

IDWR Water Right and Adjudication Search

Note: This search tool identifies active water rights and active transfers. If you want to search both active and inactive water rights, please check box below.

To view documents related to all existing Transfer applications, see [SEARCH Transfers](#) on the Water Right Transfer tab.

☐ Search for both active and inactive water right records.

Search Results

Type of Query

USAGE INSTRUCTION

☒ All Adjudication & Water Rights

Adjudication

☐ Claims

☐ Recommendations

☐ Both

Water Rights

☐ Applications

☐ Permits

☐ Decrees, Licenses and Statutory Claims

☐ Transfers

☐ All of the above

Basin

Who

What

When

Where

Clear

Search

Help

Query parameters:

basinFrom = 34

lastName = mc donald

firstName = darrell

Search for: active Records

POD = 1

Information for type: Statutory Claim, Decree and License

	Record	Basin	Sequence	Suffix	Version	Basis	Status	Priority Date	Diversion Rate	Source List	Water Uses	Owner List
Details Related Documents General Provision	1	34	43			Decreed	Active	1901-07-22	1.6	BIG LOST RIVER	IRRIGATION	MC DONALD DARRE E (Current) MC DONALD NANCY (Current)
Details Related Documents General Provision	2	34	195	C		Decreed	Active	1888-06-01	0.806	BIG LOST RIVER	IRRIGATION	MC DONALD DARRE E (Current) MC DONALD NANCY (Current)
												MC DONALD DARRE

EXHIBIT P1

Details Related Documents General Provision	3	34	196	D		Decreed	Active	1896-09-01	0.32	BIG LOST RIVER	IRRIGATION	E (Curren MC DONAJ NANC' (Curren
Details Related Documents General Provision	4	34	437			Decreed	Active	1899-05-01	0.26	BIG LOST RIVER	IRRIGATION	MC DONAJ DARRI E (Curren MC DONAJ NANC' (Curren
Details Related Documents General Provision	5	34	2480	A		Decreed	Active	1986-05-01	0.79	GROUND WATER	IRRIGATION	MC DONAJ DARRI E (Curren MC DONAJ NANC' (Curren
Details Related Documents General Provision	6	34	2491	A		Decreed	Active	1944-05-08	0.988	BIG LOST RIVER	IRRIGATION	MC DONAJ DARRI E (Curren MC DONAJ NANC' (Curren
Details Related Documents General Provision	7	34	2491	B		Decreed	Active	1944-05-08	4.168	BIG LOST RIVER	IRRIGATION	MC DONAJ DARRI E (Curren MC DONAJ NANC' (Curren
Details Related Documents General Provision	8	34	2509			Decreed	Active	1960-10-05	4.68	GROUND WATER	IRRIGATION	MC DONAJ DARRI E (Curren MC DONAJ NANC' (Curren
Details Related Documents	9	34	7028	A		Decreed	Active	1972-08-01	4.3	GROUND	IRRIGATION	MC DONAJ DARRI E (Curren

General Provision										WATER		MC DONALD NANCY (Current
Details Related Documents General Provision	10	34	7111	A		Decreed	Active	1975-05-15	0.31	BIG LOST RIVER	IRRIGATION	MC DONALD DARRE E (Current MC DONAL NANCY (Current
Details Related Documents General Provision	11	34	7112			Decreed	Active	1975-05-15	4.68	BIG LOST RIVER	IRRIGATION	MC DONALD DARRE E (Current MC DONAL NANCY (Current
Details Related Documents General Provision	12	34	7226	B		Decreed	Active	1980-02-24	1.52	GROUND WATER	IRRIGATION	MC DONALD DARRE E (Current MC DONAL NANCY (Current
Details Related Documents General Provision	13	34	7234			Decreed	Active	1979-08-15	1.66	GROUND WATER	IRRIGATION	MC DONALD DARRE E (Current MC DONAL NANCY (Current
Details Related Documents General Provision	14	34	10100			Decreed	Active	1897-05-10	4.286	BIG LOST RIVER	IRRIGATION	MC DONALD DARRE E (Current MC DONAL NANCY (Current

Number of records = 14

IDWR Water Right and Adjudication Search

Note: This search tool identifies active water rights and active transfers. If you want to search both active and inactive water rights, please check the box below.

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☐ Search for both active and inactive water right records.

Search Results

Type of Query

USAGE INSTRUCTION

☒ All Adjudication & Water Rights	
Adjudication ☐ Claims ☐ Recommendations ☐ Both	Water Rights ☐ Applications ☐ Permits ☐ Decrees, Licenses and Statutory Claims ☐ Transfers ☐ All of the above

Basin Who What When Where Clear Search Help

Query parameters:

basinFrom = 34

lastName = sowards

firstName = norman

Search for: active Records

Information for type: Statutory Claim, Decree and License

	Record	Basin	Sequence	Suffix	Version	Basis	Status	Priority Date	Diversion Rate	Source List	Water Uses	Owner
Details Related Documents General Provision	1	34	621	B		Decreed	Active	1892-01-01	0.8	BIG LOST RIVER	IRRIGATION	SOWAR NORMA K (Curre
Details Related Documents General Provision	2	34	666			Decreed	Active	1887-06-01	3.2	BIG LOST RIVER	IRRIGATION	SOWAR NORMA K (Curre
Details Related Documents General Provision	3	34	2302			Decreed	Active	1953-02-28	3.14	GROUND WATER	IRRIGATION	SOWAR NORMA K (Curre
Details Related Documents General Provision	4	34	2422			Decreed	Active	1961-06-09	2.4	GROUND WATER	IRRIGATION	SOWAR NORMA K (Curre SOWAR W T (Current'
Details Related Documents General Provision	5	34	7228			Decreed	Active	1979-05-03	0.98	GROUND WATER	IRRIGATION	SOWAR NORMA K (Curre
Details												SOWAR

EXHIBIT P2

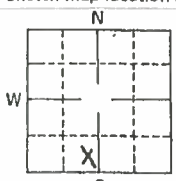
Related Documents General Provision	6	34	10867			Decreed	Active	1984-04-01	0.04	GROUND WATER	STOCKWATER	NORM/ K (Curro
Details General Provision	7	34	10868	A		Decreed	Active	1916-08-28	0.04	CHAMPAGNE CREEK	DIVERSION TO STORAGE, STOCKWATER FROM STORAGE, STOCKWATER STORAGE	SOWAF NORM/ K (Curro
Details General Provision	8	34	10868	B		Decreed	Active	1916-08-28	0.04	HAMMOND SPRING CREEK	DIVERSION TO STORAGE, STOCKWATER FROM STORAGE, STOCKWATER STORAGE	SOWAF NORM/ K (Curro
Details Related Documents General Provision	9	34	10869			Decreed	Active	1989-03-01	0.04	GROUND WATER	DOMESTIC, STOCKWATER	SOWAF NORM/ K (Curro
Details Related Documents General Provision	10	34	10871			Decreed	Active	1980-06-15	0.2	GROUND WATER	IRRIGATION	SOWAF NORM/ K (Curro
Details Related Documents General Provision	11	34	10872			Decreed	Active	1896-06-01	2.4	BIG LOST RIVER	IRRIGATION	SOWAF NORM/ K (Curro SOWAF W T (Current

Number of records = 11

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCESUSE TYPEWRITER OR
BALLPOINT PEN

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>SPENCER TOONE</u> Address <u>ARCO, IDAHO 83213</u> Owner's Permit No. <u>34-7028</u>	7. WATER LEVEL Static water level <u>22</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 <u>good</u>																																																																																																										
2. NATURE OF WORK ☒ New well ☐ Deepened ☐ Replacement ☐ Abandoned (describe method of abandoning) _____	8. WELL TEST DATA ☒ Pump ☐ Baller ☐ Air ☐ Other _____																																																																																																										
3. PROPOSED USE ☐ Domestic ☒ Irrigation ☐ Test ☐ Municipal ☐ Industrial ☐ Stock ☐ Waste Disposal or Injection ☐ Other _____ (specify type)	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Discharge G.P.M.</th> <th>Pumping Level</th> <th>Hours Pumped</th> </tr> <tr> <td style="text-align: center;"><u>3750</u></td> <td style="text-align: center;"><u>60'</u></td> <td style="text-align: center;"><u>8</u></td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> </tr> </table>	Discharge G.P.M.	Pumping Level	Hours Pumped	<u>3750</u>	<u>60'</u>	<u>8</u>																																																																																																				
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4. METHOD DRILLED ☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary ☒ Cable ☐ Dug ☐ Other _____	9. LITHOLOGIC LOG <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Hole 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>2</td> <td>TOP SOIL</td> <td></td> <td></td> </tr> <tr> <td></td> <td>2</td> <td>19</td> <td>COARSE GRAVEL</td> <td></td> <td></td> </tr> <tr> <td></td> <td>19</td> <td>33</td> <td>1" GRAVEL</td> <td></td> <td></td> </tr> <tr> <td></td> <td>33</td> <td>37</td> <td>GRAVEL</td> <td></td> <td></td> </tr> <tr> <td></td> <td>37</td> <td>39</td> <td>CLAY + GRAVEL</td> <td></td> <td></td> </tr> <tr> <td></td> <td>39</td> <td>51</td> <td>GRAVEL</td> <td></td> <td></td> </tr> <tr> <td></td> <td>51</td> <td>53</td> <td>CLAY + GRAVEL</td> <td></td> <td></td> </tr> <tr> <td></td> <td>53</td> <td>68</td> <td>GRAVEL</td> <td></td> <td></td> </tr> <tr> <td></td> <td>68</td> <td>75</td> <td>CLAY + GRAVEL</td> <td></td> <td></td> </tr> <tr> <td></td> <td>75</td> <td>77</td> <td>GRAVEL</td> <td></td> <td></td> </tr> <tr> <td></td> <td>77</td> <td>93</td> <td>CLAY + GRAVEL</td> <td></td> <td></td> </tr> <tr> <td></td> <td>93</td> <td>121</td> <td>SAND + GRAVEL</td> <td></td> <td></td> </tr> <tr> <td></td> <td>121</td> <td>129</td> <td>CLAY + GRAVEL</td> <td></td> <td></td> </tr> <tr> <td></td> <td>129</td> <td>153</td> <td>COARSE GRAVEL</td> <td></td> <td></td> </tr> <tr> <td></td> <td>153</td> <td>155</td> <td>CLAY</td> <td></td> <td></td> </tr> <tr> <td></td> <td>155</td> <td>180</td> <td>COARSE GRAVEL</td> <td></td> <td></td> </tr> </tbody> </table>	Hole Diam.	Depth		Material	Water		From	To	Yes	No	20"	0	2	TOP SOIL				2	19	COARSE GRAVEL				19	33	1" GRAVEL				33	37	GRAVEL				37	39	CLAY + GRAVEL				39	51	GRAVEL				51	53	CLAY + GRAVEL				53	68	GRAVEL				68	75	CLAY + GRAVEL				75	77	GRAVEL				77	93	CLAY + GRAVEL				93	121	SAND + GRAVEL				121	129	CLAY + GRAVEL				129	153	COARSE GRAVEL				153	155	CLAY				155	180	COARSE GRAVEL		
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6. WELL CONSTRUCTION Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____ <table border="0" style="width: 100%;"> <tr> <td>Thickness</td> <td>Diameter</td> <td>From</td> <td>To</td> </tr> <tr> <td><u>2.50</u> inches</td> <td><u>20</u> inches</td> <td>+ <u>1</u> feet</td> <td><u>180</u> feet</td> </tr> <tr> <td>_____ inches</td> <td>_____ inches</td> <td>_____ feet</td> <td>_____ feet</td> </tr> <tr> <td>_____ inches</td> <td>_____ inches</td> <td>_____ feet</td> <td>_____ feet</td> </tr> <tr> <td>_____ inches</td> <td>_____ inches</td> <td>_____ feet</td> <td>_____ feet</td> </tr> </table> Was casing drive shoe used? ☒ Yes ☐ No Was a packer or seal used? ☐ Yes ☒ No Perforated? ☒ Yes ☐ No How perforated? ☒ Factory ☐ Knife ☐ Torch Size of perforation <u>3/16</u> inches by <u>13/4</u> inches <table border="0" style="width: 100%;"> <tr> <td>Number</td> <td>From</td> <td>To</td> </tr> <tr> <td><u>2660</u> perforations</td> <td><u>20</u> feet</td> <td><u>170</u> feet</td> </tr> <tr> <td>_____ perforations</td> <td>_____ feet</td> <td>_____ feet</td> </tr> <tr> <td>_____ perforations</td> <td>_____ feet</td> <td>_____ feet</td> </tr> </table> 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 <u>20</u> Material used in seal: ☐ Cement grout ☐ Puddling clay ☒ Well cuttings 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 _____	Thickness	Diameter	From	To	<u>2.50</u> inches	<u>20</u> inches	+ <u>1</u> feet	<u>180</u> feet	_____ inches	_____ inches	_____ feet	_____ feet	_____ inches	_____ inches	_____ feet	_____ feet	_____ inches	_____ inches	_____ feet	_____ feet	Number	From	To	<u>2660</u> perforations	<u>20</u> feet	<u>170</u> feet	_____ perforations	_____ feet	_____ feet	_____ perforations	_____ feet	_____ feet	RECEIVED JAN 14 1980 Department of Water Resources Eastern District Office																																																																										
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6. LOCATION OF WELL Sketch map location must agree with written location. <u>DS</u>  Subdivision Name _____ Lot No. _____ Block No. _____ County <u>BUTTE</u> <u>SE 1/4 SW 1/4</u> Sec. <u>34</u> , T. <u>5</u> N., R. <u>26</u> E.	11. DRILLERS CERTIFICATION I/We certify that all minimum well construction standards were complied with at the time the rig was removed. Firm Name <u>GUTHRIE WELL DRILLING</u> Firm No. <u>226</u> Address <u>ARCO, IDAHO</u> Date <u>1/7/80</u> Signed by (Firm Official) <u>J. H. Guthrie</u> and (Operator) <u>[Signature]</u>																																																																																																										

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

EXHIBIT P3

EXHIBIT E

EXHIBIT D

Form 238-7
11/93

DMD

IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Office Use Only			
Inspected by _____			
Twp _____	Rge _____	Sec _____	
1/4 _____		1/4 _____	
Lat: _____	Long: _____		
☐ Air ☐ Flowing Artesian			

1. WELL TAG NO. D 0021032
DRILLING PERMIT NO. 34-2302-34-7228
Other IDWR No. 768681

2. OWNER:
Name NORMAN K. SOWARDS
Address 1718 FINCH ROAD
City HAYDEN LAKE State ID Zip 83835

3. LOCATION OF WELL by legal description:

Sketch map location must agree with written location.

N		Twp. <u>S</u> North ☒ or South ☐	
E		Rge. <u>26</u> East ☒ or West ☐	
S		Sec. <u>34</u> NW 1/4 SE 1/4 NW 1/4	
W		Gov't Lot _____ County <u>BUTTE</u> State <u>ID</u>	
		Lat: _____ Long: _____	

Address of Well Site 1/4 MI. SOUTH OF MOORE THEN EAST MOORE
(One 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		
Bentonite	0	20		Temp. Pipe

Was drive shoe used? ☒ N ☐ Shoe Depth(s) 188
Was drive shoe seal tested? ☐ Yes ☒ No How? _____

8. CASING/LINER:

Diameter	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
16	1	188	250	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
68	186					☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

42 ft. below ground Artesian pressure _____ lb.
Depth flow encountered _____ ft. Describe access port or control devices: TOP OF WELL

11. WELL TESTS:

Yield gal/min	Drawdown	Pumping Level	Time
2000	84	120	6 hrs.

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

12. LITHOLOGIC LOG: (Describe repairs or abandonment) Depth first Water Encounter 42

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
200	4		SOIL Key		☒
1652	69		SAND + GRAVEL	☒	
1652	69		Brown CLAY + Gravel	☒	
1652	188		SAND + GRAVEL	☒	

RECEIVED

NOV 14 2001

Department of Water Resources
Eastern Region

Completed Depth 188' (Measurable)
Date: Started 5-18-01 Completed 6-19-01

13. DRILLER'S CERTIFICATION

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

Company Name CATHERINE DRILLING Firm No. 226

Firm Official D. G. HUBBARD Date 11-10-01

and _____

Driller or Operator _____ Date _____

(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

EXHIBIT P5

EXHIBIT E

District Court
Snake River Basin Adjudication
PO Box 2707
Twin Falls, ID 83303-2707

Important Information About Your Water Right

December 14, 2001

NORMAN K SOWARDS
1719 FINCH RD
HAYDEN LAKE, ID 83835

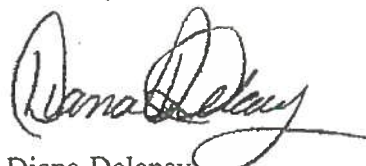
Dear Water Right Claimant(s):

The reverse side of this letter contains a copy of an *Order Amending Irrigation Period of Use Element in Partial Decree, Nunc Pro Tunc* (hereinafter "*Order*") for water right number 34-02302. According to Idaho Department of Water Resources (IDWR) records, you are the current owner of this water right. If you are not the current owner, please contact IDWR immediately at:

Idaho Department of Water Resources
1301 North Orchard
Boise, ID 83706
800-451-4129

The Purpose of the *Order* is to set forth beginning and ending dates for the irrigation period of use for this water right. As stated in the face of the *Order*, this action was necessary following the decision of the Idaho Supreme Court in *A&B Irrigation Dist. v. Idaho Conservation League*, 131 Idaho 411, 423, 958 P.2d 568, 580 (1998). This *Order* also incorporates into the *Partial Decree* an express statement that the *Partial Decree* is subject to such general provisions necessary for the definition or for the efficient administration of the water right. This express statement is necessary to comply with the requirements of Idaho Code section 42-1412(6). This *Order* in combination with the *Partial Decree* that was issued for this water right on December 29, 1997, sets forth all of the elements of your water right. The Snake River Basin Adjudication (SRBA) Court suggests that you keep this document in a safe location together with a copy of the *Partial Decree* to show evidence of the water right. The original of this *Order* and the original of the *Partial Decree* for this water right are on file with SRBA Court. If you do not have a copy of the original *Partial Decree*, one can be obtained by contacting the SRBA Court at (208) 736-3011. Please note that the *Order* is entered *Nunc Pro Tunc*, meaning that the *Order* will be treated as if it were issued the same date that the *Partial Decree* was originally issued.

Sincerely,



Diana Delaney
Case Administrator

EXHIBIT P6

EXHIBIT B

IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS

In Re SRBA)
)
Case No. 39576)

Water Right 34-02302

ORDER AMENDING IRRIGATION PERIOD OF USE ELEMENT
IN PARTIAL DECREE AND INCORPORATING INTO PARTIAL
DECREE AN EXPRESS STATEMENT REGARDING GENERAL
PROVISIONS, *NUNC PRO TUNC*

A *Partial Decree* was entered for the above-captioned irrigation water right on December 29, 1997. The period of use element was decreed as "irrigation season." In *A&B Irrigation Dist. v. Idaho Conservation League*, 131 Idaho 411, 423, 958 P.2d 568, 580 (1998), the Idaho Supreme Court remanded with the directive to include specific dates for the period of use element. Following remand, IDWR filed a *Supplemental Director's Report, Reporting Area 1, IDWR Basin 34, Regarding Revision of Period of use (For Irrigation Water Uses) and Conjunctive Management General Provisions*, which included an irrigation period of use recommendation for this water right. No objections were filed to this recommendation and the time period for filing objections has now expired.

THEREFORE, IT IS ORDERED that the period of use for the irrigation element of the above-captioned water right is hereby amended and decreed as:

PERIOD OF USE: 04-01 10-31

IT IS FURTHER ORDERED that the *Partial Decree* for the above-captioned water right is hereby amended and decreed to contain the following:

This partial decree is subject to such general provisions necessary for the definition of the rights or for the efficient administration of the water rights as may be ultimately determined by the court at a point in time no later than the entry of a final unified decree. I.C. section 42-1412(6).

This order is being entered *nunc pro tunc* as of the date the *Partial Decree* was issued and is not intended to modify any subsequent administrative changes for the water right, if any, which occurred following entry of the *Partial Decree*.

RULE 54(b) CERTIFICATE

With respect to the issues determined by the above judgment or order, it is hereby CERTIFIED, in accordance with Rule 54(b), I.R.C.P., that the court has determined that there is no just reason for delay of the entry of a final judgment and that the court has and does hereby direct that the above judgment or order shall be a final judgment upon which execution may issue and an appeal may be taken as provided by the Idaho Appellate Rules.

Dated December 14, 2001



ROGER BURDICK
Presiding Judge
Snake River Basin Adjudication

IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS -

In Re SRBA
Case No. 39576

PARTIAL DECREE PURSUANT TO
I.R.C.P. 54(b) FOR
Water Right 34-02302

1997 DEC 29 PM 4: 42
DISTRICT COURT - SRBA
TWIN FALLS CO., IDAHO

NAME & ADDRESS: NORMAN K SOWARDS
1719 FINCH RD
HAYDEN LAKE ID 83835

SOURCE: GROUNDWATER

QUANTITY: 3.14 CFS
549.5 AFY

USE OF THIS RIGHT WITH RIGHT NO. 34-00666 IS LIMITED TO A
TOTAL COMBINED DIVERSION RATE OF 4.10 CFS.

PRIORITY DATE: 02/28/1953

POINT OF DIVERSION: T05N R26E S34 NWSNW Within BUTTE County

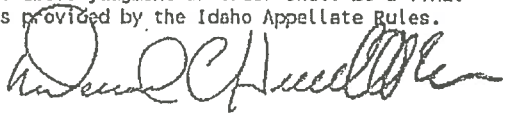
PURPOSE AND PERIOD OF USE:	PURPOSE OF USE	PERIOD OF USE	QUANTITY
	IRRIGATION	Irrigation Season	3.14 CFS 549.5 AFY

PLACE OF USE:	IRRIGATION	Within BUTTE County			
	T05N R26E S34	SENN 40	NESH 40	NWSE 40	SWSE 37
	157 ACRES TOTAL				

USE OF THIS RIGHT WITH RIGHT NO. 34-00666 IS LIMITED TO
THE IRRIGATION OF A COMBINED TOTAL OF 157 ACRES IN A SINGLE
IRRIGATION SEASON.

RULE 54(b) CERTIFICATE

With respect to the issues determined by the above judgment or order, it is hereby CERTIFIED, in accordance with Rule 54(b), I.R.C.P., that the court has determined that there is no just reason for delay of the entry of a final judgment and that the court has and does hereby direct that the above judgment or order shall be a final judgment upon which execution may issue and an appeal may be taken as provided by the Idaho Appellate Rules.


DANIEL C. HURLBUTT, JR.
PRESIDING JUDGE
Snake River Basin Adjudication

District Court
Snake River Basin Adjudication
PO Box 2707
Twin Falls, ID 83303-2707

Important Information About Your Water Right

July 10, 2002

Eleanor Toone
Spencer W Toone
585 Lilac St
Blackfoot, ID 83221

RECEIVED

JUL 12 2002

Department of Water Resources

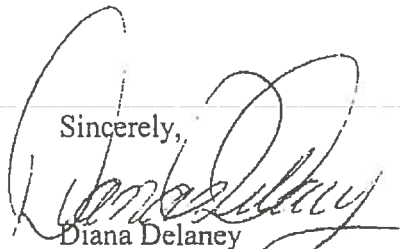
Dear Water Right Claimant(s):

Attached to this letter is a copy of an *Order Amending Irrigation Period of Use Element in Partial Decree, Nunc Pro Tunc* (hereinafter "*Order*") for water right number 34-2480A. According to Idaho Department of Water Resources (IDWR) records, you are the current owner of this water right. If you are not the current owner, please contact IDWR immediately at:

Idaho Department of Water Resources
1301 North Orchard
Boise, ID 83706
800-451-4129

The purpose of the *Order* is to set forth beginning and ending dates for the irrigation period of use for this water right. As stated in the face of the *Order*, this action was necessary following the decision of the Idaho Supreme Court in *A&B Irrigation Dist. v. Idaho Conservation League*, 131 Idaho 411, 423, 958 P.2d 568, 580 (1998). This *Order* also incorporates into the *Partial Decree* an express statement that the *Partial Decree* is subject to such general provisions necessary for the definition or for the efficient administration of the water right. This express statement is necessary to comply with the requirements of Idaho Code section 42-1412(6). This *Order*, in combination with the *Partial Decree* that was issued for this water right on February 5, 1998, sets forth all of the elements of your water right. The Snake River Basin Adjudication (SRBA) Court suggests that you keep this document in a safe location together with a copy of the *Partial Decree* to show evidence of this water right. The original of this *Order* and the original of the *Partial Decree* for this water right are on file with SRBA Court. If you do not have a copy of the original *Partial Decree*, one can be obtained by contacting the SRBA Court at (208) 736-3011. Please note that the *Order* is entered *Nunc Pro Tunc*, meaning that the *Order* will be treated as if it were issued on the same date that the *Partial Decree* was originally issued.

Sincerely,



Diana Delaney
Case Administrator

EXHIBIT P7

EXHIBIT B

2002 JUL 10 PM 2:15

DISTRICT COURT-SRBA
TWIN FALLS CO, IDAHO
FILED _____

**IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS**

In Re SRBA	)	Water Right 34-2480A
	)	
	)	ORDER AMENDING IRRIGATION PERIOD OF USE
	)	ELEMENT IN PARTIAL DECREE and
Case No. 39576	)	INCORPORATING INTO PARTIAL DECREES AN
	)	EXPRESS STATEMENT REGARDING GENERAL
	)	PROVISIONS, <i>NUNC PRO TUNC</i>

A *Partial Decree* was entered for the above-captioned irrigation water right on February 5, 1998. The period of use element was decreed as "irrigation season." In *A&B Irrigation Dist. v. Idaho Conservation League*, 131 Idaho 411, 423, 958 P.2d 568, 580 (1998), the Idaho Supreme Court remanded with the directive to include specific dates for the period of use element. Following remand, on June 24, 1999, IDWR filed a *Supplemental Director's Report, Reporting Area 1, IDWR Basin 34, Regarding Revision of Period of Use (For Irrigation Water Uses) and Conjunctive Management General Provisions*, which included an irrigation period of use recommendation for this water right. No objections were filed to this *Supplemental Director's Report*.

THEREFORE, IT IS ORDERED that the period of use element for the irrigation portion of the above-captioned water right is hereby amended and decreed as:

PERIOD OF USE: 04-01 to 11-01

IT IS FURTHER ORDERED that the *Partial Decree* for the above-captioned water right is hereby amended and decreed to contain the following:

This partial decree is subject to such general provisions necessary for the definition of the rights or for the efficient administration of the water rights as may be ultimately determined by the court a point in time no later than the entry of a final unified decree. I.C. section 42-1412(6).

This order is being entered *nunc pro tunc* as of the date the *Partial Decree* was issued and is not intended to modify subsequent administrative changes for the water right, if any, which occurred following entry of the *Partial Decree*.

RULE 54(b) CERTIFICATE

With respect to the issues determined by the above judgment or order, it is hereby CERTIFIED, in accordance with Rule 54(b), I.R.C.P., that the court has determined that there is no just reason for delay of the entry of a final judgment and that the court has and does hereby direct that the above judgment or order shall be a final judgment upon which execution may issue and an appeal may be taken as provided by the Idaho Appellate Rules.

Dated July 10, 2002.



ROGER BURDICK
Presiding Judge
Snake River Basin Adjudication

FILED
FEB 23 1998
CLERK OF DISTRICT COURT
FIFTH JUDICIAL DISTRICT
IDAHO

IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS

In Re SRBA	)	ORDER OF PARTIAL DECREE
	)	
Case No. 39576	)	For Water Right 34-02480A
_____	)	

On December 19, 1997, a *Special Master's Report and Recommendation* was filed for the above water right. No Challenges were filed to the *Special Master's Report and Recommendation* and the time for filing Challenges has now expired.

Pursuant to I.R.C.P. 53(e)(2) and *SRBA Administrative Order 1*, Section 13f, this court has reviewed the Findings of Fact and Conclusions of Law contained in the *Special Master's Report* and wholly adopts them as its own.

Therefore, IT IS ORDERED that water right 34-02480A is hereby decreed as set forth in the attached *Partial Decree Pursuant to I.R.C.P. 54(b)*.

DATED February 5, 1998.


DANIEL C. HURLBUTT, JR.
Presiding Judge
Snake River Basin Adjudication

IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS

In Re SRBA)
Case No. 39576)
PARTIAL DECREE PURSUANT TO
I.R.C.P. 54(b) FOR
Water Right 34-02480A

NAME & ADDRESS: SPENCER W TOONE
ELEANOR TOONE
585 LILAC ST
BLACKFOOT ID 83221

SOURCE: GROUNDWATER

POINT OF INJECTION INTO AND POINT OF REDIVERSION FROM THE BIG
LOST RIVER.

QUANTITY: 0.79 CFS

THIS RIGHT AND RIGHT NOS. 34-07028A AND 34-07234 ARE LIMITED
TO A TOTAL COMBINED DIVERSION RATE OF 6.60 CFS AND TO A TOTAL
COMBINED ANNUAL DIVERSION VOLUME OF 1071 AF.

USE OF THIS RIGHT WITH THE RIGHTS LISTED BELOW IS LIMITED TO A
TOTAL COMBINED DIVERSION RATE OF 9.58 CFS.
COMBINED RIGHT NOS.: 34-00196D, 34-10100, 34-02491B, 34-00195C,
34-07028A AND 34-07234.

PRIORITY DATE: 05/01/1986

POINT OF DIVERSION: T05N R26E S34 NESESW Within BUTTE County
T04N R26E S26 NWNWNW (INJECTION)
NWNWNW (REDIVERSION)

PURPOSE AND PERIOD OF USE:	PURPOSE OF USE	PERIOD OF USE	QUANTITY
	IRRIGATION	Irrigation Season	0.79 CFS

PLACE OF USE:	IRRIGATION	Within BUTTE County			
	T03N R27E S10	SWNE 39	NENW 29	NWNW 38	SNNW 39
		SENW 40	NWSE 39		
	224 ACRES TOTAL				

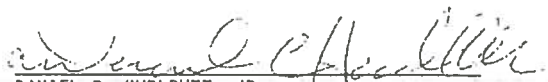
USE OF THIS RIGHT WITH RIGHT NO. 34-07028A IS LIMITED TO THE
IRRIGATION OF A COMBINED TOTAL OF 224 ACRES IN A SINGLE
IRRIGATION SEASON.

USE OF THIS RIGHT WITH THE RIGHTS LISTED BELOW IS LIMITED TO
THE IRRIGATION OF A COMBINED TOTAL OF 306 ACRES IN A SINGLE
IRRIGATION SEASON.

COMBINED RIGHT NOS.: 34-00196D, 34-10100, 34-02491B, 34-00195C,
34-07028A AND 34-07234.

RULE 54(b) CERTIFICATE

With respect to the issues determined by the above judgment or order, it is hereby CERTIFIED, in accordance
with Rule 54(b), I.R.C.P., that the court has determined that there is no just reason for delay of the entry of a
final judgment and that the court has and does hereby direct that the above judgment or order shall be a final
judgment upon which execution may issue and an appeal may be taken as provided by the Idaho Appellate Rules.


DANIEL C. HURLBUTT, JR.
PRESIDING JUDGE
Snake River Basin Adjudication

PARTIAL DECREE PURSUANT TO I.R.C.P. 54(b)
Water Right 34-02480A

PAGE 1
NOV-26-1997

1998 FEB 05 PM 02:00
DISTRICT COURT - SRBA
TWIN FALLS CO., IDAHO
FILED _____

IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS

In Re SRBA)
)
Case No. 39576)
_____)

CERTIFICATE OF MAILING

Water Right(s): 34-02480A

CERTIFICATE OF MAILING

I certify that a true and correct copy of the PARTIAL DECREE
PURSUANT TO I.R.C.P. 54(b) for WATER RIGHT 34-02480A was mailed
on February 05, 1998, with sufficient first-class postage prepaid
to the following:

DIRECTOR OF IDWR
PO BOX 83720
BOISE, ID 83720-0098

SPENCER W & ELEANOR TOONE
585 LILAC ST
BLACKFOOT, ID 83221
Phone: 208-785-4128

SPENCER W TOONE
585 LILAC ST
BLACKFOOT, ID 83221-1514
Phone: 208-785-4128

DIANA DELANEY
Chief Deputy Clerk

CERTIFICATE OF MAILING

PAGE 1
02/05/98

District Court
Snake River Basin Adjudication
PO Box 2707
Twin Falls, ID 83303-2707

Important Information About Your Water Right

July 10, 2002

Eleanor Toone
Spencer W Toone
585 Lilac St
Blackfoot, ID 83221

RECEIVED

JUL 12 2002

Department of Water Resources

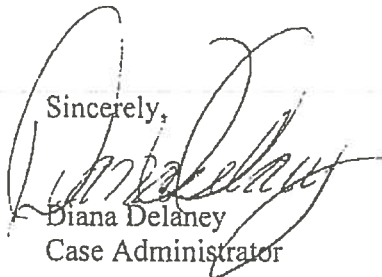
Dear Water Right Claimant(s):

Attached to this letter is a copy of an *Order Amending Irrigation Period of Use Element in Partial Decree, Nunc Pro Tunc* (hereinafter "*Order*") for water right number 34-7028A. According to Idaho Department of Water Resources (IDWR) records, you are the current owner of this water right. If you are not the current owner, please contact IDWR immediately at:

Idaho Department of Water Resources
1301 North Orchard
Boise, ID 83706
800-451-4129

The purpose of the *Order* is to set forth beginning and ending dates for the irrigation period of use for this water right. As stated in the face of the *Order*, this action was necessary following the decision of the Idaho Supreme Court in *A&B Irrigation Dist. v. Idaho Conservation League*, 131 Idaho 411, 423, 958 P.2d 568, 580 (1998). This *Order* also incorporates into the *Partial Decree* an express statement that the *Partial Decree* is subject to such general provisions necessary for the definition or for the efficient administration of the water right. This express statement is necessary to comply with the requirements of Idaho Code section 42-1412(6). This *Order*, in combination with the *Partial Decree* that was issued for this water right on February 5, 1998, sets forth all of the elements of your water right. The Snake River Basin Adjudication (SRBA) Court suggests that you keep this document in a safe location together with a copy of the *Partial Decree* to show evidence of this water right. The original of this *Order* and the original of the *Partial Decree* for this water right are on file with SRBA Court. If you do not have a copy of the original *Partial Decree*, one can be obtained by contacting the SRBA Court at (208) 736-3011. Please note that the *Order* is entered *Nunc Pro Tunc*, meaning that the *Order* will be treated as if it were issued on the same date that the *Partial Decree* was originally issued.

Sincerely,



Diana Delaney
Case Administrator

EXHIBIT P8

EXHIBIT C

2002 JUL 10 PM 2:15

DISTRICT COURT-SRBA
TWIN FALLS CO. IDAHO
FILED _____

**IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS**

In Re SRBA	)	Water Right 34-7028A
	)	
	)	ORDER AMENDING IRRIGATION PERIOD OF USE
	)	ELEMENT IN PARTIAL DECREE and
Case No. 39576	)	INCORPORATING INTO PARTIAL DECREES AN
	)	EXPRESS STATEMENT REGARDING GENERAL
	)	PROVISIONS, NUNC PRO TUNC

A *Partial Decree* was entered for the above-captioned irrigation water right on February 5, 1998. The period of use element was decreed as "irrigation season." In *A&B Irrigation Dist. v. Idaho Conservation League*, 131 Idaho 411, 423, 958 P.2d 568, 580 (1998), the Idaho Supreme Court remanded with the directive to include specific dates for the period of use element. Following remand, on June 24, 1999, IDWR filed a *Supplemental Director's Report, Reporting Area 1, IDWR Basin 34, Regarding Revision of Period of Use (For Irrigation Water Uses) and Conjunctive Management General Provisions*, which included an irrigation period of use recommendation for this water right. No objections were filed to this *Supplemental Director's Report*.

THEREFORE, IT IS ORDERED that the period of use element for the irrigation portion of the above-captioned water right is hereby amended and decreed as:

PERIOD OF USE: 04-01 to 11-01

IT IS FURTHER ORDERED that the *Partial Decree* for the above-captioned water right is hereby amended and decreed to contain the following:

This partial decree is subject to such general provisions necessary for the definition of the rights or for the efficient administration of the water rights as may be ultimately determined by the court at a point in time no later than the entry of a final unified decree. I.C. section 42-1412(6).

This order is being entered *nunc pro tunc* as of the date the *Partial Decree* was issued and is not intended to modify subsequent administrative changes for the water right, if any, which occurred following entry of the *Partial Decree*.

RULE 54(b) CERTIFICATE

With respect to the issues determined by the above judgment or order, it is hereby CERTIFIED, in accordance with Rule 54(b), I.R.C.P., that the court has determined that there is no just reason for delay of the entry of a final judgment and that the court has and does hereby direct that the above judgment or order shall be a final judgment upon which execution may issue and an appeal may be taken as provided by the Idaho Appellate Rules.

Dated July 10, 2002.



ROGER BURDICK

Presiding Judge

Snake River Basin Adjudication

IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS

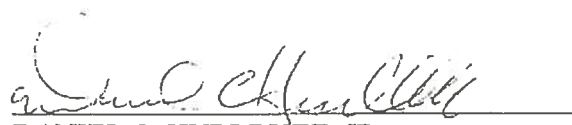
In Re SRBA	)	ORDER OF PARTIAL DECREE
	)	
Case No. 39576	)	For Water Right 34-07028A
_____	)	

On December 19, 1997, a *Special Master's Report and Recommendation* was filed for the above water right. No Challenges were filed to the *Special Master's Report and Recommendation* and the time for filing Challenges has now expired.

Pursuant to I.R.C.P. 53(e)(2) and *SRBA Administrative Order 1*, Section 13f, this court has reviewed the Findings of Fact and Conclusions of Law contained in the *Special Master's Report* and wholly adopts them as its own.

Therefore, IT IS ORDERED that water right 34-07028A is hereby decreed as set forth in the attached *Partial Decree Pursuant to I.R.C.P. 54(b)*.

DATED February 5, 1998.



DANIEL C. HURLBUTT, JR.
Presiding Judge
Snake River Basin Adjudication

IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS

In Re SR8A)
) PARTIAL DECREE PURSUANT TO
Case No. 39576) I.R.C.P. 54(b) FOR
)
) Water Right 34-07028A

NAME & ADDRESS: SPENCER W TODNE
ELEANOR TOONE
585 LILAC ST
BLACKFOOT ID 83221

SOURCE: GROUNDWATER

POINT OF INJECTION INTO AND POINT OF REDIVERSION FROM THE BIG
LOST RIVER.

QUANTITY: 4.3 CFS

THIS RIGHT AND RIGHT NOS. 34-02480A AND 34-07234 ARE LIMITED
TO A TOTAL COMBINED DIVERSION RATE OF 6.60 CFS AND TO A TOTAL
COMBINED ANNUAL DIVERSION VOLUME OF 1071 AF.

USE OF THIS RIGHT WITH THE RIGHTS LISTED BELOW IS LIMITED TO A
TOTAL COMBINED DIVERSION RATE OF 9.58 CFS.

COMBINED RIGHT NOS.: 34-00196D, 34-10100, 34-02491B, 34-00195C,
34-02480A AND 34-07234.

PRIORITY DATE: 08/01/1972

POINT OF DIVERSION: T05N R26E S34 NESESW Within BUTTE County
T04N R26E S26 NWNWNW (INJECTION)
NWNWNW (REDIVERSION)

PURPOSE AND PERIOD OF USE:	PURPOSE OF USE	PERIOD OF USE	QUANTITY
	IRRIGATION	Irrigation Season	4.3 CFS

PLACE OF USE:	IRRIGATION	Within BUTTE County			
	T03N R27E S10	SWNE 39	NENW 29	NWNW 38	SWNW 39
		SENW 40	NWSE 39		
	224 ACRES TOTAL				

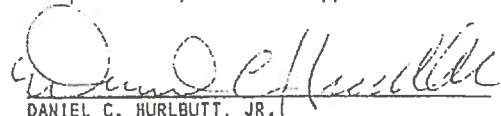
USE OF THIS RIGHT WITH RIGHT NO. 34-02480A IS LIMITED TO THE
IRRIGATION OF A COMBINED TOTAL OF 224 ACRES IN A SINGLE
IRRIGATION SEASON.

USE OF THIS RIGHT WITH THE RIGHTS LISTED BELOW IS LIMITED TO
THE IRRIGATION OF A COMBINED TOTAL OF 306 ACRES IN A SINGLE
IRRIGATION SEASON.

COMBINED RIGHT NOS.: 34-00196D, 34-10100, 34-02491B, 34-00195C,
34-02480A AND 34-07234.

RULE 54(b) CERTIFICATE

With respect to the issues determined by the above judgment or order, it is hereby CERTIFIED, in accordance
with Rule 54(b), I.R.C.P., that the court has determined that there is no just reason for delay of the entry of a
final judgment and that the court has and does hereby direct that the above judgment or order shall be a final
judgment upon which execution may issue and an appeal may be taken as provided by the Idaho Appellate Rules.



DANIEL C. HURLBUTT, JR.
PRESIDING JUDGE
Snake River Basin Adjudication

PARTIAL DECREE PURSUANT TO I.R.C.P. 54(b)
Water Right 34-07028A

1998 FEB 05 PM 02:00
DISTRICT COURT - SRBA
TWIN FALLS CO., IDAHO
FILED _____

IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS

In Re SRBA)
)
Case No. 39576)
_____)

CERTIFICATE OF MAILING

Water Right(s): 34-07028A

CERTIFICATE OF MAILING

I certify that a true and correct copy of the PARTIAL DECREE
PURSUANT TO I.R.C.P. 54(b) for WATER RIGHT 34-07028A was mailed
on February 05, 1998, with sufficient first-class postage prepaid
to the following:

DIRECTOR OF IDWR
PO BOX 83720
BOISE, ID 83720-0098

SPENCER W & ELEANOR TOONE
585 LILAC ST
BLACKFOOT, ID 83221
Phone: 208-785-4128

DIANA DELANEY
Chief Deputy Clerk

CERTIFICATE OF MAILING

PAGE 1
02/05/98

District Court
Snake River Basin Adjudication
PO Box 2707
Twin Falls, ID 83303-2707

Important Information About Your Water Right

December 14, 2001

NORMAN K SOWARDS
1719 FINCH RD
HAYDEN LAKE, ID 83835

Dear Water Right Claimant(s):

The reverse side of this letter contains a copy of an *Order Amending Irrigation Period of Use Element in Partial Decree, Nunc Pro Tunc* (hereinafter "*Order*") for water right number 34-07228. According to Idaho Department of Water Resources (IDWR) records, you are the current owner of this water right. If you are not the current owner, please contact IDWR immediately at:

Idaho Department of Water Resources
1301 North Orchard
Boise, ID 83706
800-451-4129

The Purpose of the *Order* is to set forth beginning and ending dates for the irrigation period of use for this water right. As stated in the face of the *Order*, this action was necessary following the decision of the Idaho Supreme Court in *A&B Irrigation Dist. v. Idaho Conservation League*, 131 Idaho 411, 423, 958 P.2d 568, 580 (1998). This *Order* also incorporates into the *Partial Decree* an express statement that the *Partial Decree* is subject to such general provisions necessary for the definition or for the efficient administration of the water right. This express statement is necessary to comply with the requirements of Idaho Code section 42-1412(6). This *Order* in combination with the *Partial Decree* that was issued for this water right on December 31, 1997, sets forth all of the elements of your water right. The Snake River Basin Adjudication (SRBA) Court suggests that you keep this document in a safe location together with a copy of the *Partial Decree* to show evidence of the water right. The original of this *Order* and the original of the *Partial Decree* for this water right are on file with SRBA Court. If you do not have a copy of the original *Partial Decree*, one can be obtained by contacting the SRBA Court at (208) 736-3011. Please note that the *Order* is entered *Nunc Pro Tunc*, meaning that the *Order* will be treated as if it were issued the same date that the *Partial Decree* was originally issued.

Sincerely,



Diana Delaney
Case Administrator

EXHIBIT P9

EXHIBIT C

IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS

In Re SRBA)
)
)
Case No. 39576)

Water Right 34-07228

ORDER AMENDING IRRIGATION PERIOD OF USE ELEMENT
IN PARTIAL DECREE AND INCORPORATING INTO PARTIAL
DECREE AN EXPRESS STATEMENT REGARDING GENERAL
PROVISIONS, *NUNC PRO TUNC*

A *Partial Decree* was entered for the above-captioned irrigation water right on December 31, 1997. The period of use element was decreed as "irrigation season." In *A&B Irrigation Dist. v. Idaho Conservation League*, 131 Idaho 411, 423, 958 P.2d 568, 580 (1998), the Idaho Supreme Court remanded with the directive to include specific dates for the period of use element. Following remand, IDWR filed a *Supplemental Director's Report, Reporting Area 1, IDWR Basin 34, Regarding Revision of Period of use (For Irrigation Water Uses) and Conjunctive Management General Provisions*, which included an irrigation period of use recommendation for this water right. No objections were filed to this recommendation and the time period for filing objections has now expired.

THEREFORE, IT IS ORDERED that the period of use for the irrigation element of the above-captioned water right is hereby amended and decreed as:

PERIOD OF USE: 04-01 11-01

IT IS FURTHER ORDERED that the *Partial Decree* for the above-captioned water right is hereby amended and decreed to contain the following:

This partial decree is subject to such general provisions necessary for the definition of the rights or for the efficient administration of the water rights as may be ultimately determined by the court at a point in time no later than the entry of a final unified decree. I.C. section 42-1412(6).

This order is being entered *nunc pro tunc* as of the date the *Partial Decree* was issued and is not intended to modify any subsequent administrative changes for the water right, if any, which occurred following entry of the *Partial Decree*.

RULE 54(b) CERTIFICATE

With respect to the issues determined by the above judgment or order, it is hereby CERTIFIED, in accordance with Rule 54(b), I.R.C.P., that the court has determined that there is no just reason for delay of the entry of a final judgment and that the court has and does hereby direct that the above judgment or order shall be a final judgment upon which execution may issue and an appeal may be taken as provided by the Idaho Appellate Rules.

Dated December 14, 2001



ROGER BURDICK
Presiding Judge
Snake River Basin Adjudication

RECEIVED
JAN 02 1998
Department of Water Resources
Adjudication Bureau

1997 DEC 31 AM 11:09
DISTRICT COURT - SRBA
TWIN FALLS CO., IDAHO
FILED _____

IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS

In Re SRBA	)	ORDER OF PARTIAL DECREE
	)	
Case No. 39576	)	For Water Right 34-07228
_____	)	

On November 18, 1997, a *Special Master's Report and Recommendation* was filed for the above water right. No Challenges were filed to the *Special Master's Report and Recommendation* and the time for filing Challenges has now expired.

Pursuant to I.R.C.P. 53(e)(2) and *SRBA Administrative Order 1*, Section 13f, this court has reviewed the Findings of Fact and Conclusions of Law contained in the *Special Master's Report* and wholly adopts them as its own.

Therefore, IT IS ORDERED that water right 34-07228 is hereby decreed as set forth in the attached *Partial Decree Pursuant to I.R.C.P. 54(b)*.

DATED DEC 31 1997.



DANIEL C. HURLBUTT, JR.
Presiding Judge
Snake River Basin Adjudication

IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS

In Re SRBA)
Case No. 39576)
_____)

PARTIAL DECREE PURSUANT TO
I.R.C.P. 54(b) FOR
Water Right 34-07228

1997 DEC 31 AM 11:09

DISTRICT COURT - SRBA
TWIN FALLS CO., IDAHO

FILE _____

NAME & ADDRESS: NORMAN K SOWARDS
1719 FINCH RD
HAYDEN LAKE ID 83835

SOURCE: GROUNDWATER

QUANTITY: 0.98 CFS
171.5 AFY

USE OF THIS RIGHT WITH RIGHT NO. 34-00621B IS LIMITED TO A
TOTAL COMBINED DIVERSION RATE OF 1.22 CFS.

PRIORITY DATE: 05/03/1979

POINT OF DIVERSION: T05N R26E S34 NWSNW Within BUTTE County

PURPOSE AND PERIOD OF USE:	PURPOSE OF USE	PERIOD OF USE	QUANTITY
IRRIGATION		Irrigation Season	0.98 CFS 171.5 AFY

PLACE OF USE: IRRIGATION Within BUTTE County
T05N R26E S34 NWNW 40 HWNW 9
49 ACRES TOTAL

USE OF THIS RIGHT WITH RIGHT NO. 34-00621B IS LIMITED TO THE
IRRIGATION OF A COMBINED TOTAL OF 49 ACRES IN A SINGLE IRRIGATION
SEASON.

RULE 54(b) CERTIFICATE

With respect to the issues determined by the above judgment or order, it is hereby CERTIFIED, in accordance with Rule 54(b), I.R.C.P., that the court has determined that there is no just reason for delay of the entry of a final judgment and that the court has and does hereby direct that the above judgment or order shall be a final judgment upon which execution may issue and an appeal may be taken as provided by the Idaho Appellate Rules.


DANIEL C. HOREBUTT, JR.
PRESIDING JUDGE
Snake River Basin Adjudication

1997 DEC 31 PM 02:00
DISTRICT COURT - SRBA
TWIN FALLS CO., IDAHO
FILED _____

IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS

In Re SRBA)
Case No. 39576)
_____)

CERTIFICATE OF MAILING

Water Right(s): 34-07228

CERTIFICATE OF MAILING

I certify that a true and correct copy of the PARTIAL DECREE
PURSUANT TO I.R.C.P. 54(b) for WATER RIGHT 34-07228 was mailed
on December 31, 1997, with sufficient first-class postage prepaid
to the following:

DIRECTOR OF IDWR
PO BOX 83720
BOISE, ID 83720-0098

NORMAN K. SOWARDS
1719 FINCH ROAD
HAYDEN LAKE, ID 83835
Phone: 208-772-2313

DIANA DELANEY
Chief Deputy Clerk

CERTIFICATE OF MAILING

PAGE 1
12/31/97

District Court
Snake River Basin Adjudication
PO Box 2707
Twin Falls, ID 83303-2707

Important Information About Your Water Right

July 10, 2002

Eleanor Toone
Spencer W Toone
585 Lilac St
Blackfoot, ID 83221

RECEIVED

JUL 12 2002

Department of Water Resources

Dear Water Right Claimant(s):

Attached to this letter is a copy of an *Order Amending Irrigation Period of Use Element in Partial Decree, Nunc Pro Tunc* (hereinafter "*Order*") for water right number 34-7234. According to Idaho Department of Water Resources (IDWR) records, you are the current owner of this water right. If you are not the current owner, please contact IDWR immediately at:

Idaho Department of Water Resources
1301 North Orchard
Boise, ID 83706
800-451-4129

The purpose of the *Order* is to set forth beginning and ending dates for the irrigation period of use for this water right. As stated in the face of the *Order*, this action was necessary following the decision of the Idaho Supreme Court in *A&B Irrigation Dist. v. Idaho Conservation League*, 131 Idaho 411, 423, 958 P.2d 568, 580 (1998). This *Order* also incorporates into the *Partial Decree* an express statement that the *Partial Decree* is subject to such general provisions necessary for the definition or for the efficient administration of the water right. This express statement is necessary to comply with the requirements of Idaho Code section 42-1412(6). This *Order*, in combination with the *Partial Decree* that was issued for this water right on February 5, 1998, sets forth all of the elements of your water right. The Snake River Basin Adjudication (SRBA) Court suggests that you keep this document in a safe location together with a copy of the *Partial Decree* to show evidence of this water right. The original of this *Order* and the original of the *Partial Decree* for this water right are on file with SRBA Court. If you do not have a copy of the original *Partial Decree*, one can be obtained by contacting the SRBA Court at (208) 736-3011. Please note that the *Order* is entered *Nunc Pro Tunc*, meaning that the *Order* will be treated as if it were issued on the same date that the *Partial Decree* was originally issued.

Sincerely,

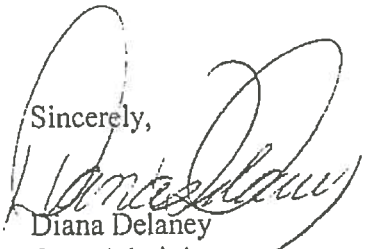

Diana Delaney
Case Administrator

EXHIBIT P10

EXHIBIT D

2007 JUL 10 PM 2:15
DISTRICT COURT-55DA
TWIN FALLS, IDAHO
FILED

IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS

In Re SRBA	)	Water Right 34-7234
	)	
	)	ORDER AMENDING IRRIGATION PERIOD OF USE
	)	ELEMENT IN PARTIAL DECREE and
Case No. 39576	)	INCORPORATING INTO PARTIAL DECREES AN
	)	EXPRESS STATEMENT REGARDING GENERAL
	)	PROVISIONS, <i>NUNC PRO TUNC</i>

A *Partial Decree* was entered for the above-captioned irrigation water right on February 5, 1998. The period of use element was decreed as "irrigation season." In *A&B Irrigation Dist. v. Idaho Conservation League*, 131 Idaho 411, 423, 958 P.2d 568, 580 (1998), the Idaho Supreme Court remanded with the directive to include specific dates for the period of use element. Following remand, on June 24, 1999, IDWR filed a *Supplemental Director's Report, Reporting Area 1, IDWR Basin 34, Regarding Revision of Period of Use (For Irrigation Water Uses) and Conjunctive Management General Provisions*, which included an irrigation period of use recommendation for this water right. No objections were filed to this *Supplemental Director's Report*.

THEREFORE, IT IS ORDERED that the period of use element for the irrigation portion of the above-captioned water right is hereby amended and decreed as:

PERIOD OF USE: 04-01 to 11-01

IT IS FURTHER ORDERED that the *Partial Decree* for the above-captioned water right is hereby amended and decreed to contain the following:

This partial decree is subject to such general provisions necessary for the definition of the rights or for the efficient administration of the water rights as may be ultimately determined by the court a point in time no later than the entry of a final unified decree. I.C. section 42-1412(6).

This order is being entered *nunc pro tunc* as of the date the *Partial Decree* was issued and is not intended to modify subsequent administrative changes for the water right, if any, which occurred following entry of the *Partial Decree*.

RULE 54(b) CERTIFICATE

With respect to the issues determined by the above judgment or order, it is hereby CERTIFIED, in accordance with Rule 54(b), I.R.C.P., that the court has determined that there is no just reason for delay of the entry of a final judgment and that the court has and does hereby direct that the above judgment or order shall be a final judgment upon which execution may issue and an appeal may be taken as provided by the Idaho Appellate Rules.

Dated July 10, 2002.



ROGER BURDICK
Presiding Judge
Snake River Basin Adjudication

IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS

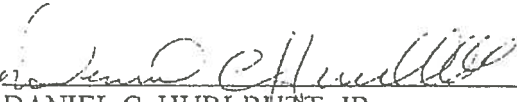
In Re SRBA	)	ORDER OF PARTIAL DECREE
	)	
Case No. 39576	)	For Water Right 34-07234
	)	

On December 19, 1997, a *Special Master's Report and Recommendation* was filed for the above water right. No Challenges were filed to the *Special Master's Report and Recommendation* and the time for filing Challenges has now expired.

Pursuant to I.R.C.P. 53(e)(2) and *SRBA Administrative Order 1*, Section 13f, this court has reviewed the Findings of Fact and Conclusions of Law contained in the *Special Master's Report* and wholly adopts them as its own.

Therefore, IT IS ORDERED that water right 34-07234 is hereby decreed as set forth in the attached *Partial Decree Pursuant to I.R.C.P. 54(b)*.

DATED February 5, 1998.



DANIEL C. HURLBUTT, JR.
Presiding Judge
Snake River Basin Adjudication

Figure 1. The effect of the concentration of the *Agrobacterium* suspension on the transformation efficiency of *Agrobacterium* strains. The *Agrobacterium* strains were incubated with the plant explants for 24 h. The explants were then cultured on the selective medium. The number of explants transformed was counted. The results are shown as the mean $\pm$ SD of three independent experiments. The data were analyzed by the Student's *t*-test. The difference between the control and the experimental groups was significant at $p < 0.05$.

[illegible]

1998 FEB 05 PM 02:00
DISTRICT COURT - SRBA
TWIN FALLS CO., IDAHO
FILED _____

IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS

In Re SRBA)
)
Case No. 39576)
_____)

CERTIFICATE OF MAILING

Water Right(s): 34-07234

CERTIFICATE OF MAILING

I certify that a true and correct copy of the PARTIAL DECREE
PURSUANT TO I.R.C.P. 54(b) for WATER RIGHT 34-07234 was mailed
on February 05, 1998, with sufficient first-class postage prepaid
to the following:

DIRECTOR OF IDWR
PO BOX 83720
BOISE, ID 83720-0098

SPENCER W & ELEANOR TOONE
585 LILAC ST
BLACKFOOT, ID 83221
Phone: 208-785-4128

DIANA DELANEY

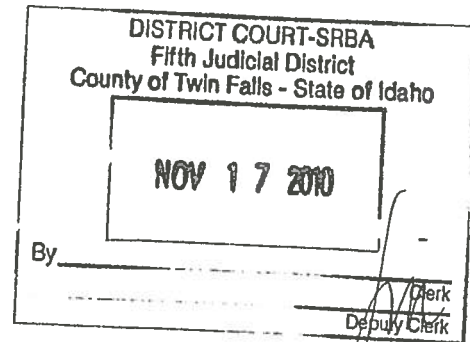
Chief Deputy Clerk

CERTIFICATE OF MAILING

PAGE 1
02/05/98

Attorney Name & Address:

James P. Speck, ISB#2067
 Speck & Aanestad
 A Professional Corporation
 120 East Avenue
 P. O. Box 987
 Ketchum, Idaho 83340
 (208) 726-4421
 FAX: (208) 726-0752



Attorneys for Darrell E. McDonald and Norman K. Sowards

IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
 STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS

In Re SRBA	)	Subcase Nos. 34-2459, 34-2460, 34-2461,
	)	34-2462, and 34-10925
Case No. 39576	)	
	)	AFFIDAVIT OF NORMAN K.
	)	SOWARDS
	)	

STATE OF IDAHO)
) ss
 County of Butte)

I, NORMAN K. SOWARDS, being over the age of eighteen years, make this affidavit based on personal information.

1. I own property north of Arco, Idaho, in the vicinity of two large wells commonly referred to as the "Island Wells" owned by Charles Isom. I understand Mr. Isom now wants to make these wells additional points of diversion for five of his water rights which presently are pumped only from wells down north of the Arco airport to irrigate his ranch south of the airport. I also understand those five rights were previously decreed in the SRBA for a total combined diversion rate of 12.5 cfs.

2. I have two groundwater irrigation rights, 34-2302 and 34-7228, which are pumped

AFFIDAVIT OF NORMAN K. SOWARDS - 1

EXHIBIT P11

from a well located just north of the Island Wells. The relative location of these wells is depicted on **Exhibit A** attached to this Affidavit. Copies of the Partial Decrees for my water rights are attached as **Exhibits B and C**.

3. I purchased this property in 1994 from Wayne Rathbun and started farming it that summer. I did not retain an attorney to assist me with the water rights related to my property. My water rights were decreed in the SRBA in December, 1997. I do not subscribe to the court's docket sheet. In fact, I didn't know it existed until a week or so ago. I generally spend my winters in Palm Springs, returning to Arco in early April, then spend June and July in Alaska. I had no idea that Mr. Isom was attempting to acquire the right to legally more than double the amount of water that he pumps from the Island Wells into the Island Canal and takes completely out of our valley until Darrell McDonald told me about this in September, 2010.

4. Darrell then contacted Mr. James P. Speck in late October to assist us in opposing the change in Mr. Isom's water rights. However, we were not able to meet with Mr. Speck to discuss these matters until November 5, 2010.

5. During the 1994 irrigation season I found that my existing well became progressively inadequate to irrigate my land as the other nearby wells were brought on line and began pumping. The only alternative to abandoning farming the land was to attempt to deepen and improve the well. First we reset the pump at about 95 ft. which was as low as possible, but the well would only produce 50% to 75% of my licensed water rights before it would cavitate. We then attempted to drill the well deeper in 1995 but we were unsuccessful for various reasons. A copy of the Well Driller's Report for this work is attached as **Exhibit D**.

6. With strong surface water years in 1996 to 2000 I was able to irrigate my land with my storage and decreed water rights. In 2001 I was forced to drill a deeper new well and install a larger pump in order to obtain my rightful amount of water. The pumping level was 120 ft. which allowed me to pump the full amount of my water rights. A copy of that Well Driller's Report is attached as **Exhibit E**. This was done at major capitol expenditure to me and also has caused me to experience permanent increased annual costs due to the larger pump and motor it was necessary to install with its accompanying higher demand and operating cost.

7. With the new well I am normally able to pump my licensed amount of water at the beginning of the irrigation season. However, as the season progresses and when the large nearby pumps are brought on line my well drops off in flow rate and can become marginal to achieve my required irrigation needs. Any additional water removed from that region of the aquifer will further exacerbate the problem in a major way.

8. I understand that the changes requested by Mr. Isom to his water rights would allow him to pump 24.5 cfs from the two Island Wells at any and all times throughout the irrigation season. It would also allow him to pump a total of 8,441.5 acre feet from these two wells to irrigate 1,980

acres more than 9 miles South of my wells, which is approximately 4.3 acre feet per acre irrigated. This is far in excess of the volume amounts for other ground water rights in the vicinity of the Island Wells, including mine.

9. I have reviewed printouts from online records of the discharge of the two Island Wells into the Big Lost River Irrigation District canal system for the period of 2003 through 2009. The maximum amount for any single year was 4,784 acre-feet, which is only 57% of the amount of water Mr. Isom seeks permission to divert from these wells.

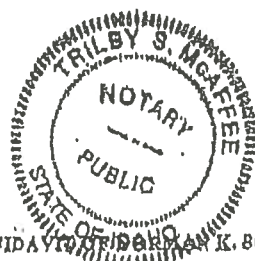
10. I am aware of the condition proposed to be added to Mr. Isom's water rights that gives the additional diversions from the Island Wells above the 12 cfs allowed under 34-7037 a 1982 priority date. My water rights described above are senior to 1982. To protect and be sure I get the full amount of my water rights I will have to make a priority call and rely on the Watermaster to somehow get the Island Wells' output limited to 12 cfs. If and when this can be done, the negative impact on the local water table and thus my ability to divert the full amount of my water rights will have occurred. Based on my experience farming my land using my ground water rights, I do not believe the water table will recover in time to avoid injury to my water rights. Furthermore, the time required for the completion of the enforcement of such a water delivery call will likely result in some serious damage to my crops due to my inability to divert and deliver the full amount of my above described senior ground water rights.

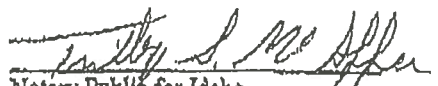
11. All of the water pumped from the Island Wells is removed from the portion of the aquifer from which I pump water for my water rights described above. If Mr. Isom is granted the right to legally pump from the Island Wells at more than twice the rate he can pump under his existing water rights, I firmly believe that I will soon be forced to again drill deeper to attempt to regain the ability to divert the amounts of water to which I am entitled under my senior water rights at great expense to me.

DATED this 16th day of November, 2010.


NORMAN K. SOWARDS

SUBSCRIBED AND SWORN to before me this 16 day of Nov, 2010.




Notary Public for Idaho
Residing at: Arco, Id
Comm. Expires: 1-28-2015

AFFIDAVIT OF NORMAN K. SOWARDS - 3

CERTIFICATE OF SERVICE

I hereby certify that on the 17th day of November, 2010, I served a true and correct copy of the foregoing on the following persons in the manner designated below:

Chief, Natural Resources Division
Office of the Attorney General, State of Idaho
P. O. Box 44449
Boise, ID 83711-4449

- ☒ United States Mail, Postage Prepaid
☐ Hand Delivery
☐ Facsimile, with copy by United States Mail, Postage Prepaid

The United States Department of Justice
Environmental and Natural Resources
Division
550 West Fort Street
Box 33
Boise, ID 83724

- ☒ United States Mail, Postage Prepaid
☐ Hand Delivery
☐ Facsimile, with copy by United States Mail, Postage Prepaid

Idaho Department of Water Resources
Document Depository
P.O. Box 83720
Boise, ID 83720-0098

- ☒ United States Mail, Postage Prepaid
☐ Hand Delivery
☐ Facsimile, with copy by United States Mail, Postage Prepaid

Mr. Paul Arrington
Barker, Rosholt & Simpson, LLP
113 Main Ave. West, Suite 303
P.O. Box 485
Twin Falls ID 83303-0485

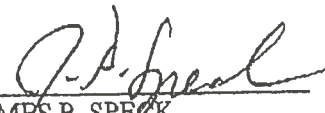
- ☐ United States Mail, Postage Prepaid
☐ Hand Delivery
☒ Facsimile, with copy by United States Mail, Postage Prepaid

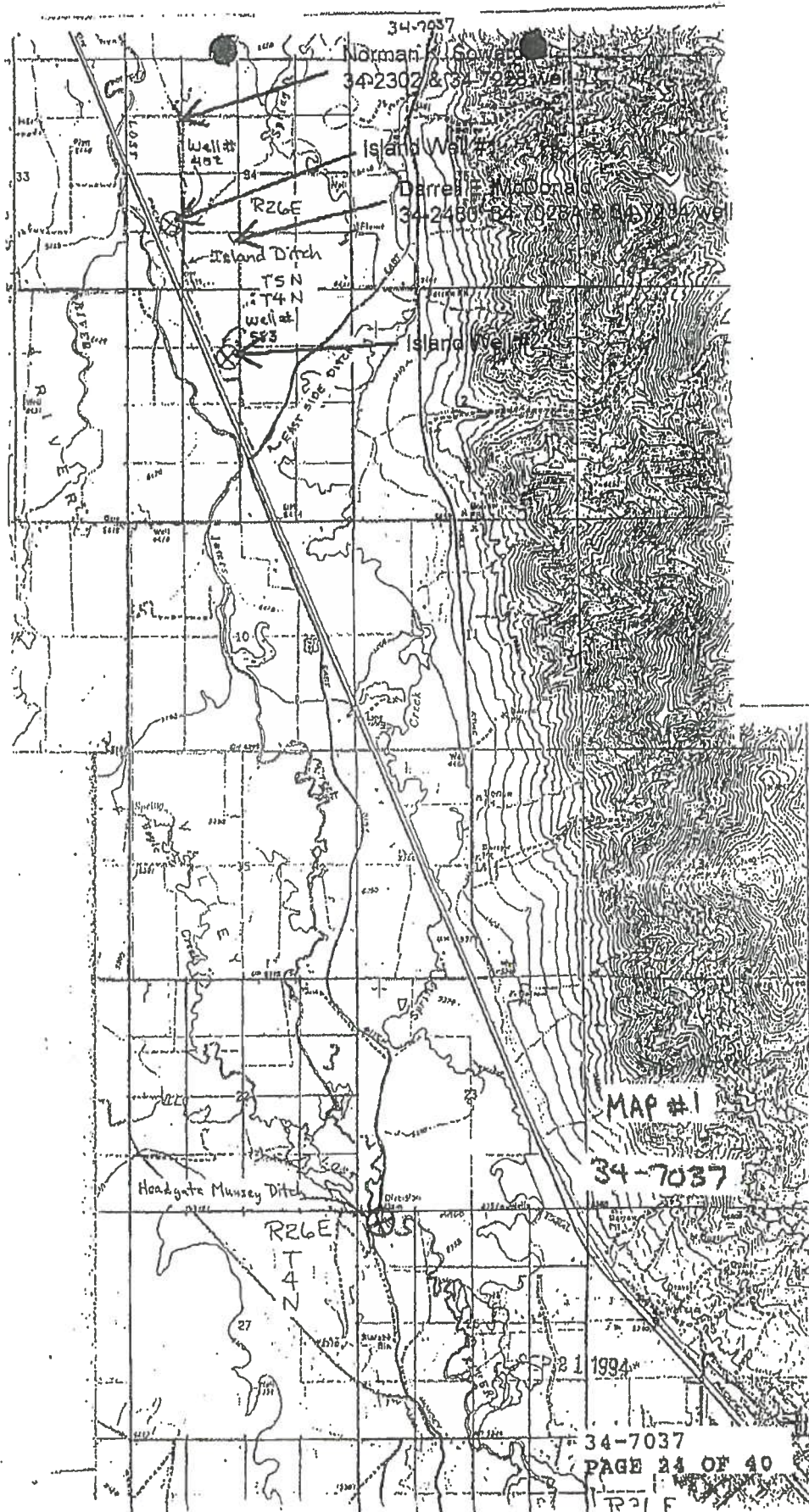
Mr. Robert L. Harris
Holden, Kidwell, Hahn & Crapo, P.L.L.C.
P.O. Box 50130
1000 Riverwalk Dr., Suite 200
Idaho Falls, ID 83405

- ☐ United States Mail, Postage Prepaid
☐ Hand Delivery
☒ Facsimile, with copy by United States Mail, Postage Prepaid

W. Kent Fletcher
Fletcher Law Office
P.O. Box 248
Burley, ID 83318

- ☐ United States Mail, Postage Prepaid
☐ Hand Delivery
☒ Facsimile, with copy by United States Mail, Postage Prepaid


JAMES P. SPECK



IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLS -In Re SRBA)
)
Case No. 39576)
_____)PARTIAL DECREE PURSUANT TO
I.R.C.P. 54(b) FOR
Water Right 34-02302

1997 DEC 29 PM 4:42

DISTRICT COURT - SRBA
TWIN FALLS CO., IDAHO

BY

NAME & ADDRESS: NORMAN K SOWARDS
1719 FINCH RD
HAYDEN LAKE ID 83835

SOURCE: GROUNDWATER

QUANTITY: 3.14 CFS
549.5 AFYUSE OF THIS RIGHT WITH RIGHT NO. 34-00666 IS LIMITED TO A
TOTAL COMBINED DIVERSION RATE OF 4.10 CFS.

PRIORITY DATE: 02/28/1953

POINT OF DIVERSION: T05N R26E S34 NWSEW Within BUTTE County

PURPOSE AND PERIOD OF USE: PURPOSE OF USE PERIOD OF USE QUANTITY
IRRIGATION Irrigation Season 3.14 CFS
549.5 AFYPLACE OF USE: IRRIGATION Within BUTTE County
T05N R26E S34 SEW 40 NE6W 40 NWSE 40 SWSE 37
157 ACRES TOTALUSE OF THIS RIGHT WITH RIGHT NO. 34-00666 IS LIMITED TO
THE IRRIGATION OF A COMBINED TOTAL OF 157 ACRES IN A SINGLE
IRRIGATION SEASON.

RULE 54(b) CERTIFICATE

With respect to the issues determined by the above judgment or order, it is hereby CERTIFIED, in accordance with Rule 54(b), I.R.C.P., that the court has determined that there is no just reason for delay of the entry of a final judgment and that the court has and does hereby direct that the above judgment or order shall be a final judgment upon which execution may issue and an appeal may be taken as provided by the Idaho Appellate Rules.

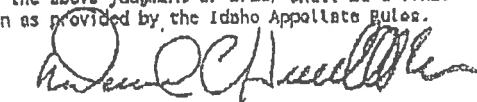

DANIEL C. HURLBUTT, JR.
PRESIDING JUDGE
Snake River Basin AdjudicationPARTIAL DECREE PURSUANT TO I.R.C.P. 54(b)
Water Right 34-02302PAGE 1
DEC-15-1997

EXHIBIT B

IN THE DISTRICT COURT OF THE FIFTH JUDICIAL DISTRICT OF THE
STATE OF IDAHO, IN AND FOR THE COUNTY OF TWIN FALLSIn Re SRBA)
Case No. 39576)PARTIAL DECREE PURSUANT TO
I.R.C.P. 54(b) FOR
Water Right 34-07228

1997 DEC 31 AM 11:09

DISTRICT COURT - SRBA
TWIN FALLS CO., IDAHO

FILE

NAME & ADDRESS: NORMAN K SOWARDS
1719 FINCH RD
HAYDEN LAKE ID 83835

SOURCE: GROUNDWATER

QUANTITY: 0.98 CFS
171.5 AFYUSE OF THIS RIGHT WITH RIGHT NO. 34-00621B IS LIMITED TO A
TOTAL COMBINED DIVERSION RATE OF 1.22 CFS.

PRIORITY DATE: 05/03/1979

POINT OF DIVERSION: TOWN R26E S34 NWSEW Within BUTTE County

PURPOSE AND PERIOD OF USE:	PURPOSE OF USE IRRIGATION	PERIOD OF USE Irrigation Season	QUANTITY 0.98 CFS 171.5 AFY
-------------------------------	------------------------------	------------------------------------	-----------------------------------

PLACE OF USE:	IRRIGATION	Within BUTTE County
	TOWN R26E S34	NEW 40
	49 ACRES TOTAL	171.5 AFY

USE OF THIS RIGHT WITH RIGHT NO. 34-00621B IS LIMITED TO THE
IRRIGATION OF A COMBINED TOTAL OF 49 ACRES IN A SINGLE IRRIGATION
SEASON.

RULE 54(b) CERTIFICATE

With respect to the issues determined by the above judgment or order, it is hereby CERTIFIED, in accordance with Rule 54(b), I.R.C.P., that the court has determined that there is no just reason for delay of the entry of a final judgment and that the court has and does hereby direct that the above judgment or order shall be a final judgment upon which execution may issue and an appeal may be taken as provided by the Idaho Appellate Rules.

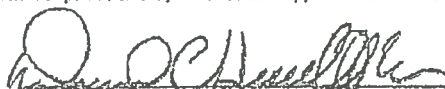

 DANIEL C. HOREBOTT JR.
 PRESIDING JUDGE
 Snake River Basin Adjudication
PARTIAL DECREE PURSUANT TO I.R.C.P. 54(b)
Water Right 34-07228PAGE 1
DEC-5-1997

EXHIBIT C

Form 239-7
3/95IDAHO DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

Use Typewriter or Ballpoint Pen

62111

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

1. DRILLING PERMIT NO. 34-95-E-0005-100
Other IDWR No. 34-2302/34-72282. OWNER:
Name NORM SOWARDS
Address Rt 1
City MORE State ID Zip 832553. LOCATION OF WELL by legal description:
Sketch map location must agree with written location.

N		Twp. <u>5</u>		North ☒ or South ☐	
W		Rge. <u>24</u>		East ☒ or West ☐	
E		Sec. <u>34</u>		1/4 <u>SE</u> 1/4 <u>NW</u> 1/4	
S		Gov't Lot _____		County <u>Blaine</u>	
		Lat: _____		Long: _____	
Address of Well Site _____ City _____					

(One at least name of road - Distance to Road or Land mark)

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 REPAIR

6. DRILL METHOD

☐ Air Rotary ☒ Cable ☐ Mud Rotary ☐ Other _____

7. SEALING PROCEDURES

SEALED-UP PACK			AMOUNT		METHOD
Material	From	To	Sacks or Pounds		

Was drive shoe used? ☒ Y ☐ N Shoe Depth(s) 85'
Was drive shoe seal tested? ☒ Y ☐ N How? _____

8. CASING/LINER:

Diameter	From	To	Grade	Material	Casing	Liner	Welded	Threaded
12"	tl	85'	200	Steel	☐	☒	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS

☒ Perforations Method Torch
☐ Screens Screen Type _____

From	To	Slot Size	Number	Diameter	Material	Casing	Liner
0	82'	1/4" x 3/8"	100			☐	☒
						☐	☐
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:

50 ft. below ground Artesian pressure _____ lb.
 Depth flow encountered _____ ft. Describe access port or control devices: TOP OF WELL

11. WELL TESTS:

☐ Pump ☐ Baller

☐ Air ☐ Flowing Artesian

Yield gal/min.	Drawdown	Pumping Level	Time

RECEIVED

Water Temp. _____ Bottom hole temp. _____

Water Quality test comments: _____

Depth first Water Encountered _____

12. LITHOLOGY: (Describe repairs or abandonment) Water

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
			THE EXISTING WELL WAS 16"		
			THE OWNER WANTED TO GO DEEPER WITH 12" CASING		
			WE GOT INTO A RESTRICTION AT 50'		
			DROVE 12" LINER TO RE-FASTEN TO 85' - THE EXISTING WELL IS ABOUT 100'		
			IT IS NOW PENDING WHO IS RESPONSIBLE FOR THE WELL: OWNER OR SELLER - DRILLER		
			RECENTLY THE PREVIOUS LESSON CAME UP WITH A VIDEO THAT SHOWED A 14" LINER DOWN THE 16" WELL		

RECEIVED

NOV 18 1997

 Department of Water Resources
 Completed Depth 100 (Measurable)
 Date Started 3-8-95 Completed 4-8-95

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 H & H Well Service Firm No. 591Firm Official Doug Hendrick Date 11-2-97

and Supervisor or Operator _____ Date _____

(Sign once if Firm Official & Operator)

FORWARD WHITE COPY TO WATER RESOURCES

EXHIBIT D

W 50/10/25-7
1/19

DMO

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

1. WELL TAG NO. D 0021032
 DRILLING PERMIT NO. 4-23021-24-7228
 OWT IDWT No. 415101

2. OWNER:
Name NORMAN K. SOWARDS
Address 1715 KINCH ROAD
City WILKINSON, LAKE State FL 32535

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

A 4x4 grid with a handwritten 'X' in the second row, second column. The grid is labeled 'K' at the top and 'VI' on the left.

Twp. 5 North 1/4 or South 1/4
 Rge. 26 East 1/4 or West 1/4
 Sec. 34 1/4 SE 1/4 NW 1/4
 Govt Lot _____
 County BUTTE
 Lat. : : Long. : :

Address of Well Bore 16001 SOUTH

Li. _____ Alk. _____ Sub. Name _____

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

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

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

7. SEALING PROCEDURES

SEALING PROCEDURES				METHOD
MATERIAL	FROM	TO	NOTES AND COMMENTS	
Sealant	10	20		Temp. Pipe

Was drive shoe used? ☒ Y ☐ N Shot DepD(s) 188
Was drive shoe anal tested? YLS-N How? _____

8. CASING/LINER:

Disposal	Flag	Yr	Days	Mileage	Going	Leaving	Washed	Threaded
16	41	198	250	Star	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of Headpipe _____ Length of Tailpipe _____

9. PERFORATIONS/SCREENS

Method photostat
Sorter Type _____

Iron	Ts	Shot Size	Number	Diameter	Material	Casting	Lower
60P	186					☐	☐
						☐	!!
						☐	☐

10. STATIC WATER LEVEL OR ARTESIAN PRESSURE:
42 ft. below ground Artesian pressure _____ lb.
 Depth flow encountered _____ ft. Describe excess pore o
 control devices: TOP OF Well

11. WALL TESTS:
 Pump in Bailor

Yield gal/acre	Organism	Passing Level	Time
2000	84	120	6 hrs.

Water Temp. 61.2 Bottom hole temp. _____
 Water Quality test or comments: _____

12. LITHOLOGIC LOG: (Describe repairs or abandonment)

[illegible]

13. DRILLER'S CERTIFICATION

We certify that all minimum wet construction standards were complied with and that the area has been removed.

Company Name Gettysburg Driving Firm No. 2076
 Firm Official J. E. Lutz Date 11-10-01
 and
 Driver & Operator _____ Date _____
 (Sign only if Firm Official's Consent)

FORWARD WHITE COPY TO WATER RESOURCES

EXHIBIT E

EXHIBIT P12

Project No. 1131-01-2011

Evaluation of Hydrologic Impacts of Additional Pumping from a Well in the Lower Big Lost River Valley

Prepared for:

James P. Speck, Speck & Aanestad

May 3, 2012

For information concerning this report, contact
Charles G. Brockway, Ph.D., P.E.



CHARLES E. BROCKWAY, Ph.D., P.E.
CHARLES G. BROCKWAY, Ph.D., P.E.

2016 NORTH WASHINGTON, SUITE 4
TWIN FALLS, IDAHO 83301

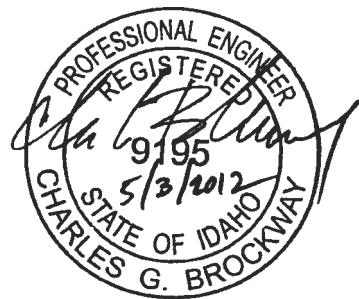
Project No. 1131-01-2011

Evaluation of Hydrologic Impacts of Additional Pumping from a Well in the Lower Big Lost River Valley

Prepared for:

James P. Speck, Speck & Aanestad

May 3, 2012



For information concerning this report, contact
Charles G. Brockway, Ph.D., P.E.



CHARLES E. BROCKWAY, PH.D., P.E.
CHARLES G. BROCKWAY, PH.D., P.E.

2016 NORTH WASHINGTON, SUITE 4
TWIN FALLS, IDAHO 83301

Evaluation of Hydrologic Impacts of Additional Pumping from a Well in the Lower Big Lost River Valley

Brockway Engineering, PLLC
C. G. Brockway, Ph.D., P.E.

May 3, 2012

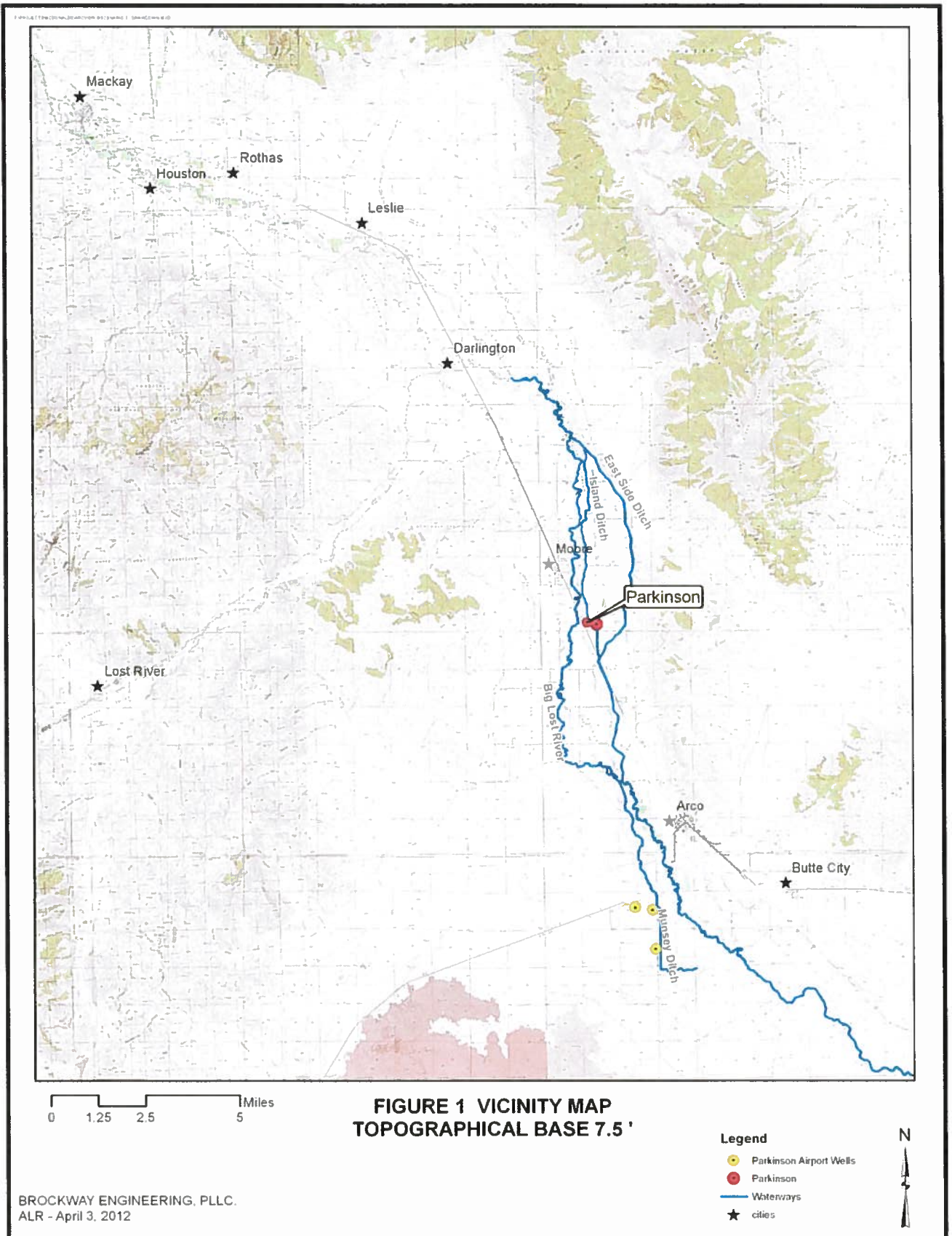
A. BACKGROUND AND METHODOLOGY

This report presents the methodology and results of a hydrologic analysis to evaluate the effect of additional groundwater pumping from a well known as the Parkinson well, located approximately one mile south of Moore, Idaho (Figure 1). The owner of the well has applied to the Idaho Department of Water Resources to allow additional flow to be diverted from the well.

Diversion from the Parkinson well is currently authorized by groundwater right 34-7176, which has been decreed in the Snake River Basin Adjudication. This right allows a maximum of 7.8 cfs to be pumped from the well and conveyed southward approximately 8 miles to land south of the Arco Airport, where it is utilized on 885 acres of irrigated land. The Parkinson Well pumps into the Island Ditch, which flows into the East Canal and subsequently into the Big Lost River. Near the point of injection to the Big Lost River, water is rediverted into the Munsey Ditch and conveyed further southward where it is pumped from the ditch to the place of use.

The land near the airport is also served by groundwater rights 34-4008, 34-2490, and 34-2497, which are currently appurtenant to three (3) wells situated near the airport. In the pending transfer before IDWR, the applicant proposes to add the Parkinson Well as a point of diversion to these rights and divert up to 4.0 cfs (1800 gpm) of additional flow from the Parkinson Well. The total authorized diversion rate from this well would be 11.8 cfs if the transfer were approved.

A study was performed to evaluate the potential impact of the proposed transfer on groundwater and surface water supplies.



The potential impact of additional pumping was evaluated by examining the physical mechanisms by which the pumping may alter the water supply either in the aquifer or in the surface stream. These mechanisms include the following:

1. Localized drawdown induced in the aquifer by a point withdrawal (often termed “local well interference”). This analysis is described in **Section D**.
2. Impacts on the water balance of the aquifer, groundwater development effect on water levels since 1950, and the expected seasonal and long-term effect of additional depletion of the aquifer. This analysis is described in **Sections E and F**.
3. Depletion of surface flows due to hydraulic connection between the aquifer and river systems. This analysis is described in **Section G**.

B. HYDROGEOLOGIC SETTING

Crosthwaite (1970) provides the most extensive review to date of the geology, hydrogeology, and occurrence and movement of surface water and groundwater within the Big Lost valley. Subsequent reports by Szczepanowski (1982), Johnson et al. (1991), and Bassick and Jones (1992) provide additional description and analysis. The Big Lost aquifer consists of deep valley-fill alluvium with discontinuous basalt intrusions from the south. Alluvial valley sediments may range from 1000 to 5000 feet in thickness. Near Moore, the thickness may be up to 2500 feet, based on seismic analysis.

The alluvium is heterogeneous and deposited in layers separated by basalt intrusions from the south and by fine-grained depositions. Basalt flows have been documented to extend up the valley at least to Moore. The valley fill sediments are heterogeneous and are separated by clay layers which likely act as barriers to flow between water-producing strata. A substantial clay layer exists at approximately 200 to 280 feet below ground, above which a highly productive water-producing zone of sand and gravel is present with water levels typically from 20 to 80 feet below land surface (Crosthwaite, 1970). A typical lithologic profile is shown in Figure 2, in which a deep test well is illustrated and the clay layer is evident.

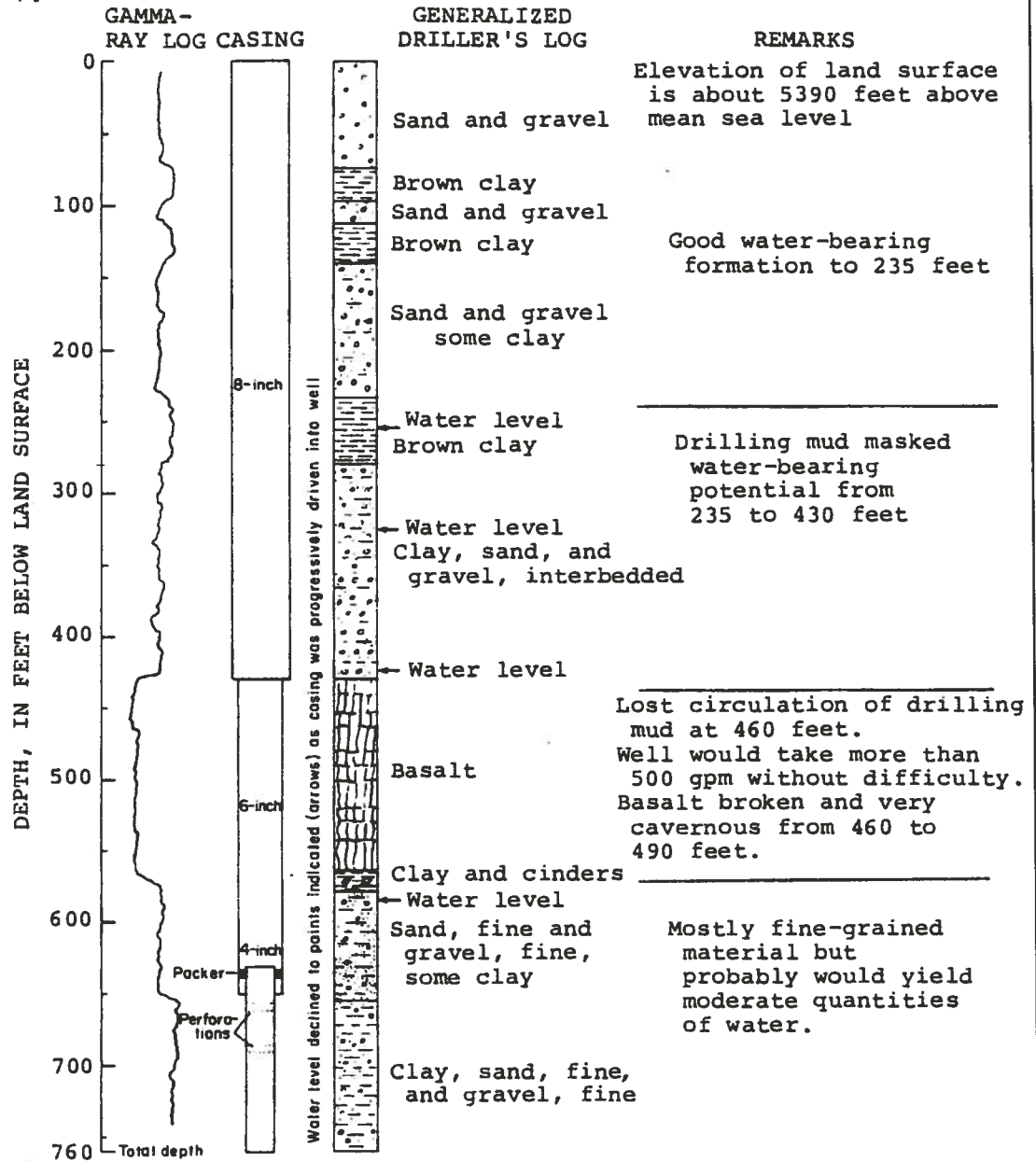


Figure 2. Generalized lithologic log for well 4N26E21ABB1 in the Big Lost aquifer system (after Crosthwaite, 1970)

Recent deepening of the Parkinson Well, completed in January 2010, provides additional evidence of the extent of highly permeable sand and gravel formations and the clay layer at approximately 250 feet. According to Woods (2012), water levels in the well began to drop when the depth was advanced from the original depth of 160 feet to 249 feet, indicating that a separating layer had been penetrated. The bottom of the hole was cemented to 239 feet and 16" perforated casing was installed from 153 to 249 feet. Based on subsequent pump testing, this modification increased the well yield to in excess of 5,100 gpm (11.4 cfs).

Although additional water-producing alluvium is present beneath the clay layer, a study of well logs in the valley indicates that virtually all wells – both irrigation and domestic – are completed above the clay layer in the upper alluvium and are shallower than 250 feet in depth. Typically, irrigation wells in this area are fully cased to depth and perforations are cut in the casing to allow entry of the water. Therefore, for the purposes of analysis, the aquifer was considered to be bounded on the bottom by a clay layer at an average of 250 feet below ground. The validity of this assumption was strengthened by the results of the transmissivity estimation and the water balance and groundwater pumping analyses described below. Flow in the basalt and sedimentary strata below the clay layer is considerable (Crosthwaite, 1970) but was not considered for this analysis. It appears that flow in this lower zone enters the ESPA directly as underflow without influencing surface water hydrology and without being pumped by groundwater wells.

The alluvial aquifer is bounded on the west and east by bedrock formations and by tributary valleys which contribute flow to the system, the magnitude of which is generally minor compared to the total groundwater flow in the main valley.

Groundwater flow direction is essentially parallel to the valley, with local distortions reflecting changes in aquifer properties and interaction with the Big Lost River. Both Crosthwaite (1970) and Bassick and Jones (1992) conducted mass measurements of well water levels and developed contour maps of the aquifer. The contour map created by Bassick and Jones (1992) is reproduced as Figure 3. This map was created from a mass measurement of 154 wells in March 1991. The gradient of flow in the region south of Moore is approximately 18 ft/mile or 0.0034 ft/ft.

At the mouth of the valley, the gradient drops sharply as the flow in the alluvial system discharges into the basalts of the Eastern Snake Plain aquifer. Depth to water in wells southwest of Arco can exceed 200 feet.

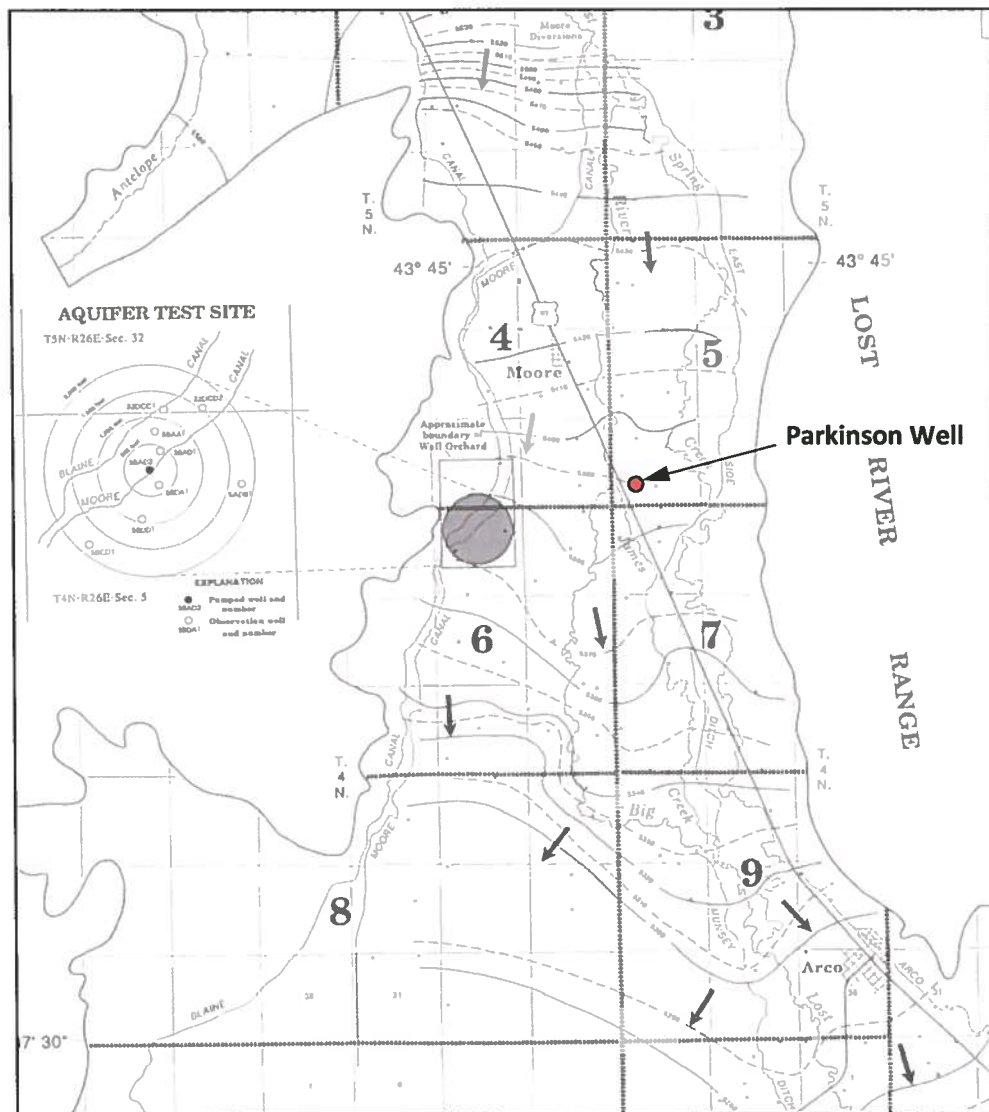


Figure 3. Water table contours and flow direction in the Big Lost River alluvial aquifer (after Bassick and Jones, 1992).

C. GROUNDWATER DEVELOPMENT HISTORY

Groundwater development in the Big Lost valley was minimal prior to the 1950s. Beginning in the late 1950s and continuing through the 1980s, many irrigation wells were developed, with most of the groundwater pumping concentrated in a region approximately 6 miles north to 6 miles south of Moore. Many of these wells pump directly into the pre-existing canal system for use downstream on lands which may also

be served by surface water rights or other groundwater rights. Many dozen such wells have been constructed. Groundwater rights have been decreed in the SRBA, and therefore an accurate assessment of actual appropriation can be made. The pattern of groundwater development since the 1950s is illustrated in Figure 4, in which the cumulative appropriation is shown as a function of priority date for wells located in T5N R26E and T4N R26E, which includes the Big Lost Valley below Antelope Creek and above Arco. Two periods of rapid development are evident: one in the early 1960s in response to the drought in those years, and a second in the mid-1970s. This graph illustrates the overall pattern of development but does not reflect actual amount of pumping due to effects of weather, surface water availability, and other factors; also, the decreed diversion rate on a water right often does not reflect total pumping authorization due to combined-use limits with other rights.

The Parkinson Well, which is the subject of the present study, was originally drilled in May 1977. The priority date of the existing water right 34-7176 is May 29, 1977. As noted above, the well was deepened to 249 feet in 2010.

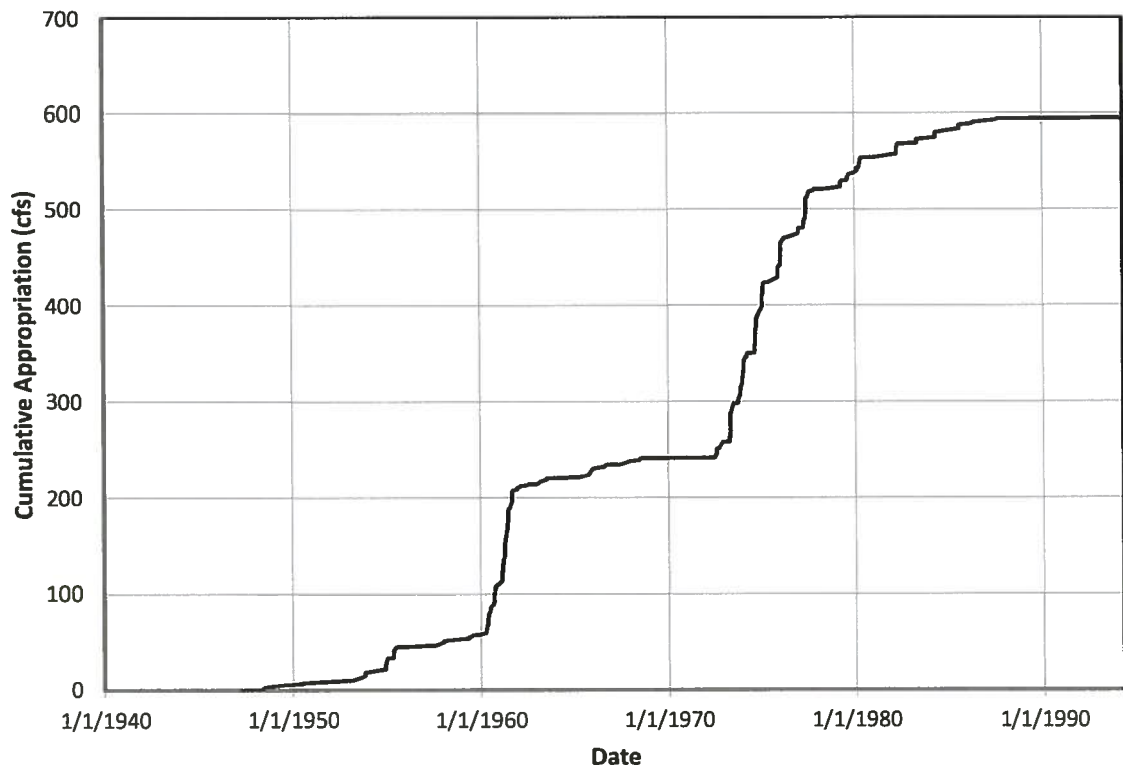


Figure 4. Cumulative appropriation of groundwater in the Lower Big Lost Valley.

D. LOCAL WELL INTERFERENCE ANALYSIS

Pumping additional flow from the Parkinson Well will cause a greater drawdown in the vicinity of the well than would otherwise occur if the well was limited to the decreed flow of 7.8 cfs. The drawdown around a pumping well, often referred to as the “cone of depression,” will propagate outward from the well and negatively impact water levels at surrounding wells, with the impact increasing over time. The effect generally occurs over a relatively localized area but the magnitude of the drawdown depends on the well pumping rate in combination with hydraulic properties of the aquifer, namely the transmissivity and storativity, and the location of aquifer boundaries.

The local drawdown due to well pumping was calculated using the analytical groundwater flow model WinFlow. This model essentially implements the Theis procedure for drawdown calculation but allows greater flexibility to evaluate multiple-well scenarios, aquifers that have a non-negligible gradient, and aquifers which are bounded and cannot be assumed to be infinite in extent.

All irrigation and domestic wells within about 3 miles of the Parkinson Well are completed in the alluvial system above the clay strata at approximately 250 feet below ground. Therefore, for the purposes of this analysis, the clay layer was assumed to be the bottom of the shallow aquifer and of sufficient extent that the deeper alluvium does not supply appreciable water to wells pumping from the upper zone. Static water levels recorded at the time of drilling for wells completed within the past decade average approximately 50 feet. Therefore, the saturated depth of the aquifer was taken to be 200 feet.

The gradient of the aquifer was taken to be 18 ft/mile (Crosthwaite, 1970; Bassick and Jones, 1992).

a. Estimation of Transmissivity

Two sources of aquifer transmissivity estimates were utilized: 1) estimates made from specific capacity and test duration data derived from data reported on drilling records; and 2) the controlled pumping test performed on the Parkinson Well by Wood (2011).

In analyzing the specific capacity data from the well drilling records, the Theis approach was used with a correction for partial penetration as outlined in Bradbury and Rothschild (1985). Irrigation wells in this area are typically cased to depth with perforations in the casing throughout a portion of the casing length. The length of casing with perforations is the “open interval” and varies from 14 feet to 129 feet in the analyzed wells. The

correction for partial penetration is especially important in this case, where none of the analyzed wells fully penetrate the aquifer and many have open intervals less than 50% of the total aquifer depth. Not correcting for this effect can lead to underestimation of the hydraulic conductivity. Selected wells were limited to large irrigation wells with adequate reported data to conduct the analysis. A total of 17 wells were identified.

Calculated transmissivities ranged from 5,000 to 243,000 ft²/day (Appendix A), with an average of 49,800 ft²/day. The average hydraulic conductivity was calculated to be 243 ft/day. This value is in good agreement with typical published values for sand and gravel aquifers. For the transmissivity calculation, storativity was assumed to be 0.15, a typical value for unconfined alluvial aquifers.

Bassick and Jones (1992) conducted a long-term pumping test of a well in the Big Lost alluvium while measuring eight observation wells, and calculated transmissivities ranging from 61,000 to 330,000 ft²/day. These transmissivities are slightly higher than those calculated in the present study, but the pumping well was located in the area known as the “well orchard,” a region of exceptionally high well productivity. Bassick and Jones (1992) also found a “most probable” storativity value of 0.001, indicating the presence of confined or semi-confined conditions, at least in the well orchard area. In the specific capacity analysis, the storativity is not of great import in determining transmissivity and does not affect equilibrium drawdown, but does effect the time to approach equilibrium drawdown as described below. To assess the effect of storativity on transmissivity estimation, the analysis of specific capacity was repeated with a storativity of 0.001, and the average hydraulic conductivity was found to be 297 ft/day.

Wood (2011) conducted a pumping test of the Parkinson Well under relatively controlled conditions. During the test, the Parkinson Well was pumped at an average rate of 5,117 gpm, and drawdown was measured over time at both the pumped well and one observation well located 0.25 miles to the south. The total duration of the test was approximately 94 hours. By fitting theoretical curves to the measured data, the transmissivity and storativity were calculated to be 29,000 ft²/d and 0.37 using the Theis method, and 0.12 and 35,000 ft²/d using the Cooper-Jacob method of curve fitting. The author indicates that the Cooper-Jacob method likely yielded the more accurate result, and therefore suggested that 35,000 ft²/d is the best estimate of the transmissivity calculated from the test data. This value is reasonably close to the 49,800 ft²/d average value calculated from the specific capacity analysis. Since the 35,000 ft²/d value resulted from a controlled long-term pumping test, it is likely more accurate and should be adopted as the best transmissivity estimate at this time in the local vicinity of the Parkinson Well. With an aquifer saturated depth of 200 feet, the corresponding hydraulic

conductivity is 175 ft/day.

b. Aquifer Boundaries

The mountain bedrock on the west and east confines the alluvial system, acting essentially as a no-flow boundary condition. The effect of these boundaries is to cause a greater drawdown than would occur at the same pumping rate if the aquifer were infinite in extent. The average width of the aquifer between the estimated contact between bedrock and alluvium is 18,500 feet and was assumed to be uniform from the north to south limits of the study area. The effect of the boundaries was included in the model using the image well approach (Todd, 1980).

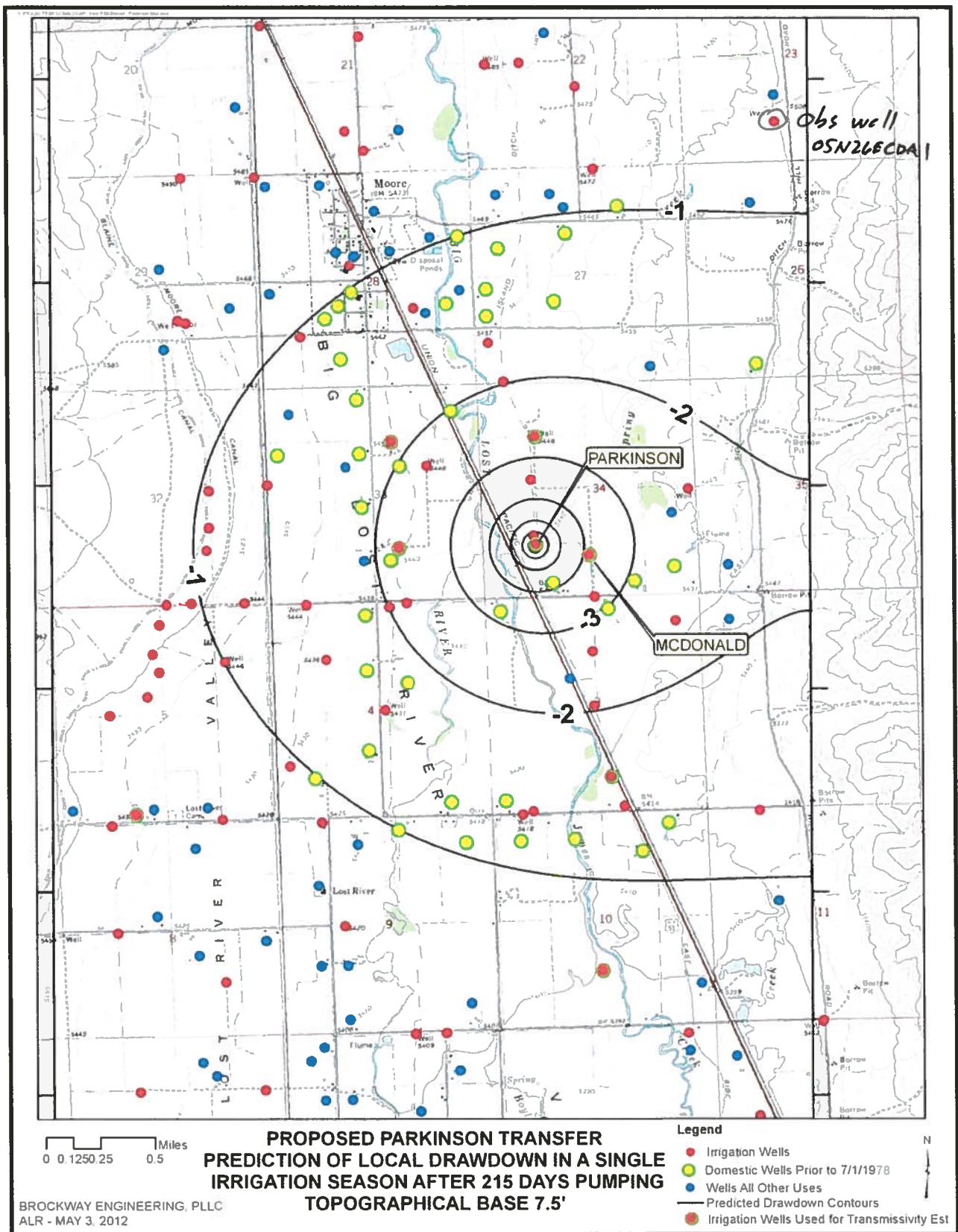
North and south boundaries of the model were constant-head boundaries, situated far enough away from the pumping well to be outside the zone of influence. If the boundaries are situated far enough away from the pumping well influence, whether they are constant-head or constant-flow is of no consequence.

c. Results

The results of the drawdown modeling are shown on Figure 5 for a pumping rate of 4.0 cfs for 215 days, the length of the irrigation season. This is the maximum withdrawal that would be allowed by the proposed transfer. The contour lines of predicted drawdown represent increases over any drawdown which would already occur due to pumping 7.8 cfs under license 34-7176. Increased drawdown, or equivalently, decreased water levels, ranges from in excess of 12 feet in the immediate vicinity of the pumping well to less than 1 foot at a distance of about 1.6 miles from the pumping well.

Depicted in Figure 5 are the known locations of irrigation wells and domestic wells, based on information from the IDWR database. Domestic groundwater rights having priority dates earlier than July 1, 1978 and lying within the zone having predicted drawdowns of 1.0 foot or greater are highlighted. There are a total of 42 such domestic rights.

The predicted drawdown pattern over time at the McDonald irrigation well, located 1320 feet east-southeast of the Parkinson Well, is shown on Figure 6. After continuous pumping of 215 days, the impact on the McDonald well is predicted to be 3.85 feet.



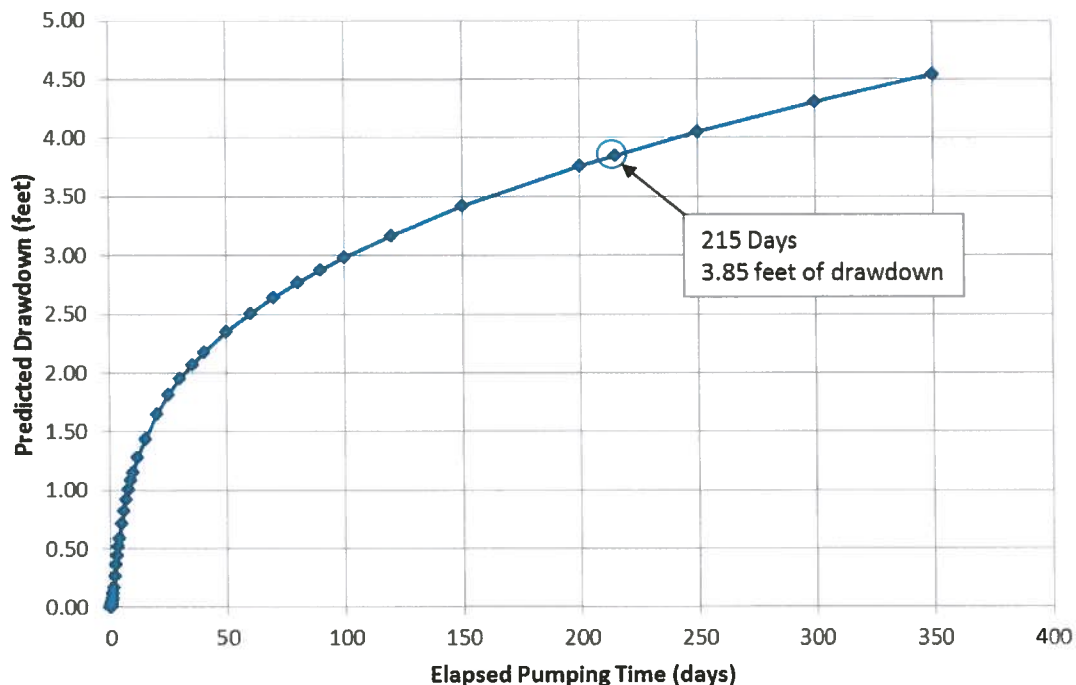


Figure 6. Predicted drawdown at the McDonald irrigation well due to pumping of the Parkinson Well at a continuous rate of 4.0 cfs.

d. Significance of Drawdown and Effect on Well Pumping Rate

There is no adopted definition of “significant” when defining drawdown from a pumped well. The adverse effects of increased drawdown on a well are increased pumping cost, reduced well yield, and perhaps a “dry hole” if the well is shallow. Pumping cost is directly proportional to pumping lift, i.e. if the pumping lift is 50 feet to free discharge and the water level declines by 5 feet for any reason, the pumping cost will increase by 10%, but only if the well can pump at the same flow rate at a lift of 55 feet. In reality, a decrease in water level in an unconfined alluvial system with a finite depth will generally reduce the yield of a well because the open area available to convey water into the casing will be reduced. For this reason, a decrease in water level of 5 feet will generally result in more than a 5-foot increase in pumping lift. And, there is a limit to how much additional drawdown is tolerable since the aquifer depth is limited. The well can be deepened in an attempt to restore the yield, but this too is limited by the aquifer depth and may or may not be an adequate remedy. Both irrigation and domestic wells will be subject to these effects, although most domestic wells can deliver the very low yields

required for domestic purposes even with declines in water levels unless the wells are excessively shallow. However, the power cost analysis is the same for both domestic and irrigation wells.

The McDonald irrigation well is situated 1320 feet east-southeast of the Parkinson Well. According to the drilling record, the well has a depth of 180 feet and is fully cased with perforations from 20 to 170 feet. Static water level at the time of drilling (October 1979) was 22 feet. Pumping level at a discharge of 3,750 gpm was 60 feet, for a drawdown of 38 feet and a specific capacity of 99 gpm/foot.

Recent information obtained from Agricultural Services, Inc. indicates that the static water level is 68 feet and the pump is set with the intake at 105 feet. The installed pump is a Goulds 14RHMC, 2-stage, 9.5-inch diameter vertical turbine unit. The design discharge is 2,700 gpm at 135 feet of total dynamic head (TDH). The anticipated drawdown at 2,700 gpm based on a specific capacity of 99 gpm/foot is 27 feet, making the pumping level equal to $68 + 27 = 95$ feet. This means the submergence, or the depth of water above the pump intake, will be approximately 10 feet, which is much less than typically recommended to avoid vortexing and intake of air into the pump. A typical minimum submergence is 20 feet, but 40 to 50 feet is optimal. Therefore, any additional lowering of the aquifer water table will be detrimental to the proper operation of this pump.

An estimate of the reduction in flow rate due to a lowering of the water table can be made using the performance curve of the installed pump. At a rate of 2700 gpm, each one-foot increase in TDH causes the pump to reduce its flow by 17.4 gpm. A 3.9-foot increase in pumping lift would result in a flow reduction of 67 gpm, or 2.5% of the discharge. Based on long-term additional impacts as described in Section F, the reduction in discharge would be 80 to 96 gpm, or 3.0% to 3.6% of the discharge. This analysis assumes that the well itself can still produce the same discharge even at the lower aquifer level. In reality, well yield tends to decline with lower aquifer levels and therefore the impact on deliverable flow by this pump will be greater.

e. Predicted Impact on Pre-1978 Domestic Wells

The model developed above was utilized to estimate the impact after 215 days of pumping on domestic wells with priority dates earlier than July 1, 1978. These wells were identified and located based on water rights and geospatial information from the IDWR database. These wells are noted on Figure 5. Drawdown at wells within the predicted zone of influence, defined as the area having a drawdown 1.0 foot or greater, and the predicted drawdown at each well, is shown in Table 2.

Table 2. Domestic water rights with priority dates prior to July 1, 1978.

Right No.	Owner ⁽¹⁾	Priority Date	Predicted Drawdown in Feet ⁽²⁾
34-10050	MILDRED RATHBUN	1/1/1892	2.90
34-10107	BRUCE E BLACKMER	7/1/1949	1.32
34-10152	LLOYD A BINGHAM	6/1/1929	1.67
34-10154	RICHARD G KELLER	5/1/1930	1.46
34-10194	CHRIS LORD	10/22/1887	1.25
34-10235	DALE E SMITH	4/1/1933	2.03
34-10245	JAMES LEE PACE	4/1/1912	1.24
34-10258	RAY MILTON BOYACK	7/16/1906	1.64
34-10276	PATSY A GOODSON	10/15/1962	2.03
34-10279	PATSY A GOODSON	1/1/1952	1.58
34-10308	MARY J SPENCER	1/1/1915	1.02
34-10309	ARTHUR W REYNOLDS	4/1/1887	1.63
34-10335	ESTATE OF CHESTER E HARPER	6/1/1896	1.17
34-10344	GEORGE L WHEELER	3/15/1941	0.98
34-10345	COLLEEN BABCOCK	6/1/1885	4.19
34-10350	GAY D WHEELER	10/1/1968	1.44
34-10367	VIRGIL L HAIL	5/20/1959	2.15
34-10386	WILLIAM R JOHNSON	11/11/1970	1.00
34-10394	EVEREST P ZEDIKER	4/1/1930	1.3
34-10395	JERALD W KELLER	9/30/1973	1.3
34-10399	OWEN LOFTUS	6/1/1910	1.03
34-10408	RAYMOND W NOBLE	6/1/1925	1.06
34-10423	RICHARD E BEAL	5/1/1935	1.25
34-10456	NOLON E BEARD	3/2/1887	1.13
34-10459	LLOYD E JENSEN	9/20/1936	1.09
34-10481	JACK A JENSEN	12/31/1939	1.23
34-10492	WADE WADDOUPS	6/1/1896	1.45
34-10502	RAYMOND W NOBLE	6/1/1920	1.06
34-10601	THOMAS IRA SIPES	6/15/1952	1.13
34-10632	VAUGHN L JENSEN	10/3/1949	1.11
34-10753	PHILLIP A RATHBUN	6/1/1930	2.98
34-10762	LONNIE HANEY	1/15/1930	1.79
34-10788	DARYN P ACOR	7/15/1989	0.99
34-10790	DARYN P ACOR	5/17/1945	0.99
34-10792	EVERETT T ACOR JR	6/10/1909	1.23
34-10793	EVERETT T ACOR JR	6/15/1900	1.75
34-10811	GERALD STORER	5/1/1950	1.04
34-10843	L VAUGHN JENSEN	1/1/1918	1.00
34-10846	WILLIAM L BAIRD	12/31/1884	3.2
34-10850	NANCY L HARVEY	8/31/1987	3.21
34-10899	LEON J POWELL	4/1/1955	1.03
34-12045	CHERI MAYNARD	12/31/1930	2.55
Average			1.59
Median			1.28
Maximum			4.19

(1) Current owner on IDWR database

(2) Drawdown from Parkinson Well pumping 4.0 cfs for 215 days.

Longer-term impacts due to depletion of the aquifer would be additive to those shown in Table 2 and are discussed in Section F. Well drilling records for the domestic wells represented in Table 2 were obtained from the IDWR database for as many wells for which logs exist. These logs are shown in Appendix B.

E. AQUIFER CONDITIONS AND DEPLETION FROM PUMPING

The local well interference effect presented above would occur even if there were an infinite amount of groundwater available in the aquifer; it occurs simply because a gradient must be induced in order to convey water through the porous media comprising the aquifer to the point of withdrawal. A second effect that must be considered relates to the amount of withdrawal relative to the total available groundwater yield. The sustainability of groundwater pumping and the effect of additional pumping can be evaluated by examining total groundwater flow in relation to the amount of withdrawal, and by relating groundwater level trends to pumping or drought-related factors.

a. Groundwater Discharge

The amount of water flowing in the aquifer was estimated using Darcy's Law, a standard approach in which the total flow is related to the hydraulic conductivity, gradient, and cross-sectional area perpendicular to the flow. Using the above-defined parameters, Darcy's Law yields a groundwater flow of 35.5 cfs (70.4 ac-ft/day; 25,700 ac-ft/year) in the upper aquifer near Moore. Crosthwaite (1970) estimated the total discharge including flow through the entire profile of sediments and basalt units of 325 cfs or 235,300 ac-ft/year at Moore. However, as stated above, only the upper aquifer, bounded by a clay layer at approximately 250 feet below ground, has been developed for groundwater pumping. Therefore, the flow of 35.5 cfs or 25,700 ac-ft/year is of most interest for the present analysis.

b. Estimation of Groundwater Withdrawal

The amount of groundwater withdrawal is not constant, but varies significantly each year due to changes in demand for supplemental water which depends on available surface supply and climatic factors. Data on the amount of groundwater pumped prior to about 1994 is sporadic or nonexistent, with the exception of the 1984 through 1990 period for which the pumpage was estimated using power records (Johnson, 1991; Bassick and Jones, 1992). Crosthwaite (1970) also reports pumpage data for 1959 through 1968 for both primary and supplemental water supplies, but it is not clear what methodology was

used to arrive at these values. After 1994, Water District 34 began reporting annual volume of groundwater pumpage, which appears to have been calculated using a combination of power record analysis and measured data (Appendix A).

To augment the sparse record, Johnson et al. (1991) outlined a method by which groundwater pumping volume can be estimated through a linear regression with annual streamflow measured below Mackay Dam. The regression is a reasonably good fit, and has its physical basis in the fact that higher surface water supply leads to lower groundwater pumping demand, and vice-versa. The streamflow below Mackay Dam is a measure of the total water supply, i.e. natural flow plus storage releases. To develop this relationship, Johnson et al. (1991) used the data that was available from 1984 through 1990. As much more data is now available, the same analysis was repeated using a more complete record through 2009. The data and regression line are shown in Figure 7; more detail can be found in Appendix A. One difference between this analysis and Johnson et al. (1991) is the use of an exponential regression which provides the best fit to the data.

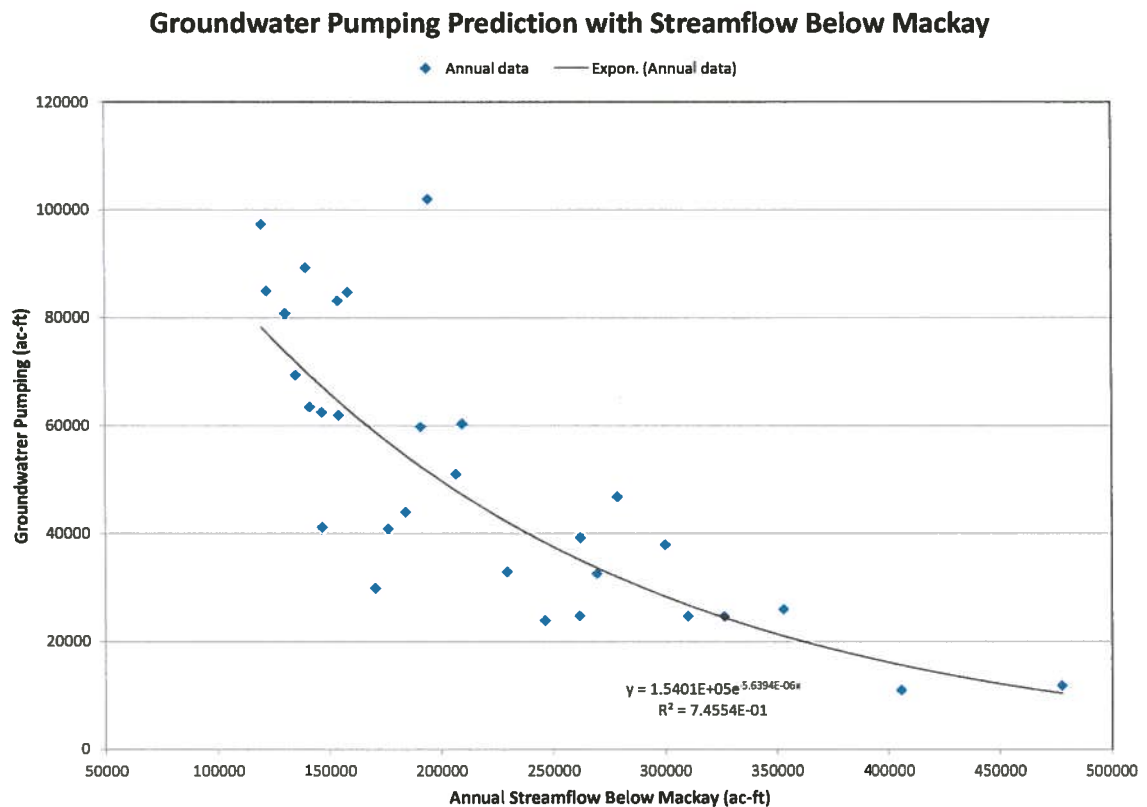


Figure 7. Regression of annual groundwater pumping with annual streamflow below Mackay Dam.

A record of annual groundwater pumpage from the aquifer was developed using all known measured or estimated data, plus estimated data using the above regression for years where data was unavailable. Calculations are included in Appendix A and the resulting data set is summarized in Table 2.

Table 2. Summary of groundwater pumpage estimates (acre-feet).

Period	1959-1987	1988-2009
Maximum (Year)	102,000 (1966)	97,326 (2004)
Minimum (Year)	11,000 (1965)	24,845 (1995)
Average	38,290	60,730
Average (all years)	47,970	

The average or normal annual pumpage estimated by this procedure is 47,970 ac-ft, which is consistent with the estimate by Johnson et al. (1991) of 47,000 ac-ft.

The net depletion of the aquifer due to groundwater pumping is equal to the total diversion, less additional canal seepage caused by the conveyance of groundwater, less incidental recharge on the irrigated land from the application of the groundwater (assuming the land is situated over the aquifer). Canal seepage occurs more or less uniformly over the reach of the canal utilized to convey the pumped water, and the irrigated land is generally downstream of the groundwater withdrawal. Therefore, there will be an area of the aquifer which is subject to the full pump-out or something greater than the net depletion. Canal seepage is not known with certainty, but apparently the Big Lost River Irrigation District assesses a “shrink” of up to 50% on the water based on information from the owner and other water users. This assessment does not appear to be based on physical principles, since the addition of water to a canal which is already carrying water diverted from the Big Lost River would not generally result in much of the additional injected water being lost. Accounting for canal seepage and irrigation recharge, net depletion at any point in the aquifer would likely range from 50% to 100% of the gross pumpage. Each water right will be different depending on how it is conveyed and where it is used. In the case of the Parkinson Well, the depletion is equal to the full pumping rate at the well, with some amount of return to the aquifer occurring over the length of the canals conveying water to the place of use southwest of Arco. The place of use is situated over the Eastern Snake Plain Aquifer and therefore incidental recharge of this water from irrigation application would not benefit the Big Lost aquifer.

A comparison of total pumpage and net depletion with annual average groundwater flow provides a measure of the sustainability of the groundwater development. The recent (1988-2009) annual pumpage of 60,730 ac-ft significantly exceeds the calculated groundwater discharge in the aquifer at Moore of 25,700 ac-ft. This is also true for the net depletion. The lower annual pumpage in the 1959 to 1987 period of 38,290 ac-ft was still higher than the annual groundwater discharge, but the net depletion in these years was likely close to or less than the groundwater discharge. Further evidence can be gleaned by examining the relationship of measured groundwater levels with groundwater pumping.

c. Groundwater level relationship with drought and pumpage

Water levels in USGS observation wells completed in the upper alluvium in T5N R26E and T4N R26E, and with sufficient data to be meaningful, are depicted on Figures 8 through 11. The best long-term records are those for wells 05N26E23CDA1 (located 2.5 miles north-northeast of the Parkinson Well), and 04N26E26DCD1 (located 4 miles south of the Parkinson Well). Relatively small seasonal fluctuations consistent with surface water irrigation recharge and later-season groundwater pumping have historically been evident. Water levels in the aquifer were reasonably steady from the 1950s through 1987, but began to decline in 1988 and decreased 25 to 45 feet within four years. Levels then recovered from 1995 through 1996 and remained near the historic levels through 1999, after which an even greater decline was observed.

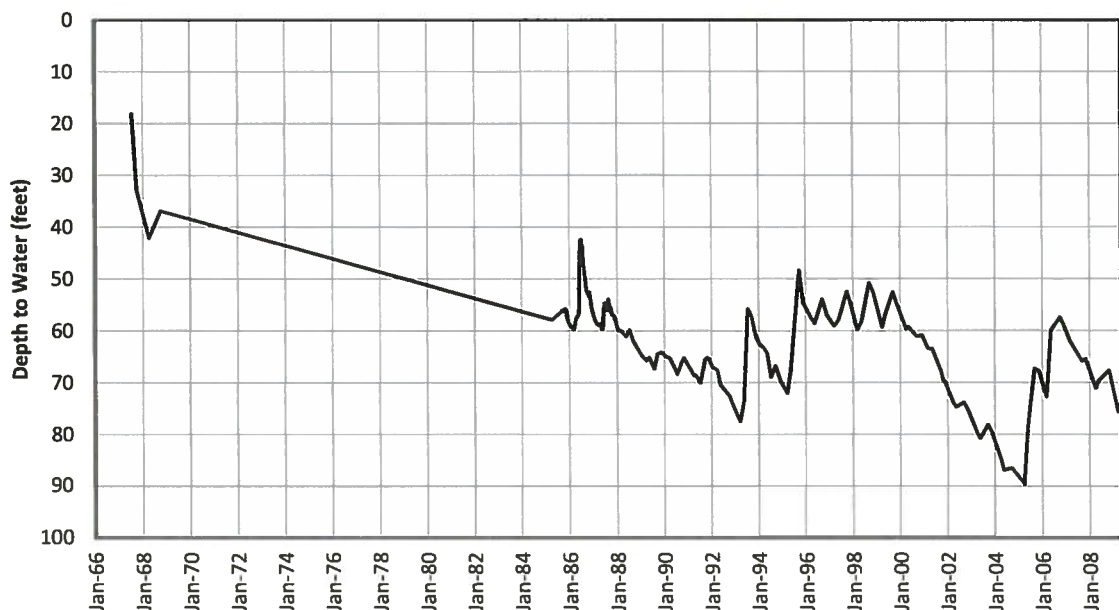


Figure 8. Depth to water record in well 05N26E05DCB1.

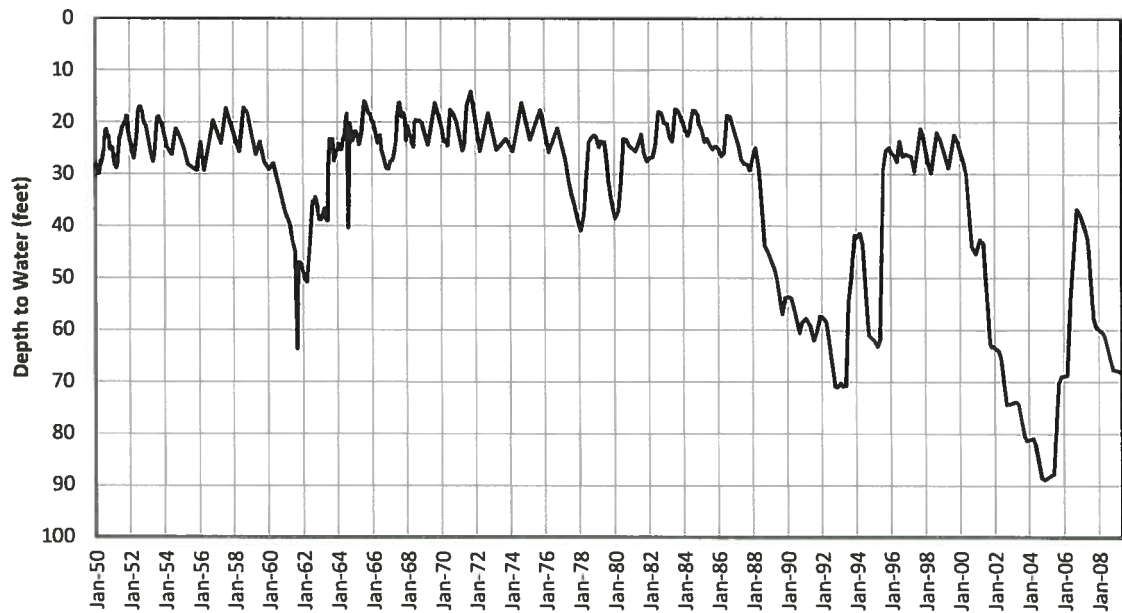


Figure 9. Depth to water record in well 05N26E23CDA1.

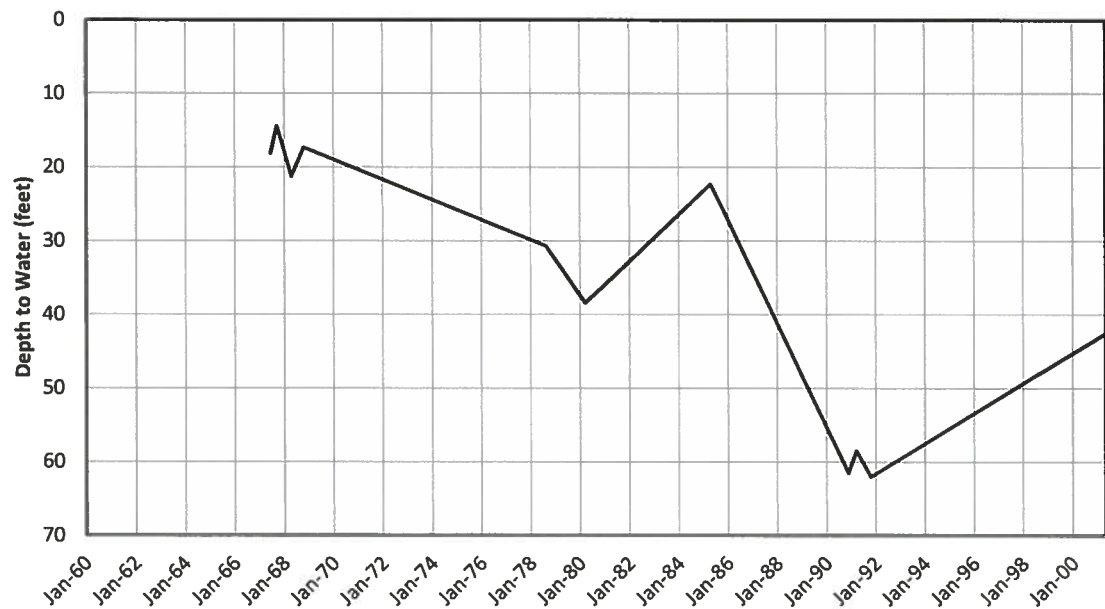


Figure 10. Depth to water record in well 04N26E04BBA1.

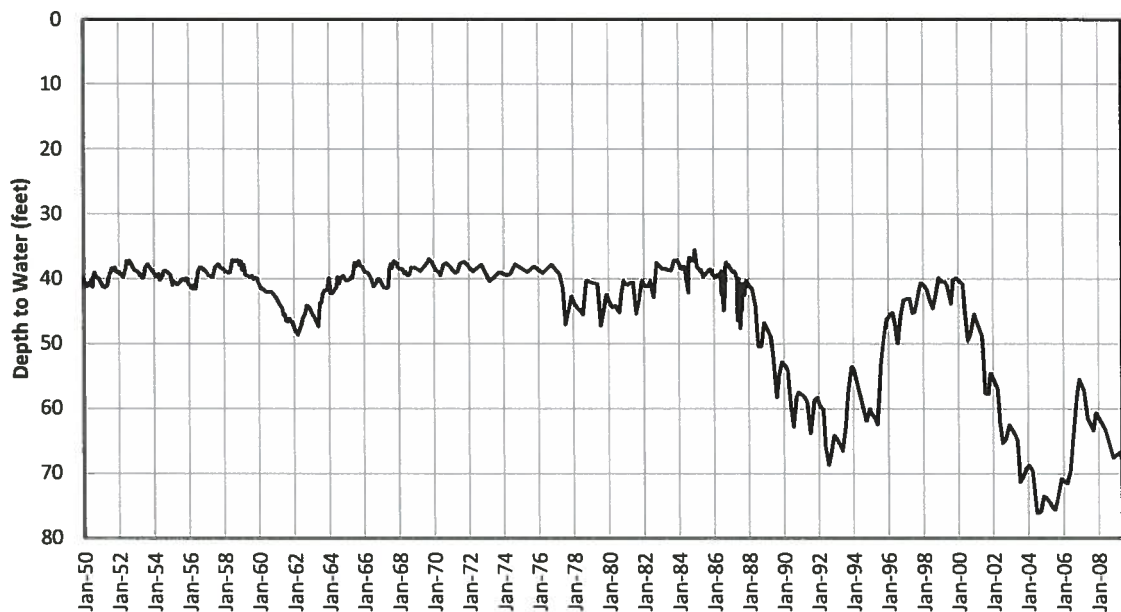


Figure 11. Depth to water record in well 04N26E26DCD1.

Since the late 1980s the aquifer appears to be sensitive to overall basin water supply, as suggested by the marked response to the 1987-1994 and 2000-2004 droughts and to the wet periods in between. The response in groundwater level observed since 1987 is likely due to 1) reduced natural recharge, 2) reduced recharge from river seepage and irrigation, and 3) greater pumpage from groundwater to meet irrigation demands. These potential influences were investigated.

Factor 1: Drought indicator. As an indicator of overall basin water supply, i.e. drought and wet periods, the precipitation record at the Mackay Ranger Station was examined. The annual total precipitation was expressed as a cumulative departure from average. This is a common procedure when analyzing precipitation data which results in a dataset in which sustained drought and wet periods are clearly evident. This data was then overlain on the water level in well 05N26E23CDA1 (Figure 12). Although some correlation is evident, particularly with the drought and wet periods since 1984, the analysis is not conclusive. For example, the wet period in the 1950s did not result in any increase in water levels. The relatively normal precipitation since 2004 has not corresponded with a sustained recovery of water levels (note that the cumulative precipitation for 2009 and 2010 is actually zero, not missing from the dataset).

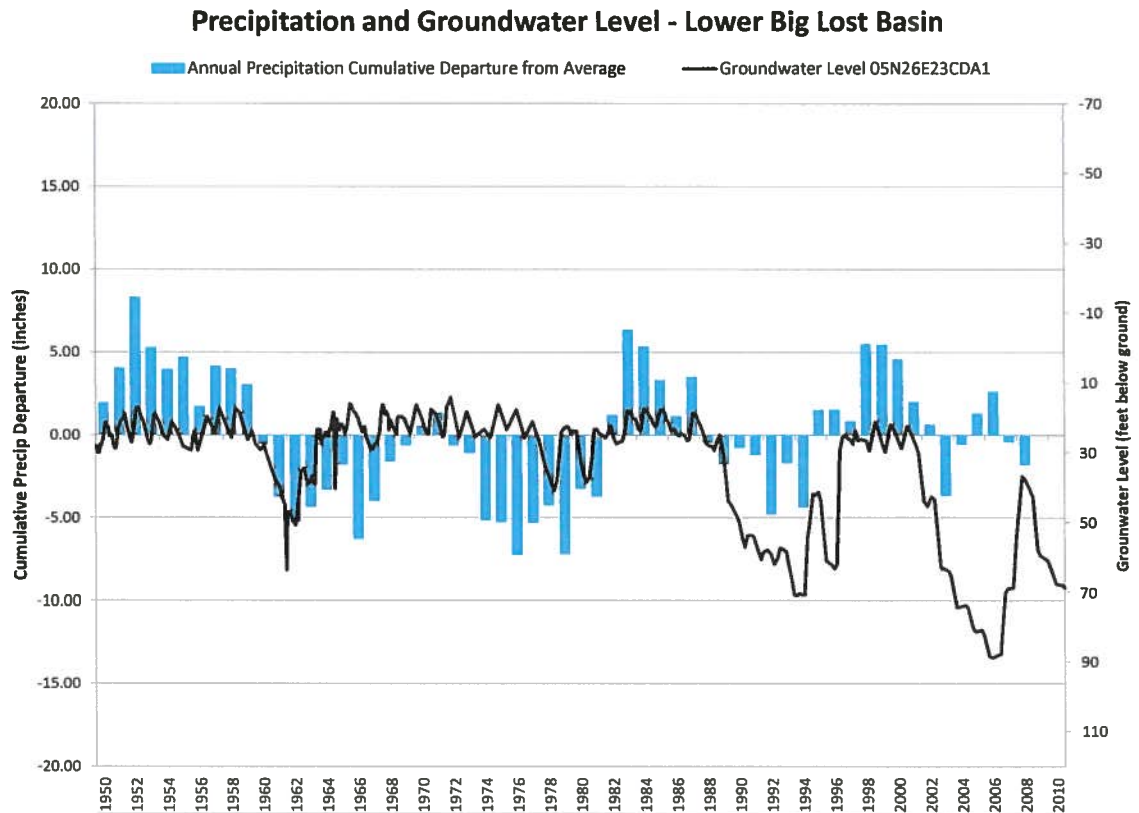


Figure 12. Groundwater level in well 05N26E23CDA1 and precipitation at Mackay (cumulative departure from normal) from 1950 through 2009.

Factor 2: Surface water supply. Annual streamflow at Mackay is a measure of the total surface water supply available for diversion. It may be hypothesized that years (or multiple years) with low surface water supply will lead to reduced river loss to the aquifer, and reduced diversions and hence reduced canal seepage and irrigation recharge, which may lead to lower groundwater levels. Annual water year streamflow at Mackay was expressed as a departure from average and overlain on the water level in well 05N26E23CDA1 (Figure 13). In this plot, the 3-year backward moving average of streamflow departure from average is shown. A 3-year backward average is justified on the physical basis that groundwater levels are normally influenced by reductions in net recharge and pumping withdrawals in the same year and in previous years due to the storage effects of the aquifer. This data indicates that periods of low water generally correspond to periods of reduced groundwater levels; however the correlation is not completely consistent. For example, periods of high flows do not always correspond to

high groundwater levels. During the extremely low groundwater levels seen in 2003 and 2004, the streamflow was not much lower than it was in the early 1960s and the early 1990s.

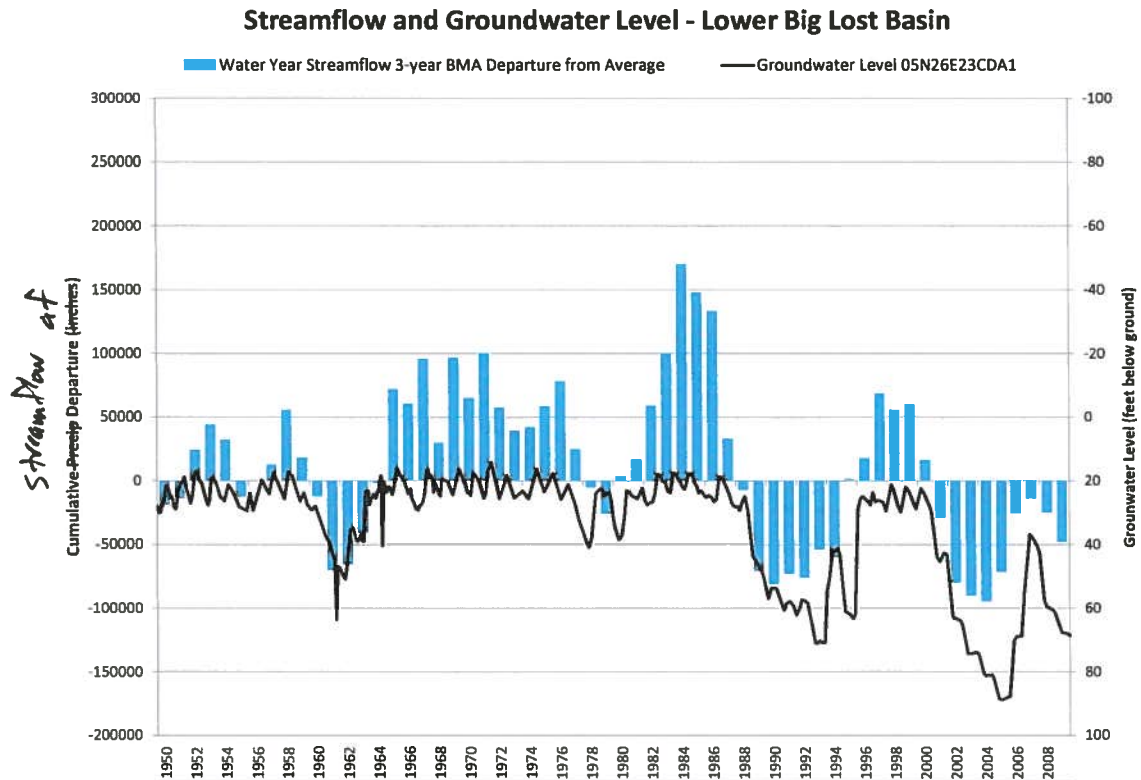


Figure 13. Groundwater level in well 05N26E23CDA1 and streamflow at Mackay (departure from normal) from 1950 through 2009.

Factor 3. Groundwater pumping. Withdrawals from groundwater reduce the amount of water in the aquifer and would be expected to negatively affect water levels. Again, a 3-year backward moving average was used for the physical reasons stated above. In Figure 14, the 3-year backward moving average of pumping volume is shown against the water level in well 05N26E23CDA1. From Figure 15 it is clear that groundwater pumping has a direct effect on aquifer levels, and this effect appears to have become more pronounced and direct in the years after 1987 as annual pumping volume has increase significantly.

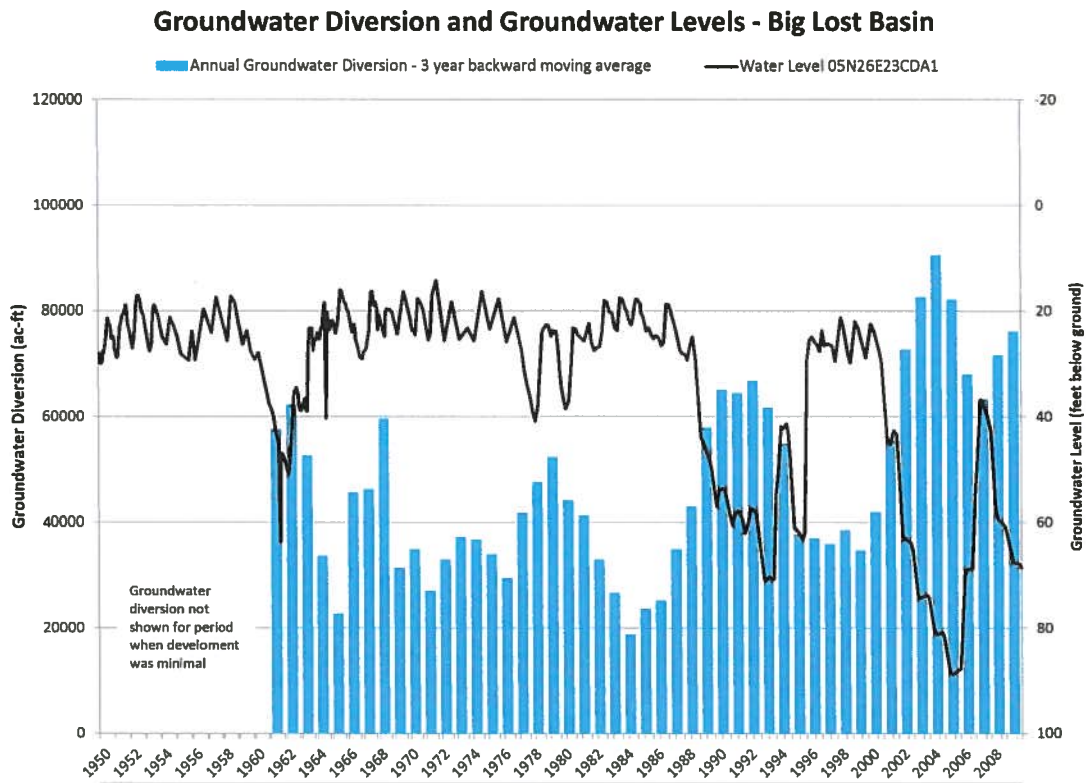


Figure 14. Groundwater level in well 05N26E23CDA1 and average annual groundwater pumping from 1959 through 2009.

As a further demonstration, scatterplots and linear regressions were created of water levels in well 05N26E23CDA1 and groundwater pumpage from 1959 through 1987 and from 1988 through 2009 (Figure 15). The slope of the regression line is much flatter using the early period data, and the relationship is less direct with an r-squared of 0.47. The slope is steeper using the later data and the relationship is much stronger with a very high r-squared of 0.92. The slope of the regression lines can be used to estimate the impact of groundwater pumping on water levels. For example, prior to 1988, an incremental increase in withdrawal of 10,000 acre-feet average for 3 years resulted in a decline of 3.8 feet in the aquifer. Since 1988, the same incremental increase in pumping resulted in a decline of 9.5 feet in the aquifer, in the relatively short term – not accounting for the potential additional negative effect of this pumping increment on long-term trend.

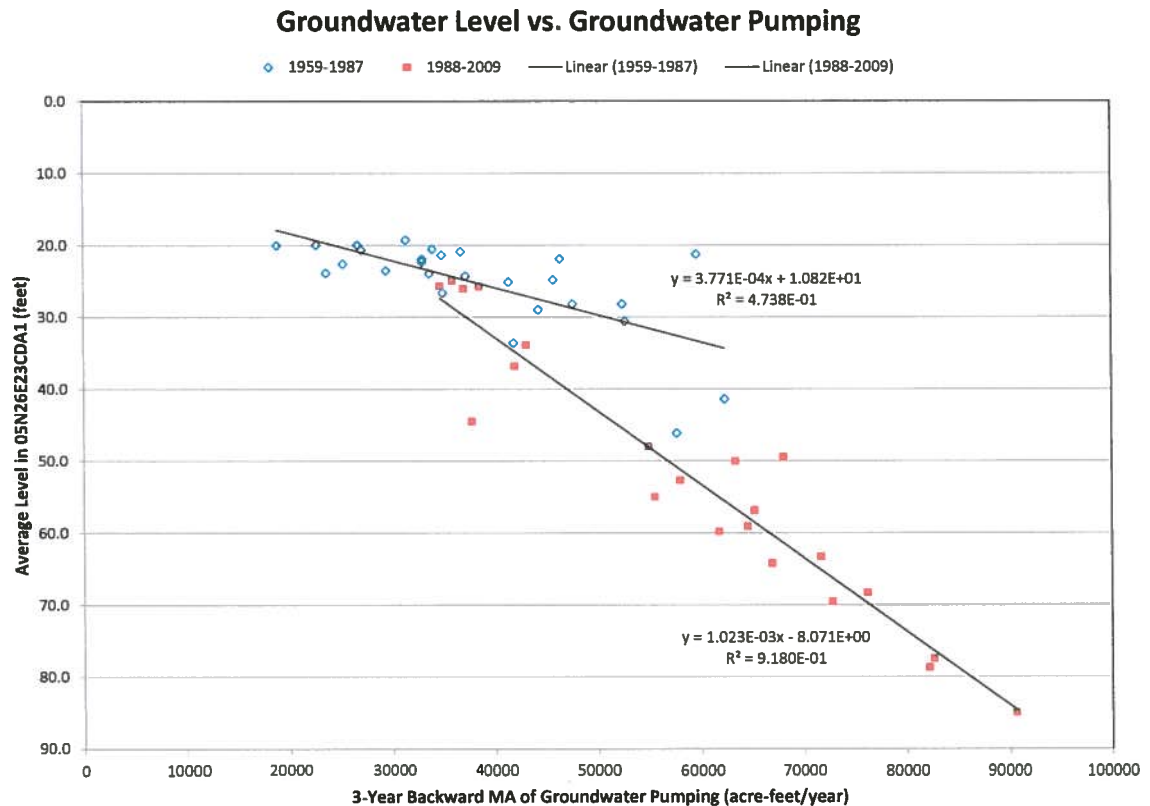


Figure 15. Scatterplots of groundwater level in well 05N26E23CDA1 and annual groundwater pumping from 1959 through 2009.

d. Separation of streamflow and pumping effects

As illustrated in Figures 13 and 14, both annual streamflow and groundwater pumping appear to be related to groundwater levels, and a valid physical justification can be formulated to explain how either effect, or both, would affect the aquifer water balance and therefore water levels. In order to separate these effects, a multiple regression was performed with annual water year streamflow and annual groundwater pumpage as predictor variables, and average annual groundwater level in 05N26E23CDA1 as the independent variable. The period 1988-2009 was used to develop the regression. The resulting equation is

$$GW\ Level = -0.0987 \times Streamflow + 0.777 \times Pumping$$

Where

<i>Streamflow</i> =	Annual water year streamflow at Mackay, 3-year backward moving average of departure from normal, in 1000 acre-feet
<i>Pumping</i> =	Annual groundwater pumping, 3-year backward moving average, in 1000 acre-feet.
<i>GW Level</i> =	Average annual depth to groundwater in well 05N26E23CDA1, in feet.

Statistics of the regression are provided in Table 3.

Table 3. Statistics of the multiple regression to predict groundwater level.

Adjusted R-squared	0.94
Beta (streamflow)	-0.272
Beta (pumping)	0.728
F	170.5
p	<0.0001
SE estimate	4.56

The regression has an extremely high adjusted r-squared and F statistic, indicating that the regression model is an excellent fit. Both predictor variables have significant coefficients and both contribute to the explanation of groundwater level fluctuations, in a statistical sense: with higher streamflow, groundwater levels tend to be higher, and with higher pumping, groundwater levels tend to be lower. A residual analysis was performed to ensure that the assumptions of least-squares linear regression were reasonably satisfied.

The beta coefficients given in Table 3 are the standardized regression coefficients for the predictor variables. Because they are standardized, their magnitude may be directly compared to determine the relative effect of each predictor variable. In this case, the magnitude of the beta coefficient for pumping is 2.7 times greater than the magnitude of the beta coefficient for streamflow. This means that the effect of groundwater pumping on water level in the aquifer is 2.7 times greater than the effect of changes in surface water supply, i.e. streamflow.

This analysis indicates that the best explanation for the difference in aquifer response in recent decades is increased groundwater pumping. Physically, this may be explained by noting that the groundwater pumpage now exceeds annual groundwater flow on an average basis, as demonstrated in the previous section. Under this condition, the aquifer would be expected to be sensitive to groundwater pumping and would not be expected to

maintain its historic equilibrium level. The analyses described above were repeated using the data set for well 04N26E26DCD1, with similar results.

The data indicates (Figure 15) that if the groundwater pumpage is about 45,000 acre-feet per year or less, the aquifer can sustain the pumping and water levels should remain at or near historical levels. If withdrawal exceeds this amount, as it has in recent decades, the aquifer cannot sustain it and water levels will decline. This can be seen in Figure 14, and also in Figure 15 where a breakpoint in the slope occurs at about 45,000 acre-feet per year.

The expected result of over-pumping is a long-term downward trend, punctuated by drawdown and recovery periods in accordance with fluctuations in pumping. The hypothesis that a long-term declining trend is occurring is examined in the next section.

e. Groundwater level trend statistics

A visual inspection of the groundwater level time series for 04N26E26DCD1 and 05N26E23CDA1 appears to indicate little or no long-term trend from 1950-1987. Thereafter, the series appears to show a declining long-term trend, with shorter-term drawdown and recovery periods superimposed on the long-term trend. To test this hypothesis, a trend analysis was performed using the Mann-Kendall (M-K) method. This method is a non-parametric approach to trend analysis which is not dependent on assumptions regarding the underlying stationarity or probability distribution of the deviations from the trend line. As such, it is robust amidst a wide range of data conditions and is widely used in the analysis of hydrologic data sets. Helsel and Hirsch (2005) provides a good overview of the method. The results of the M-K statistical analysis are shown in Table 4.

Table 4. Mann-Kendall results on depth-to-water time series.

Parameter	04N26E26DCD1			05N26E23CDA1		
	1949-1987	1988-2009	All Data	1950-1987	1988-2009	All Data
S	-75	1642	67886	-9000	951	18810
Tau	-0.000405	0.234	0.257	-0.167	0.185	0.203
Zs	-0.0148	3.77	10.36	-4.51	2.75	6.30
p	0.4938	0.9997	0.9998	<0.0001	0.9967	0.9998

The M-K results indicate that for the 1950-1987 period, there is no statistically-significant trend in 04N26E26DCD1, and a slight statistically-significant decreasing trend (increasing water level) in 05N26E23CDA1. For the 1988-2009 period, there are statistically significant increasing trends (decreasing water levels) in both wells. Using the entire period of record, there are statistically significant increasing trends (decreasing water levels) in both wells. All trends were detected at very high confidence levels exceeding 99%.

F. LONG-TERM EFFECTS OF ADDITIONAL DEPLETION FROM PROPOSED PUMPING

Annual depletion of the alluvial aquifer from the Parkinson Well depends on the extent to which it is utilized relative to utilization of the wells near the airport. Possible pumpage scenarios are illustrated in Table 5 relative to the total groundwater flow calculated at Moore. Net depletion of the alluvial aquifer, as discussed above, is equal to the gross pumpage less the additional canal seepage occurring within a reach that can actually benefit the alluvial aquifer. Assuming the additional seepage is 50% of the gross pumping (a very high assumption), then about half of this amount, or 25% of the gross, would return to the aquifer above Arco and could provide some offsetting benefit.

Table 4. Depletion from additional Parkinson Well pumping.

Scenario	Annual Diversion from Parkinson Well		Net Aquifer Depletion (after canal seepage)*	
	Volume	Percent of Groundwater Flow at Moore	Volume	Percent of Groundwater Flow at Moore
Parkinson Well pumps 4.0 cfs for 215 days	1,706 ac-ft	6.6%	1,280 ac-ft	5.0%
Parkinson Well pumps 4.0 cfs for 100 days	793 ac-ft	3.1%	595 ac-ft	2.3%

* Assumes 50% canal seepage total; 25% occurs within reach that can physically offset pumping from alluvial aquifer.

The potential additional depletion due to the proposed transfer is a significant fraction of the discharge of the upper alluvium, and would exacerbate the declining aquifer levels, both in the long term and during drought periods when the groundwater level data indicates that the aquifer supply is not sufficient. In terms of impact on the alluvial aquifer, the requested transfer would be hydrologically equivalent to a new appropriation.

An estimate of the long-term impact on the aquifer levels near the Parkinson Well can be made by employing the results of the analysis in Section E(c), in which it was found that each additional 1,000 ac-ft of annual depletion is expected to result in a decline in the water table of 0.95 feet. Since the aquifer directly in the vicinity of the Parkinson Well will experience the full depletion (little or no canal seepage offset), an annual depletion of 793 to 1,706 ac-ft/year is appropriate. These depletions would correspond to long-term water table declines of 0.75 to 1.62 feet.

These long-term declines would be in addition to the localized drawdown due to the well pumping as calculated in Section D(c). Thus, the estimated total decline would be 4.6 to 5.5 feet.

Accurate quantification of the long-term future impact on water levels would best be quantified with a calibrated numerical groundwater model with sufficient cell resolution to capture local conditions in the Big Lost valley. The Eastern Snake Plain Aquifer Model domain does extend up the valley, but the cell size and resolution of aquifer depth and other parameters is not sufficient for the present purposes.

G. SURFACE WATER INFLUENCE

The relationship between groundwater and surface water in the Big Lost valley has been documented by Crosthwaite (1970), Szczepanowski (1982), and Johnson, et al. (1991). These authors document the “relatively free interchange” between surface and groundwater in the Big Lost valley and the fact that pumping of groundwater generally results in depletion of surface water to some extent. Johnson et al. (1991) evaluated the issue in greater detail and developed two procedures by which the impact of groundwater pumping could be estimated. Additional study of groundwater and river profiles has been completed by IDWR, the most recent of which was in 2004.

The direct exchange of water between the aquifer and the river can occur when the elevation of the water table is the same as that of the river, causing a hydraulic connection between the two sources. Under this condition, the aquifer may feed the river (reach gain) or the river may feed the aquifer (reach loss). A reduction in groundwater level causes a decrease in reach gain, or an increase in reach loss. If the groundwater level drops below the river, the direct hydraulic connection is broken and the river can only lose water to the aquifer. This condition is termed a “perched stream.”

IDWR (1991) and IDWR (2004) have determined the relationship between the water table elevation and the river elevation along the length of the river from Mackay to Arco, and have documented the changes in this relationship over time (Figures 16 and 17).

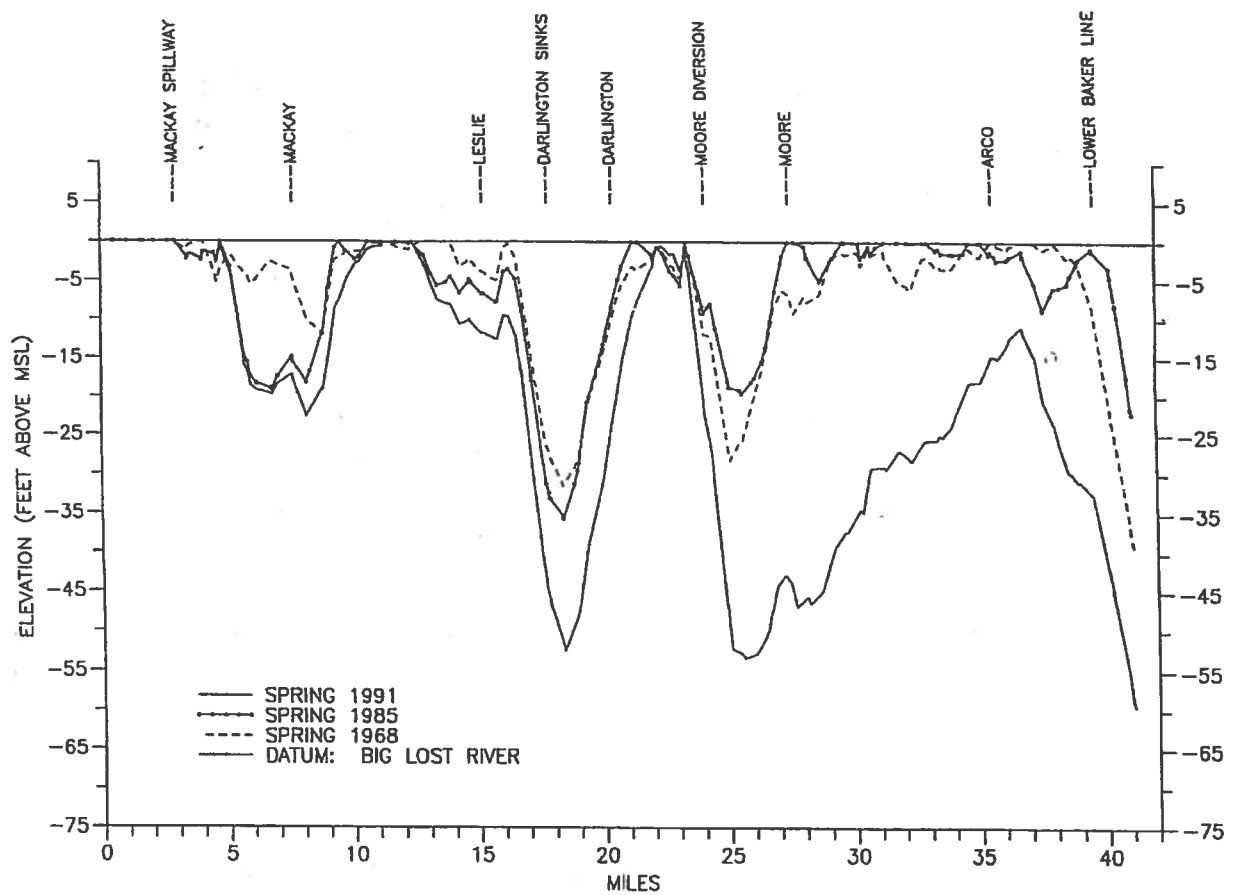


Figure 16. Profile of groundwater elevation and adjacent elevation in the Big Lost River (from IDWR, 1991).

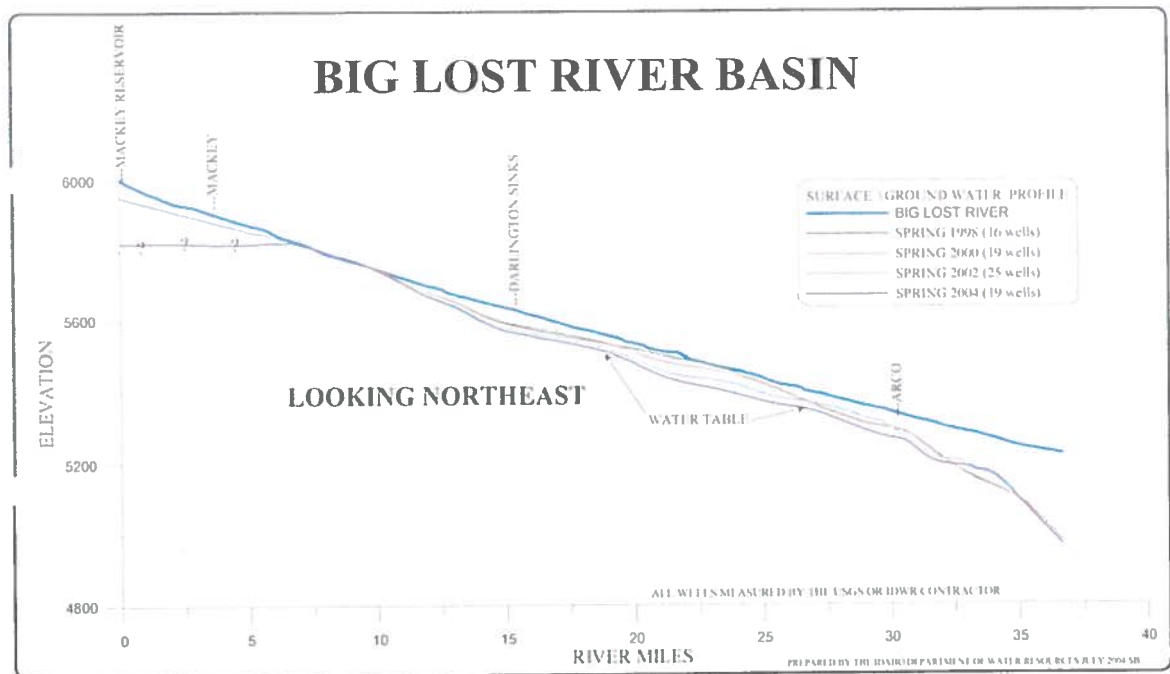


Figure 17. Profile of groundwater elevation and adjacent elevation in the Big Lost River (after IDWR, 2004).

Historically, many reaches of the river have gained water from the aquifer, both above and below the Moore Diversion. In the Darlington Sinks area and between the Moore Diversion and Moore, the river has always been perched. Based on the 1968 profile (Figure 16), the river and aquifer were connected and the river gained water from the aquifer in nearly the entire reach from Moore to below Arco. The 1985 profile shows a similar connection. As groundwater levels have declined since the late 1980s, the hydraulic connection from approximately Leslie (between Mackay and Darlington) downstream to Arco has generally been eliminated. The most recent measurements that indicate any gaining reach below Moore were in 1998 (Figure 17). A completely perched river is now generally the normal condition below Moore. Water levels have recovered somewhat since the last profile measurement in 2004, but not to the 1998 levels and it is likely that there is no gain occurring below Moore at this time.

The result of this pattern has been a reduction of surface water available for diversion. Reach gain is a source of surface supply to senior water rights that has historically been relied upon. Johnson et al. (1991) estimated the “diversion depletion” to be 20,000 to 30,000 acre-feet per year in low water years and 13,000 acre-feet per year in normal years. The authors attribute the diversion depletion to pumping of groundwater wells

which have caused decreased aquifer levels and increased reach loss or decreased reach gain in the Big Lost River. Additional groundwater depletion of the alluvial aquifer would exacerbate the diversion depletion. The Johnson, et al. study could be extended by incorporating recent data since 1991, but this analysis was not performed for the present study.

In most well logs shallow clay strata are present at 20 to 80 feet below ground. To the extent this layer exists and a well is cased through it, pumping the well may have less effect on the uppermost zone and therefore on the gain or loss from reaches of the Big Lost River which are interconnected with the groundwater. However, it appears such strata are discontinuous and may not provide complete segregation based on a review of well drilling records. The authors cited above do not address the effect of any shallow clay layers and generally assume free interchange of groundwater with the river. Although widespread, this shallow clay layer is not present uniformly in all wells; many well logs indicate very thin "gravel and clay" layers or fail to identify any clay at that depth. Therefore, it appears likely that the shallow clay is discontinuous rather than a valley-wide barrier to vertical mixing between the two alluvial zones. In areas where the clay is thin and/or contains significant gravel fraction, the layer may not be impermeable. An exhaustive analysis of drilling logs would be needed in order to map the location, nature, and extent of this layer. As noted above, a numerical groundwater model that incorporates surface water / groundwater interaction would be a useful tool in evaluating current and future impacts of pumping.

H. CONCLUSIONS

1. The lower Big Lost River alluvial aquifer, situated approximately between Moore and Arco, has been extensively developed for irrigation since the late 1950s. The aquifer consists generally of highly productive sand and gravel, with localized lenses of finer-grained material. Estimated hydraulic conductivity near the Parkinson Well is 175 ft/day and the estimate transmissivity is 35,000 ft²/day.
2. Pumping an additional 4.0 cfs from the Parkinson Well for 215 days will result in a local drawdown in the alluvial aquifer from greater than 12 feet at the well, to nearly zero at a distance of about 1.6 miles from the well. The predicted drawdowns are not negligible and will likely result in increased power costs, decreased well yields, and potentially the need to deepen or replace domestic and irrigation wells which are too shallow to provide the required yield.

3. The predicted localized drawdown at the McDonald irrigation well for the above pumping scenario is 3.9 feet.
4. The estimated average annual discharge in the upper alluvial aquifer developed for irrigation use is 25,700 acre-feet per year.
5. Average groundwater pumping from the aquifer for the period 1959 through 2009 is estimated to be 47,970 acre-feet per year.
6. Pumping has increased significantly since the late 1980s. The estimated average pumping for 1959 through 1987 is 38,290 acre-feet/year and the estimated average pumping for 1988 through 2009 is 60,730 acre-feet/year.
7. Prior to the late 1980s, the average net depletion was likely close to the average annual aquifer discharge, resulting in generally stable aquifer levels. This has not been the case in the period since the late 1980s, over which time the average pumpage and net depletion have exceeded the average annual groundwater discharge.
8. Groundwater levels were reasonably steady from 1950 through 1987 with the exception of the early 1960s drought period. Major declines and recovery periods have been observed since 1987, but the levels have not recovered to historic levels.
9. The groundwater level fluctuations, including the major declines and recoveries observed since 1987, are best explained as a consequence of groundwater pumping. Excellent statistical correlation exists between 3-year average pumping volume and groundwater levels.
10. Based on correlations between aquifer levels and groundwater withdrawals since 1988, each additional 10,000 acre-feet of annual depletion results in a long-term decline in the aquifer level of 9.5 feet. Using this correlation, the long-term depletion effects of the proposed additional pumping from the Parkinson Well would add about 0.7 to 1.6 feet to the drawdown. The total estimated impact on the McDonald well from the proposed Parkinson transfer – including localized short-term effects and long-term effects – would be a decline of 4.6 to 5.5 feet.
11. Taking into account both short-term localized effects and long-term effects of the proposed pumping from the Parkinson Well, the reduction in flow rate from the

McDonald irrigation well would be at least 80 to 96 gpm, or 3.0 to 3.6% of the total discharge.

12. At least 42 domestic water rights with priority dates earlier than July 1, 1978 are located within a zone predicted to incur 1.0 foot or more of drawdown from the proposed Parkinson Well pumping based on the localized analysis. The predicted impact at these wells ranges from 1.0 to 4.2 feet. If long-term depletion effects are also considered, these impacts would be from 0.7 to 1.6 feet greater.
13. Statistically significant long-term downward trends exist since 1987 in the water levels in the alluvial system.
14. The groundwater and surface water systems are connected, but the reach gain which has historically provided a portion of the water supply in the Big Lost River below Moore has been eliminated by the declining groundwater levels. The reduction in surface water diversions due to this effect is approximately 13,000 acre-feet/year in normal years, and 20,000 to 30,000 acre-feet/year in low water years. Additional pumping from the aquifer will exacerbate this shortage and delay any incipient reconnection if groundwater levels recover, resulting in larger depletions of surface water supply for senior rightholders than would otherwise occur.
15. Based on the data review and analyses contained herein, the proposed additional pumping that would occur if a transfer of water rights 34-4008, 34-2490, and 34-2497 were approved would result in significant impacts to groundwater users for irrigation and domestic purposes, and to surface water users.

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Appendix A

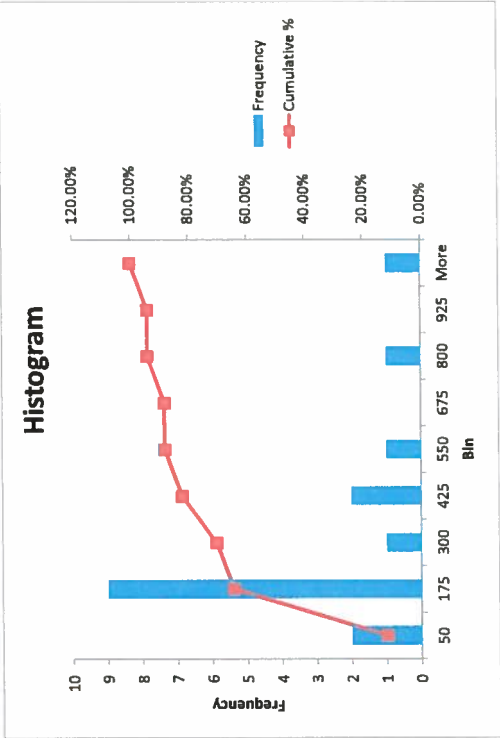
Data and Calculations

Big Lost Alluvial Aquifer Transmissivity Estimation

I.D.	Location	Pumping		Drawdown	Time	Well	Storage	SWL	Aquifer	Avg open	Average aquifer	Specific	L/b	G	sp	Trial T	Calc T	Calc K
		Rate	[ft]		[min]	radius				Interval	thickness	capacity				[ft/d]	[ft/d]	[ft/d]
Quist	SENW3, T4N, R26E	3640	52	720	10	0.15	18	250	250	110.5	206	70.0	0.54	1.57	3.40	20501.0	20501.2	98.5
Johnson	SWSE Sec 3, T4N, R26E	2000	40	1440	8	0.15	26	250	250	100	204	50.0	0.49	1.54	4.35	16816.0	16816.3	82.4
Pearson	SESW Sec 5, T4N, R26E	3600	45	720	10	0.15	60	250	250	115.5	167.5	80.0	0.68	1.78	1.59	18870.0	18868.7	112.7
Olsen	SWSE Sec 10, T4N, R26E	1200	52	1440	8	0.15	18	250	250	92	206	23.1	0.45	1.53	5.21	8112.0	8112.2	38.4
Walker	NWSW Sec 14, T4N, R26E	2285	41	180	8	0.15	20	250	250	89.5	208.5	56.0	0.43	1.53	5.66	19413.0	19412.5	92.7
Techich	NWSW Sec 15, T4N, R26E	2700	7	960	8	0.15	45	250	250	96.5	201.5	385.7	0.48	1.53	4.55	142229.0	142229.0	705.9
Buxton	NWSW Sec 16, T4N, R26E	2700	85	2400	10	0.15	31	250	250	100	176.5	31.8	0.57	1.60	2.87	8969.0	8968.8	50.8
Spraker	NESE Sec 16, T4N, R26E	900	15	130	12.5	0.15	21	250	250	14	221.5	60.0	0.06	2.53	41.88	87843.0	87842.9	396.6
Island South	5N28E34NWSW	4115	19.74	120	10	0.15	30.46	250	250	125	209.67	208.5	0.60	1.64	2.64	53482.0	53481.9	255.1
Jones	5N28E21SWSW	2693	9	240	9	0.15	50	250	250	113	185.5	299.2	0.58	1.61	2.88	85321.0	85321.4	436.4
Smith	5N28E27SWSW	2943	92	300	10	0.15	23	250	250	81	181	32.0	0.45	1.53	4.76	9910.0	9910.3	54.8
Moore 1	5N28E28SENW	450	5	210	6	0.15	17	250	250	40	230.5	90.0	0.17	1.99	18.73	72835.0	72834.7	316.0
Moore 2	5N28E28SENW	445	21.8	360	6	0.15	14.7	250	250	46	224.4	20.4	0.20	1.88	16.39	14088.0	14087.8	62.8
Babcock	5N28E33SWNE	4200	6	630	8	0.15	46	250	250	105	201	700.0	0.52	1.56	3.79	243241.0	243240.6	1210.2
Bleak	5N28E33SWSE	2600	24	360	8	0.15	37	250	250	94.5	201	108.3	0.47	1.53	4.71	36608.0	36608.2	182.1
Sowards	5N28E34NWSW	2000	84	360	8	0.15	42	250	250	110	166	23.8	0.66	1.74	1.93	5311.0	5311.3	32.0
Parkinson	5N28E34SWSW	4200	50	540	10	0.15	20	250	250	100	205	84.0	0.49	1.54	4.17	26522.0	26522.2	129.4
Toone	5N28E34SESW	3750	38	480	10	0.15	22	250	250	129	209	98.7	0.62	1.67	2.39	25565.0	25565.1	122.3
																Mean	49757.6	243.4
																Max	243240.6	1210.2
																Min	5311.3	32.0
																Std dev	60680.5	299.4

38.1

Bin	Frequency	Cumulative %
50	2	11.76%
175	9	64.71%
300	1	70.59%
425	2	82.35%
550	1	88.24%
675	0	88.24%
800	1	94.12%
925	0	94.12%
More	1	100.00%



Big Lost River Annual Groundwater Pumping Data

All values in acre-feet

Sources:

- 1 Johnson, et al. (1991). Total = 1.428 x Below Antelope
- 2 WD34 Records
- 3 Crosthwaite (1970)

Year	Strmfl blw Mcky CY	Strmfl blw Mcky WY	GW Below Antelope	GW Total	Source
1959	164090	170794		30000	3
1960	153889	153991		62000	3
1961	129650	130606		81000	3
1962	186497	184274		44000	3
1963	236632	229501		33000	3
1964	242979	246435		24000	3
1965	415295	405789		11000	3
1966	179785	194649		102000	3
1967	365037	353243		26000	3
1968	222042	207037		51000	3
1984	445595	477537	8300	11852	1
1985	238406	262152	27500	39270	1
1986	317175	326514	17300	24704	1
1987	175854	176506	28700	40984	1
1988	136335	141272	44500	63546	1
1989	137266	135239	48600	69401	1
1990	149574	146605	43800	62546	1
1991	163981	165067			
1992	122542	125882			
1993	223781	213139			
1994	136832	147185		41233	2
1995	320505	310007		24845	2
1996	260620	261636		44980	2
1997	308921	299944		37976	2
1998	265193	269609		32621	2
1999	271854	274894			
2000	167261	170601			
2001	125031	133284			
2002	127203	122425		85136	2
2003	136253	139583		89394	2
2004	119058	120074		97326	2
2005	193012	191130		59818	2
2006	282568	278587		46860	2
2007	146605	153628		83342	2
2008	158477	158114		84856	2
2009	214080	209736		60326	2

Big Lost River Groundwater Pumping Estimates 1959-2009

Pumping is measured or estimated from power records where indicated (bold);

estimated using regression equation with streamflow below Mackay (water year) for other years

Volumes in acre-feet, depths in feet

Pumping:

Average 1959-2009 47973
Average 1959-1987 38294
Average 1988-2009 60730

Streamflow:

Average 1959-2009 231921
Average 1959-1987 264150
Average 1988-2009 189438

Year	Strmflow blw Mackay	3-year BMA	GW Pumping Estimate	3-year BMA	Avg Level in 05N26E23CDA1	Avg Level in 04N26E26DCD1
1950	185172				25.78	40.28
1951	243474				25.77	39.73
1952	310348	246331			20.98	38.43
1953	244321	266048			23.10	38.78
1954	208216	254295			23.67	39.34
1955	175224	209254			27.56	40.39
1956	282900	222113			24.27	40.01
1957	245508	234544			21.29	38.62
1958	304976	277794			20.42	37.97
1959	170794	240426	30000		24.98	39.46
1960	153991	209920	62000		31.45	41.82
1961	130606	151797	81000	57667	46.10	45.72
1962	184274	156290	44000	62333	41.39	46.18
1963	229501	181460	33000	52667	30.58	43.90
1964	246435	220070	24000	33667	23.99	40.77
1965	405789	293908	11000	22667	19.96	38.69
1966	194649	282291	102000	45667	24.85	39.87
1967	353243	317894	26000	46333	21.95	39.28
1968	207037	251643	51000	59667	21.25	38.72
1969	395509	318596	17200	31400	19.29	37.63
1970	259112	287219	36587	34929	21.47	38.42
1971	311528	322049	27375	27054	20.64	38.28
1972	267299	279313	34966	32976	21.94	38.32
1973	205320	261382	49272	37204	24.28	39.64
1974	319853	264157	26143	36793	20.97	38.79
1975	317102	280758	26544	33986	20.54	38.52
1976	263596	300184	35690	29459	23.52	38.45
1977	160289	246996	63214	41816	33.48	43.82
1978	225881	216589	43973	47626	28.19	43.27
1979	202424	196198	50067	52418	28.20	42.62
1980	249440	225915	38598	44213	28.94	43.20
1981	264903	238923	35433	41366	25.13	41.83
1982	328686	281010	24896	32975	22.35	40.14
1983	370387	321325	19765	26698	20.00	37.75
1984	477537	392203	11852	18838	20.03	37.97

1985	262152	370025	39270	23629	23.88	38.93
1986	326514	355401	24704	25276	22.62	39.66
1987	176506	255057	40984	34986	26.62	41.28
1988	141272	214764	63546	43078	33.90	45.72
1989	135239	151006	69401	57977	52.70	52.35
1990	146605	141039	62546	65164	56.86	57.60
1991	165067	148970	61565	64504	59.04	59.24
1992	125882	145851	76472	66861	64.21	64.07
1993	213139	168029	47185	61741	59.81	61.77
1994	147185	162068	41233	54963	47.99	58.64
1995	310007	223444	24845	37754	44.50	55.55
1996	261636	239609	44980	37019	26.04	46.15
1997	299944	290529	37976	35934	24.95	43.15
1998	269609	277063	32621	38526	25.75	42.14
1999	274894	281482	33527	34708	25.69	40.97
2000	170601	238368	59708	41952	36.85	44.81
2001	133284	192926	73403	55546	54.98	52.45
2002	122425	142103	85136	72749	69.53	61.19
2003	139583	131764	89394	82644	77.46	67.17
2004	120074	127360	97326	90619	85.00	72.77
2005	191130	150262	59818	82179	78.70	73.93
2006	278587	196597	46860	68001	49.44	63.77
2007	153628	207782	83342	63340	50.01	60.65
2008	158114	196776	84856	71686	63.27	64.47
2009	209736	173826	60326	76175	68.29	67.36

Appendix B
Well Drilling Records

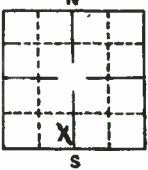
McDonald and Parkinson Irrigation Well Logs

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
WELL DRILLER'S REPORT

USE TYPEWRITER OR
BALLPOINT PEN

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.

McDonald

1. WELL OWNER Name <u>SPENCER TOONE</u> Address <u>ARCO, IDAHO 83213</u> Owner's Permit No. <u>34-7028</u>	7. WATER LEVEL Static water level <u>22</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 <u>good</u>																																																																																							
2. NATURE OF WORK ☒ New well ☐ Deepened ☐ Replacement ☐ Abandoned (describe method of abandoning) _____	8. WELL TEST DATA ☒ Pump ☐ Bailor ☐ Air ☐ Other _____																																																																																							
3. PROPOSED USE ☐ Domestic ☒ Irrigation ☐ Test ☐ Municipal ☐ Industrial ☐ Stock ☐ Waste Disposal or Injection ☐ Other _____ (specify type) _____	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th>Discharge G.P.M.</th> <th>Pumping Level</th> <th>Hours Pumped</th> </tr> </thead> <tbody> <tr> <td><u>3750</u></td> <td><u>60'</u></td> <td><u>8</u></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	<u>3750</u>	<u>60'</u>	<u>8</u>																																																																																	
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4. METHOD DRILLED ☐ Rotary ☐ Air ☐ Hydraulic ☐ Reverse rotary ☒ Cable ☐ Dug ☐ Other _____	9. LITHOLOGIC LOG <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Hole Diam.</th> <th colspan="2">Depth</th> <th rowspan="2">Material</th> <th rowspan="2">Water Yes No</th> </tr> <tr> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td>20"</td> <td>0</td> <td>2</td> <td>TOP SOIL</td> <td>☒</td> </tr> <tr> <td></td> <td>2</td> <td>19</td> <td>COARSE GRAVEL</td> <td>☒</td> </tr> <tr> <td></td> <td>19</td> <td>33</td> <td>1" GRAVEL</td> <td>☒</td> </tr> <tr> <td></td> <td>33</td> <td>37</td> <td>GRAVEL</td> <td>☒</td> </tr> <tr> <td></td> <td>37</td> <td>39</td> <td>CLAY + GRAVEL</td> <td>☒</td> </tr> <tr> <td></td> <td>39</td> <td>51</td> <td>GRAVEL</td> <td>☒</td> </tr> <tr> <td></td> <td>51</td> <td>53</td> <td>CLAY + GRAVEL</td> <td>☒</td> </tr> <tr> <td></td> <td>53</td> <td>68</td> <td>GRAVEL</td> <td>☒</td> </tr> <tr> <td></td> <td>68</td> <td>75</td> <td>CLAY + GRAVEL</td> <td>☒</td> </tr> <tr> <td></td> <td>75</td> <td>77</td> <td>GRAVEL</td> <td>☒</td> </tr> <tr> <td></td> <td>77</td> <td>93</td> <td>CLAY + GRAVEL</td> <td>☒</td> </tr> <tr> <td></td> <td>93</td> <td>121</td> <td>SAND + GRAVEL</td> <td>☒</td> </tr> <tr> <td></td> <td>121</td> <td>129</td> <td>CLAY + GRAVEL</td> <td>☒</td> </tr> <tr> <td></td> <td>129</td> <td>153</td> <td>COARSE GRAVEL</td> <td>☒</td> </tr> <tr> <td></td> <td>153</td> <td>155</td> <td>CLAY</td> <td>☒</td> </tr> <tr> <td></td> <td>155</td> <td>180</td> <td>COARSE GRAVEL</td> <td>☒</td> </tr> </tbody> </table>	Hole Diam.	Depth		Material	Water Yes No	From	To	20"	0	2	TOP SOIL	☒		2	19	COARSE GRAVEL	☒		19	33	1" GRAVEL	☒		33	37	GRAVEL	☒		37	39	CLAY + GRAVEL	☒		39	51	GRAVEL	☒		51	53	CLAY + GRAVEL	☒		53	68	GRAVEL	☒		68	75	CLAY + GRAVEL	☒		75	77	GRAVEL	☒		77	93	CLAY + GRAVEL	☒		93	121	SAND + GRAVEL	☒		121	129	CLAY + GRAVEL	☒		129	153	COARSE GRAVEL	☒		153	155	CLAY	☒		155	180	COARSE GRAVEL	☒
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6. WELL CONSTRUCTION Casing schedule: ☒ Steel ☐ Concrete ☐ Other _____ <table style="width: 100%;"> <tr> <td>Thickness</td> <td>Diameter</td> <td>From</td> <td>To</td> </tr> <tr> <td><u>250</u> inches</td> <td><u>20</u> inches</td> <td><u>1</u> foot</td> <td><u>180</u> feet</td> </tr> <tr> <td>_____ inches</td> <td>_____ inches</td> <td>_____ feet</td> <td>_____ feet</td> </tr> <tr> <td>_____ inches</td> <td>_____ inches</td> <td>_____ feet</td> <td>_____ feet</td> </tr> <tr> <td>_____ inches</td> <td>_____ inches</td> <td>_____ feet</td> <td>_____ feet</td> </tr> </table> Was casing drive shoe used? ☒ Yes ☐ No Was a packer or seal used? ☐ Yes ☒ No Perforated? ☒ Yes ☐ No How perforated? ☒ Factory ☐ Knife ☐ Torch Size of perforation <u>3/16</u> inches by <u>134</u> inches <table style="width: 100%;"> <tr> <td>Number</td> <td>From</td> <td>To</td> </tr> <tr> <td><u>2660</u> perforations</td> <td><u>20</u> feet</td> <td><u>170</u> feet</td> </tr> <tr> <td>_____ perforations</td> <td>_____ feet</td> <td>_____ feet</td> </tr> <tr> <td>_____ perforations</td> <td>_____ feet</td> <td>_____ feet</td> </tr> </table> 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 <u>20</u> Material used in seal: ☐ Cement grout ☐ Pudding clay ☒ Well cuttings Sealing procedure used: ☐ Slurry pit ☐ Temp. surface casing ☐ Overbore to seal depth Method of joining casing: ☐ Threaded ☒ Welded ☐ Solvent ☐ Cemented between strata Describe access port _____	Thickness	Diameter	From	To	<u>250</u> inches	<u>20</u> inches	<u>1</u> foot	<u>180</u> feet	_____ inches	_____ inches	_____ feet	_____ feet	_____ inches	_____ inches	_____ feet	_____ feet	_____ inches	_____ inches	_____ feet	_____ feet	Number	From	To	<u>2660</u> perforations	<u>20</u> feet	<u>170</u> feet	_____ perforations	_____ feet	_____ feet	_____ perforations	_____ feet	_____ feet	RECEIVED JAN 14 1980 Department of Water Resources Eastern District Office																																																							
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6. LOCATION OF WELL Sketch map location must agree with written location. <i>W</i>  Subdivision Name _____ Lot No. _____ Block No. _____ County <u>BUTTE</u> <u>SE</u> 1/4 <u>SW</u> 1/4 Sec. <u>34</u> T. <u>5</u> N. R. <u>26</u> E.	11. DRILLERS CERTIFICATION I/We certify that all minimum well construction standards were complied with at the time the rig was removed. Firm Name <u>GUTHRIE WELL DRILLING</u> Firm No. <u>226</u> Address <u>ARCO, IDAHO</u> Date <u>1/7/80</u> Signed by (Firm Official) <u>J. H. Guthrie</u> and (Operator) <u>[Signature]</u>																																																																																							

USE TYPEWRITER OR
BALL POINT PEN

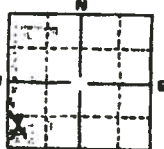
State of Idaho
Department of Water Resources

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.

RECEIVED

SEP 27 1977

1. WELL OWNER Name <u>RALPH S. PARKINSON</u> <u>JAMES S. BRISCOE</u> Address <u>ARCO IDAHO 83213</u> Owner's Permit No. <u>34-7176</u>		7. WATER LEVEL Department of Water Resources Eastern District Office Static water level <u>20</u> feet below land surface Flowing? ☐ Yes ☒ No G.P.M. flow _____ Temperature _____ F. Quality <u>good</u> Artesian closed-in pressure _____ p.s.i. Controlled by ☐ Valve ☐ Cap ☐ Plug																																																											
2. NATURE OF WORK ☒ New well ☐ Deepened ☐ Replacement ☐ Abandoned (describe method of abandoning)		8. WELL TEST DATA ☒ Pump ☐ Baller ☐ Other Discharge G.P.M. <u>4200</u> Draw Down <u>50'</u> Hours Pumped <u>9</u>																																																											
3. PROPOSED USE ☐ Domestic ☒ Irrigation ☐ Test ☐ Other (specify type) ☐ Municipal ☐ Industrial ☐ Stock ☐ Waste Disposal or injection		9. LITHOLOGIC LOG <u>042745</u> <table border="1"><thead><tr><th rowspan="2">Hole 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>5</td><td>SOIL</td><td></td><td></td></tr><tr><td></td><td>5</td><td>15</td><td>GRAVEL</td><td></td><td></td></tr><tr><td></td><td>15</td><td>26</td><td>CLAY + GRAVEL</td><td></td><td></td></tr><tr><td></td><td>26</td><td>70</td><td>SAND + GRAVEL</td><td></td><td></td></tr><tr><td></td><td>70</td><td>77</td><td>CLAY</td><td></td><td></td></tr><tr><td></td><td>77</td><td>110</td><td>SAND + GRAVEL</td><td></td><td></td></tr><tr><td></td><td>110</td><td>118</td><td>SAND CLAY</td><td></td><td></td></tr><tr><td></td><td>118</td><td>160</td><td>SAND + GRAVEL</td><td></td><td></td></tr></tbody></table>		Hole Diam.	Depth		Material	Water		From	To	Yes	No	20"	0	5	SOIL				5	15	GRAVEL				15	26	CLAY + GRAVEL				26	70	SAND + GRAVEL				70	77	CLAY				77	110	SAND + GRAVEL				110	118	SAND CLAY				118	160	SAND + GRAVEL		
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	5	15	GRAVEL																																																										
	15	26	CLAY + GRAVEL																																																										
	26	70	SAND + GRAVEL																																																										
	70	77	CLAY																																																										
	77	110	SAND + GRAVEL																																																										
	110	118	SAND CLAY																																																										
	118	160	SAND + GRAVEL																																																										
4. METHOD DRILLED ☒ Cable ☐ Rotary ☐ Dug ☐ Other																																																													
5. WELL CONSTRUCTION Diameter of hole <u>20</u> inches Total depth <u>160</u> feet Casing schedule: ☒ Steel ☐ Concrete Thickness _____ Diameter _____ From _____ To _____ _____ inches _____ inches _____ feet _____ feet _____ inches _____ inches _____ feet _____ feet _____ inches _____ inches _____ feet _____ feet _____ inches _____ inches _____ feet _____ feet Was casing drive shoe used? ☒ Yes ☐ No Was a packer or seal used? ☐ Yes ☒ No Perforated? ☒ Yes ☐ No How perforated? ☒ Factory ☐ Knife ☐ Torch Size of perforation <u>1/8</u> inches by <u>2</u> inches Number _____ From _____ To _____ <u>3500</u> perforations <u>30</u> feet <u>150</u> feet <u>720</u> perforations <u>30</u> feet <u>120</u> 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 <u>20</u> Material used in seal ☐ Cement grout ☐ Pudding clay ☒ Well cuttings Sealing procedure used ☐ Slurry pit ☐ Temporary surface casing ☐ Overbars to seal depth																																																													
6. LOCATION OF WELL Sketch map location must agree with written location.  Subdivision Name _____ Lot No. _____ Block No. _____ County <u>BUTTE</u> <u>SW 1/4 SW 1/4 Sec. 34 T. 5 N. R. 26 E. 1/4</u>		10. Work started <u>May 9/77</u> finished <u>May 27/77</u>																																																											
		11. DRILLERS CERTIFICATION Firm Name <u>Anthony Well Drilling Firm</u> No. <u>226</u> Address <u>PO BOX 319 ARCO IDAHO 83213</u> Date <u>9/24/77</u> Signed by (Firm Official) <u>J. T. Anthony</u> and <u>J. T. Anthony</u> (Operator) <u>3664</u>																																																											

USE ADDITIONAL SHEETS IF NECESSARY

FORWARD THE REPORT TO THE DIRECTOR

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

1 WELL TAG NO.

DRILLING PERMIT NC

Other IDWR NO. D0058967

2 OWNER:

Name: Ralph Parkinson

Address: 2253 North 3100 West

City: Arco State: ID Zip 83213

3 LOCATION OF WELL by legal description.

N

Twp 5 ☒ North ☐ South
Rge 28 ☒ East ☐ West
Sec 34

10 Acres 1/4 SW 1/4 SW 1/4
40 Acres 160 Acres

Gov't Lot _____
County Butte
Lat: 43 42.862 Long: 113 21.086

Address of Well Site: 2952 West 2400 North

Address of Well Site: 2053 West 3100 North

City: Arco

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

Lot No.	Blk No.	Subd. Name:
---------	---------	-------------

4 USE:

☐ Domestic Thermal ☐ Municipal Injection ☐ Monitor Other ☒ Irrigation

5 TYPE OF WORK:

☐ New Well ☒ Modify ☐ Abandonment ☐ Other Deepen

6 DRILL METHOD:

☐ Air Rotary ☒ Cable ☐ Mud Rotary ☐ Other

7 SEALING PROCEDURES:

SEAL/FILTER PACK			AMOUNT	
	From	To		Method
Deepen				Annular

Was drive shoe used?	☒ Yes	☐ No	Shoe Depth(s)	-249
----------------------	---	-----------------------------	---------------	------

Was drive shoe seal tested? ☒ Yes ☐ No ☒ Slide Depulviser How? ☐ Yes ☒ No

8 CASING/LINER:

Dia.	From	To	Gauge	Material	Casing	Liner	Welded	Threaded
16"	-153	-249	0.25	Steel	☒	☐	☒	☐
					☐	☐	☐	☐
					☐	☐	☐	☐
					☐	☐	☐	☐

Length of headpipe: _____ Length of Tailpipe: _____

9 PERFORATIONS/SCREENS:

From	To	Slot Size	Number	Diameter	Material	Casing	User
-160	-244	3/16"	2400		Steel	☒	☐
						☐	☐

STATIC WATER LEVEL OR ARTESIAN PRESSURE:

46 ft below ground

Artesian Pressure: lb

Describe access port or control devices: Well Cap

11 WELL TESTS:

☐ Pump ☐ Bailer ☒ Air ☐ Flowing Artesian

Flowing Artesian

Yield	Drawdown	Pumping Level	Time

Water Temp	Cold	Bottom hole temp
------------	------	------------------

Water Quality test or comments:

12 LITHOLOGIC LOG:

Bore Dia.	From	To	Remarks: Lithology, Water Quality & Temperature	Y	N
20	0	159	Existing 20" casing		
16	159	169	Sand & Gravel	X	
16	169	178	Clay		X
16	178	227	Gravel	X	
16	227	232	Sand & Small Gravel	X	
16	232	242	Gravel	X	
16	242	246	Clay & Gravel	X	
16	246	249	Gravel & Sand	X	
			Cut 16" casing off at -153'		
			-153 to -160 .250 blank		
			-160 to -244 .375 Perf		
			-244 to -249 .25 blank		
			Plugged bottom of hole with rock and		
			cement from -239 to -249.		

Completed Depth: 239 ft

Date Started: 11/01/09

Date Completed: 12/24/09

13 DRILLER'S CERTIFICATION:

1We certify that all minimum well construction standards were complied with at the time the rig was removed.

Firm: Independent Drilling BF Firm No. 343

Firm Official: [Signature] Date: 1/14/2010

Supervisor/Operator:  Date: 1/14/2010

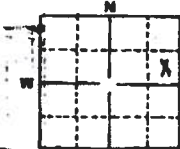
Domestic Well Logs within Impact Zone

USE TYPEWRITER
BALL POINT PEN

State of Idaho
Department of Water Administration
WELL DRILLER'S REPORT

RECEIVED
MAR 12 1975

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.
Department of Water Resources
Eastern District Office

1. WELL OWNER Name <u>JOHN J. JOHNSON</u> Address <u>MOORE, IDAHO 83255</u> Owner's Permit No. _____		7. WATER LEVEL Static water level <u>18</u> feet below land surface Flowing? ☐ Yes ☐ No G.P.M. flow _____ Temperature _____ ° F. Quality <u>good</u> Artesian closed-in pressure _____ p.s.i. Controlled by ☐ Valve ☐ Cap ☐ Plug																																			
2. NATURE OF WORK ☒ New well ☐ Deepened ☐ Replacement ☐ Abandoned (describe method of abandoning) _____		8. WELL TEST DATA ☐ Pump ☒ Bailer ☐ Other Discharge G.P.M. <u>25</u> Draw Down <u>NONE</u> Hours Pumped _____																																			
3. PROPOSED USE ☒ Domestic ☐ Irrigation ☐ Test ☐ Other (specify type) _____ ☐ Municipal ☐ Industrial ☐ Stock ☐ Waste Disposal or Injection		9. LITHOLOGIC LOG <u>042165</u> <table border="1"><thead><tr><th rowspan="2">Hole 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>6"</td><td>0</td><td>6</td><td>TOP SOIL</td><td></td><td></td></tr><tr><td></td><td>6</td><td>17</td><td>SAND & GRAVEL</td><td></td><td></td></tr><tr><td></td><td>17</td><td>22</td><td>CLAY</td><td></td><td></td></tr><tr><td></td><td>22</td><td>48</td><td>SAND & GRAVEL</td><td></td><td></td></tr></tbody></table>		Hole Diam.	Depth		Material	Water		From	To	Yes	No	6"	0	6	TOP SOIL				6	17	SAND & GRAVEL				17	22	CLAY				22	48	SAND & GRAVEL		
Hole Diam.	Depth		Material		Water																																
	From	To		Yes	No																																
6"	0	6	TOP SOIL																																		
	6	17	SAND & GRAVEL																																		
	17	22	CLAY																																		
	22	48	SAND & GRAVEL																																		
4. METHOD DRILLED ☒ Cable ☐ Rotary ☐ Dug ☐ Other																																					
5. WELL CONSTRUCTION Diameter of hole <u>6</u> inches Total depth <u>48</u> feet Casing schedule: ☒ Steel ☐ Concrete Thickness <u>1.250</u> inches Diameter <u>6</u> inches From <u>48</u> feet _____ inches _____ inches _____ feet _____ 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 <u>1/8</u> inches by <u>6</u> inches Number <u>24</u> From <u>35</u> feet <u>45</u> 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 <u>20</u> Material used in seal ☐ Cement grout ☒ Pudding clay ☐ Well cuttings Sealing procedure used ☐ Sherry pit ☐ Temporary surface casing ☐ Overbore to seal depth																																					
6. LOCATION OF WELL Sketch map location must agree with written location. <u>B34</u>  Subdivision Name _____ Lot No. _____ Block No. _____ County <u>BUTTE</u> <u>SE 1/4 NE 1/4 Sec. 28 T. 5 N. 26 E. 1</u>		10. Work started <u>Jan 29/75</u> finished <u>Jan 23/75</u>																																			
		11. DRILLERS CERTIFICATION Firm Name <u>Butter's Well Drilling</u> Firm No. <u>226</u> Address <u>Box 319 Moore, Idaho</u> Date <u>3/10/75</u> Signed by (Firm Official) <u>H. T. Guthrie</u> and <u>H. T. Guthrie</u> (Operator) <u>3661</u>																																			

USE ADDITIONAL SHEETS IF NECESSARY

FORWARD THE WHITE COPY TO THE DEPARTMENT

NOV 17 1968

17040218

WELL OWNER: John
Name Good M. Burch
Address Moore

Size of drilled hole: 16" Total
depth of well: 162' Standing water
level below ground: 19' Temp.
Fahr. ° Test delivery: gpm
or cfs Pump? ☐ Bail ☐
Size of pump and motor used to make test:

Length of time of test: _____ Hrs. Min.
 Drawdown: _____ ft. Artesian pressure: ft.
 above land surface Give flow _____ cfs
 or _____ gpm. Shutoff pressure: _____
 Controlled by: Valve ☐ Cap ☐ Plug ☐
 No control ☐ Does well leak around casing?
 Yes ☐ No ☒

DEPTH	MATERIAL	30120	WATER
FROM TO			YES OR NO
FEET FEET			

0	9	top soil
9	42	gravel sand - some clay (yes)

Manufacturer's name _____

Type _____ Model No. _____

Diam. _____ Slot size _____ Set from _____ ft. to _____ ft.

Diam. _____ Slot size _____ Set from _____ ft. to _____ ft.

Did any strata contain unusable water? Yes ☐
No. ☒ Type of water: _____
Depth of strata _____ ft. Method of sealing
strata off: _____

Locate well in section

Sec.

Work started: April, 1961
Work finished: April 17, 1961
Well Driller's Statement: This well was drilled under my supervision and this report is true to the best of my knowledge.
Name: Bill E. Findley
Address: 265 Patton, Blackfoot, Idaho
Signed by: Emory Findley
License No. _____ Date: 11-8-66

3029
USGS

WELL DRILLER'S REPORT

State law requires that this report be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

[illegible]

USE ADDITIONAL SHEETS IF NECESSARY

WELL DRILLER'S REPORT

State law requires that this report be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

[illegible]

USE ADDITIONAL SHEETS IF NECESSARY

ID NUMBER _____

State of Idaho Department of Water Resources
AUTHORIZATION TO ABANDON A WELL

1. WELL OWNER INFORMATION:

Date 10/27/10 Phone Number 231-4444
Name FANNY MAE Ripe - REMAX Co. LLC
Mailing Address _____
City _____ State _____ Zip Code _____

2. WELL LOCATION:

Township: 5N Range: 26E Section: 28 1/4 NE 1/4 SW 1/4
Gov't Lot No. _____ County _____
Street Address of well site: 3120 N. 337th
City MOORE Lot _____ Block _____ Subdivision Name: _____
GPS Location: Lat: 43.43.794 Long: 112.22.232

3. TYPE OF WELL:

☒ DOMESTIC ☐ MONITORING ☐ IRRIGATION ☐ OTHER _____
(Describe)

4. WELL INFORMATION: (Well depth, measured, casing size & static water level required)

Well Tag Number: 70 O/D
Previous Drilling Permit Number: _____
Water Right Number: _____
Well Log on File? ☐ Yes ☒ No
*Casing Size: 4 *Material: _____
Temperature: 87 < 85°F 85 > 85°F Flowing Artesian? ☐ Yes ☒ No
*Static Water Level: DRY (measured) * Well Depth 60' (measured)

5. REASON FOR ABANDONMENT OF WELL

O/D - DRY - Hooked to City Water System

6. PROPOSED METHOD OF ABANDONMENT:

(This Application must be reviewed prior to commencement of abandonment)

Filled with Bentonite

7. Drilling Company proposing abandonment H & H Well Service

8. License Number 541 Date of abandonment 10/20/10

9. APPLICANTS SIGNATURE Fanny Mae Ripe DATE: 10/27/10
Title owner

(Owner, Firm Representative, Other)

Form 238(4)-2
09/2006

ACTION OF THE DEPARTMENT OF WATER RESOURCES

This application for abandonment has been reviewed by IDWR on / / Verbal-10/24/2010
mm dd yy

This review does not constitute an endorsement by IDWR of the proper abandonment of this well.
Pursuant to Section 42-238(12), Idaho Code. All abandonments must meet the requirements of the
Administrative Rules for Well Construction Standards. (Abandonment of this well will require the
services of a well driller licensed in the State of Idaho unless a waiver has been granted.)

DEANIS M. DEAN Sr. Water Resource Agent
Signature of Authorized Department Representative Title

ABANDONMENT REPORT

ABANDONMENT PROCEDURES:

Must describe all details of work performed including perforations, sealing materials and how casing was removed.

PROCEDURE	FROM	TO	WEIGHT / VOLUME
Remove old Pump			
Filled 4" hole with			
Dentonite	- 6	60	450 LBS
DRY hole			

DRILLER'S CERTIFICATION

I/We certify that all minimum well construction standards were complied with

Company Name H+H Well Service License # 541
Driller Doug Hovick Date 10/22/10
Operator _____ Date _____

WELL DRILLER'S REPORT

State law requires that this report be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

1. WELL OWNER

1040218

Name Ward Thayne

Address Arco - Idaho

Owner's Permit No. _____

2. NATURE OF WORK

☒ New well ☐ Deepened ☐ Replacement

☐ Abandoned (describe method of abandoning) _____

3. PROPOSED USE

☒ Domestic ☐ Irrigation ☐ Test

☐ Municipal ☐ Industrial ☐ Stock

4. METHOD DRILLED

☒ Cable ☐ Rotary ☐ Dug ☐ Other

5. WELL CONSTRUCTION

Diameter of hole 6 inches Total depth 49 feet

Casing schedule: ☐ Steel ☐ Concrete

Thickness	Diameter	From	To
<u>.250</u> inches	<u>6</u> inches	<u>+1</u> feet	<u>49</u> feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet
_____ inches	_____ inches	_____ feet	_____ feet

Was a pecker or seal used? ☐ Yes ☒ No

Perforated? ☐ Yes ☒ No

How perforated? ☐ Factory ☐ Knife ☐ Torch

Size of perforation _____ inches by _____ inches

Number	From	To
_____ perforations	_____ feet	_____ 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 _____

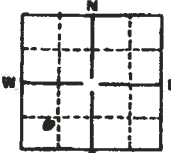
Placed from _____ feet to _____ feet

Surface seal? ☒ Yes ☐ No To what depth 18 feet

Material used in seal ☐ Cement grout ☒ Puddling clay

6. LOCATION OF WELL

Sketch map location must agree with written location.



County Butte

SW 1/4 SW 1/4 Sec. 4 T. 4 N., R. 26 E.

7. WATER LEVEL

Static water level 20 feet below land surface

Flowing? ☐ Yes ☒ No G.P.M. flow _____

Temperature _____ F. Quality _____

Artesian closed-in pressure _____ p.s.i.

Controlled by ☐ Valve ☐ Cap ☐ Plug

8. WELL TEST DATA

☐ Pump ☒ Bailor ☐ Other

Discharge G.P.M.	Draw Down	Hours Pumped
<u>20</u>	<u>110H4</u>	<u>1</u>

9. LITHOLOGIC LOG

30148

Hole Diam.	Depth		Material	Water	
	From	To		Yes	No
<u>6</u>	<u>0</u>	<u>7</u>	<u>clay</u>		
	<u>7</u>	<u>12</u>	<u>clay & gravel</u>		
	<u>12</u>	<u>26</u>	<u>gravel</u>		
	<u>26</u>	<u>29</u>	<u>sand</u>		
	<u>29</u>	<u>36</u>	<u>gravel & sand</u>		
	<u>36</u>	<u>49</u>	<u>gravel</u>		

10.

Work started 10/29/70 finished 10/31/70

11. DRILLER'S CERTIFICATION

2947

This well was drilled under my supervision and this report is true to the best of my knowledge.

Doug Cushman Drilling Co. 72

Driller's or Firm's Name _____ Number _____

445 Riverton Rd - Blackfoot

Address _____

Doug Cushman 11/3/70

Signed By _____ Date _____

USE ADDITIONAL SHEETS IF NECESSARY

FORWARD THE WHITE, BLUE, AND PINK COPIES TO THE DEPARTMENT



CHARLES G. BROCKWAY, Ph.D., P.E.

Brockway Engineering, PLLC
2016 North Washington Street, Suite 4
Twin Falls, Idaho 83301
(208) 736-8543 • charles.g.brockway@brockwayeng.com

EDUCATION

- | | |
|-----------|--|
| 1992-1995 | Iowa Institute of Hydraulic Research
University of Iowa, Iowa City, Iowa.
Ph.D., Civil and Environmental Engineering

Research was conducted under the Hunter Rouse Scholarship,
leading to the doctorate granted in December 1995. |
| 1989-1992 | University of Idaho, Moscow, Idaho.
B.S., Civil Engineering |
| 1988-1989 | Northwest Nazarene College, Nampa, Idaho. Major: Physics. |

EXPERIENCE

Professional

Managing Member, Brockway Engineering, PLLC
August 1995 to present. Areas of particular expertise include:

- Computer modeling of water resources systems
- Hydraulic, hydrologic, and environmental evaluations
- Statistical analysis and stochastic modeling
- Irrigation systems and crop water requirements
- Water conveyance and control system analysis and design
- Rainfall-runoff and flood plain-floodway analysis
- Idaho and western states water right transactions
- Economic analysis of water resources systems

P.E. Registrations: Idaho, Wyoming

Research

Graduate research: Quantitative assessment of the uncertainties associated with hydrologic reconstructions in augmenting historical information about low-flow phenomena.
Dr. A. Allen Bradley, Iowa Institute of Hydraulic Research, University of Iowa.

Undergraduate research: Leak detection in long oil pipelines under transient conditions
Dr. C. P. Liou, University of Idaho.

HONORS and AWARDS

University of Idaho Alumni Award for Excellence, 1992
Outstanding Senior Civil Engineering Student, 1992
Tau Beta Pi member
Phi Kappa Phi member
Golden Key National Honor Society member
National Dean's List member
Hunter Rouse Fellow, University of Iowa, 1992 - 1995

ACADEMIC PUBLICATIONS

- Brockway, C. G. and A. Allen Bradley (1995). Errors in streamflow drought statistics reconstructed from tree ring data. *Water Resources Research*, 31(9), 2279-2293.
- Brockway, C. G. (1995). An evaluation of streamflow reconstructions for estimation of drought statistics. Ph.D. Thesis, University of Iowa, Iowa City, Iowa.
- Brockway, C. G. and A. Allen Bradley (1996). Errors in reconstructed streamflow drought statistics. *13th Conference on Probability and Statistics in the Atmospheric Sciences*, American Meteorological Society.
- Liou, C.P., C. G. Brockway, and R. B. Miller (1991). Pipeline variable uncertainties and their effects on leak detectability. *1992 API Cybernetics Symposium*, Houston, Texas.

OTHER PUBLICATIONS

Dr. Brockway is the author or co-author of over 100 technical publications related to consulting services performed in the hydraulics, hydrology, and water resources fields. A listing can be provided upon request.

GRADUATE RESEARCH

Research was conducted at the Iowa Institute of Hydraulic Research under the Hunter Rouse scholarship. A brief summary of the main emphasis of the work is provided here.

Observed records of hydrologic variables such as streamflow are generally too short to yield reliable estimates of the characteristics of extreme events such as prolonged drought or large-scale temperature anomalies. In an effort to augment observed records, analysts have employed paleologic indicators such as the growth rings of trees, ice core composition, and sediment deposition characteristics as proxies for the desired hydrologic variable. If the paleologic information can be related to observed hydrologic information, a reconstruction of the hydrologic variable can be created for many years past.

Although reconstructions have been used frequently to make inferences about past drought or wet periods, or past temperature anomalies, time series statistics estimated from a reconstructed record are inherently more uncertain than those estimated from an observed record; they may be biased or have inflated standard error of estimation. This and other problems make records augmented with paleologic information less useful than they may appear.

The stochastic technique of Monte Carlo simulation was employed to investigate the usefulness of reconstructed hydrologic records. The estimation standard error and bias of important drought statistics was examined both in absolute terms and relative to expected uncertainty when an observed record is used. Uncertainty is dependent on the error in the reconstruction model, the length of data used to calibrate the model, the degree of autocorrelation present in the time series, and other factors. The phenomenon of "artificial smoothing" was identified and can lead to large biases in the estimated variance and other statistics. The presence of such bias may have led to erroneous conclusions about shifts in climate patterns by some users of hydrologic reconstructions. A Monte-Carlo processing technique was developed which greatly reduces estimation biases and should be used whenever statistics are estimated from a reconstruction.

AREAS OF EXPERTISE AND PRACTICE

Computer Modeling

Development, testing, and implementation of computer models for deterministic and stochastic analysis of hydraulic and hydrologic systems, both surface water and groundwater.

Groundwater Evaluations

Data collection, evaluation, and analysis of groundwater flow systems and contaminant transport.

Hydraulic Analysis and Design

Design and analysis of canal diversion and regulation structures, water measurement structures, spillways, pipelines, culverts, aqueducts, canals, pumping stations, surge-control devices, groundwater wells, irrigation systems, pipeline networks, municipal distribution systems.

Land Application of Wastewater

Evaluation and design of all aspects of wastewater treatment by land application, including hydrogeologic analysis and modeling, parameter loading analysis, environmental impact evaluation, system management and design, and permit acquisition and compliance.

Stream Bank Protection

Analysis of sedimentation and meander pattern evolution in natural waterways, both mountainous and low-gradient. Design of bank stabilization and protection structures. Design of river management projects including flood channel restoration, natural gravel bar removal, drop structures, and sills.

Water Rights Evaluations

Hydrologic analysis and transaction preparation for water right permits and transfers in compliance with current state policies, rules, and statutes. Crop evapotranspiration determination, climatic analysis; statistical analysis of climate and crop use variables; water requirements evaluations for irrigation, domestic, commercial, and industrial applications; consumptive use determination; field investigations, measurement and analysis of diversion capacity and water requirements.

Flood Analysis and Control

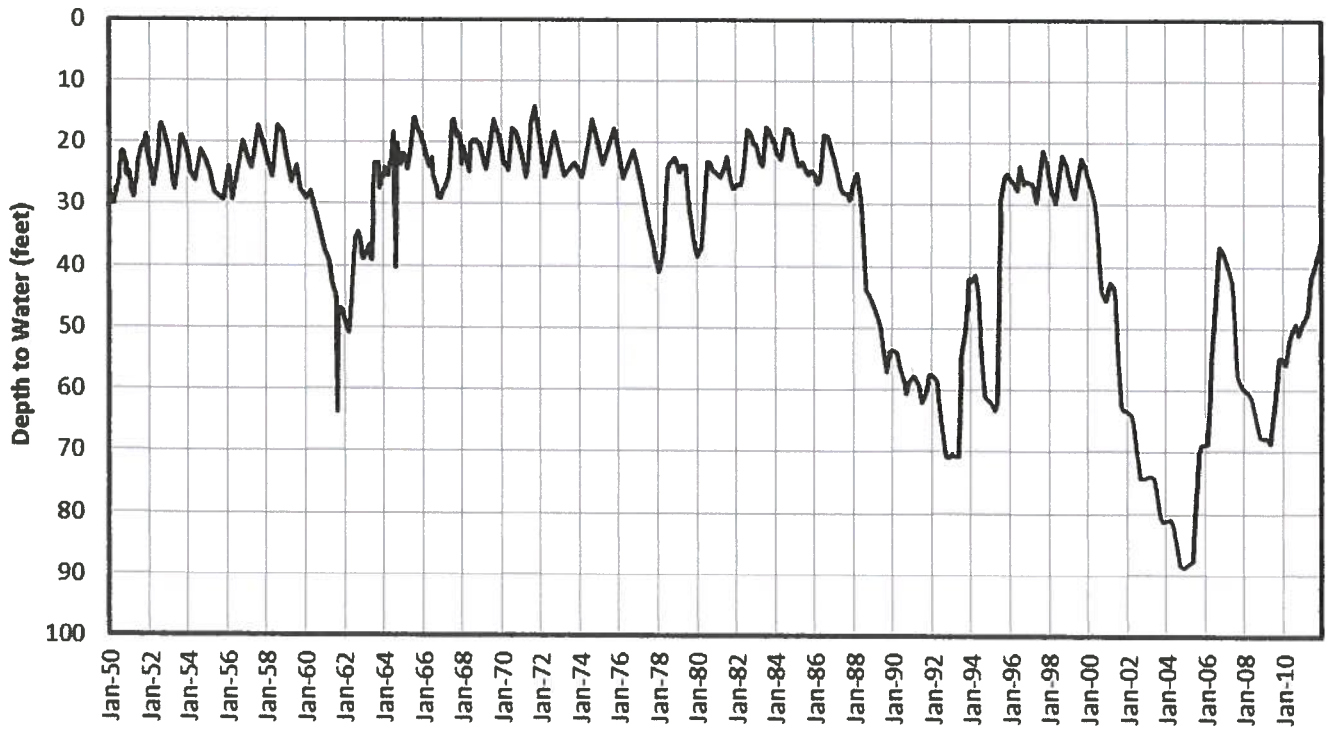
Estimation of flood-frequency relationships in natural and man-made drainages using statistical and deterministic approaches. Hydraulic analysis and computer modeling of waterways to predict water surface elevations and extent of inundation during flood events. Design of flood control structures and bank protection structures.

Water Demand and Sufficiency Analyses

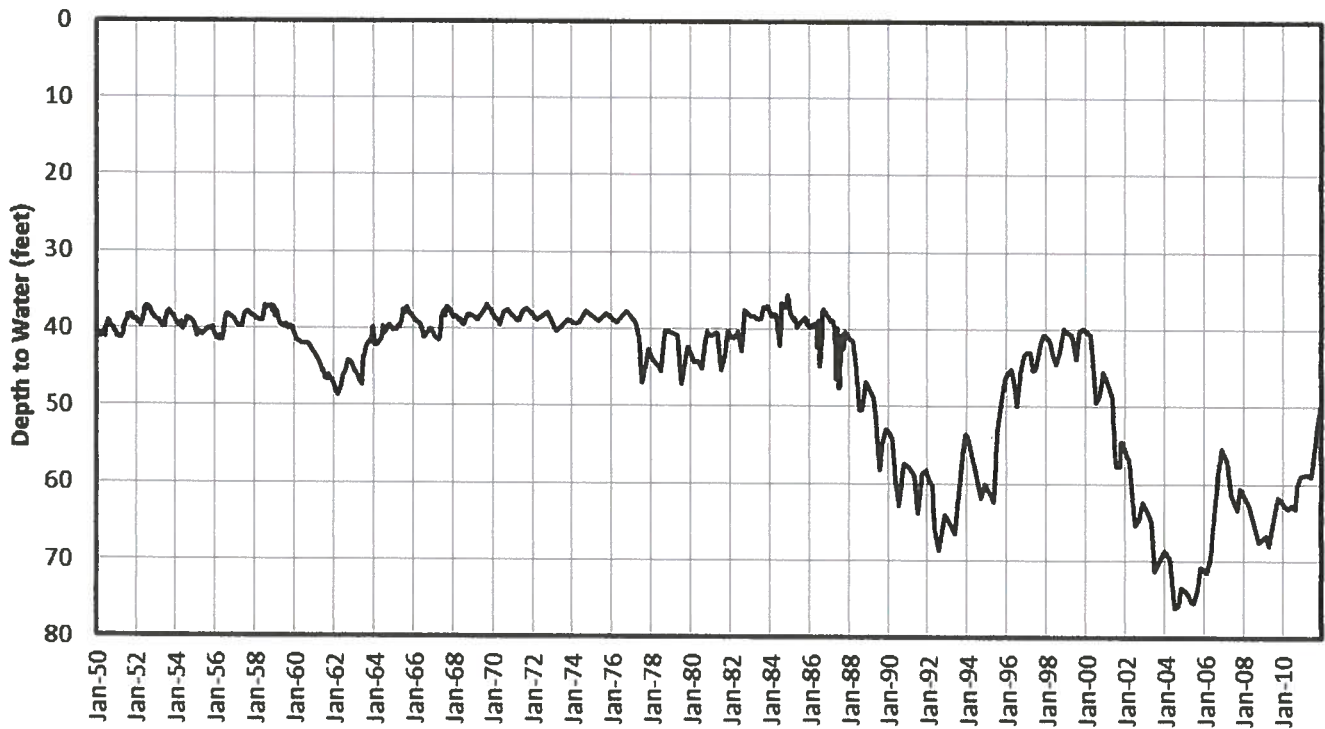
Analysis and determination of water supply suitability, source development feasibility, and other factors affecting water supplies for municipalities, residential developments, and industry.

Hydrography

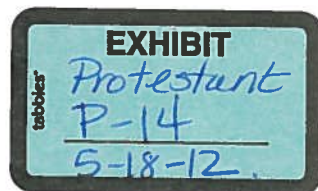
Discharge measurements in open-channels and closed-conduits using current meters, in-pipe impeller and propeller meters, and non-intrusive ultrasonic meters.



5N26E23CDA updated with IDWR data through December 2011



4N26E26DCD1 updated with IDWR data through December 2011



RECEIVED

MAY 07 2012

Department of Water Resources
Eastern Region

TELEPHONE
(208) 726-4421
FACSIMILE
(208) 726-0752

SPECK & AANESTAD
A PROFESSIONAL CORPORATION
ATTORNEYS

120 EAST AVENUE
POST OFFICE BOX 987
KETCHUM, IDAHO 83340

JAMES P. SPECK
jim@speckandaanestad.com
DOUGLAS J. AANESTAD
doug@speckandaanestad.com

May 3, 2012

Idaho Dept. of Water Resources
900 North Skyline Drive, Suite A
Idaho Falls, ID 83402-1718

**RE: APPLICATION FOR TRANSFER NO. 77610
IN THE NAME OF PARKINSON FARMS**

Dear IDWR:

Enclosed for filing in the above-referenced matter is a List of Potential Witnesses and a List of Exhibits. Also enclosed is a copy of each of these documents; please receipt date-stamp these copies and return them to me in the enclosed self-addressed postage-prepaid envelope I have enclosed for that purpose.

Thank you.

Sincerely yours,

SPECK & AANESTAD
A Professional Corporation



Jennifer Talmadge
Asst. to James P. Speck

Enclosures

RECEIVED

MAY 07 2012

Department of Water Resources
Eastern Region

James P. Speck, Esq., ISB #2067

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jim@speckandaanestad.com

Attorneys for Protestants Darrell E. McDonald and Norman K. Sowards

BEFORE THE IDAHO DEPARTMENT OF WATER RESOURCES

IN THE MATTER OF APPLICATION)

FOR TRANSFER NO. 77610 IN THE)

NAME OF PARKINSON FARMS)

LIST OF POTENTIAL WITNESSES

Parkinson Farms, Applicant.)

Protestants Darrell E. McDonald and Norman K. Sowards, submit the following list of witnesses they may call to testify at the hearing in this matter:

1. Dr. Charles G. Brockway
2. Darrell E. McDonald
3. Norman K. Sowards
4. Any of the other Protestants
5. Any witness identified as a witness by the Applicant

Dated this 3rd day of May, 2012.

SPECK & AANESTAD

A Professional Corporation

Attorneys for Protestants Darrell E. McDonald and
Norman K. Sowards

By


James P. Speck

CERTIFICATE OF SERVICE

I hereby certify that on the 3rd day of May, 2012, I served a true and correct copy of the foregoing LIST OF POTENTIAL WITNESSES on the following persons in the manner designated below:

Idaho Dept. of Water Resources
900 North Skyline Drive, Suite A
Idaho Falls, ID 83402-1718



United States Mail, Postage Prepaid



Hand Delivery



Facsimile

Darrell L. McDonald
P.O. Box 246
Arco, ID 83213



United States Mail, Postage Prepaid



Hand Delivery



Facsimile

Kirby A. Jensen
2781 N 3375 W
Moore, Idaho 83255



United States Mail, Postage Prepaid



Hand Delivery



Facsimile

Parkinson Farm
2253 N 3100 W
Arco, ID 83213



United States Mail, Postage Prepaid



Hand Delivery



Facsimile

Seth Beal
2827 N 3375 W
Moore, ID 83255



United States Mail, Postage Prepaid



Hand Delivery



Facsimile

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



United States Mail, Postage Prepaid



Hand Delivery



Facsimile


JAMES P. SPECK