

**SUPPLEMENTAL DIRECTOR'S REPORT
ON STANDARD FORM 5 AGREEMENT**

Subcase Nos. 36-7134 and 36-7135

In Re SRBA
Twin Falls County Civil Case No. 39576

Report to the SRBA District Court

Prepared by the Idaho Department of Water Resources
Karl J. Dreher, Director
Donald V. Shaff, Manager, Adjudication Technical Staff

December 1, 2005

I. INTRODUCTION

In his *Order Requesting I.R.E. 706 Report on Standard Form 5 Agreement* issued on June 23, 2005, Presiding Judge John M. Melanson requested that the Idaho Department of Water Resources (“IDWR”) submit a report pursuant to Rule 706, Idaho Rules of Evidence for subcases 36-7134 and 36-7135. Of special interest to the court are certain issues pertaining to an agreement reached between IDWR and the claimant/objector, Minidoka County School District #331. In response to this order and in accordance with Idaho Code § 43-1412(4), Administrative Order 1, and I.R.E., Rule 706, IDWR submits this Supplemental Director’s Report. This report was prepared under the supervision of Karl J. Dreher, Director, and Donald V. Shaff, Manager, Adjudication Technical Staff.

The following IDWR employees have knowledge of the information contained in this report: Shane Bendixsen, Technical Hydrogeologist and David R. Tuthill Jr., Administrator, Water Management Division.

II. FACTUAL BACKGROUND

The two parcels of land in question here lie within the boundaries of the Minidoka Irrigation District (MID). One is located north of Rupert and one is located to the south of Rupert. Originally the parcels were farmland. Irrigation was provided by surface water delivered by MID, for which the property owners paid the necessary assessments.

The parcels subsequently were purchased by the Minidoka County School District No. 331 (school district). The school district constructed a junior high school on each parcel. The construction included lawns and practice fields. Initially the school district irrigated the lawns and practice fields with the same surface water historically

delivered to the parcels by MID. The school district continued to pay the MID assessments of its predecessors in interest, and has continued to pay those assessments to this day.

The school district subsequently determined it would be more efficient to convert to a pressurized sprinkler irrigation system, but concluded that using the surface water provided by MID could not be efficiently done. Accordingly, it decided it would have a well drilled on each parcel to provide the water for the pressurized systems.

However, it viewed the purpose of the wells to be to recapture MID seepage water. It has always viewed the water it pumps as being MID water. It views the wells as merely providing an alternative delivery mechanism. Accordingly it applied for water right permits for the two wells--not to assert entitlement to water rights independent of MID, but rather merely as the most efficient means of obtaining the necessary IDWR permission to drill the wells. Permit Nos. 36-07134 and 36-07135 were issued, the wells were drilled, and ultimately licenses were issued to the school district.¹

The school district filed claims for the licenses in the SRBA and ultimately the rights were recommended and partially decreed mostly as licensed. However, the rights subsequently were re-recommended in the director's Basin 36 supplemental report for period of use for irrigation rights and for conjunctive management general provisions. The school district then filed objections to these re-recommendations, objecting both to

¹ In this regard the school district, as an MID shareholder, is standing in the shoes of MID in recapturing and re-using water delivered by MID. Accordingly it is logical to conclude that the licenses held by the school district do not evidence water rights at all; rather the rights providing the school district's water are held by either MID or the Bureau of Reclamation, or some combination thereof. The fact that these uses logically should be claimed under MID or BOR rights was discussed during settlement negotiations. However it was determined that if such were done, and license nos. 36-07134 and 36-07135 were decreed as disallowed by the SRBA Court, the school district would lose that which evidences its permission to drill and operate the two wells in question. Therefore, this approach was rejected in favor of retaining the two licensed rights, but adding language to clearly explain what the school district is doing. Moreover, it would as a practical matter be impossible to determine which MID or BOR rights this re-use is subsumed under.

the conjunctive management general provision and to the recommended period of use. The objection to the conjunctive management general provision subsequently was resolved by inclusion in the water right descriptions the remark that is now of concern to the court. The objection to the period of use was not pursued.

In pursuing its objections the school district contended that because the use in question was merely re-use of MID seepage water pumped from a perched aquifer created by MID's seepage and drainage water—separate and distinct from the Eastern Snake Plain Aquifer (ESPA)—it should not be recommended and decreed as if it were an ESPA groundwater right. The school district contended that this distinction must be recognized by inclusion of language exempting the two rights from any delivery calls and mitigation requirements that might in the future be imposed on ESPA groundwater rights.

During a lengthy period of settlement negotiations, which included study by IDWR's engineers as to whether the two wells were pumping from the perched aquifer or the ESPA, the director of IDWR agreed to include language exempting the two wells from delivery calls and mitigation requirements that might be imposed on ESPA groundwater rights if the school district could provide to IDWR acceptable evidence in the form of an engineering study that proved that the wells were not pumping ESPA water.

The existence of the perched aquifer underlying MID is not in doubt. (See November 29, 2005, memorandum of Shane Bendixsen, attached as Exhibit 1). One of the people who is most expert on it is Mr. Shane Bendixsen, an engineer currently employed by IDWR. It is historically well known that application of Minidoka Project water quickly raised the local water table to such a high degree that the local irrigation

districts were required to install an elaborate system of drains to lower the water table enough that farming could successfully be undertaken. The aquifer clearly is perched, but it drains to the north and northwest where ultimately it “spills” into the ESPA.

Even though the perched aquifer therefore is connected to the ESPA, the director was willing to agree to the school district’s position if it could be proved that the wells were intercepting water from the perched aquifer before it reached the ESPA. This is because IDWR generally recognizes an appropriator’s right to recapture and re-use ground water as well as surface water. With seepage water it obviously is very difficult as a practical matter to determine when the water has left the zone where the appropriator can still recapture and re-use it, versus when it has returned to the public water supply where it is subject to appropriation by another. The policy adopted by the director to make this determination is that seepage water is subject to recapture by the original appropriator down to the point where it reaches the regional aquifer. Thus in the present case water can be recaptured from the perched aquifer down to the point where the water reaches the ESPA.

This was not a major concern for the well on the school district parcel south of Rupert because that well was clearly pumping water from the perched aquifer. It was, however, very much an issue regarding the well on the parcel north of Rupert because that well is located in the area where water from the perched aquifer moves into the ESPA.

Pursuant to the director’s requirements, the school district commissioned an engineering study of the two wells. (A copy is attached as Exhibit 2). The engineer’s report was submitted to IDWR where it was reviewed by two engineers, Dave Tuthill, the

Adjudication Bureau Chief, and Shane Bendixsen. Both concurred in the conclusions of the report. (Mr. Bendixsen's memorandum in that regard is attached at Exhibit 3).

The report concluded that the south well was pumping water from the perched aquifer. However, the north well had been drilled all the way through the perched aquifer and into the underlying ESPA. Nonetheless, the report concluded that although there was ESPA water in the bottom of the well, hydrostatic pressure was pushing water from the perched aquifer into the well above the ESPA water, and that it was water from the perched aquifer that the well was pumping.

Based upon this finding IDWR concluded that the two wells were recapturing seepage water before it reached the ESPA; that the rights therefore were not ESPA groundwater rights; and that, accordingly, exemption language was appropriate. In subsequent negotiations the language contained in the Standard Forms 5 before the court was crafted, agreed upon, and incorporated into the descriptions of the water rights. Standard Forms 5 were subsequently executed and filed with the court.

III. RESPONSE TO THE COURT'S QUESTIONS

QUESTION 1: Is the hydrogeology one of a "perched aquifer" or more akin to the "groundwater mounding" resulting from surface drainage by the Minidoka Irrigation District Water?

ANSWER: The November 29, 2005 memorandum of Shane Bendixsen documents that this is a perched aquifer rather than merely groundwater mounding resulting from seepage water. (Attached as Exhibit 1). Groundwater mounding does take place, but it occurs within the perched aquifer and thus is distinct from the regional aquifer (ESPA). If this were not so, IDWR would not have agreed to the present settlement. In the past

IDWR has reviewed requests to consider a groundwater mound as distinct from the regional aquifer, and these requests have not been approved because IDWR does not view a groundwater mound within the regional aquifer as being distinct from the regional aquifer.

QUESTION 2: Does the inclusion of the shoulder remark which allows for the expanded irrigation season so long as it is subordinated to certain other rights, including rights from the ESPA, contradict the determination that the source is derived from a perched aquifer and is recaptured and reused water? If so, does the contradiction make the subordination language ambiguous or illusory? If the source for the rights is derived solely from a perched aquifer and is recaptured water, then what is the reason for subordination to other rights with sources from the ESPA?

ANSWER: IDWR views the season of use on these rights as helping to prevent injury to other rights through enlargement of the use, by insuring that the “re-use” of recaptured water does not occur outside of the time period within which the original use is allowed. The shoulder remark subordinates the use to all unsubordinated rights, not just unsubordinated ESPA groundwater rights. Therefore the shoulder remark is not illusory because it protects other—unsubordinated—users of water from the perched aquifer against enlargement of the season of use beyond that which was originally provided for in the licences. The two licenses upon which these rights are based set the May 1st to November 1st season of use, and this determination was not administratively contested by the school district at the time the licenses were issued. As determined by prior SRBA decisions both the school district and IDWR are bound by the terms of the license.

Therefore IDWR recommended the licensed season of use, but, as with all other similarly situated licenses, refined it by adding the standard shoulder remark to permit pre- and post-season use so long as such could be done without injury to other rights. IDWR recommended the season of use in this way in an attempt to be as consistent as possible in its recommendations of licensed seasons of use, and to make no more changes to the water right descriptions than were absolutely necessary to resolve the school district's objections. While an argument can be made that this more restrictive season of use is unnecessary to prevent injury since during part of the season of use it subordinates the re-use to water rights and priorities to which the use upon which it is based is not subordinated, the only one who could argue that it was harmed by this restriction is the school district.² And while the school district did in fact originally object to the recommended season of use, it ultimately chose not to pursue that objection.

QUESTION 3: Is the Court exceeding its jurisdiction by decreeing that the water right is not subject to a delivery call or any mitigation requirements imposed on ESPA groundwater rights?

ANSWER: Pursuant to Idaho Code § 42-1411(2)(j), as made applicable to the court by Idaho Code §42-1412(6), the court shall include in its partial decree of a right

such remarks and other matters as are necessary for definition of the right, the clarification of any element of a right, or for administration of the right by the director.

² The more restrictive season of use is in fact very fortuitous in the present circumstances. While IDWR has issued preliminary recommendations for the rights delivered by MID containing an unsubordinated season of use of the same length as the subordinated season of use for the two school district rights in question, preliminary negotiations may result in IDWR shortening the season of use for the rights delivered by MID. The more restrictive season of use for the two school district rights protects against the possibility that these negotiations could produce a shorter season of use for the "use" than for the "re-use".

Thus it is within the scope of authority granted to the court by the Idaho Legislature for it to decree remarks and other matters necessary for definition, clarification, or administration of the water right.

In the present situation the school district and IDWR have stipulated through the Standard Forms 5 presently before the court that the remark in question should be included in the partial decrees of the rights in question. As the legislature has granted the court the authority to determine if the remark is necessary, that is the determination that the court now must make.

If it finds the remark is necessary it is merely ratifying the conclusion that IDWR and the school district have already reached and expressed in the Standard Forms 5, viz. that the rights in question are not groundwater rights from the ESPA, and, thus, in the event of a call should be treated differently from ESPA groundwater rights. If on the other hand the court determines that the remark is not necessary, it is not carried forward into the partial decree to impose any limitation on IDWR's statutory authority to respond to delivery calls.

In other words, if the court approves the remark it is only imposing a limitation on IDWR's authority that IDWR has consented to have the court impose; if the court rejects the remark, then it is not in any way invading IDWR's authority and responsibility to respond to delivery calls because it merely is rejecting IDWR's self-imposed limitation on that authority. Accordingly, whichever way the court rules, it is not exceeding its jurisdiction by infringing upon IDWR's rights and statutory duties as an executive branch agency to respond to delivery calls or otherwise administer water rights.

Is the determination that the right is not subject to a call more appropriately an administrative determination that should be made when and if the issue arises?

ANSWER: By decreeing the elements of any water right the court is establishing parameters that in the event of a delivery call will ultimately help determine how that right will be treated in response to that call. The only thing the court is being asked to do in the present case that is different is to include language in the partial decrees for these two rights explaining that even though they otherwise may look like ESPA groundwater rights, they are not ESPA groundwater rights and are not to be subject to delivery calls or mitigation requirements that may be imposed on ESPA groundwater rights.

This determination can be made in advance of a call just as the determination of the elements of the right can be made in advance of a call. Then, as with all other rights, in the event of a delivery call the director will determine how these rights are to be impacted by the call based upon the court's decrees of both their elements and any remarks that further define or clarify those elements or impose conditions necessary for administration.

The language in question here does not exempt these rights from all calls; it only exempts them from delivery calls against ESPA groundwater rights the same as any other right that is not an ESPA groundwater right.

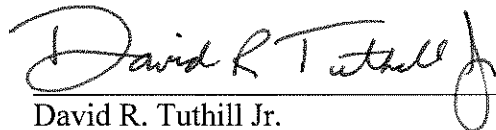
Is the determination consistent with the Basin-Wide 5 general provision that provides for the identification of sources that will be administered separately from other sources but does not provide which rights are or are not subject to a delivery call?

ANSWER: IDWR views inclusion of the remark as being consistent with Basin-Wide 5.

The conjunctive management general provision does not address re-use of appropriated water because re-use of water under a water right simply constitutes an attribute or characteristic of beneficial use. The Basin-Wide 5 general provision addresses connectivity of sources for purpose of determining priorities of rights, i.e. the right to beneficially use one's right vis a vis the rights of other appropriators to do the same.

The reason a remark is proposed in this very unusual situation is that here, unlike with a surface right, it is not obvious that the appropriator is re-using appropriated water. Without the remark these rights easily could be mistaken for ESPA groundwater rights. Thus, without the remark to indicate otherwise, the appropriator's use might appear to be such as to subject it to mitigation requirements that would not be imposed on other users re-using appropriated water.

IDWR respectfully submits the Supplemental Director's Report on Standard Form 5 Agreement in subcases 36-7134 and 36-7135 this 1st day of December 2005.


David R. Tuthill Jr.
Administrator, Water Management Division

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that on this 1 day of December, 2005, I caused to be served a true and correct copy of the foregoing by the following method to:

1. Original to:

Clerk of the District Court
Snake River Basin Adjudication
253 Third Avenue North
P.O. Box 2707
Twin Falls, ID 83303-2707

☐ Overnight Mail
☐ Regular Mail
☐ Hand-Delivered
☒ Facsimile via email

2. Copies to:

Roger D. Ling
Ling, Robinson & Walker
P.O. Box 396
Rupert, ID 83350

☐ Overnight Mail
☒ Regular Mail
☐ Hand-Delivered
☐ Facsimile

IDWR Document Repository
P.O. Box 82720
Boise, ID 83720-0098

☐ Overnight Mail
☐ Regular Mail
☒ Hand-Delivered
☐ Facsimile

MEMORANDUM

November 29, 2005

To: Nick Spencer

From: Shane Bendixsen, Technical Hydrogeologist, IDWR

Subject: **Minidoka School District 706 Report**

Attachments #1 and #2 present the locations of the two sites, the shallow ground water system, profile locations, and the ground water flow direction (northwest) for spring and fall. Attachments #3 and #4 present the profiles. This work was completed for use when the Minidoka Irrigation District was requesting credit for water lost in return flows to the Snake River. The following is a brief description of the shallow ground water system.

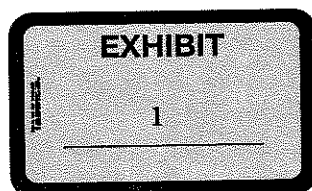
Keith Anderson (now deceased) for Anderson Engineering constructed a contour map showing the northwestern flow direction. The United States Geological Survey (USGS) mapped in the arial extent of the aquifer. This is the only other previous work.

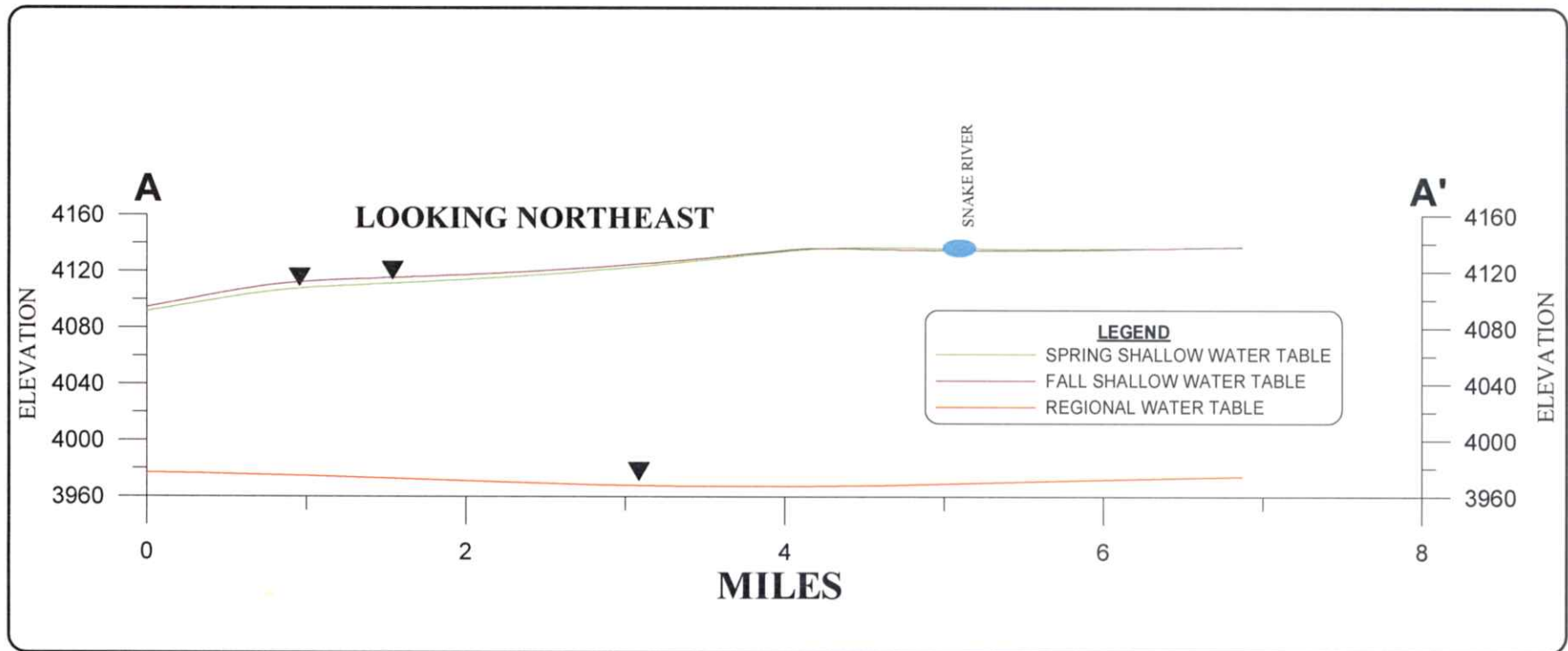
Based on work by IDWR staff it was decided that old lakebed sediments separate the shallow system from the regional system. When the area was first irrigated, drains had to be constructed into the Snake River because downward percolation was so small the area became a bog or a swamp and had to be dewatered in order for farming to continue.

Therefore ground water discharge from the area is from 1) downward percolation into the regional system, 2) drain flow back into the Snake River and 3), flow to the northwest into the regional system where the lakebed sediments pinch out.

Surface drains had to be constructed because of poor downward drainage. Based on return flow measurements, the drains return approximately five percent of the amount diverted, but this is both surface and ground water. Therefore the majority of the water returns to the regional system via the northward flow direction and infiltration. Mounding in the regional system does not appear to be taking place. Mounding does appear in the shallow system.

Briefly, the system is best described as a perched system separated from the regional system by old lake sediments. Ground water discharge is via surface drains to the Snake River, downward percolation to the regional system, and flow to the northwest into the regional system. Mounding only appears in the perched system and is controlled by surface drains in the shallow perched aquifer.

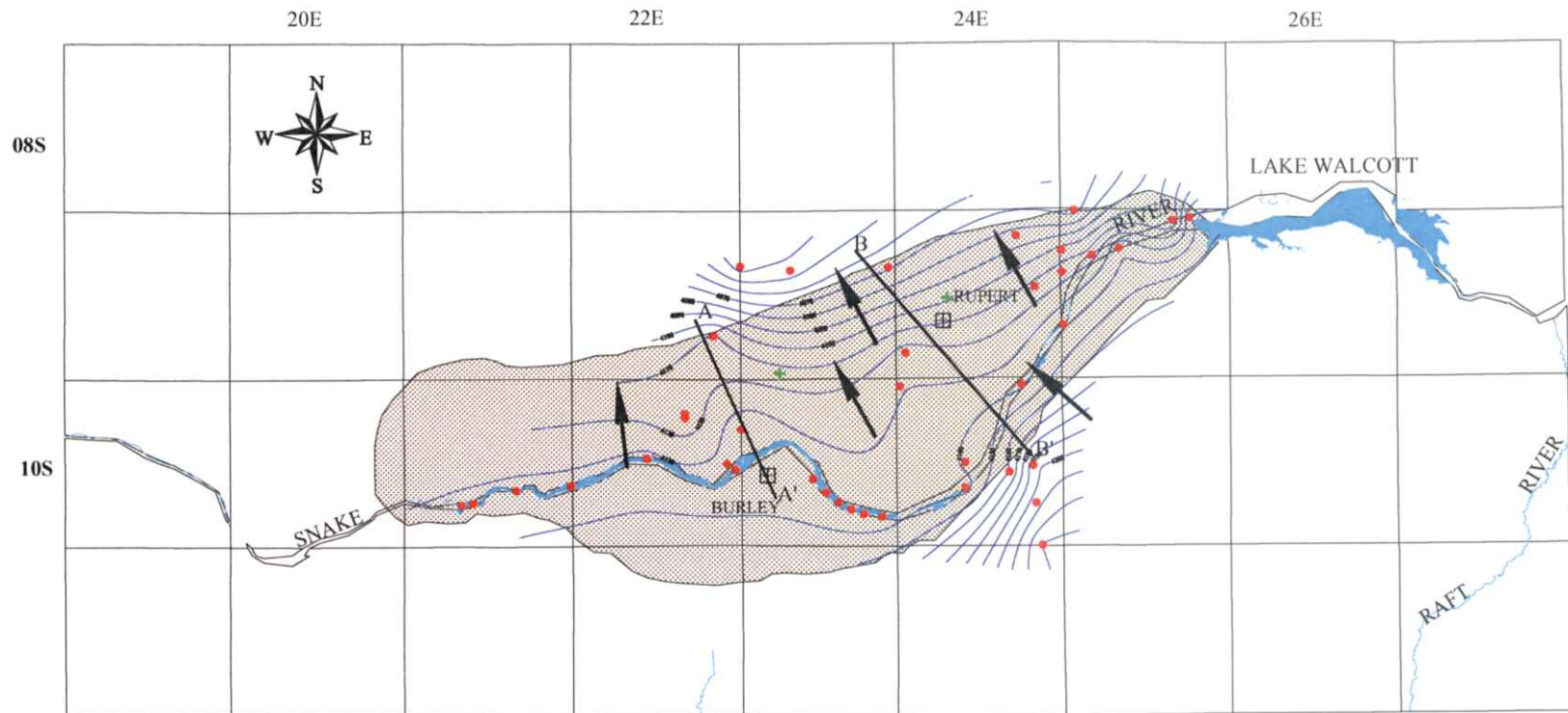




ATTACHMENT #3

FALL 2001 CONTOURS

WELLS LESS THAN 200 ft. TOTAL DEPTH



SHALLOW SYSTEM AS
PRESENTED BY THE USGS



GENERALIZED FLOW DIRECTION



WELL OF RIVER CONTOUR LOCATION



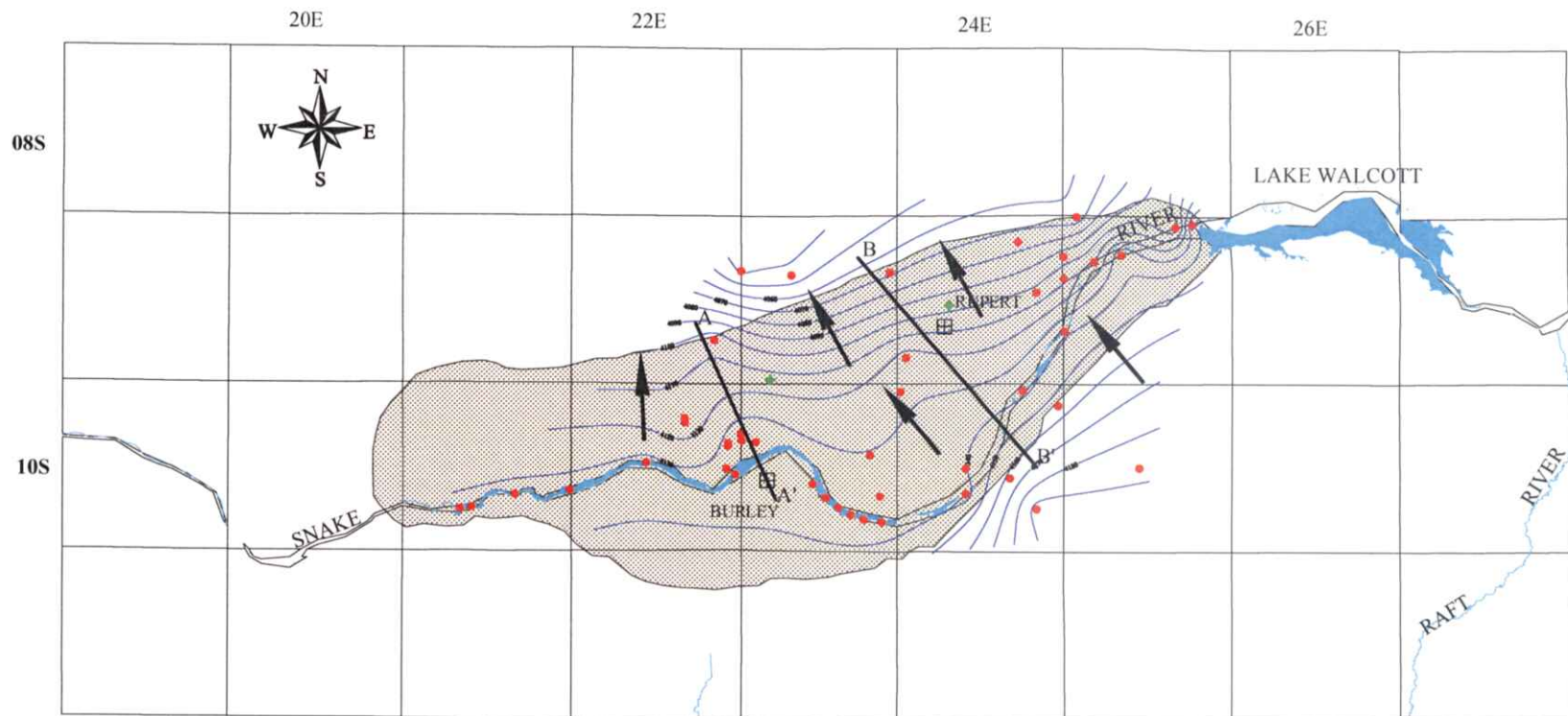
SCHOOL SITES

BASED ON 22 WELLS MEASURED IN FALL 2001

PREPARED BY THE IDAHO DEPARTMENT OF WATER RESOURCES OCT 2002 SB

SPRING 2002 CONTOURS

WELLS LESS THAN 200 ft. TOTAL DEPTH



SHALLOW SYSTEM AS
PRESENTED BY THE USGS



GENERALIZED FLOW DIRECTION



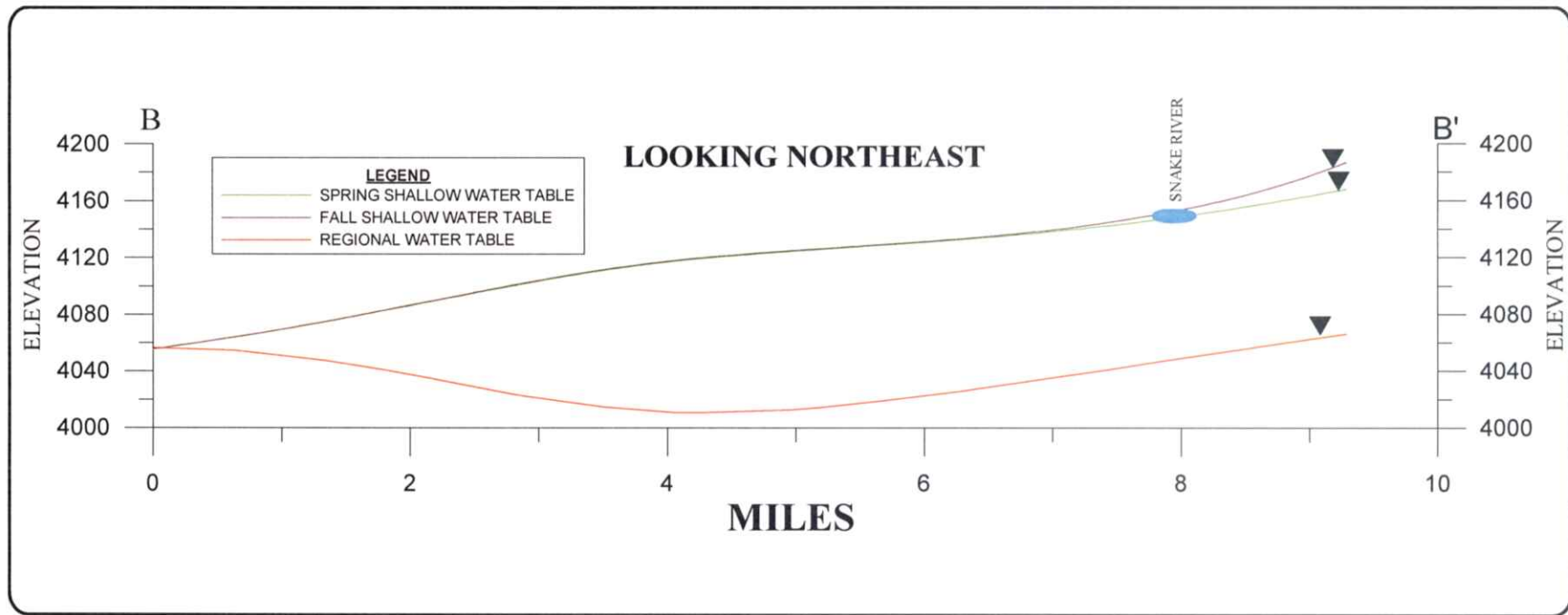
WELL OR RIVER CONTOUR LOCATION



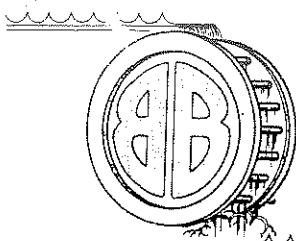
SCHOOL SITES

BASED ON 21 WELLS MEASURED IN SPRING 2002

PREPARED BY THE IDAHO DEPARTMENT OF WATER RESOURCES DEC 2001 SB



ATTACHMENT #4



BARNETT INTERMOUNTAIN WATER CONSULTING

RECEIVED
AUG 05 2004
DEPARTMENT OF
WATER RESOURCES

Technical Memorandum

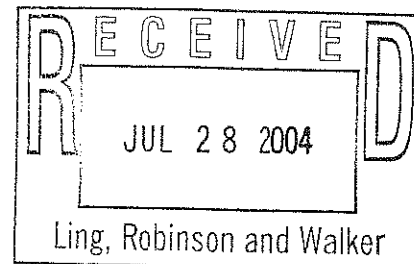
106 West 500 South, Suite 101
Bountiful, Utah 84010-6232
(801) 292-4662
FAX (801) 524-6320

To: Roger D. Ling, Esq.

From: Barnett Intermountain Water Consulting
Don A. Barnett, P.E., P.G.

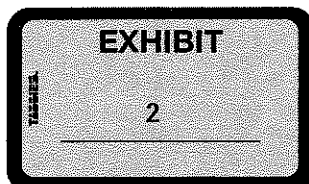
Subject: Minidoka County School District No. 331 –
SRBA Subcase Nos. 36-07134 and 36-07135

Date: July 24, 2004



A review was made of available data to determine whether or not the Minidoka County School District No. 331 East Minico and West Minico Middle School wells are producing water from the perched or regional aquifer systems. In so doing a review was also made of an IDWR memorandum from Scott King to Dave Tuthill dated July 18, 2002 (copy included as Attachment 1). In general I concur in the methodologies employed in the memorandum and concur in the conclusions with respect to the West Minico Middle School well (water right 36-7134). I disagree with the conclusion that the East Minico Middle School well (water right 36-7135) is partially producing waters from the regional aquifer. My disagreement is not in the methodology used but rather in the data which was available at the time for review.

General Hydrogeology – As discussed in the King memorandum, the area is underlain by a perched aquifer system. The areal extent of the perched system has been mapped by the USGS. The geologic setting is lacustrine sediments intercalated with volcanic material. Though there does seem to be some lithological correlation between nearby wells, there does not appear to be one single major confining bed separating the perched from the regional system, but rather a series of lacustrine sand and clay deposits with interspersed basalt and cinder beds. The less permeable layers act as aquitards to the downward movement of groundwater from the perched to the regional system. However, these less permeable layers do not appear to be laterally continuous and aerial extensive throughout the perched aquifer. Thus, it is more of a perched aquifer system with a series of perched zones rather than a single perched aquifer with one continuous confining layer. This is born out by the varying water levels within the perched system, with the declining water levels with depth.



Don A. Barnett, P. E.

Jack A. Barnett, P. E.

As you well know, there is not significant rainfall in the Rupert area. What little precipitation falls is generally consumed by the vegetation. However, since the early 1900's this area has been flooded with irrigation waters. There are accounts that perched water table rose some 85 feet the first year after irrigation began on the Minidoka Project. In ongoing studies that we are participating in with IDWR, it is being learned that the Minidoka Irrigation District applies several hundred thousand acre-feet each year to the land in excess of the crop water requirements. Some of this excess water is captured by drains and returned to the Snake River. However, the majority of this water recharges the perched aquifer system and then percolates downward and feeds the regional aquifer system.

King's Water Level Data – King used available IDWR groundwater levels to make his analysis. In the third paragraph of his memorandum it indicates that the elevation of the perched system near the East Minico well is 4085 feet, ten feet below the regional water system. This simply doesn't fit with the model and our understanding of the ground water in the area. This would mean that waters from the regional aquifer would be flowing up through confining zones into the perched system. However, the data available to King were based on a number of measurements "taken between 1986 and 1996. An overall generalization" (see notation on maps). Over this eleven-year period a number of well measurements were taken and lumped together. With such data, one is not able to differentiate between the perched and regional systems.

General Water Level Data – In our working with IDWR on ground water issues in the area, Shane Bendixsen, of the Department, compiled the well level data for the fall of 2001 and the spring of 2002. He indicated that if the data were all mixed, a nonsensical groundwater contour map would be created. However, when he plotted all of the wells which were less than 200' deep together and grouped separately the water level data for wells greater than 200' deep, then a normal groundwater contour map would be generated. Using these data he then generated a cross section showing the water levels for the perched and regional systems (included as Attachment 2). On Bendixsen's cross section I have plotted the data for the East Minico well. The well was a little northeast of the section and, hence, needed to be projected into it. You can see that the water level reported for this well reasonably corresponds with the average of the perched system and is well above the regional aquifer level. In fact, the bottom of the East Minico well is above the regional aquifer.

Nearest Monitor Well Data – As further corroboration of Bendixsen's work we can look for well specific data. In the USGS's groundwater monitoring network, the nearest regional aquifer well to the East Minico well is located only about one mile south in section 29. The surface elevation of the well is 4155 feet above sea level. Water level measurements made between 1980 and 2002 have varied between about 140 and 187 feet below land surface. This corresponds to an elevation of between about 4015 and 3988 feet above sea level. As was described in the King memorandum, the water elevation in the East Minico well was about 4089, or about

75 to 100 feet above the regional aquifer elevation. Further the bottom of the East Minico well is at an elevation of 4035, again, above the regional aquifer.

Lithologic Logs – We also reviewed several logs for wells in the area. Many of the wells are shallow like the East Minico well which is 120' deep. The log for the East Minico well (see Attachment 3) shows basalt and cinders in the bottom 40' of the well. This would make one wonder if it were completed in the regional basalt aquifer. However, as the well wasn't drilled any deeper, one doesn't know what lithology lies beneath the bottom of the well. We obtained from IDWR the two well logs for wells drilled deeper than 200' in the same section as the East Minico well and compared the three wells' lithology. All three have between 30 to 40 feet of sand at the top of the well. They then each have a more clayey zone which varies in thickness from 30 to 60 feet. Below the clay layer is a volcanic zone into which the East Minico well penetrated approximately 40 feet, potentially giving the impression that it had ended in the regional volcanic aquifer. However, the logs for the two deeper wells show this volcanic zone only extending to approximately 180 feet below the land surface with then a nearly 300 foot thick lacustrine series of beds extending to approximately 485 feet below the land surface before again penetrating basalt beds. This 300 foot thick lacustrine deposit has significant clay beds. These beds would tend to retard the downward movement of water causing it to pool or be perched above this aquitard. Thus, the lithology of the wells in the area corroborates the water level data and tends to confirm that the basalt and cinder zone from which the East Minico well produces water is separated from and perched above the regional aquifer.

Conclusion – I concur in the general methodologies employed in the King memorandum for differentiating between the aquifers. It appears that IDWR's better data and improved method for segregating the perched and regional aquifer data, shows that the East Minico well is producing from a zone which is perched above the regional system. Both the general water level data as well as specific data from the nearest well which is a part of the USGS's monitoring network show the regional system some 80 to 100 feet below the water level found in the East Minico well. In fact, the regional aquifer is below the bottom of the East Minico well. Further, the lithologic data support the water level data in showing that the zone that this well pumps from is separated from the regional system.

Attachment 1
King Memorandum

MEMORANDUM

To: Dave Tuthill *DT*
From: Scott King *SK*
Date: July 18, 2002

Subject: Recovery of project ground water within Minidoka Irrigation District

I have reviewed Roger Ling's May 29, 2002 letter regarding recovery of project ground water. It appears evident that one of the wells diverts water from the perched aquifer system, but it is not clear that the second does. Although much of the water in this shallow aquifer system likely results from MID irrigation diversions, it is likely that other sources also recharge this system.

The two water rights at issue include 36-7134 and 36-7135. The source for 36-7134 is a well at 9S 23E 32 NESE, just south of Paul, Idaho. The Well Driller's Report indicates a well with total depth of 105 feet constructed in sand, gravel, and clay with two water-bearing layers. The first is near the surface and the second from depths of 67 to 100 feet. A thick clay layer from 30 to 67 feet separates the water-bearing layers. Also, the well bottoms in another clay layer. Static water level at the time of construction (June 1970) was 6 feet below land surface. Topographic maps indicate the approximate land surface elevation near the well is 4150 feet. In this area, the top of the regional aquifer is at 4020 feet and the top of the perched aquifer is at 4120 feet (IDWR, 1997). The bottom of the borehole is near 4045 feet, 25 feet above the regional aquifer level. Other well logs from nearby boreholes indicate that the deeper clay layer is very thick, perhaps hundreds of feet thick, and separates the upper perched system from the deep regional aquifer found in basalt. Although the water-bearing layer of the regional system may be near 450-500 feet deep in this area, it appears to be under artesian pressure producing a static level from 130 to 230 feet in this area. The well constructed for 36-7134 clearly did not reach this deep regional system.

The second right, 36-7135, is supplied by a well at 9S 24E 20 NENW, on the north end of Rupert, Idaho. The Driller's Report for this well indicates a total depth of 120 feet constructed in sand, gravel, clay, and basalt. Water was encountered in a 30 to 38 foot layer of sand and pea gravel above a 42-foot thick layer of brown clay providing a static level of 23' 6". Drilling continued through the clay and into basalt and basalt cinders where significant water was found as indicated by lost cuttings. The final static water level was 66' 4" below land surface (June 1970). The land surface elevation near the well is 4155 feet; static water level was near 4089 feet, and the bottom of the borehole is at 4035 feet. Water contour maps indicate that in this area the regional aquifer level is near 4095 feet while the perched level is near 4085 feet. Based on the well log and water contour maps, it appears reasonable that the water encountered in the sand and gravel above the clay layer is from the perched system, whereas the basalt and cinders convey flow through the regional system and are confined by the thick clay layers above. Driller's Reports from deeper boreholes in the vicinity describe a variety of basalt, clay, and sand layers. One log indicates water in 450-600 foot range while another doesn't find water at these depths. Most of the other nearby wells are less than 175 feet deep with static water levels from 66 to 80 feet and appear to draw most water from basalt and cinders from depths greater than 110 feet. This source in basalt and cinders lies below a 30 to

80 foot thick clay layer located at depths of 35 to 100 feet. Water is usually found above this clay layer, but wells typically protrude past the clay into the basalt and cinders. This well likely draws water from both the perched and regional systems.

Available literature describes that the perched aquifer is found in the sands and gravels of the Burley lakebeds whereas the large regional system is found in deeper basalts. Extent of the perched aquifer is based on a USGS map (Whitehead, 1994). A copy of this map is included and was used as the source of a digital shapefile of the aquifer boundary (X:\Spatial\HydrologySurfaceandGround\Aquifers\perched_aq.shp). In this area, water flow in the regional aquifer is generally westward while flow in the perched system is to the north and northwest. The perched system spills off at the northern and western edges and is tributary to regional aquifer (Crosthwaite and Scott, 1956; IDWR, 1997). Diversion of water from the perched system will result in less recharge to the regional Snake Plain aquifer.

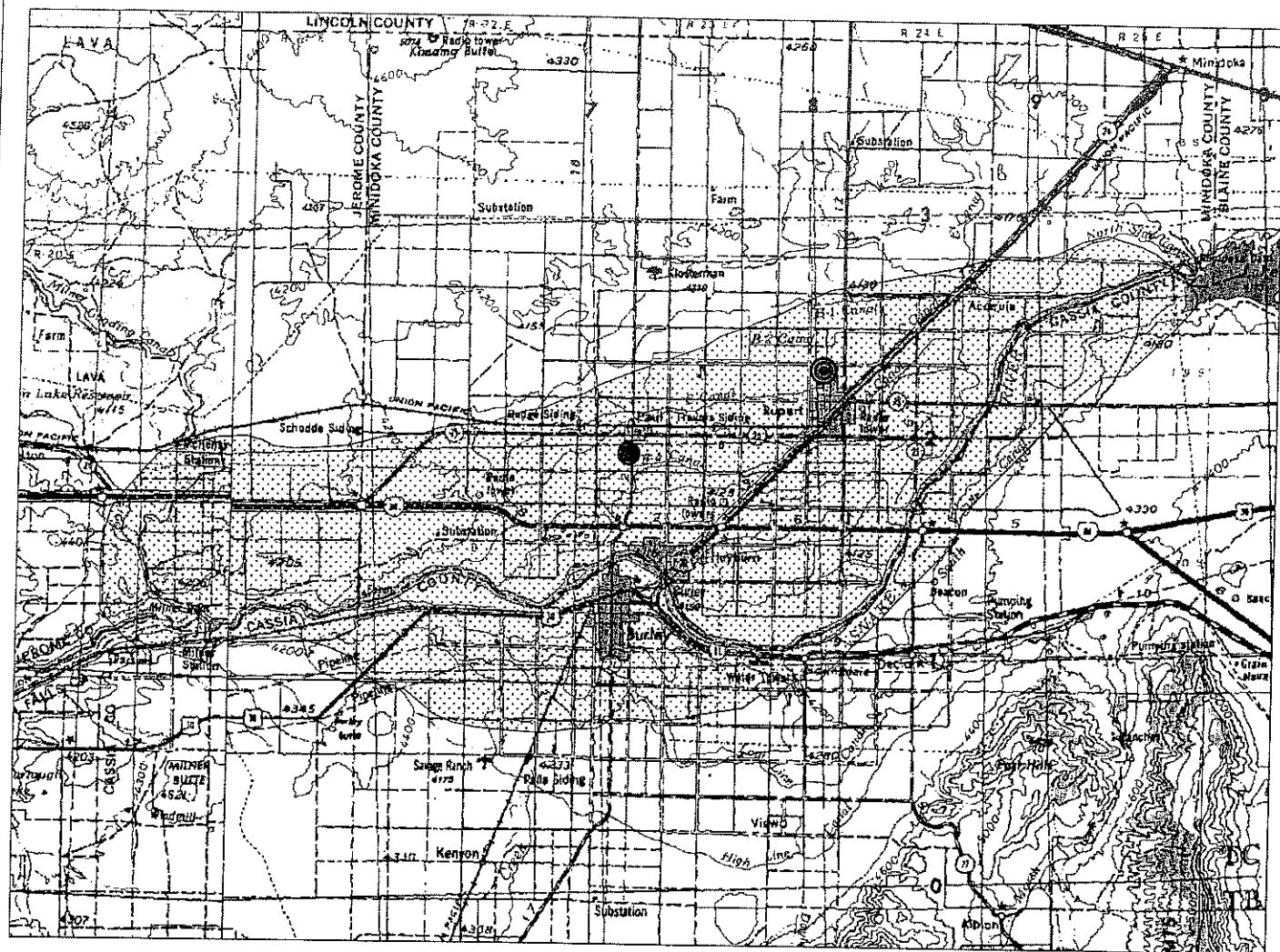
Near the 36-7134 (Paul) well, head differences between the two systems is near 100 feet. The head differences increase to the southwest and decrease to zero along the northern boundary of T9S R23E. Head differences between the aquifers also decreases to the north and east where in much of 9S 24E ground water elevation maps indicates that the perched system ranges from 10 to 20 feet above the regional aquifer to 10 feet below the regional system in the Rupert area and northward (IDWR, 1997).

Much of the recharge into the perched system is likely a result of local irrigation diversions (Crosthwaite and Scott, 1956; Garabedian, 1992; Nace, 1948). However, not all water in the system results from Minidoka Irrigation District losses. Average annual recharge due to precipitation in this area is 1 to 2 inches per year (Garabedian, 1992). Perched ground water contours indicate a northerly direction of flow and therefore other potential sources such as irrigation losses from projects on the south side of the Snake River as well as losses from the river itself contribute to the perched system in the Rupert and Paul areas. Losses from Lake Walcott and underflow from the Raft River basin may also charge the eastern portions of the perched system.

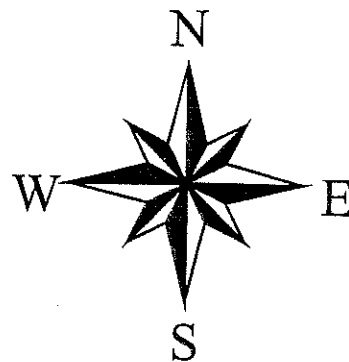
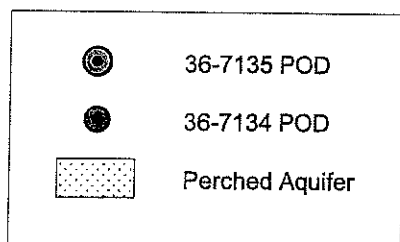
In summary, it is evident that 36-7134 draws water from the perched system while 36-7135 likely draws from both the perched and regional aquifers. A major source of supply to the perched aquifer results from local canals and irrigation losses. However, other sources including recharge due to precipitation and contributions from the Snake River, Lake Walcott, and irrigation projects on the south side of the Snake River are also likely.

- Crosthwaite, E.G., and Scott, R.C., 1956, Ground Water in the North Side Pumping Division Minidoka Project, Minidoka County, Idaho: U. S. Geological Survey.
- Garabedian, S.P., 1992, Hydrology and Digital Simulation of the Regional Aquifer System, Eastern Snake River Plain, Idaho: U. S. Geological Survey.
- IDWR, 1997, Burley Rupert Area Ground Water Data.
- Nace, R.L., 1948, Preliminary report on Ground Water in Minidoka County, Idaho with special reference to The North Side Pumping Division of the Minidoka Project: U. S. Geological Survey.
- Whitehead, R.L., 1994, Ground Water Atlas of the United States Idaho, Oregon, Washington: U. S. Geological Survey.

Rupert Area Perched Aquifer



8 0 8 16 Miles



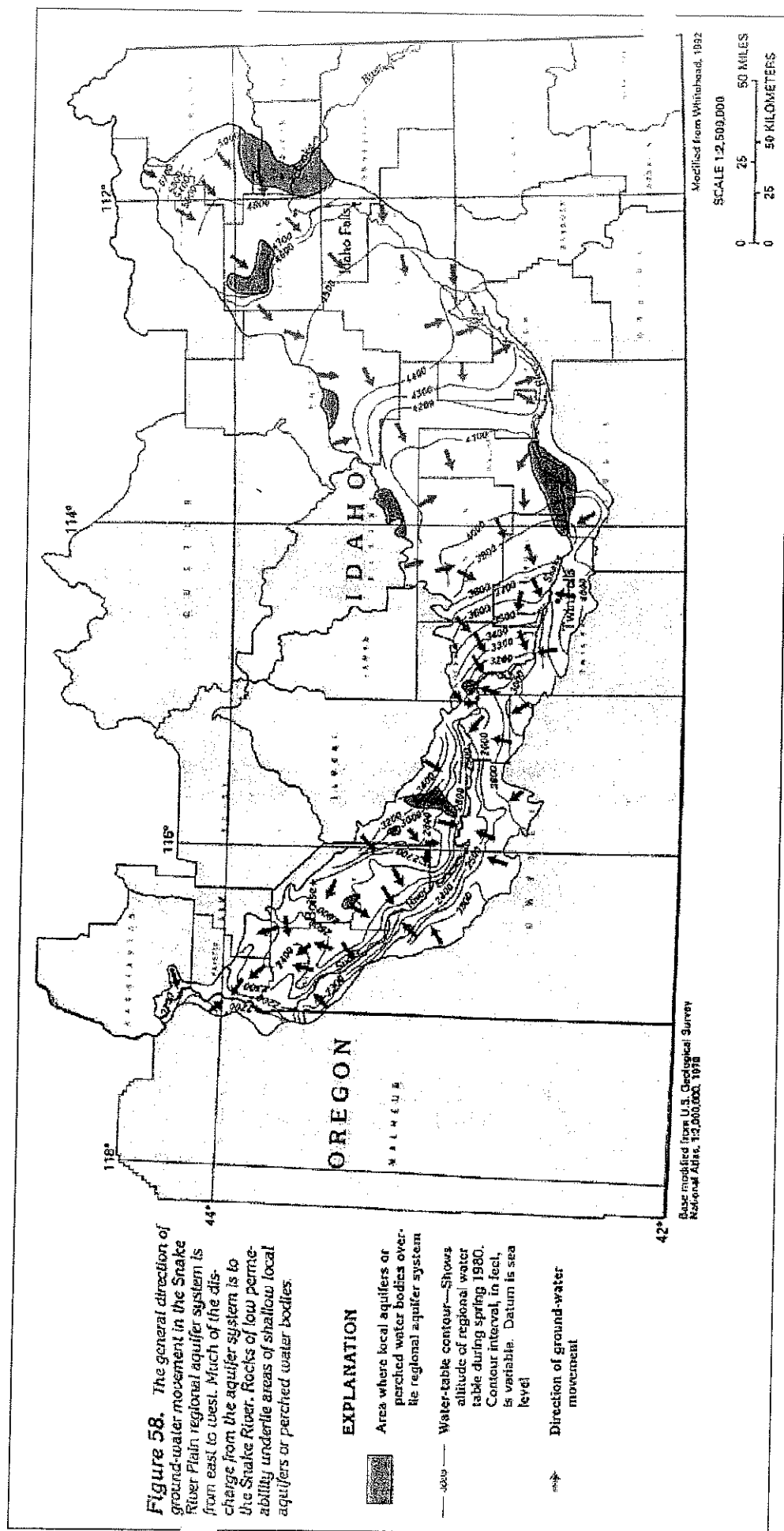


Figure 1. From Ground Water Atlas of the United States (http://capp.water.usgs.gov/gwa/ch_h/jpeg/H058.jpeg).

GROUND WATER DATA

This map shows the regional contours.

Perched Elev
- Regional Elev

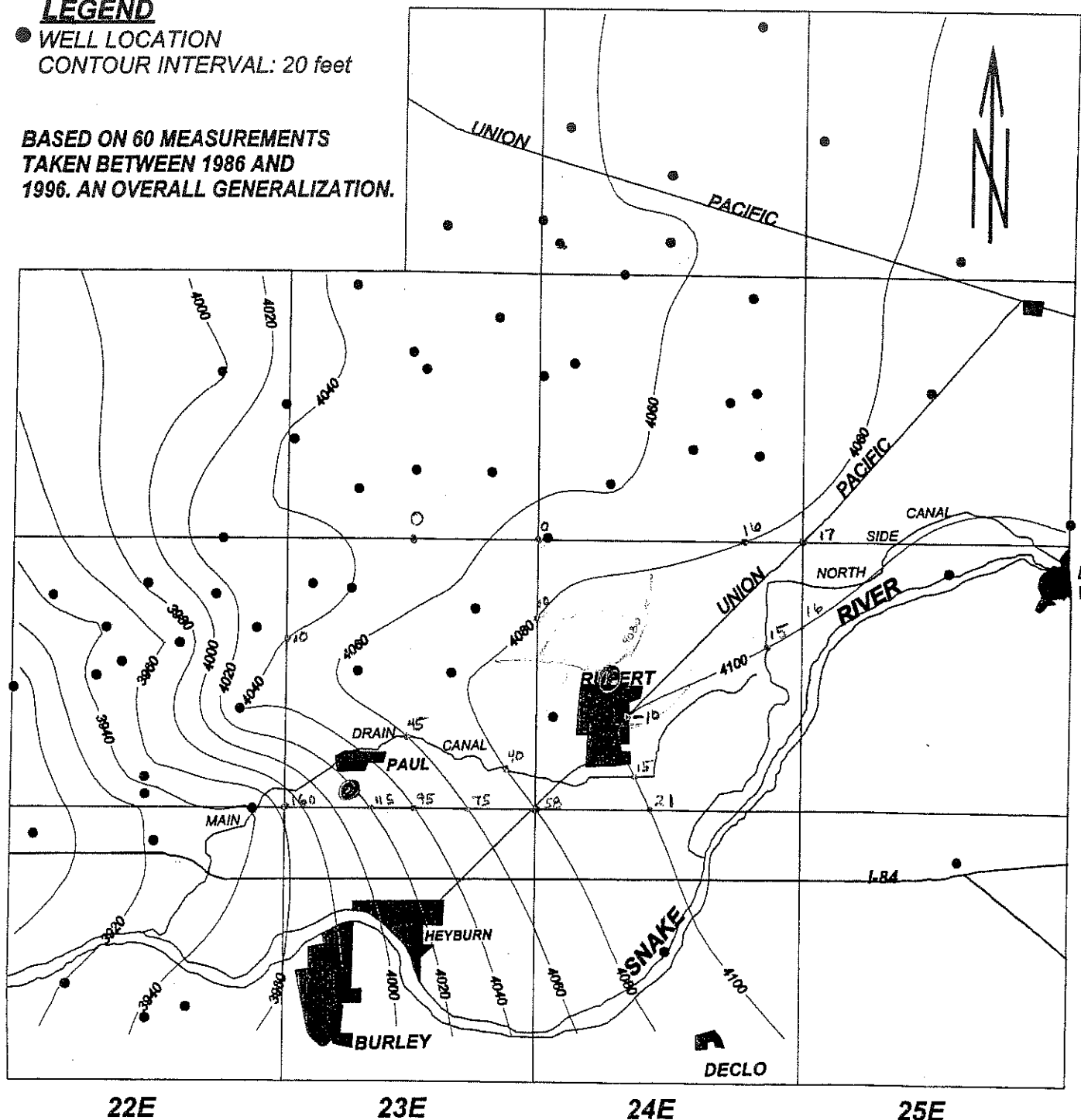
My pencil values are head difference between perched and regional systems.

In the read area, regional head values exceed perched head values.

LEGEND

- WELL LOCATION
- CONTOUR INTERVAL: 20 feet

BASED ON 60 MEASUREMENTS
TAKEN BETWEEN 1986 AND
1996. AN OVERALL GENERALIZATION.



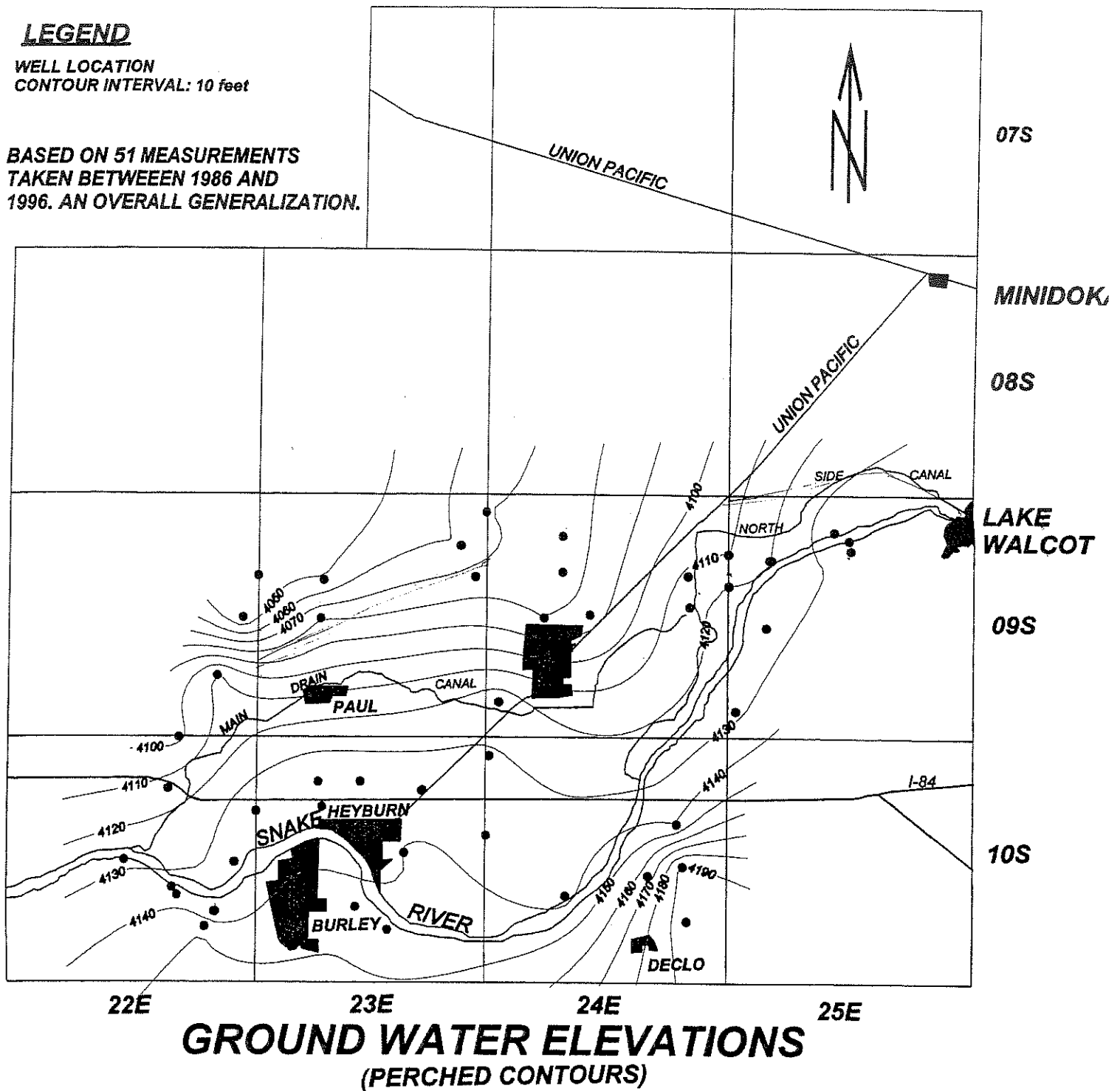
GROUND WATER ELEVATIONS

(REGIONAL CONTOURS)

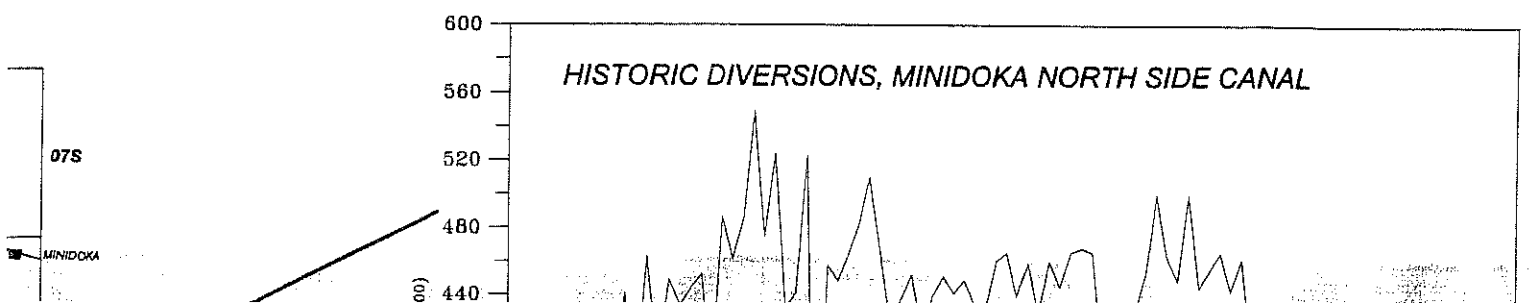
LEGEND

WELL LOCATION
CONTOUR INTERVAL: 10 feet

BASED ON 51 MEASUREMENTS
TAKEN BETWEEN 1986 AND
1996. AN OVERALL GENERALIZATION.

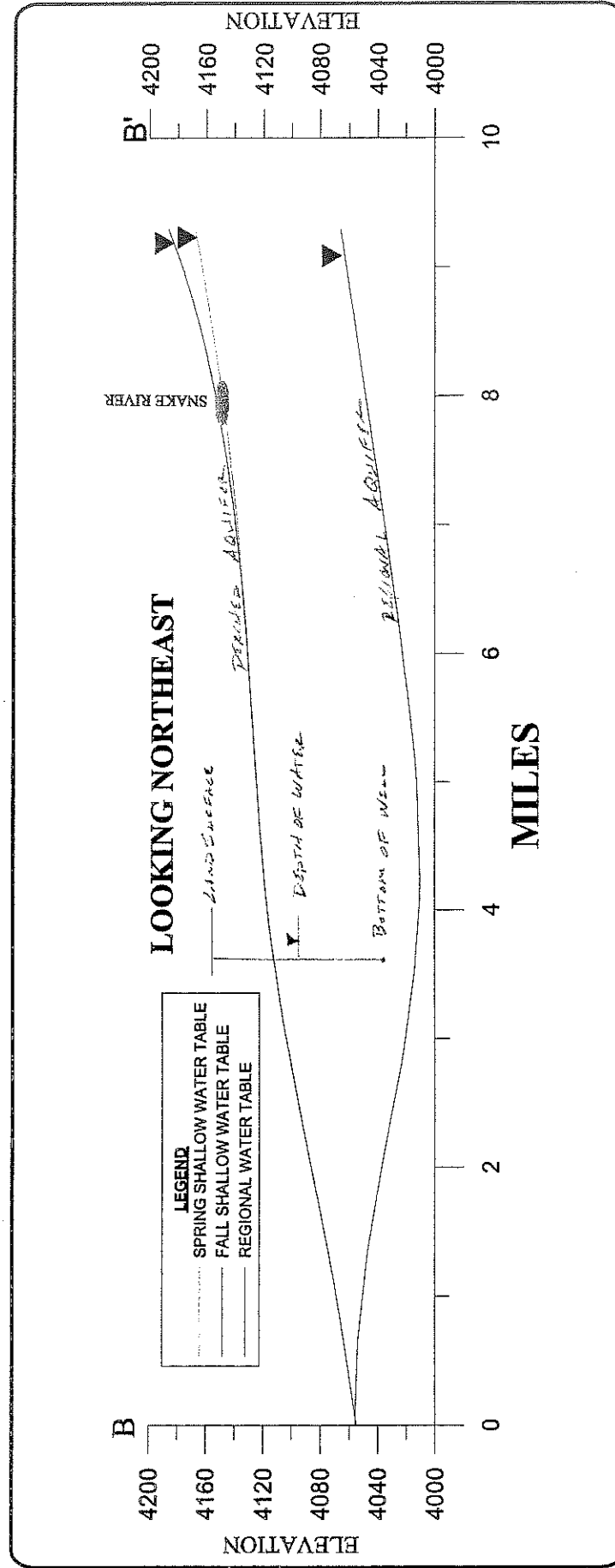


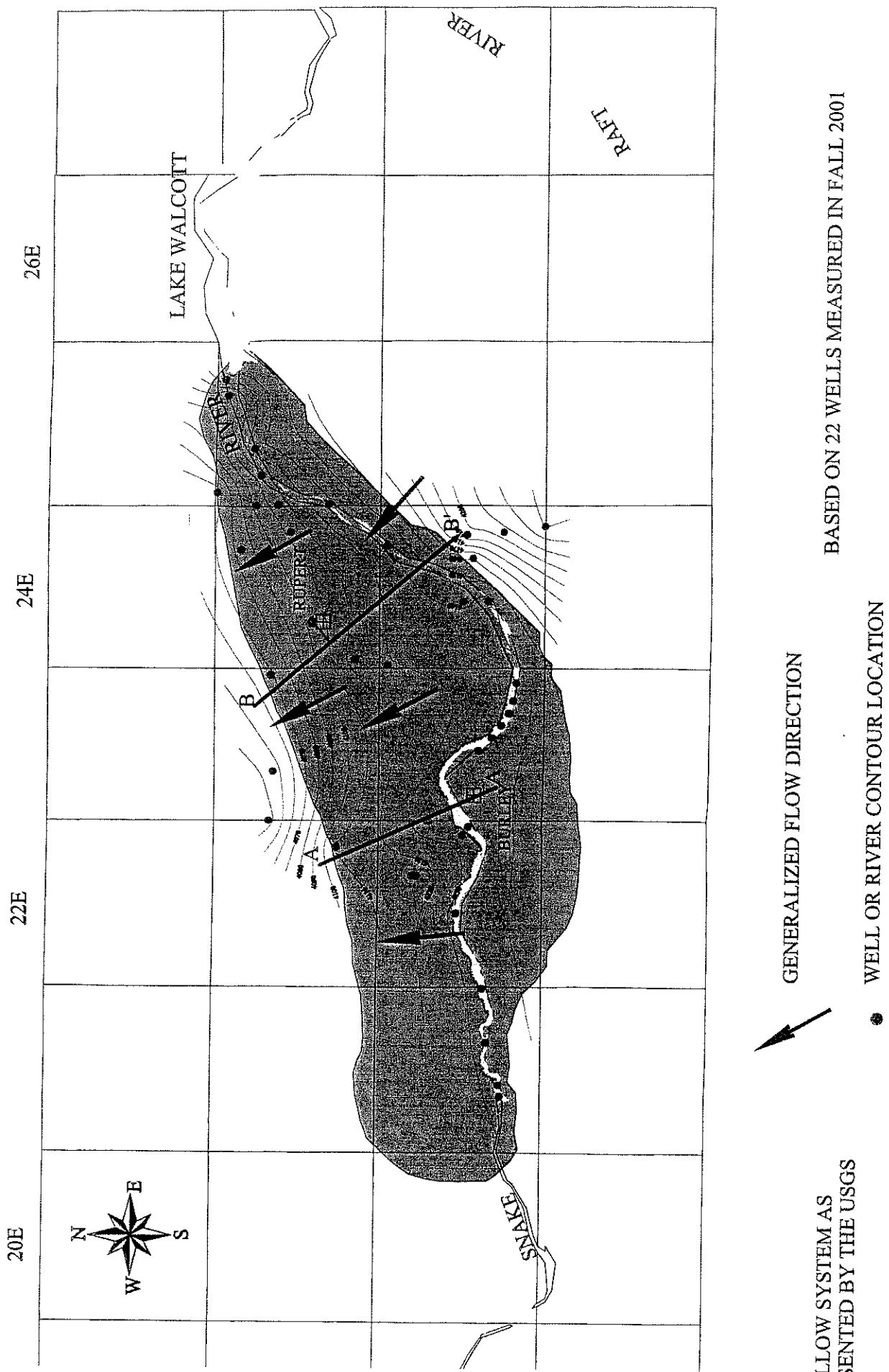
HISTORIC DIVERSIONS, MINIDOKA NORTH SIDE CANAL



Attachment 2
Aquifer Cross Section

BURLEY - LAKE WALCOTT AREA





LOW SYSTEM AS
SENT BY THE USGS

GENERALIZED FLOW DIRECTION

BASED ON 22 WELLS MEASURED IN FALL 2001

WELL OR RIVER CONTOUR LOCATION

Attachment 3
East Minico and Near-by Well Logs

WELL DRILLER'S REPORT

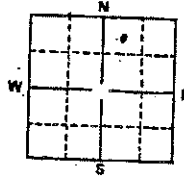
*State law requires that this report be filed with the State Reclamation Engineer within 30 days after completion or abandonment of the well.

1. WELL OWNER Name <u>Minidoka County School District</u> Address <u>Rupert, Idaho</u> Owner's Permit No. <u>36-7135</u> 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 <u>8</u> inches Total depth <u>120</u> feet Casing schedule: ☒ Steel ☐ Concrete <table style="width: 100%;"> <thead> <tr> <th>Thickness</th> <th>Diameter</th> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td><u>1/4</u> inches</td> <td><u>8-5/8</u> inches</td> <td><u>+1</u> feet</td> <td><u>90</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> </tbody> </table> Was a packer or seal used? ☐ Yes ☒ No Perforated? ☐ Yes ☒ No How perforated? ☐ Factory ☐ Knife ☐ Torch Size of perforation _____ inches by _____ inches <table style="width: 100%;"> <thead> <tr> <th>Number</th> <th>From</th> <th>To</th> </tr> </thead> <tbody> <tr> <td>_____ perforations</td> <td>_____ feet</td> <td>_____ 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> </tbody> </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? ☒ Yes ☐ No To what depth <u>20</u> feet Material used in seal ☒ Cement grout ☒ Puddling clay 6. LOCATION OF WELL Sketch map location must agree with written location. County <u>Minidoka</u> <u>36 7135</u> <u>N.E. 1/4 Sec. 20</u>, T. <u>9</u> N/S, R. <u>24</u> E/W	Thickness	Diameter	From	To	<u>1/4</u> inches	<u>8-5/8</u> inches	<u>+1</u> feet	<u>90</u> feet	_____ inches	_____ inches	_____ feet	_____ feet	_____ inches	_____ inches	_____ feet	_____ feet	_____ inches	_____ inches	_____ feet	_____ feet	Number	From	To	_____ perforations	_____ feet	_____ feet	_____ perforations	_____ feet	_____ feet	_____ perforations	_____ feet	_____ feet	7. WATER LEVEL Static water level <u>66' 4"</u> feet below land surface Flowing? ☐ Yes ☒ No G.P.M. flow _____ Temperature <u>60</u> ° F. Quality <u>good</u> Artesian closed-in pressure _____ p.s.i. Controlled by: ☐ Valve ☐ Cap ☐ Plug 8. WELL TEST DATA ☐ Pump ☐ Bailor ☐ Other <table style="width: 100%;"> <thead> <tr> <th>Discharge G.P.M.</th> <th>Draw Down</th> <th>Hours Pumped</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td></tr> </tbody> </table> 9. LITHOLOGIC LOG <table style="width: 100%;"> <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>12</td> <td>0</td> <td>20</td> <td>Sand</td> <td> </td> <td>X</td> </tr> <tr> <td>10</td> <td>20</td> <td>30</td> <td>Sand</td> <td> </td> <td>X</td> </tr> <tr> <td>10</td> <td>30</td> <td>38</td> <td>Sand and Pea Gravel (Static level 23' 6")</td> <td>X</td> <td> </td> </tr> <tr> <td> </td> <td>38</td> <td>80</td> <td>Brown Clay</td> <td> </td> <td>X</td> </tr> <tr> <td> </td> <td>80</td> <td>90</td> <td>Gray Basalt</td> <td> </td> <td>X</td> </tr> <tr> <td>8</td> <td>90</td> <td>95</td> <td>Gray Basalt</td> <td> </td> <td>X</td> </tr> <tr> <td> </td> <td>95</td> <td>116</td> <td>Gray Basalt cinders, lost</td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td>Approx 75% cuttings.</td> <td>X</td> <td> </td> </tr> <tr> <td> </td> <td>116</td> <td>120</td> <td>Red Basalt cinders, lost</td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td>all cuttings.</td> <td>X</td> <td> </td> </tr> </tbody> </table> 10. Work started <u>May 27, 1970</u> finished <u>June 1, 1970</u> 11. DRILLER'S CERTIFICATION This well was drilled under my supervision and this report is true to the best of my knowledge. <u>36-7135</u> <u>Commons Drilling Co</u> 46 Driller's or Firm's Name Number <u>Box 126, Rupert, Idaho 83350</u> Address Signed By <u>Ray L. Commons</u> Date <u>June 13, 1970</u>	Discharge G.P.M.	Draw Down	Hours Pumped										Hole Diam.	Depth		Material	Water		From	To	Yes	No	12	0	20	Sand		X	10	20	30	Sand		X	10	30	38	Sand and Pea Gravel (Static level 23' 6")	X			38	80	Brown Clay		X		80	90	Gray Basalt		X	8	90	95	Gray Basalt		X		95	116	Gray Basalt cinders, lost						Approx 75% cuttings.	X			116	120	Red Basalt cinders, lost						all cuttings.	X	
Thickness	Diameter	From	To																																																																																																																
<u>1/4</u> inches	<u>8-5/8</u> inches	<u>+1</u> feet	<u>90</u> feet																																																																																																																
_____ inches	_____ inches	_____ feet	_____ feet																																																																																																																
_____ inches	_____ inches	_____ feet	_____ feet																																																																																																																
_____ inches	_____ inches	_____ feet	_____ feet																																																																																																																
Number	From	To																																																																																																																	
_____ perforations	_____ feet	_____ feet																																																																																																																	
_____ perforations	_____ feet	_____ feet																																																																																																																	
_____ perforations	_____ feet	_____ feet																																																																																																																	
Discharge G.P.M.	Draw Down	Hours Pumped																																																																																																																	
Hole Diam.	Depth		Material	Water																																																																																																															
	From	To		Yes	No																																																																																																														
12	0	20	Sand		X																																																																																																														
10	20	30	Sand		X																																																																																																														
10	30	38	Sand and Pea Gravel (Static level 23' 6")	X																																																																																																															
	38	80	Brown Clay		X																																																																																																														
	80	90	Gray Basalt		X																																																																																																														
8	90	95	Gray Basalt		X																																																																																																														
	95	116	Gray Basalt cinders, lost																																																																																																																
			Approx 75% cuttings.	X																																																																																																															
	116	120	Red Basalt cinders, lost																																																																																																																
			all cuttings.	X																																																																																																															

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. **JUN 16 1970**

RECEIVED

1. WELL OWNER Name <u>City of Rupert</u> Address <u>Rupert, Idaho</u> Owner's Permit No. <u>36-7115</u>		7. WATER LEVEL Static water level <u>67</u> feet below land surface Flowing? ☐ Yes ☒ No G.P.M. flow _____ Temperature <u>61</u> ° 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 <table border="1"><thead><tr><th>Discharge G.P.M.</th><th>Draw Down</th><th>Hours Pumped</th></tr></thead><tbody><tr><td>1500</td><td>36.5'</td><td>3</td></tr><tr><td>1950</td><td>50'</td><td></td></tr></tbody></table>		Discharge G.P.M.	Draw Down	Hours Pumped	1500	36.5'	3	1950	50'																																																																																																																																																																																																														
Discharge G.P.M.	Draw Down	Hours Pumped																																																																																																																																																																																																																							
1500	36.5'	3																																																																																																																																																																																																																							
1950	50'																																																																																																																																																																																																																								
3. PROPOSED USE ☒ Domestic ☒ Irrigation ☐ Test ☐ Municipal ☐ Industrial ☐ Stock		9. LITHOLOGIC LOG <u>050410</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>6</td><td>Sandy Top Soil</td><td></td><td></td></tr><tr><td></td><td>6</td><td>30</td><td>Sand (Gray + Brown) - Surface</td><td></td><td></td></tr><tr><td></td><td>30</td><td>34</td><td>Gravel + Sand (Gray-Brown)</td><td></td><td></td></tr><tr><td></td><td>34</td><td>65</td><td>Brown Clay</td><td></td><td></td></tr><tr><td></td><td>65</td><td>77</td><td>Gray Basalt Firm</td><td></td><td></td></tr><tr><td></td><td>77</td><td>144</td><td>Gray Basalt (Hard)</td><td></td><td></td></tr><tr><td></td><td>144</td><td>151</td><td>Red + Gray Basalt (Broken)</td><td></td><td></td></tr><tr><td></td><td>151</td><td>162</td><td>Red + Gray Basalt (Firm - Caving From 144)</td><td></td><td></td></tr><tr><td></td><td>162</td><td>170</td><td>Gray Basalt (Hard)</td><td></td><td></td></tr><tr><td></td><td>170</td><td>173</td><td>Gray Basalt (Broken)</td><td></td><td></td></tr><tr><td></td><td></td><td></td><td>A FEW porous CUTTINGS</td><td></td><td></td></tr><tr><td></td><td>173</td><td>176</td><td>Gray Basalt (Firm - Hard)</td><td></td><td></td></tr><tr><td></td><td>176</td><td>185</td><td>Gray Basalt (Broken - Some cinders)</td><td></td><td></td></tr><tr><td>16"</td><td>185</td><td>200</td><td>Gray sand + clay (Heaving)</td><td></td><td></td></tr><tr><td></td><td>200</td><td>221</td><td>Pure Gray Sand (Very Fine)</td><td></td><td></td></tr><tr><td></td><td>221</td><td>231</td><td>Sandy Gray Clay (Caving)</td><td></td><td></td></tr><tr><td></td><td>231</td><td>312</td><td>Gray Clay (Dry - Sticky)</td><td></td><td></td></tr><tr><td>12"</td><td>312</td><td>315</td><td>Sandy Gray Clay</td><td></td><td></td></tr><tr><td></td><td>315</td><td>345</td><td>Gray Clay + Sandy Seams</td><td></td><td></td></tr><tr><td></td><td>345</td><td>350</td><td>Sticky Gray Clay</td><td></td><td></td></tr><tr><td></td><td>350</td><td>361</td><td>Fine Gray Sand (Caving - Badly - Heaving up casing)</td><td></td><td></td></tr><tr><td></td><td>361</td><td>396</td><td>Dry, Sticky Gray Clay</td><td></td><td></td></tr><tr><td></td><td>396</td><td>424</td><td>Packed Gray Sand (Caving)</td><td></td><td></td></tr><tr><td></td><td>424</td><td>426</td><td>Sticky Dry Gray Clay</td><td></td><td></td></tr><tr><td></td><td>426</td><td>472</td><td>Packed Gray Sand (Caving)</td><td></td><td></td></tr><tr><td></td><td>472</td><td>475</td><td>Sticky Dry Gray Clay</td><td></td><td></td></tr><tr><td></td><td>475</td><td>482</td><td>Gray Basalt (Firm - Drive casing to rock)</td><td></td><td></td></tr><tr><td></td><td>482</td><td>502</td><td>Gray Basalt (Hard - Caving From 478')</td><td></td><td></td></tr><tr><td></td><td>502</td><td>507</td><td>Broken Gray Basalt</td><td></td><td></td></tr><tr><td></td><td>507</td><td>523</td><td>Gray Basalt (Very Hard)</td><td></td><td></td></tr><tr><td></td><td>523</td><td>528</td><td>Broken Gray Basalt (Chy Seams)</td><td></td><td></td></tr><tr><td></td><td>528</td><td>532</td><td>Gray Basalt (Hard) Chy Seams</td><td></td><td></td></tr><tr><td></td><td>532</td><td>535</td><td>Brownish Gray Sand + Clay</td><td></td><td></td></tr><tr><td></td><td>535</td><td>538</td><td>Brownish Gray Clay (Sticky)</td><td></td><td></td></tr></tbody></table>		Hole Diam.	Depth		Material	Water		From	To	Yes	No	20"	0	6	Sandy Top Soil				6	30	Sand (Gray + Brown) - Surface				30	34	Gravel + Sand (Gray-Brown)				34	65	Brown Clay				65	77	Gray Basalt Firm				77	144	Gray Basalt (Hard)				144	151	Red + Gray Basalt (Broken)				151	162	Red + Gray Basalt (Firm - Caving From 144)				162	170	Gray Basalt (Hard)				170	173	Gray Basalt (Broken)						A FEW porous CUTTINGS				173	176	Gray Basalt (Firm - Hard)				176	185	Gray Basalt (Broken - Some cinders)			16"	185	200	Gray sand + clay (Heaving)				200	221	Pure Gray Sand (Very Fine)				221	231	Sandy Gray Clay (Caving)				231	312	Gray Clay (Dry - Sticky)			12"	312	315	Sandy Gray Clay				315	345	Gray Clay + Sandy Seams				345	350	Sticky Gray Clay				350	361	Fine Gray Sand (Caving - Badly - Heaving up casing)				361	396	Dry, Sticky Gray Clay				396	424	Packed Gray Sand (Caving)				424	426	Sticky Dry Gray Clay				426	472	Packed Gray Sand (Caving)				472	475	Sticky Dry Gray Clay				475	482	Gray Basalt (Firm - Drive casing to rock)				482	502	Gray Basalt (Hard - Caving From 478')				502	507	Broken Gray Basalt				507	523	Gray Basalt (Very Hard)				523	528	Broken Gray Basalt (Chy Seams)				528	532	Gray Basalt (Hard) Chy Seams				532	535	Brownish Gray Sand + Clay				535	538	Brownish Gray Clay (Sticky)		
Hole Diam.	Depth		Material		Water																																																																																																																																																																																																																				
	From	To		Yes	No																																																																																																																																																																																																																				
20"	0	6	Sandy Top Soil																																																																																																																																																																																																																						
	6	30	Sand (Gray + Brown) - Surface																																																																																																																																																																																																																						
	30	34	Gravel + Sand (Gray-Brown)																																																																																																																																																																																																																						
	34	65	Brown Clay																																																																																																																																																																																																																						
	65	77	Gray Basalt Firm																																																																																																																																																																																																																						
	77	144	Gray Basalt (Hard)																																																																																																																																																																																																																						
	144	151	Red + Gray Basalt (Broken)																																																																																																																																																																																																																						
	151	162	Red + Gray Basalt (Firm - Caving From 144)																																																																																																																																																																																																																						
	162	170	Gray Basalt (Hard)																																																																																																																																																																																																																						
	170	173	Gray Basalt (Broken)																																																																																																																																																																																																																						
			A FEW porous CUTTINGS																																																																																																																																																																																																																						
	173	176	Gray Basalt (Firm - Hard)																																																																																																																																																																																																																						
	176	185	Gray Basalt (Broken - Some cinders)																																																																																																																																																																																																																						
16"	185	200	Gray sand + clay (Heaving)																																																																																																																																																																																																																						
	200	221	Pure Gray Sand (Very Fine)																																																																																																																																																																																																																						
	221	231	Sandy Gray Clay (Caving)																																																																																																																																																																																																																						
	231	312	Gray Clay (Dry - Sticky)																																																																																																																																																																																																																						
12"	312	315	Sandy Gray Clay																																																																																																																																																																																																																						
	315	345	Gray Clay + Sandy Seams																																																																																																																																																																																																																						
	345	350	Sticky Gray Clay																																																																																																																																																																																																																						
	350	361	Fine Gray Sand (Caving - Badly - Heaving up casing)																																																																																																																																																																																																																						
	361	396	Dry, Sticky Gray Clay																																																																																																																																																																																																																						
	396	424	Packed Gray Sand (Caving)																																																																																																																																																																																																																						
	424	426	Sticky Dry Gray Clay																																																																																																																																																																																																																						
	426	472	Packed Gray Sand (Caving)																																																																																																																																																																																																																						
	472	475	Sticky Dry Gray Clay																																																																																																																																																																																																																						
	475	482	Gray Basalt (Firm - Drive casing to rock)																																																																																																																																																																																																																						
	482	502	Gray Basalt (Hard - Caving From 478')																																																																																																																																																																																																																						
	502	507	Broken Gray Basalt																																																																																																																																																																																																																						
	507	523	Gray Basalt (Very Hard)																																																																																																																																																																																																																						
	523	528	Broken Gray Basalt (Chy Seams)																																																																																																																																																																																																																						
	528	532	Gray Basalt (Hard) Chy Seams																																																																																																																																																																																																																						
	532	535	Brownish Gray Sand + Clay																																																																																																																																																																																																																						
	535	538	Brownish Gray Clay (Sticky)																																																																																																																																																																																																																						
4. METHOD DRILLED ☒ Cable ☐ Rotary ☐ Dug ☐ Other																																																																																																																																																																																																																									
5. WELL CONSTRUCTION Diameter of hole <u>20</u> inches Total depth <u>184</u> feet Casing schedule: ☒ Steel ☐ Concrete <table border="1"><thead><tr><th>Thickness</th><th>Diameter</th><th>From</th><th>To</th></tr></thead><tbody><tr><td><u>1/4</u> inches</td><td><u>20</u> inches</td><td><u>0</u> feet</td><td><u>72.5</u> feet</td></tr><tr><td><u>1/4</u> inches</td><td><u>16</u> inches</td><td><u>186</u> feet</td><td><u>296.5</u> feet</td></tr><tr><td><u>1/4</u> inches</td><td><u>12</u> inches</td><td><u>303.5</u> feet</td><td><u>475</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></tbody></table> Was a packer or seal used? ☒ Yes ☐ No Perforated? ☒ Yes ☐ No How perforated? ☐ Factory ☒ Knife ☐ Torch Size of perforation <u>3</u> inches by <u>3/8</u> inches <table border="1"><thead><tr><th>Number</th><th>From</th><th>To</th></tr></thead><tbody><tr><td><u>280</u> perforations</td><td><u>120</u> feet</td><td><u>190</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></tbody></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 <u>1 1/2"</u> Placed from <u>185</u> feet to <u>190</u> feet Surface seal? ☒ Yes ☐ No To what depth <u>72.5</u> feet Material used in seal ☒ Cement grout ☐ Puddling clay		Thickness	Diameter	From	To	<u>1/4</u> inches	<u>20</u> inches	<u>0</u> feet	<u>72.5</u> feet	<u>1/4</u> inches	<u>16</u> inches	<u>186</u> feet	<u>296.5</u> feet	<u>1/4</u> inches	<u>12</u> inches	<u>303.5</u> feet	<u>475</u> feet	_____ inches	_____ inches	_____ feet	_____ feet	_____ inches	_____ inches	_____ feet	_____ feet	Number	From	To	<u>280</u> perforations	<u>120</u> feet	<u>190</u> feet	_____ perforations	_____ feet	_____ feet	_____ perforations	_____ feet	_____ feet																																																																																																																																																																																				
Thickness	Diameter	From	To																																																																																																																																																																																																																						
<u>1/4</u> inches	<u>20</u> inches	<u>0</u> feet	<u>72.5</u> feet																																																																																																																																																																																																																						
<u>1/4</u> inches	<u>16</u> inches	<u>186</u> feet	<u>296.5</u> feet																																																																																																																																																																																																																						
<u>1/4</u> inches	<u>12</u> inches	<u>303.5</u> feet	<u>475</u> feet																																																																																																																																																																																																																						
_____ inches	_____ inches	_____ feet	_____ feet																																																																																																																																																																																																																						
_____ inches	_____ inches	_____ feet	_____ feet																																																																																																																																																																																																																						
Number	From	To																																																																																																																																																																																																																							
<u>280</u> perforations	<u>120</u> feet	<u>190</u> feet																																																																																																																																																																																																																							
_____ perforations	_____ feet	_____ feet																																																																																																																																																																																																																							
_____ perforations	_____ feet	_____ feet																																																																																																																																																																																																																							
6. LOCATION OF WELL Sketch map location must agree with written location.  County <u>Minidoka</u> <u>NW 1/4 NE 1/4 Sec. 20, T. 9 S, R. 24 E</u>		11. DRILLER'S CERTIFICATION This well was drilled under my supervision and this report is true to the best of my knowledge. <u>Alexander Drilling Co.</u> 127 Driller's or Firm's Name Number <u>510-13 ST. Rupert, Idaho</u> Address <u>Jack Alexander</u> June 12, 1970 Signed By Date																																																																																																																																																																																																																							

027870

REPORT OF WELL DRILLER
State of IdahoRECEIVED
JUL 29 1968

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

WELL OWNER
Name City of Rupert
Address Rupert, Idaho

Owner's Permit No. 9-30720
NATURE OF WORK (check): Replacement well ☐
New well ☒ Deepened ☐ Abandoned ☐

Water is to be used for:

METHOD OF CONSTRUCTION: Rotary ☐ Cable ☒
Dug ☐ Other ☐

(explain)
CASING SCHEDULE: Threaded ☐ Welded ☒
12" Diam. from 0 ft. to 100-4 ft.
16" Diam. from 0 ft. to 489 ft.
"Diam. from ft. to ft.
"Diam. from ft. to ft.
Thickness of casing: Material:
Steel ☐ concrete ☐ wood ☐ other ☐

(explain)
PERFORATED? Yes ☐ No ☐ Type of perforator used:

Size of perforations: " by "
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.
perforations from ft. to ft.

WAS SCREEN INSTALLED? Yes ☐ No ☒

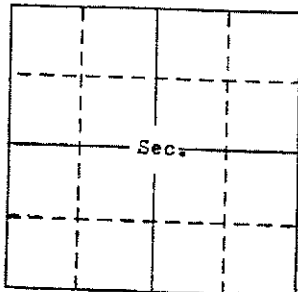
Manufacturer's name Model No.
Type Slot size Set from ft. to ft.
Diam. Slot size Set from ft. to ft.

CONSTRUCTION: Well gravel packed? Yes ☐
No ☐ size of gravel Gravel placed from ft. to ft. Surface seal provided? Yes ☐ No ☐ To what depth? ft. Material used in seal:

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

Surface casing used? Yes ☐ No ☒
Cemented in place? Yes ☐ No ☒

Locate well in section



LOCATION OF WELL: County Benedict
S 1/4 SE 1/4 Sec. 20 T. 9 N. 1/4 R. 24 E/W

Size of drilled hole: 20" 4.489' Total depth of well: 616' Standing water level below ground: 52-6" Temp. Fahr. Test delivery: 1800 gpm or cfs Pump? ☒ Bail ☐

Size of pump and motor used to make test: 400 H.P. Airplane Motor 12" bore 10" Column

Length of time of test: 5 Hrs. Min.

Drawdown: 12 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	WATER
FROM	TO		YES OR NO
FEET	FEET		
0	21	sand	no
21	32	sand + gravel	no
32	36	clay	no
36	46	gray clay	no
46	72	gray clay	no
72	94	gray sand	no
94	96	gray clay + gravel	no
96	137	black sand	no
137	140	black lava loose	no
140	150	gray lava with holes	yes
150	163	black sand	no
163	170	black lava loose	no
170	174	gray clay	no
174	183	black sand	no
183	197	sandy clay	no
197	217	sandstone	yes
217	225	gray clay	no
225	260	gray shale clay	no
260	299	blue shale	no
299	307	gray sand	no
307	343	black sand	no
343	370	gray clay	no
370	388	gray shale	no
388	413	black sand	no
413	425	gray shale	no
425	435	black lava sand	no
435	456	gray sand	yes
456	482	gray clay	yes
482	487	lava boulders	yes
487	492	gray clay	yes
492	503	black lava hard	yes
503	549	gray lava hard	yes
549	593	black lava hard	yes
593	601	gray lava very hard	yes
601	610	clay boulders + sand	yes

Work started: 6-2-62

Work finished: 8-7-62

Well Driller's Statement: This well was drilled under my supervision and this report is true to the best of my knowledge.

Name: Sherran Couch

Address: Hayburn, Idaho

Signed by: Ralph C. Stanton

License No. 79 Date: 7-26-68

Use other side for additional remarks

(over)

UCGS

MEMORANDUM

August 10, 2004

To: Dave Tuthill *DT*
From: Shane Bendixsen *SB*
Subject: **Minidoka County School District No. 331-SRBA Subcase Nos. 36-071345 and 36-07135, Barnett Memorandum.**

I agree with Don Barnett's conclusion that both wells are screened in the shallow or perched system. Based on current data available, the two hundred foot depth is a valid estimate. If more data becomes available, this depth could change.

When Scott King prepared his memo, the data that I had compiled for the shallow ground water in the Burley area, was not completed. I compiled the data at the request of the Minidoka Irrigation District and the Twin Falls Canal Company. I spent considerably more time than Scott King did and therefore was much more conclusive.

The only other work completed for the area was by Crosthwaite and Scott (1956) and Anderson and Kelley (no date available). Keith Anderson was available to review my work and agreed that the flow direction for the shallow zone was north to northwest. He stated that he had once made a flow map for the shallow zone, but did not have a copy. Crosthwaite and Scott (1956) stated that the flow direction was north to northwest but presented no flow map.

REFERENCES

Crosthwaite, E.G., and Scott, R.C., 1956, Ground Water in the North side Pumping Division Minidoka Project, Minidoka County, Idaho: U.S. Geological Survey.

