HEARING ADMITTED EXHIBIT LIST

IN THE MATTER OF LICENSE NO. 37-7842)
IN THE NAME OF THE)
IDAHO WATER RESOURCES BOARD)

November 1-2, 2018

Hearing Officer: Gary Spackman

IDWR' EXHIBITS

EXHIBIT NUMBER	EXHIBIT DESCRIPTION
IDWR 1	Water Right License 37-7842 & cover letter
IDWR 2	Memorandum of Michele Edl re License Review with attachments/photos
IDWR 3	Application for Permit, ad & Director's Approval (Under Vonde's cross, Edl marked exhibit)
IDWR 4	Illustrative Map
IDWR 5	Beneficial Use Field Report 11/24/1993
IDWR 6	ARC infrared map of Dietrich Canal (only exhibit NOT in WR file)
IDWR 7	Application for Amendment 7/13/17 signed by Keen

IWRB'S EXHIBITS

EXHIBIT NUMBER	EXHIBIT DESCRIPTION
IWRB 100	Map Richfield Canal Conveyance (Bates IWRB 00003064)*included in Expert Report
IWRB 101	Photo Jim Byrns Slough Injecting into Little Wood River (IWRB 00003069)*
IWRB 102	Map Dietrich Canal Conveyance System (IWRB 0003065)*
IWRB 103	Photo Little Wood River Check Structure (IWRB 0003070)*
IWRB 104	Photo Jim Byrns Slough Flowing into Dietrich Canal (IWRB 0003071)*
IWRB 105	Map Milner Gooding Shoshone Canal Conveyance System (IWRB 0000366)*
IWRB 106	Photograph of Shoshone site head gate*

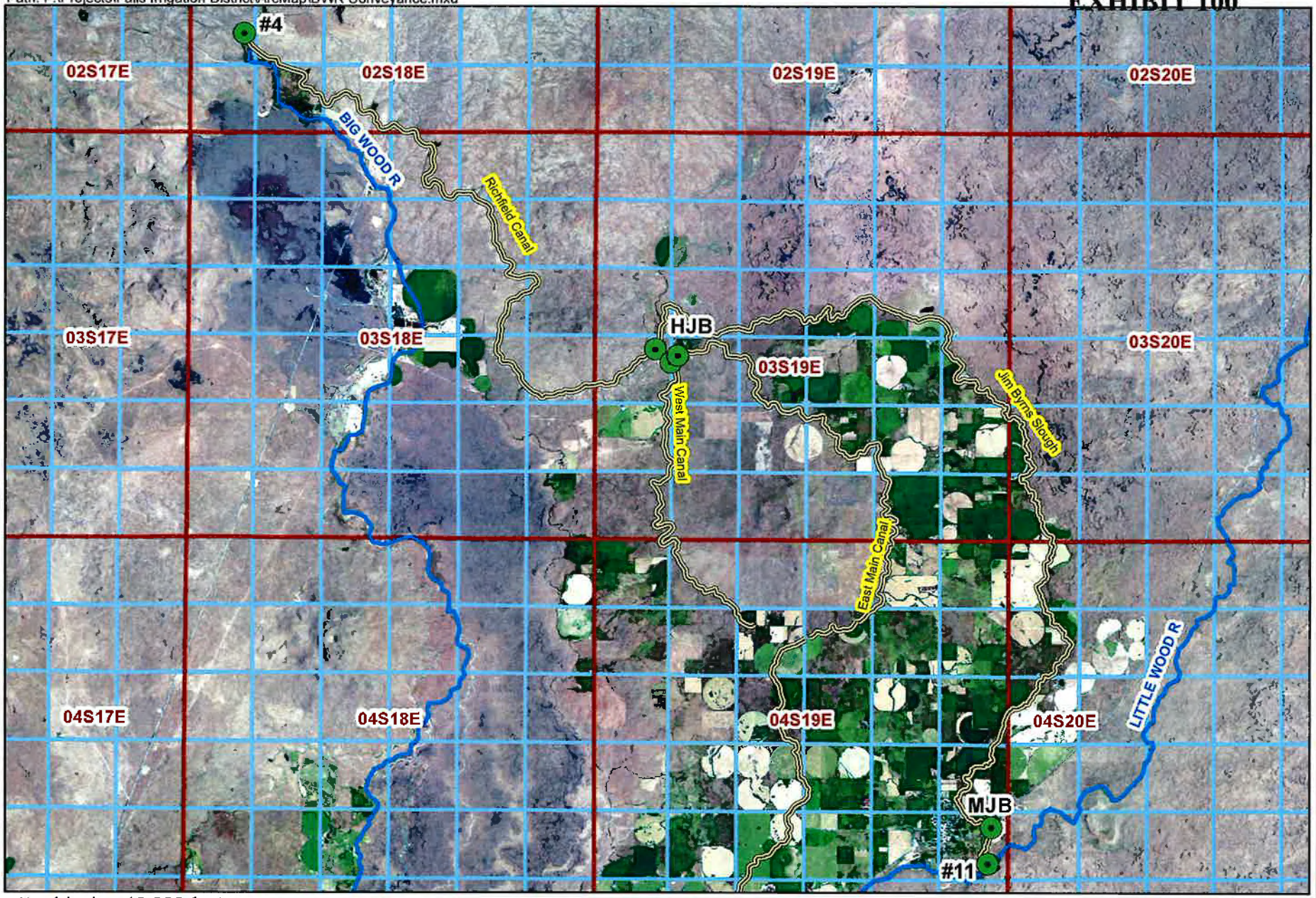
EXHIBIT NUMBER	EXHIBIT DESCRIPTION
IWRB 107	Map 1982 gauge stations & readings/flows (Appendix K to expert report)*
IWRB 108	Certified Exam Report of ____ with Appendices A-O
IWRB 109	Large demonstrative map
IWRB 110	1983 IDWR Order
IWRB 111	4/14/17 Letter from A. Vonde to Shelley Keen, IDWR
IWRB 112	4/11/06 Letter from L. Wasden to IDWR
IWRB 113	7/13/17 M. Edl Memo re subordination
IWRB 114	5/20/82 IDWR letter to LSRARD
IWRB 115	no exhibit
IWRB 116	Survey, design from back file
IWRB 117	no exhibit
IWRB 118	11/9/1981 IDWR Decision and Order
IWRB 119	11/23/1983 Letter to Dept of Health & Welfare from G. Martens (from back file)
IWRB 120	12/01/1983 to LSRARD from G. Saxton, IDWR
IWRB 121	3/9/1984 Letter to IDWR from G. Martens, Edwards, Howard & Martens, Inc.
IWRB 122	3/16/1984 Letter to G. Martens from N. Young, IDWR
IWRB 123	4/12/84 Letter to LSRAD (Lower Snake River Aquifer Recharge District)
IWRB 124	4/11/1984 Letter to IDWR from J. LeMoyne, Lower Snake River Aquifer Recharge District.
IWRB 125	6/6/1984 Letter to Lemoyne re SR Recharge from Martens

PETITIONER'S EXHIBITS

EXHIBIT NUMBER	EXHIBIT DESCRIPTION
PETITIONER 201	Initial Proof of Beneficial Use
PETITIONER 202	POBU after "prove up" period
PETITIONER 203	Reinstatement Order
PETITIONER 204	Memo 10/7/99 re recharge Permit No. 37-7842
PETITIONER 205	IDWR Water Right 37- ____ (Owner: Big Wood River Canal Company)
PETITIONER 206	IDWR Water Right 37-10343

Path: F:\Projects\Falls Irrigation District\ArcMap\BWR Conveyance.mxd

EXHIBIT 100



N 1 inch = 10,000 feet

BROCKWAY ENGINEERING, PLLC
GEP - AUGUST 1, 2018

FIGURE 3: RICHFIELD CANAL CONVEYANCE

WATER RIGHT NO. 37-7842
NAIP 2017 AERIAL PHOTOGRAPH

Legend

Measuring Stations

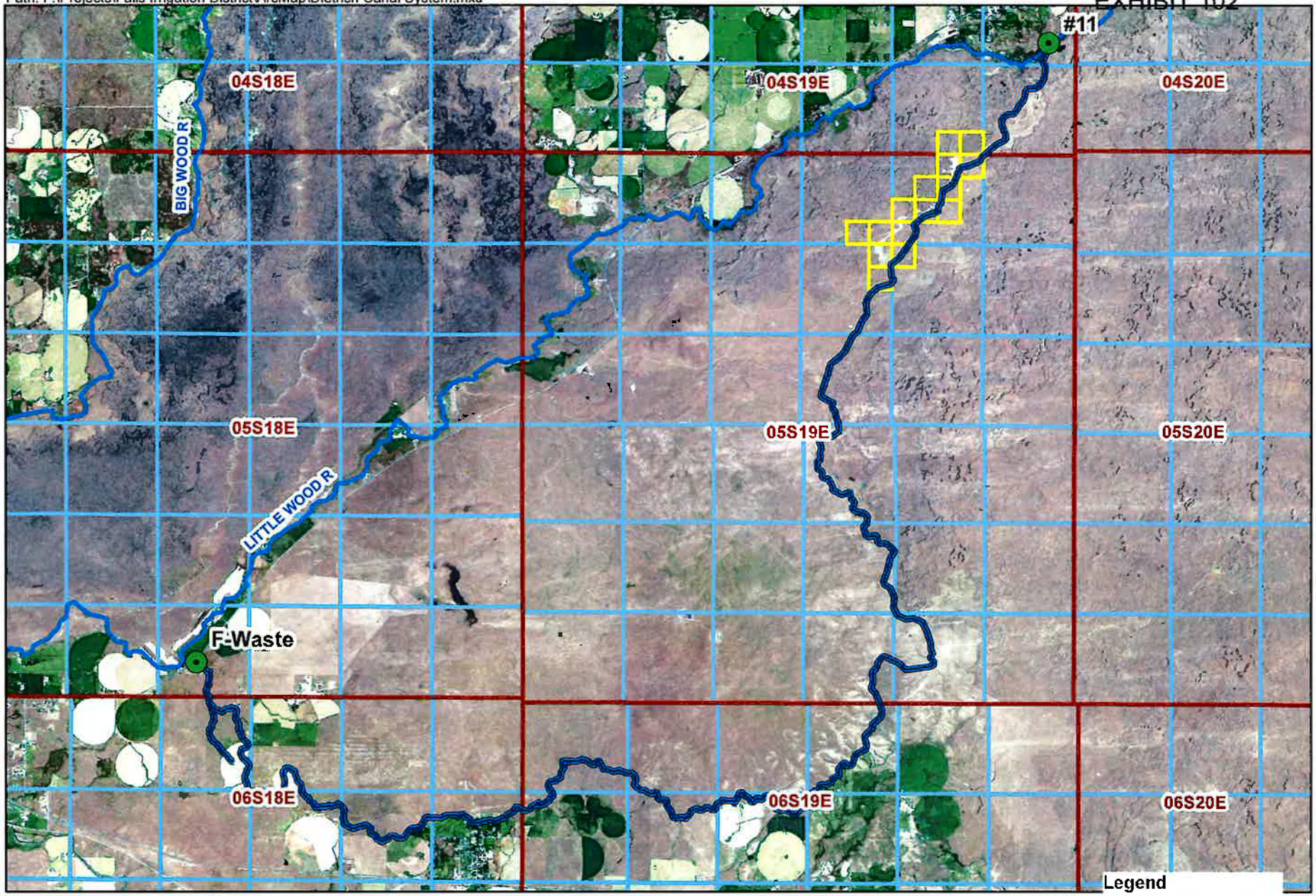
Richfield_Canal_System

IWRB00003064

Figure 8: Photograph taken on July 22nd of the Jim Byrns Slough, water from the Big Wood River, injecting into the Little Wood River.

Path: F:\Projects\Falls Irrigation District\ArcMap\Dietrich Canal System.mxd

EXHIBIT 102



N 1 inch = 7,500 feet

BROCKWAY ENGINEERING, PLLC
GEP - AUGUST 1, 2018

FIGURE 4: DIETRICH CANAL CONVEYANCE

WATER RIGHT NO. 37-7842
NAIP 2017 AERIAL PHOTOGRAPH

IWRB00003065

Figure 9: Photograph taken on July 22nd of the Little Wood River check structure. Structure is immediately downstream of the confluence of the Jim Byrns Slough and the Little Wood River, and the diversion to the Dietrich Canal.

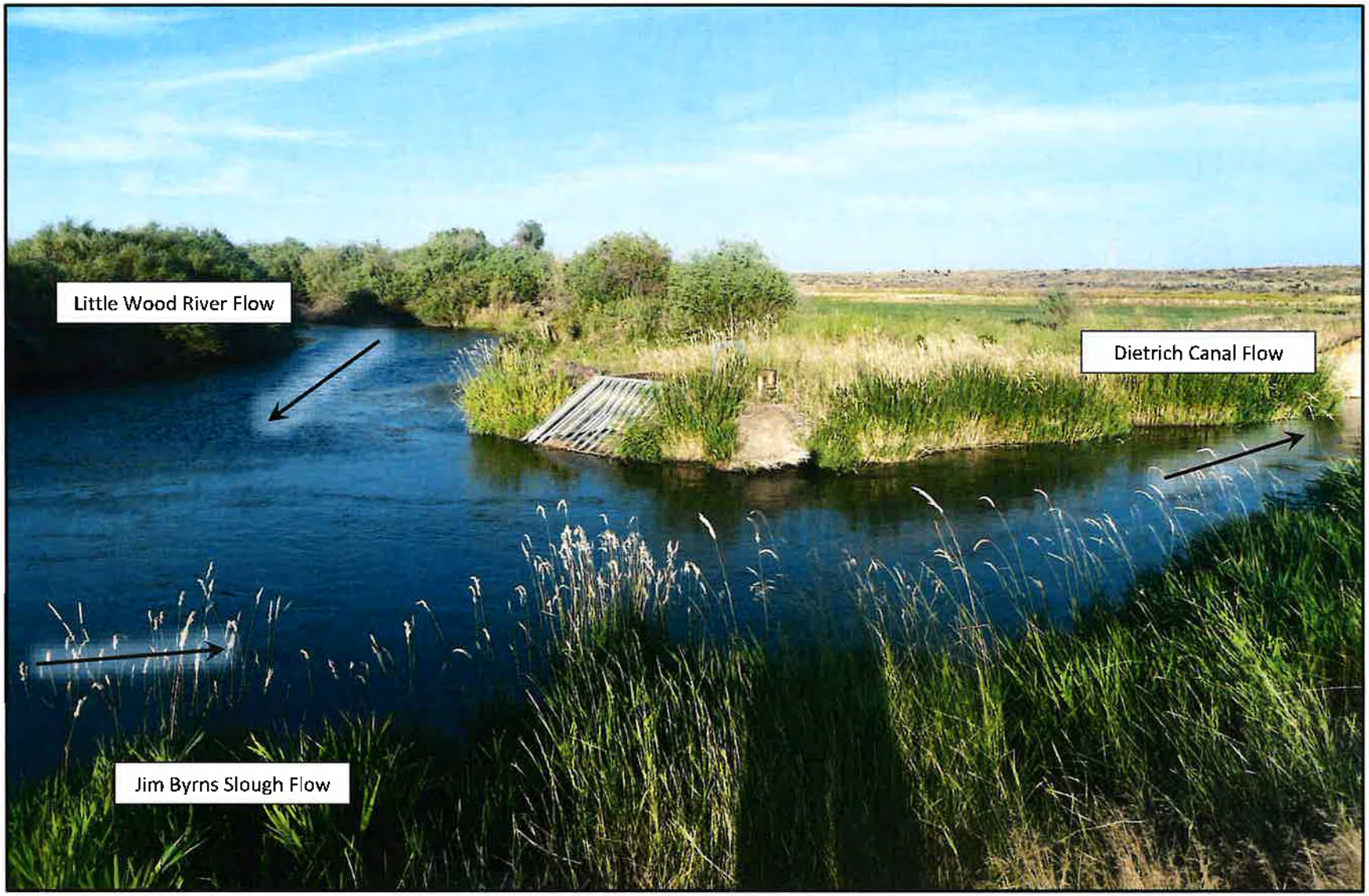
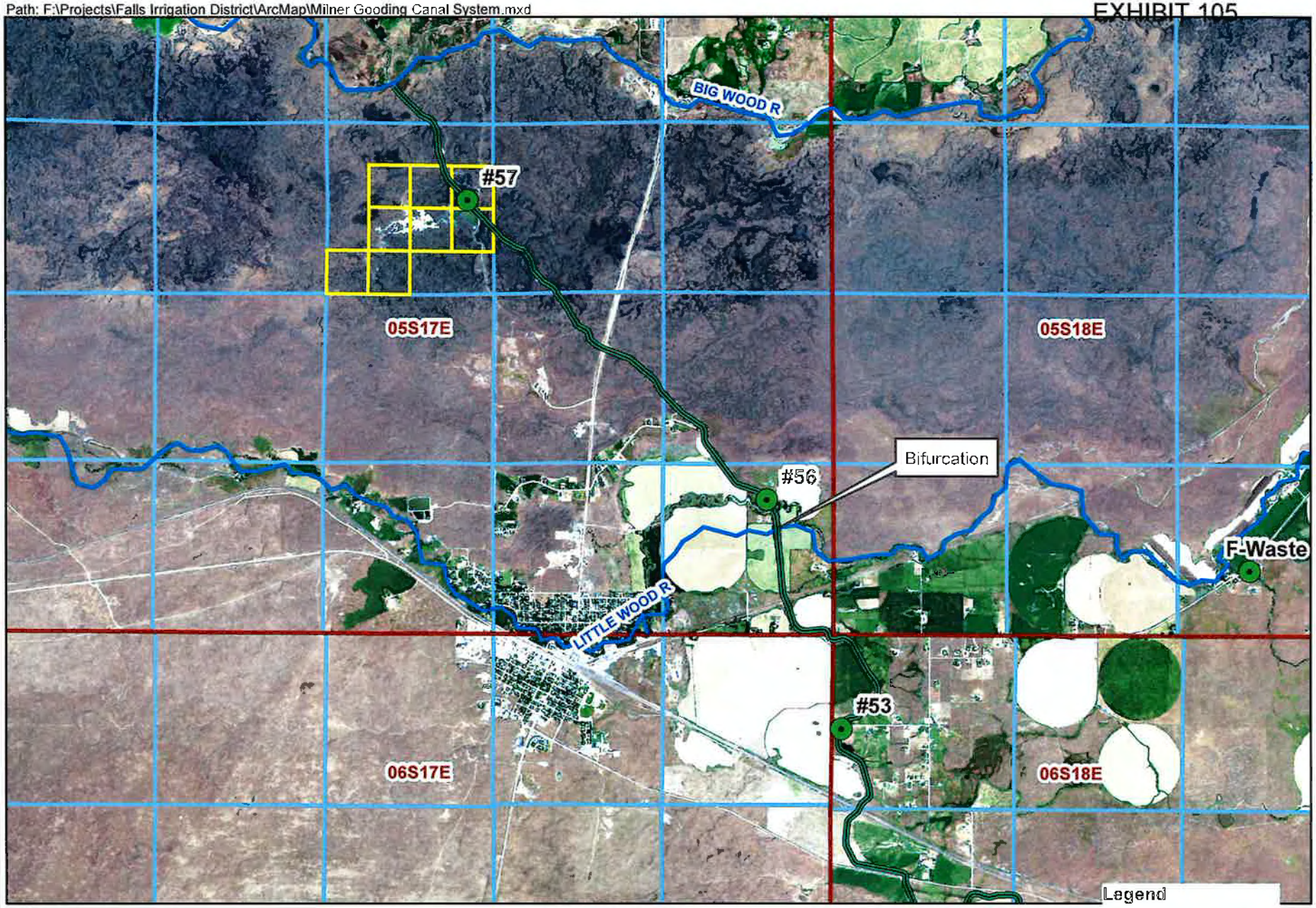


Figure 10: Photograph taken on July 22nd of the Dietrich Canal diversion, which includes water from the Little Wood River and Jim Byrns Slough, which is water from the Big Wood River.

Path: F:\Projects\Falls Irrigation District\ArcMap\Milner Gooding Canal System.mxd

EXHIBIT 105



N 1 inch = 4,000 feet

BROCKWAY ENGINEERING, PLLC
GEP - AUGUST 1, 2018

FIGURE 5: MILNER-GOODING CANAL CONVEYANCE

WATER RIGHT NO. 37-7842
NAIP 2017 AERIAL PHOTOGRAPH

IWRB00003066

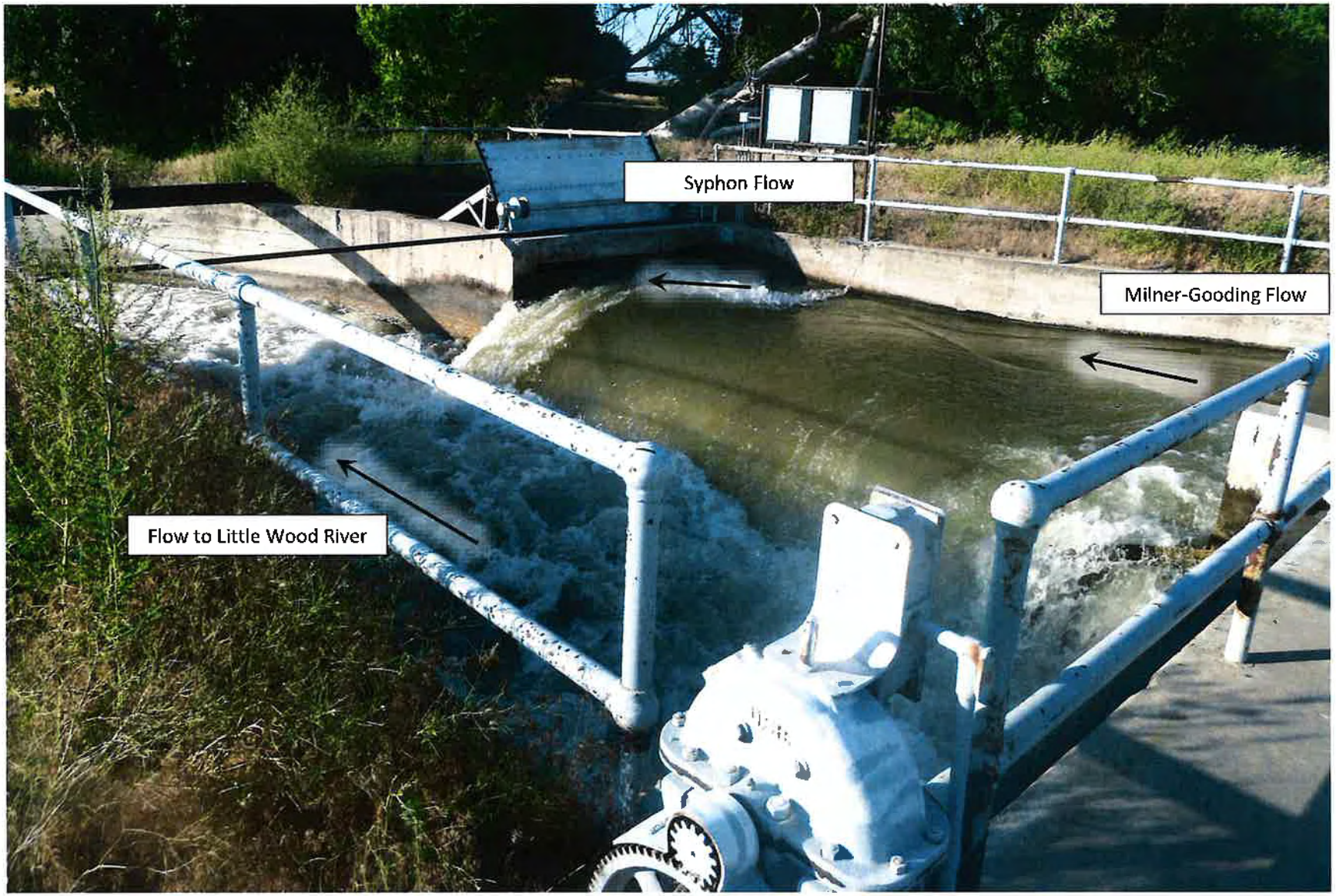


Figure 11: Photograph taken on July 22nd of the bifurcation, where the Milner-Gooding Canal can inject water into the Little Wood River or flow through a syphon tube under the Little Wood River.

State of Idaho
DEPARTMENT OF WATER RESOURCES
322 East Front Street • P.O. Box 83720 • Boise, Idaho 83720-0098
Phone: (208) 287-4800 • Fax: (208) 287-6700 • Web Site: www.idwr.idaho.gov

GARY SPACKMAN
Director

C.L. "BUTCH" OTTER
Governor

July 14, 2017

STATE OF IDAHO
IDAHO WATER RESOURCE BOARD
322 E FRONT ST
PO BOX 83720
BOISE ID 83720-0098

RE: License No. 37-7842

Issuance of License

Dear Water Right Holder(s):

The Department of Water Resources has issued the enclosed Water Right License confirming that a water right has been established in accordance with your permit. Please be sure to thoroughly review the conditions of approval and remarks listed on your license. Also enclosed is a copy of the approved application for amendment.

The license is a PRELIMINARY ORDER issued by the Department pursuant to section 67-5243, Idaho Code. It can and will become a final order without further action by the Department unless a party petitions for reconsideration or files an exception and/or brief within fourteen (14) days of the service date as described in the enclosed information sheet.

Please note that water right owners are required to report any change of water right ownership and/or mailing address to the Department within 120 days of the change. Failure to report these changes could result in a $100 late filing fee. Contact any office of the Department or visit the Department's homepage on the Internet to obtain the proper forms and instructions.

If you have any questions, please contact me at 208-287-4951.

Sincerely,

for Pamela Skaggs, Water Rights Supervisor
Water Right Permits Section

Enclosure(s)

c: WATER DISTRICT #37

EXHIBIT
tabbies
1

IDWR 1

State of Idaho
Department of Water Resources

Water Right License

WATER RIGHT NO. 37-07842

PRIORITY: August 25, 1980

Maximum Diversion Rate: 250.00 CFS
Maximum Diversion Volume: 13,900.0 AF

It is hereby certified that:

STATE OF IDAHO
IDAHO WATER RESOURCE BOARD
322 E FRONT ST
PO BOX 83720
BOISE ID 83720-0098

has complied with the terms and conditions of the permit, issued pursuant to Application for Permit dated July 02, 1980, and has submitted Proof of Beneficial Use on July 27, 1992. An examination confirms water is diverted from:

SOURCE:
LITTLE WOOD RIVER

TRIBUTARY:
MALAD RIVER

and a water right has been established as follows:

BENEFICIAL USE	PERIOD OF USE	DIVERSION RATE	ANNUAL DIVERSION VOLUME
GROUND WATER RECHARGE	01/01 to 12/31	250.00 CFS	13,900.0 AF

LOCATION OF POINT(S) OF DIVERSION:
LITTLE WOOD RIVER L4 (SW¼SE¼) Sec. 25, Twp 04S, Rge 19E, B.M. LINCOLN County

PLACE OF USE: GROUND WATER RECHARGE

			NE				NW				SW				SE				
Twp	Rge	Sec	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	Totals
04S	19E	35															X L7	X L8	
05S	19E	2	X L1	X L2															

CONDITIONS OF APPROVAL

1. The issuance of this right does not grant any right-of-way or easement across the land of another.
2. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 37.
3. The right holder shall maintain a measuring device and lockable controlling works of a type approved by the Department in a manner that will provide the watermaster suitable control of the diversion(s).
4. The following rights are diverted through point(s) of diversion described above: 37-7842, 37-13043, 37-13112, 37-13113, 37-13114, 37-14264, 37-21401, 37-21402, 37-21403, 37-21404, and 37-21405.

State of Idaho
Department of Water Resources

Water Right License

WATER RIGHT NO. 37-07842

5. Rights 37-7842, 37-13043, 37-13112, 37-13113, 37-13114, 37-14264, 37-21401, 37-21402, 37-21403, 37-21404, and 37-21405 when combined shall not exceed a total diversion rate of 647.38 cfs.

6. Pursuant to Section 42-234(4), Idaho Code, to ensure that other water rights are not injured by the operations of the recharge project authorized by this right, the Director has authority to approve, disapprove, or require alterations in the methods employed to achieve ground water recharge.

7. Pursuant to Section 42-234(3), Idaho Code, the Director may reduce the amount of water that may be diverted for recharge purposes under this right even though there is sufficient water to supply the entire amount authorized for appropriation under this right.

8. Prior to further diversion and use of water in accordance with this water right, the right holder shall obtain Bureau of Land Management authorization necessary to access the point of diversion or place of use or to convey water across federal land.

9. Places of use for groundwater recharge describing federal public lands within the canals and discharges outside of the canals onto federal public land are not authorized, unless specifically authorized in writing by the United States.

This license is issued pursuant to the provisions of Section 42-219, Idaho Code. The water right confirmed by this license is subject to all prior water rights and shall be used in accordance with Idaho law and applicable rules of the Department of Water Resources.

Signed this 13th day of July, 2017.

Shelley W. Keen

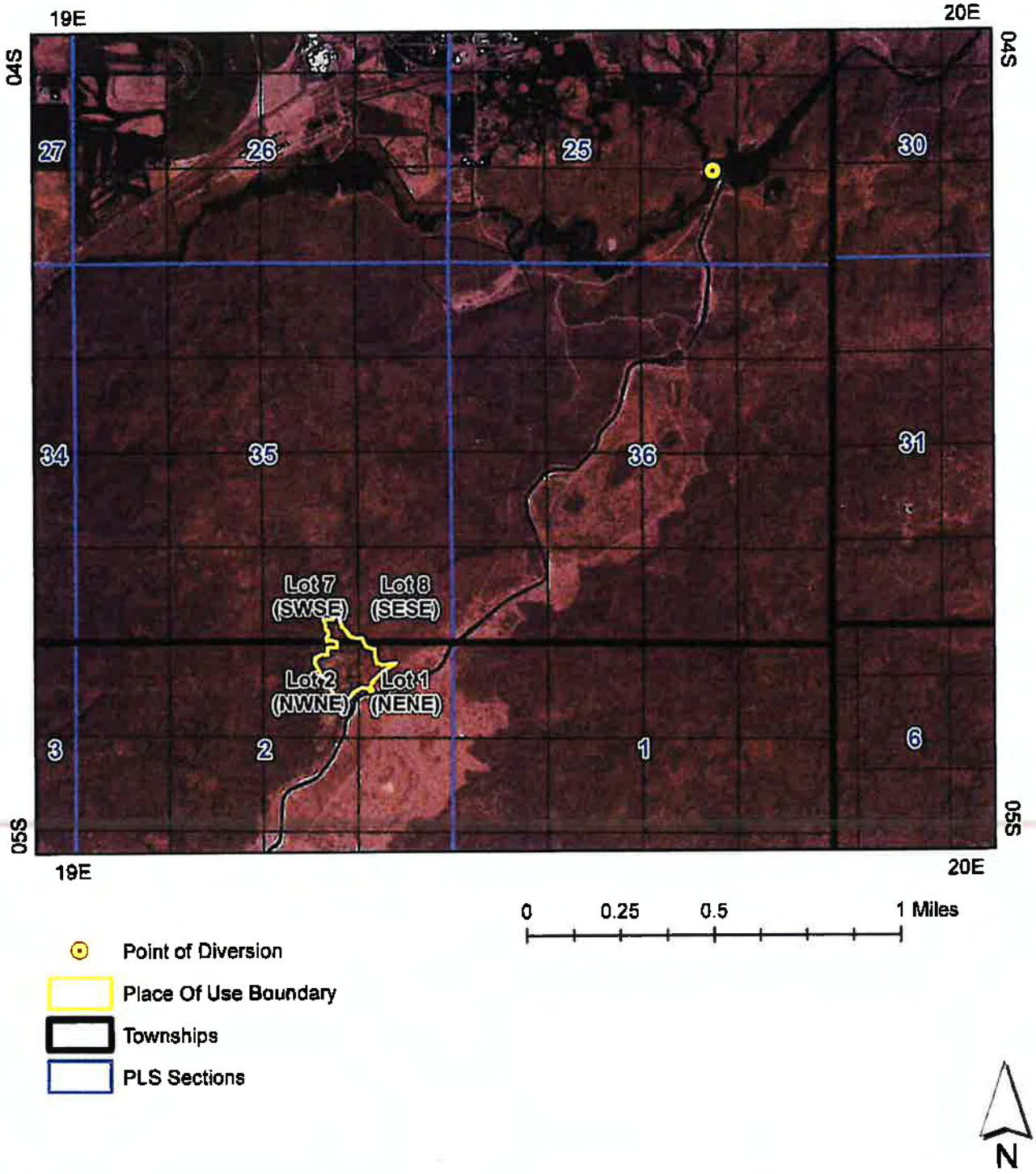
SHELLEY W. KEEN
Water Rights Section Manager

State of Idaho
Department of Water Resources

Attachment to Water Right License

37-7842

This map depicts the GROUND WATER RECHARGE place of use boundary for this water right at the time of this approval and is attached to the approval document solely for illustrative purposes.



CERTIFICATE OF SERVICE

I hereby certify that on July 17, 2017 I mailed a true and correct copy, postage prepaid, of the foregoing PRELIMINARY ORDER **(Approved License)** to the person(s) listed below:

RE: WATER RIGHT NO. 37-7842

STATE OF IDAHO
IDAHO WATER RESOURCE BOARD
322 E FRONT ST
PO BOX 83720
BOISE ID 83720-0098

WATER DISTRICT #37
KEVIN D LAKEY
107 W 1ST
SHOSHONE ID 83352

Darla Block
Technical Records Specialist

EXPLANATORY INFORMATION TO ACCOMPANY A PRELIMINARY ORDER

(To be used in connection with actions when a hearing was not held)

(Required by Rule of Procedure 730.02)

The accompanying order or approved document is a "**Preliminary Order**" issued by the department pursuant to section 67-5243, Idaho Code. **It can and will become a final order without further action of the Department of Water Resources ("department") unless a party petitions for reconsideration, files an exception and brief, or requests a hearing as further described below:**

PETITION FOR RECONSIDERATION

Any party may file a petition for reconsideration of a preliminary order with the department within fourteen (14) days of the service date of this order. **Note: the petition must be received by the department within this fourteen (14) day period.** The department will act on a petition for reconsideration within twenty-one (21) days of its receipt, or the petition will be considered denied by operation of law. See Section 67-5243(3) Idaho Code.

EXCEPTIONS AND BRIEFS

Within fourteen (14) days after: (a) the service date of a preliminary order, (b) the service date of a denial of a petition for reconsideration from this preliminary order, or (c) the failure within twenty-one (21) days to grant or deny a petition for reconsideration from this preliminary order, any party may in writing support or take exceptions to any part of a preliminary order and may file briefs in support of the party's position on any issue in the proceeding with the Director. Otherwise, this preliminary order will become a final order of the agency.

REQUEST FOR HEARING

Unless a right to a hearing before the Department or the Water Resource Board is otherwise provided by statute, any person aggrieved by any final decision, determination, order or action of the Director of the Department and who has not previously been afforded an opportunity for a hearing on the matter may request a hearing pursuant to section 42-1701A(3), Idaho Code. A written petition contesting the action of the Director and requesting a hearing shall be filed within fifteen (15) days after receipt of the denial or conditional approval.

ORAL ARGUMENT

If the Director grants a petition to review the preliminary order, the Director shall allow all parties an opportunity to file briefs in support of or taking exceptions to the preliminary order and may schedule oral argument in the matter before issuing a final order. If oral arguments are to be heard, the Director will within a reasonable time period notify each party of the place, date and hour for the argument of the case. Unless the Director orders otherwise, all oral arguments will be heard in Boise, Idaho.

CERTIFICATE OF SERVICE

All exceptions, briefs, requests for oral argument and any other matters filed with the Director in connection with the preliminary order shall be served on all other parties to the proceedings in accordance with IDAPA Rules 37.01.01302 and 37.01.01303 (Rules of Procedure 302 and 303).

FINAL ORDER

The Director will issue a final order within fifty-six (56) days of receipt of the written briefs, oral argument or response to briefs, whichever is later, unless waived by the parties or for good cause shown. The Director may remand the matter for further evidentiary hearings if further factual development of the record is necessary before issuing a final order. The department will serve a copy of the final order on all parties of record.

Section 67-5246(5), Idaho Code, provides as follows:

> Unless a different date is stated in a final order, the order is effective fourteen (14) days after its service date if a party has not filed a petition for reconsideration. If a party has filed a petition for reconsideration with the agency head, the final order becomes effective when:
>
> (a) The petition for reconsideration is disposed of; or
> (b) The petition is deemed denied because the agency head did not dispose of the petition within twenty-one (21) days.

APPEAL OF FINAL ORDER TO DISTRICT COURT

Pursuant to sections 67-5270 and 67-5272, Idaho Code, if this preliminary order becomes final, any party aggrieved by the final order or orders previously issued in this case may appeal the final order and all previously issued orders in this case to district court by filing a petition in the district court of the county in which:

i. A hearing was held,
ii. The final agency action was taken,
iii. The party seeking review of the order resides, or
iv. The real property or personal property that was the subject of the agency action is located.

The appeal must be filed within twenty-eight (28) days of this preliminary order becoming final. See section 67-5273, Idaho Code. The filing of an appeal to district court does not itself stay the effectiveness or enforcement of the order under appeal.

MEMORANDUM

Date: October 29, 2014

To: Water Right File 37-7842

From: Michele Edl

Re: license review

Background

In July 7, 1986 when John LeMoyne, then chairman of the Lower Snake Aquifer Recharge District (LSARD), submitted a proposal to the USBOR for the High Plains States Groundwater Demonstration Program Act of 1983, he mentioned two sites for aquifer recharge. One location was undeveloped at that time and is now the Shoshone recharge site. The other location was a pre-existing site on the Dietrich Canal near Richfield.

The Beneficial Use Field Reports which have been submitted for the licensing of this permit consider only the Shoshone site. I base my recommendations for this license on the recharge activity which occurred at the other site. See Dietrich Canal site discussion below.

Field visit confirmation

There were two field examiner's reports to review for licensing. Both reports were completed by the same examiner, Gerald Martens. One was signed by Mr. Martens on July 6, 1992 and submitted with a Proof of Beneficial Use statement on July 27, 1992. The second was signed on November 24, 1993 and received by IDWR on November 29, 1993. Neither report was complete enough to be reviewed independently. And although I pooled information from both reports, I found that confirmation of beneficial use remained unclear. It was necessary to revisit some of the relevant locations before I could complete a pre-licensing review.

On July 9, 2014, Shelley Keen and I visited the office of the Big Wood Canal Company (BWCC) and met with Lynn Harmon, the manager of the BWCC. Mr. Harmon provided the as-built engineering plans for the Bification and guided us to the site. He also gave us directions to the Dietrich Canal site. I have attached photos of the bifurcation and the Dietrich site which I took that day.

Shoshone recharge site

After reviewing flow records provided by the field examiner in his November 1993 report, I found that he had recommended the Big Wood River as one source of the recharge water. He appeared to have based his source recommendations on readings which were taken at locations on the Milner-Gooding Canal (a canal segment controlled by North Side Canal Company) and the Dietrich Canal (a canal segment controlled by Big Wood Canal Company). The examiner mislabeled two of the column headings in his spreadsheet. The data in the two columns furthest to the right should be swapped. I have confirmed that the data did come from records kept by the watermaster for Basin 37 and 37M. And in discussions with the watermaster, I have also confirmed that, although unlikely, it is possible to bring water from the Big and Little Wood Rivers to the Shoshone site.

The Shoshone recharge site is located between measuring stations #56 and #57 on the Milner-Gooding Canal. It is also downstream from a structure which carries the nameplate label "Byfication". (The correct spelling for this term is bifurcation). This unique structure is a combination siphon and flow control structure. It was constructed circa 1930 and under certain conditions it could be capable of directing water from the Little Wood River into the Milner-Gooding Canal. But typically water flows in the opposite direction, from the Milner-Gooding Canal into the Little Wood River.

EXHIBIT 2 tabbies

IDWR 8

There are two lanes that water can take through the bifurcation. Water can remain in the Milner Gooding Canal and continue to flow northeast after dipping under the Little Wood River in the bifurcation siphon. Or water can exit the Milner-Gooding Canal through the bifurcation's turn-out lane to join the Little Wood River and flow southeast. The direction of flow can be reversed only if the water in the Milner-Gooding Canal has less energy than the water in the Little Wood River. For water from Basin 37 to be the source water for the event on which Mr. Martens bases his recommendations, he would have needed to confirm that the flow in the Little Wood River was greater than the flow in the Milner-Gooding Canal. That was not the case.

Although there was excess water in Basin 37 (the Little Wood and Big Wood Rivers) during April and May of 1986, there was also water flowing in the Milner-Gooding Canal which originated from Basin 1 (the Snake River). The quantity of water flowing in the Milner-Gooding Canal at the time excluded a reversal of the flow through the bifurcation. The water arriving at the Shoshone recharge site in April and May of 1986 was from the Snake River.

Based on the engineering plans, the site visit and the flow data provided, I have concluded that the examiner confirmed a recharge event at the Shoshone recharge site but that little if any of the source water for that event could be attributed to the Big or Little Wood Rivers. The water came from the Snake River through the Milner-Gooding Canal.

Companion water right 1-7054 should be used to authorize the Snake River as a source of recharge water, which leaves water right permit 37-7842 to authorize recharge water from the Big Wood and Little Wood Rivers. The Dietrich Canal site uses water from Basin 37 for recharge.

Dietrich Canal recharge site

When permit 37-7842 was issued in 1982, several new sites within the LSARD were being considered for aquifer recharge. The Shoshone recharge site was developed through that effort. However, even before the LSARD was created, (on August 27, 1981) a site adjacent to the Dietrich Canal had been developed and used for flood/flow control.

The first week in April of 1981, the Shoshone District Manager of the BLM, Commissioners from Gooding and Lincoln County and the Mayors of Shoshone and Gooding signed a cooperative agreement for the use of 2320 acres of public land for flood control. (See attached copy of Cooperative Agreement I-05-63.)

Construction of the Dietrich site preceded the Cooperative Agreement by more than 10 years. According to Lincoln County and Big Wood Canal Company personnel the rediversion structure on the Dietrich Canal had been constructed circa 1970. Lincoln County personnel provided photos (taken July 29, 2014) which show a section of the Dietrich Canal and the wall of the rediversion structure which is etched with the year 1970.

The Lower Snake Aquifer Recharge District considered both the Shoshone site and the Dietrich site as aquifer recharge sites in 1986. In a recharge demonstration proposal to the USBOR, the LSARD Ground Water Recharge Demonstration Proposal states,

> There are two locations where water is being discharged into the aquifer. One is on the Dietrich Canal just south of Richfield. This is a flood control facility used by Lincoln and Gooding Counties to prevent flooding along the Little Wood River. This site will handle 800 cfs of discharge up to a week and continued flow of approximately 200 cfs. [1]

I am recommending the Dietrich Canal site as the place-of-use for this water right. But before I detail the elements of the water right, it's important that I clarify what I mean by aquifer recharge and how this facility qualifies.

[1] Lower Snake Aquifer Recharge District Ground Water Recharge Demonstration Proposal July 7, 1986 for High Plains States Groundwater Demonstration Program Act of 1983, submitted by John LeMoyne,

Activities which enhance aquifer recharge can be put into three categories.[2]

1. Unintentional – the consequences of deliberate activities that have an unrelated purpose. Examples are deep seepage under irrigation areas or leaking water and sewer pipe.
2. Unmanaged – an intentional activity known to increase aquifer recharge, but usually undertaken to dispose of water rather than to recover it. Examples include septic tank leach fields and flood control impoundments. The recharge proponent does not take any responsibility for water recovery.
3. Managed – an intentional activity to increase aquifer recharge and to recover water for economic or environmental purposes. Examples of the mechanisms for managed recharge include injection wells and infiltration basins.

The essential components common to both managed and unmanaged aquifer recharge project are: a source of water, a means to capture that water, sufficient land to harvest the water and an intentional water related activity which can increase the supply of water stored in an aquifer.

Conclusion
Although the agreement with the BLM was for flood control, and the site is not currently approved for managed aquifer recharge, I propose that the Dietrich Canal site qualifies as an unmanaged aquifer recharge site. And that there may be an opportunity to convert the site from unmanaged to managed recharge site by applying conditions on its operation. Therefore, I am recommending the following elements in a license for ground water recharge use.

POD
The permit POD address is incorrect. Glen Saxton recognized the error early on and indicated that the POD should be in section 25, Township 4S, Range 19E. Mr. Saxton's recommended PLSS grid address is the location of the Dietrich Canal's measuring site and/or its diversion from the Little Wood River. And it is the POD address that I identify and recommend for this right.

A licensing amendment will be required.

According to available Lincoln County taxlot information the BLM owns the property at the point-of-diversion.

Source
The permit authorized water diverted from both the Big Wood River and the Little Wood Rivers.

There is a potential path that water from the Big Wood River could take to the POU. But water from the Big Wood River would need to travel a convoluted route involving the Richfield canal and the Jim Byrns Slough before eventually injecting into the Little Wood River near Richfield above the POD. Therefore, the Big Wood River has been eliminated as a source and I am recommending only the Little Wood River as the source for water diverted under this permit.

Cooperative Agreement I-05-63 recognized that the capacity of the Little Wood River and the servant canals could be insufficient to contain all the water periodically available from the Little Wood River drainage.

The Dietrich Canal provides the means to convey the water from the Little Wood River to the recharge site.

Water Use
POU has been used for flood or flow control by the Lincoln and Gooding Counties since the re-diversion

[2]Waterlines Report Series No. 13, Managed aquifer recharge, February 2009, Australian Government National Water Commission.

structure was constructed.
The rediversion structure pre-existed permit 37-7842. Big Wood Canal Company personnel stated that it had been constructed by the Lincoln County in the late 1960's. In response to an information request, the Lincoln County Commissioners office provided the attached photos showing the inscribed date, 1970.

The application for permit states that the applicant expected to use the Dietrich Canal and/or Richfield Canal by contract. The Dietrich Canal is used to convey the water to the site. According to the data in the watermaster's records, the Dietrich Canal has a capacity of nearly 400 cfs. (See May 17, 1984 record). I believe that those records are based on a stage-discharge relationship. The raw, hand-written records show that the relationship was appropriately adjusted throughout that irrigation season.

Based on personal conversations with the current watermaster, Kevin Lakey, and the current manager of the Big Wood Canal Company, Lynn Harmon, the customers served by the Dietrich Canal have an early irrigation season demand of approximately 150 cfs. The water data indicates that almost 400 cfs was flowing in the Dietrich Canal. Given that the daily spot readings may have an error of +/- 10%, there would have been 210 to 250 cfs available through the canal for other uses at this location. (400 cfs – 40 cfs error = 360 cfs. Approximately 150 of the 360 would be dedicated to irrigation use, leaving at least 210 cfs for aquifer recharge.)

According to the current manager of the BWCC, the site can absorb the entire flow that the Dietrich Canal is capable of delivering. (from 7/9/2014 conversation). The quote from the LSARD proposal above indicates that the LSARD believed that the site could absorb more water. However, I do not have data to support either rate statement.

Watermaster records for 1984 indicate that water diverted into and from the Dietrich Canal for flood control (which is unmanaged aquifer recharge), within the development period of the permit (1982-1992). See the attached page from the WM book and my spreadsheet.

My flow rate and volume recommendations are based on watermaster records for the 1984 irrigation season.[3] Although the Little Wood River may have had higher flows in other years, the records from the spring of 1984 show that excess Little Wood River water was channeled into the Dietrich Canal and likely discharged at the Dietrich Canal recharge site. There is no record that the water was subsequently recovered and used.

POU
The POU is located in section 2, Township 5S, Range 19E, which is within the boundary of the LSARD. This specific place-of-use was not advertised but could be included in published "possible sites for recharge" which were in T 5S R 19E. (See the advertisement.)

According to available Lincoln County taxlot information, the BLM owns the place of use. In 1981, before this permit was approved, the BLM, Lincoln and Gooding County Commissions, and the mayors of Shoshone and Gooding signed a cooperative agreement which allowed the public's land to be used for flood control.

The flood control site is a natural basin which has been utilized to capture and hold the water for a short time until it enters the subsurface. I created the POU shape using elevations from the available ArcMap DRG layer. The site is a broad, flat, land surface bounded by the Dietrich Canal bank and low berms to create an infiltration basin.

IDWR knows very little about the soils or subsurface geology at the site. (See Neal Farmer's email.) However, the height of water delivered to site would be limited by the height of the canal bank, which would in turn limit the pressure head available to drive water into the subsurface.
The volume of the infiltration basin likely exceeds the volume I recommend for this license.

[3] Formally titled Water Distribution and Hydrometric Work, Districts Nos. 37 and 37M, Big and Little Wood Rivers, 1984.

Status/combined use
No other water rights overlap the POU.
Several water rights share the POD. Most of those rights are held by the Big Wood Canal Company and when totaled, they exceed what I understood to be the carrying capacity of the Dietrich Canal. (See the water use section above.) I confirmed with the watermaster that the following rights can be diverted into the Dietrich Canal from the Little Wood River: 37-13043, 37-13112 through 37-13114, and 37-21401 through 37-21405 (held by Big Wood Canal Company) and right 37-14264, (held by the BLM). The license will contain a combined limit on the rate.

The licensed right will be subordinated. The following subset of permit condition d will be maintained on the license. This water right shall be secondary to all prior water rights including rights held by any privately owned electrical generating company to appropriate waters in the reaches of the Snake River downstream from the Milner diversion for purposes of hydroelectric power generation.

Priority date
When the permit was reinstated on December 1, 1993 the priority was advanced.

Other Conditions
The recharge site off the Dietrich Canal was developed before this permit was issued. Although IDWR has issued permits to existing facilities in the past, it's not clear that the Department was aware of the Dietrich Canal site. Permit 37-7842 is conditioned looking forward to new facilities rather than backward at a facility that already been developed.

The permit was issued with two conditions which will require additional discussion at the management level. Those conditions are the last two conditions listed under permit condition d. Other. They are:

> Water may not be diverted under this permit until the Board of Directors of the District establish and implement a procedure acceptable to the Director for assuring that the water quality of the Lower Snake Aquifer will not be impaired.
>
> Plans for recharge facilities and any conveyance works needed shall be submitted to the department for approval prior to construction.

It may be possible to acquire plans for the diversion and rediversion structures and therefore satisfy the second of the two conditions above. My preliminary requests for that information have not been successful.

That leaves the first of these two conditions unmet. A plan and procedure for protecting the water quality of the recovered water indicates that IDWR expected that any new facility would be a managed recharge facility. It did not expect that an existing, unmanaged recharge facility would be found to have beneficially used water for recharge.

If the nature-of-use for the Dietrich site is to be changed from an unmanaged recharge site to a managed recharge site through a transfer, then these last two conditions should be reevaluated.

Recommendations
I recommend 250 cfs as the rate for this license. The recommendation is based on a rate derived from the watermaster records for April and May 1984. (See excel spreadsheet)

I recommend 13,900 AF as the volume for this license. This recommendation is again based April and May 1984 watermaster records which indicate that a flow rate exceeding the irrigation requirements was available 28 days of those months. (28 days x 250 cfs x 1.9835 = 13884.5 AF. When rounded to three significant figures = 13,900 AF)

Water District # 37 & 37M

Daily Discharge in second feet of Dietrich Canal #11 for the year ending Sept 30, 1984

Day	April	May	June	July	August	September
1	14	291	238	230	213	197
2	16	309	235	228	214	198
3	16	321	228	233	202	200
4	25	321	227	233	196	200
5	27	319	233	216	197	197
6	27	309	238	217	198	193
7	28	306	226	219	198	193
8	28	300	226	220	196	196
9	29	251	226	223	196	196
10	30	183	227	228	196	196
11	30	184	227	224	196	194
12	30	204	216	223	197	201
13	30	213	213	223	206	185
14	30	219	213	224	214	179
15	30	294	209	230	201	180
16	30	390	206	231	203	179
17	30	396	206	231	204	177
18	30	387	204	230	204	181
19	325	390	207	223	206	168
20	302	387	213	226	206	186
21	259	375	214	237	207	192
22	259	247	213	235	206	196
23	259	209	209	240	207	198
24	259	210	207	240	206	198
25	261	207	204	240	210	188
26	261	207	207	228	213	183
27	259	206	221	217	213	168
28	258	219	228	214	210	159
29	256	226	230	209	213	135
30	256	227	228	213	214	155
31		221		213	217	
24 HR CFS	3694	8528	6579	6998	6359	5568
Mean	123.1	275.1	219.3	225.7	205.1	185.6
Acre Feet	7327.049	16915.29	13049.45	13880.53	12613.08	11044.13

excel calculation

WR# 37-7842 table of differences created by Michele Edl

Day	April	May	June	July	August	September
1		141	88	80	63	47
2		159	85	78	64	48
3		171	78	83	52	50
4		171	77	83	46	50
5		169	83	66	47	47
6		159	88	67	48	43
7		156	76	69	48	43
8		150	76	70	46	46
9		101	76	73	46	46
10		33	77	78	46	46
11		34	77	74	46	44
12		54	66	73	47	51
13		63	63	73	56	35
14		69	63	74	64	29
15		144	59	80	51	30
16		240	56	81	53	29
17		246	56	81	54	27
18		237	54	80	54	31
19	175	240	57	73	56	18
20	152	237	63	76	56	36
21	109	225	64	87	57	42
22	109	97	63	85	56	46
23	109	59	59	90	57	48
24	109	60	57	90	56	48
25	111	57	54	90	60	38
26	111	57	57	78	63	33
27	109	56	71	67	63	18
28	108	69	78	64	60	9
29	106	76	80	59	63	-15
30	106	77	78	63	64	5
31		71		63	67	
sum	1414	2946	6429	6848	6209	5418
	2804.669	5843.391	12751.92	13583.01	12315.55	10746.6

excess of 150

daycount = 28

volume = 28 x 250 x 1.9835 = 13884.5

IDWR 13

WATER DISTRICT #37 & 37M

DAILY DISCHARGE IN SECOND FEET OF DIETRICH CANAL #11 FOR THE YEAR ENDING SEPT. 30, 1984

DAY	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	14	291	238	230	213	197
2	16	309	235	228	214	198
3	16	321	228	233	202	200
4	25	321	227	233	196	200
5	27	319	233	216	197	197
6	27	309	238	217	198	193
7	28	306	226	219	198	193
8	28	300	226	220	196	196
9	29	251	226	223	196	196
10	30	183	227	228	196	196
11	30	184	227	224	196	194
12	30	204	216	223	197	201
13	30	213	213	223	206	185
14	30	219	213	224	214	179
15	30	294	209	230	201	180
16	30	390	206	231	203	179
17	30	396	206	231	204	177
18	30	387	204	230	204	181
19	325	390	207	223	206	168
20	302	387	213	226	206	186
21	259	375	214	237	207	192
22	259	247	213	235	206	196
23	259	209	209	240	207	198
24	259	210	207	240	206	198
25	261	207	204	240	210	188
26	261	207	207	228	213	183
27	259	206	221	217	213	168
28	258	219	228	214	210	159
29	256	226	230	209	213	135
30	256	227	228	213	214	155
31		221		213	217	
24 HR CFS	3694	8528	6579	6998	6359	5568
MEAN	123	275	219.3	226	205	186
ACRE FEET	7388	17056	13158	13880	12613	11044

TOTAL 24 Hr. C.F.S. 37,726

YEARLY MEAN 206.

YEARLY ACRE FEET 74,828.0

SCANNED

IDWR 14

123

Edl, Michele

From: Lynn Harmon [lynnharmon@cableone.net]
Sent: Tuesday, August 19, 2014 3:14 PM
To: Edl, Michele
Subject: Floodway recharge at Dietrich canal WR#37-7842

Michele, I visited with Curley Sorensen and he stated that the Canal Company installed the structure and the plans were provided by the Corp of Engineers. He said that the plans got destroyed during construction. Perhaps the Corp might have a copy of the Dietrich Floodway plans in their archives. Thanks Lynn Harmon

Edl, Michele

From: Mary Davidson [mdavidson@lincolncountyid.us]
Sent: Thursday, August 07, 2014 5:15 PM
To: Edl, Michele
Subject: RE: Information
Attachments: 003.JPG; 008.JPG; 007.JPG

WR# 37-7842

Here are a few more,
I sure hope this helped, I will let you know if I get any additional information. Did you get a hold of Curly Sorenson?

Mary Davidson
Planning and Zoning Administrator
208-886-9808
208-886-2798 Fax

From: Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]
Sent: Thursday, August 07, 2014 5:04 PM
To: Mary Davidson
Subject: RE: Information

Mary,
It came through just fine. Sorry so long getting back to you. It's been a busy day.

From: Mary Davidson [mailto:mdavidson@lincolncountyid.us]
Sent: Thursday, August 07, 2014 1:09 PM
To: Edl, Michele
Subject: RE: Information

Let me know how this comes thru

Mary Davidson
Planning and Zoning Administrator
208-886-9808
208-886-2798 Fax

From: Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]
Sent: Thursday, August 07, 2014 9:54 AM
To: Mary Davidson
Subject: RE: Information

Thank you very much. If emailing them is a hassle, I'll gladly accept the print outs via snail mail.
Idaho Department of Water Resources
322 E Front St
Boise, 83720

Our flood plain coordinator has been on vacation so I don't know yet if IDWR has any knowledge of the construction specs, date or other details of the Dietrich flood/flow control structure. If you have anything in the way of support documents, please know that I'm interested in them.
Michele Edl
208-287-4946

Edl, Michele

From: Mary Davidson [mdavidson@lincolncountyid.us]
Sent: Monday, August 18, 2014 5:01 PM
To: Edl, Michele
Subject: Pictures WR# 37-7842

Michele,
These picture were taken on July 29th 2014.

Hope this helps!

photo taken July 29, 2014

WR# 37-7842

photo taken July 29, 2014

WR# 37-7842

NNE

IDWR 20

Edl, Michele

From: Mary Davidson [mdavidson@lincolncountyid.us]
Sent: Thursday, August 07, 2014 1:09 PM
To: Edl, Michele
Subject: RE: Information
Attachments: 010.JPG

Let me know how this comes thru

Mary Davidson
Planning and Zoning Administrator
208-886-9808
208-886-2798 Fax

From: Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]
Sent: Thursday, August 07, 2014 9:54 AM
To: Mary Davidson
Subject: RE: Information

Thank you very much. If emailing them is a hassle, I'll gladly accept the print outs via snail mail.
Idaho Department of Water Resources
322 E Front St
Boise, 83720

Our flood plain coordinator has been on vacation so I don't know yet if IDWR has any knowledge of the construction specs, date or other details of the Dietrich flood/flow control structure. If you have anything in the way of support documents, please know that I'm interested in them.
Michele Edl
208-287-4946

From: Mary Davidson [mailto:mdavidson@lincolncountyid.us]
Sent: Thursday, August 07, 2014 9:41 AM
To: Edl, Michele
Subject: Information

Michele,
I have been out of the office since Monday just returning. I have not be able to download the pictures off the camera as yet. I am waiting for the Clerk to come in today to see if she can download onto her machine and get over to me.

I will let you know if there is a problem and I have to have printed off.

Have a wonderful and productive day☺

Mary Davidson
Planning and Zoning Administrator

208-886-9808
208-886-2798 Fax

photo taken July 29, 2014

WR# 37-7842

LOWER SNAKE AQUIFER RECHARGE DISTRICT

GROUND WATER RECHARGE DEMONSTRATION PROPOSAL

for

High Plains States Groundwater Demonstration Program Act of 1983

submitted by

John LeMoyne, Chairman
Route 1, Box 148
Hagerman, Idaho 83332
837-4887

July 7, 1986

ATTACHMENT TO LICENSE REVIEW WR# 37-7842

springs show the changes in amount of water discharged.

	1902	1910	1914	1917	1918	1924
Blue Lakes Springs	80(A)	118(A)	199(A)	215(O)	216(S)	194(S
Crystal Springs	304(A)	-	-	536(O)	-	486(S
Niagara Springs	107(A)	-	-	242(O)	322(S)	215(S
Briggs Springs	77(A)	_	_	128(S)	130(S)	125(O

(A) August (O) October (S) September

1] Geology and Ground Water, Snake River Plain, ID. Geological Supply Paper #774. Washington 1938.

In addition to this long term effect, there is an annual one demonstrated by the springs from the irrigation season. Approximately 30 days after irrigation starts on the plain above the springs, their flows begin to increase reaching a peak in September and October shortly after the irrigation is turned off. The lowest flows are experienced during April and May which is about the time irrigation water is turned into the canal system. See attachment III - Box Canyon flows.

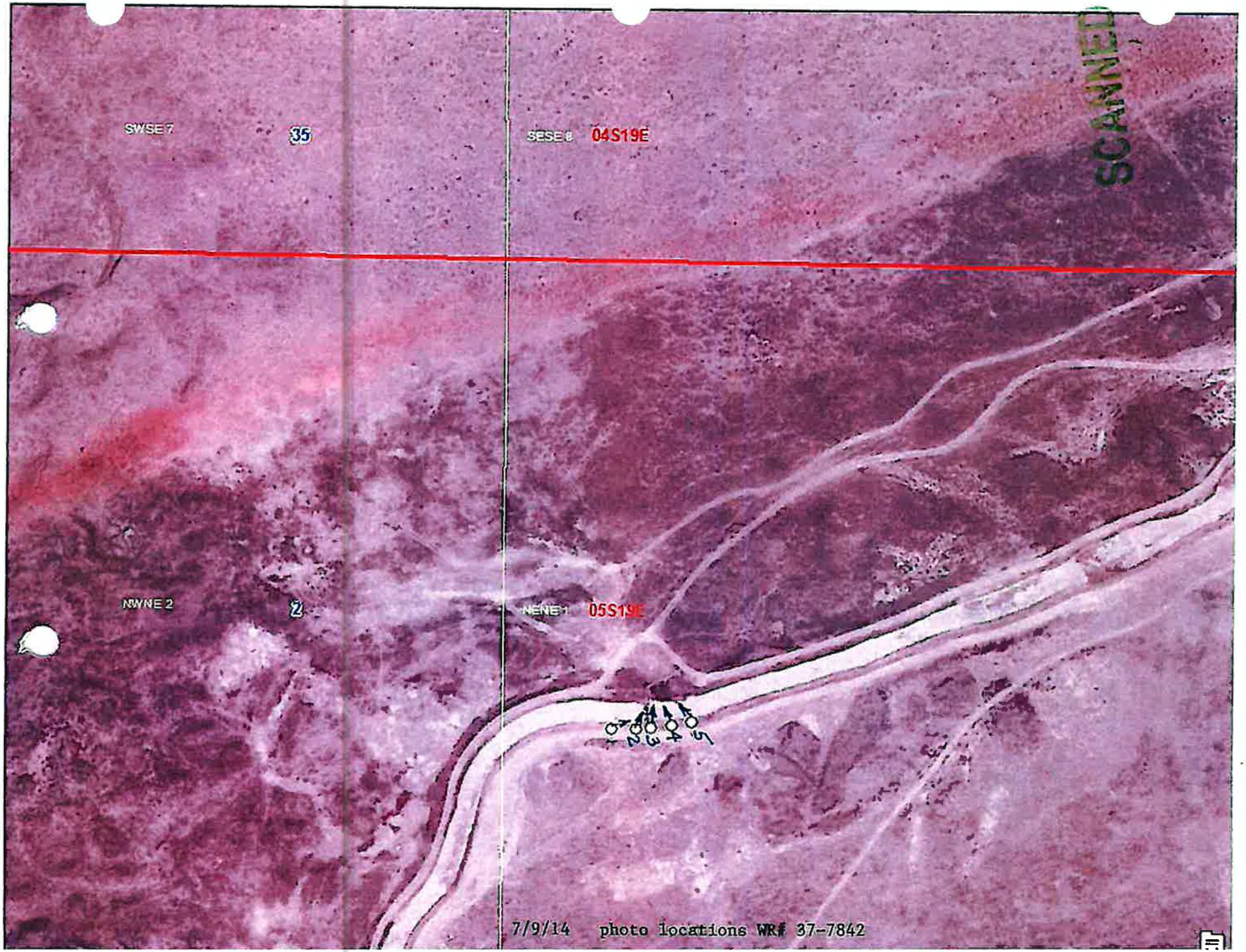
2] Artificial Recharge to the Snake Plain Aquifer in Idaho, R.F. Norvitch, C.A. Thomas, and R.J. Madison; Aug.,1969.

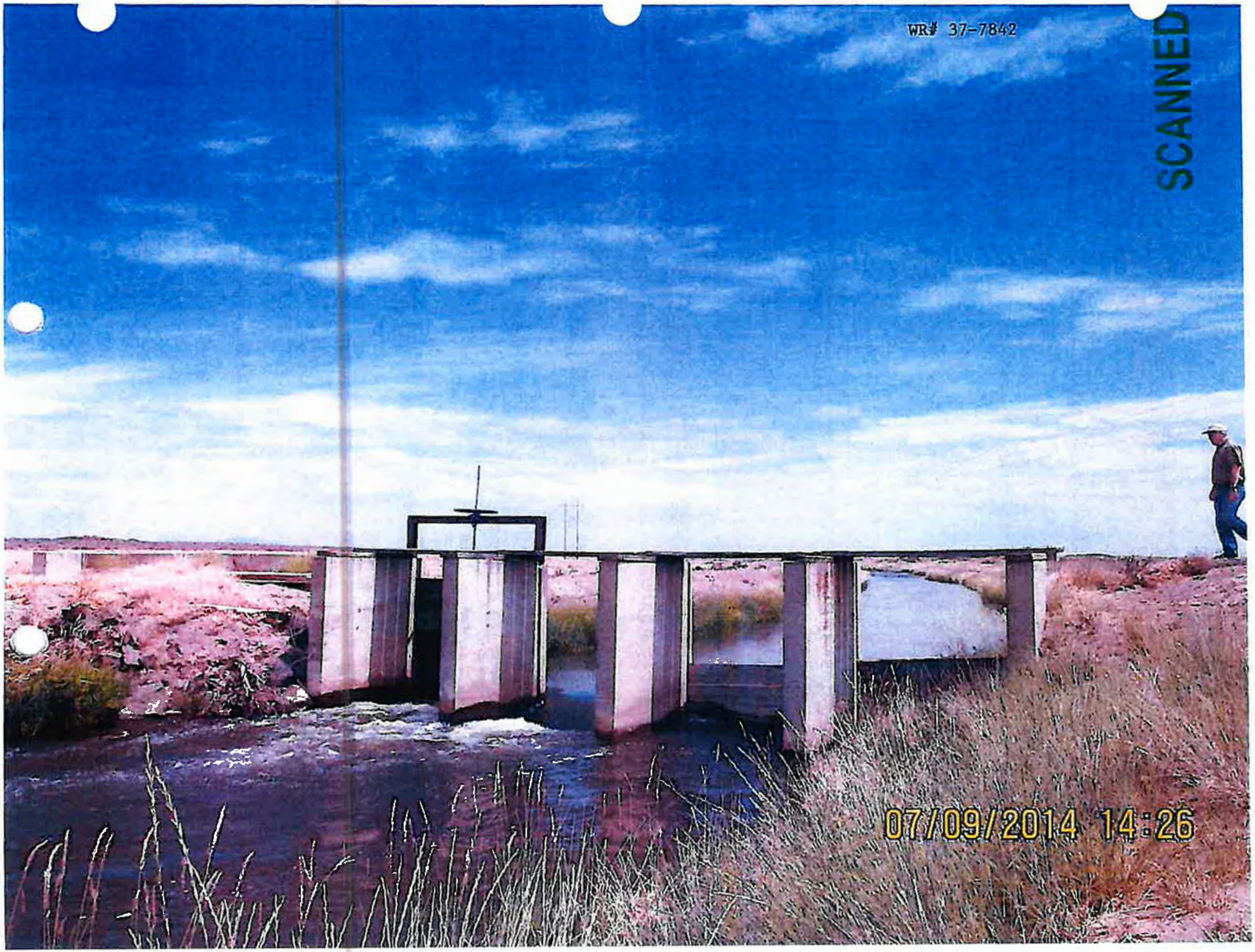
There are two locations where water is being discharged into the aquifer. One is on the Dietrich Canal just south of Richfield. This is a flood control facility used by Lincoln

and Gooding Counties to prevent flooding along the Little Wood River. This site will handle 800 CFS of discharge up to a week and a continued flow of approximately 200 CFS. The other site was installed by the Recharge District at a cost of $79,746.00. It is north of Shoshone on the Milner-Gooding Canal and at present can handle about 300 CFS. In 1985, there were 7,800 acre feet discharged at this site over a 16 day period. Monitoring at this site, attachment IV shows the water in the adjacent well increased during the recharge period and was highest just after the recharge period ceased.

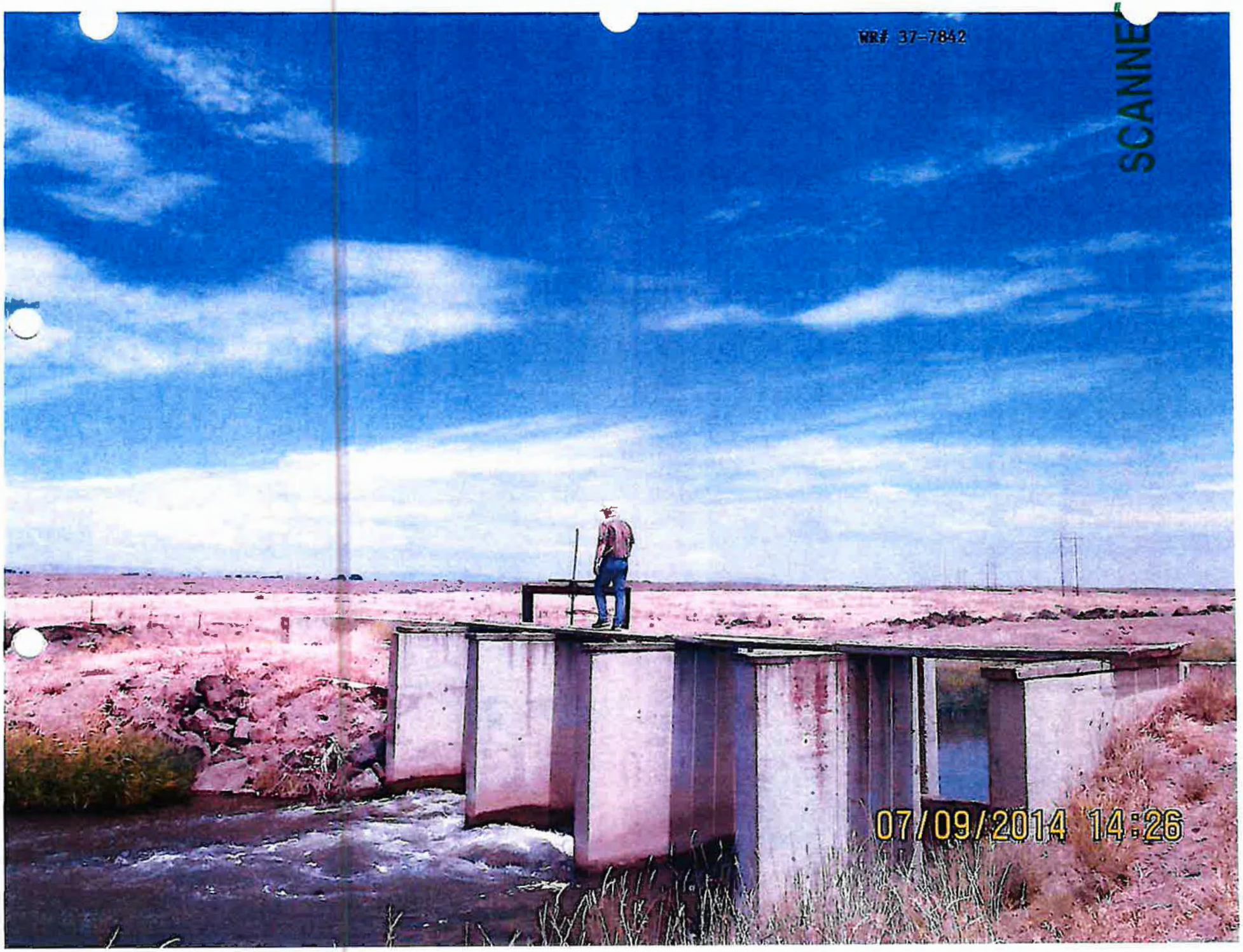
E. Hydrologic Conditions

Attachment VA and VB indicate the direction of flow of the Snake River aquifer. If has been a concern among the water users of the aquifer, that the aquifer level has been continually decreasing. We have enclosed information on 8 different wells located on attachment IIC and measurements documented on attachment IIB. Attachment IIB shows that the lowest water level is always a later date than the highest water level. All the lowest levels are in the 1980's with one exception; Well no.4 in 1979. The only data available to us was up through 1982. If we had access to recent data, it would be interesting to see if depth had continued to decline. This drop in water table is also demonstrated from the spring flow as substantiated by attachments IIA and III. The following events have occured over the past years which have led up to the reduced spring flows and a drop in the

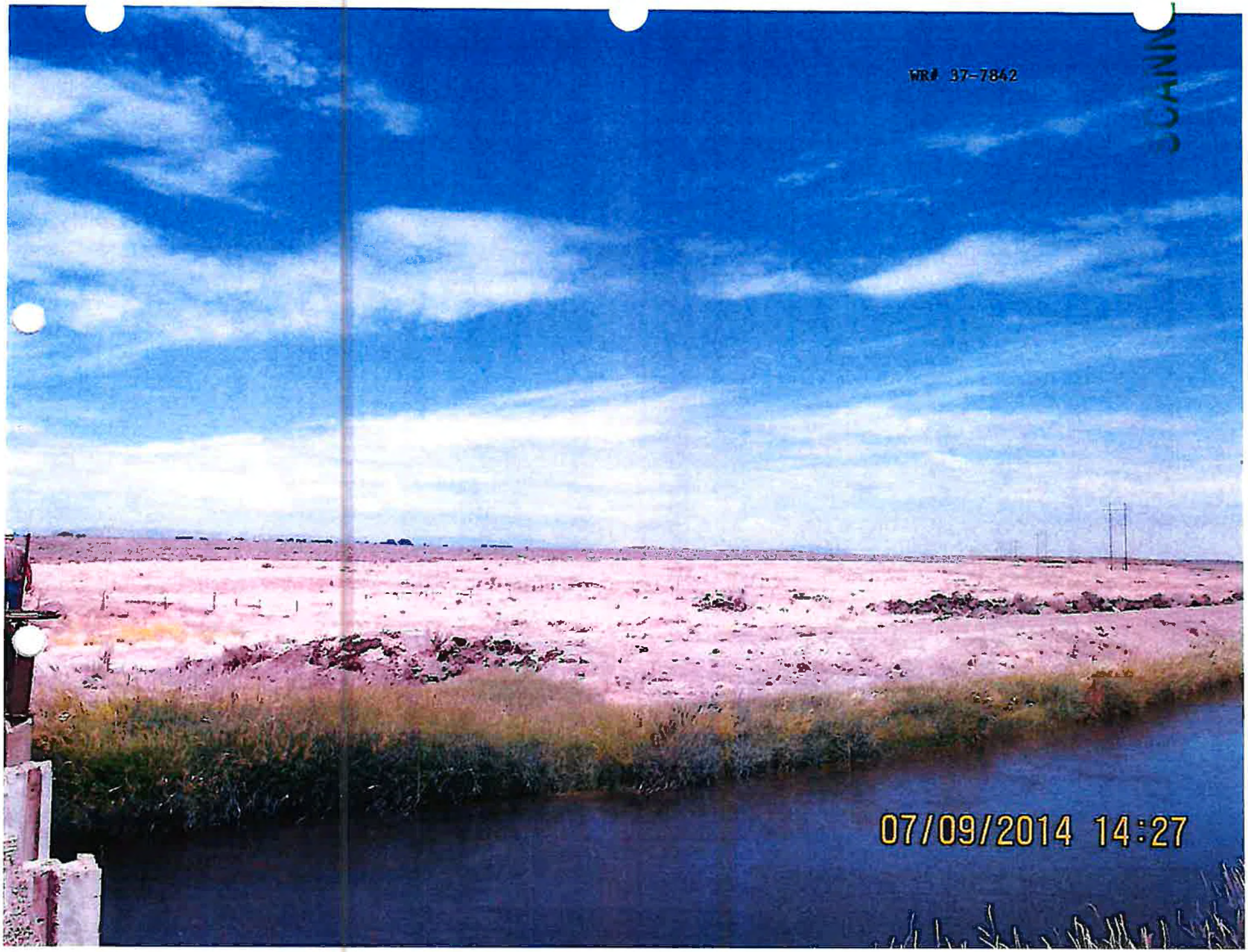




IDWR 28



IDWR 29

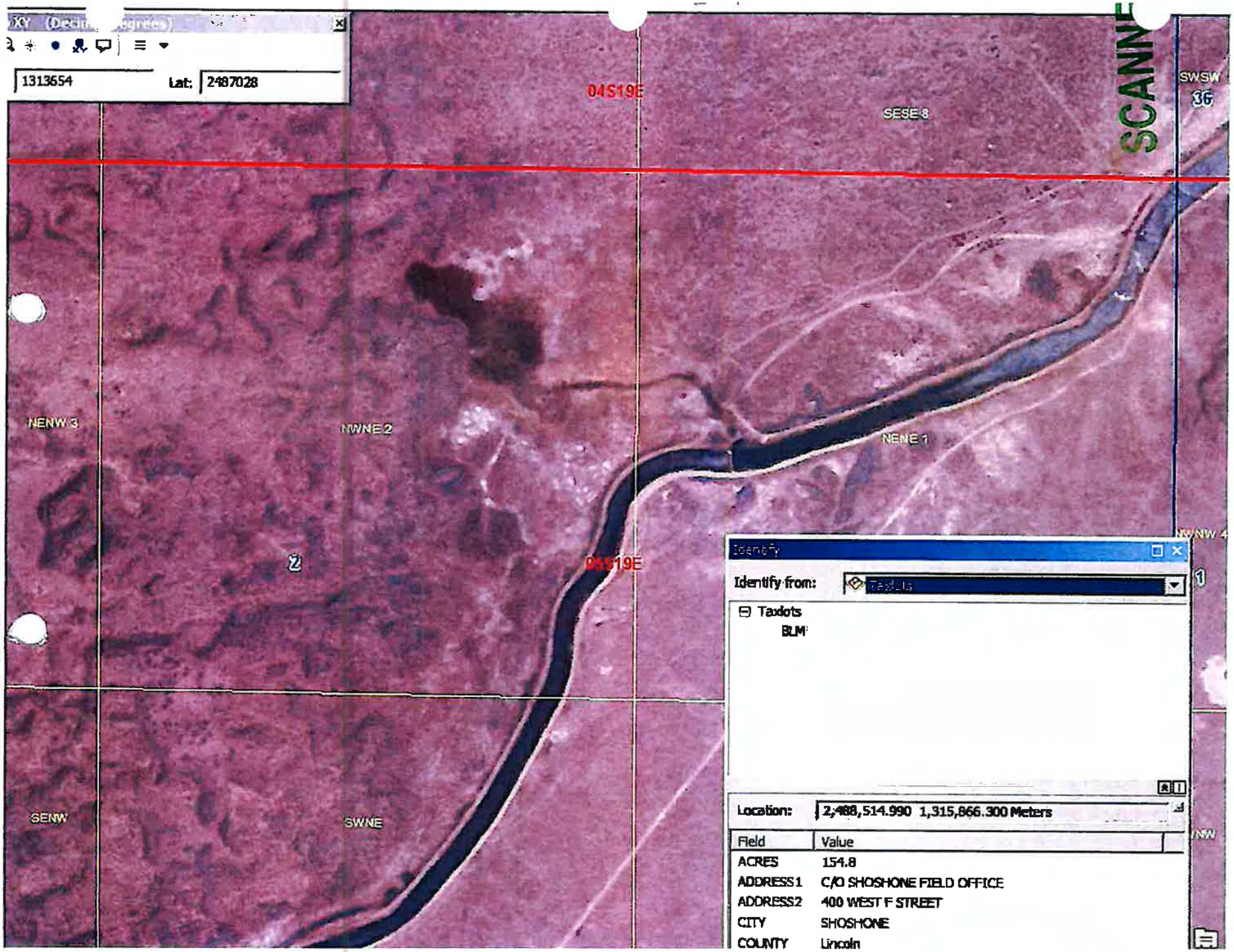


IDWR 30

SCANNED
WRF 37-7842
07/09/2014 14:29

WRI 37-7842

SCANNED


XY (Decim... degrees)
1313654
Lat: 2487028
04S19E
SESE 8
SCANNED
SWSW
36
NENW 3
NWNE 2
NENE 1
2
05S19E
Identify
Identify from:
Taxlots
BLM
Location: 2,488,514.990 1,315,866.300 Meters
Field
Value
ACRES 154.8
ADDRESS1 C/O SHOSHONE FIELD OFFICE
ADDRESS2 400 WEST F STREET
CITY SHOSHONE
COUNTY Lincoln
SENW
SWNE

IDWR 33

Edl, Michele

From: Farmer, Neal
Sent: Friday, August 01, 2014 10:24 AM
To: Edl, Michele; Keen, Shelley
Cc: Patton, Brian; Lynn Harmon
Subject: GPS coordinates for Dietrich canal floodway diversion gates

Michele,

Below is the information from a gps point I collected in year 2008 for the location of the diversion headgate structure on the Dietrich canal where water is spilled out into the BLM land.

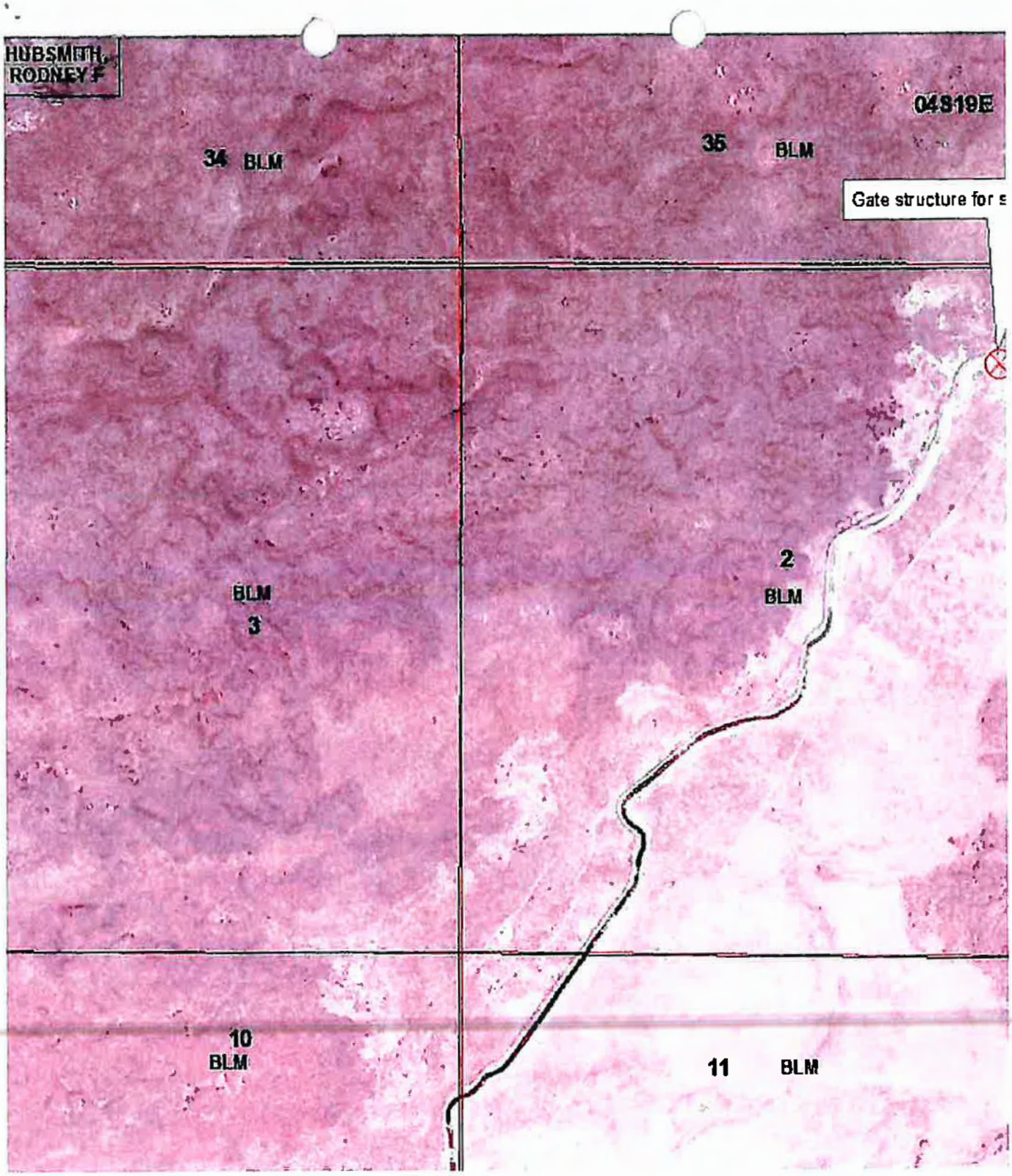
Easting = 2487028.663

Northing = 1313654.903

Neal's coordinates are in the wrong units system

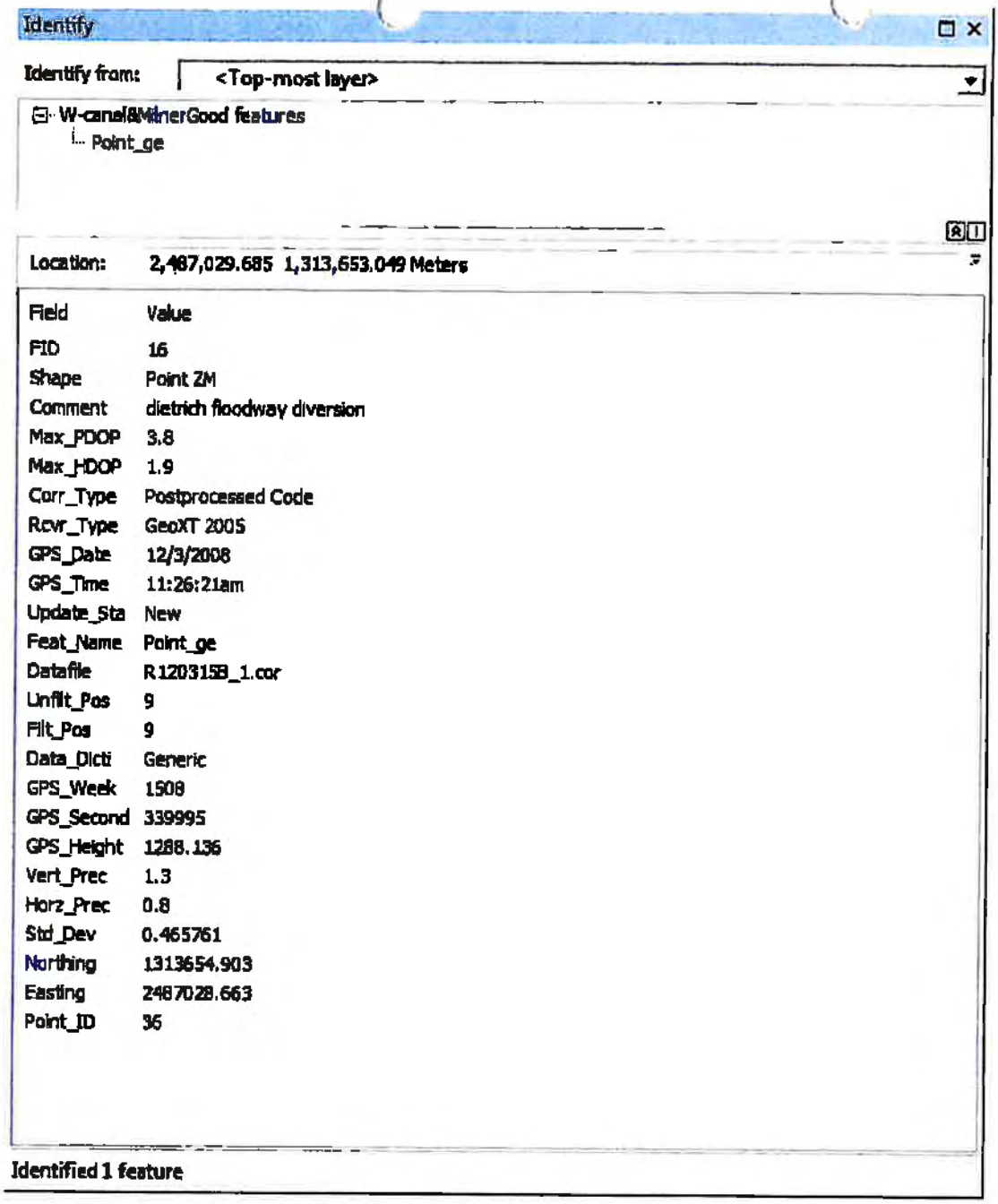
ANNED

IDWR 34



SCANNED

IDWR 35


Identify
Identify from:
<Top-most layer>
W-canal&MinerGood features
Point_ge
Location:
2,487,029.685 1,313,653.049 Meters
Field
Value
FID
16
Shape
Point ZM
Comment
dietrich floodway diversion
Max_PDOP
3.8
Max_HDOP
1.9
Corr_Type
Postprocessed Code
Rcvr_Type
GeoXT 2005
GPS_Date
12/3/2008
GPS_Time
11:26:21am
Update_Sta
New
Feat_Name
Point_ge
Datafile
R1203153_1.cor
Unfilt_Pos
9
Filt_Pos
9
Data_Dicti
Generic
GPS_Week
1508
GPS_Second
339995
GPS_Height
1288.136
Vert_Prec
1.3
Horz_Prec
0.8
Std_Dev
0.465761
Northing
1313654.903
Easting
2487028.663
Point_ID
36
Identified 1 feature

Edl, Michele

From: Farmer, Neal
Sent: Friday, August 01, 2014 8:03 AM
To: Edl, Michele
Subject: dietrich canal hydrogeology

Michele...not much info on the hydrogeology as there hasn't been many wells drilled ...given that it appears to be all basalt for several hundred feet and a depth to water table of about 200 feet,...that's about all we know.

Neal

Edl, Michele

WR# 37-7842

From: Farmer, Neal
Sent: Friday, July 11, 2014 9:44 AM
To: Edl, Michele; Keen, Shelley
Subject: BLM agreement for flood water release south of Richfield along Dietrich canal attached
Attachments: BLM Cooperative Agreement I-05-63 (Richfield site).pdf

Just fyi...here is the agreement to release flood waters out of the Dietrich canal onto BLM land that we discussed yesterday...no mention of authorized use as a recharge site.

Neal

United States Department of the Interior

IN REPLY REFER TO

2800

BUREAU OF LAND MANAGEMENT
Shoshone District Office
P.O. Box 2 B
Shoshone, ID 83352

June 15, 1982

Lou Pence
Soil Conservation Service
Wood River Resources RC&D
131 East Avenue E
Gooding, ID 83330

Dear Lou:

Enclosed is a copy of the flood control cooperative agreement I-05-63 that you requested. It should have all the requirements that would be expected of the cooperators, if they should need to use the public lands for this purpose.

Also enclosed is Information Bulletin No. 2, which explains what is required for filing an application for a right-of-way on public lands. You will also find an application form that must be used when making an application. All rights-of-way filings are now sent to this office.

If I can be of further help, please let me know.

Sincerely,

Ervin Cowley

Ervin Cowley
Monument Area Manager

Enclosures

COOPERATIVE AGREEMENT
I-05-63

BETWEEN

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
SHOSHONE DISTRICT OFFICE
P.O. BOX 2B
SHOSHONE, ID 83352

AND

MUTUAL AGREEMENT OF:

GOODING COUNTY COMMISSIONERS
GOODING, IDAHO 83330

LINCOLN COUNTY COMMISSIONERS
SHOSHONE, IDAHO 83352

CITY OF GOODING
GOODING, IDAHO 83330

CITY OF SHOSHONE
SHOSHONE, IDAHO 83352

TABLE OF CONTENTS

COOPERATIVE AGREEMENT
- I-05-63

I. PURPOSE:

The purpose of this agreement is to establish mutual guidelines and provide procedures and authorization so the cooperators can enter public lands administrated by the Bureau of Land Management (BLM) for flood control purposes. The public lands will only be used when there is an emergency to alleviate the dangers of flooding the communities of Shoshone and Gooding and when the natural drainage capacity of the Little Wood River and other canal laterals are insufficient to contain the water.

II. AUTHORITY:

A. Bureau of Land Management:

Section 307, Federal Land Policy and Management Act of 1976, P.L. 94-579, 43 U.S.C. 1737.

B. Cooperators:

III. AGREEMENT AREA

This cooperative agreement will involve only public lands located within the Shoshone BLM District, and described as follows:

T. 5 S., R. 19 E., Boise Meridian, Lincoln County, Idaho		
Section 2:	SW4NE4, SW4, NW4SE4	240 acres
Section 3:	SE4	160 acres
Section 8:	SE4	160 acres
Section 9:	S2	320 acres
Section 10:	NE4, W2, W2SE4	560 acres
Section 11:	NW4NW4	40 acres
Section 15:	NE4NW4, W2W2	200 acres
Section 17:	ALL	640 acres

There are 2,320 acres of public land in the agreement area which is considered a desert environment. The State of Idaho owns 640 acres contiguous on three sides to the agreement area and identified as Section 16, which is not part of this agreement.

The agreement area lies entirely within the Richfield Pasture of the Dietrich Butte Grazing Allotment. This allotment currently has 10 livestock operators who may use up to 5,419 active cattle AUMs each year. Also, there is fall sheep use on these lands by another livestock operator having grazing preference in the adjoining Wildhorse Allotment. Idaho Power Company has a 46 kv transmission line that traverses the tract with a 50 ft. right-of-way. The Dietrich Canal is also authorized by a right-of-way. This agreement is continuing the existing use of the lands for flood control purposes and is no way authorizing addition or new development to occur.

IV. DEFINITIONS

A. Bureau of Land Management (BLM):

The agency in the Department of Interior that has management responsibilities on those lands covered by this agreement.

B. Cooperators:

The governmental bodies of Lincoln and Gooding Counties and the cities of Shoshone and Gooding that have jointly agreed to the provisions of this agreement for the common purpose and effort of controlling flood waters along the Little Wood River.

C. District Manager:

The authorized officer in the Bureau of Land Management who has been delegated the responsibility, by the Secretary of the Interior, for the management of public lands within the Shoshone District.

D. Contractor:

All companies, groups, individuals, or agents to include federal and state agencies who are retained by the cooperators in their flood control program for the operation of this agreement.

E. Degradation:

The changing, altering, or lowering in character and quality of the lands as a result of the cooperators use through vegetative and soil disturbance, creating a negative or undesirable effect on the environment. This may be the effects from, but not limited to, the hydraulic action of flood waters or the disturbance by vehicles or heavy equipment.

V. OPERATION AND RESPONSIBILITIES

The Bureau of Land Management, acting through the District Manager, and the Cooperators, acting through the respective mayors and commission chairmen, agree as follows:

A. The Bureau of Land Management will:

1. Provide only the land used in the operation of this agreement.

2. Continue to allow existing uses on the subject lands and any additional uses which are compatible with this agreement. Existing uses on the subject land may include, but are not limited to recreation, minerals, livestock grazing, wildlife habitat, and public access.

B. The Cooperators will:

1. Provide all labor, material, equipment, and money needed in the maintenance programs, rehabilitation, or studies authorized by the cooperators for the operation of this agreement.

2. Exercise every reasonable precaution to prevent the degradation of all resources and shall rehabilitate the area, both inside and outside of the agreement area, which has been subject to degradation by the cooperators or their contractor's use.

3. Restrict operations to the existing roads or trails if vehicular equipment is used within the agreement area and no new roads will be constructed.

4. Indemnify and hold harmless the Bureau of Land Management, its officers, agents, and employees, from any and all damages and claims for damages of every description or kind whatsoever which may result from the exercise of privileges granted by this agreement or which may result from the exercise of any of the rights reserved herein.

5. Be subject to the provisions of Executive Order 11246 of September 24, 1965, as amended, which sets forth the Equal Opportunity clauses. A copy of this order may be obtained from the district manager.

6. Be responsible for the prevention and suppression of all range fires resulting from their own or their contractor's actions. This includes responsibility for suppression costs incurred by any party in controlling such fires that are determined to be the cooperator's responsibility.

7. Allow authorized representatives of the Bureau of Land Management and the general public the right of unrestricted ingress and egress within the agreement area.

8. Remove from the public lands all trash, litter, garbage, and other items originating from the cooperators and contractor's use.

9. Notify the district manager immediately if damage has occurred to public lands within or outside the agreement area as a result of the operation of this agreement.

10. If additional development is needed, beyond that which now exists, to prevent flood waters from overflowing the use area to external lands, provide the district manager with detailed plans for such development, 30 days in advance, for review and concurrence.

C. Other Items Mutually Agreed by the Bureau of Land Management and Cooperators:

1. This agreement in no way abrogates BLM responsibility and authority as set by the Federal Land Policy and Management Act (Public Law 94-579, 90 Statutes 2743), for management of the subject lands.

2. None of the items covered in this cooperative agreement are to be construed as obligating either party to the expenditure of funds in excess of authorized appropriations.

3. This agreement shall remain in full force and effect until modified or terminated by mutual agreement of BLM and the cooperators. This will be accomplished by a 30-day written notice by either party on the other.

Any proposals to change, modify, or otherwise alter any part of this agreement must have total concurrence by all the cooperators and BLM.

4. This agreement or any interest therein shall not be transferred or assigned without prior approval, in writing, of the district manager and the cooperators.

5. All tools, equipment, and other property taken upon or placed upon the public land by the cooperators or contractor during maintenance or rehabilitation efforts, shall remain the property of the cooperators or contractor and will be removed by the cooperators or contractor within a reasonable time after completion of their work. If they are not removed as directed by the district manager, within a reasonable time, then trespass actions can be taken towards the cooperators or contractor under the provisions of 43 CFR 9230.

6. No rental or use fees will be charged for the use of the public lands involved with this agreement. However, all damage and rehabilitation of the lands will be the responsibility of the cooperators or contractor use. If mineral materials such as gravel, fill dirt, etc., are needed for any phase of maintaining or rehabilitating the subject land, the cooperators will notify BLM. These materials shall be applied for under the provisions of 43 CFR 3610 and 3620, whichever is applicable.

D. Effective Date

This cooperative agreement will be in full force and effect as of the last date signed.

FLOOD CONTROL COOPERATORS

LINCOLN COUNTY COMMISSIONERS

O. J. HARRIS, CHAIRMAN
SHOSHONE, IDAHO
4-10-81
DATE

GOODING COUNTY COMMISSIONERS

RICK BRAILSFORD, CHAIRMAN
GOODING, IDAHO
4-10-81
DATE

CITY OF SHOSHONE

ELWOOD WERRY, MAYOR
SHOSHONE, IDAHO
4-8-81
DATE

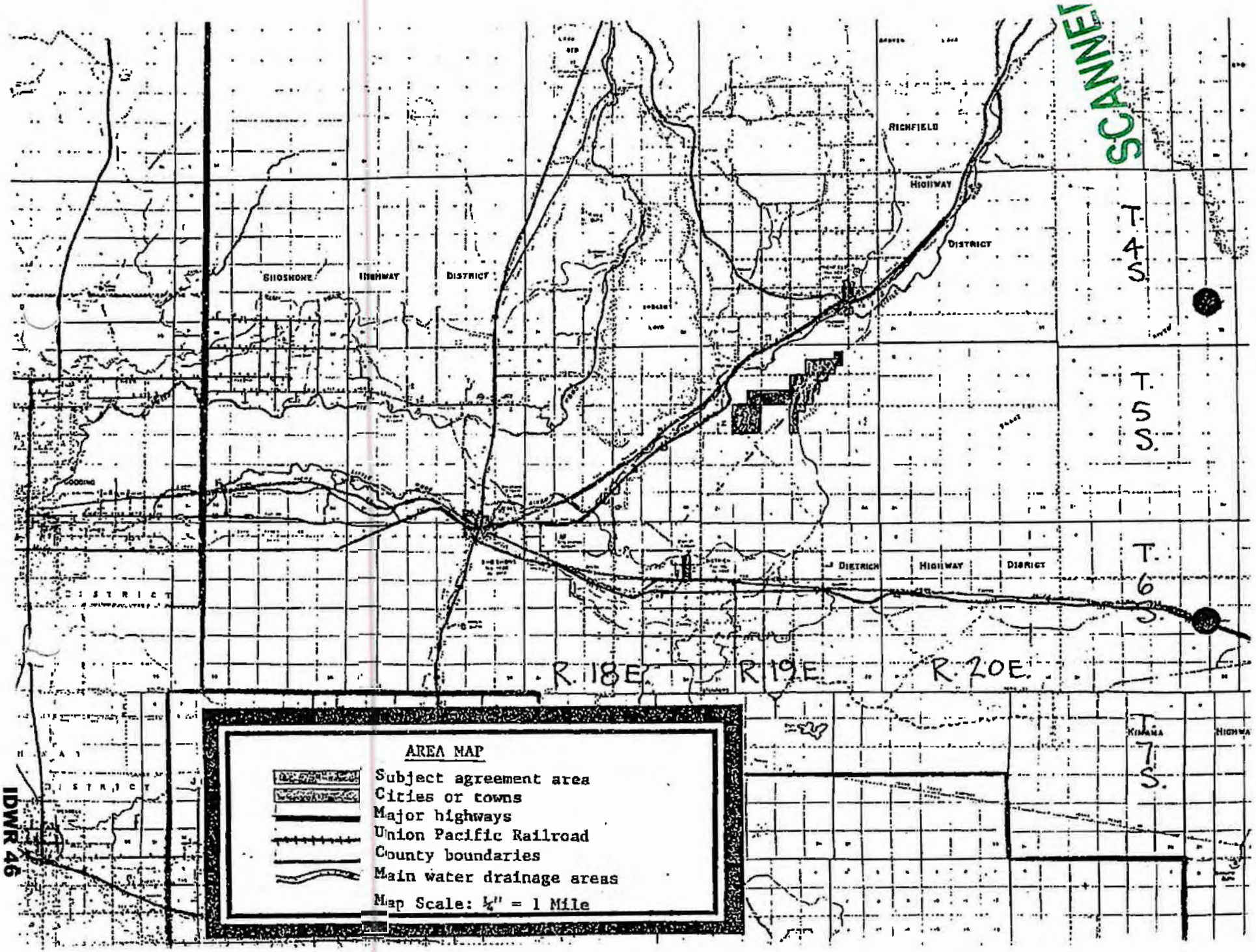
CITY OF GOODING

J. E. HELLER, MAYOR
GOODING, IDAHO
4-17-81
DATE

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

for CHARLES J. HASZIER
SHOSHONE DISTRICT MANAGER
SHOSHONE, IDAHO

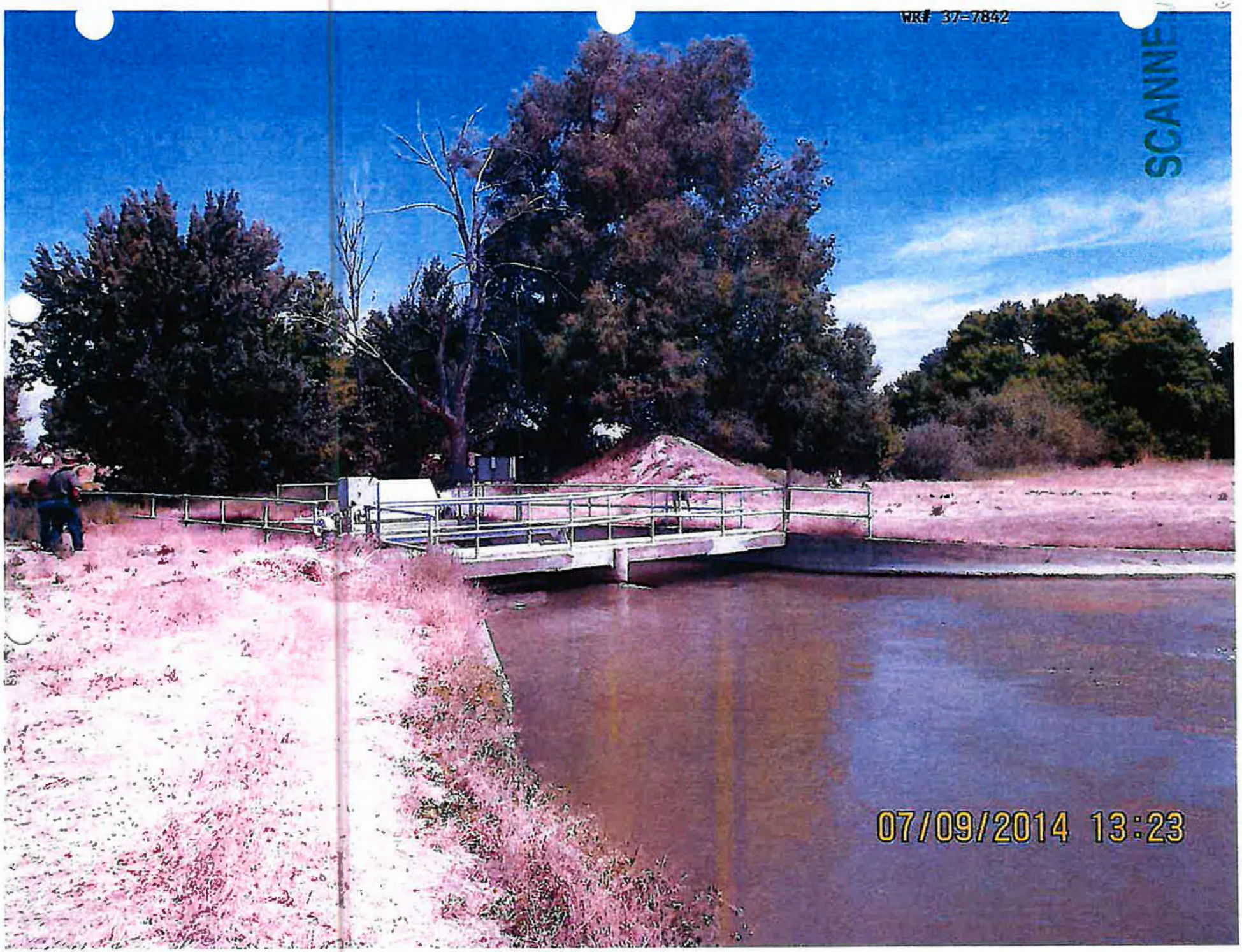
20 April 1981


SCANNED
RICHFIELD
HIGHWAY
DISTRICT
SHOSHONE
HIGHWAY
DISTRICT
GOODING
DISTRICT
HIGHWAY
DISTRICT
T. 4 S.
T. 5 S.
T. 6 S.
T. 7 S.
R. 18 E.
R. 19 E.
R. 20 E.
AREA MAP
Subject agreement area
Cities or towns
Major highways
Union Pacific Railroad
County boundaries
Main water drainage areas
Map Scale: ½" = 1 Mile

IDWR 46

bifurcation 7/9/2014 photo locations WR# 37-7842

IDWR 47



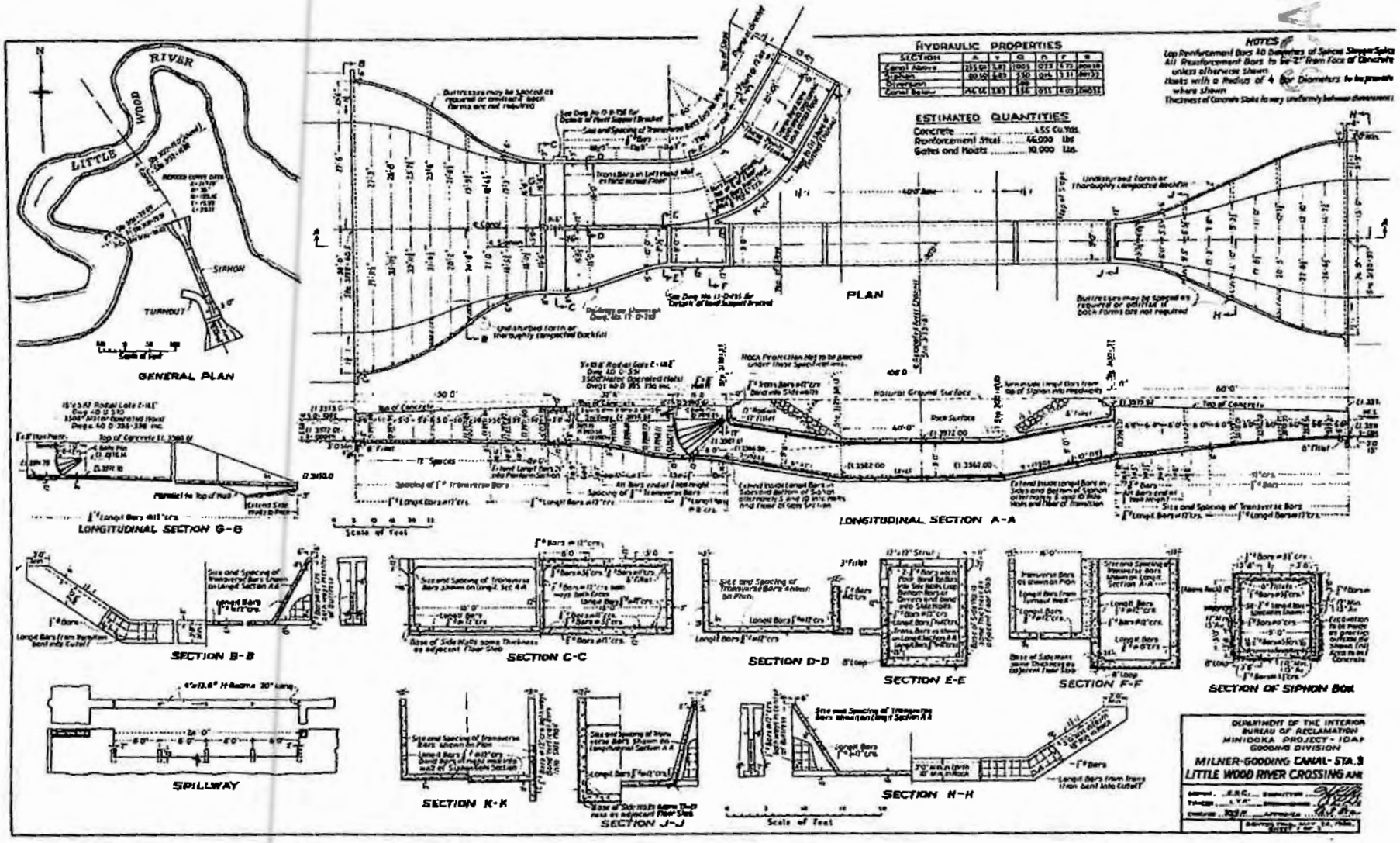
IDWR 48

IDWR 50

SCANNED
07/09/2014 13:22

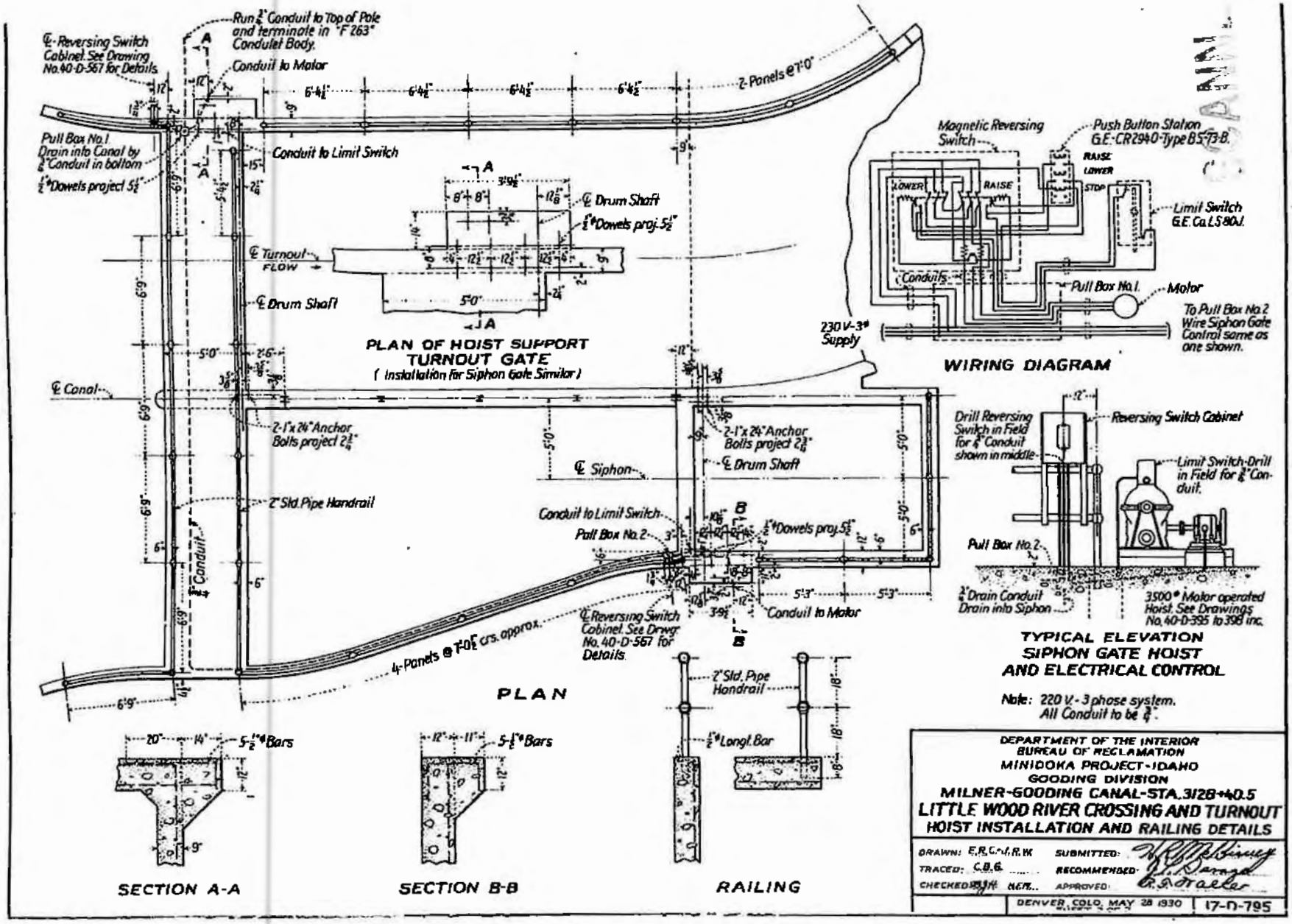
IDWR 52

Bifurcation Works



copy of the bifurcation engineering drawing provided by BWCC 7/9/14
WR# 37-7842

IDWR 53



IDWR 54

copy of the bifurcation engineering drawing provided by BWCC 7/9/14
WR# 37-7842

S. Keen's notes RE: Permit 37-784[illegible] (1)
7/9/2014

Difference between 54 + 14 on the LWR could be attributable to losses during high flows. Unlikely that water came from ~~[illegible]~~ LWR into Milner Gooding because flows were 400+ cfs in the canal.

at Shoshone ⇒ Lynn doesn't think getting LWR water into the canal with 400 cfs in the canal is possible.

No losses from 56 to 57.

Canal is flat from 53 to 56. Can make it look like a gaining reach by setting gates.

April 1984 228' to 258' in the District Main Canal flood runoff from LWR + BWR to the floodway. Huge area

May 30 still 220 cfs ↖

Would normally run 100 to 150 cfs for irrigation in late May. Would have to have dumped water.

SCANN

IDWR 55

Anything over 150 cfs was probably being dumped. Lynn thinks this would be a conservative estimate. (From District canal early in the irrigation season.

Edl, Michele

From: Lynn Harmon [lynnharmon@cableone.net]
Sent: Tuesday, June 17, 2014 6:58 AM
To: Edl, Michele
Subject: RE: original readings and rating table **WR# 37-7842**

Michele, The water source is from Big wood river via the Richfield Main and Jim Burns Slough

From: Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]
Sent: Monday, June 16, 2014 6:26 PM
To: Lynn Harmon
Subject: RE: original readings and rating table

Mr. Harmon,
I have had a chance to compare the field examiner's report with the page of the measurement log that you have provided.
The field examiner's report has spreadsheet with a column labeled with the heading 'JBS'. I am assuming that that signifies the Jim Burns Slough.

My question:
What is the source of water that is traveling in the Jim Burns Slough before it crosses Hwy 93 and joins the Little Wood River?
Thank you.
Michele Edl

From: Lynn Harmon [mailto:lynnharmon@cableone.net]
Sent: Friday, June 13, 2014 11:47 AM
To: Edl, Michele
Subject: original readings and rating table

Keen, Shelley

From: Joe [joe@brownjameslaw.com]
Sent: Friday, April 04, 2014 11:43 AM
To: Keen, Shelley
Subject: Permit No. 37-7842
Attachments: History.pdf; Exhibits.pdf

Dear Mr. Keen:

I write in follow up to our recent telephone conversation regarding Permit No. 37-07842 and the Department's investigation for licensing. I have attached a history regarding the subject water right. The history raises several concerns regarding licensing on the permit.

However, we do have a couple of primary concerns. First, the Department may not be aware that it is impossible to divert water from the Little Wood River through the Gooding Milner Canal at the denoted diversion structure when the Gooding Milner Canal already contains water. For your review, I have attached a couple of exhibits which were included with the Beneficial Use Field Report submitted to the Department in November 1993. The first page of exhibit is a map which shows the measuring stations, diversion structure, and recharge site regarding both permit number 01-07054 and 37-07842. The second page of the exhibit is a Summary of Recharge Records, again, under both permits.

The Field Report appears to indicate that the waters were comingled at the point of the diversion structure where the Gooding Milner Canal crosses the Little Wood River commonly referred to as "the Bifurcation." It is possible to divert water from the Little Wood River into the Gooding Milner Canal at the Bifurcation. However, in order to do so it is necessary to back up the water in the Little Wood River to force the water to go up gradient into the Gooding Milner Canal system. This can only be done when the Gooding Milner Canal is empty. Otherwise the water from the Gooding Milner Canal would simply dump into the Little Wood River.

This fact is recognized by the managers of the Big Wood Canal Company in American Falls Reservoir District #2. This fact provides support for the comments in the Department's file indicating that no recharge took place from the Little Wood River prior to June 1, 1992.

In reviewing the Summary of Recharge Records shows several errors. Some rather obvious. As an example, the columns denoting max possible recharge from Big Wood and max possible recharge from Snake River, appear to be in error in that the numbers under the columns should be in the opposite column based on the formula provided. Also, there is simply straight forward errors such as on April 8, 1986, where it denotes 260cfs was measured at Measuring Station No. 57 resulting in 260cfs recharge possibly from the Big Wood River. When in actuality Measuring Station No. 57 is beyond the recharge site. It would appear to be prudent to review the canal company records directly to determine what recharge occurred prior to June 1, 1992.

Another issue of primary concern is whether the priority date should be advanced to November 29, 1993, the date when satisfactory proof of beneficial use was received by the Department. The record indicates that the permit lapsed and in the case when satisfactory proof was received by the Department following 60 days of a lapse of the permit, the Department may, upon a showing of reasonable cause reinstate the permit, but in reinstating the permit the Department must advance the priority date of the permit to the date the proof of beneficial use was received. In this case, November 29, 1993.

Please review the issues raised in the provided history. If you have any questions, please feel free to give me a call.

SCANNED

Thanks for your time and consideration.

Joe

History
Permit 37-07842

An application was filed on July 2, 1980 seeking a permit to divert 800 cfs from the Little Wood and Big Wood Rivers for purposes of ground water recharge. (Application for Permit 37-07842). The application denoted the point of diversion as the SW¼ of SE¼ of Section 24, Township 4 S, Range 19 E, located within Lincoln County. *Id.* The application proposed diverting the water through the use of the Dietrich and Richfield canal systems. *Id.* It should be noted that neither the Little Wood nor the Big Wood Rivers flow though Section 24, Township 4 S, Range 19 E. However, the Dietrich canal diverts from the Little Wood River in Section 25, Township 4 S, Range 19 E. The Department recognized these errors during an early review and made a note to the file indicating that the point of diversion on the application was in error, and that the only apparent source of water would be the Little Wood River. (Note to File 12-29-81). The applicants never sought to amend their application.

The application was incomplete as to the description of the proposed place of use, but did include a drawing indicating that the water would be diverted from the Little Wood River through the Dietrich Canal to the recharge site southeast of Richfield, Idaho. (Application for Permit 37-07842). The published notice of application for water right clarified that the possible recharge sites were located within Sections 15, 16, 21, 22 and 28, Township 5 S, Range 19 E, Lincoln County. (Affidavit of Publication). The application indicated that five years was required for completion of the works and application of the water for recharge. (Application for Permit 37-07842).

The subject application sought a permit to divert water from the Little Wood River through the Dietrich Canal for purposes of recharge southeast of Richfield. (Application for Permit 37-07842). The applicants filed another application on the same day seeking to divert

water from the Snake River through the Milner-Gooding Canal for purposes of recharge northwest of Shoshone, Idaho. (Application for Permit 37-07842). This other application was ultimately assigned Permit No. 01-07054.

The subject application was approved on June 2,1982, under Permit No. 37-07842, with a completion and submission of beneficial use deadline of June 1, 1987. (Application for Permit 37-07842). A request for extension of time was submitted on June 1, 1987. (Request for Extension 6-1-87). The request was returned by the Department to the applicant on July 16, 1987, for additional information. (IDWR./Saxton ltr 7-16-87). Ultimately, the Department approved the request for extension on October 4, 1989, extending the completion and proof of beneficial use deadline to June 1, 1992. (Request for Extension 6-1-87).

The Department sent a notice of proof of beneficial use due on March 31, 1992, providing notice that proof of beneficial use had to be submitted no later than June 1, 1992. (Proof Due Notice 3-31-92). Proof of beneficial use was not timely submitted and the Department sent a lapsed notice on June 5, 1992. (Lapse Notice 6-5-92). The Department received proof of beneficial use on or about June 15, 1992. (IDWR./Gustafson ltr 6-15-92). The Department returned the proof of beneficial use form to the applicants on June 15, 1992, stating that the proof was unacceptable. *Id.* The Department further informed the permit holder that the permit was still lapsed, and that the priority date would be penalized one day for every day that the proof was not submitted. *Id.* On July 9, 1992, the Department received a beneficial use field report regarding the permit, but did not receive the original proof of beneficial use form. (IDWR/Gustafson ltr 7-9-92). The Department informed the permit holders that they could not continue licencing until it received the original proof of beneficial use form. *Id.* On July 23,

1992, the Department again provided notice that they could not process the permit without an original proof of beneficial use form. (IDWR/Gustafson ltr 7-23-92).

On July 27, 1992, the Department received the original proof of beneficial use form. (Proof Beneficial Use 37-07842). The form listed both Permit No. 37-07842 and Permit No. 01-07054. *Id.* The proof of beneficial use indicated a total of 300 cfs of ground water had been diverted from the Snake River. *Id.* The beneficial use field report denoted the source as the Snake River, provided a point of diversion different from the application, as well as different place of use. *Id.* The beneficial use field report also denoted that the water was diverted through the Milner-Gooding Canal and not the Dietrich Canal. (Field Report 37-07842). The Department accepted the amended proof of beneficial use and beneficial use field report. The Department entered its order reinstating the permit and advancing the priority date to August 25, 1990 on the 29th day of July, 1992. (Order of Reinstatement 7-29-92).

On further review, the Department determined that the beneficial use field report was not acceptable. The applicants provided an amended beneficial use field report on October 19, 1993. (IDWR/Saxton ltr 10-21-93). The Department determined that the amended beneficial use field report was still not acceptable and returned it to the applicants on October 21, 1993. *Id.* On November 29, 1993, the Department received another amended beneficial field report denoting both Permit No. 01-07054 and Permit No. 37-07842 with a total diversion of 300 cfs. (Amended Field Report 37-07847). This time the beneficial use field report indicated the source as the Snake River/Big Wood River but did not include the Little Wood River. *Id.* Also, the field report indicated a diversion point distinct from application for permit. *Id.* Again, the total diversion rate was stated at 300 cfs. *Id.* The Department entered a reinstatement order regarding

both permits on December 1, 1993. (Reinstatement Order). The Department failed to advance the priority date in recognition of the continuing lapse. *Id.*

There appears to be little activity in the file until 1999 when the permit holders were anticipating transferring legal ownership to the Idaho Water Resources Board. On March 19, 1999, the Idaho Water Resources Board agreed to accept assignment of the permits. (IDWR/Hass ltr 3-22-99). In its review leading up to the acceptance of the assignment, the Department indicated that both Permit No. 01-07054 and Permit No. 37-07842 had filed proof of beneficial use for diversion rate of 300 cfs each. (Memo to File 1-14-99). This is incorrect. As noted above, the Proof of Beneficial Use form, as well as the Beneficial Use Field Report indicated a combined total of 300 cfs, with the water coming from the Snake River via the Milner-Gooding Canal.

The conclusion that a total of 300 cfs from the Snake River had been put to beneficial use is supported by the Department's own internal review of the permits. A Memo to the file in October 1999 indicated that recharge under Permit No. 01-07054 from the Snake River through the Milner-Gooding Canal could be confirmed and the license for that has been prepared for signature. (Memo to File 10-7-95). However, regarding Permit No. 37-07842 there did not appear to be any application toward beneficial use. Based on the Department's conversation with Dan McFadden of the Lower Snake River Aquifer Recharge District, no ground water recharge had ever taken place from the Little Wood River via the Dietrich Canal. *Id.* Also, based on the Department's conversation with Paul Castelin of the Technical Services Bureau, no recharge from the Little Wood or Big Wood River had taken place. *Id.* The Department concluded that there has been no beneficial use to date and that the permit should be routed for extension or reinstatement processing. *Id.* This conclusion was further supported by the

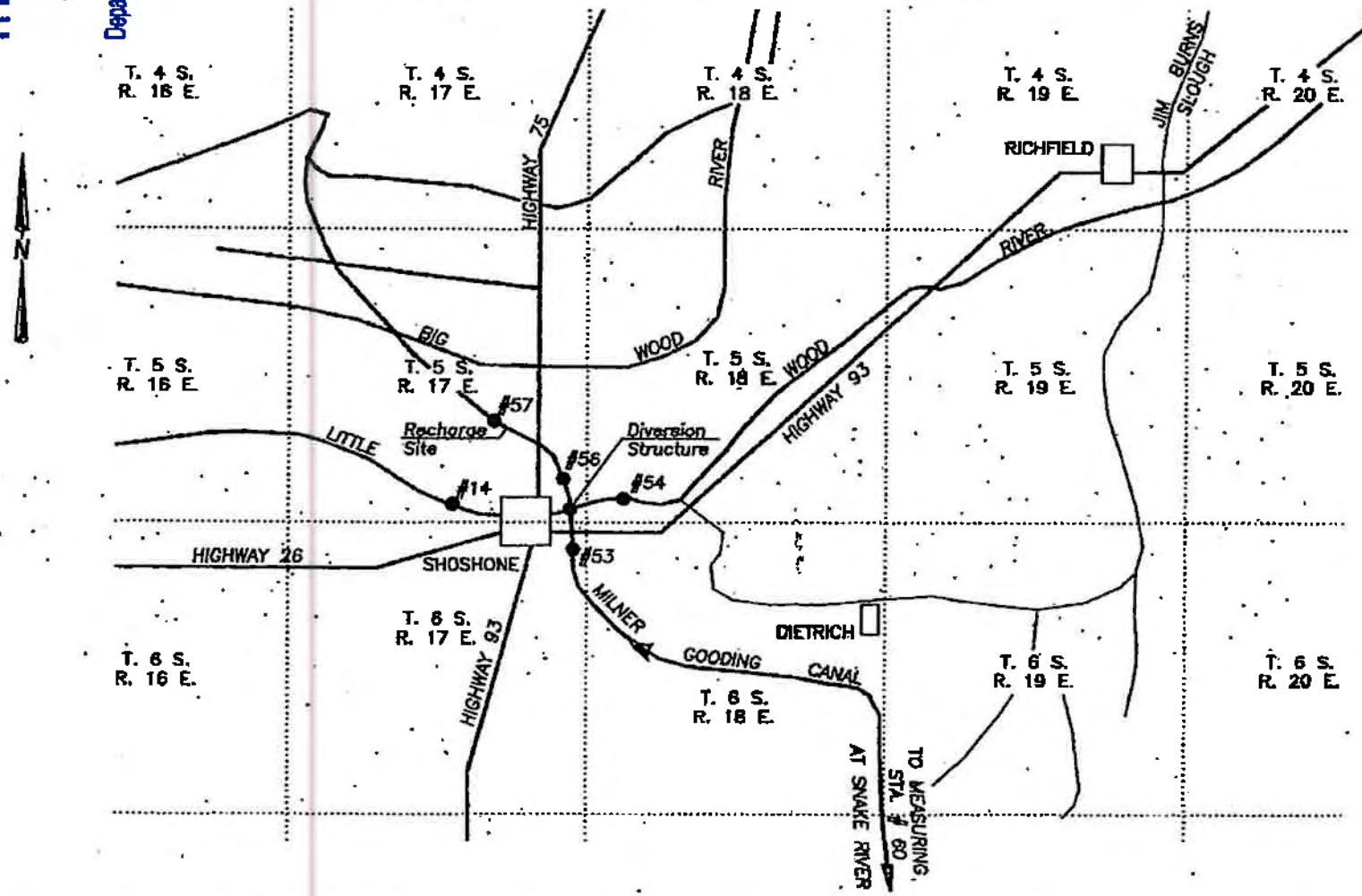
correspondence from the Big Wood Canal Company and American Falls Reservoir District #2 of November 1999, which clarified that all recharge water from 1986 through 1995 was Snake River water delivered via the Milner-Gooding Canal. (Oneida ltr 11-99).

Though the Department's file contains a proof of beneficial use form and beneficial use field report, which has not been withdrawn, the Idaho Water Resources Board adopted a resolution asking the Director to extend the proof date regarding the "undeveloped" portion of the permit. (WRB Resolution 3-21-00). An order was entered on April 3, 2000 extending the proof date for the permit until June 1, 2004. (IDWR 4-3-00). On August 25, 2004, the Idaho Water Resources Board again requested for an extension of time to submit proof of beneficial use resulting in another extension to June 1, 2009. (Request for Extension 8-25-04). On June 1, 2009, the Department received another request for extension of time to submit proof of beneficial use. (Request for Extension 6-1-09). On March 19, 2010, while the request for extension of time was pending, the Director indicated "[It] does not appear the beneficial use of water for recharge purposes has occurred under this permit to date, despite the confusion in the record on this issue." (IDWR./Spackman ltr 3-19-10). The request for extension was granted on the 2nd day of September 2010 and the time within which to submit proof of beneficial use was extended to June 1, 2014. (Request for Extension 6-1-09).

My clients filed a Petition for Hearing, and Petition for Declaratory Ruling on September 22, 2011. In November of 2011, the Hearing Officer issued a Recommended Order wherein he found the Department's actions in granting a series of extensions void and rescinded the Department's order of September 2nd 2010 granting an extension of time within which to submit proof of beneficial use. The hearing officer noted that "The Department will investigate the extent of beneficial use occurring prior to June 1, 1992 as part of the licensing process." (Rec.

Order 11-30-11). If IWRB or the Petitioners disagree with the Department's determination of beneficial use occurring within the authorized development period, the proper venue to raise arguments regarding the true extent of beneficial use would be the licensing process." *Id.* Accordingly, the Hearing Officer ordered: "The Department shall conduct an investigation of Permit 37-7842 for licensing purposes and issue a license consistent with its findings." *Id.* The Director adopted the Recommended Order as his Final Order on February 28, 2014. (Final Order 2-28-12)

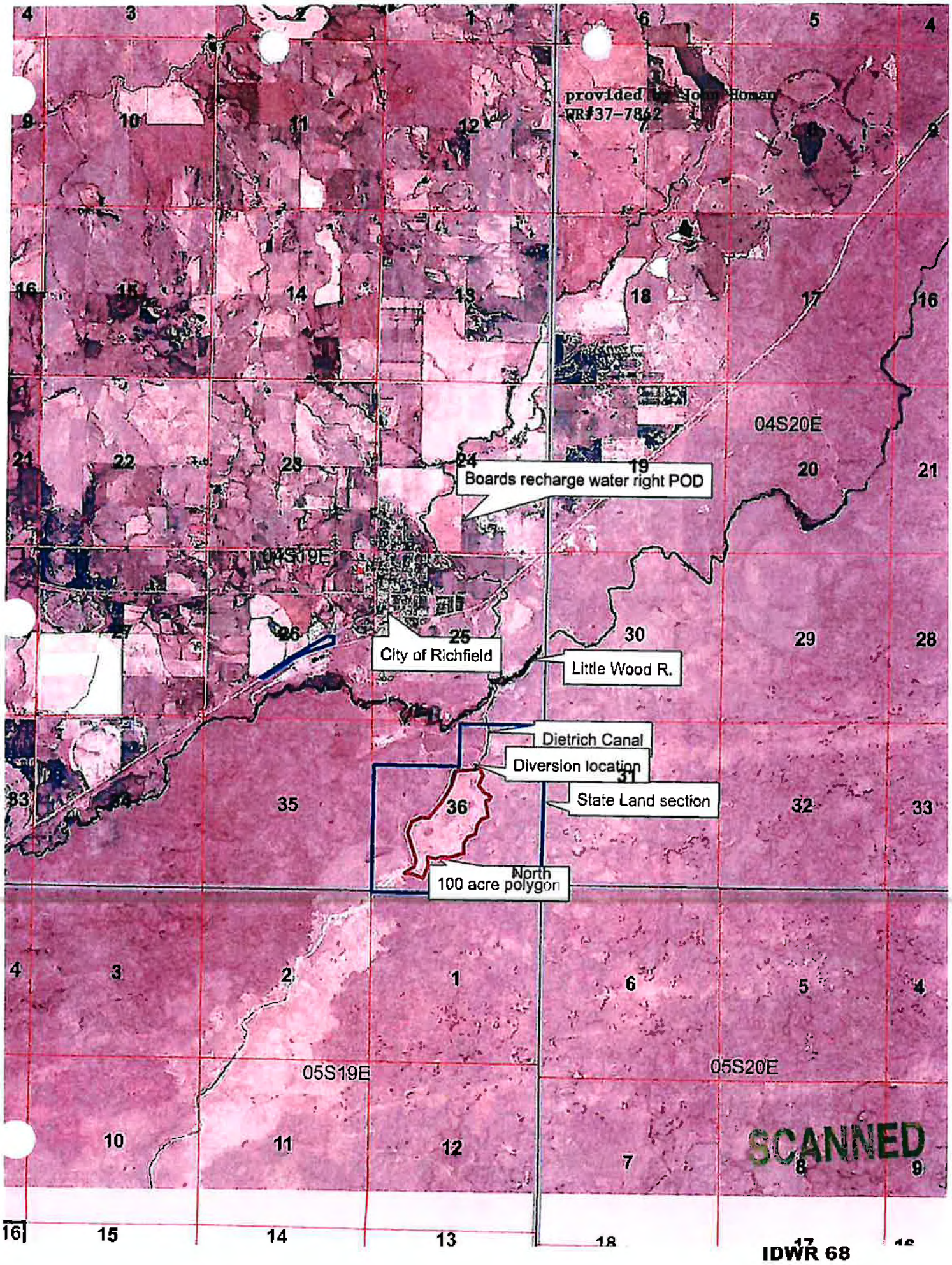
Exhibit For
Lower Snake River Aquifer Recharge
Permit No's. 01-07054 & 37-07842



Summary of Recharge Records for Lower Snake River Recharge Permit No. 01-07054 & 37-07842

DATE	MEASURING STAT ON						RECHARGE	MAX POSSIBLE RECHARGE FROM BIG WOOD	MAX POSSIBLE RECHARGE FROM SNAKE RIVE
	JBS	14	53	54	56	57			
04-07-86			220		252	252	0		
04-08-86						260	260	260	
04-09-86		646	425		432	260	172	172	
04-10-86			401		448	265	183	183	
04-11-86	97	692	472		460	265	195	195	97
04-12-86	57		472			261	261	261	57
04-13-86	62					270	270	270	62
04-14-86	66	717	486	787	486	275	211	211	66
04-15-86	52	681	485	721	482	252	230	230	52
04-16-86	57	659	479	689	470	239	231	231	57
04-17-86	43	636	405	674	496	223	273	273	43
04-18-86	40	604	614	628	632	310	322	322	40
04-19-86	73	556	596	564	618	342	276	276	73
04-20-86	142		596	563			---	---	142
04-21-86	141	615	596	651	618	342	276	276	141
04-22-86	50	526	585	544	604	350	254	254	50
04-23-86	221	454	566	544	580	360	220	220	220
04-24-86	213	596	572	636	586	396	190	190	190
04-25-86	168	560	563	585	580	394	186	186	168
04-26-86	181	500	644	524	654	340	314	314	181
04-27-86	172		644	530				---	172
04-28-86	165	615	696	537	648	465	182	182	165
04-29-86	158	580	670	503	626	465	161	161	158
04-30-86	142	506	661	420	616	459	157	157	142

JBS - Jimmy Byrnes Slough
All flows in CFS as recorded by Bigwood Canal Co.
Recharge = 56-57
Max Recharge (from Snake River): Total discharge but not to exceed flow at M.S. 53. M.S.
Max Recharge (from Big Wood River): Total discharge from JBS but not to exceed total dishcarge.
Measuring stations 14+56 should approximately total measuring stations 53+54


provided by John Homan
WR#37-7862
Boards recharge water right POD
04S20E
04S19E
City of Richfield
Little Wood R.
Dietrich Canal
Diversion location
State Land section
North
100 acre polygon
05S19E
05S20E
SCANNED
IDWR 68

MEMORANDUM

DATE: February 27, 2014

TO: Water Right File 37-7842

FROM: Shelley W. Keen SWK

RE: Conversation with Attorney Joe James

This morning I spoke with attorney Joe James (208-934-8185) about the licensing review effort for Permit 37-7842. Mr. James said he represents a group of hydropower producers who do not believe there was any beneficial use of water established in connection with the permit. Mr. James's allegation is that water cannot be diverted from the Wood River into the Milner-Gooding Canal when there is Snake River water in it because of the head differential. Therefore, any water conveyed to recharge would have been from the Snake River.

I invited Mr. James to email me his concerns in detail. I indicated that if he did so, IDWR would evaluate and account for them in its license review.

MEMORANDUM

Date: November 06, 2013

To: Water Right File 37-7842/1-7054

From: Michele Edl

Re: recharge capacity

Initial review

This permit authorizes 800 cfs comingled from both the Big - Little Wood Rivers and the Snake River to be put to beneficial use for groundwater recharge. In spite of a series of processing actions after the amended Beneficial Use Field Report was accepted in 1993, the right is limited by the Proof of Beneficial Use statement to 300 cfs.

The recharge event confirmed by the examiner occurred in April 1986. Discharge data from USGS station #13142500, Big Wood River below Magic Dam near Richfield ID, confirms that Magic reservoir filled early that year and a significant quantity of water was released from the impoundment before the irrigation season began. See the attached graph.

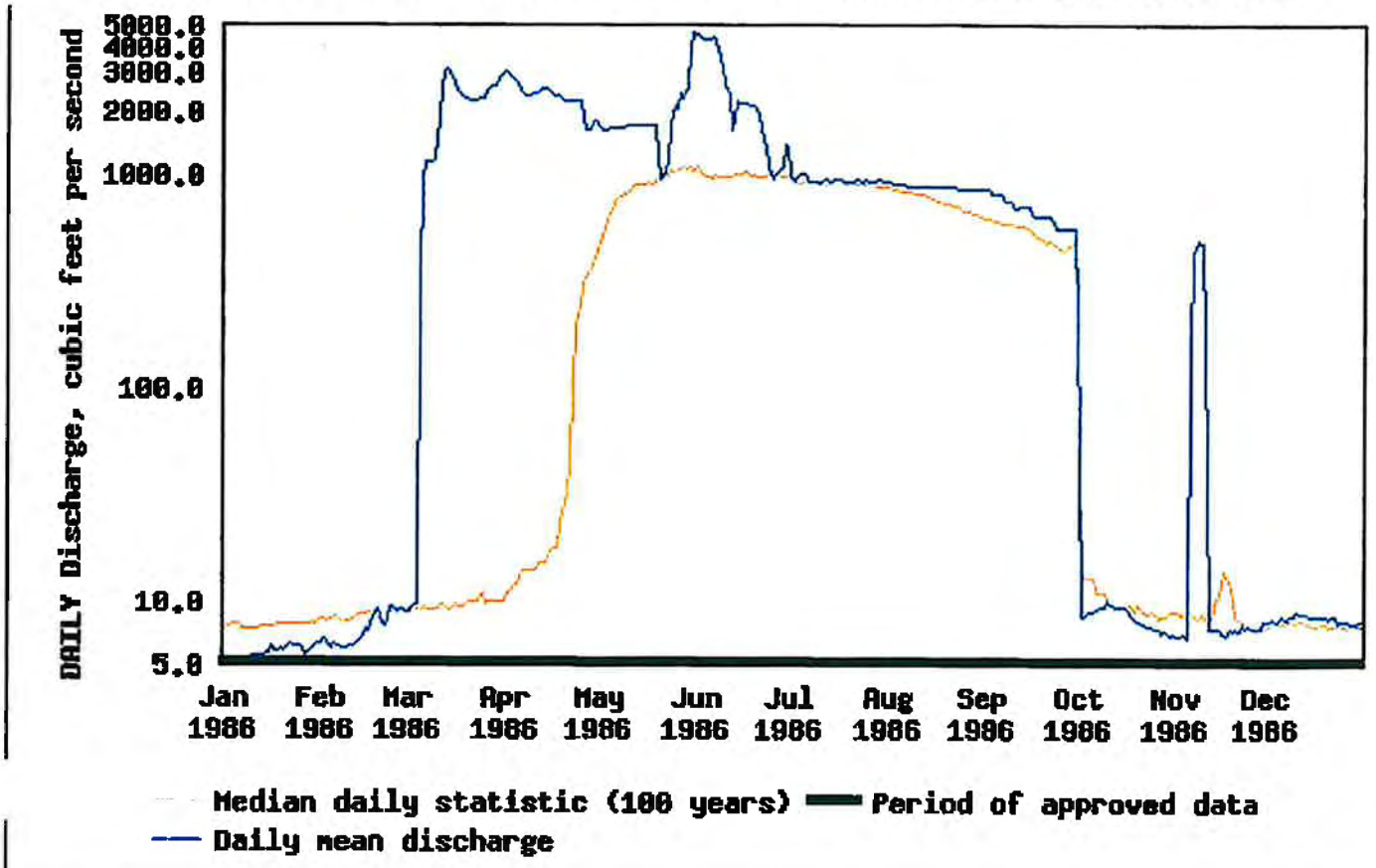
ESPA Modeling

On October 22, 2013, I attended a seminar presentation by Mike McVay (Technical Hydrogeologist, State Office, IDWR). A copy of the seminar announcement is attached. As a result, I recognized similarities between the place of use authorized by this permit and the Shoshone site described in Mr. McVay s presentation. And I anticipated that elements of this water right had been analyzed by Mr. McVay as part of his recharge investigation.

I emailed Mr. McVay a request to confirm if 300 cfs could be beneficially used for recharge at the POU location of this permit. In short, his answer was yes. However, he also stated that the site does have limits on its ability to accept recharge. This site cannot utilize the 800 cfs originally authorized by the permit. It is limited by the infiltration rate to 695 AF or ~ 350 cfs at most.

USGS

USGS 13142500 BIG WOOD RIVER BL MAGIC DAM NR RICHFIELD ID



Idaho Water Resources Research Institute
Water Resources and Hydrology Seminar

IDAHO WATER RESOURCES RESEARCH INSTITUTE

Title: "Using the ESPAM2,1 Aquifer Model to Evaluating Recharge on the Eastern Snake Plain"

Presenter: Mike McVay, IDWR

Date: Tuesday, Oct 22, 2013, 11:30-12:20 Mountain Time
10:30-11:20 Pacific Time

Locations: **UI-Boise @ Idaho Water Center – Classroom 162**
Idaho Falls @ University Place, Tingy Admin Bldg., 350A
UI-Moscow @ Education Bldg Room 103
Pocatello @ ISU Oboler Library Room B06

Abstract:
Water levels in the Eastern Snake Plain aquifer have been in decline since the 1950's. One mechanism for stabilizing water levels is managed aquifer recharge. However, limited resources require that managed recharge be done efficiently and effectively. Groundwater modeling provides a powerful tool for evaluating recharge activities, but it must be used responsively.

Biographical Info:

Mike McVay is a Technical Hydrogeologist at the Idaho Department of Water Resources. He earned a Bachelor's of Science in Geologic Engineering and a Master's of Science in Hydrology from the University of Idaho. Mike is currently employed at the Idaho Department of Water resources and specializes in aquifer characterization and groundwater modeling. Mike is also registered as both a professional geologist and a professional engineer in the State of Idaho.

The IWRRI Hydrology Seminar Series is open to all interested professionals, legislators, water supply managers, local government representatives, attorneys, students and interested public. Please pass this announcement on to anyone you think may be interested. If you would like to be removed from this list or know someone who should to be added please contact: Deborah Wold (208) 332-4430 or dwold@uidaho.edu.

Edl, Michele

From: McVay, Michael
Sent: Tuesday, November 05, 2013 9:54 AM
To: Edl, Michele
Subject: RE: recharge water right 37-7842

Hi Michelle,

Fortunately for us, we have already modeled recharge at the Shoshone site in an effort to prioritize recharge locations. Part of the analysis entailed investigating the capacity to deliver water to the site and how much the site can infiltrate. I've listed the recharge capacities and how we obtained the information below:

- Diversion Capacity: This is the ability to get water to the site. This number was derived by looking at past recharge effort at the site. The maximum amount of water successfully delivered to the Shoshone recharge site was 19,900 AF/month (19,900/30.5 = **652 Af/day**).
- Infiltration Capacity: This is the ability of the site to infiltrate water. Based on conversations with the canal manager, the maximum infiltration rate is 21,200 AF/month (**695 AF/day**).
- Groundwater Capacity: This is the assessment of "enough room" for recharge. This is based on depth to groundwater and considers if the recharge will immediately return to the surface-water system, or threaten infrastructure. Due to relatively deep groundwater, the site can take **656 AF/day**.
- Recharge you are assessing: In your email you asked if 300 cfs for 21 days is reasonable for recharge. Converting 300 cfs into AF/day is **595 AF/day**.

Therefore, it appears that the 300 cfs applied over 21 days is reasonable. Please feel free to contact me for more information, or if you have any questions about the data.

Best regards,

Mike

From: Edl, Michele
Sent: Sunday, October 27, 2013 7:08 PM
To: McVay, Michael
Subject: recharge water right 37-7842

Mike,
Of my many assignments is one to issue a license for water right 37-7842 which is currently held by the IWRB. It has a colorful past but proof was submitted in the 1990s for 300 cfs put to use as recharge.
I was paying attention during your talk last Tuesday, but I am gonna need your help with confiming the quantity of beneficial use.

The place of use is Tsp 5S 17E sec 22 or ESPAM grid cells **R 42 C 39** and **R 42 C 38**. The site would probably be in your Lower Snake River recharge unit.
Water from the Big Wood and Little Wood were being comingled with a little water from the Snake but it was all conveyed to this location through the Milner-Gooding canal.
The event occurred from April 7 – 30, 1986.

My question: Is 21 days of 300 cfs dumped at this location recharge?

Thanks
Michele

Form 202
3/78

ASSIGNED TO:
Lower Snake River
Recharge District
1301 Vista Ave
Boise, ID 83705

RECEIVED
JUL 10
Department of Water Resources
Northern District Office

Ident. No. 37-7842

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
APPLICATION FOR PERMIT

RECEIVED
APPROVED
Department of Water Resources

To appropriate the public waters of the State of Idaho

1. Name of applicant Earl Hardy, Therleif Rangen & John LeMoyne & John W. Jones, Jr. Phone 342-0090

Post office address 1301 Vista Ave.; Boise, ID 83705

2. Source of water supply Little Wood & Big Wood which is a tributary of Snake

3. Location of point of diversion is SW ¼ of SE ¼ of Section 24 Township 4S

Range 19E B.M. Lincoln County, additional points of diversion if any: ___

4. Water will be used for the following purposes:

Amount 800 cfs (cfs or acre-feet per annum) for G.W. Recharge purposes from Jan. 1 to Dec. 31 (both dates inclusive)

Amount _____ (cfs or acre-feet per annum) for _____ purposes from _____ to _____ (both dates inclusive)

Amount _____ (cfs or acre-feet per annum) for _____ purposes from _____ to _____ (both dates inclusive)

Amount _____ (cfs or acre-feet per annum) for _____ purposes from _____ to _____ (both dates inclusive)

5. Total quantity to be appropriated:

a. 800 cubic feet per second and/or b. _____ acre-feet per annum.

6. Proposed diverting works:

a. Description of ditches, flumes, pumps, headgates, etc. Contract use of Dietrich Canal System and Richfield Canal system.

b. Height of storage dam _____ feet, active reservoir capacity _____ acre-feet; total reservoir capacity _____ acre-feet, materials used in storage dam: _____

Period of year when water will be diverted to storage _____ (Month/Day) to _____ (Month/Day) inclusive.

c. Proposed well diameter is _____ inches; proposed depth of well is _____ feet.

7. Time required for the completion of the works and application of the water to the proposed beneficial use is 5 years *(minimum 1 year – maximum 5 years)*.

8. Description of proposed uses:

a. If water is not for irrigation:

(1) Give the place of use of water: _____ ¼ of _____ ¼ of Section _____ Township _____ Range _____ B.M.

(2) Amount of power to be generated: _____ horsepower under _____ feet of head.

(3) List number of each kind of livestock to be watered _____

(4) Name of municipality to be served _____, or number of families to be supplied with domestic water _____.

(5) If water is to be used for other purposes describe: Groundwater recharge subject to the requirements of Title 42 Chapter 42 Idaho Code

EXHIBIT
3
tabbies

IDWR 75

b. If water is for irrigation, indicate acreage in each subdivision in the tabulation below:

TWP	RANGE	SEC.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

Total number of acres to be irrigated _____

c. Describe any other water rights used for the same purposes as described above. None

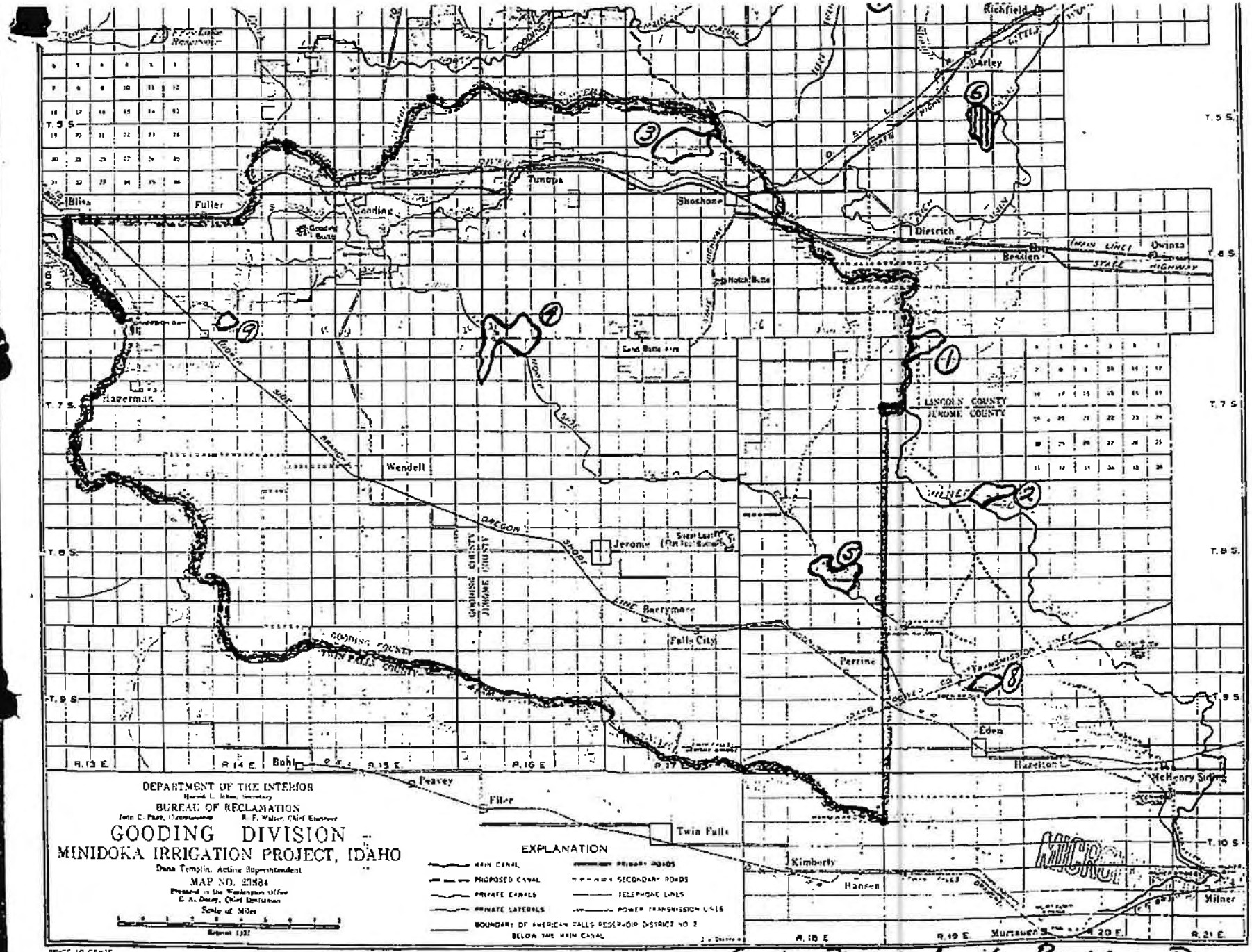
9. a. Who owns the property at the point of diversion Big Wood Canal Co.

b. Who owns the land to be irrigated or place of use BLM

c. If the property is owned by a person other than the applicant, describe the arrangement enabling the applicant to make this filing Applicant has worked with owners of P.D. & place of use to negotiate agreement for use of facilities. Negotiations will continue until agreement is complete.

10. Remarks Applicant agrees to meet specifically the requirements of 42-4201 (2) subordinating applicants right to all prior perfected water rights including those held by any privately owned electric generating company, and 42-4201 (3) providing for the reduction of applicants right under certain conditions. Applicant further agrees to meet all additional requirements and conditions of Title 42, Chapter 42.

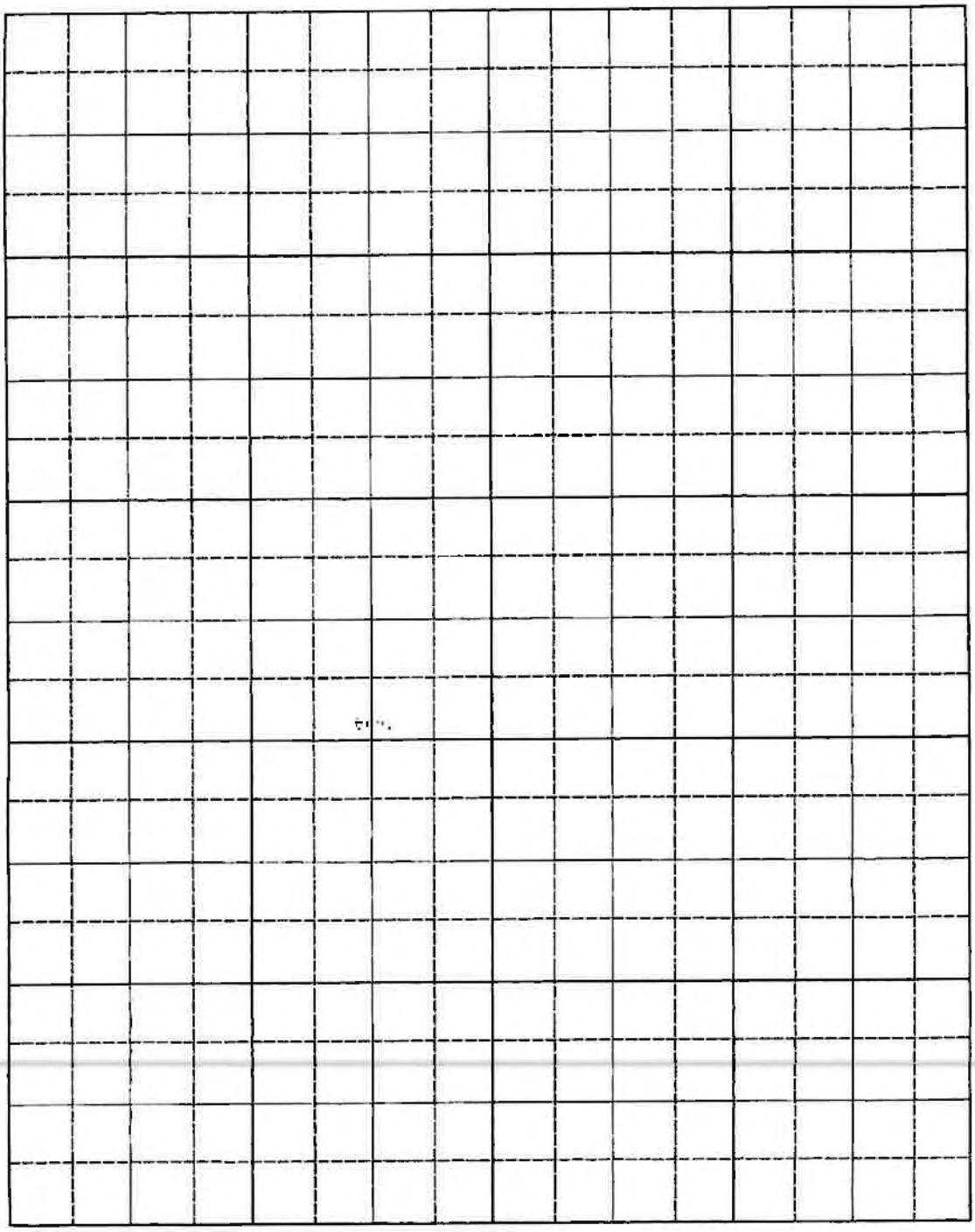
Applicant's filing is being held in trust for a recharge district being formed under 42-4202 Idaho Code. Applicant agrees to assign application to the recharge district upon reimbursement of costs.



Lower Snake Plains Aquifer Recharge Dist.

IDWR 77

11. Map of proposed project: show clearly the proposed point of diversion, place of use, section number, township and range number.



Scale: 2 inches equal 1 mile.

BE IT KNOWN that the undersigned hereby makes application for permit to appropriate the public waters of the State of Idaho as herein set forth.

Earl M. Hanley
(Applicant)

Proposed Priority 6/30/1980

Received by mcaya Date 6/30/80 7/2/80 Time 11:30 am 2:18

Preliminary check by LH Fee $ 1485.00 # 16193

Receipted by mcaya Date 6/30/80

Publication prepared by mcaya Date 7/23/80

Published in Lincoln Co. Journal

Publication dates 7/31 + 8/7/80 8/14 + 8/21/80

Publication approved mcaya Date 9/3/80

Protests filed by: None

Copies of protests forwarded by _____

Hearing held by _____ Date _____

Recommended for (approval) denial by LH

ACTION OF THE DIRECTOR, DEPARTMENT OF WATER RESOURCES

This is to certify that I have examined Application for Permit to appropriate the public waters of the State of Idaho No. 37-7842, and said application is hereby APPROVED.

1. Approval of said application is subject to the following limitations and conditions:

   a. SUBJECT TO ALL PRIOR WATER RIGHTS.

   b. Proof of construction of works and application of water to beneficial use shall be submitted on or before June 1, 1987.

   c. The rate of diversion, if water is to be used for irrigation under this permit, when combined with all other water rights for the same land shall not exceed 0.02 cubic feet per second for each acre of land.

   d. Other: Permit holder shall commence the excavation or construction of diverting works within one year of the date this permit is issued and shall proceed diligently until the project is complete.

A measuring device of a type approved by the Department shall be permanently installed and maintained as part of the diverting works.

The issuance of this permit in no way grants any right-of-way or easement across the land of another.

Use of water under this permit is subject to control by the watermaster of State Water District No. 37, Big Wood River.

Permit shall be secondary to all prior water rights including rights held by any privately owned electrical generating company to appropriate waters in the reaches of the Snake River downstream from the Milner diversion for purposes of hydroelectric power generation.

The Director may regulate or reduce the rate of diversion under this permit pursuant to requirements of Section 42-4201, Idaho Code.

The permit shall not be assigned or sold without first securing the written approval of the Department of Water Resources.

Water may not be diverted under this permit until the Board of Directors of the District establish and implement a procedure acceptable to the Director for assuring that the water quality of the Lower Snake Aquifer will not be impaired.

Plans for recharge facilities and any conveyance works needed shall be submitted to the Department for approval prior to construction.

Witness my hand this 2nd day of June, 1982.

L. Glen Saxton
Chief, Operations Bureau

NOTICE OF APPLICATION FOR WATER RIGHT

Notice is hereby given that the following application(s) have been submitted for permit to appropriate the public waters of the State of Idaho:

37-7842

Hardy, Earl
Rangen, Tharleif
Jones, John W., Jr.
LeMoyne, John
1301 Vista Ave., Boise, Idaho 83705

Source: Little Wood & Big Wood River tributary of Snake River

Date Filed: 6/30/80

Amount: 800 cfs

Diversion Point: SW¼SE¼, Sec. 24, T.4S, R.19E, Lincoln County

Use: Groundwater Recharge (800 cfs) from Jan. 1 to Dec. 31

Place of Use: Within the boundaries of the Lower Snake Plains Aquifer Recharge District located within T5S, R14E; T5S R15E; T5S, R16E; T5S R17E; T6S R13E; T6S R14E; T6S R15E; T6S R16E; T6S R17E; T6S R18E; T7S R13E; T7S R14E; T7S R15E; T7S R16E; T7S R17E; T7S R18E; T7S R19E; T8S R13E; T8S R14E; T8S R15E; T8S R16E; T8S R17E; T8S R18E; T9S R14E; T9S R15E; T9S R16E; T9S R17E; T9S R18E; T10S R18E.

Possible sites for recharge of the water are within the following described lands: Sec. 15, 16, 21, 22, 28, T.5S R19E.

Diversion Means: Contract use of Dietrich Canal system and Richfield Canal system.

If issued, the permit(s) will be subject to all prior water rights. Protests against the granting of any permit must be filed with the Director of the Idaho Department of Water Resources, 1041 Blue Lakes Blvd. North, Twin Falls, Idaho 83301 and received on or before September 2, 1980.

/s/ C. Stephen Allred
Director

L/2tc/8-14

Form 218
6/92

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

BENEFICIAL USE FIELD REPORT

RECEIVED
NOV 2 9 1993
Department of Water Resources

A. GENERAL INFORMATION

Permit No. 01-07054 37-07842

1. Owner: Lower Snake River Recharge District Phone No. 837-4887

Current Address: Box 48, Hagerman, Idaho

2. Accompanied by: Gerald Martens EXAM DATE :

Address: 1139 Falls Ave. E, Twin Falls, Idaho Phone No. 734-4888

Relationship to Permit Holder: None

3. Source: Snake River/Big Wood River tributary to See Narrative

B. OVERLAP REVIEW

1. Other water rights with the same place of use: None

2. Other water rights with the same point of diversion: None

C. DIVERSION AND DELIVERY SYSTEM

1. **Point(s) of Diversion:**

Ident No.	Gov't Lot	¼	¼	¼	Sec.	Twp.	Rge.	County	Method of Determination/Remarks
		SE	NE		22	5S	17E	Lincoln	7.5 minute quadrange

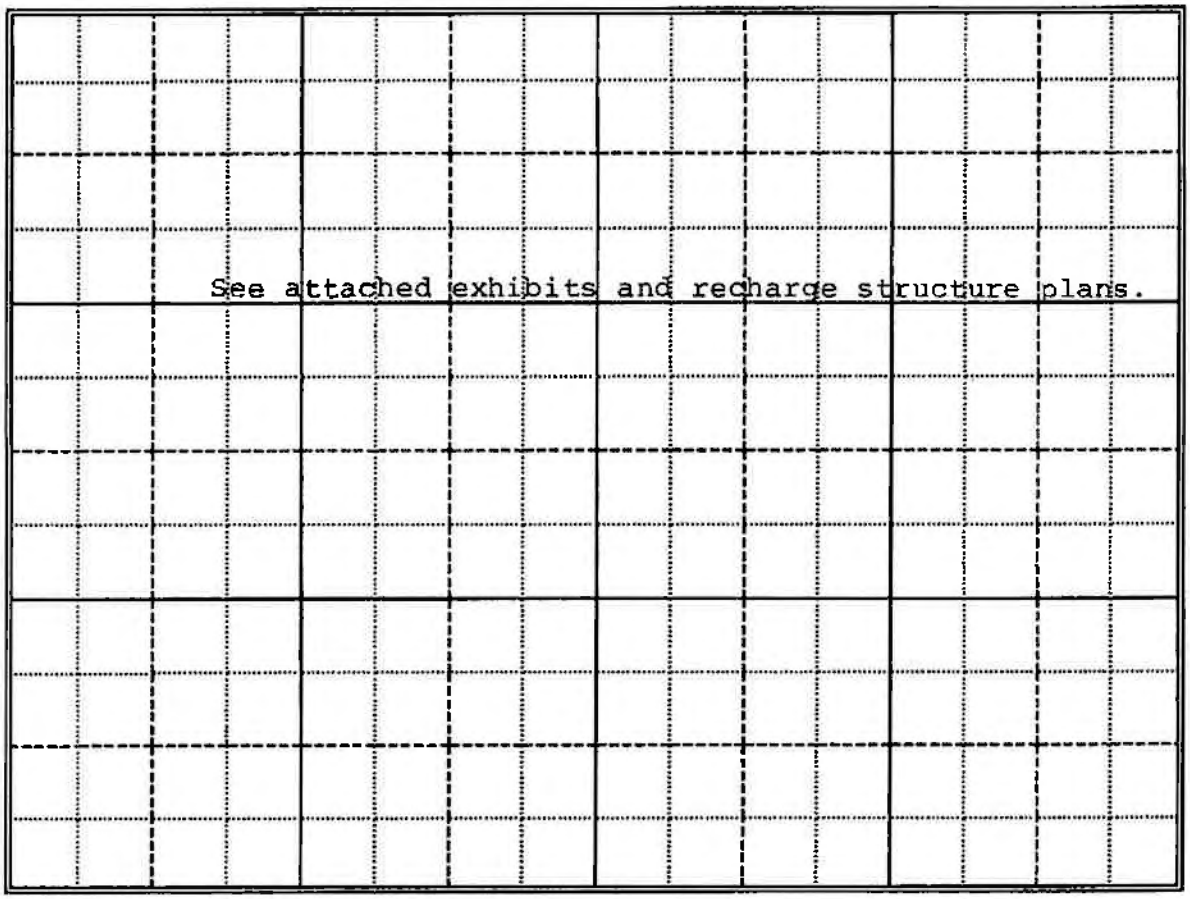
2. **Place(s) of Use:** Indicate Method of Determination

TWP	RGE	SEC	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
5S	17E	22			X	X			X	X	X	X		X		X	X		

EXHIBIT
tabbies 5

IDWR 81

3. **Delivery System Diagram**: Indicate all major components and distances between components. Indicate weir size/ditch size/pipe I.d. as applicable.



Scale: 1" = _____.

____ Copy of USGS Quadrange Attached Showing location(s) of point(s) of diversion and place(s) of use (required).

____ Aerial Photo Attached (required for irrigation of 10+ acres)

____ Photo of Diversion and System Attached

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
N/A					

Code to correspond with No. on map and aerial photo

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Milner Gooding Canal Measuring Stations 56 and 57						

2. **Measurements:** Water measured in concrete flume above and below diversion. Diversion quantity is mathematical difference. Upstream flow measured at Milner Gooding Canal Diversion Structure 56. Downstream measurement at Milner Gooding Canal Structure No. 57. Rating curves have been established for both stations. See attached letter.

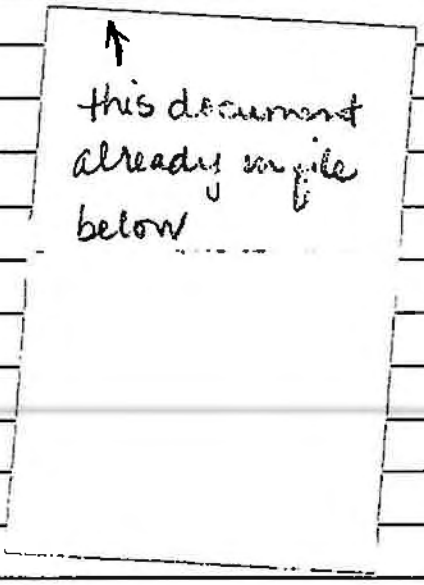
E. NARRATIVE/REMARKS/COMMENTS

Measurement flow records for April 1986, as prepared by Big Wood Canal Company. Attached are flow records.

The Big Wood Canal Co-mingles water from Snake River and Bigwood River upstream of diversion. District routinely replaces water from one source with water from other sources. At time of proof of Beneficial Use Report the Bigwood water was supplementing Snake River flows to facilitate flows measured at diversion.

Division agreement between Lower Snake River Recharge District and Bureau of Land Management attached for your information.

Attached is a flow summary sheet that tabulates the recharge rate of flow and the maximum potential contribution to total recharge from each potential source.



Have conditions of permit approval been met? X yes ___ no

F. FLOW CALCULATIONS ____ Additional Computation Sheets Attached

Measured Method:

See Section E.

G. VOLUME CALCULATIONS N/A

1. Volume Calculations for Irrigation:

$V_{I.R.}$ = (Acres Irrigated) x (Irrigation Requirement) = _____

$V_{D.R.}$ = [Diversion Rate (cfs)] x (Days in Irrigation Season) x 1.9835 = _____

V = Smaller of $V_{I.R.}$ and $V_{D.R.}$ = _____

2. Volume Calculations for Other Uses:

H. RECOMMENDATIONS

1. **Recommended Amounts**

Beneficial Use	Period of Use From	Period of Use To	Rate of Diversion Q (cfs)	Annual Volume V (afa)
Groundwater Recharge	1-1	12-31	300 CFS	
		Totals:	300 CFS	

2. **Recommended Amendments**

___ Change P.D. as reflected above ___ Add P.D. as reflected above ___ None

___ Change P.U. as reflected above ___ Add P.U. as reflected above ___ Other

I. AUTHENTICATION

Field Examiner's Name Gerald Martens Date 11/24/93

Reviewer _____ Date _____

PROFESSIONAL ENGINEER REGISTERED SEAL STATE OF IDAHO GERALD L. MARTENS

EHM Engineers Inc.
1139 Falls Ave. E
Twin Falls, Idaho 83301

Re: Water permit # 37-07842

Dear Mr. Martins:

Enclosed find copy of the record for water diverted into the recharge area from the Milner-Gooding canal North of Shoshone, Idaho.
The method used for caculating this discharge is as follows. Measuring Station # 56 above the concrete flume on the Milner-Gooding canal was measured, Measuring station # 57 below the recharge diversion was also measured, the difference is the caculated amount of water diverted into the recharge area.
Rating curves were established for both of the measuring stations on the Milner-Gooding canal.
I sincerely hope this will satifisy the requirments for permit # 37-07842.

Sincerely

Reid J Newby
P.O. Box N
Shoshone, Idaho 83352

	No	X	No	Y	No	Z	T		No	Z1	No	Z2		to 100	
			6/26/92										93 1/		1
															2
[illegible]															3
[illegible]															4
[illegible]															5
[illegible]															6
[illegible]														252	7
[illegible]														260	8
[illegible]														260	9
[illegible]														265	10
[illegible]													2.61	[illegible]	11
[illegible]													2.50	261	12
[illegible]														270	13
[illegible]														275	14
[illegible]			[illegible]	[illegible]	.47	[illegible]	[illegible]						2.44	252	15
[illegible]		[illegible]	[illegible]	[illegible]	.11	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	2.56	279	16
[illegible]		[illegible]	2.05	55	.47	19	+171	273	7.31	[illegible]	2.04	19	2.40	223	17
[illegible]		176	2.10	[illegible]	[illegible]	[illegible]	[illegible]	322	[illegible]	2190	[illegible]	18	3.34	310	18
[illegible]		221	2.20	11	.51	21	+144	240	7.19	117	1.92	17	3.54	242	19
															20
[illegible]		216	2.40	94	.57	36	-101	276	7.04	1780	2.10	20	3.34	342	21
1972	.20	178	2.54	111	.64	42	+40	254	6.98	1922	2.09	19	3.41	350	22
1919	1.24	188	2.54	111	.74	51	+41	220	6.76	1724	2.07	19	3.48	260	23
1036	1.12	160	2.60	119	.72	49	+7	190	6.84	1337	2.07	19	3.75	396	24
1042	1.40	226	2.60	119	.76	53	+61	186	6.44	1476	2.07	19	3.74	394	25
467	1.40	226	2.60	119	.76	53	+69	250	6.53	1541	2.07	19	3.32	340	26
527	1.70	312	2.60	119	.77	54	•		6.58	1579	2.22	22	•		27
527	1.70	312	2.60	119	.77	54	+154	192	6.58	1579	2.22	22	4.50	466	28
562	1.61	276	2.65	126	.80	57	+108	159	6.01	1189	2.21	21	4.48	465	29
597	1.50	250	2.70	132	.83	61	+72	157	5.94	1147	2.20	21	4.44	459	30
															31

This is A Copy of Big Wood Canal Co.
Record for April 1986 Water into
Recharge.
Yellow is in C.f.s Each Day.

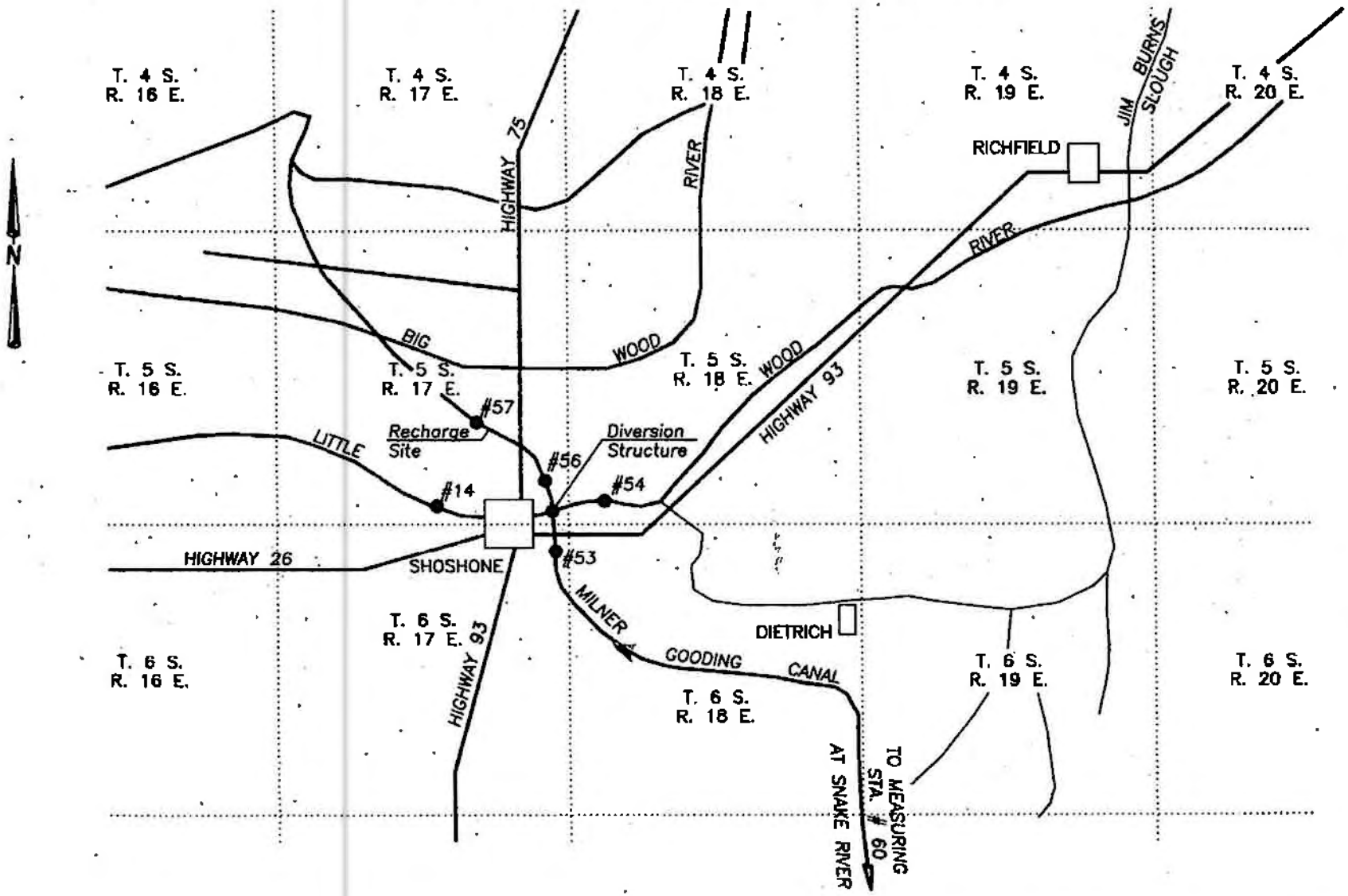
[signature]

for Permit # 37-07842

1985

IDWR 86

Exhibit For
Lower Snake River Aquifer Recharge
Permit No's. 01-07054 & 37-07842

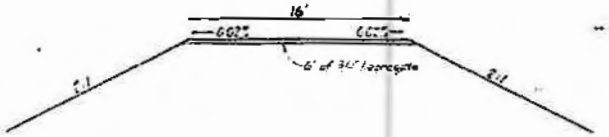


IDWR 87

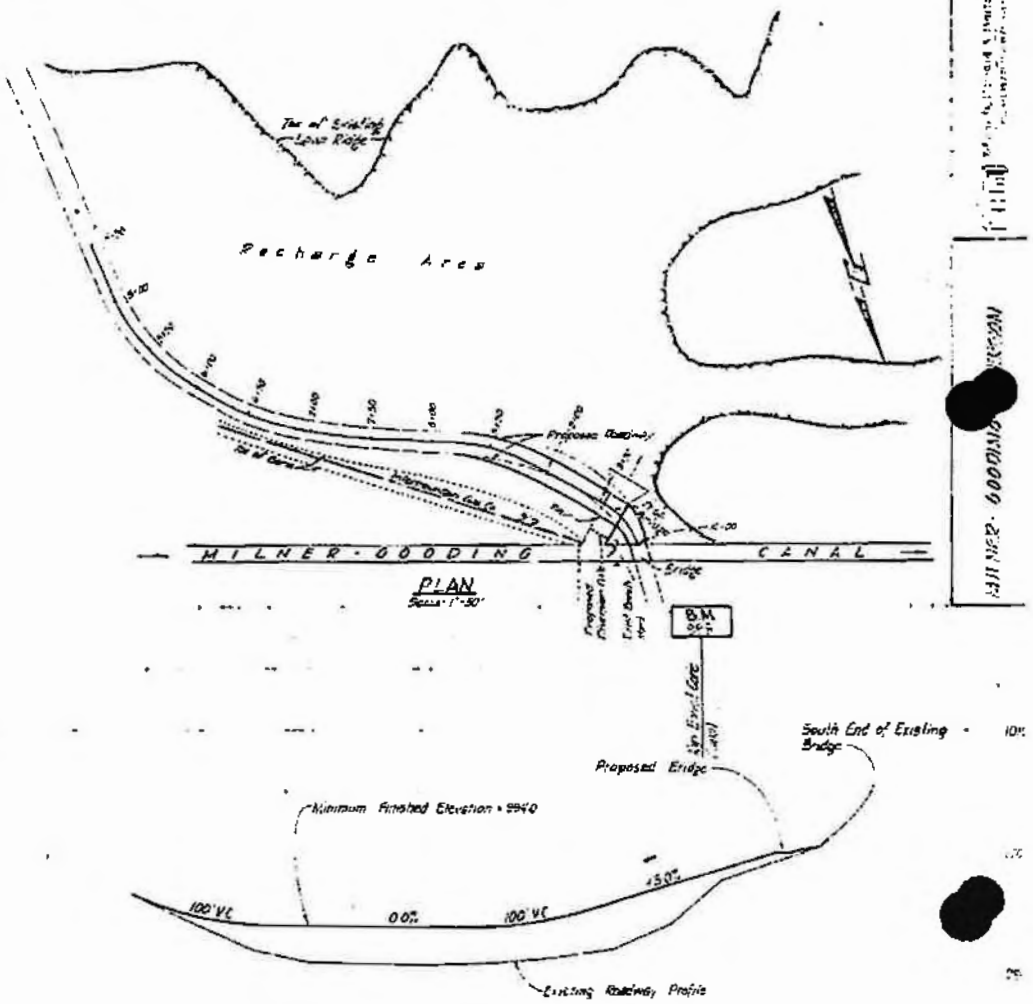
Summary of Recharge
Records for
Lower Snake River Recharge
Permit No. 01-07054 & 37-07842

	MEASURING STAT ON								
DATE	JBS	14	53	54	56	57	RECHARGE	MAX POSSIBLE RECHARGE FROM BIG WOOD	MAX POSSIBLE RECHARGE FROM SNAKE RIVE
04-07-86			220		252	252	0		
04-08-86						260	260	260	
04-09-86		646	425		432	260	172	172	
04-10-86			401		448	265	183	183	
04-11-86	97	692	472		460	265	195	195	97
04-12-86	57		472			261	261	261	57
04-13-86	62					270	270	270	62
04-14-86	66	717	486	787	486	275	211	211	66
04-15-86	52	681	485	721	482	252	230	230	52
04-16-86	57	659	479	689	470	239	231	231	57
04-17-86	43	636	405	674	496	223	273	273	43
04-18-86	40	604	614	628	632	310	322	322	40
04-19-86	73	556	596	564	618	342	276	276	73
04-20-86	142		596	563			---	---	142
04-21-86	141	615	596	651	618	342	276	276	141
04-22-86	50	526	585	544	604	350	254	254	50
04-23-86	221	454	566	544	580	360	220	220	220
04-24-86	213	596	572	636	586	396	190	190	190
04-25-86	168	560	563	585	580	394	186	186	168
04-26-86	181	500	644	524	654	340	314	314	181
04-27-86	172		644	530				---	172
04-28-86	165	615	696	537	648	466	182	182	165
04-29-86	158	580	670	503	626	465	161	161	158
04-30-86	142	506	661	420	616	459	157	157	142

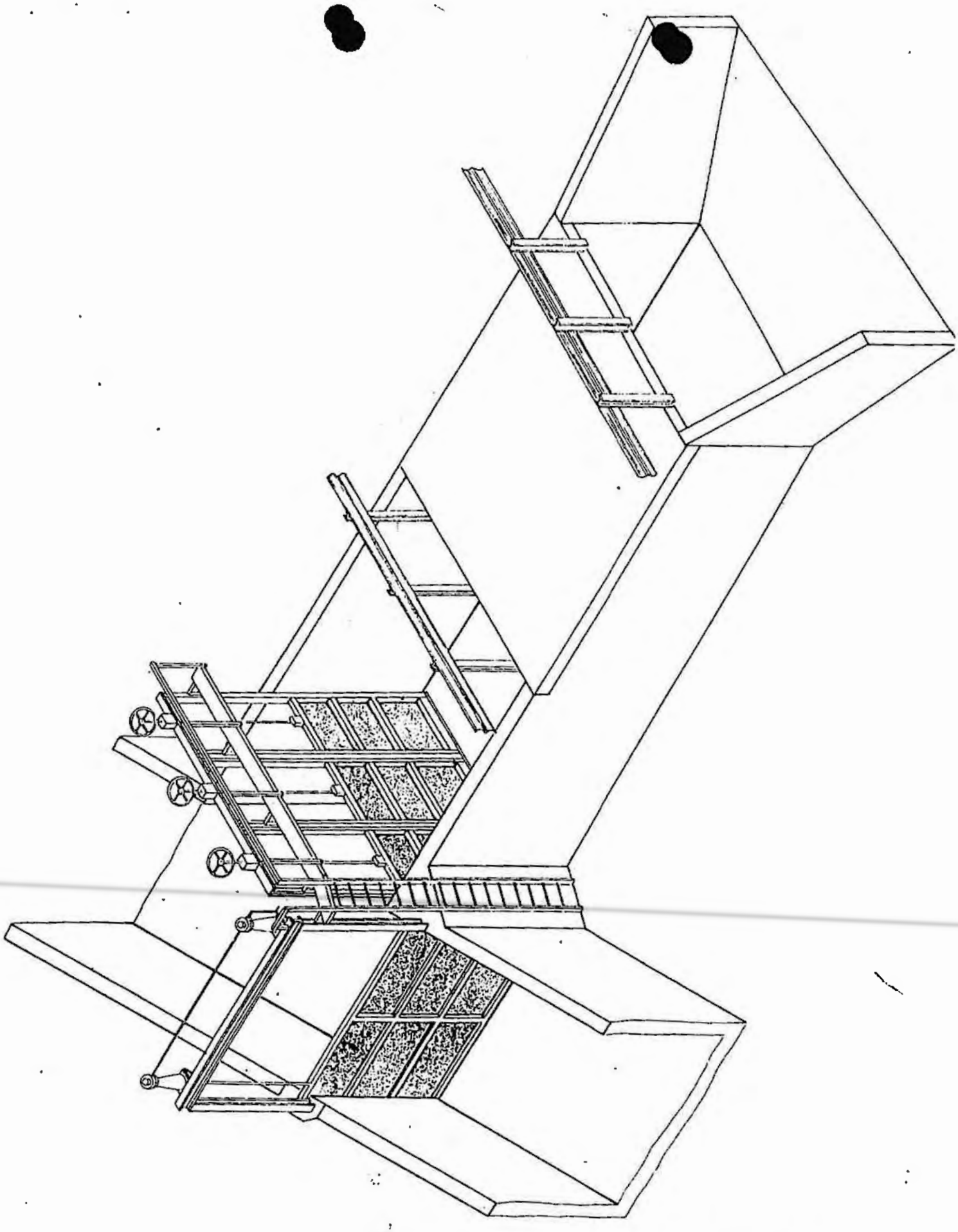
JBS - Jimmy Byrnes Slough
All flows in CFS as recorded by Bigwood Canal Co.
Recharge = 56-57
Max Recharge (from Snake River): Total discharge but not to exceed flow at M.S. 53. M.S.
Max Recharge (from Big Wood River): Total discharge from JBS but not to exceed total dishcarge.
Measuring stations 14+56 should approximately total measuring stations 53+54

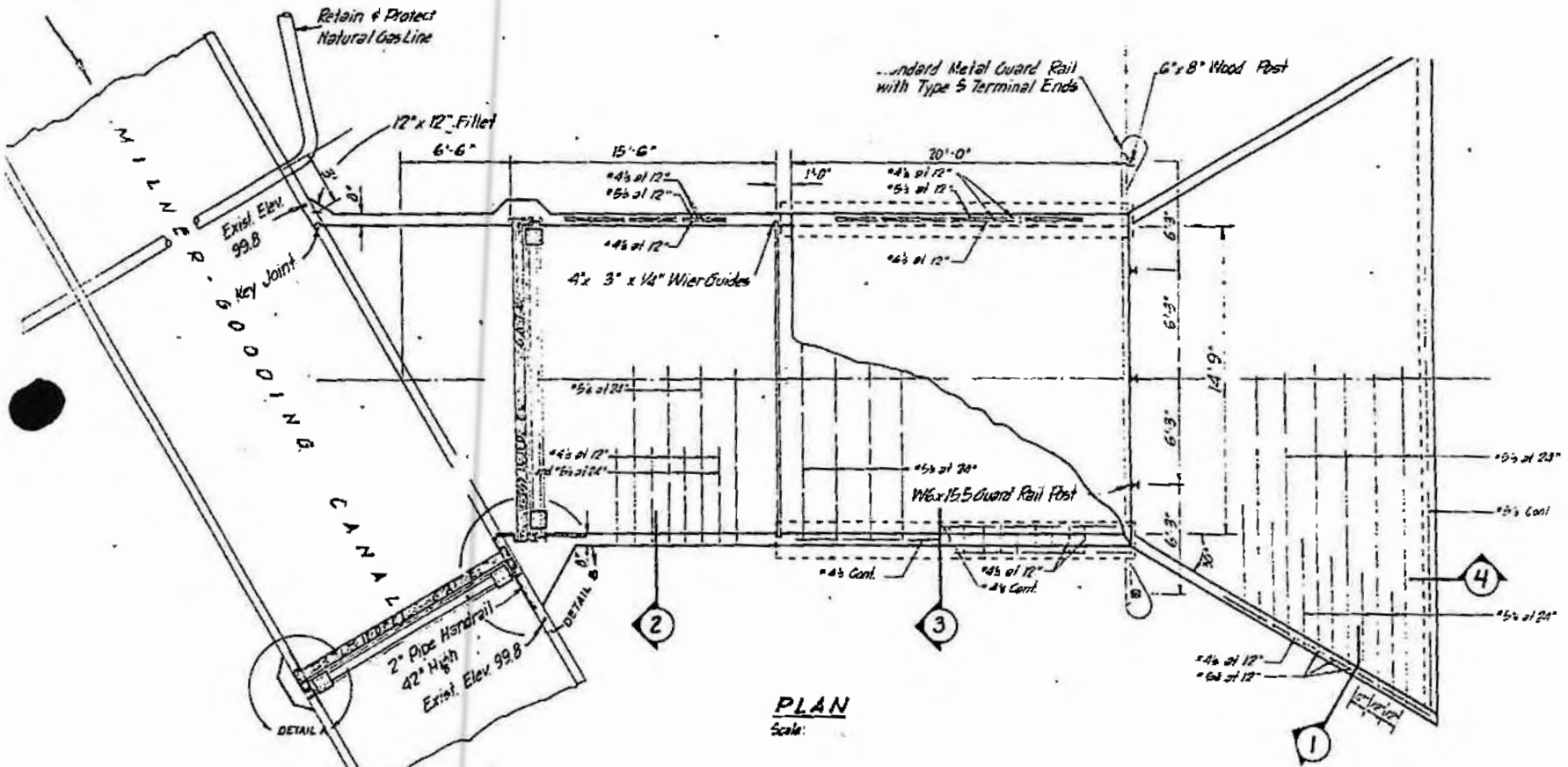


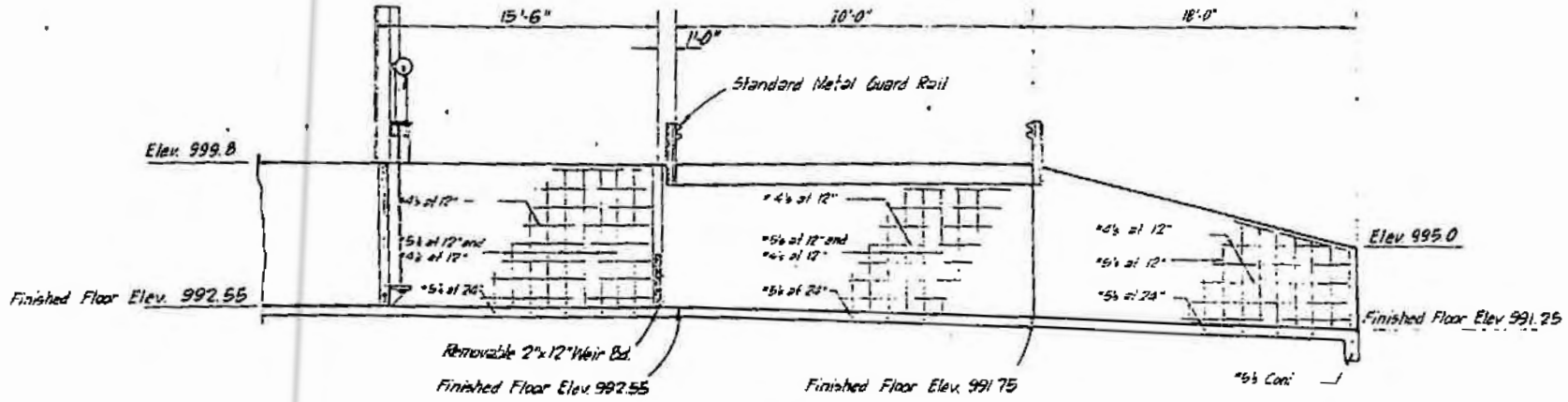
TYPICAL ROADWAY SECTION
NTS



ROADWAY PROFILE







GE...

Materi... with Highw... Curren... All Me... of Ban... Slab i... is Pla... formly... Edges... tion o... Other...

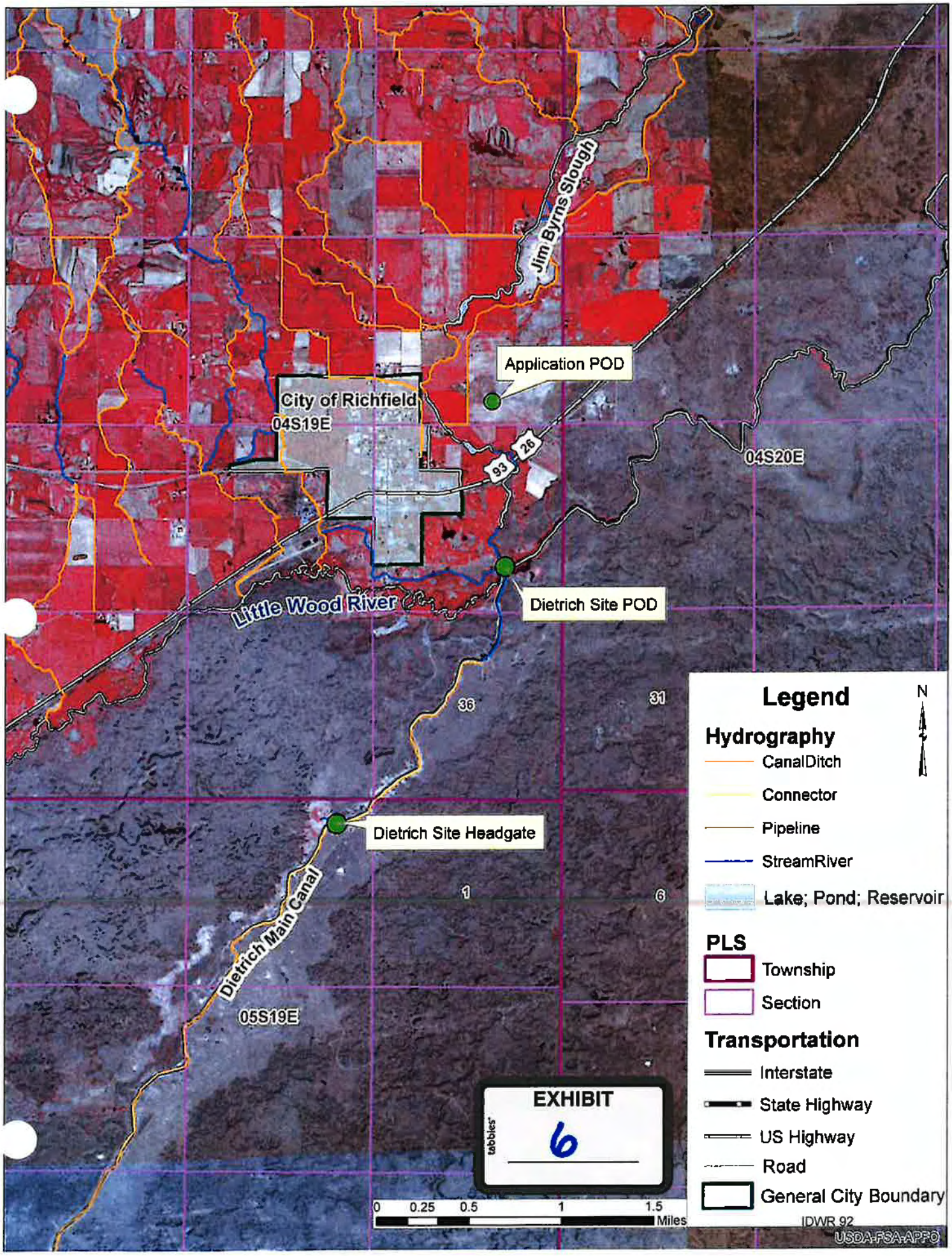
HY...

Q ma...

DE...

Stru... 7.0 Conc... Met... Pres... Mgm... Act...

IDWR 91


Jim Byrns Slough
Application POD
City of Richfield
04S19E
93
26
04S20E
Little Wood River
Dietrich Site POD
36
31
Dietrich Site Headgate
1
6
Dietrich Main Canal
05S19E
Legend
N
Hydrography
CanalDitch
Connector
Pipeline
StreamRiver
Lake; Pond; Reservoir
PLS
Township
Section
Transportation
Interstate
State Highway
US Highway
Road
General City Boundary
EXHIBIT
tabbies
6
0 0.25 0.5 1 1.5
Miles
IDWR 92
USDA-FSA-APFO

State of Idaho
Department of Water Resources

APPLICATION FOR AMENDMENT

(For Licensing Purposes)
WATER RIGHT NO. 37-07842

PRIORITY: August 25, 1980

Maximum Diversion Rate: 250.00 CFS
Maximum Diversion Volume: 13,900.0 AF

Comes now

STATE OF IDAHO
IDAHO WATER RESOURCE BOARD
322 E FRONT ST
PO BOX 83720
BOISE ID 83720-0098

and represents to the Idaho Department of Water Resources that he is the owner and holder of Permit to Appropriate the Public Waters of the State of Idaho No. 37-07842, and requests that the permit be changed as follows:

SOURCE:
LITTLE WOOD RIVER

TRIBUTARY:
MALAD RIVER

BENEFICIAL USE	PERIOD OF USE	DIVERSION RATE	ANNUAL DIVERSION VOLUME
GROUND WATER RECHARGE	01/01 to 12/31	250.00 CFS	13,900.0 AF

LOCATION OF POINT(S) OF DIVERSION:
LITTLE WOOD RIVER L4 (SW¼SE¼) Sec. 25, Twp 04S, Rge 19E, B.M. LINCOLN County

PLACE OF USE: GROUND WATER RECHARGE

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
04S	19E	35															X L7	X L8	
05S	19E	2	X L1	X L2															

Permit holder asserts that no one will be injured by such change and that such change will be made at permit holder's own risk. Signed this 13th day of JULY, 2017.

(Signature)

EXHIBIT 7

State of Idaho
Department of Water Resources

APPLICATION FOR AMENDMENT

(For Licensing Purposes)
WATER RIGHT NO. 37-07842

FOR DEPARTMENT USE ONLY

Preliminary check by SWK Fee = N/A Receipted by _____ # _____ Date _____

ACTION OF THE DEPARTMENT OF WATER RESOURCES

The Idaho Department of Water Resources hereby approves the above Application for Amendment for Permit No. 37-07842 with the following:

CONDITIONS OF APPROVAL

1. The issuance of this right does not grant any right-of-way or easement across the land of another.
2. Use of water under this right will be regulated by a watermaster with responsibility for the distribution of water among appropriators within a water district. At the time of this approval, this water right is within State Water District No. 37.
3. The right holder shall maintain a measuring device and lockable controlling works of a type approved by the Department in a manner that will provide the watermaster suitable control of the diversion(s).
4. The following rights are diverted through point(s) of diversion described above: 37-7842, 37-13043, 37-13112, 37-13113, 37-13114, 37-14264, 37-21401, 37-21402, 37-21403, 37-21404, and 37-21405.
5. Rights 37-7842, 37-13043, 37-13112, 37-13113, 37-13114, 37-14264, 37-21401, 37-21402, 37-21403, 37-21404, and 37-21405 when combined shall not exceed a total diversion rate of 647.38 cfs.
6. Pursuant to Section 42-234(4), Idaho Code, to ensure that other water rights are not injured by the operations of the recharge project authorized by this right, the Director has authority to approve, disapprove, or require alterations in the methods employed to achieve ground water recharge.
7. Pursuant to Section 42-234(3), Idaho Code, the Director may reduce the amount of water that may be diverted for recharge purposes under this right even though there is sufficient water to supply the entire amount authorized for appropriation under this right.
8. Prior to further diversion and use of water in accordance with this water right, the right holder shall obtain Bureau of Land Management authorization necessary to access the point of diversion or place of use or to convey water across federal land.
9. Places of use for groundwater recharge describing federal public lands within the canals and discharges outside of the canals onto federal public land are not authorized, unless specifically authorized in writing by the United States.

This amendment is issued pursuant to the provisions of Section 42-211, Idaho Code.

Signed this 13th day of July, 2017.

Shelley W. Keen

SHELLEY W. KEEN
Water Rights Section Manager

EXHIBIT 107

1981

1
2
3.
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
29
30
31

EXHIBIT 107

May 1982

	Magic		#3		#4		#5		East		West		J.B. Head		E Spill	W1	W2	
1																		1
2																		2
3	931.5	178,114	7.76	3680														3
4	931.7	178,858	8.10	3890	3.35	188	6.40	3946	1.16	100	1.05	45			20	28	20	4
5	931.9	179,602	8.30	4100	3.27	177	6.59	4050	1.22	107	1.22	50	.45	29	25	23	20	5
6	931.7	178,858	8.06	3930	3.76	252	6.23	3658	1.20	153	1.34	55	.48	32	15	38	30	6
7	931.5	178,114	7.72	3470	3.63	231	5.80	3270	1.54	146	1.30	53	.48	32	15	18	22	7
8	931.4	177,742	7.48	3250	3.60	226	5.53	3030	1.46	136	1.28	53	.46	30	15	9	15	8
9	931.3	177,370	7.28	3050	3.58	223	5.37	2850	1.35	123	1.26	51	.42	26				9
10	931.2	176,998	7.04	2820	3.90	276	4.96	2774	1.58	151	152	63	.58	44	17	7	15	10
11	931.1	176,627	6.94	2720					1.76	172	1.60	67	.38	22	16	7	12	11
12	931.0	176,256	6.70	2500	3.89	274	4.60	2414	1.72	167	1.58	66	.39	23	15	0	5	12
13	930.9	175,890	6.58	2390	3.90	300	4.42	2274	1.70	165	1.58	66	.38	22	15	0	5	13
14	930.8	175,524	6.48	2300	4.25	370	4.26	2104	1.98	199	1.96	88	.44	28	15	15	12	14
15	930.8	175,524	6.48	2300	4.24	368	4.24	2094	1.95	195	1.92	85	.48	32	15	12	12	15
16	930.9	175,890	6.62	2430	4.25	370	4.43	2214	1.94	194	1.90	84	.48	32				16
17	931.0	176,256	6.82	2610	4.25	370	4.53	2404	1.94	194	1.90	84	.47	31		3		17
18	931.2	176,998	7.10	2860	4.45	410	4.69	2544	2.15	220	2.05	94	.49	33	/	8	/	18
19	931.4	177,742	7.48	3210	"	/	/	/	2.15	220	2.05	94	.52	36	15	4	13	19
20	931.6	176,486	7.76	3490	4.45	4.10	5.50	3354	2.27	236	1.98	90	.32	18				20
21	931.6	176,486	7.72	3450	4.71	462	5.44	3294	2.32	242	2.04	94	.66	54	15	11	15	21
22	931.5	178,114	7.64	3370	4.70	460	5.43	3284	2.30	239	2.00	91	.66	54	15	13	18	22
23	931.5	178,114	7.64	3370	4.73	466	5.42	2814	2.28	237	1.98	90	.64	52	15	12	18	23
24	931.6	178,486	7.66	3390	4.71	462	5.45	3304	2.36	247	2.09	97	.57	42	9	7		24
25	931.6	178,486	7.74	3470	4.72[c]	456	5.55[c]	3024	2.30[c]	240	2.09[c]	102	.56	41	8	5	15	25
26	931.7	178,858	7.85	3590	4.99	511	5.69	3164	2.48	264	2.22	112	.71	62	8	9	15	26
27	931.8	179,230	8.14	3890	4.98	509	5.93	3404	2.50	266	2.36	125	.64	52	8	5	18	27
28	931.9	179,602	9.28[c]	4140	4.99	511	6.22	3694	2.52	269	2.36	125	.65	53	8	4	9	28
29	931.8	179,230	8.00	3840	5.21	561	5.78	3254	2.66	287	2.33	122	.78	73	8	9	10	29
30	931.5	178,114	7.46	3280	5.40	606	5.14	2614	2.60	279	2.30	119	1.06	147				30
31	931.2	176,998	7.04	2870	5.41	608	4.66	2134	2.68	290	2.34	123	.97	106	8	9	6	31
Total	930.9	175,970			5.57	646	4.13	1620	2.76	300	2.52	140	1.07	128				
Mean													1.06					

May 1982

	#60		#53		#54		#14		#56		#51		#52		Dry	Kroll	Main	L.S.	
1																			1
2																			2
3	4.70	606	3.42	385	3.56	494	4.22	604	5.53	416	3.50	318	1.89	83					3
4	5.90	830	3.82	462	3.49	469	4.12	582	5.66	438	3.56	327							4
5	5.90	830	4.44	586	3.60	534	4.62	692	6.10	515	3.52	321	2.68	127	14				5
6	5.90	830	4.40	578	3.59	519	4.64	697	6.08	511	3.56	327	2.92	141					6
7	6.68	986	4.81	652	3.62	533	4.78	728	6.31	555	3.50	318	2.84	136			4	2	7
8	6.68	986	5.07	654	3.56	510	4.82	C 626	6.41	532	3.30	288	3.32	165					8
9	6.68	986	5.03	645	3.43	462	4.54	609	6.38	526									9
10	6.66	982	5.06	652	3.41	455	4.48	596	6.36	522	3.20	276	3.48	177			6	5	10
11	6.68	986	5.09	658	3.46	473	4.62	626	6.40	530	3.20	276	3.48	177	10	12	7	8	11
12	6.66	982	4.98	635	3.36	437	4.40	578	6.32	515	2.89	239	3.58	184		8	6	8	12
13	7.18	1088	5.09	658	2.90	281	3.34	374	6.31	513	2.80	229	3.61	186	9	8	2	4	13
14	7.18	1088	5.24	694	2.64	173	3.32	373	6.38	526	2.48	194	3.94	209	9	12	0	5	14
15	7.18	1088	5.20	681	2.86	269	3.32	373	6.35	520	2.46	192	4.12	1.27	9				15
16	7.20	1092	5.14	668	2.82	257	3.26	362	6.32	515					9	8	0	4	16
17	7.18	1088	5.12	664	2.71	224	3.06	336	6.30	511	2.34	180	4.06	217	5	9	1	4	17
18	7.20	1092	4.88	635	2.66	209	2.46	398	5.76	417	1.88	1.28	3.64	198	8	7	4	5	18
19	7.20	1092	4.94	647	2.88	275	3.72	445	5.89	439	1.92	.83	3.88	205	13	9	4	6	19
20	7.18	1088	5.00	660	3.08	336	4.42	582	6.03	463	2.09	.724	3.88	205	13	9	6	4	20
21	7.18	1088	5.06	673	3.18	372	4.34	566	6.11	477	2.04	.72	3.88	205	9	9	3	4	21
22	7.18	1088	5.02	664	3.32	423	4.48	596	6.14	482	1.83	.61	3.89	205					22
23	7.16	1084	4.97	654	3.26	401	4.42	582	6.10	475					7	9	5	4	23
24	7.16	1084	4.96	652	3.27	405	4.43	582	6.10	475	1.86	64	4.01	214	4	7	3	6	24
25	7.16	1084	4.97	654	3.31	419	4.52	604	6.15	484	1.80	55	4.02	214	3	6	3	0	25
26	7.18	1088	4.87	633	3.29	412	4.28	554	6.28	507	1.98	C 95	4.06	C 224	4	9	3	5	26
27	7.20	1092	4.88	C 705	3.13	C 372	3.99	C 518	6.19	C 528	1.89	69	4.00	220	4	6	2	6	27
28	7.20	1092	4.91	712	3.10	361	3.98	516	6.19	528	1.80	61	4.07	225	4	7	3	3	28
29	7.18	1088	4.89	707	3.16	386	4.04	528	6.22	534	1.80	61	4.06	224	—	—	—	5	29
30	7.18	1088	4.83	694	3.00	326	3.79	479	6.09	509					5		4	3	30
31	7.18	1088	4.85	699	3.03	336	3.84	488	6.12	515	1.81	61	4.08	226	5	5	2	3	31
Total	7.18	1088	4.77	681	2.75	251	3.42	410	5.89	473	1.66	52	3.94	216					
Mean	7.14	30772																	

3.

June 1982

	#60		#53		#54		#14		#56		#51		#52		Dry	Krill	Main	L.S.	
1	7.18	1088	4.77	681	2.75	251	3.42	410	5.89	473	1.66	52	3.94	216	9	4	2	1	1
2	7.69	1199	5.06	746	2.86	284	3.56	434	6.13	517	1.38	38	4.26	238	12	8	3	3	2
3	8.22	1321	5.25	709	2.86	284	3.76	472	6.25	540	1.80	61	4.12	228	9	8	5	4	3
4	8.28	1334	5.88	945	2.86	284	4.04	528	6.62	612	2.52	152	4.20	234	7	8	5	4	4
5	8.28	1334	5.94	960	2.83	275	4.04	528	6.69	626	2.66	177	4.04	223	7	6	5	4	5
6	8.28	1334	6.00	976	2.80	266	4.06	531	6.65	618									6
7	8.28	1334	5.95	963	2.73	245	3.88	496	6.61	610	2.48	145	3.96	219	8	6	5	4	7
8	8.28	1334	5.98	971	2.75	251	3.95	510	6.64	616	2.44	138	4.18	233					8
9	8.26	1330	5.99	974	2.72	242	3.92	504	6.64	616	2.40	131	4.16	231	7	5	5	2	9
10	8.26	1321	5.93	958	2.53	185	3.72	466	6.58	604	2.34	121	4.12	228					10
11	8.46	1367	6.01	979	2.33	129	3.58	439	6.50	588	2.29	123	4.10	227	8	6	5	2	11
12	8.84	1454	6.15	1018	2.40	147	3.64	451	6.61	610	2.24	114	4.28	240					12
13	8.95	1433	6.30	1061	2.34	132	3.90	498	6.49	586					7	6	3	3	13
14	8.78	1440	6.23	1041	2.25	112	3.83	487	6.45	578	2.54	183	4.36	246	12	20	7	5	14
15	8.80	1445	6.24	1044	1.94	59	3.72	466	6.34	557	2.32	129	4.00	222	12	16	7	6	15
16	8.85	1456	6.31	1064	1.98	64	3.76	470	6.37	562	2.30	c 102	4.04	c 199	11	12	7	4	16
17	8.86	1459	6.34	c 1046	2.24	c 84	3.90	c 510	6.47	c 566	2.48	136	3.02	133	15	12	6	5	17
18	8.86	1459	6.41	1069	2.81	230	4.42	629	6.74	620	2.56	154	4.30	217	14	12	8	4	18
19	8.84	1454	6.45	1079	2.95	272	4.62	673	6.83	639	2.74	203	4.08	202	13	10	—	—	19
20	8.78	1440	6.44	1076	3.07	308	4.80	712	6.90	655									20
21	8.84	1454	6.42	1070	3.07	308	4.76	702	6.90	655	2.82	224	4.08	202	12	10	7	5	21
22	8.86	1459	6.24	1018	3.05	302	4.82	717	6.90	655	2.82	224	4.08	202	12	10	6	5	22
23	8.86	1459	6.38	1058	2.85	242	4.52	651	6.76	624	2.66	180	4.00	196	10	9	2	3	23
24	8.86	1459	6.38	1058	2.78	221	4.46	637	6.73	618	2.58	159	4.00	196	9	7			24
25	8.86	1459	6.38	1058	2.95	242	4.50	646	6.75	622	2.58	159	4.00	196	7	6	0	0	25
26	8.88	1463	6.40	1064	2.90	257	4.62	672	6.80	632	2.64	175	4.06	200					26
27	8.88	1463	6.43	1073	2.93	266	4.66	681	6.83	639									27
28	8.90	1468	6.43	1073	2.87	248	4.62	672	6.80	632	2.64	175	4.06	200	6	6	3 #	0	28
29	8.98	1486	6.32	1041	2.89	254	4.56	659	6.75	622	2.58	159	4.04	199	6	4	2 #	0	29
30	8.94	1477	6.40	1064	2.93	266	4.66	681	6.81	635	2.60	164	4.06	200	5	4	3 #	2	30
31															6	5	3 #	4	31
Total		46																	
Mean																			

4

June 1982

	Magic		#3		#4		#5		East		West		J.D. Head			E.Spill	W1	W-2	
																8	9	6	
1	930.9	175,890	6.54	2400	5.57	646	4.13	1620	2.76	300	2.52	140	1.07	128		18	14	18	1
2	930.9	175,890	6.06	1970					2.76	300	2.54	142	1.06	124		13	16	18	2
3	931.3	177,370	4.90	1080	5.58	648	2.29	572	2.78	303	2.54	142	1.02	116		15	18	18	3
4	931.8	179,230	4.92	1090	5.58	648	2.30	576	2.77	302	2.54	142	1.05	122		15	21	15	4
5	932.3	181.108	4.66	912	5.35	601	2.03	465	2.80	305	2.56	144	.80	76		15	23	15	5
6	7727	182.620	4.50	811	5.13	542	1.92	421	2.95	325	2.54	142	.54	46		/	/	/	6
7	933.3	184.906	4.52	824	5.13	542	1.97	441	2.74	298	1.54	142	.52	36		12	26	15	7
8	933.7	186.442	4.56	848	5.12	540	2.01	457	2.76	300	2.56	144	.52	36		12	26	20	8
9	934.0	187.596	4.53	830	5.13	542	1.98	445	2.72	295	2.56	144	.53	38		12	29	25	9
10	934.2	188.276	4.55	842	5.15	547	1.98	445	2.64	284	2.54	142	.60	46		12	18	25	10
11	934.5	189546	4.55	842	5.13	542	1.99	449	2.66	287	2.54	142	.61	47		12	-	15	11
12	934.9	191,107	4.58	861	5.13	542	2.00	453	2.68	290	2.54	142	.55	48		12	16	11	12
13	9354	193,084	4.89	1070	5.14	545	2.36	603	2.70	292	2.54	142	.52	41					13
14	935.3	192,188	6.52	2380	5.18	554	4.12	1612	2.36	248	2.58	146	.38	22		12	0	8	14
15	935.3	192,688	6.80	2640	5.18	554	4.47	2284	2.68	290	2.57	145	.54	40		12	11	5	15
16	935.3	192,688	6.88	2710	5.45	617	4.42	1894	2.76	300	2.66	154	.82	79		12	11	9	16
17	935.3	192,688	7.62	3440	5.47	518	5.31	3234	2.74	298	2.69	155	.79	74		12	12	9	17
18	935.3	192,688	7.62	3440	5.48	520	5.30	3284	2.80	305	2.76	165	.68	57		12	—	10	18
19	935.4	193084	7.80	3630	5.48	520	5.49	3414	2.80	305	2.81	171	.63	50		12	16	15	19
20	935.3	192,688	7.94	3780	5.49	522	5.66	3258	2.86	313	2.80	170	.62	49					20
21	935.3	192,688	7.94	3780	5.50	525	5.65	3255	2.80	305	2.78	167	.64	52		12	16	10	21
22	935.3	192,688	7.84	3670	5.50	525	5.53	3096	2.80	305	2.78	167	.64	52		15	11	15	22
23	935.2	192,292	7.82	3650	5.51	527	5.54	3109	2.78	303	2.79	168	.60	46		15	—	15	23
24	935.2	192,292	7.84	3670	5.53	531	5.64	3242	2.81	307	2.80	170	.62	49		15	7	15	24
25	935.2	192,292	7.74	3590	5.53	531	5.00	2449	2.78	303	2.78	167	.69	59		15	7	15	25
26	935.2	192,292	7.60	3480	550	525	5.30	1798	2.81	307	2.78	167	.58	44		15	8	15	26
27	934.1	191.896	7.28	3060	557	540	4.97	2416	2.85	312	2.76	165	.53	40		/	/	/	27
28	935.2	192.292	6.94	2730	5.57	540	4.52	1922	2.80	305	2.79	164	.54	40		15	12	15	28
29	935.3	192,688	7.40	3180	5.58	542	5.15	2504	2.81	307	2.73	162	.57	42		15	12	15	29
30	935.3	192,688	7.52	3300	5.60	547	5.33	2836	2.78	303	2.72	161	.57	42		15	15	15	30
31																			31
Total																			
Mean																		IWRB00003293	

	Magic		# 3		# 4		# 5		July 1982 East		West		J.T.	Head		W-1	W-2	E Spill	
1	935.2	192,292	7.28	3060	5.61	549	5.04	2493	2.82	308	2.74	163	.56	41		15	15	11	1
2	935.2	192,292	6.90	2700	5.63	554	4.60	2009	2.78	303	2.73	162	.60	46		15	15	/	2
3	935.1	191,896	6.80	2600	5.65	538	4.47	1875	2.80	305	2.72	161	.56	41		17	18	15	3
4	935.1	191,896	6.74	2550	/	/	/	/	2.80	305	2.73	162	.56	41		/	/	/	4
5	935.1	191,896	6.52	2340	5.68	565	4.15	1577	2.64	284	2.63	151	.58	57		15	12	8	5
6	935.0	191,500	6.42	2250	5.50	563	4.02	1473	2.66	287	2.64	152	.67	56		15	11	8	6
7	935.0	191,500	5.28	1320	5.57	579	2.84	795	2.86	313	2.78	167	.72	63		29	18	15	7
8	935.1	191 896	5.32	1350	5.57	579	2.86	805	2.84	311	2.80	170	.78	73		27	30	15	8
9	935.1	191 896	5.38	1390	5.55	574	2.91	830	2.79	304	2.80	170	.80	76					9
10	935.1	191 896	5.36	1380	533	525	2.96	855	2.69	291	268	156	.73	65		13	15	15	10
11	935.1	191 896	5.34	1370	5.43	547	2.92	835	2.68	290	2.72	161	.74	66					11
12	935.1	191,896	5.00	1120	5.42	545	2.57	660	2.72	295	2.72	161	.70	60		10	12	12	12
13	935.2	192,292	4.72	(c) 100	5.43	(c) 527	2.28	(c) 558	2.71	294	2.72	161	.66	54		10	12	12	13
14	935.1	191,896	5.96	1860	566	579	3.50	1178	2.74	298	2.73	162	.90	93		12	12	11	14
15	935.1	191,896	5.42	1430	5.65	577	2.94	880	2.70	292	271	160	.89	91		12	9	12	15
16	935.2	192,292	5.08	1370	5.64	574	2.58	709	2.72	295	2.68	156	.84	83		12	9	12	16
17	935.2	192,292	5.04	1340	593	674	2.45	655	2.90	318	2.78	167	.98	108					17
18																			18
19	9357	191,896	4.62	1030	5.92	641	1.95	424	2.88	316	2.77	166	97	106		9	9	11	19
20	9357	191,896	4.64	1050	593	644	1.93	416	2.88	316	2.76	165	.98	108		9	9		20
21	9357	191,896	4.66	1060	592	641	1.92	412	2.82	308	2.76	165	.96	104		7	8	4	21
22	9357	191896	4.66	1060	6.09	683	1.83	376	2.92	321	2.82	172	1.06	124		7	8	6	22
23	9356	191,683	4.61	1030	6.11	(c) 688	1.72	(c) 333	2.96	326	2.82	172	1.02	116		7	8	6	23
24	9349	196,109	4.60	1020	610	683	1.69	329	2.96	326	2.83	173	1.02	116		10	10	9	24
25	9348	190,718	4.60	1020	6.08	678	1.63	307	2.97	327	2.83	173	1.02	116					25
26	934.7	190,327	4.68	1080	6.17	702	1.80	372	2.96	326	2.84	174	1.04	120		10	10	9	26
27	934.5	189,546	4.68	1080	6.17	702	1.85	392	2.93	322	2.84	174	1.03	118	/	10	10	9	27
28	934.3	189,766	4.66	1060	6.19	707	1.60	372	297	327	283	173	1.02	116		10	12	9	28
29	934.2	189,276	4.62	1030	6.18	705	1.72	340	296	326	282	172	1.03	118		15	12	11	29
30	934.1	197,986	4.60	1020	6.10	683	1.57	287	2.94	324	2.84	174	1.18	150		15	12	11	30
31	933.9	187,211	4.60	1020	5.99	656	1.65	314	293	322	2.82	172	1.07	126					31
Total																			
Mean																			

July 1982

	# 15		# 53		# 54		# 14		# 56		# 51		# 52		Dry	Knoll	Main	L.S.	
1	3.32	333	6.36	1052	2.95	272	4.66	681	6.80	632	2.58	159	4.02	196	7	6	3	2	1
2	3.34	337	6.34	1046	2.97	278	4.70	690	6.79	630	2.58	159	4.04	198					2
3	3.32	333	6.31	1039	2.94	269	4.59	666	6.74	620	2.56	199	4.02	196	5				3
4	3.33	335	6.35	1049	3.02	293	4.72	695	6.80	632									4
5	3.20	312	6.45	1079	3.01	290	4.79	710	6.85	643	2.70	192	4.08	202	6	10	5	5	5
6	3.20	312	6.47	1085	3.03	296	4.80	712	6.85	643	2.64	175	4.08	202	9	10	4	4	6
7	3.23	317	6.40	1041	3.05	302	4.79	710	6.83	639	2.68	186	4.10	203	7	10	6	3	7
8	3.25	321	6.43	1073	3.09	314	4.79	710	6.85	643	2.68	186	4.08	202	13	12	5	3	8
9	3.26	322	6.24	1010	3.00	287	4.64	676	6.69	610	2.66	180	4.06	200	12	8	5	3	9
10	3.21	313	6.02	958	2.91	260	4.34	611	6.50	572	2.50	140	4.00	196	9	5			10
11	3.15	303	5.98	947	2.58	161	4.94	528	6.32	538									11
12	3.17	306	5.92	932	2.48	134	3.84	508	6.25	524	2.26	96	3.82	182	0	0	3	2	12
13	3.14	301	5.09	976	2.26	88	3.70	481	6.24	522	1.89	56	4.06	200	0	0	0	2	13
14	3.24	326	6.22	1013	2.17	73	3.78	496	6.32	538	2.00	66	4.14	206	3	2	4	2	14
15	3.30	330	6.33	1044	2.18	74	3.84	508	6.35	543	2.14	94	4.11	235	5	3	3	1	15
16	3.30	330	6.34	1046	2.15	70	3.80	500	6.34	541	2.10	88	4.11	235	5	4	4	2	16
17	3.30	330	6.35	1049	2.14	68	3.80	500	6.35	543	2.06	84	4.10	234	5	4	2	2	17
18																			18
19	3.32	333	6.37	1055	2.24	84	3.88	516	6.39	551	2.05	82	4.09	233	5	4	3	2	19
20	3.26	322	6.36	1052	2.11	64	3.80	508	6.34	541	1.90	66	4.00	227	5	0	1	1	20
21	3.27 @	360	6.41 @	1061	2.03 @	56	3.79 @	548	6.35 @	592	1.81	54	4.04	233	2	1	1	3	21
22	3.28	362	6.45	1073	1.97	50	3.74	540	6.36	594	1.78	56	4.06	231	0	0	2	4	22
23	3.31	367	6.49	1085	2.06	60	3.91	564	6.40	602	1.70	50	4.10	234	1	2	1	4	23
24	3.31	367	6.57	1109	2.07	62	3.84	560	6.43	608	1.82	58	4.16	240	3	2	4	2	24
25	3.33	371	6.59	1115	2.07	62	3.90	572	6.47	616									25
26	3.35	375	6.61	1121	2.11	67	3.96	585	6.51	624	1.90	74	4.22	243	2	4	4	6	26
27	3.34	373	6.60	1118	2.14	71	3.97	587	6.50	622	2.20	102	4.27	243	5	4	3	6	27
28	3.35	375	6.65	1133	2.22	84	4.05	604	6.56	635	2.34	127	4.16	238	7	3	5	6	28
29	3.35	375	6.73	1157	2.38	116	4.24	646	6.63	650	2.34	127	4.14	237	7	3	7	6	29
30	3.32	369	6.61	1121	2.38	116	4.20	637	6.55	632	2.28	116	4.12	236	7	3	4	7	30
31	3.39	371	6.55	1103	2.59	170	4.30	659	6.61	646	2.08	106	4.12	236					31
Total																			
Mean																			

	Magic		#3		#4		#5		July-Aug. 1982 East		West		J.B	Head		W-1	W-2	E Spill	
1	933.8	186,826	4.57	999	5.97	651	1.66	318	2.91	320	2.83	167	1.07	126		16	12	—	1
2	933.6	186,058	4.58	1010	5.97	651	1.68	325	2.92	321	2.80	164	1.06	1.24		30	12	20	2
3	933.2	184,522	4.56	992	5.98	653	1.60	297	2.92	321	2.82	166	1.06	124		30	12	23	3
4	933.1	184,138	4.42	899	5.72	591	1.57	287	2.80	305	2.74	158	.86	.86		17	12	16	4
5	932.9	183,376	4.50	952	5.74	C615	1.70	C332	2.83	309	2.74	158	.87	.88				14	5
6	932.7	182,620	4.50	952	5.74	615	1.68	325	2.82	308	2.71	154	.88	90					6
7	932.4	181,486	4.50	952	5.75	617	1.66	318	2.80	305	2.73	156	.88	90		17	12	12	7
8																			8
9	931.8	179,230	4.46	925	5.74	615	1.62	304	2.83	309	2.68	151	.87	88		15	12	11	9
10	931.5	178,114	4.48	939	5.75	617	1.68	325	2.81	307	2.68	151	.86	86		15	10	10	10
11	931.2	176,998	4.48	939	5.75	617	1.67	322	2.90	316	2.74	158	.78	74		15	10	—	11
12	930.8	175,524	4.47	932	5.76	620	1.67	322	2.87	314	2.72	155	.78	73		15	10	13	12
13	930.4	174,061	4.47	932	5.76	620	1.67	322	2.86	313	2.76	160	.78	73		13	8	—	13
14	930.1	172,966	4.46	925	5.76	620	1.63	307	2.87	314	2.74	158	.78	73		—	—	10.2	14
15																			15
16	929.2	169,727	4.50	952	5.79	627	1.75	352	2.85	312	2.74	156	.79	74		15	15	12	16
17	928.9	168,656	4.50	952	5.79	627	1.77	360	2.86	313	2.72	155	.78	73		15	15	11	17
18	928.5	167,244	4.50	952	5.91	656	1.66	318	2.84	311	2.73	156	.88	90		15	15	12	18
19	928.1	165,832	4.50	952	5.90	653	1.73	344	2.83	309	2.74	158	.90	93		15	15	13	19
20	927.7	164,438	4.50	952	5.91	656	1.72	340	2.84	311	2.70	152	.87	88		15	15	14	20
21	927.4	163,396	4.50	945	5.92	620	1.70	325	2.78	303	2.67	150	.90	93					21
22	—	—	—	—	—	—	—	—	—	—	—	—	—	—					22
23	926.4	159,968	4.50	945	5.93	622	1.70	325	2.80	305	2.67	150	.89	90		15	15	9	23
24	926.1	158,948	4.49	939	5.93	622	1.72	332	2.79	304	2.68	151	.88	90		15	15	9	24
25	925.6	157,270	4.49	939	5.95	627	1.72	332	2.77	302	2.65	148	.88	90		14	15	9	25
26	925.2	155,934	4.49	939	5.95	627	1.71	329	2.77	302	2.65	148	.88	90		14	15	8	26
27	924.8	154,610	4.46	919	5.95	627	1.67	314	2.78	303	2.66	149	.88	90		14	15		27
28	924.4	153,298	4.46	919	5.96	629	1.67	314	2.82	308	2.60	143	.85	84					28
29																			29
30	923.6	150,699	444	906	5.96	629	1.71	329	2.81	307	2.60	143	.83	81		15	16	15	30
31	923.2	149,483	4.36	855	5.93	594	1.56	276	2.84	311	2.61	144	.62	49					31
Total																			
Mean																			

Aug. 1982

	#	60	#	17	#	#9	/	X		Y		Z	#	21	+ or −	#	93		
1	9.20	1456	2.13	171	1.00	56	5.26	397	2.96	166	0.98	86	3.21	294	+160	3.18	43		1
2	9.20	1456	2.14	171	1.08	66	5.01	352	2.90	158	.98	86	3.26	304	+123	3.19	44		2
3	9.18	1454	2.20	180	1.14	76	5.25	395	2.88	156	.98	86	3.23	298	+158	3.21	44		3
4	9.18	1454	2.31	196	1.05	64	5.21	388	2.86	153	.96	84	3.40	335	+166	3.23	45		4
5	9.18	1454	2.25	186	1.04	62	4.95	341	2.88	156	.95	83	3.50	357	+147	3.22	45		5
6	9.16	1449	2.17	176	1.09	69	4.88	329	2.88	156	.95	83	3.15	302	+105	3.20	44		6
7	9.18	1454	2.19	179	1.10	70	4.74	304	2.90	158	.96	84	3.18	288	+62	3.21	45		7
8	/	/	2.24	180	1.08	67	4.79	312	2.92	161	.96	84	3.08	2.68	+79	3.21	45		8
9	9.18	1454	2.14	172	1.03	61	4.75	305	2.94	164	.96	84	3.14	2.80	+72	3.20	44		9
10	9.18	1454	2.20	190	1.04	62	4.76	(c) 283	2.90	(c) 157	.96	(c) 79	3.08	2.68	+62	3.20	(c) 38		10
11	9.18	1454	2.05	159	1.08	67	4.65	264	2.88	154	.96	79	3.10	2.72	+46	3.18	38		11
12	9.20	1459	2.05	159	1.06	65	4.57	252	2.88	154	.96	79	3.00	2.52	+34	3.16	37		12
13	9.10	1459	2.07	162	1.06	65	4.51	242	2.88	154	.96	79	2.90	233	+9	3.15	36		13
14	9.20	1459	2.06	161	1.05	64	4.07	181	2.88	154	.96	79	2.85	220	−52	3.15	36		14
15	9.20	1459	2.09	165	1.07	66	4.68	270	2.88	154	.96	79	2.77	209	+42	3.17	37		15
16	9.20	1459	2.11	168	1.19	84	4.72	276	2.88	154	.96	79	3.08	268	+53	3.18	37		16
17	9.20	1459	2.04	158	1.20	85	4.68	270	2.84	149	.94	76	3.25	3.02	+45	3.18	37		17
18	9.20	1459	1.93	142	1.21	87	4.63	261	2.90	157	.93	75	3.23	298	+29	3.14	36		18
19	9.20	(c) 1401	1.91	140	1.15	77	4.50	241	2.92	160	.92	74	3.14	280	+7	3.26	40		19
20	9.20	1401	1.96	147	1.05	64	4.60	256	2.92	160	.92	74	2.99	250	+22	3.30	42		20
21	9.18	1396	1.95	145	1.18	82	4.55	253	2.92	160	.92	74	3.04	260	+19	3.25	40		21
22	–	–	2.03	157	1.20	85	4.61	258	2.92	160	.96	79	3.07	266	+19	3.27	41		22
23	9.20	1401	2.08	160	1.20	85	4.55	248	2.98	160	.96	79	3.10	272	+9	3.29	42		23
24	9.18	1396	2.07	162	1.22	89	4.61	258	2.98	160	.96	79	3.07	(c) 288	+19	3.30	42		24
25	9.17	1394	2.06	161	1.24	93	4.65	264	2.92	160	.96	79	3.13	304	+25	3.29	42		25
26	9.17	1394	2.00	152	1.36	96	4.65	264	2.90	157	.98	81	3.26	326	+26	3.27	41		26
27	9.18	1396	1.97	148	1.23	91	4.57	252	2.90	157	.98	81	3.25	326	+44	3.26	40		27
28	9.20	1401	1.98	150	1.13	74	4.27	207	2.94	162	.97	80	3.08	290	−35	3.30	42		28
29			2.06	161	1.15	77	4.36	220											29
30	9.20	1401	2.16	175	1.24	93	4.46	235	2.94	162	.97	80	3.00	274	+8	3.26	40		30
31	8.76	1300	2.35	201	1.25	94	4.60	256	2.88	154	.95	77	3.24	324	+40	3.28	41		31
Total	8.77	−100																	
Mean		[illegible]																	

IWRB00003297

Sept 1982

	Magic		# 3		# 4		# 5		East		West		J.D	Head		W-1	W-2	E Spill	
1	922.8	148,138	4.37	861	5.80	591	1.64	304	2.74	295	2.55	138	.61	47		16	15	19	1
2	922.4	146,277	4.38	867	5.81	593	1.65	307	2.77	302	2.54	137	.61	47		16	15	17	2
3	922.0	145,677	4.38	867	5.81	593	1.66	311	2.72	295	2.54	137	.69	59		16	15	—	3
4	921.6	144,380	4.30	817	5.62	549	1.60	290	2.61	281	2.50	133	.54	40		20	15	23	4
5																			5
6	920.8	141,920	4.38	c 861	5.64	c 518	1.75	c 340	2.60	c 284	2.46	c 136	.55	40		20	15	29	6
7	920.5	141,011	4.28	799	5.64	518	1.62	293	2.61	286	2.45	135	.53	38				30	7
8	920.0	139,498	4.18	735	5.41	470	1.55	270	2.48	269	2.38	128	.31	17		19	20	15	8
9	919.7	138,607	4.18	735	5.41	470	1.57	276	2.49	270	2.40	130	.32	18		21	15		9
10	919.3	137,420	4.17	728	5.42	472	1.55	270	2.40	258	2.27	118	.50	34		15			10
11	919.0	136,532	4.17	728	5.41	470	1.56	273	2.36	253	2.27	118	.50	35					11
12																			12
13	918.3	134,499	4.17	728	5.42	472	1.56	273	2.36	253	2.26	118	.50	35		13	12	12	13
14	917.9	133,345	4.18	735	5.43	474	1.57	276	2.39	257	2.28	119	.51	35		13	12	12	14
15	917.6	132,493	4.17	728	5.42	472	1.56	273	2.35	252	2.26	118	.51	35		14	12	12	15
16	917.3	131,641	4.17	728	5.43	474	1.56	273	2.34	251	2.23	115	.49	33		12	12	17	16
17	917.0	130,789	4.17	728	5.43	474	1.57	276	2.34	251	2.30	121	.50	34		12	12	17	17
18	916.6	129,665	4.16	722	5.43	474	1.55	270	2.38	256	2.30	121	.50	34					18
19	916.3	129,823																	19
20	916.0	127,952	4.16	722	5.44	476	1.55	270	2.38	256	2.29	120	.51	35		17	12	20	20
21	915.6	126,874	4.16	722	5.44	476	1.55	270	2.40	258	2.30	121	.50	34		15	15	24	21
22	915.9	125,766	4.16	722	5.45	479	1.54	067	2.40	258	2.30	121	.57	36					22
23	914.9	124,938	4.08	673	5.29	446	1.51	258	225	239	226	118	42	26		15	15	19	23
24	914.6	124,116	4.08	673	5.29	446	1.50	255	224	238	223	116	42	26		15	15	21	24
25	914.3	123,294	4.08	673	5.29	446	150	255	2.26	240	224	116	.41	25					25
26																			26
27	913.6	121.392	4.08	673	5.29	446	150	255	224	238	222	114	.41	25		10	12	21	27
28	913.3	120.852	4.07	667	5.28	444	1.49	252	231	247	222	114	.41	25		12	12		28
29	912.9	119.505	4.07	667	5.29	446	1.48	249	226	240	226	118	.48	32		12	12	23	29
30	912.6	118,704	4.07	667	5.29	446	1.49	252	228	242	224	116	.49	33					30
31																			31
Total																			
Mean																			

Sept 1982

	#	15	#	53	#	54	#	14	#	56	#	51	#	52	Dry	Knull	Main	L.S.	
1	3.09	306	6.46	1042	2.32	104	4.08	611	6.48	616	2.32	107	4.08	236	13	6	4	2	1
2	3.05	299	6.46	1082	2.31	102	4.04	602	6.49	618	2.30	104	4.08	236	10	7	4	2	2
3	3.10	308	6.50	1094	2.37	114	4.12	620	6.52	624	2.34	111	4.10	237	10	7			3
4	3.10	308	6.55	1109	2.39	118	4.16	629	6.55	630	2.31	C 109	4.10	C 235					4
5																			5
6	3.15	C 312	6.44	1076	2.30	100	3.96	585	6.42	604	2.36	118	4.12	236	10	7	4	2	6
7	3.28	324	6.46	C 1067	2.28	C 129	4.00	C 562	6.45	C 610	2.48	129	4.34	253	11	12	5	4	7
8	3.29	324	6.42	1055	2.21	100	3.93	546	6.43	606	2.24	98	4.09	229	12	10	5	4	8
9	3.20	321	6.38	1044	2.03	68	3.81	521	6.44	608	2.08	77	4.14	238	12	10	7	5	9
10	3.17	315	6.33	1030	1.96	59	3.76	512	6.40	600	2.06	75	4.14	238	13	10	5	6	10
11	3.17	315	6.35	1035	1.98	62	3.76	512	6.41	602	2.00	69	4.12	236	15	10	6	7	11
12																			12
13	3.20	321	6.47	1070	2.16	90	3.97	554	6.59	639	2.22	95	4.20	242	12	15	11	9	13
14	3.23	326	6.50	1079	2.24	106	4.06	572	6.57	635	2.32	111	4.28	249	12	17	9	8	14
15	3.15	312	6.48	1073	2.33	124	4.08	576	6.47	614	2.40	125	4.18	241	17	17	8	9	15
16	3.13	308	6.47	1070	2.41	144	4.09	578	6.45	610	2.39	121	4.14	238	14	10	10	9	16
17	3.17	315	6.38	1044	2.46	158	4.02	564	6.23	566	2.40	125	4.16	239	15	15	15	12	17
18	3.09	301	6.31	1024	2.40	142	3.90	540	6.14	549	2.38	121	3.96	225	14	8	17	13	18
19																			19
20	3.10	303	6.33	1030	2.46	158	3.94	548	6.13	547	2.48	142	3.80	221	16	12	15	13	20
21	2.93	272	6.36	1038	2.50	170	4.00	560	6.18	557	2.60	172	3.72	208	14	12	14	12	21
22	2.92	270	6.38	1044	2.52	176	4.02	564	6.16	557	2.62	178	3.68	205	18	10	14	12	22
23	2.93	272	6.37	1041	2.54	182	4.04	568	6.16	553	2.68	194	3.60	200	12	10	13	12	23
24	2.80	250	6.32	1027	2.45	155	3.93	546	6.13	547	2.62	178	3.58	198	13	12	10	12	24
25	2.80	250	6.34	1032	2.48	147	3.92	544	6.17	555	2.66	189	3.58	198	10	12	13	11	25
26																			26
27	2.81	252	6.40	1055	2.50	170	4.04	568	6.26	572	2.74	212	3.64	203	12	20	12	16	27
28	2.92	253	6.45	1064	2.60	200	4.15	591	6.28	576	2.80	230	3.68	205	17	17	16	17	28
29	2.61	219	6.55	1094	2.68	224	4.31	626	6.40	600	3.12	352	3.16	169	10	2	17	16	29
30	2.61	219	6.54	1091	2.69	227	4.24	633	6.35	590		400	2.48	127	4	0	22	19	30
31																			31
Total																			
Mean																			

								OcT		1982									
	#	60	#	17	#	9		X		y		Z	#	21	" "	#	93		
1	7.70	1075																	1
2	7.76	1075																	2
3																			3
4	7.73	1124																	4
5	7.72	1122																	5
6	7.18	1010																	6
7	7.14	1002																	7
8	7.16	1006																	8
9	7.18	1010																	9
10	7.11	1006																	10
11		0 55																	11
12																			12
13								Stock [illegible]			Nov 1, 1982								13
14	[illegible]	[illegible]	#	6/	#	5	E Main		W Main			[illegible]							14
15	3.96	584	3.98	2.92	,	250'	1.90	189	1.90	65	.05	12							15
16	3.98	595	4.20	3.36		.00	1.74	170	1.50	[illegible]	[illegible]	[illegible]							16
17																			17
18				200'															18
19	Ordered		305'	1st	day	201'	Tojo dug #5				increased to 39%					200#5	300#4		19
20	with 160		- 153' East			1.46	west 57		[illegible] J.R										20
21																			21
22																			22
23		10,505																	23
24																			24
25																			25
26																			26
27																			27
28																			28
29																			29
30																			30
31																			31
Total																			
Mean																			

IWRB00003500

ACOUSTIC CURRENT METER — 35

Rated by U.S. Bureau of Standards,

	VELOCITY - FT PER SEC.												
	10 Rev	15 Rev	20 Rev	30 Rev	40 Rev	50 Rev	60 Rev	70 Rev	80 Rev	90 Rev	100 Rev	150 Rev	200 Rev
96	.58		1.10	1.66	2.20	2.75	3.36	3.85	4.40	4.94	5.48		
94	.57		1.07	1.62	2.15	2.69	3.22	3.76	4.30	4.83	5.37		
92	.56		1.05	1.58	2.10	2.63	3.15	3.67	4.21	4.72	5.25		
93	.55		1.03	1.54	2.05	2.57	3.08	3.59	4.11	4.61	5.13		
96	.54		1.01	1.50	2.00	2.51	3.00	3.50	4.01	4.50	5.01		
95	.53		.99	1.47	1.96	2.45	2.93	3.42	3.92	4.40	4.89		
48	.53		.97	1.44	1.92	2.40	2.87	3.35	3.84	4.31	4.79		
47	.52		.95	1.41	1.88	2.35	2.81	3.28	3.76	4.22	4.69		
46	.51		.93	1.38	1.84	2.30	2.75	3.21	3.68	4.13	4.59		
45	.50		.91	1.35	1.80	2.25	2.69	3.14	3.60	4.04	4.49		
50	49		.89	1.33	1.76	2.20	2.64	3.08	3.52	3.96	4.40		
51	.49		.88	1.30	1.72	2.16	2.59	3.02	3.46	3.89	4.32		
52	.48		.87	1.27	1.69	2.12	2.54	2.97	3.39	3.82	4.24		
53	.47		.85	1.25	1.66	2.08	2.49	2.91	3.33	3.75	4.16		
54	.46		.83	1.22	1.63	2.04	2.44	2.85	3.26	3.68	4.06		
55	.45		.82	1.20	1.60	2.00	2.40	2.80	3.20	3.61	4.00		
56	.45		.81	1.18	1.57	1.96	2.36	2.75	3.15	3.55	3.93		
57	.44		.79	1.16	1.54	1.93	2.32	2.71	3.09	3.49	3.86		
58	.43		.77	1.14	1.52	1.90	2.28	2.66	3.04	3.43	3.79		
59	.43		.76	1.12	1.49	1.86	2.24	2.61	2.98	3.37	3.72		
60	.42		.75	1.11	1.47	1.83	2.20	2.57	2.93	3.31	3.66		
61	.42		.74	1.09	1.44	1.80	2.17	2.53	2.88	3.26	3.60		
62	.41		.73	1.07	1.42	1.77	2.14	2.49	2.84	3.20	3.54		
63	.41		.72	1.05	1.40	1.74	2.10	2.45	2.79	3.15	3.49		
64	.40		.71	1.03	1.37	1.71	2.07	2.41	2.75	3.10	3.43		
63	.40		.70	1.02	1.35	1.69	2.03	2.37	2.70	3.05	38		
66	.39		.69	1.00	1.33	1.66	2.00	2.34	2.66	3.00	3.33		
67	.39		.68	.98	1.31	1.64	1.97	2.30	2.62	2.95	3.28		
68	.38		.67	.97	1.29	1.62	1.94	2.27	2.58	2.91	3.23		
69	.38		.66	.95	1.27	1.59	1.91	2.23	2.54	2.86	3.18		
70	.38		.65	.94	1.26	1.57	1.88	2.20	2.51	2.82	3.14		

Test No. AC 12

EXHIBIT 108

Project No. 1464-01-2018

Certified Water Rights Examiner Analysis of Water Right No. 37-7842

Prepared for:

Idaho Water Resource Board
322 East Front Street
Boise, ID 83720

August 10, 2018

For information concerning this report, contact
G. Erick Powell, Ph.D., P.E.

BROCKWAY ENGINEERING P.L.L.C.

CHARLES E. BROCKWAY, PH.D., P.E.
CHARLES G. BROCKWAY, PH.D., P.E.
2016 WASHINGTON STREET NORTH
SUITE 4
TWIN FALLS, IDAHO 83301

Project No. 1464-01-2018

Certified Water Rights Examiner Analysis of Water Right No. 37-7842

Prepared for:

Idaho Water Resource Board
322 East Front Street
Boise, ID 83720

August 10, 2018

For information concerning this report, contact
G. Erick Powell, Ph.D., P.E.

BROCKWAY ENGINEERING PLLC

CHARLES E. BROCKWAY, PH.D., P.E.
CHARLES G. BROCKWAY, PH.D., P.E.
2016 WASHINGTON STREET NORTH
SUITE 4
TWIN FALLS, IDAHO 83301

Table of Contents

List of Tables

List of Figures

Appendices

Certified Water Rights Examiner Analysis of Water Right No. 37-7842

Prepared by: G. Erick Powell, Ph.D., P.E.
Brockway Engineering, PLLC

Date: August 10, 2018

A. Introduction

This report is a summary review of water use for recharge under water right no. 37-7842 during the permit development period between 1982 and 1992. As a Certified Water Rights Examiner (personal credentials available in Appendix A), I was requested to review the documentation pertaining to the permit application, proof of beneficial use, license exams, and the IDWR issued license. In addition, I was asked to review all pertinent data associated with this water right. Using all of the data contained in the report's Tables, Figures, and Appendices, I have rendered an opinion of the beneficial use of water right permit no. 37-7842 during the development period from 1982 through 1992.

B. Development Period

Water right permit application no. 37-7842 was filed with IDWR in 1980 (Appendix B – original POU and POD shown in Figure 1) and approved by IDWR for development on June 2, 1982 with a proof of beneficial use due date of June 1, 1987 (Appendix C). A development period extension was filed for and approved by IDWR until June 1, 1992 (Appendix C). Therefore, water diverted for recharge between 1982 and 1992 was evaluated in this report.

C. Beneficial Use Evaluations

Two evaluations of the beneficial use of recharge water under water right no. 37-7842 have been previously generated. Each evaluation has strengths as they review historic data but fall short in

describing the full water use during the development period. Gerald Martens, the permit holders' representative, submitted a beneficial use field exam in 1993 (Appendix D). Later, IDWR staff reviewed the beneficial use field exam prepared by Mr. Martens and prepared a license review memorandum dated October 29, 2014 (Appendix E).

C.1. Gerald Martens' Field Report

Mr. Martens submitted a final beneficial use field report on November 24, 1993 for permit no. 37-7842. Mr. Martens' field report can be found in Appendix D. Mr. Martens focused his analysis on the Shoshone recharge site only and combined the beneficial use of water right no. 37-7842 with water right permit no. 1-7054. However, recharge water was diverted into the Richfield Canals and into the Dietrich site, which was not included in Mr. Martens' analysis. A copy of the map included with Mr. Martens' field report is shown in Figure 2, which shows measurement locations around Shoshone. A summary of the field report regarding water right no. 37-7842 is found in Table 1.

Table 1. Beneficial Use Field Exam Summary for Water Right no. 37-7842

Owner	Source	POD	POU	Flow Rate	Max Volume
LSARD	Big Wood River	SENE Sec. 22 T5S R17E	Sec. 22 T5S R17E	300 cfs	--

C.2. Michele Edl's Beneficial Use License Review

Michele Edl, IDWR staff member, reviewed the beneficial use field report submitted by Mr. Martens and determined that there was insufficient information to allow her to complete a license recommendation. She performed additional research, analyzed alternative data, made calculations and ultimately made recommendations based on this additional information (Appendix E). In Ms. Edl's materials, she includes a document titled "Lower Snake Aquifer Recharge District Ground Water Recharge Demonstration Proposal," in which the recharge district discusses using the Dietrich Site and the Shoshone sites as recharge locations. Ms. Edl's analysis focused on the diversion of recharge water to the Dietrich recharge site. But Ms. Edl's analysis did not consider the recharge water diverted into the Richfield Canal or the Shoshone site. Ms. Edl did not formally submit a field report, but the license that was issued on July 13, 2017 was a direct result

of her additional information, work and recommendations. A summary of the recommendations are found in Table 2.

Table 2. Additional information for Water Right no. 37-7842 provided by Michele Edl and used for license of water right no. 37-7842.

Owner	Source	POD	POU	Flow Rate	Max Volume
IWRB	Little Wood River	SWSE Sec. 25, T4S R19E	Sec. 35 T4S R19E Sec. 2 T5S R19E	250 cfs	13,900 acft

C.3. Need for Additional Beneficial Use Analysis

This analysis is required because neither of the two evaluations of the beneficial use of water right permit no. 37-7842 have considered the full use of the water right permit during the development period. This analysis evaluates the recharge use during the development period within the permitted place of use and conveyance system and does not limit the analysis to a single location as was done by Mr. Martens or Ms. Edl.

D. Available Data

Water measurement data are available from Big Wood Canal Company and Water District 37. All pertinent data is available in Appendices J and K.

E. Beneficial Use Field Report

The following section contains my evaluation of all data relating to the measured data between 1982 and 1992. A completed Beneficial Use Field Report with revised data is located in Appendix F.

E.1. Section A: General Information

Permit No.:	37-7842
Owner:	Idaho Water Resource Board
Phone No.:	208-287-4800
Current Address:	322 East Front Street, P.O. Box 83720

	Boise, ID 83720
Examiner's Name:	G. Erick Powell, Ph.D., P.E.
Exam Date:	August 10, 2018
Accompanied by:	Ann Vonde (project scope and original data)
Email:	ann.vonde@ag.idaho.gov
Address:	322 East Front Street, P.O. Box 83720
	Boise, ID 83720
Relationship to Permit Holder:	Representative
Phone No.:	208-334-4141
Source:	Big Wood River and/or Little Wood River
Tributary to:	Malad River

Section A is regarding general information for permit 37-7842. The water right permit was assigned to the Idaho Water Resource Board (IWRB) in 1999 (Appendix G). I was retained by the IWRB to complete an independent evaluation of the beneficial use of water right permit no. 37-7842 for purpose of licensing using the original data during the development period from 1982 through 1992. My contact with IWRB is Ann Vonde, who presented me with the original diversion data, however she did not visit the sites with me. I personally visited the diversion points from the Little Wood River on July 22, 2018.

The source of water listed on the permit application, permit advertisement, IDWR approved permit, and 1993 IDWR reinstatement order was the Big Wood River and the Little Wood River (Appendices B and C). Water was diverted from both rivers as evidence by the watermaster diversion records (Section E.4). Water recharged along the Richfield Canal is only Big Wood River water. However, Big Wood River water combines with Little Wood River water where the Jim Byrns Slough injects water into the Little Wood River (Near #11 on Figure 3). Once Big Wood River water combines with Little Wood River water at the point of injection, it is not practical to differentiate the source of water diverted into the Dietrich Canal or the Milner-Gooding Canal. It is a mixture of Big Wood and Little Wood River water. Therefore, it is reasonable to conclude that water from both sources were used for recharge in the Dietrich and Shoshone Sites.

E.2. Section B: Overlap Review

1. Other water rights with the same place of use: 1-7054
2. Other water rights with the same source and point of diversion: See Table 3.

Section B discusses the overlap review of water rights with the same point of diversion, distribution system, place of use or beneficial use (IDAPA 37.03.02.35.d). There is one water right permit no. 1-7054 with the same purpose of recharge that overlaps a portion of the place of use for water right permit no. 37-7842. The place of use that is in common between water right permit no. 37-7842 and water right permit no. 1-7054 is the Shoshone recharge site.

As will be discussed in Section E.3 below, I conclude that there should be several points of diversion, points of injection and points of re-diversion for this water right. Table 3 lists all water rights that share these points of diversion. An analysis of all water rights sharing the place of use was not completed due to the large size of the place of use listed in the permit application and permit.

Table 3. Water rights with the same source and point of diversion.

Point of Diversion	Source	PLSS Location	Lat/Long	Water Rights	
BWR 1	Big Wood River	SENE Sec. 30 T2S R18E	43° 13' 16" N 114° 21' 25" W	37-59A 37-59B 37-59C 37-59D 37-59G 37-59J 37-59K 37-59L 37-59M 37-867 37-870 37-895	37-10343 37-10399 37-10400 37-10426 37-10596 37-13115 37-13116 37-15143 37-20733 37-21485 37-21836 37-21837
LWR 1	Little Wood River or Injected Big Wood River	SWSE Sec. 25 T4S R19E	43° 02' 36" N 114° 08' 30" W	37-14264 37-13111 37-20733 37-21404 37-21405 37-13116 37-13043 37-895 37-870	37-13115 37-867 37-13112 37-13113 37-13114 37-21401 37-21402 37-21403
LWR 2	Little Wood River or Injected Big Wood River	SWNE Sec. 36 T5S R17E	42° 56' 55" N 114° 22' 56" W		

E.3. Section C: Diversion and Delivery System

The permit application and permit list the source of the water as the Big Wood River and Little Wood River (Appendices B and C). However, only a single point of diversion is listed on the permit application and permit, which is the SWSE of Section 24, T4S R19E (Appendices B and C). This point is not located on either the Big Wood or Little Wood River courses. There are several notes in the file about this point of diversion being incorrect, as seen in Appendix H. The original POD location was likely a clerical error, and the point of diversion was intended to be the SWSE of Section 25, T4S R19E (just one section off). Within this corrected quarter-quarter, the Jim Byrns Slough ends and water from the slough enters the Little Wood River and the Dietrich Canal is diverted from the Little Wood River. The Jim Byrns Slough water is water diverted from the Big Wood River into the Richfield Canal system. The quarter-quarter discussed above is the

location where Big Wood River water is injected into the Little Wood River. In 1980, the permit application only had a space for a single point of diversion, and I interpret this as an attempt to describe a location where water from two sources are brought together for beneficial use, based on the space provided in the application.

Based on my personal conversation with Lynn Harmon, former manager of the Big Wood Canal Company, (Notes of Conversation found in Appendix I), it is my opinion that water from the Big Wood River can and was diverted for recharge use during the development period. Big Wood River water is diverted into the Richfield Canal at Station #4 (Figure 3), can be diverted into East and West Main Richfield Canals shown with call outs on Figure 3. Un-diverted Richfield Canal water flows into the Jim Byrns Slough and is measured at the head of the Jim Byrns Slough (station HJB) and at the mouth of the Jim Byrns Slough (Station MJB). The mouth of the Jim Byrns Slough is where the slough confluences with the Little Wood River.

The place of use identified in the permit application and permit included the entire service area of the Lower Snake Aquifer Recharge District and 5 sites outside the service area (Figure 1). The permit application/permit and permit advertisement clearly state that the recharge water was to use the Richfield and Dietrich Canal systems (Appendix B). Based on evidence of diversions, water was used in three recharge locations: (1) The Dietrich site located along the Dietrich Canal south of the Little Wood River, (2) The Shoshone site located along the Milner-Gooding Canal north of the Little Wood River, and (3) along the Richfield Canal before or after the irrigation season delivery occurred.

E.3.1 Dietrich Site Diversion and Delivery System

Water from the Little Wood River, which can be Little Wood River flow or injected Big Wood River water, can be diverted into the Dietrich Canal (Figure 4). A check structure exists across the Little Wood River to back water up and ensure adequate flow is diverted into the Dietrich Canal. I visited the Dietrich Canal diversion point in July 2018 and witnessed Big Wood River water being injected into the Little Wood River from the Jim Byrns Slough (Figure 8), the check structure on the Little Wood River (Figure 9) and a combination of Big Wood/Little Wood River water being diverted into the Dietrich Canal (Figure 10). I also witnessed water (from both the Little Wood and Big Wood Rivers) flowing past the check structure to continue down the Little

Wood River towards the bifurcation, where the Milner-Gooding Canal intersects with the Little Wood River.

E.3.2 Shoshone Site Diversion and Delivery System

The Milner-Gooding Canal and the Little Wood River intersects at a location called the bifurcation, located northeast of the city of Shoshone (Figure 5). The bifurcation is a hydraulic structure where Snake River water in the Milner-Gooding Canal can be split and either injected into the Little Wood River or through a siphon tube under the Little Wood River to the north section of the Milner-Gooding Canal (Figure 10). Lynn Harmon stated in a personal conversation to me that during high flows in the Little Wood River, when Snake River water is flowing only through the syphon, it is possible for Little Wood River water to flow up the bifurcation into the syphon.

I have not personally observed this backflow into the bifurcation, but Mr. Harmon has witnessed water flowing from the Little Wood River into the bifurcation. The water flow situation is obvious from the water measurement data. Figure 5 shows the measurement locations around the bifurcation. Measurement location #53 is a measurement on the Milner-Gooding Canal and measures the flow of Snake River water coming into the bifurcation. Measurement location #56 (also on the Milner-Gooding Canal) is measuring what water is flowing north away from the bifurcation (Figure 11). Occasionally, water measurements show an increase in flow from measurement location #53 to #56 (See discussion in Section E.4.2 below). An increase in flow between Stations #53 and #56 is concluded to come from the Big Wood/Little Wood Rivers.

E.3.3 Richfield Canal Diversion and Delivery System

Throughout the state of Idaho, recharge routinely occurs and is recognized as recharge within the canal systems during the non-irrigation season. Water from the Big Wood River was diverted into the Richfield canals during the non-irrigation season. Irrigation water rights diverted into the Richfield Canal have periods of use either from April 1st through October 31st or from March 15th through November 15th. However, the actual diversion of irrigation water occurs in a narrower window. In my personal conversation with Mr. Harmon, he said that the typical start of the irrigation season on the Richfield Canal is May 1st and the irrigation season usually ends in mid-

September. The watermaster records support a narrow irrigation season, with smaller diversions reported during April and no diversion records in October (Appendix J). Therefore, I concluded that the irrigation season for the Richfield Canal during the development period was from May 1st through September 30th. As described in more detail in Section E.4.3, diversions occurred to the Richfield Canal system outside of the irrigation season and the recharge flow rate within the Richfield Canal was calculated from Station #4 to HJB. Recharge was not calculated to the MJB due to seasonal gains in the slough, as discussed in Section E.4.3. However, the place of use for the Richfield Canal diversions includes the Richfield Canal from Station #4 to the MJB because, during the development period recharge water was not stopped at the HJB but continued to flow through to the MJB. Watermaster records confirm that seasonally water was recharged in the Jim Byrns Slough (HJB to MJB) during the development period.

E.3.4 Recommended Points of Diversion

Based on historical documents, watermaster delivery records, personal communication with Lynn Harmon and personal visit to the diversion sites, it is my opinion that the points of diversion for water right no. 37-7842 should be designated as shown in Tables 4 and 5. Figure 6 shows a map of the points of diversions and the conveyance system to arrive at the potential places of use.

Table 4. Proposed points of diversion based on review of the water delivery system for water diverted from the Big Wood River.

Ident. No.	¼	¼	Sec	Twp	Rge	County	Method of Determination/Remarks
BWR 1	SE	NE	30	2S	18E	Blaine County	Point of Diversion
LWR 1	SW	SE	25	4S	19E	Lincoln County	Point of Injection
LWR 1	SW	SE	25	4S	19E	Lincoln County	Point of Re-diversion
LWR 2	SW	NE	36	5S	17E	Lincoln County	Point of Re-diversion

Table 5. Proposed points of diversion based on review of the water delivery system for water diverted from the Little Wood River.

Ident. No.	¼	¼	Sec	Twp	Rge	County	Method of Determination/Remarks
LWR 1	SW	SE	25	4S	19E	Lincoln County	Point of Diversion
LWR 2	SW	NE	36	5S	17E	Lincoln County	Point of Diversion

E.3.5 Recommended Place of Use

Tables 6 through 8 lists the places of use for recharge and Figure 7 is a map of the recommended place of use.

Table 6. Place of use for the Dietrich recharge site.

			NE				NW				SW				SE			
Twp	Rge	Sec	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE
4S	19E	35															E	E
5S	19E	2	E	E	E					E	E	E	E			E		
5S	19E	3															E	E
5S	19E	10	E			E												
5S	19E	11						E										

Table 7. Place of use for the Shoshone recharge site.

			NE				NW				SW				SE			
Twp	Rge	Sec	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE
5S	17E	22			E	E				E	E		E	E	E	E		

Table 8. Place of use for the Richfield Canal.

			NE				NW				SW				SE			
Twp	Rge	Sec	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE
2S	18E	29										E	E	E				
2S	18E	30													E			
S2	18E	32		E	E	E	E								E			
2S	18E	33			E				E	E		E			E	E		E
2S	18E	34											E	E				
3S	18E	2											E	E				
3S	18E	3		E	E		E				E					E	E	E
3S	18E	11			E		E			E						E	E	E
3S	18E	13						E	E									
3S	18E	14	E	E	E	E										E	E	
3S	18E	23		E	E	E									E			E
3S	18E	24											E	E	E		E	E
3S	19E	13										E	E					
3S	19E	14									E	E			E	E	E	
3S	19E	15			E	E					E	E	E			E		
3S	19E	16									E		E	E	E	E		E
3S	19E	17										E	E	E			E	E
3S	19E	18													E			E
3S	19E	19	E	E	E					E	E	E						
3S	19E	24						E	E	E	E	E				E	E	E
3S	19E	25	E															
3S	20E	30						E	E		E	E	E	E				
3S	20E	31					E	E		E	E						E	E
4S	19E	13													E			E
4S	19E	24	E	E	E		E				E			E				
4S	19E	25	E	E	E	E	E									E		
4S	20E	6		E	E						E			E		E	E	
4S	20E	7		E	E	E									E	E	E	E
4S	20E	18					E		E	E		E						

The points of diversion and place of use were identified by combination of aerial photography, GIS data, GPS coordinates and/or site inspection.

E.4. Section D: Flow Measurements

Flow measurements throughout the region were collected by the Big Wood Canal Company and provided to the Water District 37 watermaster. The watermaster would double check measurement data with spot measurements and adjust flows as necessary. The watermaster then reports daily diversion rates in an annual report to IDWR. Diversion data by the Water District 37 watermaster is available in Appendix J and the Big Wood Canal Company measurements are

available in Appendix K. I used the watermaster records as my primary data source and then supplemented the data with records from the Big Wood Canal Company, especially diversion data during the non-irrigation season which was outside of the watermaster's records. These are public records and can be obtained through public records request. Measurements were collected in accordance with IDWR policy in place at the time and are presumed to be accurate. The actual measurement devices used to obtain these measurements existed prior to the approval and development of this permit. If the measurement device is of interest, I would suggest that one contact the Water District 37 watermaster and/or the Big Wood Canal Company. These data are considered to be the best available data for this system.

E.4.1 Dietrich Canal Site

Recharge diversions to the Dietrich site were estimated based on measured delivery to the Dietrich Canal at measurement location number #11. Water diverted into the Dietrich Canal is a combination of water from the Little Wood and Big Wood Rivers (Figure 9). Mr. Harmon said to me that the irrigation season in the Dietrich Canal usually begins on April 15th and from that date through May, the demand is between 100 cfs and 120 cfs. Ms. Edl (Appendix E) used a more conservative estimate of 150 cfs for early irrigation demand in her analysis. The likely irrigation demand in April is well below 100 cfs and by the end of May is likely close to 150 cfs, so I used an early irrigation flow rate of 120 cfs as an average irrigation demand during the dates of April 15 through May 31. I focused on the dates between April 15th and May 31st as the logical period when recharge would occur, because irrigation demands increases in June and peaks in July while spring runoff is less. If excess water exists in the Dietrich Canal, then excess water flows through the F-Waste gage and returns to the Little Wood River. Any diverted rate above the 120 cfs irrigation demand and not returned to the Little Wood River through the F-waste gage was diverted for another use and concluded to be used for recharge water.

Flow estimate to the Dietrich Canal recharge site was calculated based on the following logic:

1. Total flows into the Dietrich Canal are measured at Station #11.
2. Between April 15th and May 31st the average irrigation demand on the Dietrich Canal is 120 cfs. 120 cfs is subtracted from the total flow measurements.
3. Excess flow in the Dietrich Canal system flows through the F-Waste gage into the Little Wood River. Flows measured at the F-Waste are subtracted from the total flow measurements.

The maximum flow rate calculated for recharge use from the Dietrich Canal diversion data was 276 cfs which occurred in May 1984. Table 9 shows a sample spreadsheet of flow calculations for May 1984 when the maximum diversion rate for recharge was calculated. Complete spreadsheet calculations for all years during the development period can be found in Appendix L. The maximum annual flow rates calculated for recharge during the development period are shown in Table 10.

Table 9. Example recharge flow rate calculations to the Dietrich Site for May 1984. Highlighted row was the maximum diversion rate for recharge from the Big Wood/Little Wood Rivers during the development period.

Date	#11 Flow (cfs)	Demand (cfs)	F-Waste Flow (cfs)	Recharge (#11-Demand-F-waste) (cfs)	Date	#11 Flow (cfs)	Demand (cfs)	F-Waste Flow (cfs)	Recharge (#11-Demand-F-waste) (cfs)
5/1/84	291	120	0	171	5/16/84	390	120	0	270
5/2/84	309	120	0	189	5/17/84	396	120	0	276
5/3/84	321	120	0	201	5/18/84	387	120	0	267
5/4/84	321	120	0	201	5/19/84	390	120	0	270
5/5/84	319	120	0	199	5/20/84	387	120	0	267
5/6/84	309	120	0	189	5/21/84	375	120	0	255
5/7/84	306	120	0	186	5/22/84	247	120	0	127
5/8/84	300	120	0	180	5/23/84	209	120	0	89
5/9/84	251	120	0	131	5/24/84	210	120	0	90
5/10/84	183	120	0	63	5/25/84	207	120	0	87
5/11/84	184	120	0	64	5/26/84	207	120	0	87
5/12/84	204	120	0	84	5/27/84	206	120	0	86
5/13/84	213	120	0	93	5/28/84	219	120	0	99
5/14/84	219	120	0	99	5/29/84	226	120	0	106
5/15/84	294	120	0	174	5/30/84	227	120	0	107
					5/31/84	221	120	0	101

Table 10. Maximum flow estimates for recharge use in the Dietrich Canal in CFS for water delivery under permit no. 37-7842.

Year	Max Flow (cfs)
1982	256
1983	152
1984	276
1985	132
1986	129
1987	88
1988	129
1989	115
1990	100
1991	129
1992	144

E.4.2 Shoshone Recharge Site

Most of the recharge occurring at this location is from the Snake River delivered through the Milner-Gooding Canal. However, during high flows in the Little Wood River, water from the Big Wood/Little Wood Rivers could flow through the bifurcation and into the syphon. Diverted waters would flow through the Milner Gooding Canal to the Shoshone recharge site. Measurements are collected as shown on Figure 5: Station #53 (Milner-Gooding Canal, before the Little Wood River), Station #56 (Milner-Gooding Canal, after the Little Wood River, before the recharge diversion) and Station #57 (Milner-Gooding Canal after the recharge diversion).

Big Wood/Little Wood River recharge at the Shoshone Site was calculated based on the following logic:

1. Total recharge from the Snake, Big Wood, and Little Wood Rivers at the Shoshone site is calculated by subtracting the flow measurements at Stations #56 and #57.
2. Comparison between Station #53 and Station #56.
    a. If Station #56 is less than Station #53, then water is diverted from the Milner-Gooding Canal into the Little Wood River through the bifurcation.
    b. If Station #56 is more than Station #53 then water must have come from the Big Wood/Little Wood Rivers into the bifurcation and into the Milner-Gooding Canal

because no other sources of the additional water exist during the time periods analyzed.

Table 11 shows sample calculations from April 1984 when the maximum diversion rate from the Big Wood/Little Wood Rivers was observed in the Milner-Gooding Canal. Complete calculations for all years of the development period for the Shoshone Site flows can be found in Appendix M. Table 12 shows the annual maximum flow rate of Big Wood/Little Wood River water flowing into the Shoshone Recharge Site.

The maximum flow rate diverted into the Shoshone Recharge Site from the Big Wood/Little Wood Rivers occurred in April 1984 and was calculated to be 295 cfs.

Table 11. Sample calculations for Shoshone Site Recharge from April 1984 data. Total recharge column includes water from all sources, including Snake, Big Wood, and Little Wood Rivers. Highlighted row was the maximum diverted flow rate from the Big Wood/Little Wood Rivers into the Milner-Gooding Canal for recharge.

Date	#53 Flow (cfs)	#56 Flow (cfs)	#57 Flow (cfs)	Total Recharge (#57-#56) (cfs)	BWR/ LWR Recharge (#56-#53) (cfs)	Date	#53 Flow (cfs)	#56 Flow (cfs)	#57 Flow (cfs)	Total Recharge (#57-#56) (cfs)	BWR/ LWR Recharge (#56-#53) (cfs)
4/1/84	0	0	0	0	0	4/16/84	222	507	213	294	285
4/2/84	0	0	0	0	0	4/17/84	222	517	217	300	295
4/3/84	0	0	0	0	0	4/18/84	521	545	229	316	24
4/4/84	0	0	0	0	0	4/19/84	540	560	235	325	20
4/5/84	0	0	0	0	0	4/20/84	552	584	245	339	32
4/6/84	0	0	0	0	0	4/21/84	572	568	239	329	0
4/7/84	0	0	0	0	0	4/22/84	560	560	235	325	0
4/8/84	0	0	0	0	0	4/23/84	536	543	228	315	7
4/9/84	0	0	0	0	0	4/24/84	542	549	231	318	7
4/10/84	106	0	0	0	0	4/25/84	546	540	227	313	0
4/11/84	128	0	0	0	0	4/26/84	574	582	244	338	8
4/12/84	205	205	127	78	0	4/27/84	572	576	242	334	4
4/13/84	202	201	84	117	0	4/28/84	567	572	240	332	5
4/14/84	194	353	148	205	159	4/29/84	564	568	239	329	4
4/15/84	222	438	184	254	216	4/30/84	568	574	241	333	6

Table 12. Maximum annual flow estimates for recharge use in the Shoshone Site in CFS for water delivery under permit no. 37-7842.

Year	Max Flow (cfs)
1982	152
1983	66
1984	295
1985	232
1986	27
1987	0
1988	0
1989	33
1990	0
1991	3
1992	6

E.4.3 Richfield Canal

Based on my experience with recharge projects throughout Idaho, water diverted into canal systems during the non-irrigation season is considered recharge. As discussed in Section E.3, Big Wood River water was diverted during the non-irrigation season (before May 1st or after September 30th with no East Main and/or West Main Canal diversions) into the Richfield Canal. Mr. Harmon told me that there are no stockwater diversions into the Richfield Canal during the non-irrigation season. Water measured and diverted into the Richfield Canal system should be considered recharge water during the development period.

Big Wood River diversions into the Richfield Canal is measured at Station #4 (Figure 3). A measurement at the end of the Richfield Canal system occurs at the mouth of the Jim Byrns Slough (MJB) where the slough water combines with the Little Wood River. My original calculations for recharge within the Richfield Canal system was the difference between Station #4 and the MJB. However, sometimes, but not always, the MJB measurement was higher (more flow) than the HJB measurement, leading me to conclude that water from unknown sources were entering the slough. In order to eliminate unknown gains to the system, I calculated recharge as the difference between Station #4 and the HJB. This is a conservative approach, as there are many days within the non-irrigation season where the MJB measurement is lower than the HJB

measurement and would have resulted in higher recharge flows. But given the uncertainty of water sources within the Jim Byrns Slough, I concluded that the most defensible course was to end recharge calculations at the HJB. As previously discussed, Mr. Harmon told me that diversions into the Richfield Canal during the non-irrigation season were kept in the Richfield Canal or the Jim Byrns Slough, if water was diverted into the East or West Main Canals off of the Richfield Canal, then that water was being used for irrigation.

The flow rate diverted for recharge in the Richfield Canal was calculated based on the following logic:

1. Recharge only was considered outside of the irrigation season, April 1 through April 30 or after September 30 when water was not being not diverted into the East or West Canals.
2. Stockwater and/or irrigation diversions do not occur in the Richfield Canal system during the non-irrigation season.
3. Recharge rate was calculated as the difference between Station #4 and the HJB.

Table 13 shows a sample spreadsheet with calculations to determine the maximum flow rates for recharge along the Richfield Canal for portions of April and October/November 1987. Complete spreadsheet calculations of Richfield Canal flows for recharge for all development period years can be found in Appendix N. The maximum recharge rate for the Richfield Canal was calculated to be 300 cfs in 1987 and Table 14 shows the annual maximum rates.

Table 13. Sample calculations of Richfield Canal Recharge from portions of April and October/November 1987 data. The maximum flow rate calculated during the development period is highlighted.

Date	#4 Flow (cfs)	East Canal (cfs)	West Canal (cfs)	HJB Flow (cfs)	Recharge (#4-HJB) (cfs)		Date	#4 Flow (cfs)	East Canal (cfs)	West Canal (cfs)	HJB Flow (cfs)	Recharge (#4-HJB) (cfs)
4/15/87	0	0	0	0	0		10/18/87	0	0	0	0	0
4/16/87	0	0	0	0	0		10/19/87	0	0	0	0	0
4/17/87	0	0	0	0	0		10/20/87	0	0	0	0	0
4/18/87	0	0	0	0	0		10/21/87	0	0	0	0	0
4/19/87	0	0	0	0	0		10/22/87	0	0	0	0	0
4/20/87	0	0	0	0	0		10/23/87	0	0	0	0	0
4/21/87	122	0	0	0	122		10/24/87	0	0	0	0	0
4/22/87	168	0	0	172	0		10/25/87	0	0	0	0	0
4/23/87	170	0	0	182	0		10/26/87	0	0	0	0	0
4/24/87	172	0	0	86	86		10/27/87	0	0	0	0	0
4/25/87	186	0	0	93	93		10/28/87	0	0	0	0	0
4/26/87	206	0	0	101	105		10/29/87	0	0	0	0	0
4/27/87	318	0	0	132	186		10/30/87	0	0	0	0	0
4/28/87	327	0	0	136	191		10/31/87	0	0	0	0	0
4/29/87	382	0	0	141	241		11/1/87	300	0	0	0	300
4/30/87	443	0	0	152	291		11/2/87	316	231	73	90	0

Table 14. Maximum flow estimates for recharge use in the Richfield Canal in CFS for water delivery under permit no. 37-7842.

Year	Max Flow (cfs)
1982	110
1983	84
1984	63
1985	71
1986	234
1987	300
1988	0
1989	140
1990	0
1991	0
1992	0

E.4.4 Flow Estimates

Recharge flow rates were described above. Table 15 shows the total recharge diversion rates for water right no. 37-7842 during the development period.

Table 15. Maximum flow estimates in CFS for water delivery under permit no. 37-7842.

Year	Max Diversion Dietrich (cfs)	Max Diversion Shoshone (cfs)	Max Diversion Richfield (cfs)	Total Diversion Rate (cfs)
1982	256	152	110	518
1983	152	66	84	302
1984	276	295	63	634
1985	132	232	71	435
1986	129	27	234	390
1987	88	0	300	388
1988	129	0	0	129
1989	115	33	140	288
1990	100	0	0	100
1991	129	3	0	132
1992	144	6	0	150

Based on the flow data, and the evaluation of water diverted for recharge use, I conclude that a maximum diversion rate during a single year of the period of development was 634 cfs in 1984. The original permit application requested a total of 800 cfs, so the total recommendation diversion rate would be limited to 634 cfs.

E.5. Section E: Narrative/Remarks/Comments

I consider this entire report part of the narrative, remarks and comments section. The other part of this section is to certify that all conditions of the permit approval have been met. It is my understanding that these conditions were evaluated by Ms. Edl in her review of the permit for IDWR (Appendix E) and IDWR issued a license. I conclude that the conditions were met with sufficient evidence for IDWR.

E.6. Section F: Flow Calculations

All flow calculations made were presented in Section E.4.

E.7. Section G: Volume Calculations

Water right volume amounts are required by IDAPA 37.03.02.35.j for most beneficial use field exams. IDAPA 37.03.02.35.j.i-viii also allows for certain water rights to be issued without a volume limitation, but groundwater recharge is not listed as an exemption to the volume. The instructions in the Code state, "The annual diversion volume shall account for seasonal variations in factors affecting water use, including seasonal variations in water availability (IDAPA 37.03.02.35.j)."

Water volumes available for groundwater recharge are highly sensitive to the seasonal variations in water availability. It is the practice of most groundwater recharge water rights to divert runoff during early spring or late fall when there is no longer other demands. Placing a volume limitation on a groundwater recharge water right based on a 10-year development period where excess flow may have been limited would artificially limit the volume authorized for recharge during the high runoff events.

I examined the measured peak flows data of the USGS Big Wood River Gage below Magic Dam near Richfield, Idaho for the development period compared to the period of record for the gage (1915-2017) to illustrate the variability in water availability in these mountain basins. The peak recharge occurred in 1984 (Table 15), and the peak flow in 1984 correspond to a 17-year recurrence interval (RI) flow event. Recently, we have had larger water years in 2006 (21-year RI event) and 2017 (54-year RI event). Limiting the volume of water right no. 37-7842 to only the volume available during the development period (1982 – 1992) that included 6 out of 10 years with a recurrence interval of 1.5-year or less severely limits the opportunity to maximize water use during the above average years when groundwater recharge could be available.

The variability of recharge availability is evident by looking at the table of recharge flow rates by year in Table 15 with the total recharge flow ranging from 0 cfs to 634 cfs. This also does not take into account the duration of time that recharge water might be available. Volume calculations are sensitive to the assumptions of when recharge can occur and the duration recharge availability.

If a recharge volume must be established for groundwater recharge licenses, there are multiple approaches to estimate the recharge volume. One approach was suggested by Ms. Edl (Appendix

E) and I have used another approach. Both methods are subject to the availability of water during the development period only, which appears to be in conflict with the IDAPA rules, when recharge water rights are to capture high flows during less-frequent water years.

1. Michele Edl (Appendix E) calculated a volume based on an estimated flow rate and the number of days that this flow rate may have been available. It is unknown how Ms. Edl established the number of days that the flow rate may be available. In 2006 or 2017, this flow rate may have been available for much longer. The number of days used in Ms. Edl's analysis is arbitrary and would vary substantially in different water years.
2. I calculated a daily volume based on the flow rates diverted for recharge as discussed in Section E.4. Annual volumes can then be calculated by summing the daily recharge volumes. This method is more defensible, but highly restrictive to water availability during the development period and specific years in question. A summary of the recharge volume diverted during the development period was performed and available in Appendix O.

It is my personal opinion that the volume limit on groundwater recharge rights hinders the opportunity to recharge the aquifer during less-frequent abundant water years when more water is available for recharge. In most years, water availability for recharge will be curtailed because of priority cuts, before volume limitations are reached. However, during years of large snow pack or precipitation that did not occur during the development period, when more recharge water is available, a volume limit could prevent additional recharge from occurring. Under these conditions, no priority cut would prevent the water right holder from diverting water for recharge, but the water right would be in violation of the volume limit, because the volume limit was based on only the water available during a "normal" water year, and not a less-frequent abundant water year. Therefore, I recommend that no volume limit be included on the water right license.

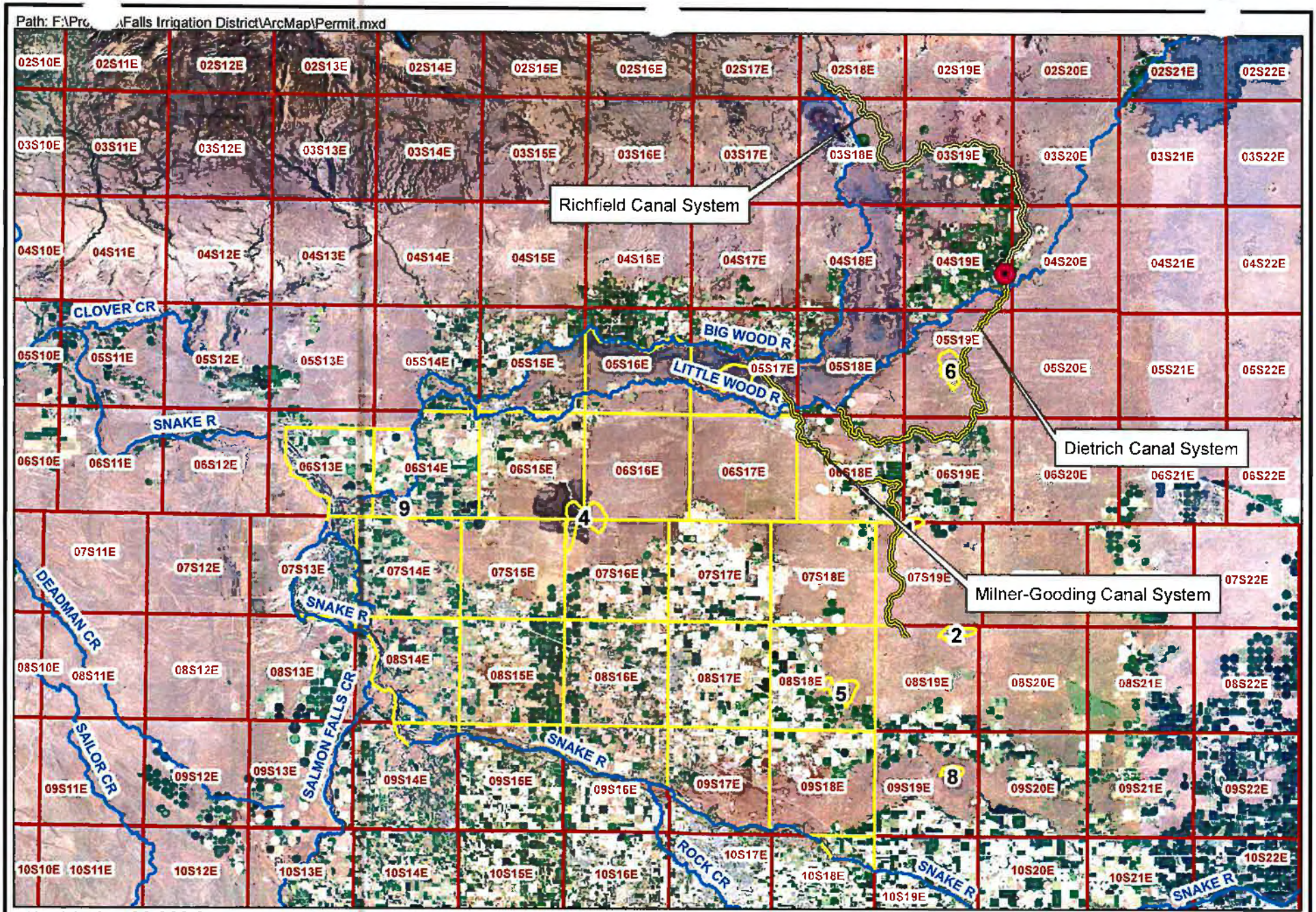
E.8. Section H: Recommendations

The following section is my recommendation based on the available data for this permit.

1. Recommended Amounts

Beneficial Use	Period of Use		Rate of Diversion Q (cfs)	Annual Volume V (afa)
	From	To		
Groundwater Recharge	1/1	12/31	634 cfs	NA

2. Recommended Amendments
   - Change P.D. as reflected on page 1
   - Change P.U. as reflected on page 1



N 1 inch = 38,000 feet

BROCKWAY ENGINEERING, PLLC
GEP - AUGUST 1, 2018

FIGURE 1: PERMIT APPLICATION POU AND POD

WATER RIGHT NO. 37-7842
NAIP 2017 AERIAL PHOTOGRAPH

Legend

- POU
- Permit POD

IDWR 80003062

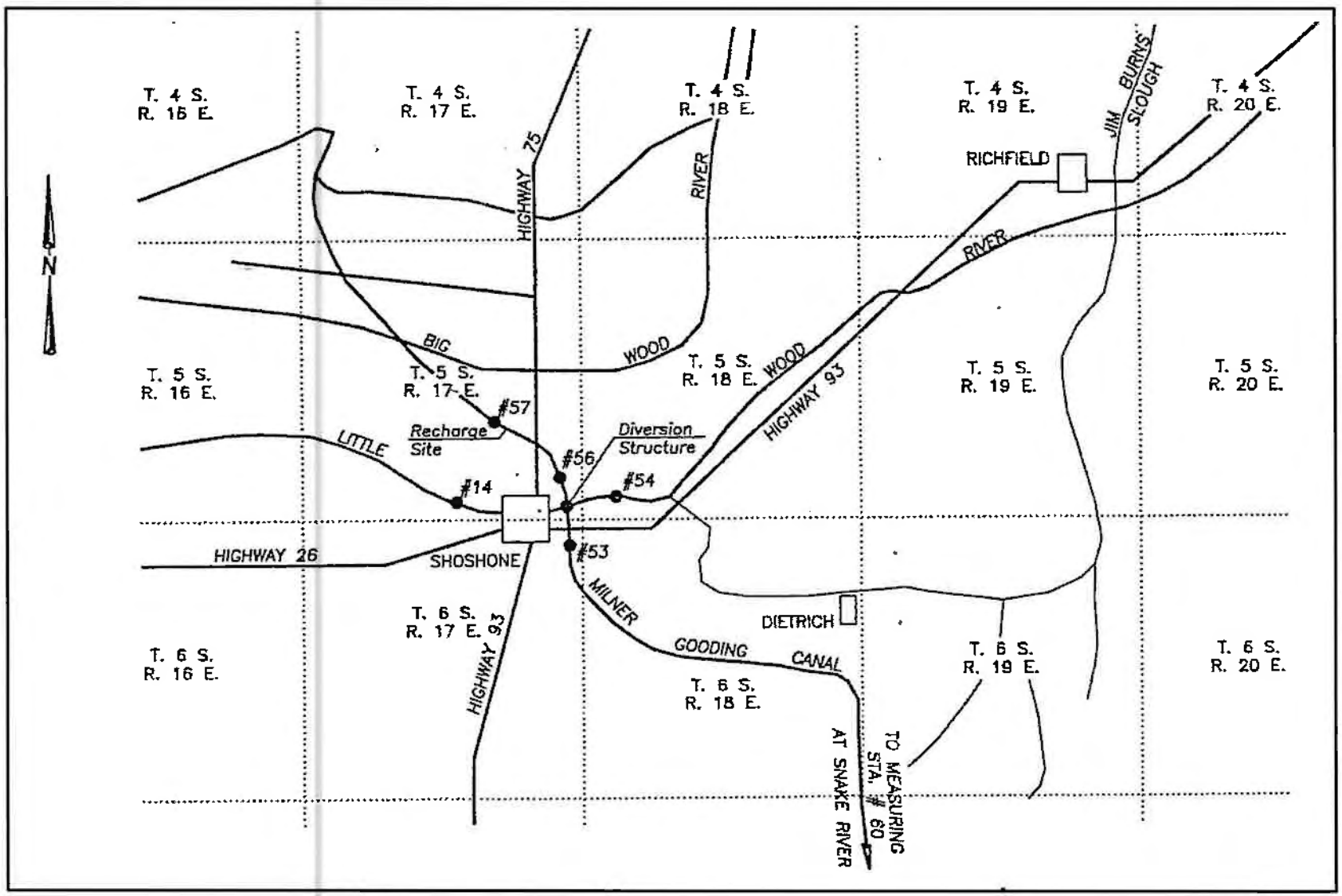


Figure 2: Map generated by Mr. Marten as part of the beneficial use exam for water right permit no. 37-7842.

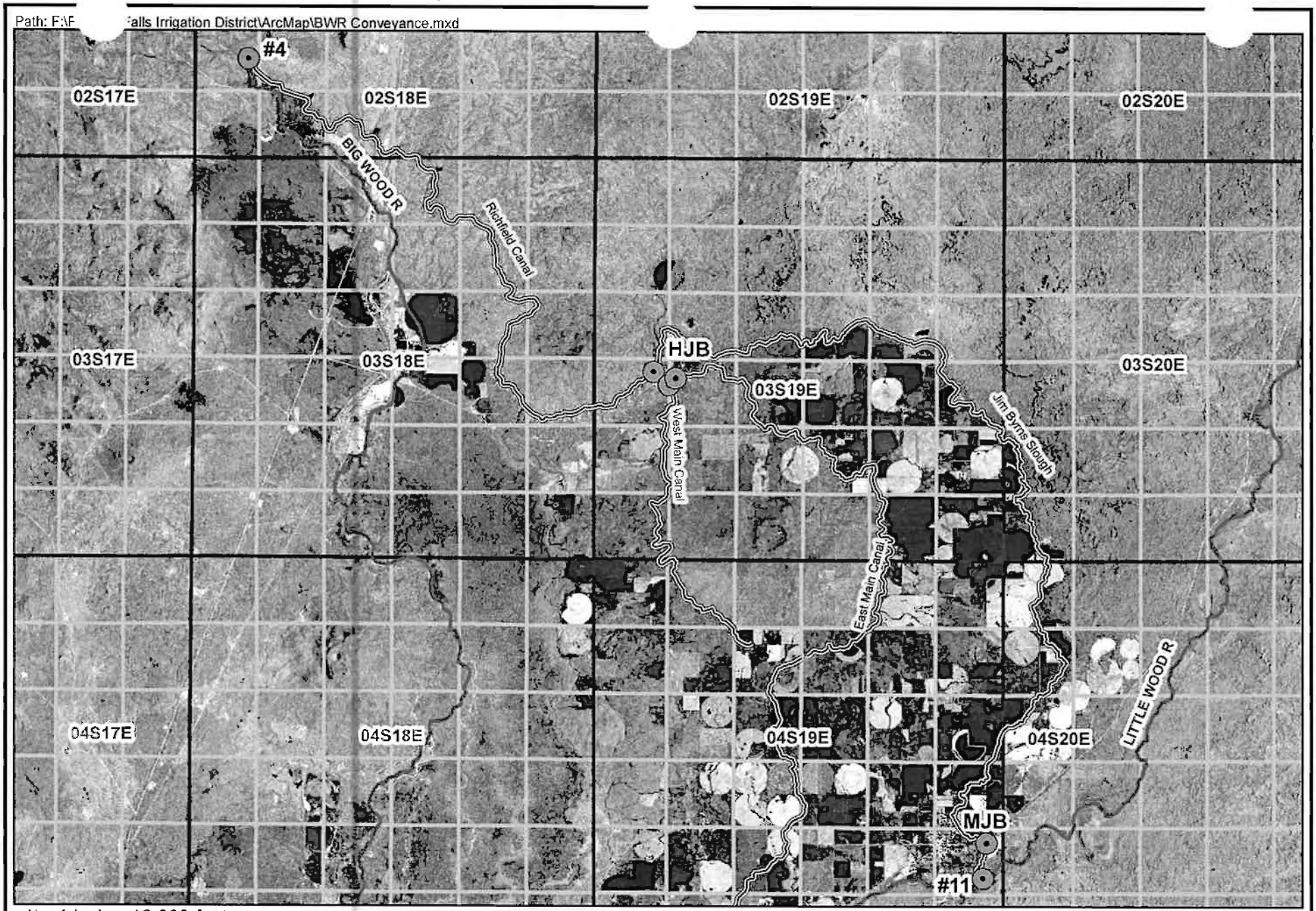


FIGURE 3: RICHFIELD CANAL CONVEYANCE

WATER RIGHT NO. 37-7842
NAIP 2017 AERIAL PHOTOGRAPH

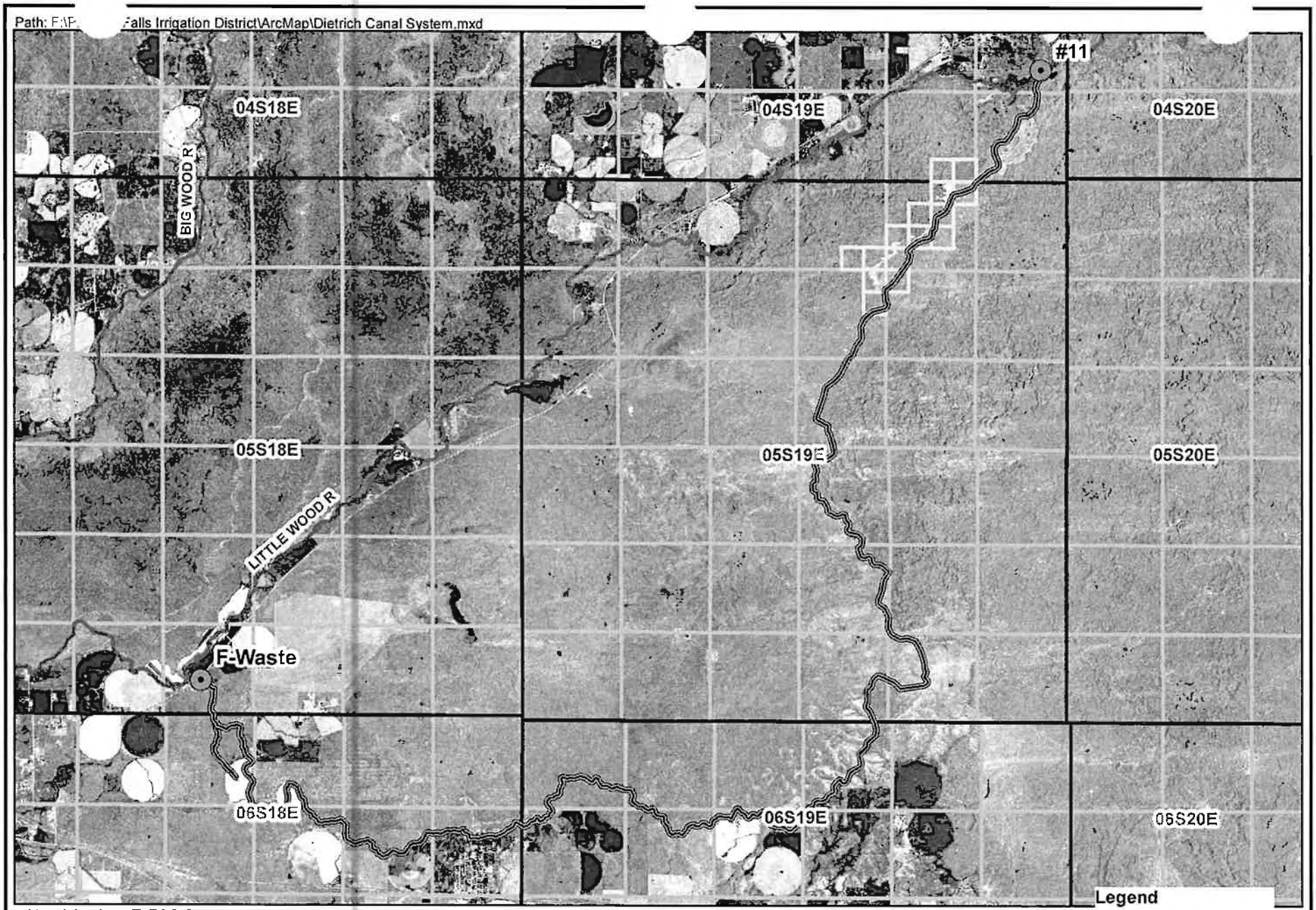


FIGURE 4: DIETRICH CANAL CONVEYANCE

WATER RIGHT NO. 37-7842
NAIP 2017 AERIAL PHOTOGRAPH

IWRB00003065

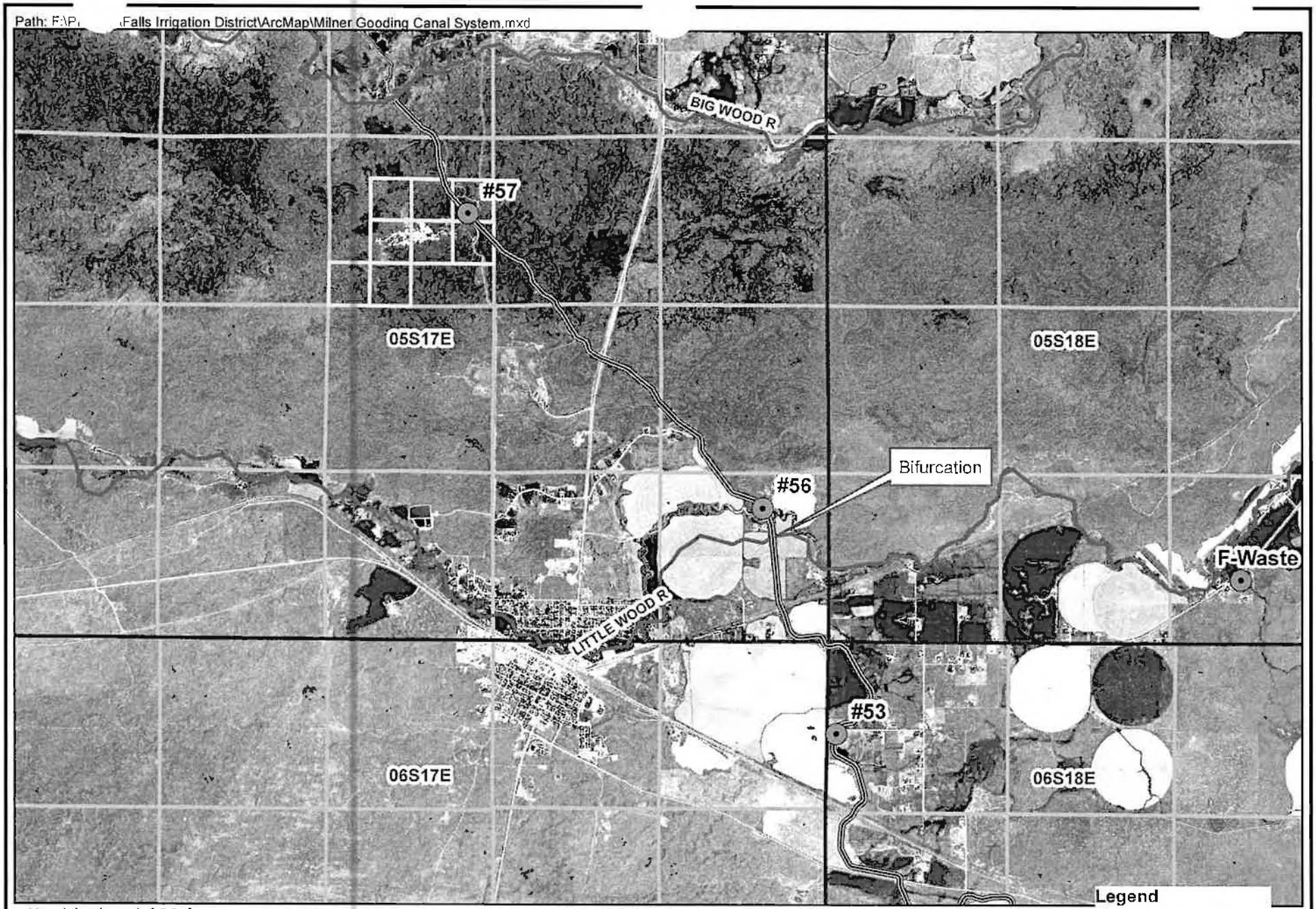


FIGURE 5: MILNER-GOODING CANAL CONVEYANCE

WATER RIGHT NO. 37-7842
NAIP 2017 AERIAL PHOTOGRAPH

IWRB00003066

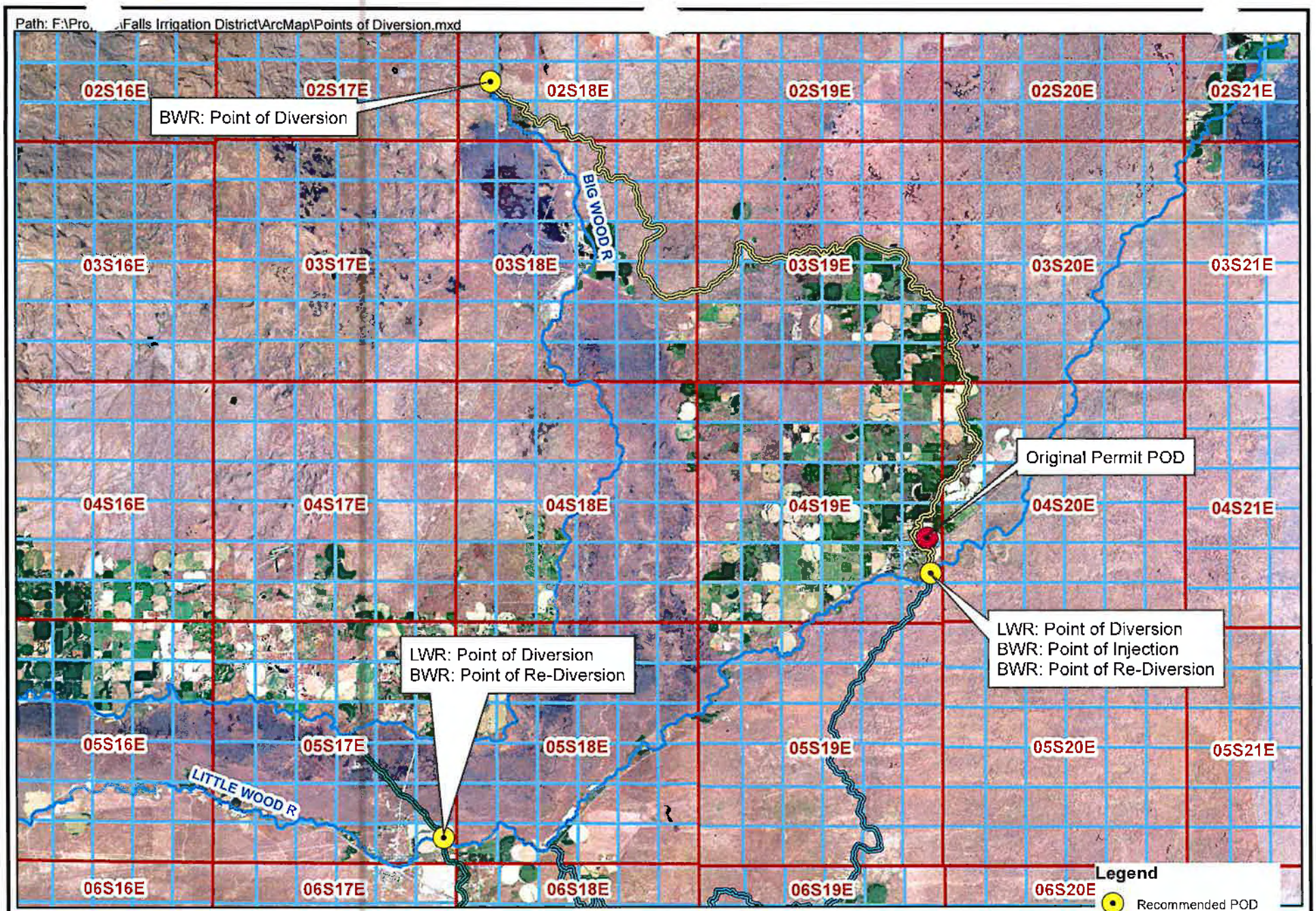


FIGURE 6: RECOMMENDED POINTS OF DIVERSION

WATER RIGHT NO. 37-7842
NAIP 2017 AERIAL PHOTOGRAPH

~~EDWB~~
IWRB0000 3067

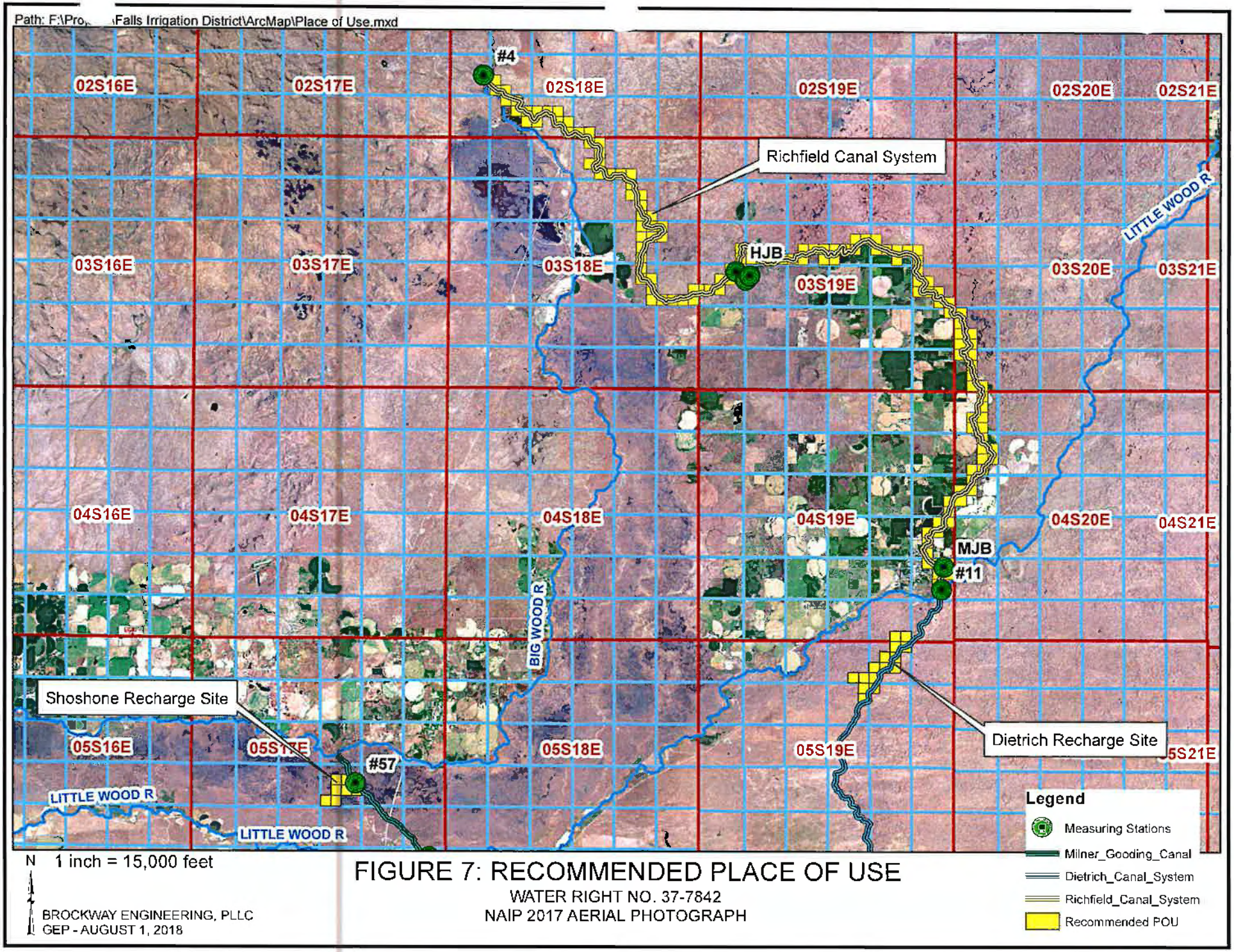


FIGURE 7: RECOMMENDED PLACE OF USE

WATER RIGHT NO. 37-7842
NAIP 2017 AERIAL PHOTOGRAPH

IWRB 00003068

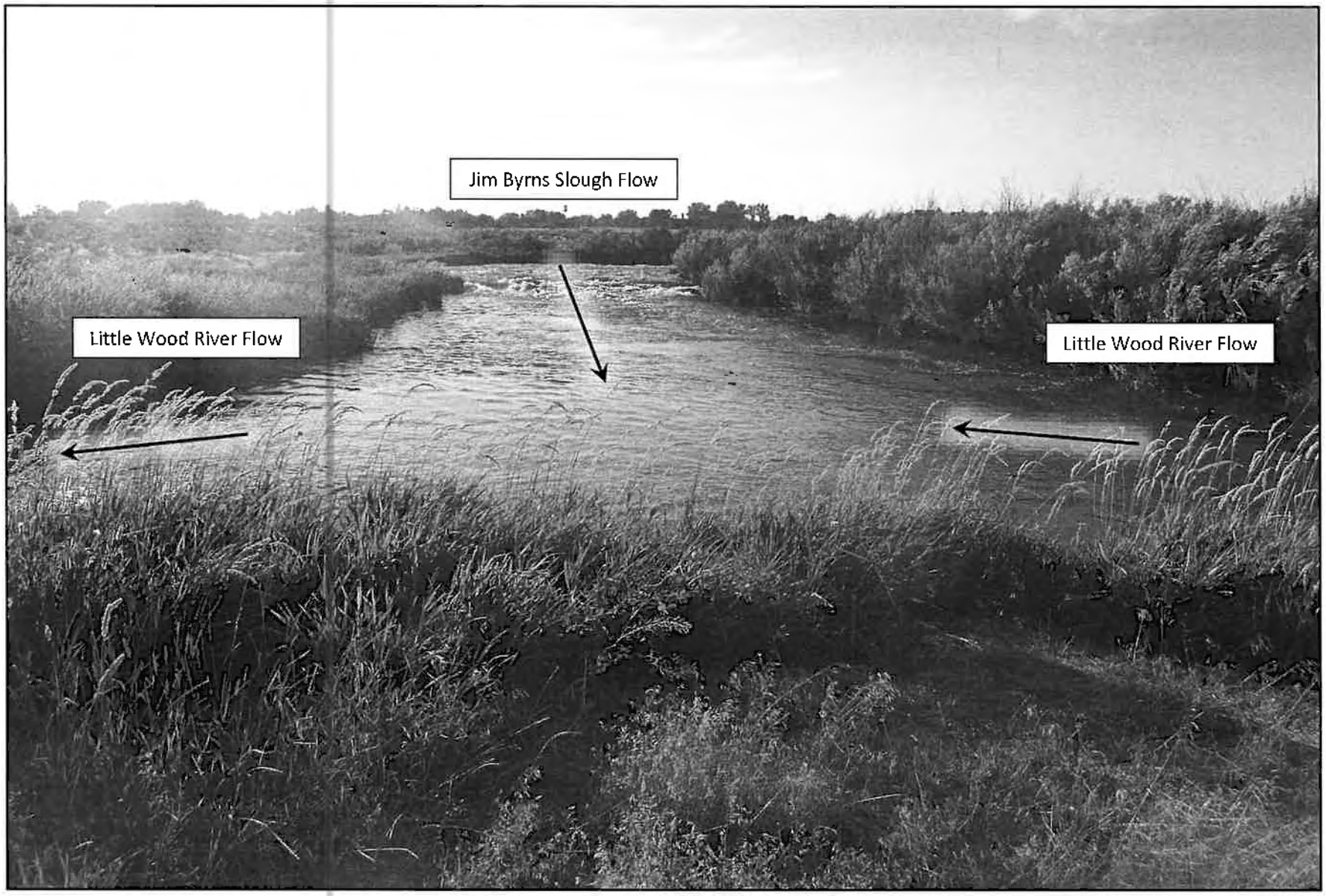


Figure 8: Photograph taken on July 22nd of the Jim Byrns Slough, water from the Big Wood River, injecting into the Little Wood River.

Figure 9: Photograph taken on July 22nd of the Little Wood River check structure. Structure is immediately downstream of the confluence of the Jim Byrns Slough and the Little Wood River, and the diversion to the Dietrich Canal.

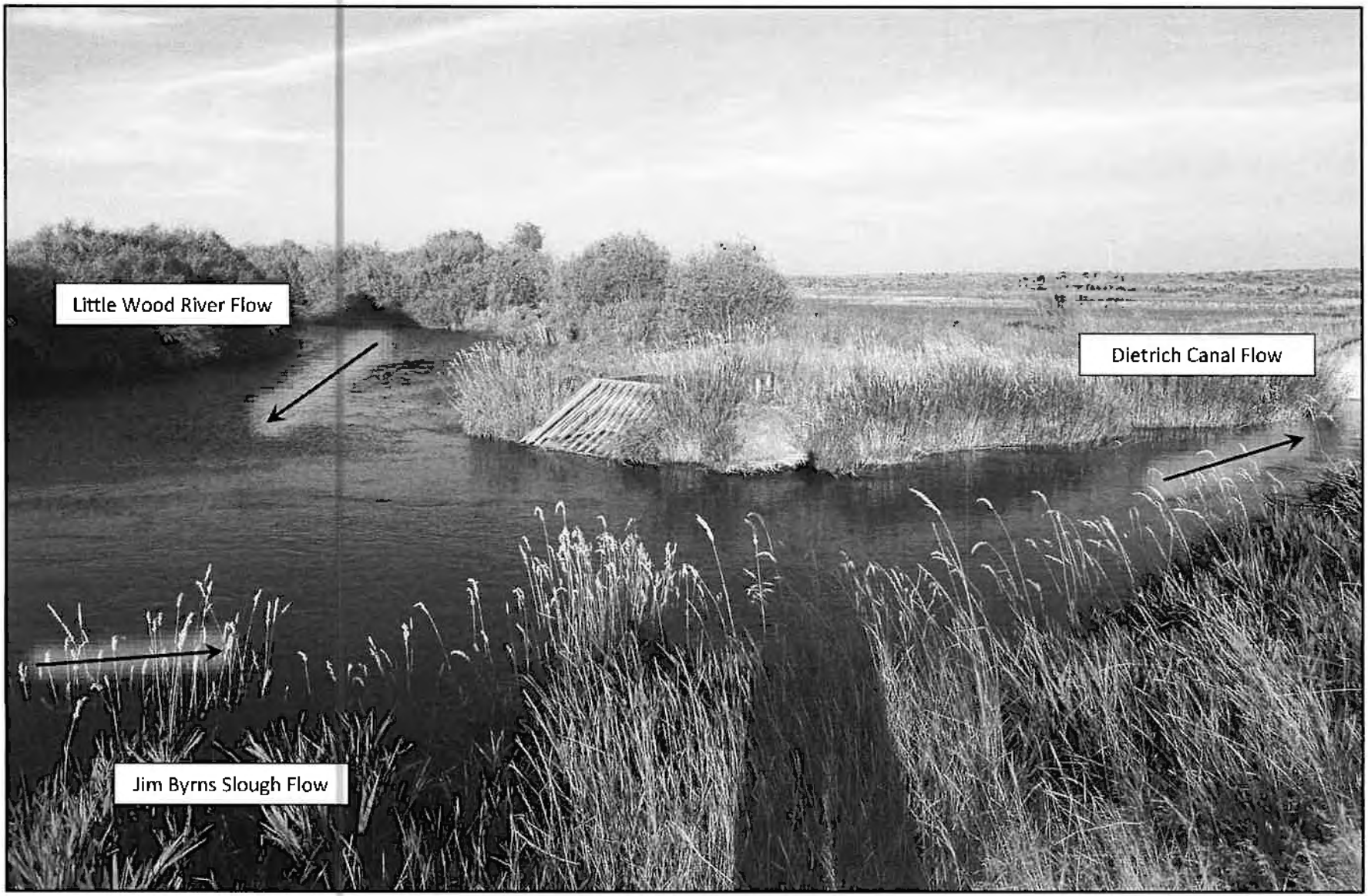


Figure 10: Photograph taken on July 22nd of the Dietrich Canal diversion, which includes water from the Little Wood River and Jim Byrns Slough, which is water from the Big Wood River.

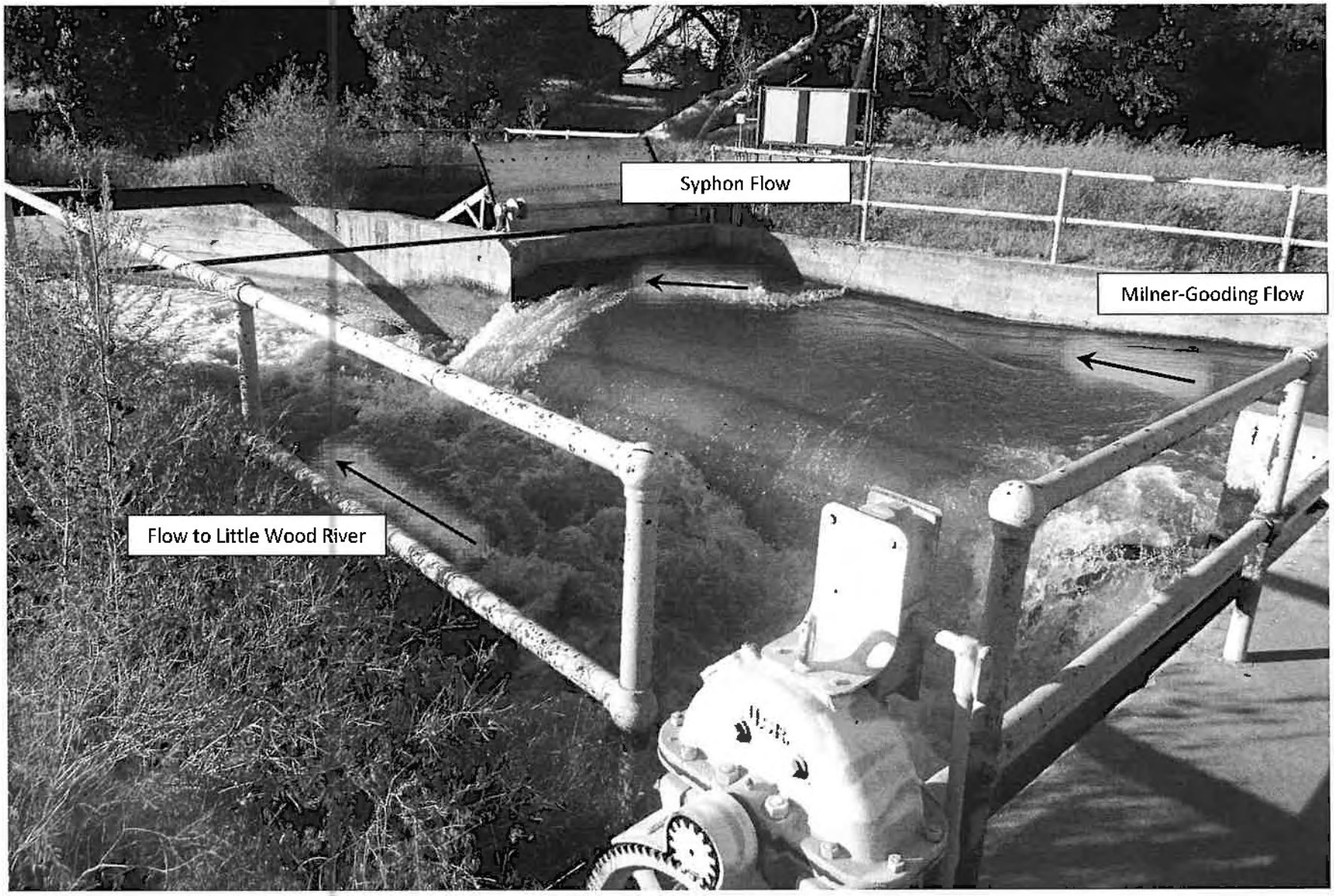


Figure 11: Photograph taken on July 22nd of the bifurcation, where the Milner-Gooding Canal can inject water into the Little Wood River or flow through a syphon tube under the Little Wood River.

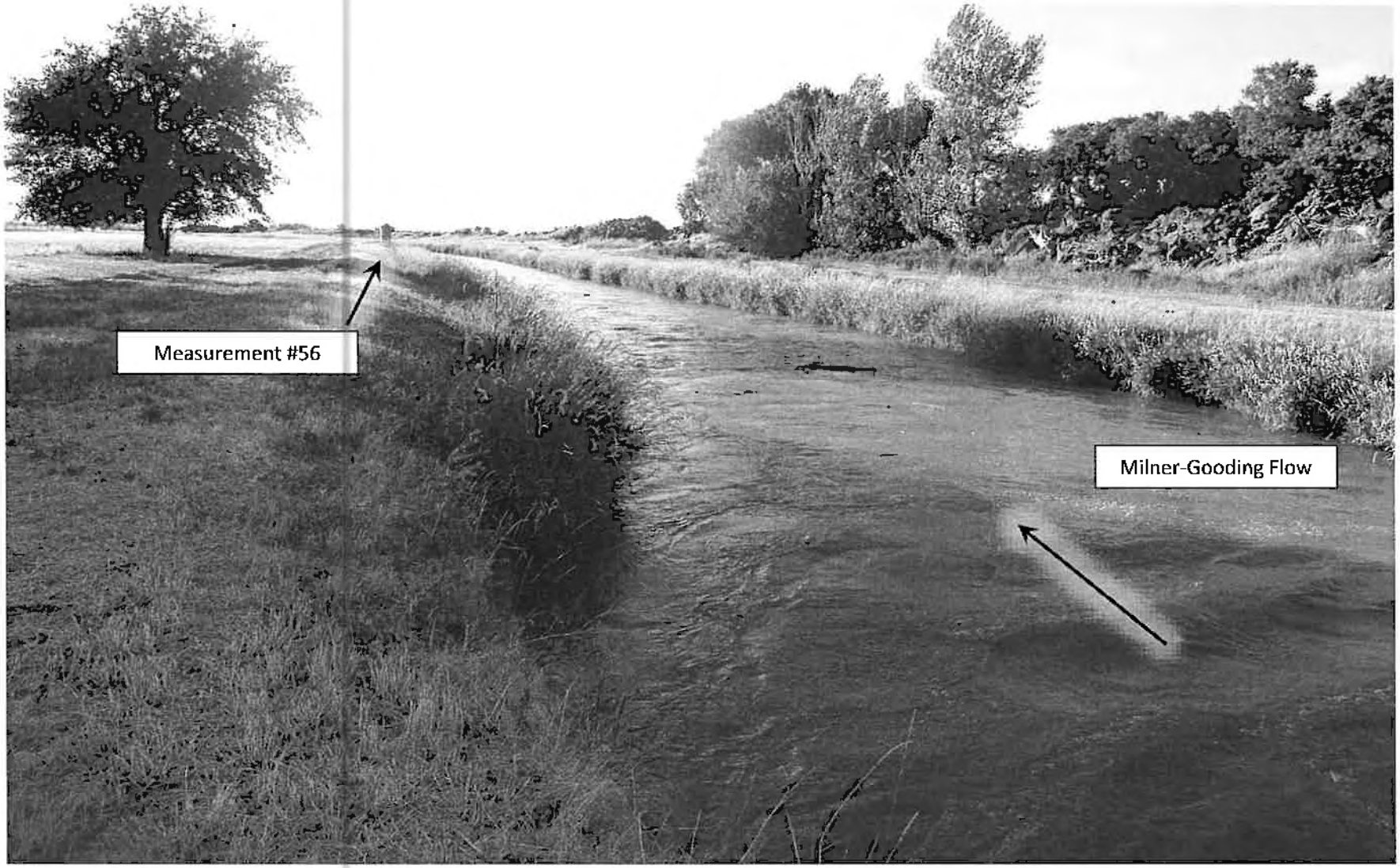


Figure 12: Photograph taken on July 22nd of the Milner-Gooding Canal immediately downstream of the syphon tube. Measurement location #56 is visible.

Appendix A
Personal Credentials of G. Erick Powell, Ph.D., P.E.

G. Erick Powell, Ph.D., P.E.

2016 Washington Street N., Suite 4
Twin Falls, Idaho 83301
Office: (208) 736-8543
Fax: (208) 736-8506

426 Kay Drive
Twin Falls, Idaho 83301
Residence: (208) 734-9808
erick@epowell.org

http://www.epowell.org

Education

Degree	University	Field	Year
Ph.D.	The Ohio State University	Agricultural Engineering	2006
	Advisor: Dr. Andrew D. Ward		
	Title: *Evaluating geomorphology and water quality of channel-forming discharges in Ohio headwater streams*		
MS	Brigham Young University	Civil and Environmental Engineering	2002
	Advisor: Dr. E. James Nelson		
	Title: *Bathymetry delineation and data collection preparing a CE-QUAL-W2 model on Scofield Reservoir, Utah*		
BS	Brigham Young University	Major: Civil and Environmental Engineering	2001
		Minor: Agronomy	

Professional Experience

Project Engineer — 2006 – Present
Brockway Engineering, PLLC
Twin Falls, Idaho

Project Engineering on hydrologic and hydraulic engineering design tasks, including: hydrological runoff prediction and evaluation, groundwater model development and technical consultant, well design, well construction, well testing, water rights, water right transfers, pipeline design, water distribution systems, stream channel evaluation, floodplain assessment, irrigation water demand, and potable water demand.

Graduate Research Assistant — 2002 – 2006
Department of Food, Agricultural, and Biological Engineering
The Ohio State University, Columbus, Ohio

Research consisting of: 1) evaluation of channel forming discharges, 2) two-stage channel design procedures, 3) nutrient performance within two-stage agricultural channels, and 4) theoretical nutrient spiraling under restored riparian projects.

Civilian Contractor — Summer 2001
Coastal and Hydraulics Laboratory
Waterways Experiment Station
United States Army Corps of Engineers, Vicksburg, Mississippi

Developed numerical groundwater flow simulations using FEMWATER and Groundwater Modeling System (GMS).

Surveyor and Draftsman 1998 – 1999
Western Land Surveying, Provo, UT
Chief draftsman and assistant surveyor for Western Land Surveying.

Laboratory Research Assistant 1993 – 1995
KSU Soil Testing Laboratory
Kansas State University, Manhattan, KS
Soil laboratory and research assistant.

Teaching Experience

Adjunct Professor 2008 – Present
Department of Physical Science
College of Southern Idaho

Course	Title
GEOG 100	Physical Geography

Adjunct professor for the College of Southern Idaho for physical geography, general education science course focusing on atmosphere, lithosphere, hydrosphere, and biosphere and the human interaction with these environmental spheres.

Online Adjunct Professor 2009 – 2016
Online Learning
Brigham Young University – Idaho

Course	Title
FDSCI 203	Environmental Stewardship
ME 201	Engineering Mechanics: Statics

Adjunct online professor for Brigham Young University. Piloted two different courses, including Engineering Mechanics: Statics. Oversaw other online science instructors as a Teaching Group Leader. Online Course Representative for ME 201 course development team.

Graduate Teaching Associate 2002 – 2006
Department of Food, Agricultural, and Biological Engineering
The Ohio State University, Columbus, Ohio

Course	Title
ACSM 370	Principles of Hydrology
FABE 373	Principles of Soil and Water Engineering
FABE 673	Design of Agricultural Water Management Systems
FABE 773	Engineering Soil-Water Management
FABE 850	Departmental/Graduate Seminar

Departmental teaching appointment. Recipient of the Stanely W. Joehlin graduate teaching award 2002-2005. Provided instruction for multiple University sponsored workshops.

Instructor 1999 – 2002
Civil and Environmental Engineering Department
Brigham Young University, Provo, Utah

Course	Title
CE En 113	Engineering Measurements

Responsible for course instruction, material evaluations, laboratory curriculum development and laboratory instruction.

Professional Licenses

State of Idaho, Professional Engineer No. P-13592
State of Utah, Professional Engineer No. 4859937-2202
State of Oregon, Professional Engineer No. 91026PE
Idaho Certified Water Rights Examiner

Professional Associations

American Society of Civil Engineers (ASCE)
American Ecological Engineering Society (AEES)
American Society of Agricultural and Biological Engineers (ASABE)
American Society for Engineering Education (ASEE)
Alpha Epsilon (ASABE Honor Society)

Professional Service

ASABE reviewer for soil and water publications
NRI grant reviewer
Assisted associate ASABE editor on peer-reviewed publications
ASABE Soil and Water Committee member
Ohio Agricultural Research Development Center (OARDC) grant reviewer
Reviewed Environmental Hydrology Textbook

Relevant Leadership Experience

The Ohio State University's College of Engineering Academic Affairs Committee member representing graduate students
Department of Food, Agricultural, and Biological Engineering Graduate Student President.
Department of Food, Agricultural, and Biological Engineering Graduate Student Treasurer.

Expert Witness

Expert Witness in Support of Water Right Permit no. 45-14456, May 2015
Expert Witness in Protest of Applications for Permit Nos. 37-22682 and 37-22852, June 2015
Expert Witness in Support of Transfer No. 79943 to Move POD for WR No. 45-14284, December 2016
Expert Witness in Civil Suit Sircuek v. Sircuek. June 2018.

Peer-Reviewed Publications

Powell, G.E., A.D. Ward, D.E. Mecklenburg, and A.D. Jayakaran. 2007. Two-stage channel systems: Part 1, a practical approach for sizing agricultural ditches. J. of Soil and Water Conservation. 62(4):pp.

Powell, G.E., A.D. Ward, D.E. Micklengburg, J. Draper, and W. Word. 2007. Two-stage channel systems: Part 2, case studies. J. of Soil and Water Conservation. 62(4):pp.

Powell, G.E. 2006. Examination, application, and evaluation of geomorphic principles and resulting water quality in Midwest agricultural streams and rivers. The Ohio State University. Doctoral dissertation.

Powell, G.E., D. Mecklenburg, and A.D. Ward. 2006. Evaluation of Channel-Forming Discharges: A Study of Large Rivers in Ohio. Trans. of ASABE. 49(1):35-46.

Martin, J.F., S.A. Diemont, G.E. Powell, M. Stanton, and S. Levy-Tacher. 2006. Emergy evaluation of the performance and sustainability of three agricultural systems with different scales and management. Agriculture, Ecosystems, and Environment. 115(2006):128-140.

Peer-Reviewed Books and Book Chapters

Powell, G.E. 2004. Solutions Manual for Environmental Hydrology: Second Edition. CRC Press. Boca Raton, Florida.

Jayakaran, A., A. Ward, D. Mecklenburg, G.E. Powell, and J. Witter. 2009. Chapter: The Fluvial Functioning of Agricultural Ditches and the Implication for their Management. Agricultural Drainage Ditches: Mitigation Wetlands of the 21st Century. Revisions made, Pending Publication.

Dr. Powell has authored numerous engineering reports as a consultant engineer.

References

Dr. Jim Nelson	jimn@byu.edu (801) 422-7632	Brigham Young University 242D Clyde Building Provo, Utah 84602
Dr. Andy Ward	ward.2@osu.edu (614) 292-9354	The Ohio State University 590 Woody Hayes Drive Columbus, Ohio 43210
Dr. Larry Brown	brown.59@osu.edu (614) 292-3826	The Ohio State University 590 Woody Hayes Drive Columbus, Ohio 43210
Dr. Charles E. Brockway	charles.e.brockway@ brockwayeng.com (208) 736-8543	Brockway Engineering, PLLC 2016 Washington Street North Suite 4 Twin Falls, Idaho 83301
Dr. Charles G. Brockway	charles.g.brockway@ brockwayeng.com (208) 736-8543	Brockway Engineering, PLLC 2016 Washington Street North Suite 4 Twin Falls, Idaho 83301

Appendix B
Original Permit Application Filed with IDWR
and Permit Advertisement

Form 202
3/78

Ident. No. 37-7842

ASSIGNED TO:
Lower Snake River
Recharge District
1301 Vista Ave
Boise, ID 83705

RECEIVED
JUL 2 1980
Department of Water Resources
Northern District Office

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
APPLICATION FOR PERMIT

RECEIVED
APPROVED
Department of Water Resources

To appropriate the public waters of the State of Idaho

1. Name of applicant Earl Hardy, Thorleif Rangen & John W. Jones, Jr. & John LeFloyne Phone 342-0090

Post office address 1301 Vista Ave.; Boise, ID 83705

2. Source of water supply Little Wood & Big Wood which is a tributary of Snake

3. Location of point of diversion is SW ¼ of SE ¼ of Section 24 Township 4S

Range 19E B.M. Lincoln County, additional points of diversion if any: ____

4. Water will be used for the following purposes:

Amount 800 cfs (cfs or acre-feet per annum) for G.W. Recharge purposes from Jan. 1 to Dec. 31 (both dates inclusive)

Amount _____ (cfs or acre-feet per annum) for _____ purposes from _____ to _____ (both dates inclusive)

Amount _____ (cfs or acre-feet per annum) for _____ purposes from _____ to _____ (both dates inclusive)

Amount _____ (cfs or acre-feet per annum) for _____ purposes from _____ to _____ (both dates inclusive)

5. Total quantity to be appropriated:

a. 800 cubic feet per second and/or b. _____ acre-feet per annum.

6. Proposed diverting works:

a. Description of ditches, flumes, pumps, headgates, etc. Contract use of Dietrich Canal System and Richfield Canal system.

b. Height of storage dam _____ feet, active reservoir capacity _____ acre-feet; total reservoir capacity _____ acre-feet, materials used in storage dam: _____

Period of year when water will be diverted to storage _____ (Month/Day) to _____ (Month/Day) inclusive.

c. Proposed well diameter is _____ inches; proposed depth of well is _____ feet.

7. Time required for the completion of the works and application of the water to the proposed beneficial use is 5 years *(minimum 1 year – maximum 5 years).*

8. Description of proposed uses:
   a. If water is **not** for irrigation:
      (1) Give the place of use of water: _____ ¼ of _____ ¼ of Section _____ Township _____ Range _____ B.M.
      (2) Amount of power to be generated: _____ horsepower under _____ feet of head.
      (3) List number of each kind of livestock to be watered _____
      (4) Name of municipality to be served _____, or number of families to be supplied with domestic water _____.
      (5) If water is to be used for other purposes describe: Groundwater recharge subject to the requirements of Title 42 Chapter 42 Idaho Code

b. If water is for irrigation, indicate acreage in each subdivision in the tabulation below:

TWP	RANGE	SEC.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

Total number of acres to be irrigated _____

c. Describe any other water rights used for the same purposes as described above. None

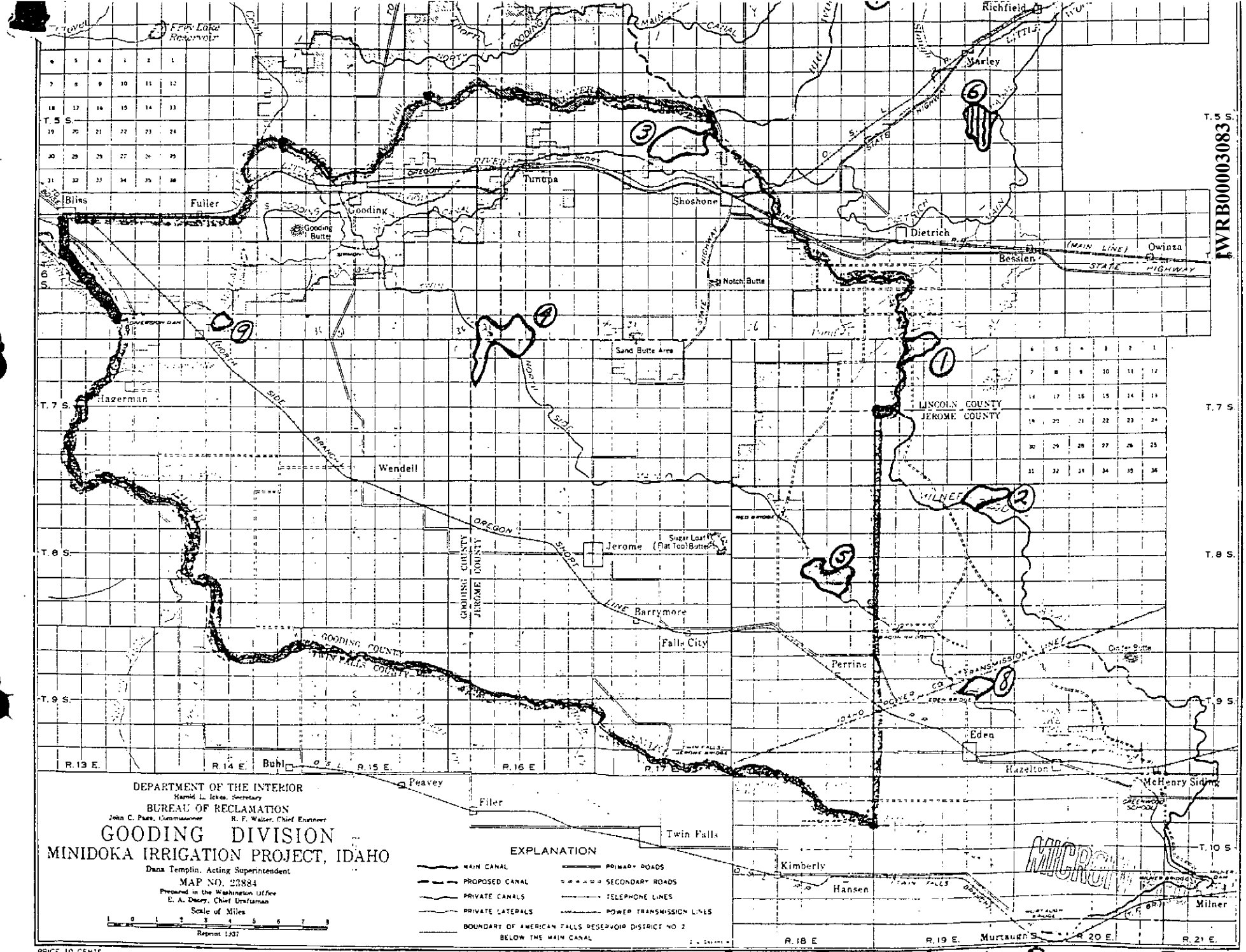
9. a. Who owns the property at the point of diversion Big Wood Canal Co.

b. Who owns the land to be irrigated or place of use BLM

c. If the property is owned by a person other than the applicant, describe the arrangement enabling the applicant to make this filing Applicant has worked with owners of P.D. & place of use to negotiate agreement for use of facilities. Negotiations will continue until agreement is complete.

10. Remarks Applicant agrees to meet specifically the requirements of 42-4201 (2) subordinating applicants right to all prior perfected water rights including those held by any privately owned electric generating company, and 42-4201 (3) providing for the reduction of applicants right under certain conditions. Applicant further agrees to meet all additional requirements and conditions of Title 42, Chapter 42.

Applicant's filing is being held in trust for a recharge district being formed under 42-4202 Idaho Code. Applicant agrees to assign application to the recharge district upon reimbursement of costs.



IWRB000003083

Lower Snake Plains Aquifer Recharge Dist.

NOTICE OF APPLICATION FOR WATER RIGHT

Notice is hereby given that the following application(s) have been submitted for permit to appropriate the public waters of the State of Idaho:

37-7842

Hardy, Earl
Rangen, Tharleif
Jones, John W., Jr.
LeMoyne, John
1301 Vista Ave., Boise, Idaho 83705

Source: Little Wood & Big Wood River tributary of Snake River

Date Filed: 6/30/80

Amount: 800 cfs

Diversion Point: SW¼SE¼, Sec. 24, T.4S, R.19E, Lincoln County

Use: Groundwater Recharge (800 cfs) from Jan. 1 to Dec. 31

Place of Use: Within the boundaries of the Lower Snake Plains Aquifer Recharge District located within T5S, R14E; T5S R15E; T5S, R16E; T5S R17E; T6S R13E; T6S R14E; T6S R15E; T6S R16E; T6S R17E; T6S R18E; T7S R13E; T7S R14E; T7S R15E; T7S R16E; T7S R17E; T7S R18E; T7S R19E; T8S R13E; T8S R14E; T8S R15E; T8S R16E; T8S R17E; T8S R18E; T9S R14E; T9S R15E; T9S R16E; T9S R17E; T9S R18E; T10S R18E.

Possible sites for recharge of the water are within the following described lands: Sec. 15, 16, 21, 22, 28, T.5S R19E.

Diversion Means: Contract use of Dietrich Canal system and Richfield Canal system.

If issued, the permit(s) will be subject to all prior water rights. Protests against the granting of any permit must be filed with the Director of the Idaho Department of Water Resources, 1041 Blue Lakes Blvd. North, Twin Falls, Idaho 83301 and received on or before September 2, 1980.

/s/ C. Stephen Allred
Director

L/2tc/8-14

Appendix C
IDWR Approvals: Permit, Extension of Time, and Reinstatement Order

Form 202
3/78

Ident. No. 37-7842

ASSIGNED TO:
Lower Snake River
Recharge District
1301 Vista Ave
Boise, ID 83705

RECEIVED
JUL 2 1980
Department of Water Resources
Northern District Office

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
APPLICATION FOR PERMIT

RECEIVED
APPROVED
Department of Water Resources

To appropriate the public waters of the State of Idaho

1. Name of applicant Earl Hardy, Thorleif Rangen & John W. Jones, Jr. & John LeMoyne Phone 342-0090

Post office address 1301 Vista Ave.; Boise, ID 83705

2. Source of water supply Little Wood & Big Wood which is a tributary of Snake

3. Location of point of diversion is SW ¼ of SE ¼ of Section 24 Township 4S

Range 19E B.M. Lincoln County, additional points of diversion if any: ____

4. Water will be used for the following purposes:

Amount 800 cfs (cfs or acre-feet per annum) for G.W. Recharge purposes from Jan. 1 to Dec. 31 (both dates inclusive)

Amount _____ (cfs or acre-feet per annum) for _____ purposes from _____ to _____ (both dates inclusive)

Amount _____ (cfs or acre-feet per annum) for _____ purposes from _____ to _____ (both dates inclusive)

Amount _____ (cfs or acre-feet per annum) for _____ purposes from _____ to _____ (both dates inclusive)

5. Total quantity to be appropriated:

a. 800 cubic feet per second and/or b. _____ acre-feet per annum.

6. Proposed diverting works:

a. Description of ditches, flumes, pumps, headgates, etc. Contract use of Dietrich Canal System and Richfield Canal system.

b. Height of storage dam _____ feet, active reservoir capacity _____ acre-feet; total reservoir capacity _____ acre-feet, materials used in storage dam: _____

Period of year when water will be diverted to storage _____ (Month/Day) to _____ (Month/Day) inclusive.

c. Proposed well diameter is _____ inches; proposed depth of well is _____ feet.

7. Time required for the completion of the works and application of the water to the proposed beneficial use is 5 years *(minimum 1 year – maximum 5 years).*

8. Description of proposed uses:
   a. If water is **not** for irrigation:
      (1) Give the place of use of water: _____ ¼ of _____ ¼ of Section _____ Township _____ Range _____ B.M.
      (2) Amount of power to be generated: _____ horsepower under _____ feet of head.
      (3) List number of each kind of livestock to be watered _____
      (4) Name of municipality to be served _____, or number of families to be supplied with domestic water _____.
      (5) If water is to be used for other purposes describe: Groundwater recharge subject to the requirements of Title 42 Chapter 42 Idaho Code

b. If water is for irrigation, indicate acreage in each subdivision in the tabulation below:

TWP	RANGE	SEC.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

Total number of acres to be irrigated _____

c. Describe any other water rights used for the same purposes as described above. None

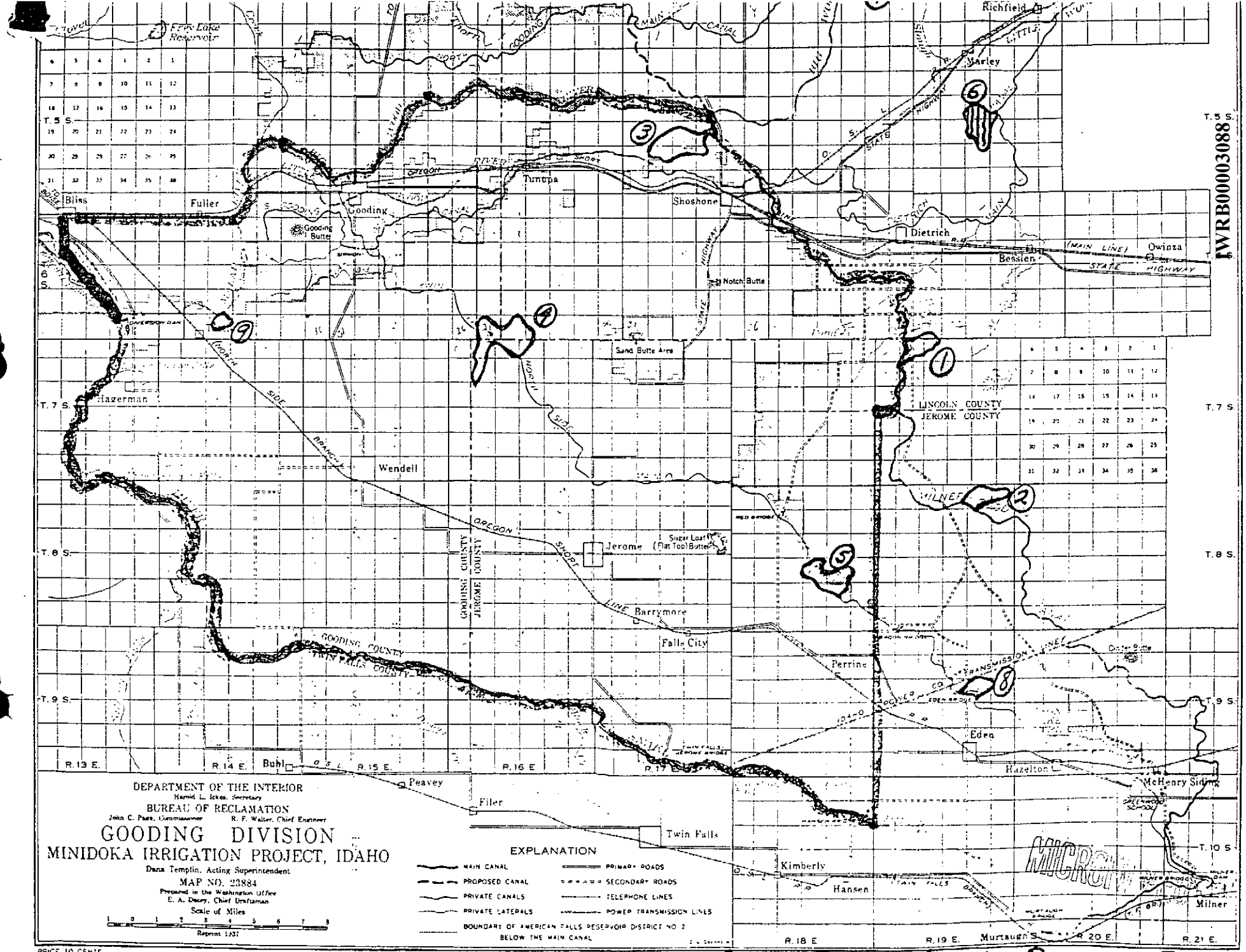
9. a. Who owns the property at the point of diversion Big Wood Canal Co.

b. Who owns the land to be irrigated or place of use BLM

c. If the property is owned by a person other than the applicant, describe the arrangement enabling the applicant to make this filing Applicant has worked with owners of P.D. & place of use to negotiate agreement for use of facilities. Negotiations will continue until agreement is complete.

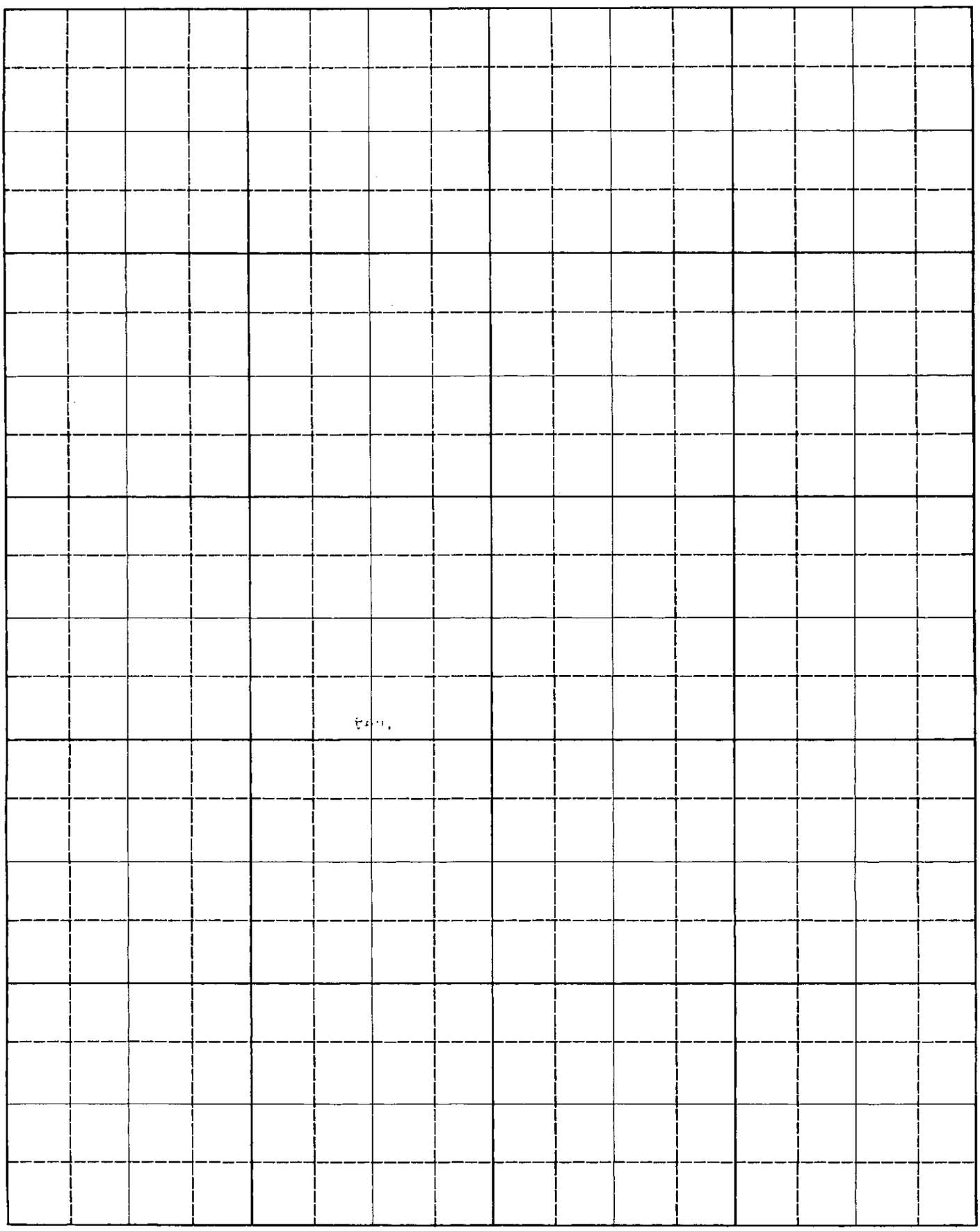
10. Remarks Applicant agrees to meet specifically the requirements of 42-4201 (2) subordinating applicants right to all prior perfected water rights including those held by any privately owned electric generating company, and 42-4201 (3) providing for the reduction of applicants right under certain conditions. Applicant further agrees to meet all additional requirements and conditions of Title 42, Chapter 42.

Applicant's filing is being held in trust for a recharge district being formed under 42-4202 Idaho Code. Applicant agrees to assign application to the recharge district upon reimbursement of costs.



Lower Snake Plains Aquifer Recharge Dist.

11. Map of proposed project: show clearly the proposed point of diversion, place of use, section number, township and range number.



Scale: 2 inches equal 1 mile.

BE IT KNOWN that the undersigned hereby makes application for permit to appropriate the public waters of the State of Idaho as herein set forth.

Earl M Hardy
(Applicant)

Proposed Priority 6/30/1980

Received by ~~rg~~ muya Date ~~6/30/80~~ 7/2/80 Time ~~2:18~~ 11:30 am

Preliminary check by LH Fee $ 1485.00

Receipted by rg Date 6/30/80 # 16193

Publication prepared by marya Date 7/23/80

Published in Lincoln Co. Journal

Publication dates 7/31 + 8/7/80 8/14 + 8/21/80

Publication approved marya Date 9/2/80

Protests filed by: None

Copies of protests forwarded by

Hearing held by Date

Recommended for (approval) denial by LH

ACTION OF THE DIRECTOR, DEPARTMENT OF WATER RESOURCES

This is to certify that I have examined Application for Permit to appropriate the public waters of the State of Idaho No. 37-7842, and said application is hereby APPROVED.

1. Approval of said application is subject to the following limitations and conditions:

   a. SUBJECT TO ALL PRIOR WATER RIGHTS.

   b. Proof of construction of works and application of water to beneficial use shall be submitted on or before June 1, 1987.

   c. The rate of diversion, if water is to be used for irrigation under this permit, when combined with all other water rights for the same land shall not exceed 0.02 cubic feet per second for each acre of land.

   d. Other: Permit holder shall commence the excavation or construction of diverting works within one year of the date this permit is issued and shall proceed diligently until the project is complete.

A measuring device of a type approved by the Department shall be permanently installed and maintained as part of the diverting works.

The issuance of this permit in no way grants any right-of-way or easement across the land of another.

Use of water under this permit is subject to control by the watermaster of State Water District No. 37, Big Wood River.

Permit shall be secondary to all prior water rights including rights held by any privately owned electrical generating company to appropriate waters in the reaches of the Snake River downstream from the Milner diversion for purposes of hydroelectric power generation.

The Director may regulate or reduce the rate of diversion under this permit pursuant to requirements of Section 42-4201, Idaho Code.

The permit shall not be assigned or sold without first securing the written approval of the Department of Water Resources.

Water may not be diverted under this permit until the Board of Directors of the District establish and implement a procedure acceptable to the Director for assuring that the water quality of the Lower Snake Aquifer will not be impaired.

Plans for recharge facilities and any conveyance works needed shall be submitted to the Department for approval prior to construction.

Witness my hand this 2nd day of June, 1982.

L. Glen Saxton
Chief, Operations Bureau

IWRB00003090

Form 204
4/86

RECEIVED
JUN 1 1987
Department of Water Resources
Southern Region Office

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

For Office Use Only
$15 FEE Receipted by [illegible]
Date 6-3-87
Receipt # 42524

REQUEST FOR EXTENSION OF TIME

RECEIVED
JUN 03 1987
Department of Water Resources

To provide additional time in which to submit proof of beneficial use for a water right permit

The Idaho Department of Water Resources will consider this form as a request that the permit be granted an additional period of time in which to complete development of a water right under the provisions of Section 42-204, Idaho Code.

Permit No. 37-7842

Name(s) of Permit Holder: Lower Snake River Acquifer Recharge District

Post Office Address: c/o John LeMoyne, P. O. Box 487, Hagerman, Idaho 83332

Telephone No. 837-4887

Date Proof is Due: June 1, 1987

Describe what work has been completed toward the development of this water right:
(This must be filled out! If no work has been completed, show "none".)

Construction of diversion and recharge facility with capacity of 600 cfs. Facility completed and operational for approximately 24 months. Continued negotiation for land rights necessary for additional sites.

Costing $ 85,000

The permit holder(s) has been unable to complete the remainder of the work for the following reasons:

Unable to date to obtain necessary land rights for private sources, State Land Board, and BLM pursuant to demonstration of need and success of completed facility.

Permit holder(s) request an extension to June 1, 19 92.
(1 yr. minimum)

(Signature)*

*IF OTHER THAN PERMIT HOLDER, POWER OF ATTORNEY MUST BE SUPPLIED.

FEE: $15.00

MICROFILMED

ACTION OF THE DEPARTMENT OF WATER RESOURCES OCT 18 1989

IT IS HEREBY ORDERED that the above request for extension of time be APPROVED and the time within which to submit proof of beneficial use is extended to June 1, 1992.

Signed this 4th day of October, 19 89.

IWRB000[illegible]

Chief, Water Allocation Bureau

BEFORE THE DEPARTMENT OF WATER RESOURCES

OF THE

STATE OF IDAHO

IN THE MATTER OF PERMIT NOS. 01-07054 AND 37-07842 BOTH IN THE NAME OF LOWER SNAKE AQUIFER RECHARGE DISTRICT

REINSTATEMENT ORDER

This matter having come before the Idaho Department of Water Resources (department), as a result of the filing of proof of beneficial use of water and a beneficial use field report with the department, the department makes the following Findings of Fact, Conclusions of Law and Order:

FINDINGS OF FACT

1. On June 2, 1982, the department issued Permit No. 01-07054 to the Lower Snake Aquifer Recharge District (permit holder) authorizing the diversion of 1,200 cubic feet per second (cfs) of water from the Snake River for ground water recharge purposes. Proof of construction of works and application of water to beneficial use (proof) was originally due on June 1, 1987 but was extended by the department to June 1, 1992.

2. On June 2, 1982, the department also issued Permit No. 37-07842 to the permit holder authorizing the diversion of 800 cfs of water from the Little Wood and the Big Wood Rivers for ground water recharge purposes. Proof of beneficial use was originally due on June 1, 1987, but was extended by the department to June 1, 1992.

3. On March 31, 1992, the department sent a proof due notice for each permit to the permit holder. On June 5, 1992, the department sent a lapse notice for each permit to the permit holder, since the permit holder had not responded and both permits had lapsed.

4. On July 27, 1992, the permit holder filed proof of beneficial use together with a field report completed by Gerald Martens, a certified water right examiner. The proof was identified as being for Permit No. 37-07842 with authorized sources of the Little Wood and Big Wood Rivers.

5. On August 12, 1993, the permit holder advised the department that the proof which was filed on July 27, 1992 was intended for both Permit Nos. 01-07054 and 37-07842.

6. The department's review of the completed field examination and

supporting data shows that the permit holder diverted water from both the Snake River and the Big and Little Wood Rivers even though the proof was identified as being only for Permit No. 37-07842.

CONCLUSIONS OF LAW

1. Section 42-218a.1., Idaho Code, provides in part as follows:

> That within sixty (60) days after such notice of lapsing the department, may upon a showing of reasonable cause, reinstate the permit with the priority date advanced a time equal to the number of days that said showing is subsequent to the date set for proof;

2. The Director should reinstate both Permit Nos. 01-07054 and 37-07842 pursuant to Section 42-218a.1., Idaho Code, and should advance the priority of each permit to August 25, 1980.

ORDER

IT IS THEREFORE, HEREBY ORDERED that Permit Nos. 01-07054 and 37-07842 are reinstated and the priority is advanced to August 25, 1980.

Dated this 1st day of December, 1993.

L. GLEN SAXTON, Chief
Water Allocation Bureau

Appendix D
Field Exam Submitted by Gerald Marten

EHM Engineers, Inc.
ENGINEERS/SURVEYORS/PLANNERS

322-92

IN THE FIELDS OF:
PLANNING
SURVEYING
HIGHWAYS
WATER
SEWAGE
STRUCTURAL
SUBDIVISIONS
BRIDGES
ENVIRONMENTAL
QUALITY CONTROL
CONSTRUCTION MNGMT.

November 24, 1993

State of Idaho
Department of Water Resources
1301 North Orchard St.
Statehouse Mail
Boise, ID 83702

ATTN: L. Glenn Saxton

RE: Permits 01-07054 & 37-07842

Dear Mr. Saxton:

The following is in response to your letter of October 21, 1993 and following a review of all known available information.

1. I have attached a map showing all major features and all measuring stations.

2. Attached is a summary of all flow records which are utilized to compute the recharge quantity and maximum potential recharge quantity from each source, Snake Rive and Bigwood River.

3. Measuring stations have been located on the exhibit and daily flow rates are provided.

4. All flow data has been consolidated onto a single sheet in a much more legible format with clarification foot notes.

5. All discharged water receded from the surface within a few hours of discharge from the Milner Gooding Canal. No water ran-off into any other surface canal, stream or other means of conveyance.

Please excuse the delay in responding to your letter. Collecting all the data and assembling it into a more reasonable format took more time than I anticipated.

Please call if there are any questions.

Respectfully yours,

EHM ENGINEERS, INC.

Gerald L. Martens, P.E.

GLM:bn

cc: John Lemoyne
Dick Onieda

Form 219
6/92

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No. 01-07054 / 37-07842

1. Owner: Lower Snake River Recharge District Phone No. 837-4887

Current Address: Box 48, Hagerman, Idaho

2. Accompanied by: Gerald Martens EXAM DATE :

Address: 1139 Falls Ave. E, Twin Falls, Idaho Phone No. 734-4888

Relationship to Permit Holder: None

3. Source: Snake River/Big Wood River tributary to See Narrative

B. OVERLAP REVIEW

1. Other water rights with the same place of use: None

2. Other water rights with the same point of diversion: None

C. DIVERSION AND DELIVERY SYSTEM

1. **Point(s) of Diversion:**

Ident No.	Gov't Lot	¼	¼	¼	Sec.	Twp.	Rge.	County	Method of Determination/Remarks
		SE	NE		22	5S	17E	Lincoln	7.5 minute quadrange

2. **Place(s) of Use:** Indicate Method of Determination

TWP	RGE	SEC	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
5S	17E	22			X	X			X	X	X	X		X		X	X		

3. **Delivery System Diagram**: Indicate all major components and distances between components. Indicate weir size/ditch size/pipe i.d. as applicable.

See attached exhibits and recharge structure plans.

Scale: 1" = _____.

____ Copy of USGS Quadrange Attached Showing location(s) of point(s) of diversion and place(s) of use (required).

____ Aerial Photo Attached (required for irrigation of 10+ acres)

____ Photo of Diversion and System Attached

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
N/A					

Code to correspond with No. on map and aerial photo

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Milner Gooding Canal Measuring Stations 56 and 57						

2. **Measurements:** Water measured in concrete flume above and below diversion. Diversion quantity is mathematical difference. Upstream flow measured at Milner Gooding Canal Diversion Structure 56. Downstream measurement at Milner Gooding Canal Structure No. 57. Rating curves have been established for both stations. See attached letter.

E. NARRATIVE/REMARKS/COMMENTS

Measurement flow records for April 1986, as prepared by Big Wood Canal Company. Attached are flow records.

The Big Wood Canal Co-mingles water from Snake River and Bigwood River upstream of diversion. District routinely replaces water from one source with water from other sources. At time of proof of Beneficial Use Report the Bigwood water was supplementing Snake River flows to facilitate flows measured at diversion.

Division agreement between Lower Snake River Recharge District and Bureau of Land Management attached for your information.

Attached is a flow summary sheet that tabulates the recharge rate of flow and the maximum potential contribution to total recharge from each potential source.

Have conditions of permit approval been met? X yes ___ no

F. FLOW CALCULATIONS _____ Additional Computation Sheets Attached

Measured Method:

See Section E.

G. VOLUME CALCULATIONS N/A

1. Volume Calculations for Irrigation:

$V_{I.R}$ = (Acres Irrigated) x (Irrigation Requirement) = _____

$V_{D.R.}$ = [Diversion Rate (cfs)] x (Days in Irrigation Season) x 1.9835 = _____

V = Smaller of $V_{I.R.}$ and $V_{D.R.}$ = _____

2. Volume Calculations for Other Uses:

H. RECOMMENDATIONS

1. Recommended Amounts

Beneficial Use	Period of Use From	Period of Use To	Rate of Diversion Q (cfs)	Annual Volume V (afa)
Groundwater Recharge	1-1	12-31	300 CFS	
		Totals:	300 CFS	

2. Recommended Amendments

___ Change P.D. as reflected above ___ Add P.D. as reflected above ___ None

___ Change P.U. as reflected above ___ Add P.U. as reflected above ___ Other

I. AUTHENTICATION

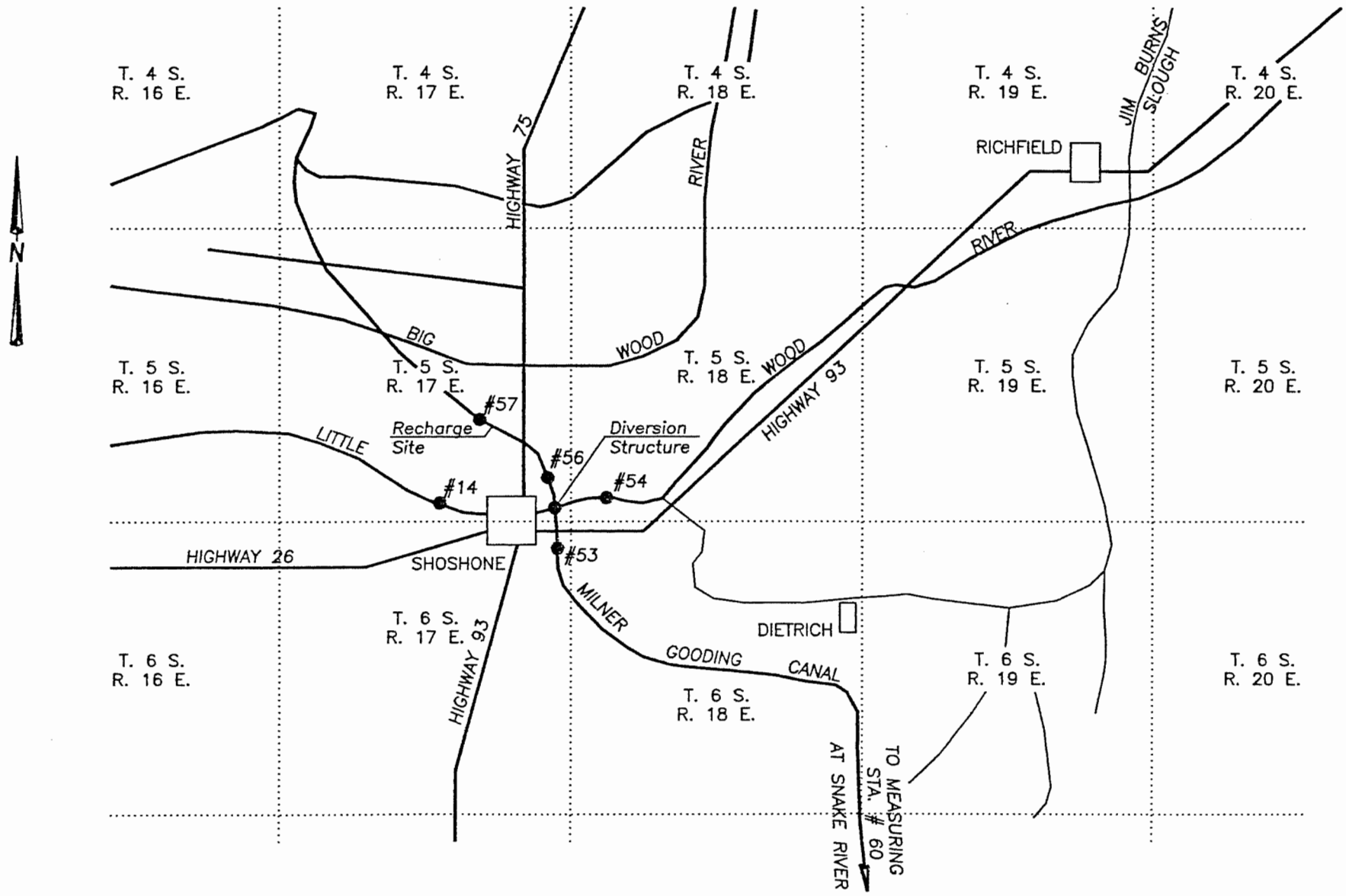
Field Examiner's Name Gerald Martens Date 11/24/93

Reviewer _____ Date _____

PROFESSIONAL ENGINEER REGISTERED SEAL STATE OF IDAHO GERALD L. MARTENS

IWRB00003100

Exhibit For
Lower Snake River Aquifer Recharge
Permit No's. 01-07054 & 37-07842



Summary of Recharge
Records for
Lower Snake River Recharge
Permit No. 01-07054 & 37-07842

	MEASURING STAT ON								
DATE	JBS	14	53	54	56	57	RECHARGE	MAX POSSIBLE RECHARGE FROM BIG WOOD	MAX POSSIBLE RECHARGE FROM SNAKE RIVE
04-07-86			220		252	252	0		
04-08-86						260	260	260	
04-09-86		646	425		432	260	172	172	
04-10-86			401		448	265	183	183	
04-11-86	97	692	472		460	265	195	195	97
04-12-86	57		472			261	261	261	57
04-13-86	62					270	270	270	62
04-14-86	66	717	486	787	486	275	211	211	66
04-15-86	52	681	485	721	482	252	230	230	52
04-16-86	57	659	479	689	470	239	231	231	57
04-17-86	43	636	405	674	496	223	273	273	43
04-18-86	40	604	614	628	632	310	322	322	40
04-19-86	73	556	596	564	618	342	276	276	73
04-20-86	142		596	563			---	---	142
04-21-86	141	615	596	651	618	342	276	276	141
04-22-86	50	526	585	544	604	350	254	254	50
04-23-86	221	454	566	544	580	360	220	220	220
04-24-86	213	596	572	636	586	396	190	190	190
04-25-86	168	560	563	585	580	394	186	186	168
04-26-86	181	500	644	524	654	340	314	314	181
04-27-86	172		644	530				---	172
04-28-86	165	615	696	537	648	466	182	182	165
04-29-86	158	580	670	503	626	465	161	161	158
04-30-86	142	506	661	420	616	459	157	157	142

JBS - Jimmy Byrnes Slough
All flows in CFS as recorded by Bigwood Canal Co.
Recharge = 56-57
Max Recharge (from Snake River): Total discharge but not to exceed flow at M.S. 53. M.S.
Max Recharge (from Big Wood River): Total discharge from JBS but not to exceed total dishcarge.
Measuring stations 14+56 should approximately total measuring stations 53+54

COOPERATIVE AGREEMENT

I-05-82

BETWEEN

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
SHOSHONE DISTRICT OFFICE
P.O. BOX 2B
SHOSHONE, ID 83352

AND

LOWER SNAKE RIVER AQUIFER
RECHARGE DISTRICT

RTE 1, BOX 148

HAGERMAN, ID 83332

TABLE OF CONTENTS

COOPERATIVE AGREEMENT

I-05-82

I. PURPOSE

The purpose of this agreement is to establish guidelines and provide procedures and authorization so the cooperator can enter public lands administered by the Bureau of Land Management (BLM) for Lower Snake River aquifer recharge purposes. The public lands will be used when there is ample excess water to divert to the desert lands for aquifer recharge.

II. AUTHORITY:

A. Bureau of Land Management:

Section 307, Federal Land Policy and Management Act of 1976, P.L. 94-579, 43 U.S.C. 1737.

B. Cooperators:

State Law - Drainage-Water Rights and Reclamation, Section 42-4212.

III. AGREEMENT AREA

This cooperative agreement will involve only public lands located within the Shoshone BLM District, and described as follows:

T. 5 S., R. 17 East, Boise Meridian, Lincoln County, Idaho
Section 22: All 640 acres.

The public land in the agreement area is a desert environment and is not within any livestock grazing allotment.

IV. DEFINITIONS

A. Bureau of Land Management (BLM):

The agency in the Department of Interior that has management responsibilities on those lands covered by this agreement.

B. Cooperators:

The governmental body of the Lower Snake River Aquifer Recharge District, chaired by John R. LeMoyne, Rte 1, Box 148, Hagerman, ID 83332.

C. District Manager:

The authorized officer in the Bureau of Land Management who has been delegated the responsibility, by the Secretary of the Interior, for the management of public lands within the Shoshone District.

D. Contractor:

All companies, groups, individuals, or agents to include Federal and State agencies who are retained by the cooperators in their aquifer recharge program for the operation of this agreement.

E. Degradation:

The changing, altering, or lowering in character and quality of the lands as a result of the cooperator use through vegetative and soil disturbance, creating a negative or undesirable effect on the environment. This may be the effects from, but not limited to the hydraulic action of recharge waters or the disturbance by vehicles or heavy equipment.

V. OPERATION AND RESPONSIBILITIES

The Bureau of Land Management, acting through the District Manager, and the Cooperator, acting through the Lower Snake River Aquifer Recharge District Chairman, agree as follows:

A. The Bureau of Land Management shall:

1. Provide only the land used in the operation of this agreement.

2. Continue to allow existing uses on the subject lands and any additional uses which are compatible with this agreement. Existing uses on the subject land may include, but are not limited to recreation, minerals, water conveyance, livestock grazing, wildlife habitat, and public access.

B. The Cooperator shall:

1. Provide all labor, material, equipment, and money needed in the maintenance programs, rehabilitation, or studies authorized by the cooperator for the operation of this agreement.

2. Exercise every reasonable precaution to prevent the degradation of all resources and shall rehabilitate the area, both inside and outside of the agreement area, which has been subject to degradation by the cooperator or their contractor's use.

3. Restrict operations to the existing roads or trails if vehicular equipment is used within the agreement area and no new roads will be constructed.

4. Indemnify and hold harmless the Bureau of Land Management, its officers, agents, and employees from any and all damages and claims for damages of every description or kind whatsoever which may result from the exercise of privileges granted by this agreement or which may result from the exercise of any of the rights reserved herein.

5. Be subject to the provisions of Executive Order 11246 of September 24, 1965 as amended, which sets forth the Equal Opportunity clauses. A copy of this order may be obtained from the district manager.

6. Be responsibile for the prevention and suppression of all range fires resulting from their own or their contractor's actions. This includes responsibility for suppression costs incurred by any party in controlling such fires that are determined to be the cooperator's responsibility.

7. Allow authorized representatives of the Bureau of Land Management and the general public the right of unrestricted ingress and egress within the agreement area.

8. Remove from the public lands all trash, litter, garbage, and other items originating from the cooperator and contractor's use.

9. Notify the district manager immediately if damage has occurred to public lands within or outside the agreement area as a result of the operation of this agreement.

10. If additional development is needed to prevent recharge waters from overflowing the use area to external lands, the cooperator shall provide the district manager with detailed plans for such development for review and concurrence, 30 days prior to development initiation.

11. Restrict development to the approved structures, diversion, and other related facilities allowed under the approved Plan of Development identified as LSRARD Plan 82-1, dated June 1, 1982.

12. Raise or build up the present access road to the cement canal and drops recreation area to prevent flooding during times of aquifer recharge.

13. Fill in the area between the lava rock outcrop, cement canal, present access road, and proposed diversion structure to allow vehicular access to mining claims to the west.

C. Other Items Mutually Agreed by the Bureau of Land Management and Cooperator:

1. This agreement in no way abrogates BLM responsibility and authority as set by the Federal Land Policy and Management Act (Public Law 94-579, 90 Statute 2743), for management of the subject lands.

2. None of the items covered in this cooperative agreement are to be construed as obligating either party to the expenditure of funds in excess of authorized appropriations.

3. This agreement shall remain in full force and effect until modified or terminated by mutual agreement of BLM and the cooperator. This shall be accomplished by a 30 day written notice by either party on the other. Any proposals to change, modify, or otherwise alter any part of this agreement must have total concurrence by the cooperator and BLM.

4, This agreement or any interest therein shall not be transferred or assigned without prior approval, in writing of the district manager and the cooperator.

5. All tools, equipment, and other property taken upon or placed upon the public land by the cooperator or contractor during maintenance or rehabilitation efforts, shall remain the property of the cooperator or contractor and shall be removed by the cooperator or contractor within a

reasonable time, but no later than 30 days after completion of their work. If they are not removed as directed by the district manager, within a reasonable time then trespass actions can be taken towards the cooperator or contractor under the provisions of 43 CFR 9230.

6. No rental or use fees will be charged for the use of the public lands involved with this agreement. However, all damage and rehabilitation of the lands shall be the responsibility of the cooperator or contractor. If mineral materials such as gravel, fill dirt, etc. are needed for any phase of maintaining or rehabilitating the subject land, the cooperators shall notify BLM. These materials shall be applied for under the provisions of 43 CFR 3610 and 3620, whichever is applicable.

D. Effective Date

This cooperative agreement will be in full force and effect as of the last date signed.

LOWER SNAKE RIVER AQUIFER RECHARGE DISTRICT

John R. LeMoyne

John R. LeMoyne, Chairman
Rte 1, Box 148
Hagerman, Idaho 83332

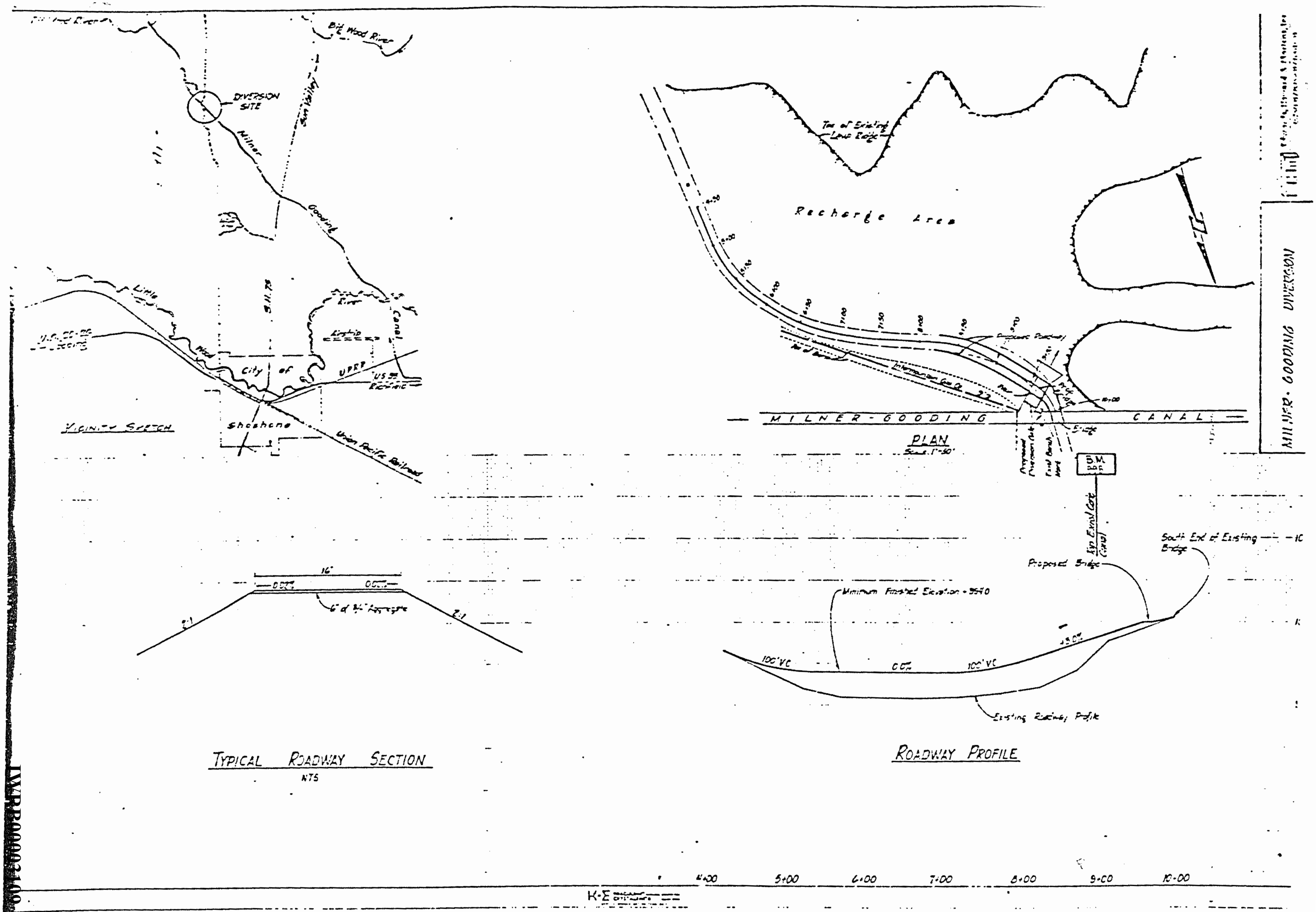
4-18-84
Date

DEPARTMENT OF THE INTERIOR,
BUREAU OF LAND MANAGEMENT

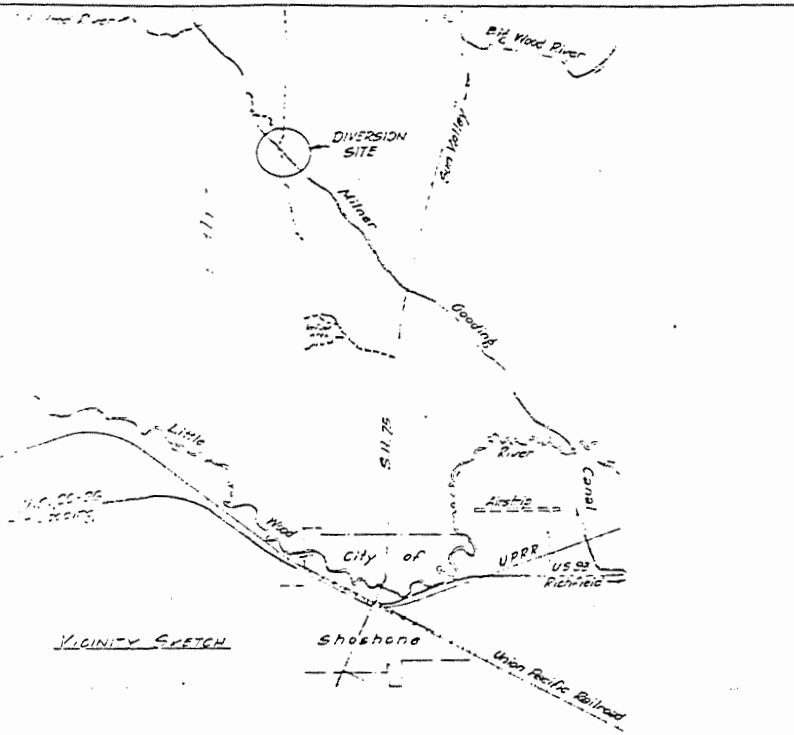
Charles G. Haszier

Charles J. Haszier
Shoshone District Manager
Shoshone, Idaho 83352

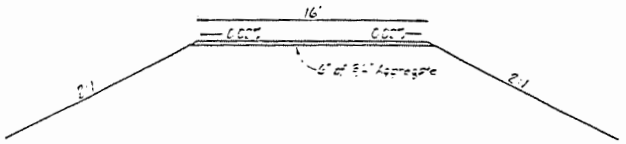
4/19/84
Date



IWRB00003109

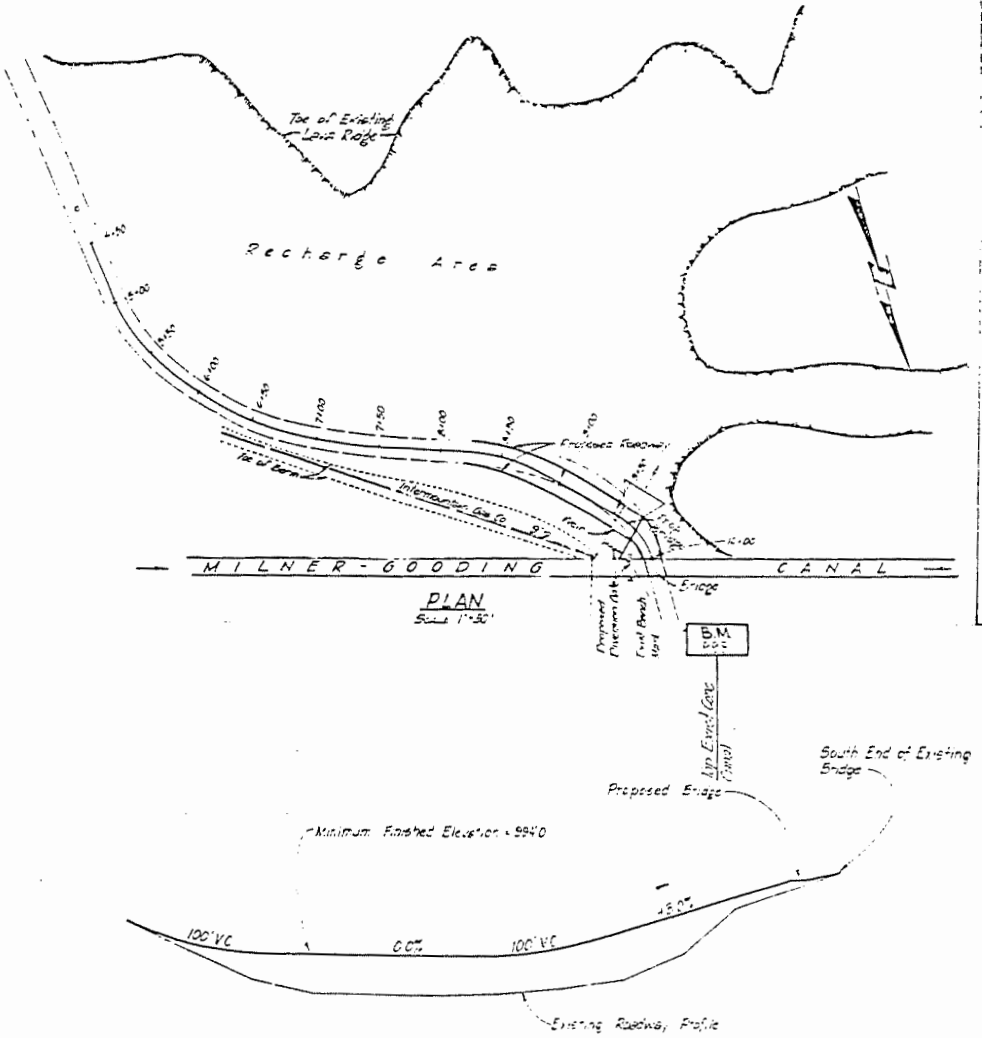


VICINITY SKETCH



TYPICAL ROADWAY SECTION

N.T.S.



PLAN

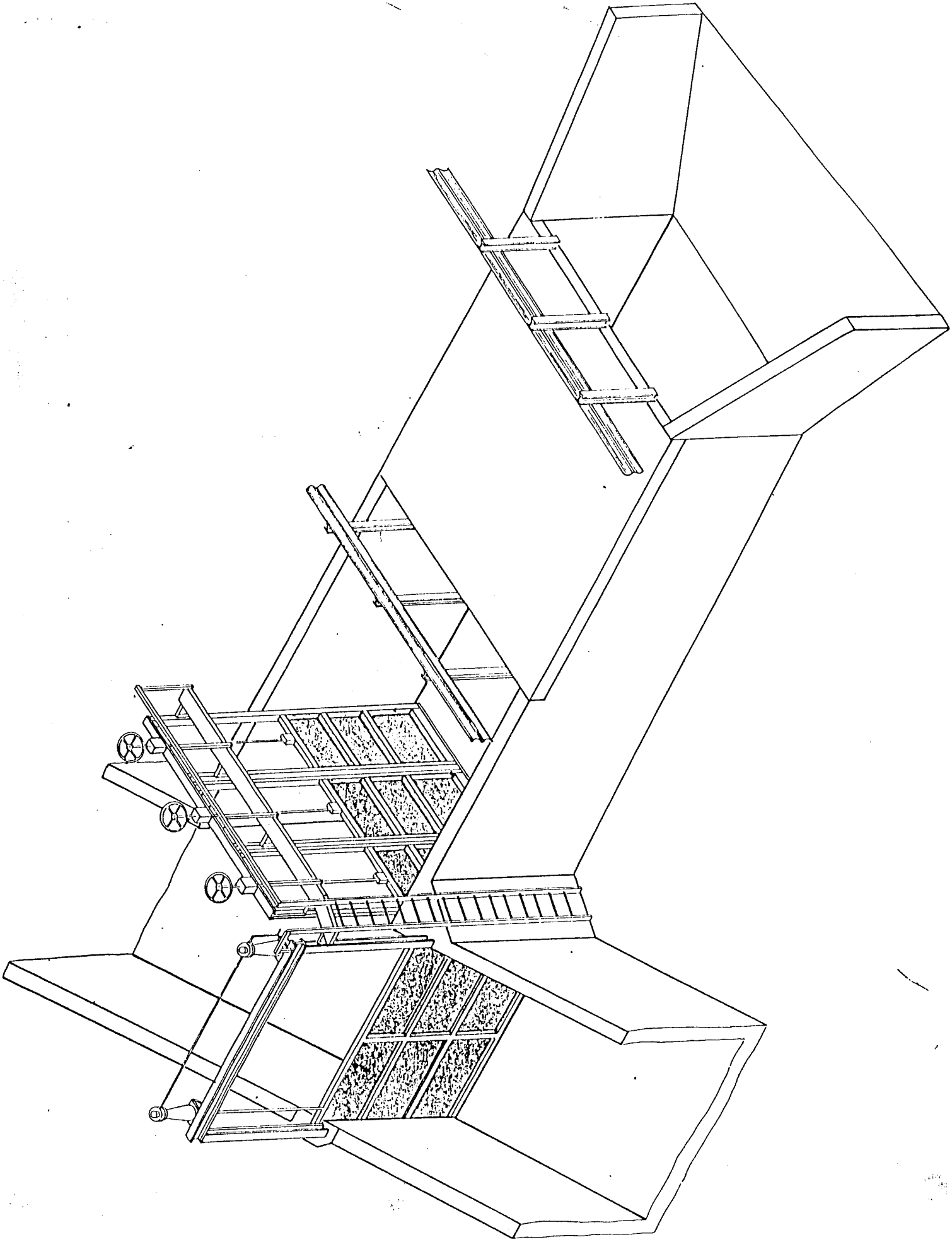
Scale 1"=50'

ROADWAY PROFILE

MILNER - GOODING DIVERSION - DAM UNIT

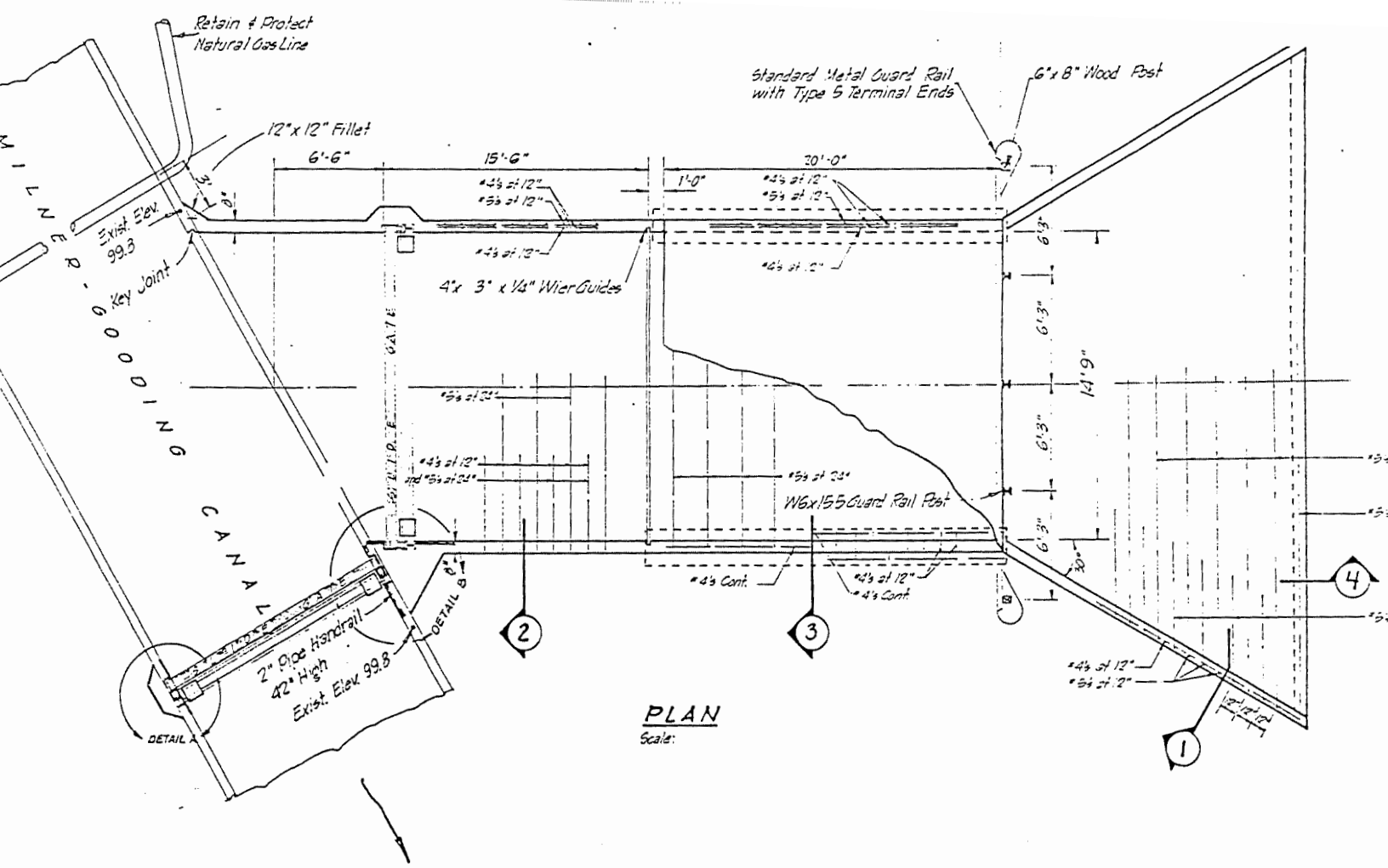
4+00 5+00 6+00 7+00 8+00 9+00 10+00

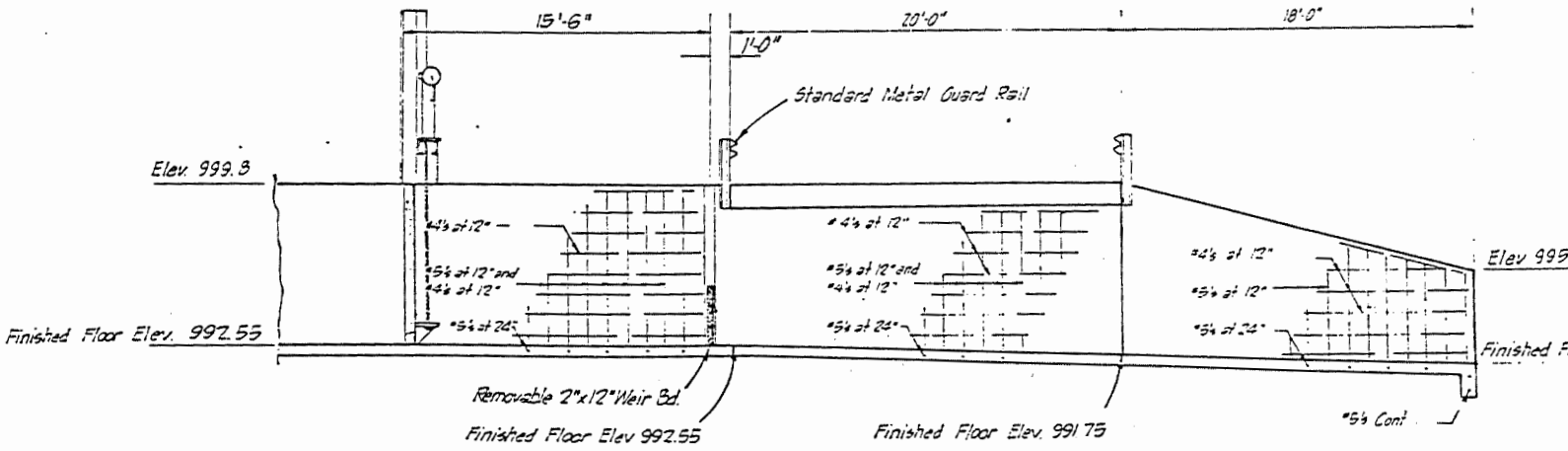
IWRB00003110



IWRB00003111

IWRB00003112





ELEVATION

Appendix E
License Review Prepared by Michelle Edl, IDWR

MEMORANDUM

Date: October 29, 2014

To: Water Right File 37-7842

From: Michele Edl

Re: license review

Background

In July 7, 1986 when John LeMoyne, then chairman of the Lower Snake Aquifer Recharge District (LSARD), submitted a proposal to the USBOR for the High Plains States Groundwater Demonstration Program Act of 1983, he mentioned two sites for aquifer recharge. One location was undeveloped at that time and is now the Shoshone recharge site. The other location was a pre-existing site on the Dietrich Canal near Richfield.

The Beneficial Use Field Reports which have been submitted for the licensing of this permit consider only the Shoshone site. I base my recommendations for this license on the recharge activity which occurred at the other site. See Dietrich Canal site discussion below.

Field visit confirmation

There were two field examiner's reports to review for licensing. Both reports were completed by the same examiner, Gerald Martens. One was signed by Mr. Martens on July 6, 1992 and submitted with a Proof of Beneficial Use statement on July 27, 1992. The second was signed on November 24, 1993 and received by IDWR on November 29, 1993. Neither report was complete enough to be reviewed independently. And although I pooled information from both reports, I found that confirmation of beneficial use remained unclear. It was necessary to revisit some of the relevant locations before I could complete a pre-licensing review.

On July 9, 2014, Shelley Keen and I visited the office of the Big Wood Canal Company (BWCC) and met with Lynn Harmon, the manager of the BWCC. Mr. Harmon provided the as-built engineering plans for the Bification and guided us to the site. He also gave us directions to the Dietrich Canal site. I have attached photos of the bifurcation and the Dietrich site which I took that day.

Shoshone recharge site

After reviewing flow records provided by the field examiner in his November 1993 report, I found that he had recommended the Big Wood River as one source of the recharge water. He appeared to have based his source recommendations on readings which were taken at locations on the Milner-Gooding Canal (a canal segment controlled by North Side Canal Company) and the Dietrich Canal (a canal segment controlled by Big Wood Canal Company). The examiner mislabeled two of the column headings in his spreadsheet. The data in the two columns furthest to the right should be swapped. I have confirmed that the data did come from records kept by the watermaster for Basin 37 and 37M. And in discussions with the watermaster, I have also confirmed that, although unlikely, it is possible to bring water from the Big and Little Wood Rivers to the Shoshone site.

The Shoshone recharge site is located between measuring stations #56 and #57 on the Milner-Gooding Canal. It is also downstream from a structure which carries the nameplate label "Byfication". (The correct spelling for this term is bifurcation). This unique structure is a combination siphon and flow control structure. It was constructed circa 1930 and under certain conditions it could be capable of directing water from the Little Wood River into the Milner-Gooding Canal. But typically water flows in the opposite direction, from the Milner-Gooding Canal into the Little Wood River.

There are two lanes that water can take through the bifurcation. Water can remain in the Milner Gooding Canal and continue to flow northeast after dipping under the Little Wood River in the bifurcation siphon. Or water can exit the Milner-Gooding Canal through the bifurcation's turn-out lane to join the Little Wood River and flow southeast. The direction of flow can be reversed only if the water in the Milner-Gooding Canal has less energy than the water in the Little Wood River. For water from Basin 37 to be the source water for the event on which Mr. Martens bases his recommendations, he would have needed to confirm that the flow in the Little Wood River was greater than the flow in the Milner-Gooding Canal. That was not the case.

Although there was excess water in Basin 37 (the Little Wood and Big Wood Rivers) during April and May of 1986, there was also water flowing in the Milner-Gooding Canal which originated from Basin 1 (the Snake River). The quantity of water flowing in the Milner-Gooding Canal at the time excluded a reversal of the flow through the bifurcation. The water arriving at the Shoshone recharge site in April and May of 1986 was from the Snake River.

Based on the engineering plans, the site visit and the flow data provided, I have concluded that the examiner confirmed a recharge event at the Shoshone recharge site but that little if any of the source water for that event could be attributed to the Big or Little Wood Rivers. The water came from the Snake River through the Milner-Gooding Canal.

Companion water right 1-7054 should be used to authorize the Snake River as a source of recharge water, which leaves water right permit 37-7842 to authorize recharge water from the Big Wood and Little Wood Rivers. The Dietrich Canal site uses water from Basin 37 for recharge.

Dietrich Canal recharge site

When permit 37-7842 was issued in 1982, several new sites within the LSARD were being considered for aquifer recharge. The Shoshone recharge site was developed through that effort. However, even before the LSARD was created, (on August 27, 1981) a site adjacent to the Dietrich Canal had been developed and used for flood/flow control.

The first week in April of 1981, the Shoshone District Manager of the BLM, Commissioners from Gooding and Lincoln County and the Mayors of Shoshone and Gooding signed a cooperative agreement for the use of 2320 acres of public land for flood control. (See attached copy of Cooperative Agreement I-05-63.)

Construction of the Dietrich site preceded the Cooperative Agreement by more than 10 years. According to Lincoln County and Big Wood Canal Company personnel the rediversion structure on the Dietrich Canal had been constructed circa 1970. Lincoln County personnel provided photos (taken July 29, 2014) which show a section of the Dietrich Canal and the wall of the rediversion structure which is etched with the year 1970.

The Lower Snake Aquifer Recharge District considered both the Shoshone site and the Dietrich site as aquifer recharge sites in 1986. In a recharge demonstration proposal to the USBOR, the LSARD Ground Water Recharge Demonstration Proposal states,

> There are two locations where water is being discharged into the aquifer. One is on the Dietrich Canal just south of Richfield. This is a flood control facility used by Lincoln and Gooding Counties to prevent flooding along the Little Wood River. This site will handle 800 cfs of discharge up to a week and continued flow of approximately 200 cfs. [1]

I am recommending the Dietrich Canal site as the place-of-use for this water right. But before I detail the elements of the water right, it's important that I clarify what I mean by aquifer recharge and how this facility qualifies.

[1] Lower Snake Aquifer Recharge District Ground Water Recharge Demonstration Proposal July 7, 1986 for High Plains States Groundwater Demonstration Program Act of 1983, submitted by John LeMoyne,

Activities which enhance aquifer recharge can be put into three categories.[2]

1. Unintentional – the consequences of deliberate activities that have an unrelated purpose. Examples are deep seepage under irrigation areas or leaking water and sewer pipe.
2. Unmanaged – an intentional activity known to increase aquifer recharge, but usually undertaken to dispose of water rather than to recover it. Examples include septic tank leach fields and flood control impoundments. The recharge proponent does not take any responsibility for water recovery.
3. Managed – an intentional activity to increase aquifer recharge and to recover water for economic or environmental purposes. Examples of the mechanisms for managed recharge include injection wells and infiltration basins.

The essential components common to both managed and unmanaged aquifer recharge project are: a source of water, a means to capture that water, sufficient land to harvest the water and an intentional water related activity which can increase the supply of water stored in an aquifer.

Conclusion
Although the agreement with the BLM was for flood control, and the site is not currently approved for managed aquifer recharge, I propose that the Dietrich Canal site qualifies as an unmanaged aquifer recharge site. And that there may be an opportunity to convert the site from unmanaged to managed recharge site by applying conditions on its operation. Therefore, I am recommending the following elements in a license for ground water recharge use.

POD
The permit POD address is incorrect. Glen Saxton recognized the error early on and indicated that the POD should be in section 25, Township 4S, Range 19E. Mr. Saxton's recommended PLSS grid address is the location of the Dietrich Canal's measuring site and/or its diversion from the Little Wood River. And it is the POD address that I identify and recommend for this right.

A licensing amendment will be required.

According to available Lincoln County taxlot information the BLM owns the property at the point-of-diversion.

Source
The permit authorized water diverted from both the Big Wood River and the Little Wood Rivers.

There is a potential path that water from the Big Wood River could take to the POU. But water from the Big Wood River would need to travel a convoluted route involving the Richfield canal and the Jim Byrns Slough before eventually injecting into the Little Wood River near Richfield above the POD. Therefore, the Big Wood River has been eliminated as a source and I am recommending only the Little Wood River as the source for water diverted under this permit.

Cooperative Agreement I-05-63 recognized that the capacity of the Little Wood River and the servant canals could be insufficient to contain all the water periodically available from the Little Wood River drainage.

The Dietrich Canal provides the means to convey the water from the Little Wood River to the recharge site.

Water Use
POU has been used for flood or flow control by the Lincoln and Gooding Counties since the re-diversion

[2]Waterlines Report Series No. 13, Managed aquifer recharge, February 2009, Australian Government National Water Commission.

structure was constructed.
The rediversion structure pre-existed permit 37-7842. Big Wood Canal Company personnel stated that it had been constructed by the Lincoln County in the late 1960's. In response to an information request, the Lincoln County Commissioners office provided the attached photos showing the inscribed date, 1970.

The application for permit states that the applicant expected to use the Dietrich Canal and/or Richfield Canal by contract. The Dietrich Canal is used to convey the water to the site. According to the data in the watermaster's records, the Dietrich Canal has a capacity of nearly 400 cfs. (See May 17, 1984 record). I believe that those records are based on a stage-discharge relationship. The raw, hand-written records show that the relationship was appropriately adjusted throughout that irrigation season.

Based on personal conversations with the current watermaster, Kevin Lakey, and the current manager of the Big Wood Canal Company, Lynn Harmon, the customers served by the Dietrich Canal have an early irrigation season demand of approximately 150 cfs. The water data indicates that almost 400 cfs was flowing in the Dietrich Canal. Given that the daily spot readings may have an error of +/- 10%, there would have been 210 to 250 cfs available through the canal for other uses at this location. (400 cfs – 40 cfs error = 360 cfs. Approximately 150 of the 360 would be dedicated to irrigation use, leaving at least 210 cfs for aquifer recharge.)

According to the current manager of the BWCC, the site can absorb the entire flow that the Dietrich Canal is capable of delivering. (from 7/9/2014 conversation). The quote from the LSARD proposal above indicates that the LSARD believed that the site could absorb more water. However, I do not have data to support either rate statement.

Watermaster records for 1984 indicate that water diverted into and from the Dietrich Canal for flood control (which is unmanaged aquifer recharge), within the development period of the permit (1982-1992). See the attached page from the WM book and my spreadsheet.

My flow rate and volume recommendations are based on watermaster records for the 1984 irrigation season.[3] Although the Little Wood River may have had higher flows in other years, the records from the spring of 1984 show that excess Little Wood River water was channeled into the Dietrich Canal and likely discharged at the Dietrich Canal recharge site. There is no record that the water was subsequently recovered and used.

POU
The POU is located in section 2, Township 5S, Range 19E, which is within the boundary of the LSARD. This specific place-of-use was not advertised but could be included in published "possible sites for recharge" which were in T 5S R 19E. (See the advertisement.)

According to available Lincoln County taxlot information, the BLM owns the place of use. In 1981, before this permit was approved, the BLM, Lincoln and Gooding County Commissions, and the mayors of Shoshone and Gooding signed a cooperative agreement which allowed the public's land to be used for flood control.

The flood control site is a natural basin which has been utilized to capture and hold the water for a short time until it enters the subsurface. I created the POU shape using elevations from the available ArcMap DRG layer. The site is a broad, flat, land surface bounded by the Dietrich Canal bank and low berms to create an infiltration basin.

IDWR knows very little about the soils or subsurface geology at the site. (See Neal Farmer's email.) However, the height of water delivered to site would be limited by the height of the canal bank, which would in turn limit the pressure head available to drive water into the subsurface.
The volume of the infiltration basin likely exceeds the volume I recommend for this license.

[3] Formally titled Water Distribution and Hydrometric Work, Districts Nos. 37 and 37M, Big and Little Wood Rivers, 1984.

Status/combined use
No other water rights overlap the POU.
Several water rights share the POD. Most of those rights are held by the Big Wood Canal Company and when totaled, they exceed what I understood to be the carrying capacity of the Dietrich Canal. (See the water use section above.) I confirmed with the watermaster that the following rights can be diverted into the Dietrich Canal from the Little Wood River: 37-13043, 37-13112 through 37-13114, and 37-21401 through 37-21405 (held by Big Wood Canal Company) and right 37-14264, (held by the BLM). The license will contain a combined limit on the rate.

The licensed right will be subordinated. The following subset of permit condition d will be maintained on the license. This water right shall be secondary to all prior water rights including rights held by any privately owned electrical generating company to appropriate waters in the reaches of the Snake River downstream from the Milner diversion for purposes of hydroelectric power generation.

Priority date
When the permit was reinstated on December 1, 1993 the priority was advanced.

Other Conditions
The recharge site off the Dietrich Canal was developed before this permit was issued. Although IDWR has issued permits to existing facilities in the past, it's not clear that the Department was aware of the Dietrich Canal site. Permit 37-7842 is conditioned looking forward to new facilities rather than backward at a facility that already been developed.

The permit was issued with two conditions which will require additional discussion at the management level. Those conditions are the last two conditions listed under permit condition d. Other. They are:

> Water may not be diverted under this permit until the Board of Directors of the District establish and implement a procedure acceptable to the Director for assuring that the water quality of the Lower Snake Aquifer will not be impaired.
>
> Plans for recharge facilities and any conveyance works needed shall be submitted to the department for approval prior to construction.

It may be possible to acquire plans for the diversion and rediversion structures and therefore satisfy the second of the two conditions above. My preliminary requests for that information have not been successful.

That leaves the first of these two conditions unmet. A plan and procedure for protecting the water quality of the recovered water indicates that IDWR expected that any new facility would be a managed recharge facility. It did not expect that an existing, unmanaged recharge facility would be found to have beneficially used water for recharge.

If the nature-of-use for the Dietrich site is to be changed from an unmanaged recharge site to a managed recharge site through a transfer, then these last two conditions should be reevaluated.

Recommendations
I recommend 250 cfs as the rate for this license. The recommendation is based on a rate derived from the watermaster records for April and May 1984. (See excel spreadsheet)

I recommend 13,900 AF as the volume for this license. This recommendation is again based April and May 1984 watermaster records which indicate that a flow rate exceeding the irrigation requirements was available 28 days of those months. (28 days x 250 cfs x 1.9835 = 13884.5 AF. When rounded to three significant figures = 13,900 AF)

Water District # 37 & 37M

Daily Discharge in second feet of Dietrich Canal #11 for the year ending Sept 30, 1984

Day	April	May	June	July	August	September
1	14	291	238	230	213	197
2	16	309	235	228	214	198
3	16	321	228	233	202	200
4	25	321	227	233	196	200
5	27	319	233	216	197	197
6	27	309	238	217	198	193
7	28	306	226	219	198	193
8	28	300	226	220	196	196
9	29	251	226	223	196	196
10	30	183	227	228	196	196
11	30	184	227	224	196	194
12	30	204	216	223	197	201
13	30	213	213	223	206	185
14	30	219	213	224	214	179
15	30	294	209	230	201	180
16	30	390	206	231	203	179
17	30	396	206	231	204	177
18	30	387	204	230	204	181
19	325	390	207	223	206	168
20	302	387	213	226	206	186
21	259	375	214	237	207	192
22	259	247	213	235	206	196
23	259	209	209	240	207	198
24	259	210	207	240	206	198
25	261	207	204	240	210	188
26	261	207	207	228	213	183
27	259	206	221	217	213	168
28	258	219	228	214	210	159
29	256	226	230	209	213	135
30	256	227	228	213	214	155
31		221		213	217	
24 HR CFS	3694	8528	6579	6998	6359	5568
Mean	123.1	275.1	219.3	225.7	205.1	185.6
Acre Feet	7327.049	16915.29	13049.45	13880.53	12613.08	11044.13

excel calculation

WR# 37-7842 table of differences created by Michele Edl

Day	April	May	June	July	August	September
1		141	88	80	63	47
2		159	85	78	64	48
3		171	78	83	52	50
4		171	77	83	46	50
5		169	83	66	47	47
6		159	88	67	48	43
7		156	76	69	48	43
8		150	76	70	46	46
9		101	76	73	46	46
10		33	77	78	46	46
11		34	77	74	46	44
12		54	66	73	47	51
13		63	63	73	56	35
14		69	63	74	64	29
15		144	59	80	51	30
16		240	56	81	53	29
17		246	56	81	54	27
18		237	54	80	54	31
19	175	240	57	73	56	18
20	152	237	63	76	56	36
21	109	225	64	87	57	42
22	109	97	63	85	56	46
23	109	59	59	90	57	48
24	109	60	57	90	56	48
25	111	57	54	90	60	38
26	111	57	57	78	63	33
27	109	56	71	67	63	18
28	108	69	78	64	60	9
29	106	76	80	59	63	-15
30	106	77	78	63	64	5
31		71		63	67	
sum	1414	2946	6429	6848	6209	5418
	2804.669	5843.391	12751.92	13583.01	12315.55	10746.6

excess of 150

daycount = 28

volume = 28 x 250 x 1.9835 = 13884.5

SCANNED

IWRB00003119

WATER DISTRICT #37 & 37M

DAILY DISCHARGE IN SECOND FEET OF DIETRICH CANAL #11 FOR THE YEAR ENDING SEPT. 30, 1984

DAY	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	14	291	238	230	213	197
2	16	309	235	228	214	198
3	16	321	228	233	202	200
4	25	321	227	233	196	200
5	27	319	233	216	197	197
6	27	309	238	217	198	193
7	28	306	226	219	198	193
8	28	300	226	220	196	196
9	29	251	226	223	196	196
10	30	183	227	228	196	196
11	30	184	227	224	196	194
12	30	204	216	223	197	201
13	30	213	213	223	206	185
14	30	219	213	224	214	179
15	30	294	209	230	201	180
16	30	390	206	231	203	179
17	30	396	206	231	204	177
18	30	387	204	230	204	181
19	325	390	207	223	206	168
20	302	387	213	226	206	186
21	259	375	214	237	207	192
22	259	247	213	235	206	196
23	259	209	209	240	207	198
24	259	210	207	240	206	198
25	261	207	204	240	210	188
26	261	207	207	228	213	183
27	259	206	221	217	213	168
28	258	219	228	214	210	159
29	256	226	230	209	213	135
30	256	227	228	213	214	155
31		221		213	217	
24 HR CFS	3694	8528	6579	6998	6359	5568
MEAN	123	275	219.3	226	205	186
ACRE FEET	7388	17056	13158	13880	12613	11044

TOTAL 24 Hr. C.F.S. 37,726

YEARLY MEAN 206.

YEARLY ACRE FEET 74,828.0

Edl, Michele

From: Lynn Harmon [lynnharmon@cableone.net]
Sent: Tuesday, August 19, 2014 3:14 PM
To: Edl, Michele
Subject: Floodway recharge at Dietrich canal WR#37-7842

Michele, I visited with Curley Sorensen and he stated that the Canal Company installed the structure and the plans were provided by the Corp of Engineers. He said that the plans got destroyed during construction. Perhaps the Corp might have a copy of the Dietrich Floodway plans in their archives. Thanks Lynn Harmon

Edl, Michele

From: Mary Davidson [mdavidson@lincolncountyid.us]
Sent: Thursday, August 07, 2014 5:15 PM
To: Edl, Michele
Subject: RE: Information
Attachments: 003.JPG; 008.JPG; 007.JPG

WR# 37-7842

Here are a few more,
I sure hope this helped, I will let you know if I get any additional information. Did you get a hold of Curly Sorenson?

Mary Davidson
Planning and Zoning Administrator
208-886-9808
208-886-2798 Fax

From: Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]
Sent: Thursday, August 07, 2014 5:04 PM
To: Mary Davidson
Subject: RE: Information

Mary,
It came through just fine. Sorry so long getting back to you. It's been a busy day.

From: Mary Davidson [mailto:mdavidson@lincolncountyid.us]
Sent: Thursday, August 07, 2014 1:09 PM
To: Edl, Michele
Subject: RE: Information

Let me know how this comes thru

Mary Davidson
Planning and Zoning Administrator
208-886-9808
208-886-2798 Fax

From: Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]
Sent: Thursday, August 07, 2014 9:54 AM
To: Mary Davidson
Subject: RE: Information

Thank you very much. If emailing them is a hassle, I'll gladly accept the print outs via snail mail.
Idaho Department of Water Resources
322 E Front St
Boise, 83720

Our flood plain coordinator has been on vacation so I don't know yet if IDWR has any knowledge of the construction specs, date or other details of the Dietrich flood/flow control structure. If you have anything in the way of support documents, please know that I'm interested in them.
Michele Edl
208-287-4946

Edl, Michele

From: Mary Davidson [mdavidson@lincolncountyid.us]
Sent: Monday, August 18, 2014 5:01 PM
To: Edl, Michele
Subject: Pictures WR# 37-7842

Michele,
These picture were taken on July 29th 2014.

Hope this helps!

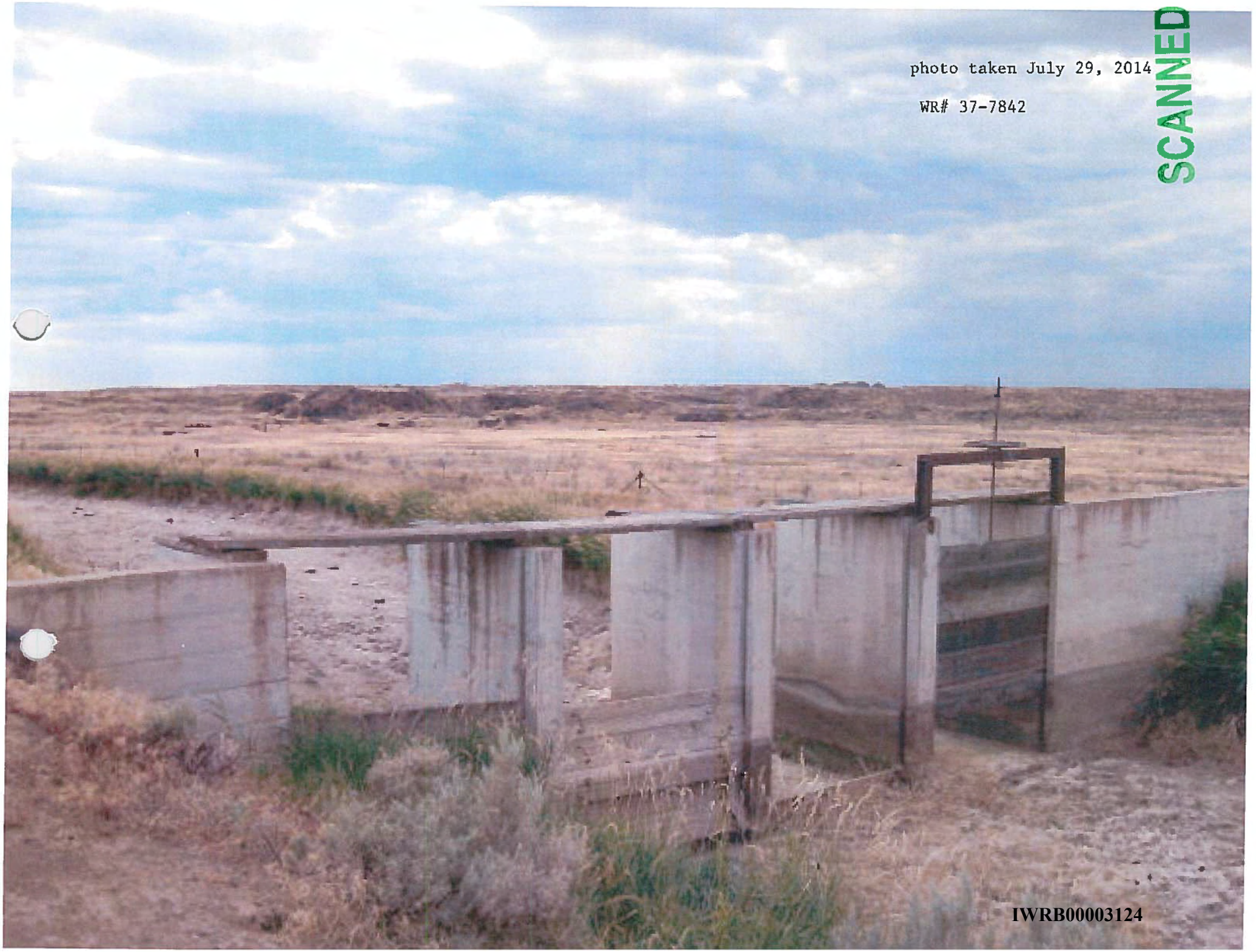


photo taken July 29, 2014
WR# 37-7842
SCANNED
IWRB00003124


photo taken July 29, 2014
WR# 37-7842
SCANNED
IWRB00003125

photo taken July 29, 2014

WR# 37-7842

Edl, Michele

From: Mary Davidson [mdavidson@lincolncountyid.us]
Sent: Thursday, August 07, 2014 1:09 PM
To: Edl, Michele
Subject: RE: Information
Attachments: 010.JPG

Let me know how this comes thru

Mary Davidson
Planning and Zoning Administrator
208-886-9808
208-886-2798 Fax

From: Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]
Sent: Thursday, August 07, 2014 9:54 AM
To: Mary Davidson
Subject: RE: Information

Thank you very much. If emailing them is a hassle, I'll gladly accept the print outs via snail mail.
Idaho Department of Water Resources
322 E Front St
Boise, 83720

Our flood plain coordinator has been on vacation so I don't know yet if IDWR has any knowledge of the construction specs, date or other details of the Dietrich flood/flow control structure. If you have anything in the way of support documents, please know that I'm interested in them.
Michele Edl
208-287-4946

From: Mary Davidson [mailto:mdavidson@lincolncountyid.us]
Sent: Thursday, August 07, 2014 9:41 AM
To: Edl, Michele
Subject: Information

Michele,
I have been out of the office since Monday just returning. I have not be able to download the pictures off the camera as yet. I am waiting for the Clerk to come in today to see if she can download onto her machine and get over to me.

I will let you know if there is a problem and I have to have printed off.

Have a wonderful and productive day☺

Mary Davidson
Planning and Zoning Administrator

208-886-9808
208-886-2798 Fax

photo taken July 29, 2014

WR# 37-7842

LOWER SNAKE AQUIFER RECHARGE DISTRICT

GROUND WATER RECHARGE DEMONSTRATION PROPOSAL

for

High Plains States Groundwater Demonstration Program Act of 1983

submitted by

John LeMoyne, Chairman
Route 1, Box 148
Hagerman, Idaho 83332
837-4887

July 7, 1986

ATTACHMENT TO LICENSE REVIEW WR# 37-7842

springs show the changes in amount of water discharged.

	1902	1910	1914	1917	1918	1924
Blue Lakes Springs	80(A)	118(A)	199(A)	215(O)	216(S)	194(S
Crystal Springs	304(A)	-	-	536(O)	-	486(S
Niagara Springs	107(A)	-	-	242(O)	322(S)	215(S
Briggs Springs	77(A)	_	_	128(S)	130(S)	125(O

(A) August (O) October (S) September

1] Geology and Ground Water, Snake River Plain, ID. Geological Supply Paper #774. Washington 1938.

In addition to this long term effect, there is an annual one demonstrated by the springs from the irrigation season. Approximately 30 days after irrigation starts on the plain above the springs, their flows begin to increase reaching a peak in September and October shortly after the irrigation is turned off. The lowest flows are experienced during April and May which is about the time irrigation water is turned into the canal system. See attachment III - Box Canyon flows.

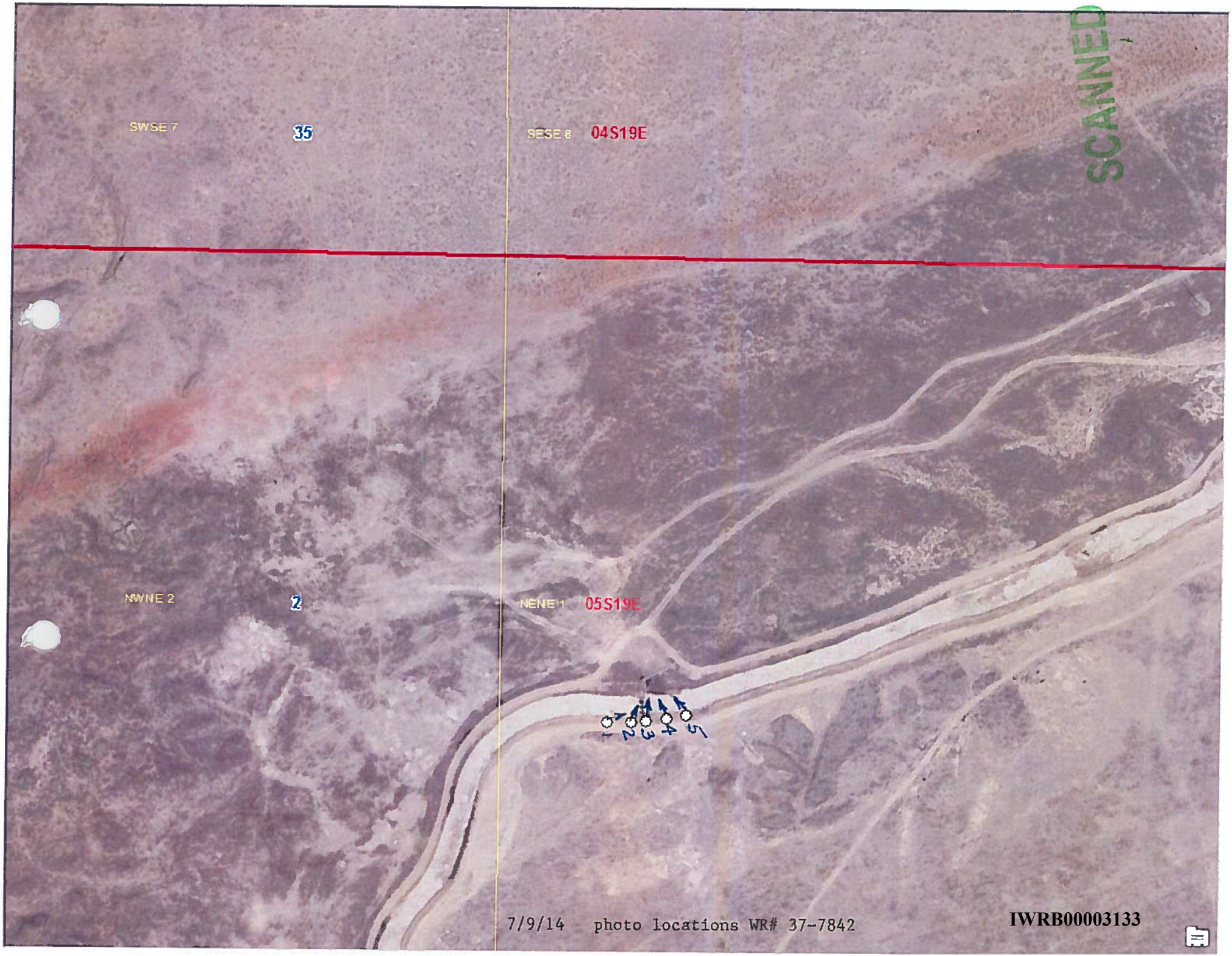
2] Artificial Recharge to the Snake Plain Aquifer in Idaho, R.F. Norvitch, C.A. Thomas, and R.J. Madison; Aug.,1969.

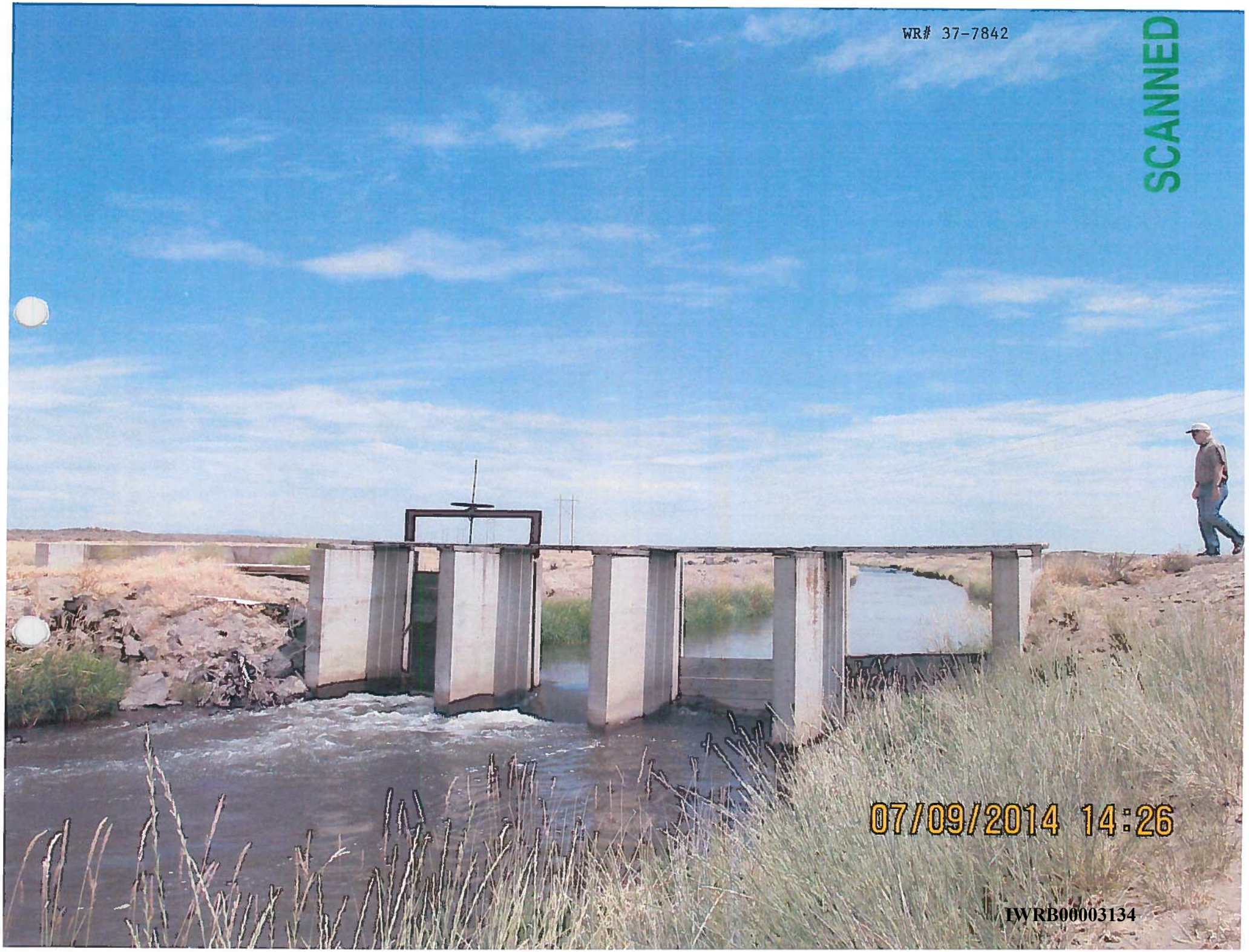
There are two locations where water is being discharged into the aquifer. One is on the Dietrich Canal just south of Richfield. This is a flood control facility used by Lincoln

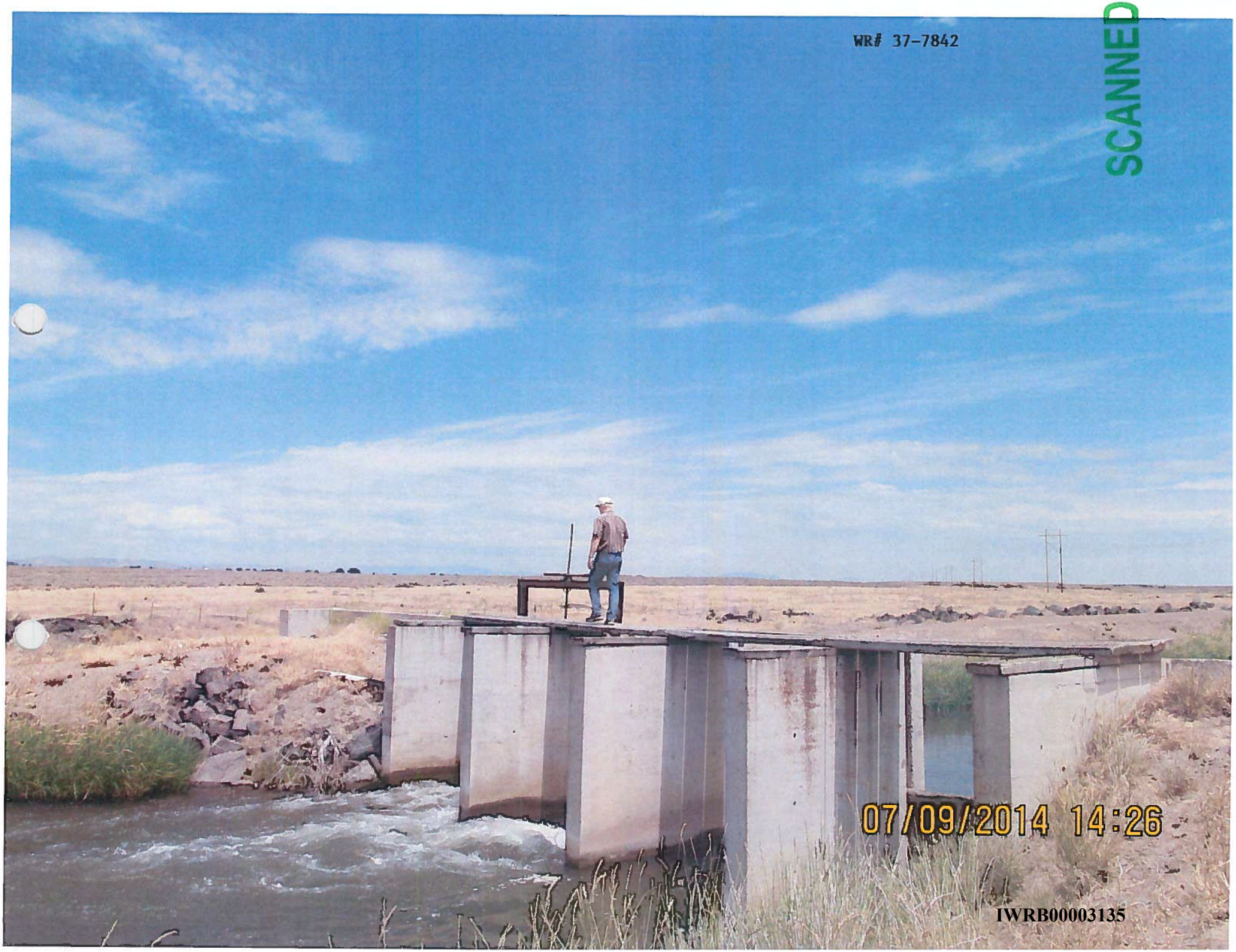
and Gooding Counties to prevent flooding along the Little Wood River. This site will handle 800 CFS of discharge up to a week and a continued flow of approximately 200 CFS. The other site was installed by the Recharge District at a cost of $79,746.00. It is north of Shoshone on the Milner-Gooding Canal and at present can handle about 300 CFS. In 1985, there were 7,800 acre feet discharged at this site over a 16 day period. Monitoring at this site, attachment IV shows the water in the adjacent well increased during the recharge period and was highest just after the recharge period ceased.

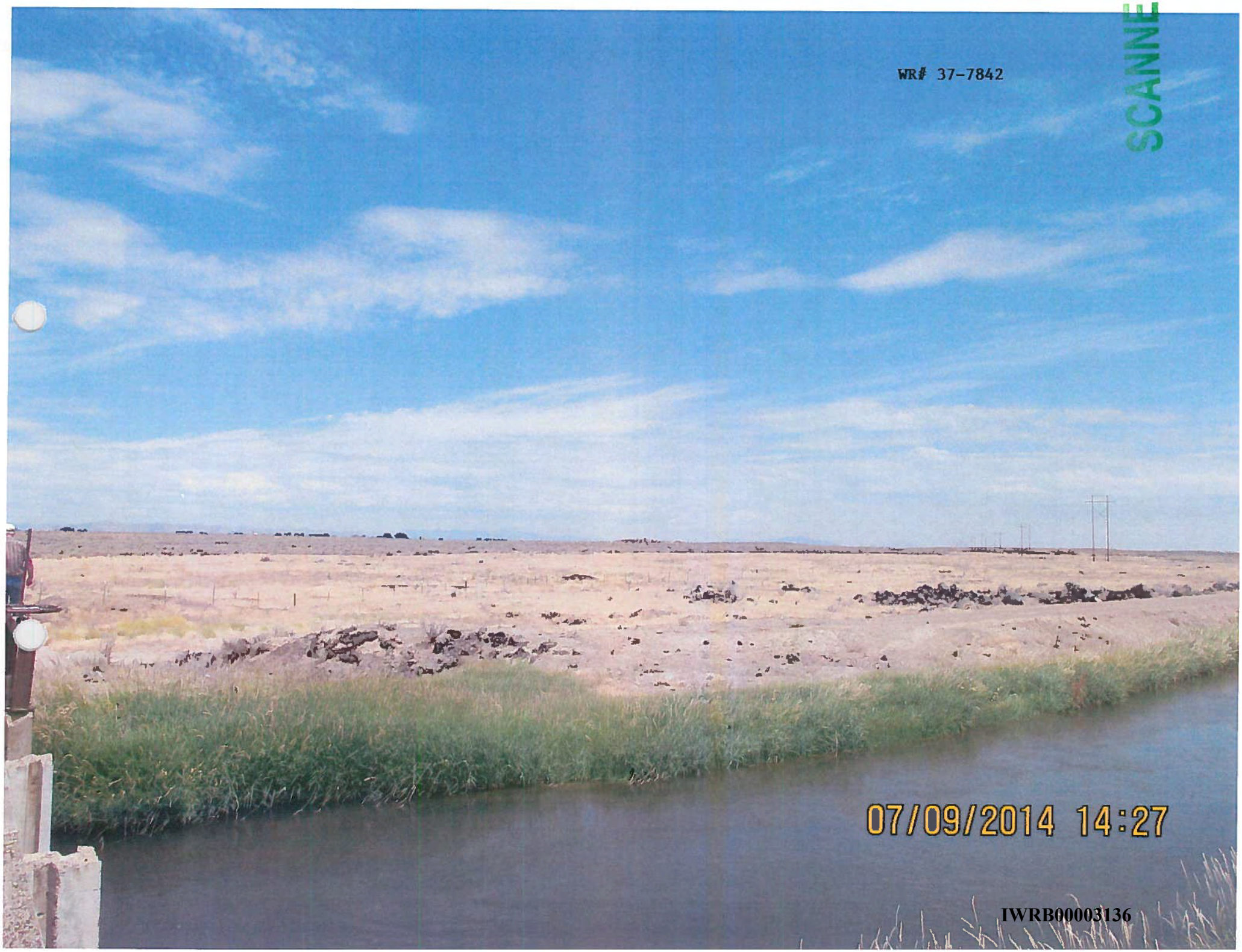
E. Hydrologic Conditions

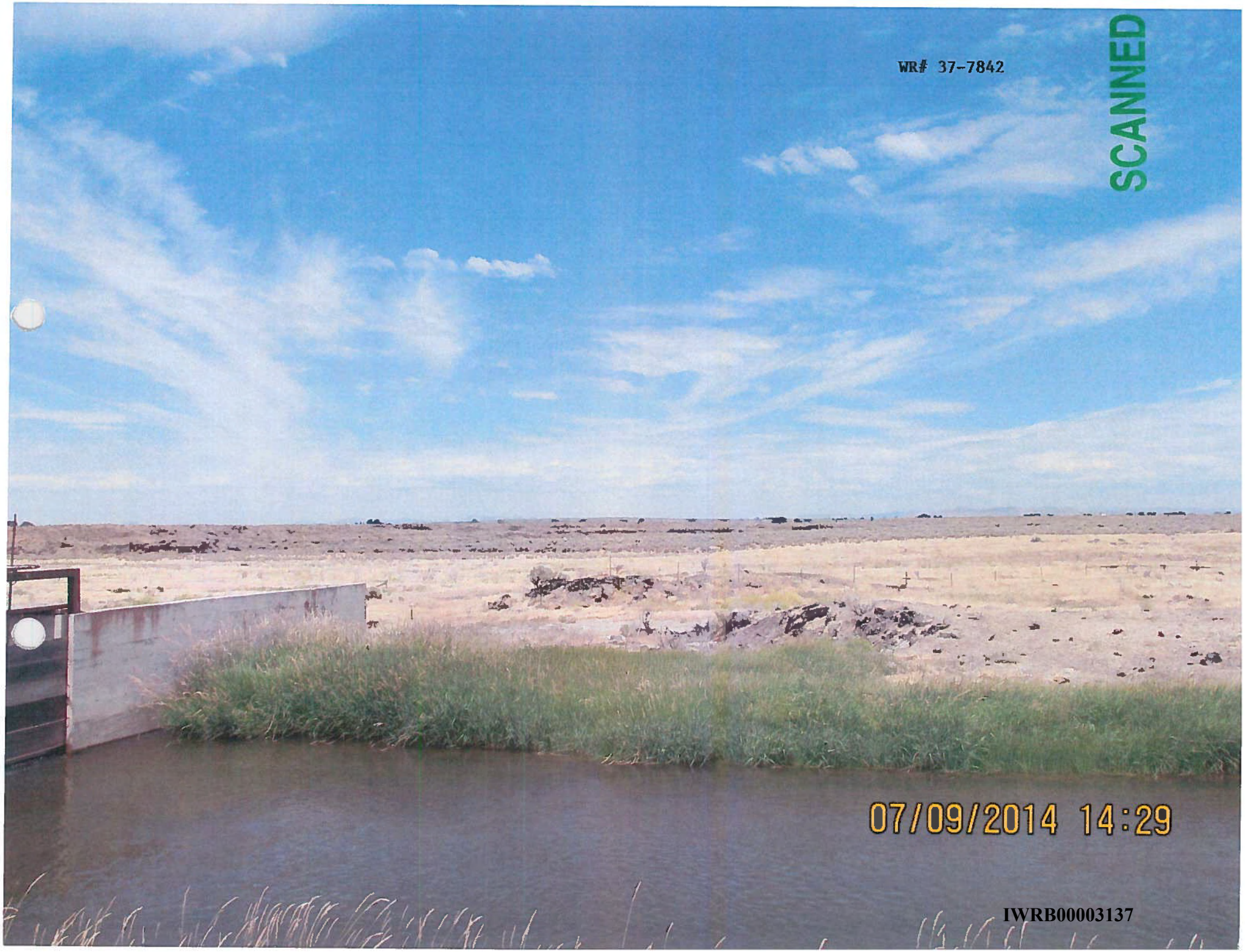
Attachment VA and VB indicate the direction of flow of the Snake River aquifer. If has been a concern among the water users of the aquifer, that the aquifer level has been continually decreasing. We have enclosed information on 8 different wells located on attachment IIC and measurements documented on attachment IIB. Attachment IIB shows that the lowest water level is always a later date than the highest water level. All the lowest levels are in the 1980's with one exception; Well no.4 in 1979. The only data available to us was up through 1982. If we had access to recent data, it would be interesting to see if depth had continued to decline. This drop in water table is also demonstrated from the spring flow as substantiated by attachments IIA and III. The following events have occured over the past years which have led up to the reduced spring flows and a drop in the

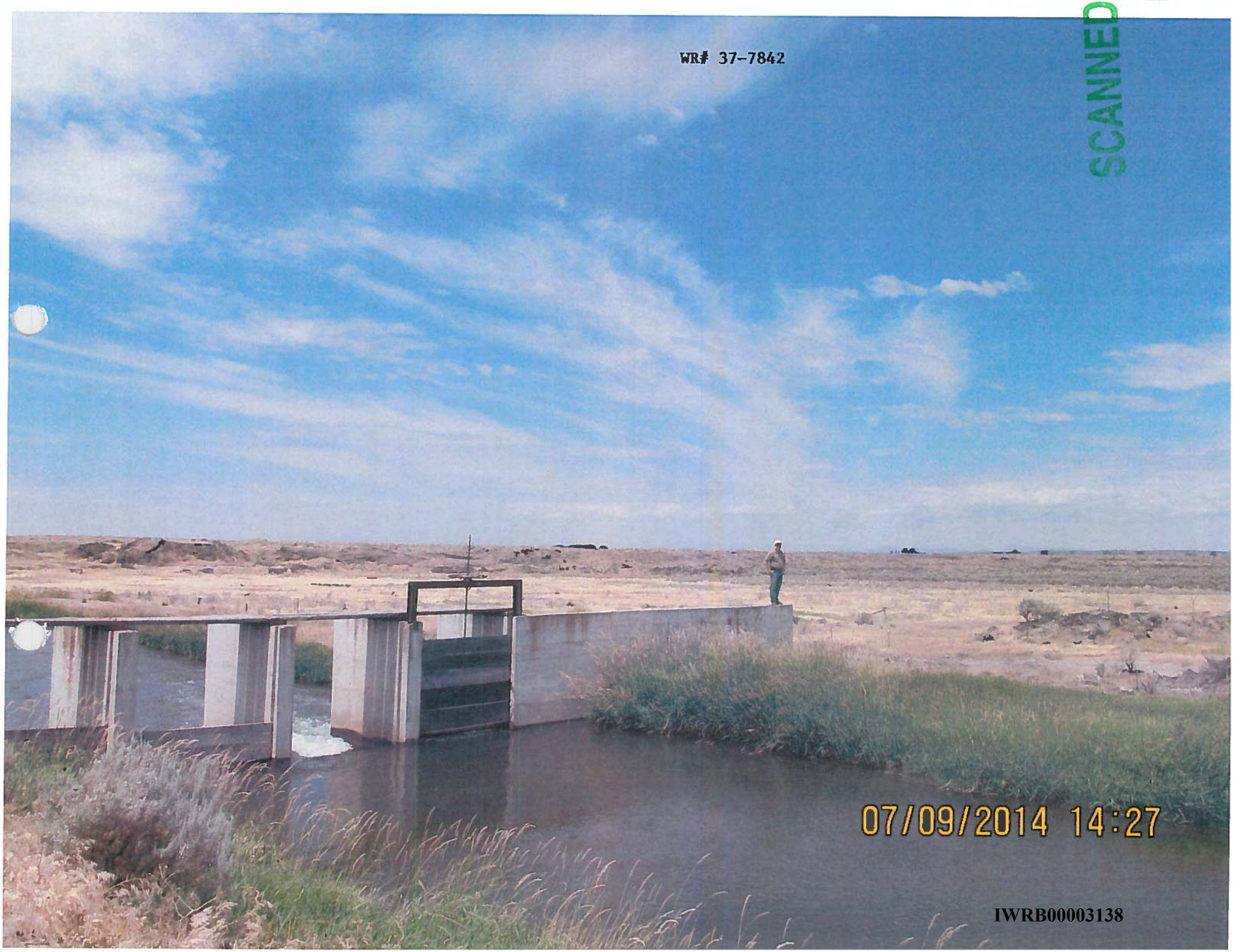



WR# 37-7842
SCANNED
07/09/2014 14:26
IWRB00003134

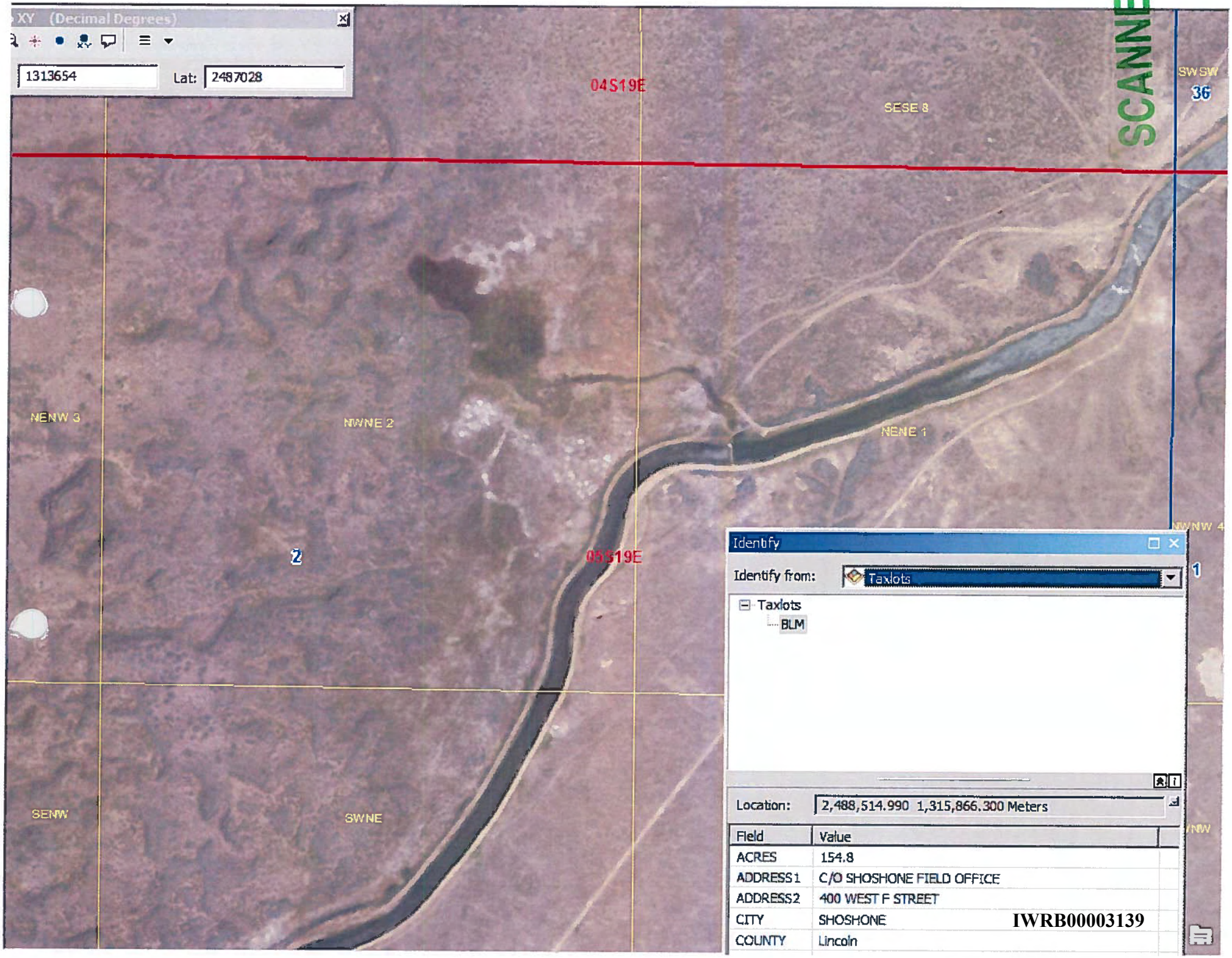

WR# 37-7842
SCANNED
07/09/2014 14:26
IWRB00003135


WR# 37-7842
SCANNED
07/09/2014 14:27
IWRB00003136


WR# 37-7842
SCANNED
07/09/2014 14:29
IWRB00003137


WR# 37-7842
SCANNED
07/09/2014 14:27
IWRB00003138

2011 aerial photo 201/WR# 37-7842



Edl, Michele

From: Farmer, Neal
Sent: Friday, August 01, 2014 10:24 AM
To: Edl, Michele; Keen, Shelley
Cc: Patton, Brian; Lynn Harmon
Subject: GPS coordinates for Dietrich canal floodway diversion gates

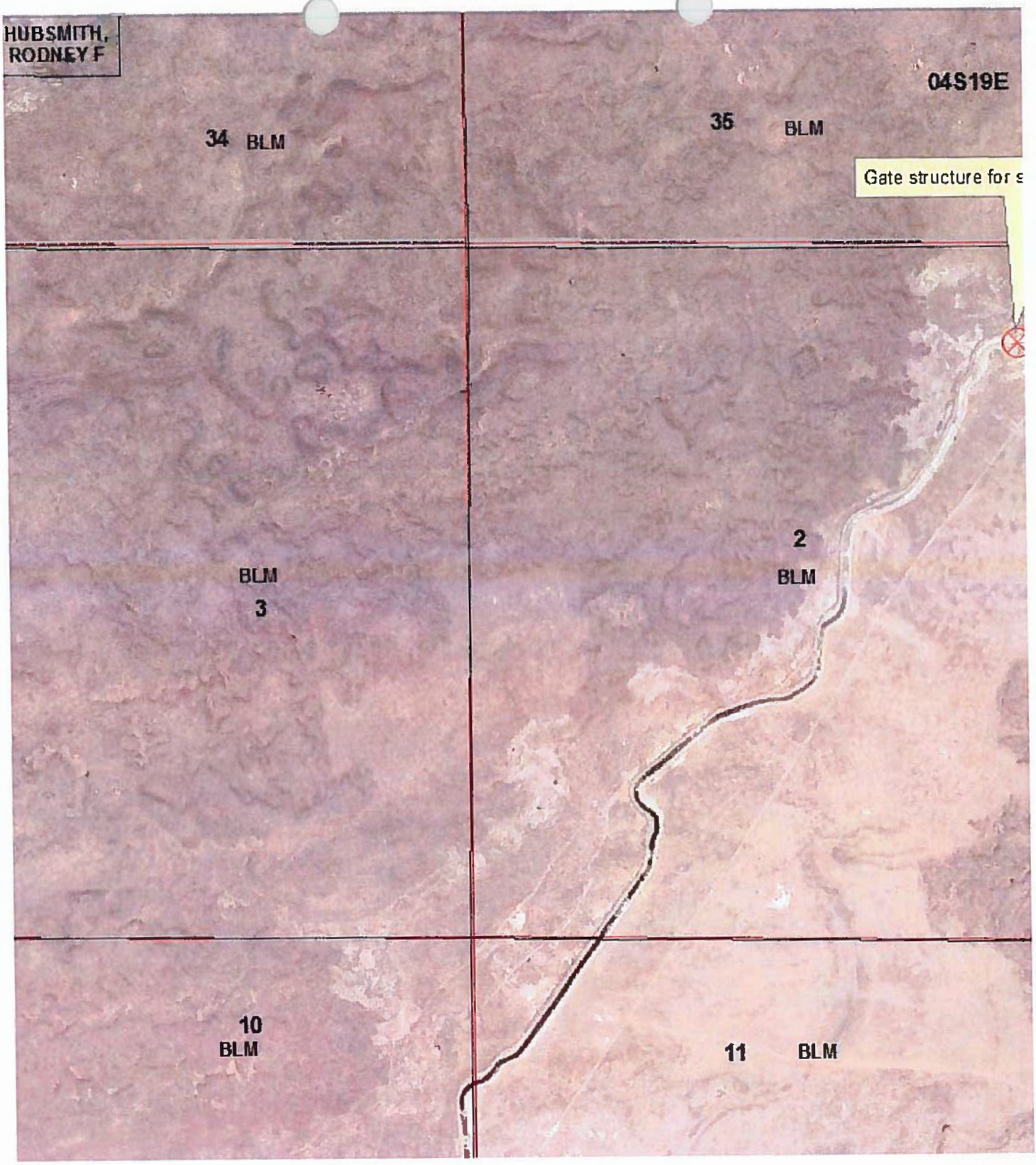
Michele,

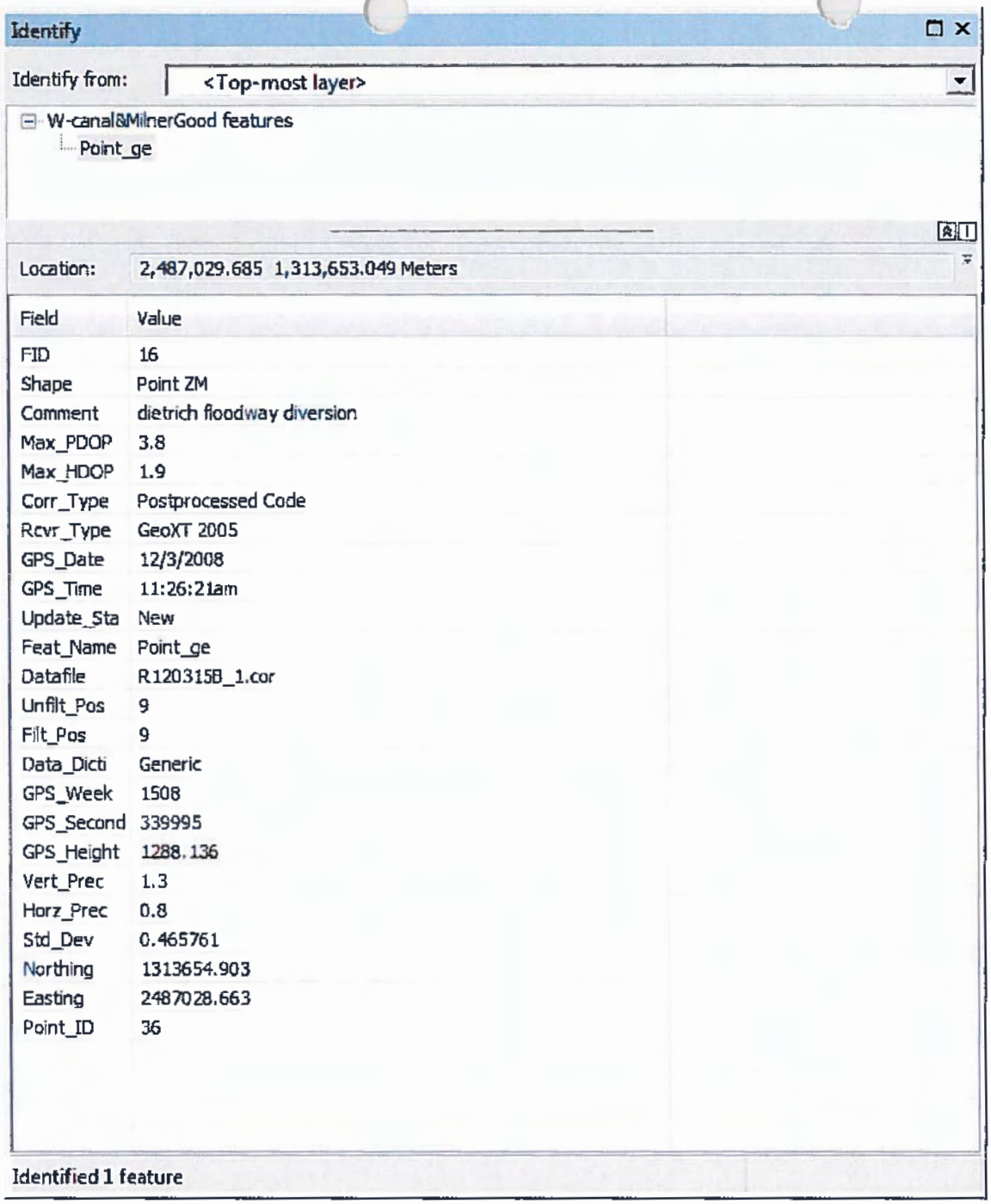
Below is the information from a gps point I collected in year 2008 for the location of the diversion headgate structure on the Dietrich canal where water is spilled out into the BLM land.

Easting = 2487028.663

Northing = 1313654.903

Neal's coordinates are in the wrong units system





Edl, Michele

From: Farmer, Neal
Sent: Friday, August 01, 2014 8:03 AM
To: Edl, Michele
Subject: dietrich canal hydrogeology

Michele...not much info on the hydrogeology as there hasn't been many wells drilled ...given that it appears to be all basalt for several hundred feet and a depth to water table of about 200 feet....that's about all we know.

Neal

Edl, Michele

WR# 37-7842

From: Farmer, Neal
Sent: Friday, July 11, 2014 9:44 AM
To: Edl, Michele; Keen, Shelley
Subject: BLM agreement for flood water release south of Richfield along Dietrich canal attached
Attachments: BLM Cooperative Agreement I-05-63 (Richfield site).pdf

Just fyi...here is the agreement to release flood waters out of the Dietrich canal onto BLM land that we discussed yesterday...no mention of authorized use as a recharge site.

Neal

IN REPLY REFER TO

2800

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Shoshone District Office
P.O. Box 2 B
Shoshone, ID 83352

June 15, 1982

Lou Pence
Soil Conservation Service
Wood River Resources RC&D
131 East Avenue E
Gooding, ID 83330

Dear Lou:

Enclosed is a copy of the flood control cooperative agreement I-05-63 that you requested. It should have all the requirements that would be expected of the cooperators, if they should need to use the public lands for this purpose.

Also enclosed is Information Bulletin No. 2, which explains what is required for filing an application for a right-of-way on public lands. You will also find an application form that must be used when making an application. All rights-of-way filings are now sent to this office.

If I can be of further help, please let me know.

Sincerely,

Ervin Cowley

Ervin Cowley
Monument Area Manager

Enclosures

COOPERATIVE AGREEMENT
I-05-63

BETWEEN

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
SHOSHONE DISTRICT OFFICE
P.O. BOX 2B
SHOSHONE, ID 83352

AND

MUTUAL AGREEMENT OF:

GOODING COUNTY COMMISSIONERS
GOODING, IDAHO 83330

LINCOLN COUNTY COMMISSIONERS
SHOSHONE, IDAHO 83352

CITY OF GOODING
GOODING, IDAHO 83330

CITY OF SHOSHONE
SHOSHONE, IDAHO 83352

TABLE OF CONTENTS

COOPERATIVE AGREEMENT
- I-05-63

I. PURPOSE:

The purpose of this agreement is to establish mutual guidelines and provide procedures and authorization so the cooperators can enter public lands administrated by the Bureau of Land Management (BLM) for flood control purposes. The public lands will only be used when there is an emergency to alleviate the dangers of flooding the communities of Shoshone and Gooding and when the natural drainage capacity of the Little Wood River and other canal laterals are insufficient to contain the water.

II. AUTHORITY:

A. Bureau of Land Management:

Section 307, Federal Land Policy and Management Act of 1976, P.L. 94-579, 43 U.S.C. 1737.

B. Cooperators:

III. AGREEMENT AREA

This cooperative agreement will involve only public lands located within the Shoshone BLM District, and described as follows:

T. 5 S., R. 19 E., Boise Meridian, Lincoln County, Idaho		
Section 2:	SW4NE4, SW4, NW4SE4	240 acres
Section 3:	SE4	160 acres
Section 8:	SE4	160 acres
Section 9:	S2	320 acres
Section 10:	NE4, W2, W2SE4	560 acres
Section 11:	NW4NW4	40 acres
Section 15:	NE4NW4, W2W2	200 acres
Section 17:	ALL	640 acres

There are 2,320 acres of public land in the agreement area which is considered a desert environment. The State of Idaho owns 640 acres contiguous on three sides to the agreement area and identified as Section 16, which is not part of this agreement.

The agreement area lies entirely within the Richfield Pasture of the Dietrich Butte Grazing Allotment. This allotment currently has 10 livestock operators who may use up to 5,419 active cattle AUMs each year. Also, there is fall sheep use on these lands by another livestock operator having grazing preference in the adjoining Wildhorse Allotment. Idaho Power Company has a 46 kv transmission line that traverses the tract with a 50 ft. right-of-way. The Dietrich Canal is also authorized by a right-of-way. This agreement is continuing the existing use of the lands for flood control purposes and is no way authorizing addition or new development to occur.

IV. DEFINITIONS

A. Bureau of Land Management (BLM):

The agency in the Department of Interior that has management responsibilities on those lands covered by this agreement.

B. Cooperators:

The governmental bodies of Lincoln and Gooding Counties and the cities of Shoshone and Gooding that have jointly agreed to the provisions of this agreement for the common purpose and effort of controlling flood waters along the Little Wood River.

C. District Manager:

The authorized officer in the Bureau of Land Management who has been delegated the responsibility, by the Secretary of the Interior, for the management of public lands within the Shoshone District.

D. Contractor:

All companies, groups, individuals, or agents to include federal and state agencies who are retained by the cooperators in their flood control program for the operation of this agreement.

E. Degradation:

The changing, altering, or lowering in character and quality of the lands as a result of the cooperators use through vegetative and soil disturbance, creating a negative or undesirable effect on the environment. This may be the effects from, but not limited to, the hydraulic action of flood waters or the disturbance by vehicles or heavy equipment.

V. OPERATION AND RESPONSIBILITIES

The Bureau of Land Management, acting through the District Manager, and the Cooperators, acting through the respective mayors and commission chairmen, agree as follows:

A. The Bureau of Land Management will:

1. Provide only the land used in the operation of this agreement.

2. Continue to allow existing uses on the subject lands and any additional uses which are compatible with this agreement. Existing uses on the subject land may include, but are not limited to recreation, minerals, livestock grazing, wildlife habitat, and public access.

B. The Cooperators will:

1. Provide all labor, material, equipment, and money needed in the maintenance programs, rehabilitation, or studies authorized by the cooperators for the operation of this agreement.

2. Exercise every reasonable precaution to prevent the degradation of all resources and shall rehabilitate the area, both inside and outside of the agreement area, which has been subject to degradation by the cooperators or their contractor's use.

3. Restrict operations to the existing roads or trails if vehicular equipment is used within the agreement area and no new roads will be constructed.

4. Indemnify and hold harmless the Bureau of Land Management, its officers, agents, and employees, from any and all damages and claims for damages of every description or kind whatsoever which may result from the exercise of privileges granted by this agreement or which may result from the exercise of any of the rights reserved herein.

5. Be subject to the provisions of Executive Order 11246 of September 24, 1965, as amended, which sets forth the Equal Opportunity clauses. A copy of this order may be obtained from the district manager.

6. Be responsible for the prevention and suppression of all range fires resulting from their own or their contractor's actions. This includes responsibility for suppression costs incurred by any party in controlling such fires that are determined to be the cooperator's responsibility.

7. Allow authorized representatives of the Bureau of Land Management and the general public the right of unrestricted ingress and egress within the agreement area.

8. Remove from the public lands all trash, litter, garbage, and other items originating from the cooperators and contractor's use.

9. Notify the district manager immediately if damage has occurred to public lands within or outside the agreement area as a result of the operation of this agreement.

10. If additional development is needed, beyond that which now exists, to prevent flood waters from overflowing the use area to external lands, provide the district manager with detailed plans for such development, 30 days in advance, for review and concurrence.

C. Other Items Mutually Agreed by the Bureau of Land Management and Cooperators:

1. This agreement in no way abrogates BLM responsibility and authority as set by the Federal Land Policy and Management Act (Public Law 94-579, 90 Statutes 2743), for management of the subject lands.

2. None of the items covered in this cooperative agreement are to be construed as obligating either party to the expenditure of funds in excess of authorized appropriations.

3. This agreement shall remain in full force and effect until modified or terminated by mutual agreement of BLM and the cooperators. This will be accomplished by a 30-day written notice by either party on the other.

Any proposals to change, modify, or otherwise alter any part of this agreement must have total concurrence by all the cooperators and BLM.

4. This agreement or any interest therein shall not be transferred or assigned without prior approval, in writing, of the district manager and the cooperators.

5. All tools, equipment, and other property taken upon or placed upon the public land by the cooperators or contractor during maintenance or rehabilitation efforts, shall remain the property of the cooperators or contractor and will be removed by the cooperators or contractor within a reasonable time after completion of their work. If they are not removed as directed by the district manager, within a reasonable time, then trespass actions can be taken towards the cooperators or contractor under the provisions of 43 CFR 9230.

6. No rental or use fees will be charged for the use of the public lands involved with this agreement. However, all damage and rehabilitation of the lands will be the responsibility of the cooperators or contractor use. If mineral materials such as gravel, fill dirt, etc., are needed for any phase of maintaining or rehabilitating the subject land, the cooperators will notify BLM. These materials shall be applied for under the provisions of 43 CFR 3610 and 3620, whichever is applicable.

D. Effective Date

This cooperative agreement will be in full force and effect as of the last date signed.

FLOOD CONTROL COOPERATORS

LINCOLN COUNTY COMMISSIONERS

O. J. HARRIS, CHAIRMAN
SHOSHONE, IDAHO
4-10-81
DATE

GOODING COUNTY COMMISSIONERS

RICK BRAILSFORD, CHAIRMAN
GOODING, IDAHO
4-10-81
DATE

CITY OF SHOSHONE

ELWOOD WERRY, MAYOR
SHOSHONE, IDAHO
4-8-81
DATE

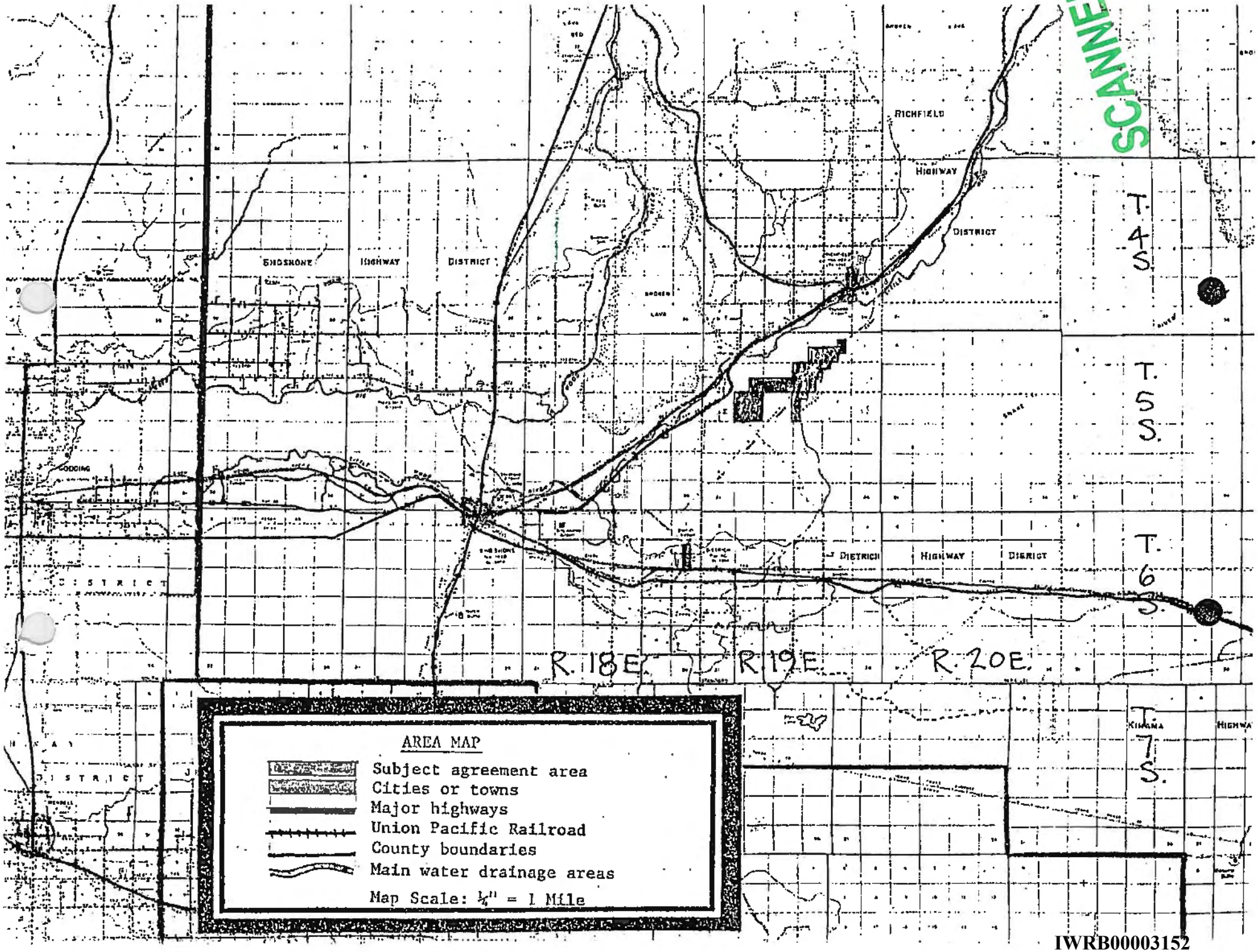
CITY OF GOODING

J. E. HELLER, MAYOR
GOODING, IDAHO
4-17-81
DATE

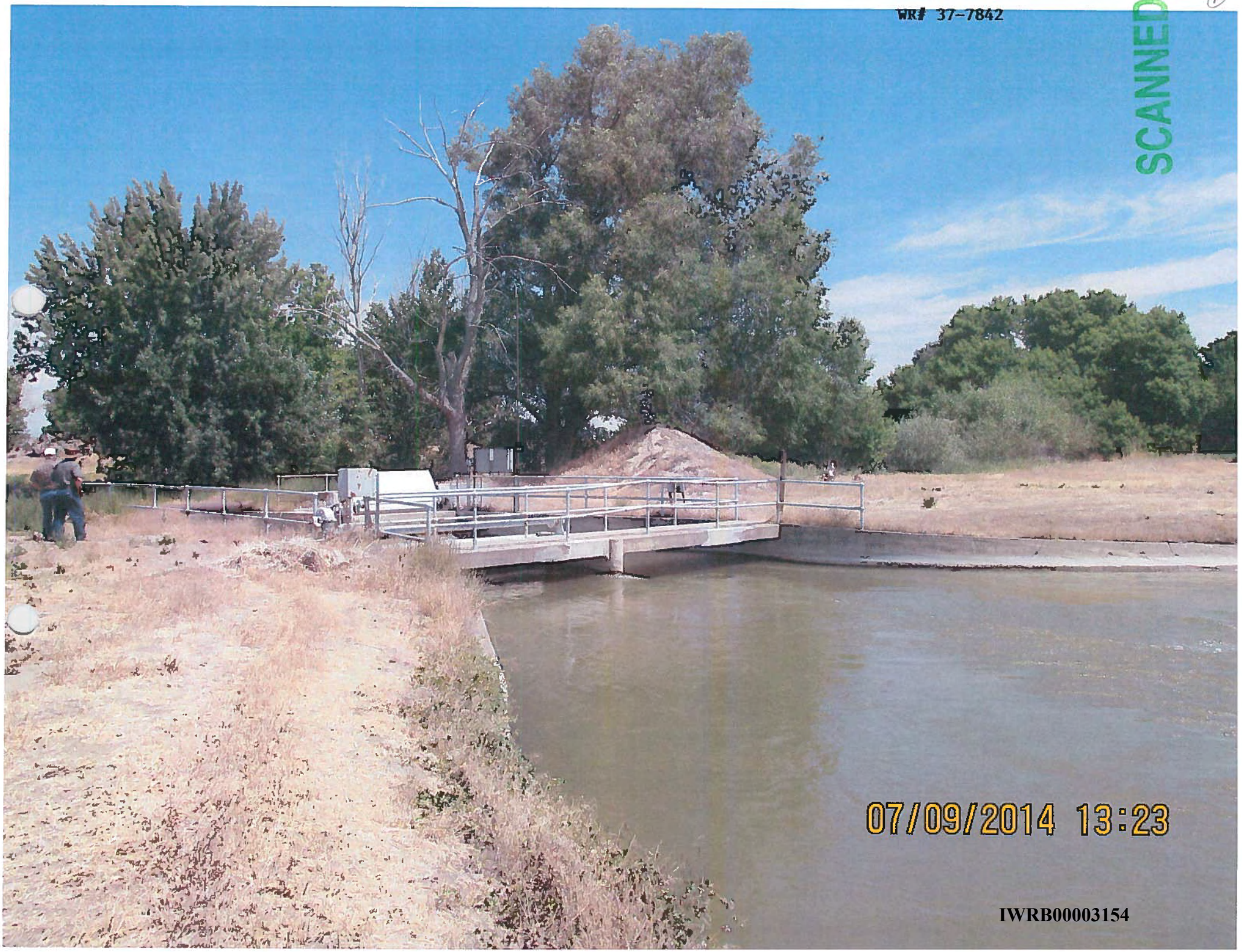
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

for CHARLES J. HASZIER
SHOSHONE DISTRICT MANAGER
SHOSHONE, IDAHO

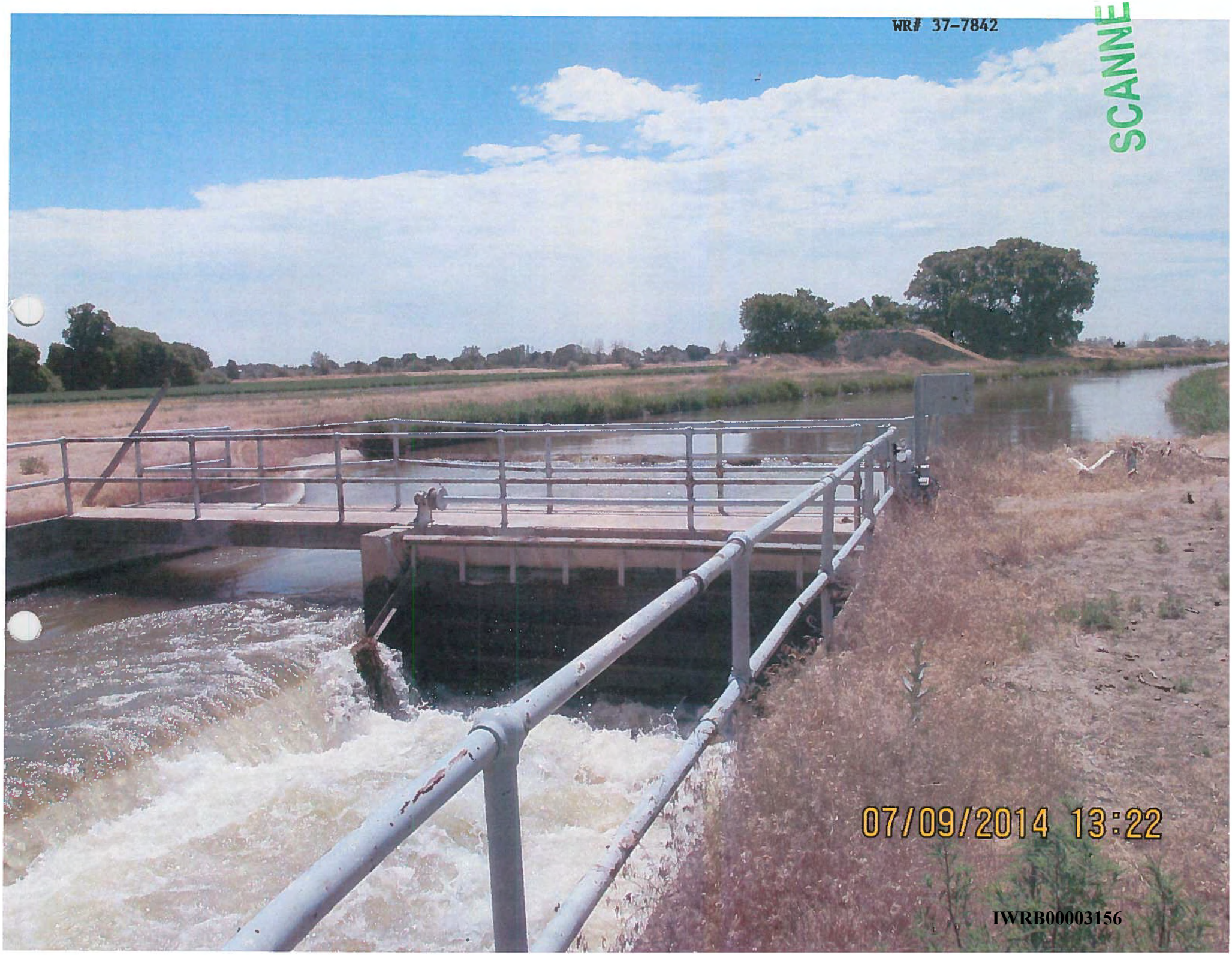
20 April 1981



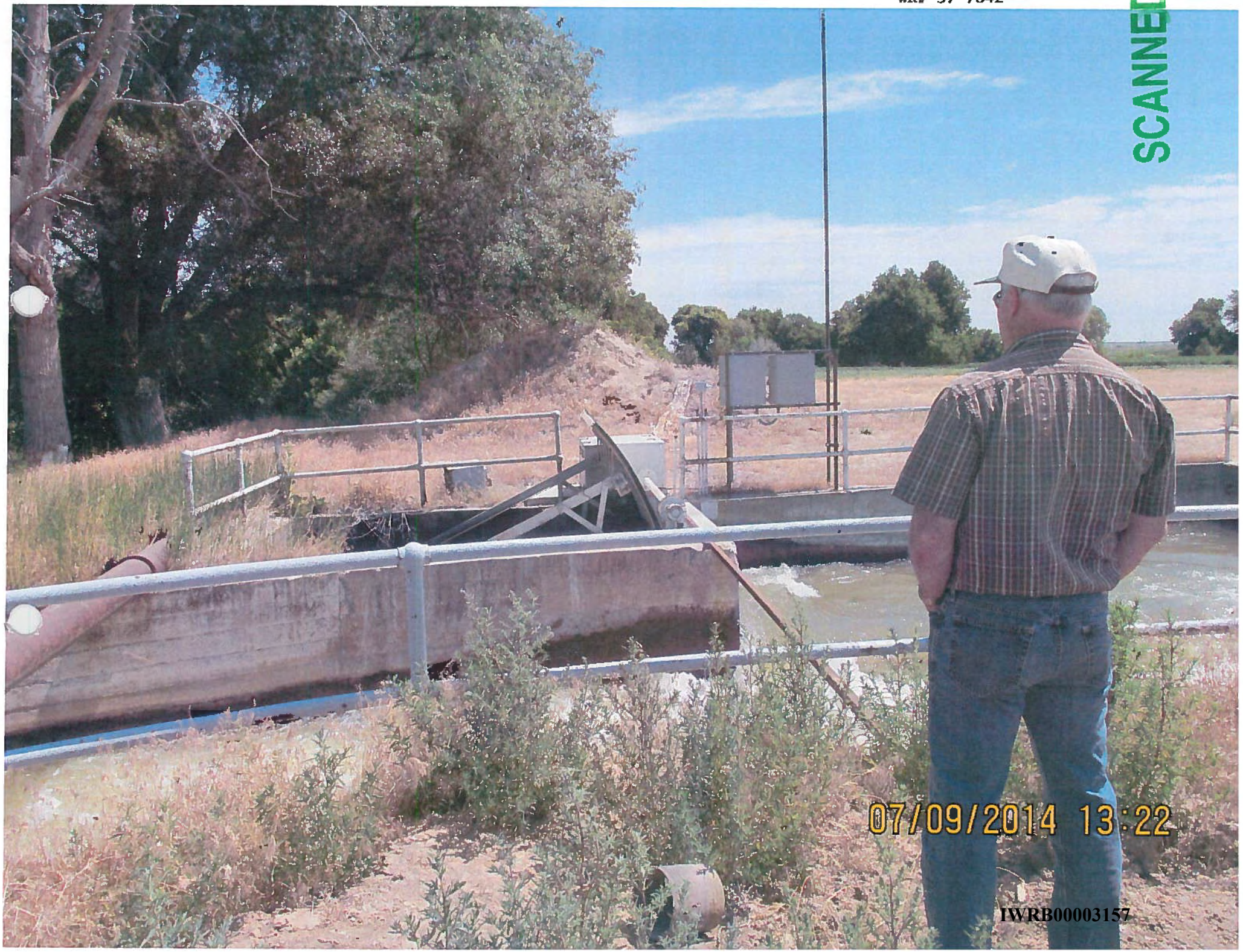
bifurcation 7/9/2014 photo locations WR# 37-7842


WR# 37-7842
SCANNED
07/09/2014 13:23
IWRB00003154

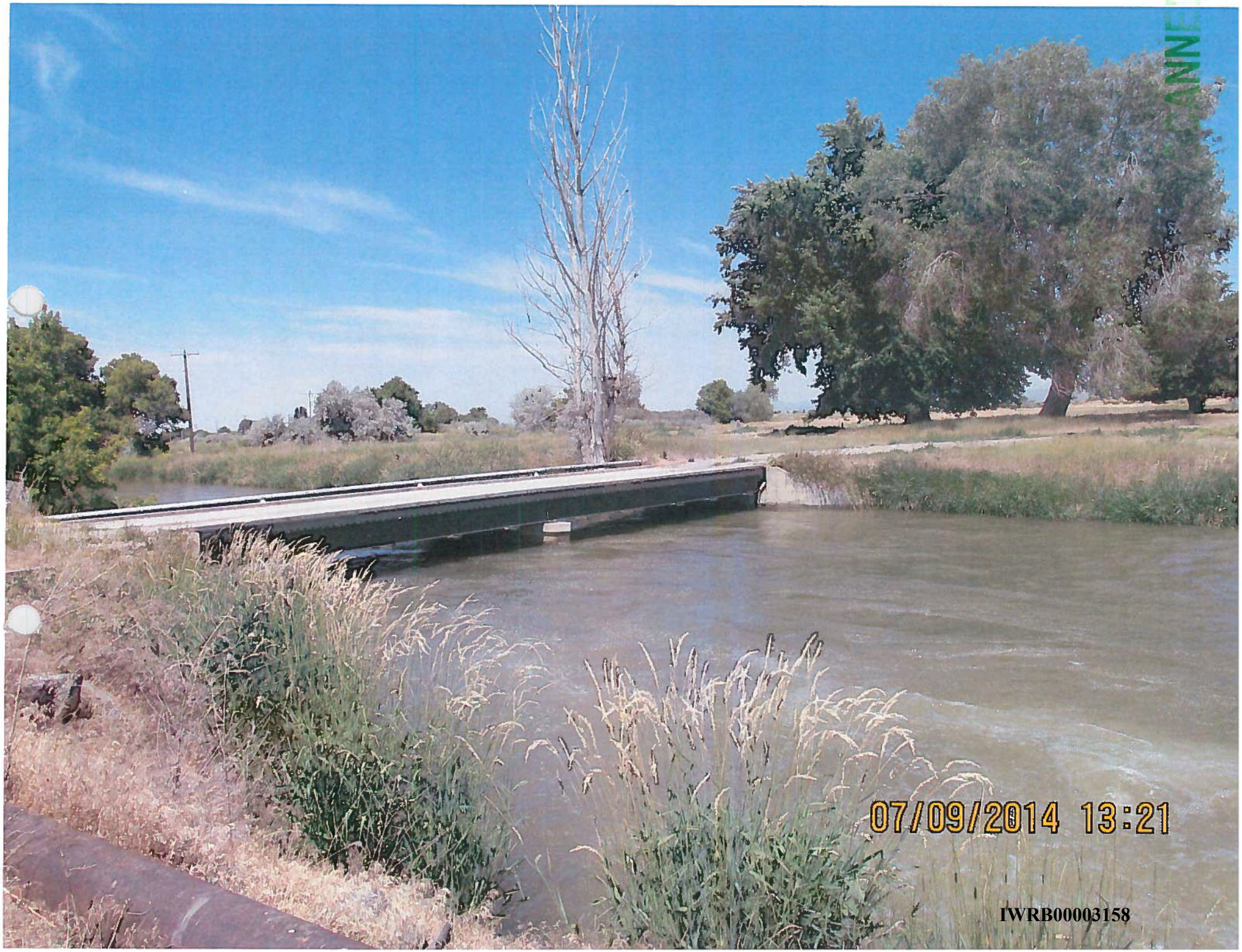
WR# 37-7842


WR# 37-7842
SCANNE
07/09/2014 13:22
IWRB00003156

WR# 37-7842

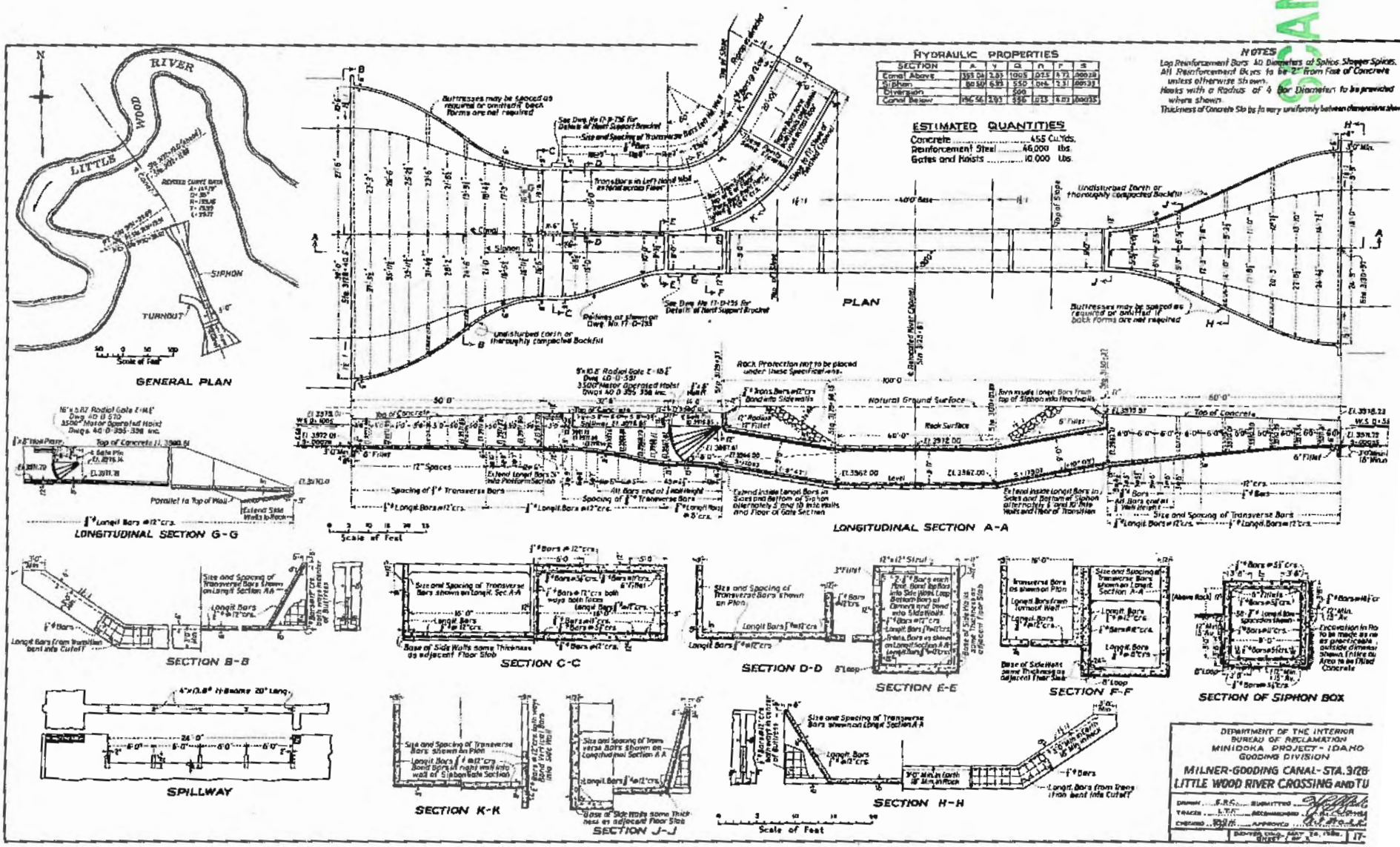


WKF 37-7842



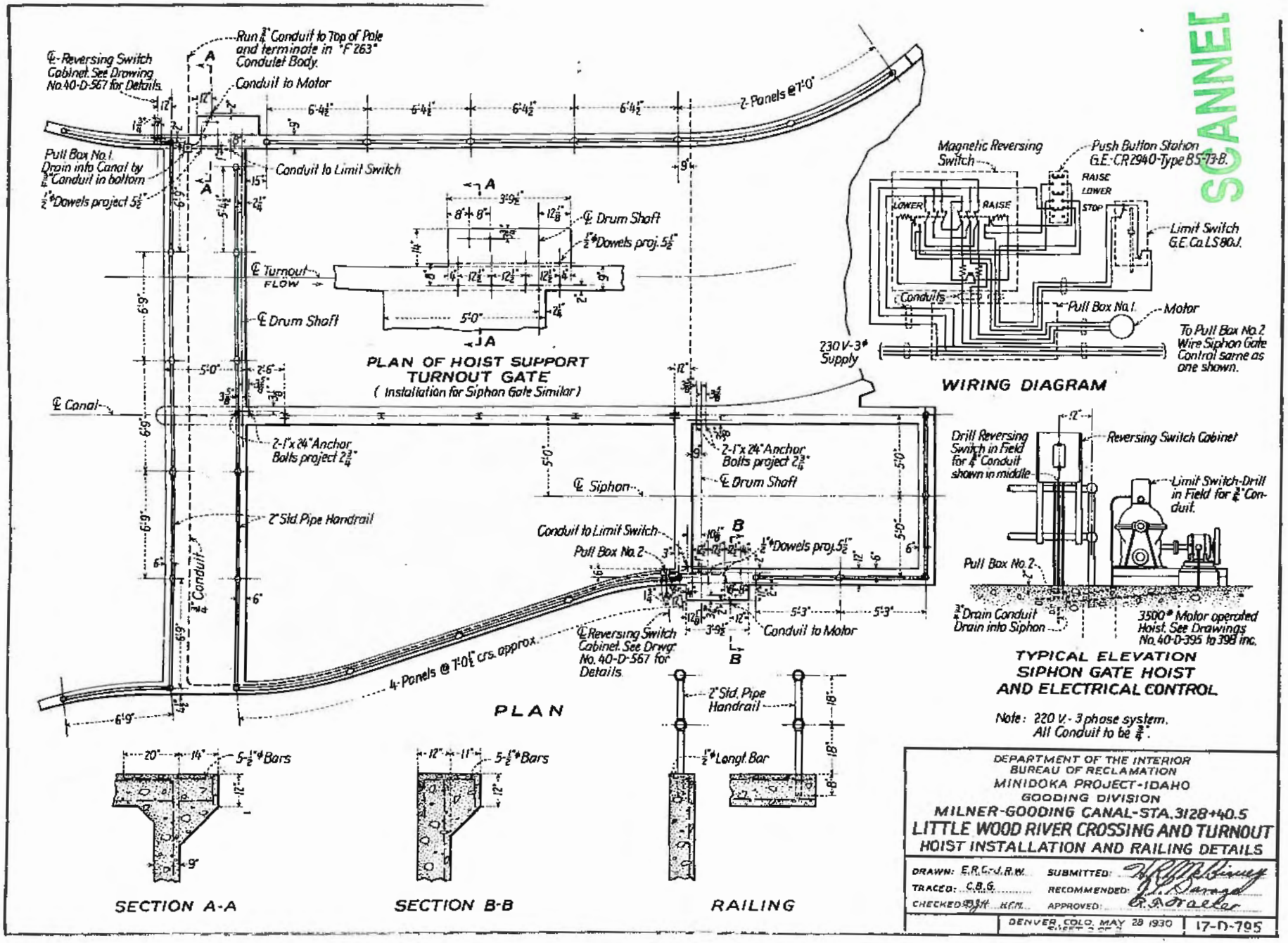
IWRB00003158

Bifacation Works



copy of the bifurcation engineering drawing provided by BWCC 7/9/14
WR# 37-7842

IWRB00003159



copy of the bifurcation engineering drawing provided by BWCC 7/9/14
WR# 37-7842

IWRB00003160

S. Keen's notes RE: Permit 37-7847
7/9/2014

(1)

Difference between 54 + 14 on the LWR could be attributable to losses during high flows. Unlikely that water came from ~~Milner~~ LWR into Milner Gooding because flows were 400+ cfs in the canal.

at Shoshone ⇒ Lynn doesn't think getting LWR water into the canal with 400 cfs in the canal is possible.

No losses from 56 to 57.

Canal is flat from 53 to 56. Can make it look like a gaining reach by setting gates.

April 1984 228' to 258' in the Dietrich Main Canal flood runoff from LWR + BWR to the floodway. Huge area

May 30 still 220 cfs ↖

SCANNED

Would normally run 100 to 150 cfs for irrigation in late May. Would have to find deeper water.

Anything over 150 cfs was probably being dumped. Lynn thinks this would be a conservative estimate. (From Dietrich canal early in the irrigation season.

Edl, Michele

From: Lynn Harmon [lynnharmon@cableone.net]
Sent: Tuesday, June 17, 2014 6:58 AM
To: Edl, Michele
Subject: RE: original readings and rating table WR# 37-7842

Michele, The water source is from Big wood river via the Richfield Main and Jim Burns Slough

---

From: Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]
Sent: Monday, June 16, 2014 6:26 PM
To: Lynn Harmon
Subject: RE: original readings and rating table

Mr. Harmon,
I have had a chance to compare the field examiner's report with the page of the measurement log that you have provided.
The field examiner's report has spreadsheet with a column labeled with the heading 'JBS'. I am assuming that that signifies the Jim Burns Slough.

My question:
What is the source of water that is traveling in the Jim Burns Slough before it crosses Hwy 93 and joins the Little Wood River?
Thank you.
Michele Edl

From: Lynn Harmon [mailto:lynnharmon@cableone.net]
Sent: Friday, June 13, 2014 11:47 AM
To: Edl, Michele
Subject: original readings and rating table

Keen, Shelley

From: Joe [joe@brownjameslaw.com]
Sent: Friday, April 04, 2014 11:43 AM
To: Keen, Shelley
Subject: Permit No. 37-7842
Attachments: History.pdf; Exhibits.pdf

Dear Mr. Keen:

I write in follow up to our recent telephone conversation regarding Permit No. 37-07842 and the Department's investigation for licensing. I have attached a history regarding the subject water right. The history raises several concerns regarding licensing on the permit.

However, we do have a couple of primary concerns. First, the Department may not be aware that it is impossible to divert water from the Little Wood River through the Gooding Milner Canal at the denoted diversion structure when the Gooding Milner Canal already contains water. For your review, I have attached a couple of exhibits which were included with the Beneficial Use Field Report submitted to the Department in November 1993. The first page of exhibit is a map which shows the measuring stations, diversion structure, and recharge site regarding both permit number 01-07054 and 37-07842. The second page of the exhibit is a Summary of Recharge Records, again, under both permits.

The Field Report appears to indicate that the waters were comingled at the point of the diversion structure where the Gooding Milner Canal crosses the Little Wood River commonly referred to as "the Bifurcation." It is possible to divert water from the Little Wood River into the Gooding Milner Canal at the Bifurcation. However, in order to do so it is necessary to back up the water in the Little Wood River to force the water to go up gradient into the Gooding Milner Canal system. This can only be done when the Gooding Milner Canal is empty. Otherwise the water from the Gooding Milner Canal would simply dump into the Little Wood River.

This fact is recognized by the managers of the Big Wood Canal Company in American Falls Reservoir District #2. This fact provides support for the comments in the Department's file indicating that no recharge took place from the Little Wood River prior to June 1, 1992.

In reviewing the Summary of Recharge Records shows several errors. Some rather obvious. As an example, the columns denoting max possible recharge from Big Wood and max possible recharge from Snake River, appear to be in error in that the numbers under the columns should be in the opposite column based on the formula provided. Also, there is simply straight forward errors such as on April 8, 1986, where it denotes 260cfs was measured at Measuring Station No. 57 resulting in 260cfs recharge possibly from the Big Wood River. When in actuality Measuring Station No. 57 is beyond the recharge site. It would appear to be prudent to review the canal company records directly to determine what recharge occurred prior to June 1, 1992.

Another issue of primary concern is whether the priority date should be advanced to November 29, 1993, the date when satisfactory proof of beneficial use was received by the Department. The record indicates that the permit lapsed and in the case when satisfactory proof was received by the Department following 60 days of a lapse of the permit, the Department may, upon a showing of reasonable cause reinstate the permit, but in reinstating the permit the Department must advance the priority date of the permit to the date the proof of beneficial use was received. In this case, November 29, 1993.

Please review the issues raised in the provided history. If you have any questions, please feel free to give me a call.

Thanks for your time and consideration.

Joe

History
Permit 37-07842

An application was filed on July 2, 1980 seeking a permit to divert 800 cfs from the Little Wood and Big Wood Rivers for purposes of ground water recharge. (Application for Permit 37-07842). The application denoted the point of diversion as the SW¼ of SE¼ of Section 24, Township 4 S, Range 19 E, located within Lincoln County. *Id.* The application proposed diverting the water through the use of the Dietrich and Richfield canal systems. *Id.* It should be noted that neither the Little Wood nor the Big Wood Rivers flow though Section 24, Township 4 S, Range 19 E. However, the Dietrich canal diverts from the Little Wood River in Section 25, Township 4 S, Range 19 E. The Department recognized these errors during an early review and made a note to the file indicating that the point of diversion on the application was in error, and that the only apparent source of water would be the Little Wood River. (Note to File 12-29-81). The applicants never sought to amend their application.

The application was incomplete as to the description of the proposed place of use, but did include a drawing indicating that the water would be diverted from the Little Wood River through the Dietrich Canal to the recharge site southeast of Richfield, Idaho. (Application for Permit 37-07842). The published notice of application for water right clarified that the possible recharge sites were located within Sections 15, 16, 21, 22 and 28, Township 5 S, Range 19 E, Lincoln County. (Affidavit of Publication). The application indicated that five years was required for completion of the works and application of the water for recharge. (Application for Permit 37-07842).

The subject application sought a permit to divert water from the Little Wood River through the Dietrich Canal for purposes of recharge southeast of Richfield. (Application for Permit 37-07842). The applicants filed another application on the same day seeking to divert

water from the Snake River through the Milner-Gooding Canal for purposes of recharge northwest of Shoshone, Idaho. (Application for Permit 37-07842). This other application was ultimately assigned Permit No. 01-07054.

The subject application was approved on June 2,1982, under Permit No. 37-07842, with a completion and submission of beneficial use deadline of June 1, 1987. (Application for Permit 37-07842). A request for extension of time was submitted on June 1, 1987. (Request for Extension 6-1-87). The request was returned by the Department to the applicant on July 16, 1987, for additional information. (IDWR./Saxton ltr 7-16-87). Ultimately, the Department approved the request for extension on October 4, 1989, extending the completion and proof of beneficial use deadline to June 1, 1992. (Request for Extension 6-1-87).

The Department sent a notice of proof of beneficial use due on March 31, 1992, providing notice that proof of beneficial use had to be submitted no later than June 1, 1992. (Proof Due Notice 3-31-92). Proof of beneficial use was not timely submitted and the Department sent a lapsed notice on June 5, 1992. (Lapse Notice 6-5-92). The Department received proof of beneficial use on or about June 15, 1992. (IDWR./Gustafson ltr 6-15-92). The Department returned the proof of beneficial use form to the applicants on June 15, 1992, stating that the proof was unacceptable. *Id.* The Department further informed the permit holder that the permit was still lapsed, and that the priority date would be penalized one day for every day that the proof was not submitted. *Id.* On July 9, 1992, the Department received a beneficial use field report regarding the permit, but did not receive the original proof of beneficial use form. (IDWR/Gustafson ltr 7-9-92). The Department informed the permit holders that they could not continue licencing until it received the original proof of beneficial use form. *Id.* On July 23,

1992, the Department again provided notice that they could not process the permit without an original proof of beneficial use form. (IDWR/Gustafson ltr 7-23-92).

On July 27, 1992, the Department received the original proof of beneficial use form. (Proof Beneficial Use 37-07842). The form listed both Permit No. 37-07842 and Permit No. 01-07054. *Id.* The proof of beneficial use indicated a total of 300 cfs of ground water had been diverted from the Snake River. *Id.* The beneficial use field report denoted the source as the Snake River, provided a point of diversion different from the application, as well as different place of use. *Id.* The beneficial use field report also denoted that the water was diverted through the Milner-Gooding Canal and not the Dietrich Canal. (Field Report 37-07842). The Department accepted the amended proof of beneficial use and beneficial use field report. The Department entered its order reinstating the permit and advancing the priority date to August 25, 1990 on the 29th day of July, 1992. (Order of Reinstatement 7-29-92).

1990 not 1990

On further review, the Department determined that the beneficial use field report was not acceptable. The applicants provided an amended beneficial use field report on October 19, 1993. (IDWR/Saxton ltr 10-21-93). The Department determined that the amended beneficial use field report was still not acceptable and returned it to the applicants on October 21, 1993. *Id.* On November 29, 1993, the Department received another amended beneficial field report denoting both Permit No. 01-07054 and Permit No. 37-07842 with a total diversion of 300 cfs. (Amended Field Report 37-07847). This time the beneficial use field report indicated the source as the Snake River/Big Wood River but did not include the Little Wood River. *Id.* Also, the field report indicated a diversion point distinct from application for permit. *Id.* Again, the total diversion rate was stated at 300 cfs. *Id.* The Department entered a reinstatement order regarding

both permits on December 1, 1993. (Reinstatement Order). The Department failed to advance the priority date in recognition of the continuing lapse. *Id.*

There appears to be little activity in the file until 1999 when the permit holders were anticipating transferring legal ownership to the Idaho Water Resources Board. On March 19, 1999, the Idaho Water Resources Board agreed to accept assignment of the permits. (IDWR/Hass ltr 3-22-99). In its review leading up to the acceptance of the assignment, the Department indicated that both Permit No. 01-07054 and Permit No. 37-07842 had filed proof of beneficial use for diversion rate of 300 cfs each. (Memo to File 1-14-99). This is incorrect. As noted above, the Proof of Beneficial Use form, as well as the Beneficial Use Field Report indicated a combined total of 300 cfs, with the water coming from the Snake River via the Milner-Gooding Canal.

The conclusion that a total of 300 cfs from the Snake River had been put to beneficial use is supported by the Department's own internal review of the permits. A Memo to the file in October 1999 indicated that recharge under Permit No. 01-07054 from the Snake River through the Milner-Gooding Canal could be confirmed and the license for that has been prepared for signature. (Memo to File 10-7-95). However, regarding Permit No. 37-07842 there did not appear to be any application toward beneficial use. Based on the Department's conversation with Dan McFadden of the Lower Snake River Aquifer Recharge District, no ground water recharge had ever taken place from the Little Wood River via the Dietrich Canal. *Id.* Also, based on the Department's conversation with Paul Castelin of the Technical Services Bureau, no recharge from the Little Wood or Big Wood River had taken place. *Id.* The Department concluded that there has been no beneficial use to date and that the permit should be routed for extension or reinstatement processing. *Id.* This conclusion was further supported by the

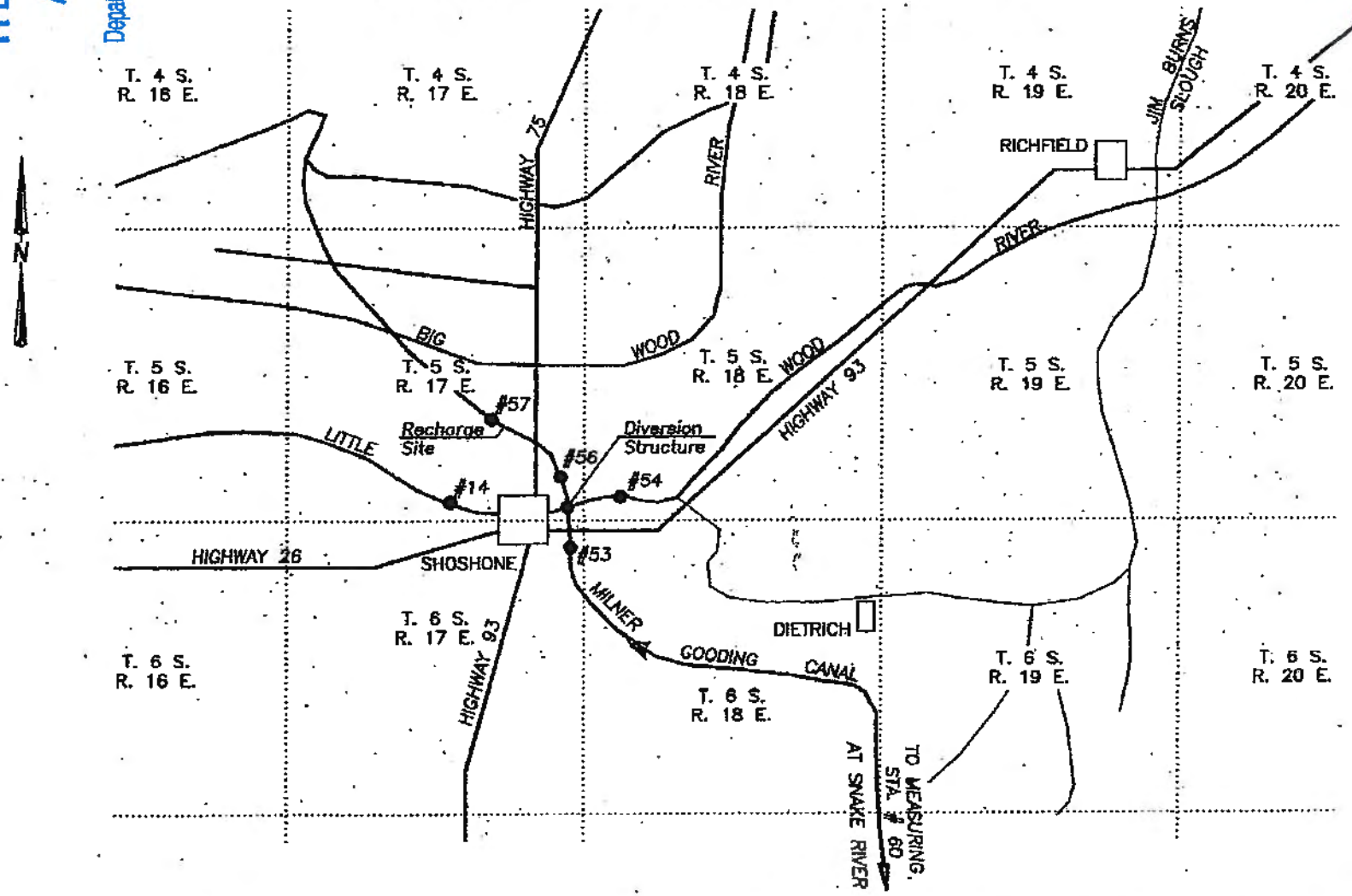
correspondence from the Big Wood Canal Company and American Falls Reservoir District #2 of November 1999, which clarified that all recharge water from 1986 through 1995 was Snake River water delivered via the Milner-Gooding Canal. (Oneida ltr 11-99).

Though the Department's file contains a proof of beneficial use form and beneficial use field report, which has not been withdrawn, the Idaho Water Resources Board adopted a resolution asking the Director to extend the proof date regarding the "undeveloped" portion of the permit. (WRB Resolution 3-21-00). An order was entered on April 3, 2000 extending the proof date for the permit until June 1, 2004. (IDWR 4-3-00). On August 25, 2004, the Idaho Water Resources Board again requested for an extension of time to submit proof of beneficial use resulting in another extension to June 1, 2009. (Request for Extension 8-25-04). On June 1, 2009, the Department received another request for extension of time to submit proof of beneficial use. (Request for Extension 6-1-09). On March 19, 2010, while the request for extension of time was pending, the Director indicated "[It] does not appear the beneficial use of water for recharge purposes has occurred under this permit to date, despite the confusion in the record on this issue." (IDWR./Spackman ltr 3-19-10). The request for extension was granted on the 2nd day of September 2010 and the time within which to submit proof of beneficial use was extended to June 1, 2014. (Request for Extension 6-1-09).

My clients filed a Petition for Hearing, and Petition for Declaratory Ruling on September 22, 2011. In November of 2011, the Hearing Officer issued a Recommended Order wherein he found the Department's actions in granting a series of extensions void and rescinded the Department's order of September 2nd 2010 granting an extension of time within which to submit proof of beneficial use. The hearing officer noted that "The Department will investigate the extent of beneficial use occurring prior to June 1, 1992 as part of the licensing process." (Rec.

Order 11-30-11). If IWRB or the Petitioners disagree with the Department's determination of beneficial use occurring within the authorized development period, the proper venue to raise arguments regarding the true extent of beneficial use would be the licensing process." *Id.* Accordingly, the Hearing Officer ordered: "The Department shall conduct an investigation of Permit 37-7842 for licensing purposes and issue a license consistent with its findings." *Id.* The Director adopted the Recommended Order as his Final Order on February 28, 2014. (Final Order 2-28-12)

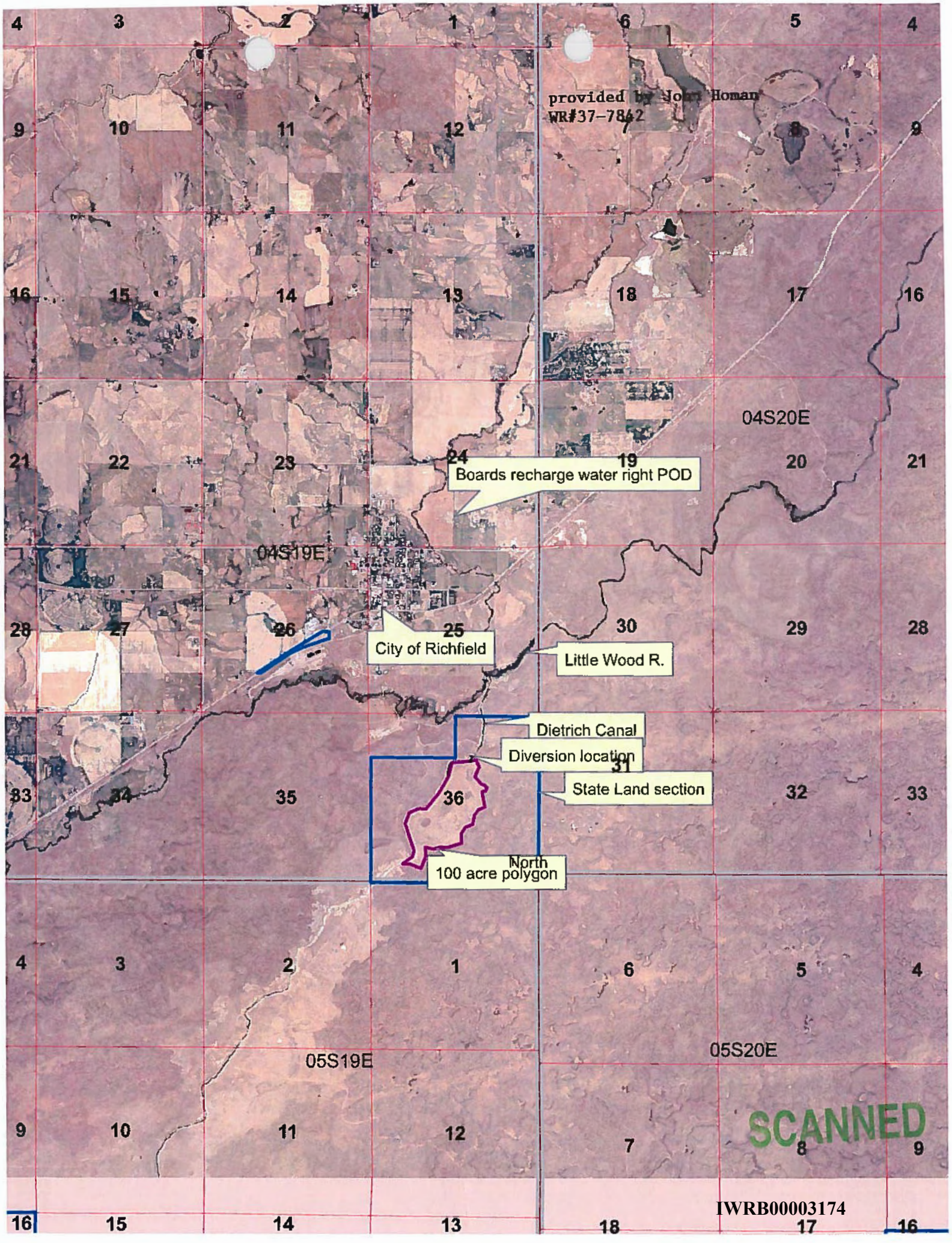
Exhibit For
Lower Snake River Aquifer Recharge
Permit No's. 01-07054 & 37-07842



Summary of Recharge Records for Lower Snake River Recharge Permit No. 01-07054 & 37-07842

DATE	MEASURING STAT ON						RECHARGE	MAX POSSIBLE RECHARGE FROM BIG WOOD	MAX POSSIBLE RECHARGE FROM SNAKE RIVE
	JBS	14	53	54	56	57			
04-07-86			220		252	252	0		
04-08-86						260	260	260	
04-09-86		646	425		432	260	172	172	
04-10-86			401		448	265	183	183	
04-11-86	97	692	472		460	265	195	195	97
04-12-86	57		472			261	261	261	57
04-13-86	62					270	270	270	62
04-14-86	66	717	486	787	486	275	211	211	66
04-15-86	52	681	485	721	482	252	230	230	52
04-16-86	57	659	479	689	470	239	231	231	57
04-17-86	43	636	405	674	496	223	273	273	43
04-18-86	40	604	614	628	632	310	322	322	40
04-19-86	73	556	596	564	618	342	276	276	73
04-20-86	142		596	563			---	---	142
04-21-86	141	615	596	651	618	342	276	276	141
04-22-86	50	526	585	544	604	350	254	254	50
04-23-86	221	454	566	544	580	360	220	220	220
04-24-86	213	596	572	636	586	396	190	190	190
04-25-86	168	560	563	585	580	394	186	186	168
04-26-86	181	500	644	524	654	340	314	314	181
04-27-86	172		644	530				---	172
04-28-86	165	615	696	537	648	466	182	182	165
04-29-86	158	580	670	503	626	465	161	161	158
04-30-86	142	506	661	420	616	459	157	157	142

JBS - Jimmy Byrnes Slough
All flows in CFS as recorded by Bigwood Canal Co.
Recharge = 56-57
Max Recharge (from Snake River): Total discharge but not to exceed flow at M.S. 53. M.S.
Max Recharge (from Big Wood River): Total discharge from JBS but not to exceed total dishcarge.
Measuring stations 14+56 should approximately total measuring stations 53+54


provided by John Homan
WR#37-7862
Boards recharge water right POD
City of Richfield
Little Wood R.
Dietrich Canal
Diversion location
State Land section
North
100 acre polygon
04S19E
04S20E
05S19E
05S20E
SCANNED
IWRB00003174

MEMORANDUM

DATE: February 27, 2014

TO: Water Right File 37-7842

FROM: Shelley W. Keen SWK

RE: Conversation with Attorney Joe James

This morning I spoke with attorney Joe James (208-934-8185) about the licensing review effort for Permit 37-7842. Mr. James said he represents a group of hydropower producers who do not believe there was any beneficial use of water established in connection with the permit. Mr. James's allegation is that water cannot be diverted from the Wood River into the Milner-Gooding Canal when there is Snake River water in it because of the head differential. Therefore, any water conveyed to recharge would have been from the Snake River.

I invited Mr. James to email me his concerns in detail. I indicated that if he did so, IDWR would evaluate and account for them in its license review.

MEMORANDUM

Date: November 06, 2013

To: Water Right File 37-7842/1-7054

From: Michele Edl

Re: recharge capacity

Initial review

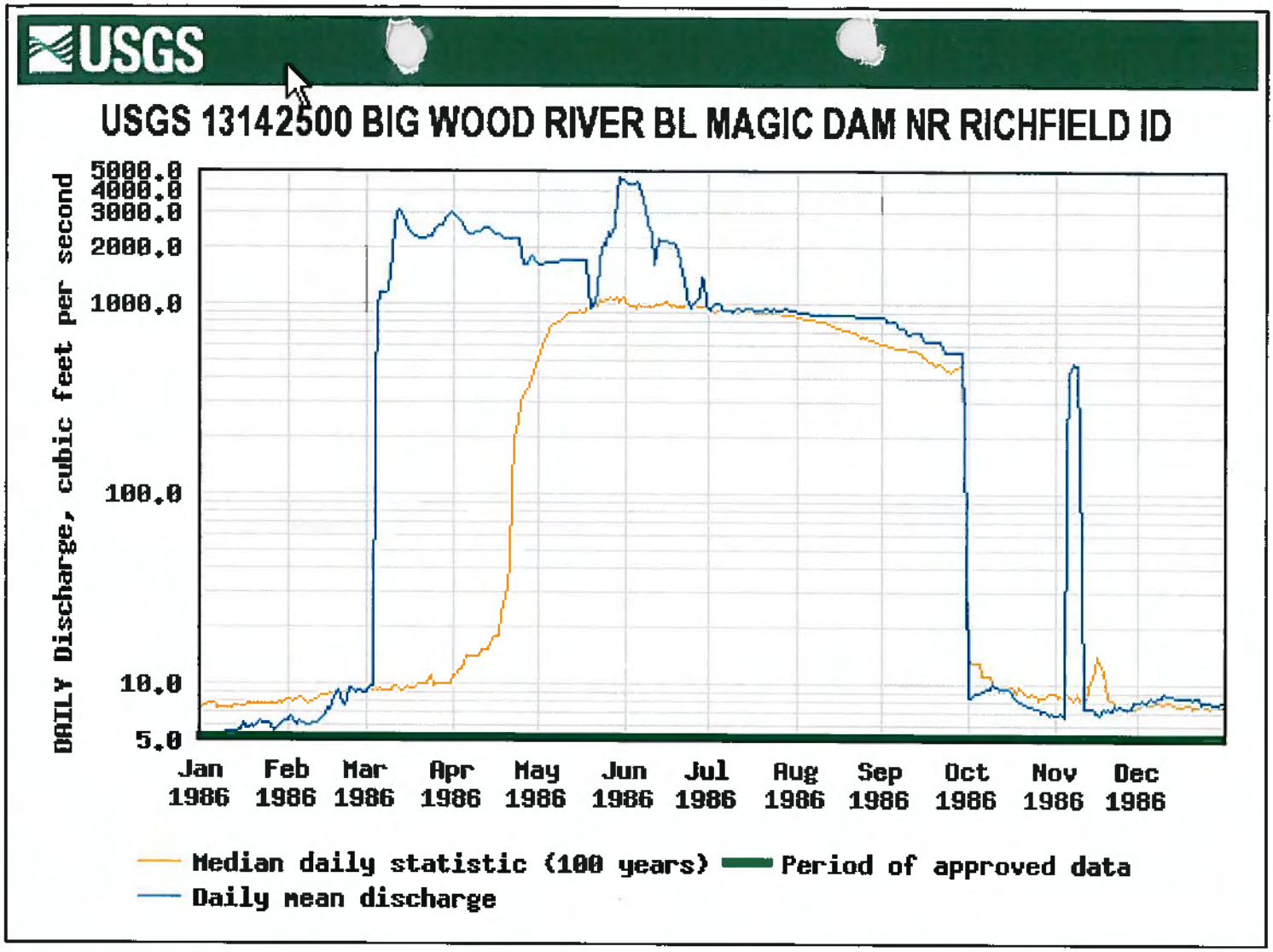
This permit authorizes 800 cfs comingled from both the Big - Little Wood Rivers and the Snake River to be put to beneficial use for groundwater recharge. In spite of a series of processing actions after the amended Beneficial Use Field Report was accepted in 1993, the right is limited by the Proof of Beneficial Use statement to 300 cfs.

The recharge event confirmed by the examiner occurred in April 1986. Discharge data from USGS station #13142500, Big Wood River below Magic Dam near Richfield ID, confirms that Magic reservoir filled early that year and a significant quantity of water was released from the impoundment before the irrigation season began. See the attached graph.

ESPA Modeling

On October 22, 2013, I attended a seminar presentation by Mike McVay (Technical Hydrogeologist, State Office, IDWR). A copy of the seminar announcement is attached. As a result, I recognized similarities between the place of use authorized by this permit and the Shoshone site described in Mr. McVay s presentation. And I anticipated that elements of this water right had been analyzed by Mr. McVay as part of his recharge investigation.

I emailed Mr. McVay a request to confirm if 300 cfs could be beneficially used for recharge at the POU location of this permit. In short, his answer was yes. However, he also stated that the site does have limits on its ability to accept recharge. This site cannot utilize the 800 cfs originally authorized by the permit. It is limited by the infiltration rate to 695 AF or ~ 350 cfs at most.


USGS
USGS 13142500 BIG WOOD RIVER BL MAGIC DAM NR RICHFIELD ID
DAILY Discharge, cubic feet per second
5000.0
4000.0
3000.0
2000.0
1000.0
100.0
10.0
5.0
Jan 1986
Feb 1986
Mar 1986
Apr 1986
May 1986
Jun 1986
Jul 1986
Aug 1986
Sep 1986
Oct 1986
Nov 1986
Dec 1986
Median daily statistic (100 years)
Period of approved data
Daily mean discharge

Idaho Water Resources Research Institute
Water Resources and Hydrology Seminar

IDAHO WATER RESOURCES RESEARCH INSTITUTE

Title: "Using the ESPAM2,1 Aquifer Model to Evaluating Recharge on the Eastern Snake Plain"

Presenter: Mike McVay, IDWR

Date: Tuesday, Oct 22, 2013, 11:30-12:20 Mountain Time
10:30-11:20 Pacific Time

Locations: UI-Boise @ Idaho Water Center – Classroom 162
Idaho Falls @ University Place, Tingy Admin Bldg., 350A
UI-Moscow @ Education Bldg Room 103
Pocatello @ ISU Oboler Library Room B06

Abstract:
Water levels in the Eastern Snake Plain aquifer have been in decline since the 1950's. One mechanism for stabilizing water levels is managed aquifer recharge. However, limited resources require that managed recharge be done efficiently and effectively. Groundwater modeling provides a powerful tool for evaluating recharge activities, but it must be used responsively.

Biographical Info:

Mike McVay is a Technical Hydrogeologist at the Idaho Department of Water Resources. He earned a Bachelor's of Science in Geologic Engineering and a Master's of Science in Hydrology from the University of Idaho. Mike is currently employed at the Idaho Department of Water resources and specializes in aquifer characterization and groundwater modeling. Mike is also registered as both a professional geologist and a professional engineer in the State of Idaho.

The IWRRI Hydrology Seminar Series is open to all interested professionals, legislators, water supply managers, local government representatives, attorneys, students and interested public. Please pass this announcement on to anyone you think may be interested. If you would like to be removed from this list or know someone who should to be added please contact: Deborah Wold (208) 332-4430 or dwold@uidaho.edu.

Edl, Michele

From: McVay, Michael
Sent: Tuesday, November 05, 2013 9:54 AM
To: Edl, Michele
Subject: RE: recharge water right 37-7842

Hi Michelle,

Fortunately for us, we have already modeled recharge at the Shoshone site in an effort to prioritize recharge locations. Part of the analysis entailed investigating the capacity to deliver water to the site and how much the site can infiltrate. I've listed the recharge capacities and how we obtained the information below:

- Diversion Capacity: This is the ability to get water to the site. This number was derived by looking at past recharge effort at the site. The maximum amount of water successfully delivered to the Shoshone recharge site was 19,900 AF/month (19,900/30.5 = **652 Af/day**).
- Infiltration Capacity: This is the ability of the site to infiltrate water. Based on conversations with the canal manager, the maximum infiltration rate is 21,200 AF/month (**695 AF/day**).
- Groundwater Capacity: This is the assessment of "enough room" for recharge. This is based on depth to groundwater and considers if the recharge will immediately return to the surface-water system, or threaten infrastructure. Due to relatively deep groundwater, the site can take **656 AF/day**.
- Recharge you are assessing: In your email you asked if 300 cfs for 21 days is reasonable for recharge. Converting 300 cfs into AF/day is **595 AF/day**.

Therefore, it appears that the 300 cfs applied over 21 days is reasonable. Please feel free to contact me for more information, or if you have any questions about the data.

Best regards,

Mike

From: Edl, Michele
Sent: Sunday, October 27, 2013 7:08 PM
To: McVay, Michael
Subject: recharge water right 37-7842

Mike,
Of my many assignments is one to issue a license for water right 37-7842 which is currently held by the IWRB. It has a colorful past but proof was submitted in the 1990s for 300 cfs put to use as recharge.
I was paying attention during your talk last Tuesday, but I am gonna need your help with confiming the quantity of beneficial use.

The place of use is Tsp 5S 17E sec 22 or ESPAM grid cells **R 42 C 39** and **R 42 C 38**. The site would probably be in your Lower Snake River recharge unit.
Water from the Big Wood and Little Wood were being comingled with a little water from the Snake but it was all conveyed to this location through the Milner-Gooding canal.
The event occurred from April 7 – 30, 1986.

My question: Is 21 days of 300 cfs dumped at this location recharge?

Thanks
Michele

Appendix F
Completed Beneficial use Field Exam Report

Form 219 07/11

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

BENEFICIAL USE FIELD REPORT

A Beneficial Use Field Report is prepared by a water right examiner as the result of an examination to clearly confirm and establish the extent of the beneficial use of water established in connection with a permit during the development period authorized by the permit and any extensions of time previously approved.

A. GENERAL INFORMATION

Permit No. 37-7842

1. Owner Idaho Water Resource Board Phone No. 208-287-4800
   Current address 322 East Front Street, P.O. Box 83720, Boise, ID 83720
2. Examiner's name G. Erick Powell EXAM DATE July 20, 2018
3. Accompanied by Ann Vonde (project scope and data) Email Ann.vonde@ag.idaho.gov
   Address 322 East Front Street, P.O. Box 83720, Boise, ID 83720
   Relationship to permit holder Representative Phone No. 208-334-4141
4. Source Big Wood River and/or Little Wood River tributary to Malad River

B. OVERLAP REVIEW

1. Other water rights with the same place of use See Narrative: Water Right Permit No. 1-7054
2. Other water rights with the same source and point of diversion See Narrative

C. DIVERSION AND DELIVERY SYSTEM

1. **Point(s) of Diversion:**

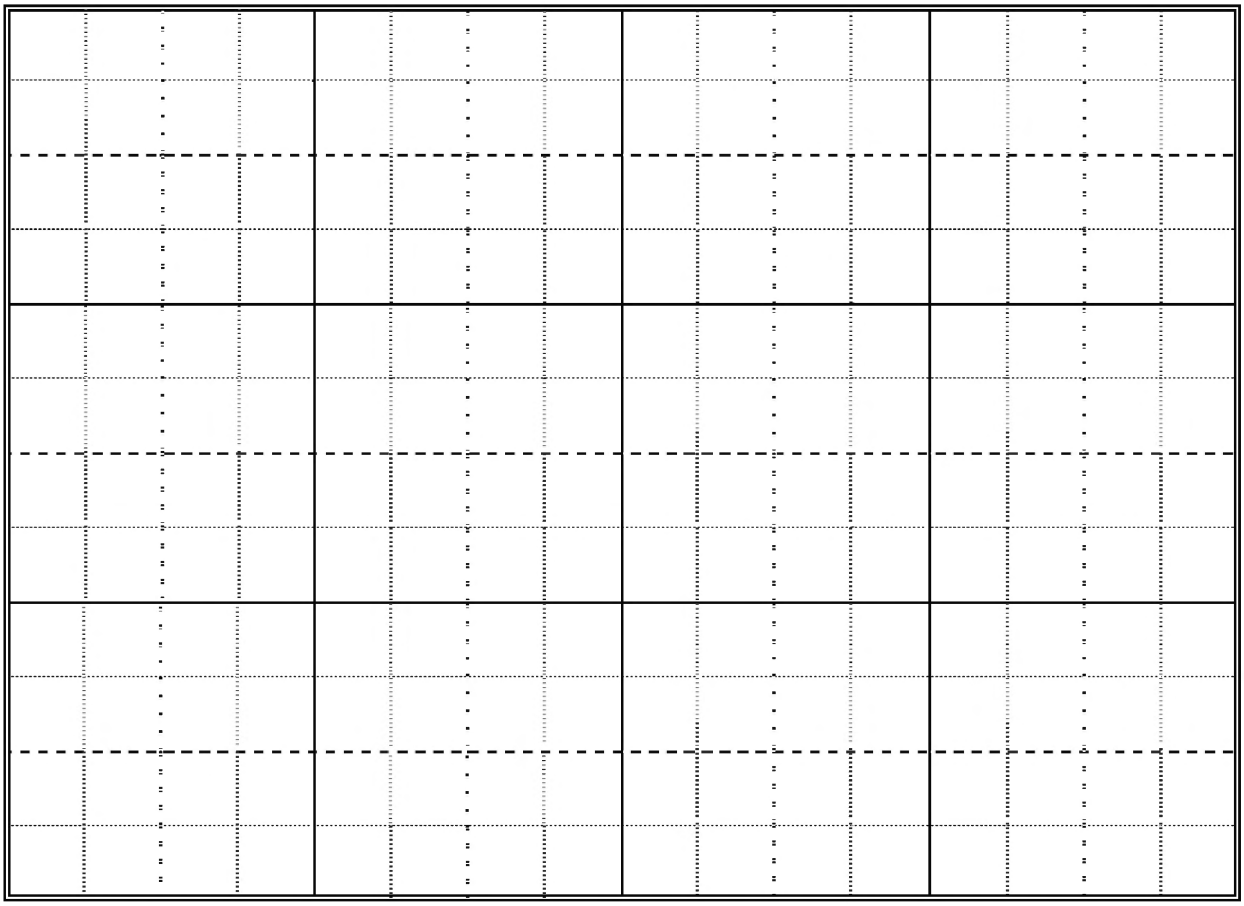
Ident. No.	Gov't Lot	¼	¼	¼	Sec	Twp	Rge	County	Method of Determination/Remarks
BWR 1			SE	NE	30	2S	18E	Blaine County	BWR - Point of Diversion
LWR 1			SW	SE	25	4S	19E	Lincoln County	BWR - POI, POR; LWR - POD
LWR 2			SW	NE	36	5S	17E	Lincoln County	BWR - POR, LWR - POD

2. **Place(s) of Use:** Method of determination Aerial Photograph, GIS, GPS

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	

See Narrative for POU description

3. **Delivery System Diagram**: Indicate all major components and distances between components. Indicate weir size/ditch size/pipe diameter (inside), as applicable. Use the space provided or ☐ see attached.



Scale: 1" = See Map

☐ Copy of USGS Quadrangle attached showing location(s) of point(s) of diversion and place(s) of use (**required**)
☐ Aerial photo attached (required for irrigation of 10+ acres)
☐ Photo of diversion and system attached

4.

Well or Diversion Identification No.*	**Motor Make**	**Hp**	**Motor Serial No.**	**Pump Make**	**Pump Serial No. or Discharge Size**
NA					

Code to correspond with no. on map and aerial photo

D. FLOW MEASUREMENTS

1.

Measurement Equipment	**Type**	**Make**	**Model No.**	**Serial No.**	**Size**	**Calib. Date**
See Report						

2. **Measurements:** See Report

E. NARRATIVE/REMARKS/COMMENTS

See Report

Has the permit holder met all conditions of permit approval, including any mitigation requirements and/or measuring device installation requirements? ☐ Yes ☐ No If no, what must be done to meet the permit requirements?

See Report

F. FLOW CALCULATIONS

☐ Additional computation sheets attached

Measured Method:
See Report

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$V_{I.R}$ = (Acres Irrigated) x (Irrigation Requirement) = NA

$V_{D.R}$ = [Diversion Rate (cfs)] x (Days in Irrigation Season) x 1.9835 = _____

V = Smaller of $V_{I.R.}$ and $V_{D.R.}$ = _____

2. Volume Calculations for Other Uses:
See Report

H. RECOMMENDATIONS

1. Recommended Amounts

Beneficial Use	Period of Use From	Period of Use To	Rate of Diversion Q (cfs)	Annual Volume V (afa)
Groundwater Recharge	1/1	12/31	634 cfs	---
		Totals:	634 cfs	---

2. Recommended Amendments

☒ Change P.D. as reflected on page 1 ☐ Add P.D. as reflected on page 1 ☐ None
☒ Change P.U. as reflected on page 1 ☐ Add P.U. as reflected on page 1 ☐ Other

I. AUTHENTICATION

Field Examiner's Signature _____ Date 8/10/18

Reviewer _____ Date _____

PROFESSIONAL ENGINEER LICENSED SEAL 13592 8/10/18 STATE OF IDAHO G. ERICK POWELL

Appendix G
Assignment of Permit from LSARD to IWRB

7/94

For Office Use Only
$25 Filing Fee
Receipt
Date 4/28/99

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
ASSIGNMENT OF PERMIT

I, Dan McFadden, hereby assign to Idaho Water Resource Board
of, P.O. Box 83720 Boise Idaho (208) 327-7900
(Full Address) 83720-0098 (Phone)

All my right, title, and interest in and to Permit No. 37-07842 ~~BB~~ to appropriate the public waters of the State of Idaho.

OR (for partial assignments)

The following described portion of my right, title, and interest in and to Permit No. 37-07842 to appropriate the public waters of the State of Idaho. (Describe portion of the permit assigned listing the number of acres in each 40 acre subdivision, point of diversion location, and the amount of water in cubic feet per second.)

Made this 28th day of April, 1999.

Dan McFadden Chairman
Permit Holder
Lower Snake River Aquifer
Recharge District

State of Idaho)
) ss
County of GOODING)

On this 28th day of APRIL, 1999, personally appeared before me the signer(s) of the above instrument, who duly acknowledged to me that he (she) (they) executed the same.

SUZANNE K. JENSEN NOTARY PUBLIC STATE OF IDAHO seal

Suzanne K. Jensen
Notary Public residing at
Hagerman, Idaho

My commission expires: 08/04/2004

IWRB00003187

RECEIVED

JUN - 3 1999

Department of Water Resources

AGREEMENT CONVEYING LEGAL TITLE TO WATER RIGHTS FROM THE LOWER SNAKE RIVER AQUIFER RECHARGE DISTRICT TO THE IDAHO WATER RESOURCE BOARD

THIS AGREEMENT is made and entered into this 13th day of May, 1999, by and between the IDAHO WATER RESOURCE BOARD ("BOARD") and the LOWER SNAKE RIVER AQUIFER RECHARGE DISTRICT ("LSRARD").

WITNESSETH:

WHEREAS, the BOARD, pursuant to Section 42-1734, Idaho Code, has authority to acquire, purchase lease, or exchange land, rights, water rights, easements, franchises, and other property deemed necessary or proper for the construction, operation and maintenance of water projects; and

WHEREAS, the LSRARD is the holder of Water Right Permit No. 01-07054 from the Snake River upstream from Milner Dam and Water Right Permit No. 37-07842 from the Little and Big Wood Rivers for aquifer recharge purposes on the Lower Snake River Plain, both permits having a priority date of August 25, 1980; and

WHEREAS, the LSRARD desires to convey and assign all its legal interests in Water Right Permit Nos. 01-07054 and 37-07842 to the BOARD, at no cost, so that the rights may be developed and utilized to the full extent feasible under the law for managed recharge purposes consistent with the State Water Plan; and

WHEREAS, the LSRARD by a majority vote of its Board of Directors taken at a special meeting convened in accordance with the provisions of Section 42-4211, Idaho Code, on the 5th day of April, 1999, has authorized its Chairman to execute the present Agreement Conveying Legal Title to Water Rights on its behalf; and

WHEREAS, the Board by resolution passed and approved on the 19th day of March, 1999, agreed to accept the assignment of Water Right Permit Nos. 01-07054 and 37-07842 as conveyed under this Agreement.

NOW, THEREFORE, in consideration of the mutual covenants and agreements herein contained, and other good and valuable consideration, the receipt of which is hereby acknowledged, the parties hereto agree as follows:

1. The LSRARD shall convey legal title and all ownership rights and interests in Water Right Permit Nos. 01-07054 and 37-07842 to the BOARD. Simultaneously with the execution of this Agreement, the LSRARD shall execute an Assignment of Permit form to be filed with the Idaho Department of Water Resources.

State of Idaho RECORDED-REQUEST OF

ADA COUNTY RECORDER
J. DAVID NAVARRO
BOISE, IDAHO

FEE 9a DEPUTY

1999 MY 28 AM 10:00

2. The BOARD shall accept the assignment of Water Right Permit Nos. 01-07054 and 37-07842 from the LSRARD and shall hold legal title to the water rights. The Board shall not assign or convey the water rights represented by Water Right Permit Nos. 01-07054 and 37-07842, or any portion thereof, to any third party or entity without first providing to the LSRARD written notice and opportunity to reacquire title to the water rights, or any portion thereof, from the Board within six (6) months from the date of the written notice.

3. The LSRARD shall exercise full operational and fiscal responsibility for existing recharge projects utilizing Water Right Permit Nos. 01-07054 and 37-07842 and is hereby authorized by the Board to continue the existing use of water under these two rights for recharge purposes.

4. LSRARD shall indemnify and hold harmless the BOARD from all liability and expense on account of claims, suits and costs growing out of or connected with willful or negligent acts, errors, or omissions by its employees or agents with respect to existing or future recharge projects owned or operated by LSRARD that utilize Water Right Permit 01-07054 or 37-07842, provided, however, that the BOARD shall not be relieved hereby from liability for its own willful or negligent acts, errors, or omissions, and those of its employees or agents. This indemnification and hold harmless provision shall not apply to projects utilizing Water Right Permit 01-07054 or 37-07842 that are not owned or operated by LSRARD.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the day and year first above written.

IDAHO WATER RESOURCE BOARD

Clarence Parr, Chairman

LOWER SNAKE RIVER AQUIFER RECHARGE DISTRICT

Chairman

ATTEST:

J. David Erickson, Secretary

ATTEST:

Secretary

Approved as to Legal Form and Sufficiency:

Deputy Attorney General

ACKNOWLEDGEMENT

STATE OF IDAHO)
) SS.
County of Gooding)

On this 28TH day of April, 1999, before me, a Notary Public in and for said County and State, personally appeared DAN MCFADDAN, known or identified to me to be the duly elected Chairman of the LOWER SNAKE RIVER AQUIFER RECHARGE DISTRICT, the quasi-municipal district that executed the foregoing instrument, and acknowledged to me that said district executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

SUZANNE K. JENSEN NOTARY PUBLIC STATE OF IDAHO

Suzanne K. Jensen
NOTARY PUBLIC FOR IDAHO
Residing at: Hagerman, Id. 83332
My Commission expires: 08/04/2004

180642

STATE OF IDAHO COUNTY OF GOODING
Filed for record at the request of Dept of Water
51 min. past 10 o'clock A m. this 21st
of May, 1999 900
By Penny Archibald Deputy

BEFORE THE WATER RESOURCE BOARD
OF THE STATE OF IDAHO

IN THE MATTER OF BOARD ACCEPTANCE)
OF WATER RIGHT PERMIT NOS. 01-07054)
AND 37-07842 FROM THE LOWER SNAKE) RESOLUTION
RIVER AQUIFER RECHARGE DISTRICT.)
)

WHEREAS, Policy 1J of the Idaho State Water Plan adopted by the Board provides that it is the policy of Idaho that managed recharge be encouraged, pursuant to state law; and

WHEREAS, the Idaho Water Resource Board ("Board") pursuant to Section 42-1734, Idaho Code, has authority to acquire, purchase, lease, or exchange land, rights, water rights, easements, franchises and other property deemed necessary or proper for the construction, operation and maintenance of water projects; and

WHEREAS, the Lower Snake River Aquifer Recharge District ("Recharge District") is the holder of Water Right Permit No. 01-07054 from the Snake River upstream from Milner Dam and Water Right Permit No. 37-07842 from the Little and Big Wood Rivers for aquifer recharge purposes on the Lower Snake River Plain, both permits having a priority date of August 25, 1980; and

WHEREAS, the Recharge District desires to assign all its legal interests in Water Right Permit Nos. 01-07054 and 37-07842 to the Board, at no cost, so that the rights may be developed and utilized to the full extent feasible under the law for managed recharge purposes consistent with the State Water Plan; and

WHEREAS, it is the desire and intention of the Board and the Recharge District that the Recharge District shall have and exercise full operational and fiscal responsibility for existing recharge projects utilizing the assigned water rights pursuant to agreement with the Board; and

WHEREAS, it is the desire and intention of the Board and the Recharge District that the Recharge District shall hold the Board harmless from any and all liability associated with the operation of any recharge project utilizing the assigned water rights.

NOW THEREFORE, BE IT RESOLVED that the Idaho Water Resource Board hereby agrees to accept, without cost, the assignment of all interests held by the Lower Snake River Aquifer Recharge District in Water Right Permit Nos. 01-07054 and 37-07842 contingent upon the Board and the Recharge District executing a written agreement governing the rights and responsibilities of the parties resulting from the assignment of the water rights.

BE IT FURTHER RESOLVED that the Board Chairman is hereby authorized to file with the Idaho Department of Water Resources an Assignment of Permit form for Water Right Permit Nos. 01-07054 and 37-07842, and to file such other pleadings or documents and to take such other actions before the Department as are appropriate and necessary to perfect all vested or inchoate interests acquired under the two water right permits.

PASSED AND APPROVED this 19th day of March, 1999.

Clarence Parr
CLARENCE PARR, Chairman

ATTEST:

J. David Erickson
J. DAVID ERICKSON, Secretary

Appendix H
Notes in Water Right Backfile of Incorrect POD

Note to File:

- P.d. as described on app. appears to be in error.

- P.d. appears to be in SWSE - Sec 25, T45, R19E rather than in Sec 24.

- also ? on source. - appears to be only Little Wood

12-29-81

To

Date Time

WHILE YOU WERE OUT

of

Phone

Telephoned		Please call	
Called to see you		Will call again	
Wants to see you		Returned your	[redacted]

Message

for

Glen's notes are
Correct

Appendix A
Personal Credentials of G. Erick Powell, Ph.D., P.E.

G. Erick Powell, Ph.D., P.E.

2016 Washington Street N., Suite 4
Twin Falls, Idaho 83301
Office: (208) 736-8543
Fax: (208) 736-8506

426 Kay Drive
Twin Falls, Idaho 83301
Residence: (208) 734-9808
erick@epowell.org

http://www.epowell.org

Education

Degree	University	Field	Year
Ph.D.	The Ohio State University	Agricultural Engineering	2006
	Advisor: Dr. Andrew D. Ward		
	Title: *Evaluating geomorphology and water quality of channel-forming discharges in Ohio headwater streams*		
MS	Brigham Young University	Civil and Environmental Engineering	2002
	Advisor: Dr. E. James Nelson		
	Title: *Bathymetry delineation and data collection preparing a CE-QUAL-W2 model on Scofield Reservoir, Utah*		
BS	Brigham Young University	Major: Civil and Environmental Engineering	2001
		Minor: Agronomy	

Professional Experience

Project Engineer — 2006 – Present
Brockway Engineering, PLLC
Twin Falls, Idaho

Project Engineering on hydrologic and hydraulic engineering design tasks, including: hydrological runoff prediction and evaluation, groundwater model development and technical consultant, well design, well construction, well testing, water rights, water right transfers, pipeline design, water distribution systems, stream channel evaluation, floodplain assessment, irrigation water demand, and potable water demand.

Graduate Research Assistant — 2002 – 2006
Department of Food, Agricultural, and Biological Engineering
The Ohio State University, Columbus, Ohio

Research consisting of: 1) evaluation of channel forming discharges, 2) two-stage channel design procedures, 3) nutrient performance within two-stage agricultural channels, and 4) theoretical nutrient spiraling under restored riparian projects.

Civilian Contractor — Summer 2001
Coastal and Hydraulics Laboratory
Waterways Experiment Station
United States Army Corps of Engineers, Vicksburg, Mississippi

Developed numerical groundwater flow simulations using FEMWATER and Groundwater Modeling System (GMS).

Surveyor and Draftsman 1998 – 1999
Western Land Surveying, Provo, UT
Chief draftsman and assistant surveyor for Western Land Surveying.

Laboratory Research Assistant 1993 – 1995
KSU Soil Testing Laboratory
Kansas State University, Manhattan, KS
Soil laboratory and research assistant.

Teaching Experience

Adjunct Professor 2008 – Present
Department of Physical Science
College of Southern Idaho

Course	Title
GEOG 100	Physical Geography

Adjunct professor for the College of Southern Idaho for physical geography, general education science course focusing on atmosphere, lithosphere, hydrosphere, and biosphere and the human interaction with these environmental spheres.

Online Adjunct Professor 2009 – 2016
Online Learning
Brigham Young University – Idaho

Course	Title
FDSCI 203	Environmental Stewardship
ME 201	Engineering Mechanics: Statics

Adjunct online professor for Brigham Young University. Piloted two different courses, including Engineering Mechanics: Statics. Oversaw other online science instructors as a Teaching Group Leader. Online Course Representative for ME 201 course development team.

Graduate Teaching Associate 2002 – 2006
Department of Food, Agricultural, and Biological Engineering
The Ohio State University, Columbus, Ohio

Course	Title
ACSM 370	Principles of Hydrology
FABE 373	Principles of Soil and Water Engineering
FABE 673	Design of Agricultural Water Management Systems
FABE 773	Engineering Soil-Water Management
FABE 850	Departmental/Graduate Seminar

Departmental teaching appointment. Recipient of the Stanely W. Joehlin graduate teaching award 2002-2005. Provided instruction for multiple University sponsored workshops.

Instructor 1999 – 2002
Civil and Environmental Engineering Department
Brigham Young University, Provo, Utah

Course	Title
CE En 113	Engineering Measurements

Responsible for course instruction, material evaluations, laboratory curriculum development and laboratory instruction.

Professional Licenses

State of Idaho, Professional Engineer No. P-13592
State of Utah, Professional Engineer No. 4859937-2202
State of Oregon, Professional Engineer No. 91026PE
Idaho Certified Water Rights Examiner

Professional Associations

American Society of Civil Engineers (ASCE)
American Ecological Engineering Society (AEES)
American Society of Agricultural and Biological Engineers (ASABE)
American Society for Engineering Education (ASEE)
Alpha Epsilon (ASABE Honor Society)

Professional Service

ASABE reviewer for soil and water publications
NRI grant reviewer
Assisted associate ASABE editor on peer-reviewed publications
ASABE Soil and Water Committee member
Ohio Agricultural Research Development Center (OARDC) grant reviewer
Reviewed Environmental Hydrology Textbook

Relevant Leadership Experience

The Ohio State University's College of Engineering Academic Affairs Committee member representing graduate students
Department of Food, Agricultural, and Biological Engineering Graduate Student President.
Department of Food, Agricultural, and Biological Engineering Graduate Student Treasurer.

Expert Witness

Expert Witness in Support of Water Right Permit no. 45-14456, May 2015
Expert Witness in Protest of Applications for Permit Nos. 37-22682 and 37-22852, June 2015
Expert Witness in Support of Transfer No. 79943 to Move POD for WR No. 45-14284, December 2016
Expert Witness in Civil Suit Sircuek v. Sircuek. June 2018.

Peer-Reviewed Publications

Powell, G.E., A.D. Ward, D.E. Mecklenburg, and A.D. Jayakaran. 2007. Two-stage channel systems: Part 1, a practical approach for sizing agricultural ditches. J. of Soil and Water Conservation. 62(4):pp.

Powell, G.E., A.D. Ward, D.E. Micklengburg, J. Draper, and W. Word. 2007. Two-stage channel systems: Part 2, case studies. J. of Soil and Water Conservation. 62(4):pp.

Powell, G.E. 2006. Examination, application, and evaluation of geomorphic principles and resulting water quality in Midwest agricultural streams and rivers. The Ohio State University. Doctoral dissertation.

Powell, G.E., D. Mecklenburg, and A.D. Ward. 2006. Evaluation of Channel-Forming Discharges: A Study of Large Rivers in Ohio. Trans. of ASABE. 49(1):35-46.

Martin, J.F., S.A. Diemont, G.E. Powell, M. Stanton, and S. Levy-Tacher. 2006. Emergy evaluation of the performance and sustainability of three agricultural systems with different scales and management. Agriculture, Ecosystems, and Environment. 115(2006):128-140.

Peer-Reviewed Books and Book Chapters

Powell, G.E. 2004. Solutions Manual for Environmental Hydrology: Second Edition. CRC Press. Boca Raton, Florida.

Jayakaran, A., A. Ward, D. Mecklenburg, G.E. Powell, and J. Witter. 2009. Chapter: The Fluvial Functioning of Agricultural Ditches and the Implication for their Management. Agricultural Drainage Ditches: Mitigation Wetlands of the 21st Century. Revisions made, Pending Publication.

Dr. Powell has authored numerous engineering reports as a consultant engineer.

References

Dr. Jim Nelson	jimn@byu.edu (801) 422-7632	Brigham Young University 242D Clyde Building Provo, Utah 84602
Dr. Andy Ward	ward.2@osu.edu (614) 292-9354	The Ohio State University 590 Woody Hayes Drive Columbus, Ohio 43210
Dr. Larry Brown	brown.59@osu.edu (614) 292-3826	The Ohio State University 590 Woody Hayes Drive Columbus, Ohio 43210
Dr. Charles E. Brockway	charles.e.brockway@ brockwayeng.com (208) 736-8543	Brockway Engineering, PLLC 2016 Washington Street North Suite 4 Twin Falls, Idaho 83301
Dr. Charles G. Brockway	charles.g.brockway@ brockwayeng.com (208) 736-8543	Brockway Engineering, PLLC 2016 Washington Street North Suite 4 Twin Falls, Idaho 83301

Appendix B
Original Permit Application Filed with IDWR
and Permit Advertisement

Form 202
3/78

Ident. No. 37-7842

ASSIGNED TO:
Lower Snake River
Recharge District
1301 Vista Ave
Boise, ID 83705

RECEIVED
JUL 2 1980
Department of Water Resources
Northern District Office

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
APPLICATION FOR PERMIT

RECEIVED
APPROVED
Department of Water Resources

To appropriate the public waters of the State of Idaho

1. Name of applicant Earl Hardy, Thorleif Rangen & John W. Jones, Jr. & John LeFloyne Phone 342-0090

Post office address 1301 Vista Ave.; Boise, ID 83705

2. Source of water supply Little Wood & Big Wood which is a tributary of Snake

3. Location of point of diversion is SW ¼ of SE ¼ of Section 24 Township 4S

Range 19E B.M. Lincoln County, additional points of diversion if any: ____

4. Water will be used for the following purposes:

Amount 800 cfs (cfs or acre-feet per annum) for G.W. Recharge purposes from Jan. 1 to Dec. 31 (both dates inclusive)

Amount _____ (cfs or acre-feet per annum) for _____ purposes from _____ to _____ (both dates inclusive)

Amount _____ (cfs or acre-feet per annum) for _____ purposes from _____ to _____ (both dates inclusive)

Amount _____ (cfs or acre-feet per annum) for _____ purposes from _____ to _____ (both dates inclusive)

5. Total quantity to be appropriated:

a. 800 cubic feet per second and/or b. _____ acre-feet per annum.

6. Proposed diverting works:

a. Description of ditches, flumes, pumps, headgates, etc. Contract use of Dietrich Canal System and Richfield Canal system.

b. Height of storage dam _____ feet, active reservoir capacity _____ acre-feet; total reservoir capacity _____ acre-feet, materials used in storage dam: _____

Period of year when water will be diverted to storage _____ (Month/Day) to _____ (Month/Day) inclusive.

c. Proposed well diameter is _____ inches; proposed depth of well is _____ feet.

7. Time required for the completion of the works and application of the water to the proposed beneficial use is 5 years *(minimum 1 year – maximum 5 years).*

8. Description of proposed uses:
   a. If water is **not** for irrigation:
      (1) Give the place of use of water: _____ ¼ of _____ ¼ of Section _____ Township _____ Range _____ B.M.
      (2) Amount of power to be generated: _____ horsepower under _____ feet of head.
      (3) List number of each kind of livestock to be watered _____
      (4) Name of municipality to be served _____, or number of families to be supplied with domestic water _____.
      (5) If water is to be used for other purposes describe: Groundwater recharge subject to the requirements of Title 42 Chapter 42 Idaho Code

b. If water is for irrigation, indicate acreage in each subdivision in the tabulation below:

TWP	RANGE	SEC.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

Total number of acres to be irrigated _____

c. Describe any other water rights used for the same purposes as described above. None

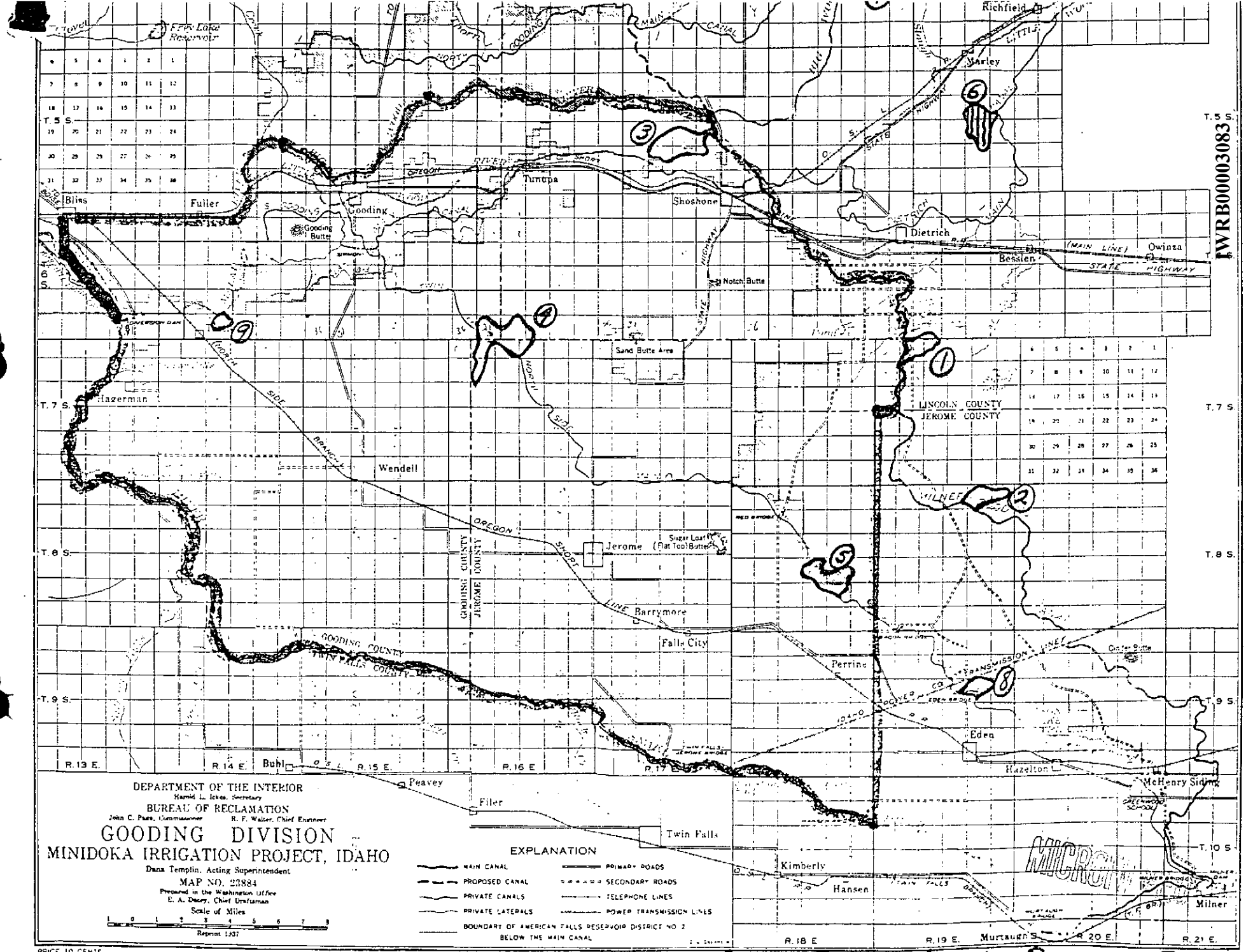
9. a. Who owns the property at the point of diversion Big Wood Canal Co.

b. Who owns the land to be irrigated or place of use BLM

c. If the property is owned by a person other than the applicant, describe the arrangement enabling the applicant to make this filing Applicant has worked with owners of P.D. & place of use to negotiate agreement for use of facilities. Negotiations will continue until agreement is complete.

10. Remarks Applicant agrees to meet specifically the requirements of 42-4201 (2) subordinating applicants right to all prior perfected water rights including those held by any privately owned electric generating company, and 42-4201 (3) providing for the reduction of applicants right under certain conditions. Applicant further agrees to meet all additional requirements and conditions of Title 42, Chapter 42.

Applicant's filing is being held in trust for a recharge district being formed under 42-4202 Idaho Code. Applicant agrees to assign application to the recharge district upon reimbursement of costs.



IWRB000003083

Lower Snake Plains Aquifer Recharge Dist.

NOTICE OF APPLICATION FOR WATER RIGHT

Notice is hereby given that the following application(s) have been submitted for permit to appropriate the public waters of the State of Idaho:

37-7842

Hardy, Earl
Rangen, Tharleif
Jones, John W., Jr.
LeMoyne, John
1301 Vista Ave., Boise, Idaho 83705

Source: Little Wood & Big Wood River tributary of Snake River

Date Filed: 6/30/80

Amount: 800 cfs

Diversion Point: SW¼SE¼, Sec. 24, T.4S, R.19E, Lincoln County

Use: Groundwater Recharge (800 cfs) from Jan. 1 to Dec. 31

Place of Use: Within the boundaries of the Lower Snake Plains Aquifer Recharge District located within T5S, R14E; T5S R15E; T5S, R16E; T5S R17E; T6S R13E; T6S R14E; T6S R15E; T6S R16E; T6S R17E; T6S R18E; T7S R13E; T7S R14E; T7S R15E; T7S R16E; T7S R17E; T7S R18E; T7S R19E; T8S R13E; T8S R14E; T8S R15E; T8S R16E; T8S R17E; T8S R18E; T9S R14E; T9S R15E; T9S R16E; T9S R17E; T9S R18E; T10S R18E.

Possible sites for recharge of the water are within the following described lands: Sec. 15, 16, 21, 22, 28, T.5S R19E.

Diversion Means: Contract use of Dietrich Canal system and Richfield Canal system.

If issued, the permit(s) will be subject to all prior water rights. Protests against the granting of any permit must be filed with the Director of the Idaho Department of Water Resources, 1041 Blue Lakes Blvd. North, Twin Falls, Idaho 83301 and received on or before September 2, 1980.

/s/ C. Stephen Allred
Director

L/2tc/8-14

Appendix C
IDWR Approvals: Permit, Extension of Time, and Reinstatement Order

Form 202
3/78

Ident. No. 37-7842

ASSIGNED TO:
Lower Snake River
Recharge District
1301 Vista Ave
Boise, ID 83705

RECEIVED
JUL 2 1980
Department of Water Resources
Northern District Office

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
APPLICATION FOR PERMIT

RECEIVED
APPROVED
Department of Water Resources

To appropriate the public waters of the State of Idaho

1. Name of applicant Earl Hardy, Thorleif Rangen & John W. Jones, Jr. & John LeMoyne Phone 342-0090

Post office address 1301 Vista Ave.; Boise, ID 83705

2. Source of water supply Little Wood & Big Wood which is a tributary of Snake

3. Location of point of diversion is SW ¼ of SE ¼ of Section 24 Township 4S

Range 19E B.M. Lincoln County, additional points of diversion if any: ____

4. Water will be used for the following purposes:

Amount 800 cfs (cfs or acre-feet per annum) for G.W. Recharge purposes from Jan. 1 to Dec. 31 (both dates inclusive)

Amount _____ (cfs or acre-feet per annum) for _____ purposes from _____ to _____ (both dates inclusive)

Amount _____ (cfs or acre-feet per annum) for _____ purposes from _____ to _____ (both dates inclusive)

Amount _____ (cfs or acre-feet per annum) for _____ purposes from _____ to _____ (both dates inclusive)

5. Total quantity to be appropriated:

a. 800 cubic feet per second and/or b. _____ acre-feet per annum.

6. Proposed diverting works:

a. Description of ditches, flumes, pumps, headgates, etc. Contract use of Dietrich Canal System and Richfield Canal system.

b. Height of storage dam _____ feet, active reservoir capacity _____ acre-feet; total reservoir capacity _____ acre-feet, materials used in storage dam: _____

Period of year when water will be diverted to storage _____ (Month/Day) to _____ (Month/Day) inclusive.

c. Proposed well diameter is _____ inches; proposed depth of well is _____ feet.

7. Time required for the completion of the works and application of the water to the proposed beneficial use is 5 years *(minimum 1 year – maximum 5 years).*

8. Description of proposed uses:
   a. If water is **not** for irrigation:
      (1) Give the place of use of water: _____ ¼ of _____ ¼ of Section _____ Township _____ Range _____ B.M.
      (2) Amount of power to be generated: _____ horsepower under _____ feet of head.
      (3) List number of each kind of livestock to be watered _____
      (4) Name of municipality to be served _____, or number of families to be supplied with domestic water _____.
      (5) If water is to be used for other purposes describe: Groundwater recharge subject to the requirements of Title 42 Chapter 42 Idaho Code

b. If water is for irrigation, indicate acreage in each subdivision in the tabulation below:

TWP	RANGE	SEC.	NE¼				NW¼				SW¼				SE¼				TOTALS
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	

Total number of acres to be irrigated _____

c. Describe any other water rights used for the same purposes as described above. None

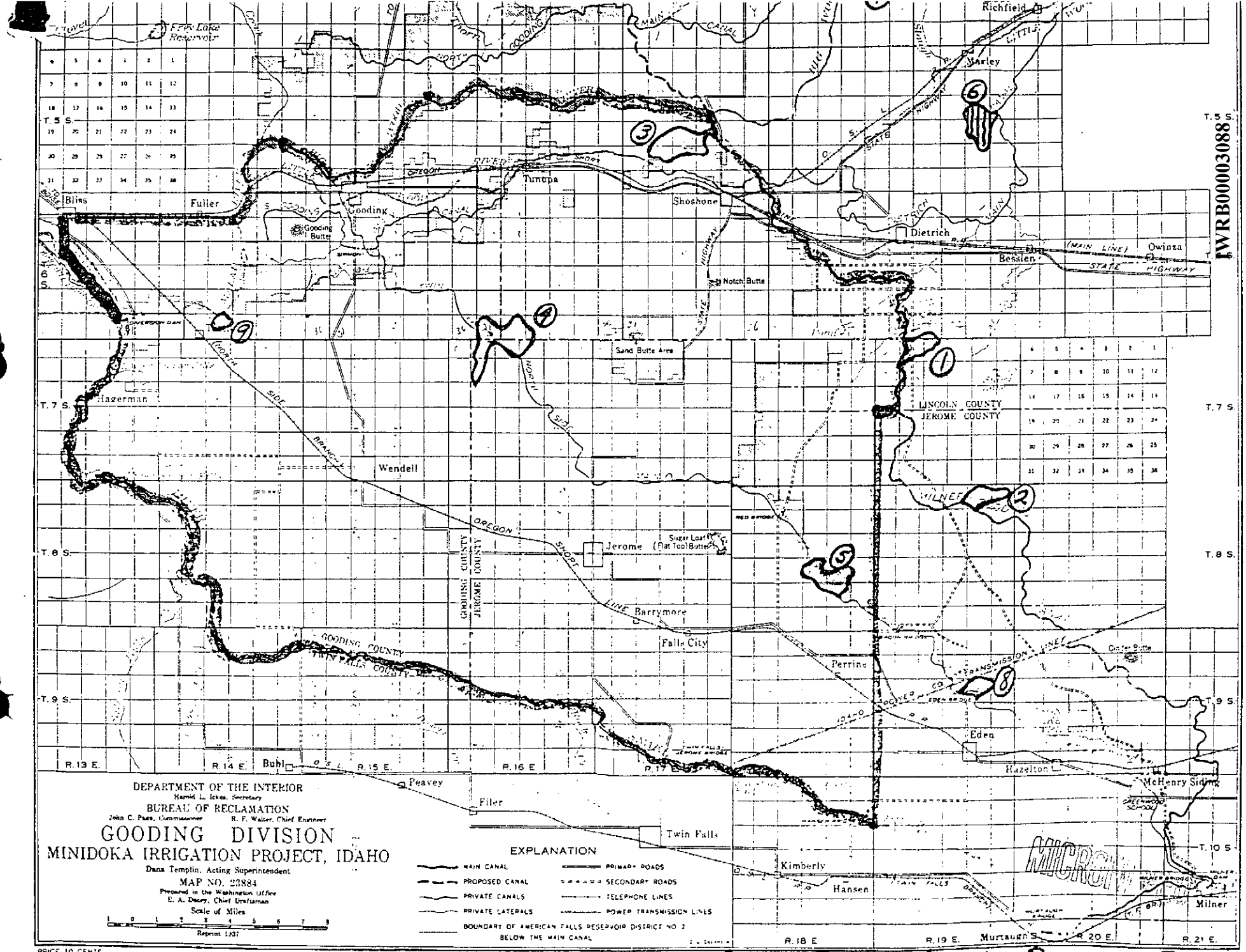
9. a. Who owns the property at the point of diversion Big Wood Canal Co.

b. Who owns the land to be irrigated or place of use BLM

c. If the property is owned by a person other than the applicant, describe the arrangement enabling the applicant to make this filing Applicant has worked with owners of P.D. & place of use to negotiate agreement for use of facilities. Negotiations will continue until agreement is complete.

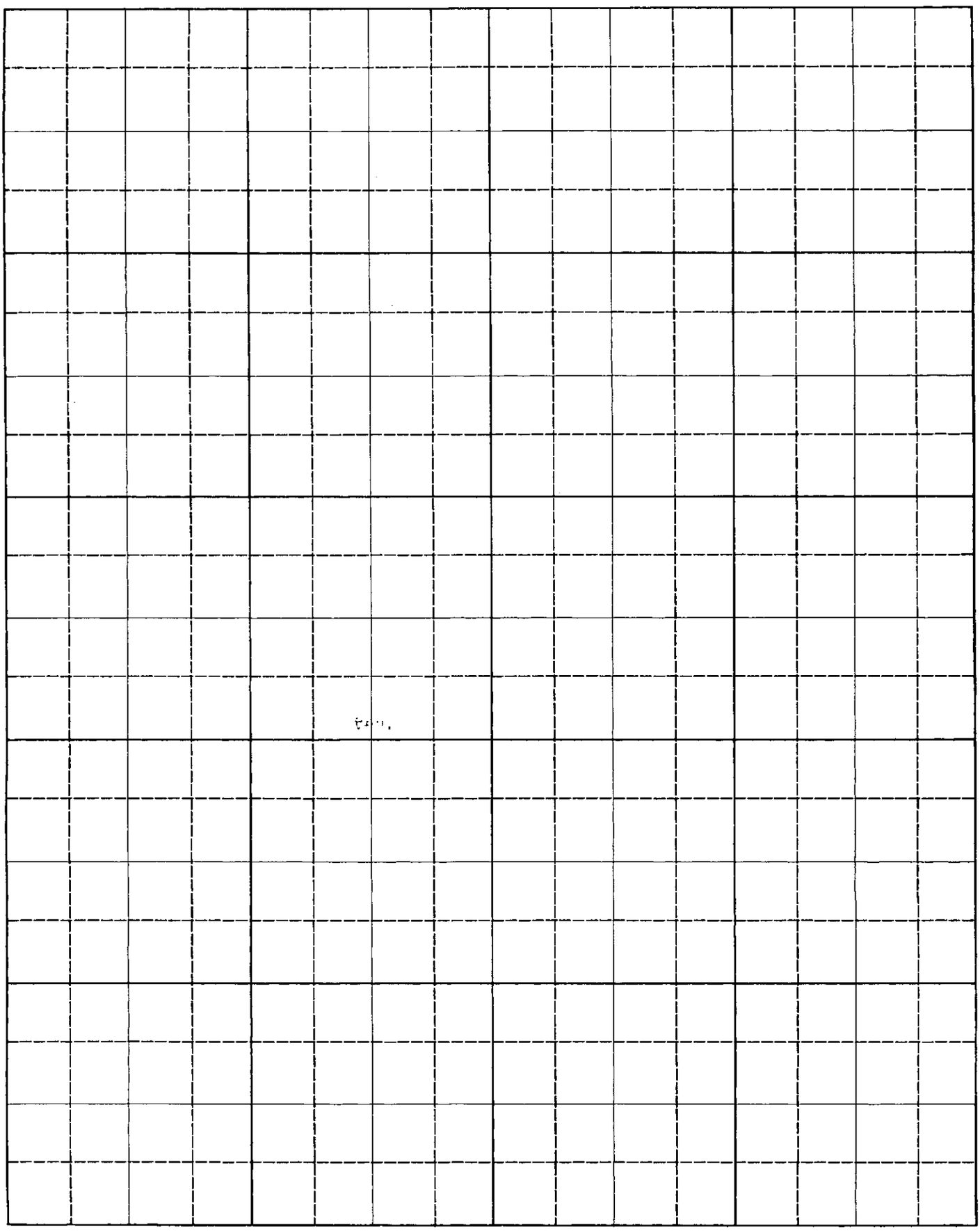
10. Remarks Applicant agrees to meet specifically the requirements of 42-4201 (2) subordinating applicants right to all prior perfected water rights including those held by any privately owned electric generating company, and 42-4201 (3) providing for the reduction of applicants right under certain conditions. Applicant further agrees to meet all additional requirements and conditions of Title 42, Chapter 42.

Applicant's filing is being held in trust for a recharge district being formed under 42-4202 Idaho Code. Applicant agrees to assign application to the recharge district upon reimbursement of costs.



Lower Snake Plains Aquifer Recharge Dist.

11. Map of proposed project: show clearly the proposed point of diversion, place of use, section number, township and range number.



Scale: 2 inches equal 1 mile.

BE IT KNOWN that the undersigned hereby makes application for permit to appropriate the public waters of the State of Idaho as herein set forth.

Earl M Hardy
(Applicant)

Proposed Priority 6/30/1980

Received by ~~rg~~ maya Date ~~6/30/80~~ 7/2/80 Time ~~2:18~~ 11:30 am

Preliminary check by LH Fee $ 1485.00

Receipted by rg Date 6/30/80 # 16193

Publication prepared by maya Date 7/23/80

Published in Lincoln Co. Journal

Publication dates 7/31 + 8/7/80 8/14 + 8/21/80

Publication approved maya Date 9/2/80

Protests filed by: None

Copies of protests forwarded by

Hearing held by Date

Recommended for approval denial by LH

ACTION OF THE DIRECTOR, DEPARTMENT OF WATER RESOURCES

This is to certify that I have examined Application for Permit to appropriate the public waters of the State of Idaho No. 37-7842, and said application is hereby APPROVED.

1. Approval of said application is subject to the following limitations and conditions:

   a. SUBJECT TO ALL PRIOR WATER RIGHTS.

   b. Proof of construction of works and application of water to beneficial use shall be submitted on or before June 1, 1987.

   c. The rate of diversion, if water is to be used for irrigation under this permit, when combined with all other water rights for the same land shall not exceed 0.02 cubic feet per second for each acre of land.

   d. Other: Permit holder shall commence the excavation or construction of diverting works within one year of the date this permit is issued and shall proceed diligently until the project is complete.

A measuring device of a type approved by the Department shall be permanently installed and maintained as part of the diverting works.

The issuance of this permit in no way grants any right-of-way or easement across the land of another.

Use of water under this permit is subject to control by the watermaster of State Water District No. 37, Big Wood River.

Permit shall be secondary to all prior water rights including rights held by any privately owned electrical generating company to appropriate waters in the reaches of the Snake River downstream from the Milner diversion for purposes of hydroelectric power generation.

The Director may regulate or reduce the rate of diversion under this permit pursuant to requirements of Section 42-4201, Idaho Code.

The permit shall not be assigned or sold without first securing the written approval of the Department of Water Resources.

Water may not be diverted under this permit until the Board of Directors of the District establish and implement a procedure acceptable to the Director for assuring that the water quality of the Lower Snake Aquifer will not be impaired.

Plans for recharge facilities and any conveyance works needed shall be submitted to the Department for approval prior to construction.

Witness my hand this 2nd day of June, 1982.

L. Glen Saxton
Chief, Operations Bureau

IWRB00003090

Form 204
4/86

RECEIVED
JUN 1 1987
Department of Water Resources
Southern Region Office

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

For Office Use Only
$15 FEE Receipted by [illegible]
Date 6-3-87
Receipt # 42524

REQUEST FOR EXTENSION OF TIME

RECEIVED
JUN 03 1987
Department of Water Resources

To provide additional time in which to submit proof of beneficial use for a water right permit

The Idaho Department of Water Resources will consider this form as a request that the permit be granted an additional period of time in which to complete development of a water right under the provisions of Section 42-204, Idaho Code.

Permit No. 37-7842

Name(s) of Permit Holder: Lower Snake River Acquifer Recharge District

Post Office Address: c/o John LeMoyne, P. O. Box 487, Hagerman, Idaho 83332

Telephone No. 837-4887

Date Proof is Due: June 1, 1987

Describe what work has been completed toward the development of this water right:
(This must be filled out! If no work has been completed, show "none".)

Construction of diversion and recharge facility with capacity of 600 cfs. Facility completed and operational for approximately 24 months. Continued negotiation for land rights necessary for additional sites.

Costing $ 85,000

The permit holder(s) has been unable to complete the remainder of the work for the following reasons:

Unable to date to obtain necessary land rights for private sources, State Land Board, and BLM pursuant to demonstration of need and success of completed facility.

Permit holder(s) request an extension to June 1, 19 92.
(1 yr. minimum)

(Signature)*

*IF OTHER THAN PERMIT HOLDER, POWER OF ATTORNEY MUST BE SUPPLIED.

FEE: $15.00

MICROFILMED

ACTION OF THE DEPARTMENT OF WATER RESOURCES OCT 18 1989

IT IS HEREBY ORDERED that the above request for extension of time be APPROVED and the time within which to submit proof of beneficial use is extended to June 1, 1992.

Signed this 4th day of October, 19 89.

IWRB000[illegible]

Chief, Water Allocation Bureau

BEFORE THE DEPARTMENT OF WATER RESOURCES

OF THE

STATE OF IDAHO

IN THE MATTER OF PERMIT NOS. 01-07054 AND 37-07842 BOTH IN THE NAME OF LOWER SNAKE AQUIFER RECHARGE DISTRICT

REINSTATEMENT ORDER

This matter having come before the Idaho Department of Water Resources (department), as a result of the filing of proof of beneficial use of water and a beneficial use field report with the department, the department makes the following Findings of Fact, Conclusions of Law and Order:

FINDINGS OF FACT

1. On June 2, 1982, the department issued Permit No. 01-07054 to the Lower Snake Aquifer Recharge District (permit holder) authorizing the diversion of 1,200 cubic feet per second (cfs) of water from the Snake River for ground water recharge purposes. Proof of construction of works and application of water to beneficial use (proof) was originally due on June 1, 1987 but was extended by the department to June 1, 1992.

2. On June 2, 1982, the department also issued Permit No. 37-07842 to the permit holder authorizing the diversion of 800 cfs of water from the Little Wood and the Big Wood Rivers for ground water recharge purposes. Proof of beneficial use was originally due on June 1, 1987, but was extended by the department to June 1, 1992.

3. On March 31, 1992, the department sent a proof due notice for each permit to the permit holder. On June 5, 1992, the department sent a lapse notice for each permit to the permit holder, since the permit holder had not responded and both permits had lapsed.

4. On July 27, 1992, the permit holder filed proof of beneficial use together with a field report completed by Gerald Martens, a certified water right examiner. The proof was identified as being for Permit No. 37-07842 with authorized sources of the Little Wood and Big Wood Rivers.

5. On August 12, 1993, the permit holder advised the department that the proof which was filed on July 27, 1992 was intended for both Permit Nos. 01-07054 and 37-07842.

6. The department's review of the completed field examination and

supporting data shows that the permit holder diverted water from both the Snake River and the Big and Little Wood Rivers even though the proof was identified as being only for Permit No. 37-07842.

CONCLUSIONS OF LAW

1. Section 42-218a.1., Idaho Code, provides in part as follows:

> That within sixty (60) days after such notice of lapsing the department, may upon a showing of reasonable cause, reinstate the permit with the priority date advanced a time equal to the number of days that said showing is subsequent to the date set for proof;

2. The Director should reinstate both Permit Nos. 01-07054 and 37-07842 pursuant to Section 42-218a.1., Idaho Code, and should advance the priority of each permit to August 25, 1980.

ORDER

IT IS THEREFORE, HEREBY ORDERED that Permit Nos. 01-07054 and 37-07842 are reinstated and the priority is advanced to August 25, 1980.

Dated this 1st day of December, 1993.

L. GLEN SAXTON, Chief
Water Allocation Bureau

Appendix D
Field Exam Submitted by Gerald Marten

EHM Engineers, Inc.
ENGINEERS/SURVEYORS/PLANNERS

322-92

IN THE FIELDS OF:
PLANNING
SURVEYING
HIGHWAYS
WATER
SEWAGE
STRUCTURAL
SUBDIVISIONS
BRIDGES
ENVIRONMENTAL
QUALITY CONTROL
CONSTRUCTION MNGMT.

November 24, 1993

State of Idaho
Department of Water Resources
1301 North Orchard St.
Statehouse Mail
Boise, ID 83702

ATTN: L. Glenn Saxton

RE: Permits 01-07054 & 37-07842

Dear Mr. Saxton:

The following is in response to your letter of October 21, 1993 and following a review of all known available information.

1. I have attached a map showing all major features and all measuring stations.

2. Attached is a summary of all flow records which are utilized to compute the recharge quantity and maximum potential recharge quantity from each source, Snake Rive and Bigwood River.

3. Measuring stations have been located on the exhibit and daily flow rates are provided.

4. All flow data has been consolidated onto a single sheet in a much more legible format with clarification foot notes.

5. All discharged water receded from the surface within a few hours of discharge from the Milner Gooding Canal. No water ran-off into any other surface canal, stream or other means of conveyance.

Please excuse the delay in responding to your letter. Collecting all the data and assembling it into a more reasonable format took more time than I anticipated.

Please call if there are any questions.

Respectfully yours,

EHM ENGINEERS, INC.

Gerald L. Martens, P.E.

GLM:bn

cc: John Lemoyne
Dick Onieda

Form 219
6/92

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No. 01-07054 / 37-07842

1. Owner: Lower Snake River Recharge District Phone No. 837-4887

Current Address: Box 48, Hagerman, Idaho

2. Accompanied by: Gerald Martens EXAM DATE :

Address: 1139 Falls Ave. E, Twin Falls, Idaho Phone No. 734-4888

Relationship to Permit Holder: None

3. Source: Snake River/Big Wood River tributary to See Narrative

B. OVERLAP REVIEW

1. Other water rights with the same place of use: None

2. Other water rights with the same point of diversion: None

C. DIVERSION AND DELIVERY SYSTEM

1. **Point(s) of Diversion:**

Ident No.	Gov't Lot	¼	¼	¼	Sec.	Twp.	Rge.	County	Method of Determination/Remarks
		SE	NE		22	5S	17E	Lincoln	7.5 minute quadrange

2. **Place(s) of Use:** Indicate Method of Determination

TWP	RGE	SEC	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
5S	17E	22			X	X			X	X	X	X		X		X	X		

3. **Delivery System Diagram**: Indicate all major components and distances between components. Indicate weir size/ditch size/pipe i.d. as applicable.

See attached exhibits and recharge structure plans.

Scale: 1" = _____.

____ Copy of USGS Quadrange Attached Showing location(s) of point(s) of diversion and place(s) of use (required).

____ Aerial Photo Attached (required for irrigation of 10+ acres)

____ Photo of Diversion and System Attached

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
N/A					

Code to correspond with No. on map and aerial photo

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Milner Gooding Canal Measuring Stations 56 and 57						

2. **Measurements:** Water measured in concrete flume above and below diversion. Diversion quantity is mathematical difference. Upstream flow measured at Milner Gooding Canal Diversion Structure 56. Downstream measurement at Milner Gooding Canal Structure No. 57. Rating curves have been established for both stations. See attached letter.

E. NARRATIVE/REMARKS/COMMENTS

Measurement flow records for April 1986, as prepared by Big Wood Canal Company. Attached are flow records.

The Big Wood Canal Co-mingles water from Snake River and Bigwood River upstream of diversion. District routinely replaces water from one source with water from other sources. At time of proof of Beneficial Use Report the Bigwood water was supplementing Snake River flows to facilitate flows measured at diversion.

Division agreement between Lower Snake River Recharge District and Bureau of Land Management attached for your information.

Attached is a flow summary sheet that tabulates the recharge rate of flow and the maximum potential contribution to total recharge from each potential source.

Have conditions of permit approval been met? X yes ___ no

F. FLOW CALCULATIONS _____ Additional Computation Sheets Attached

Measured Method:

See Section E.

G. VOLUME CALCULATIONS N/A

1. Volume Calculations for Irrigation:

$V_{I.R}$ = (Acres Irrigated) x (Irrigation Requirement) = _____

$V_{D.R.}$ = [Diversion Rate (cfs)] x (Days in Irrigation Season) x 1.9835 = _____

V = Smaller of $V_{I.R.}$ and $V_{D.R.}$ = _____

2. Volume Calculations for Other Uses:

H. RECOMMENDATIONS

1. Recommended Amounts

Beneficial Use	Period of Use From	Period of Use To	Rate of Diversion Q (cfs)	Annual Volume V (afa)
Groundwater Recharge	1-1	12-31	300 CFS	
		Totals:	300 CFS	

2. Recommended Amendments

___ Change P.D. as reflected above ___ Add P.D. as reflected above ___ None

___ Change P.U. as reflected above ___ Add P.U. as reflected above ___ Other

I. AUTHENTICATION

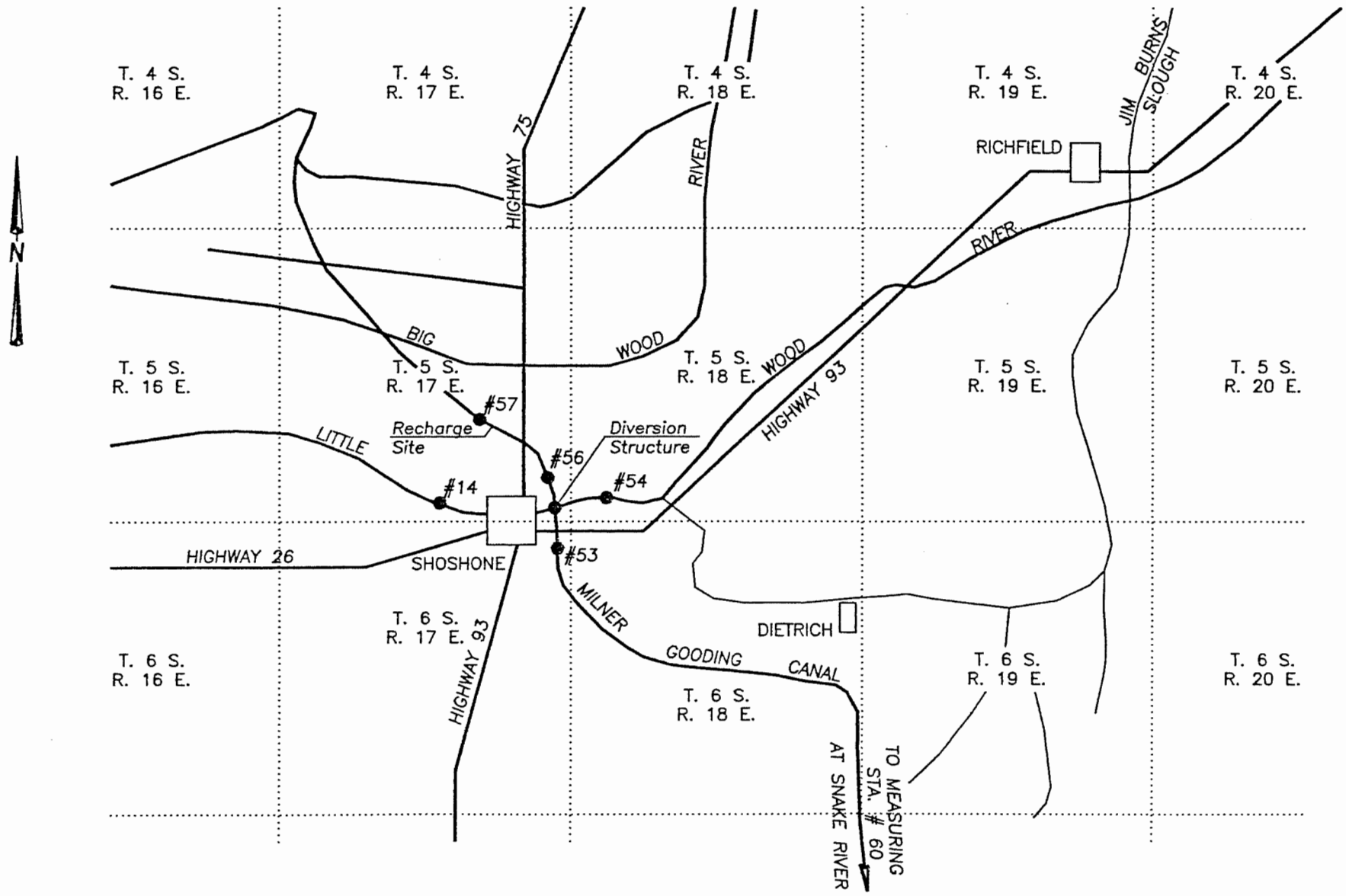
Field Examiner's Name Gerald Martens Date 11/24/93

Reviewer _____ Date _____

PROFESSIONAL ENGINEER REGISTERED SEAL STATE OF IDAHO GERALD L. MARTENS

IWRB00003100

Exhibit For
Lower Snake River Aquifer Recharge
Permit No's. 01-07054 & 37-07842



Summary of Recharge
Records for
Lower Snake River Recharge
Permit No. 01-07054 & 37-07842

	MEASURING STAT ON								
DATE	JBS	14	53	54	56	57	RECHARGE	MAX POSSIBLE RECHARGE FROM BIG WOOD	MAX POSSIBLE RECHARGE FROM SNAKE RIVE
04-07-86			220		252	252	0		
04-08-86						260	260	260	
04-09-86		646	425		432	260	172	172	
04-10-86			401		448	265	183	183	
04-11-86	97	692	472		460	265	195	195	97
04-12-86	57		472			261	261	261	57
04-13-86	62					270	270	270	62
04-14-86	66	717	486	787	486	275	211	211	66
04-15-86	52	681	485	721	482	252	230	230	52
04-16-86	57	659	479	689	470	239	231	231	57
04-17-86	43	636	405	674	496	223	273	273	43
04-18-86	40	604	614	628	632	310	322	322	40
04-19-86	73	556	596	564	618	342	276	276	73
04-20-86	142		596	563			---	---	142
04-21-86	141	615	596	651	618	342	276	276	141
04-22-86	50	526	585	544	604	350	254	254	50
04-23-86	221	454	566	544	580	360	220	220	220
04-24-86	213	596	572	636	586	396	190	190	190
04-25-86	168	560	563	585	580	394	186	186	168
04-26-86	181	500	644	524	654	340	314	314	181
04-27-86	172		644	530				---	172
04-28-86	165	615	696	537	648	466	182	182	165
04-29-86	158	580	670	503	626	465	161	161	158
04-30-86	142	506	661	420	616	459	157	157	142

JBS - Jimmy Byrnes Slough
All flows in CFS as recorded by Bigwood Canal Co.
Recharge = 56-57
Max Recharge (from Snake River): Total discharge but not to exceed flow at M.S. 53. M.S.
Max Recharge (from Big Wood River): Total discharge from JBS but not to exceed total dishcarge.
Measuring stations 14+56 should approximately total measuring stations 53+54

COOPERATIVE AGREEMENT

I-05-82

BETWEEN

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
SHOSHONE DISTRICT OFFICE
P.O. BOX 2B
SHOSHONE, ID 83352

AND

LOWER SNAKE RIVER AQUIFER
RECHARGE DISTRICT

RTE 1, BOX 148

HAGERMAN, ID 83332

TABLE OF CONTENTS

COOPERATIVE AGREEMENT

I-05-82

I. PURPOSE

The purpose of this agreement is to establish guidelines and provide procedures and authorization so the cooperator can enter public lands administered by the Bureau of Land Management (BLM) for Lower Snake River aquifer recharge purposes. The public lands will be used when there is ample excess water to divert to the desert lands for aquifer recharge.

II. AUTHORITY:

A. Bureau of Land Management:

Section 307, Federal Land Policy and Management Act of 1976, P.L. 94-579, 43 U.S.C. 1737.

B. Cooperators:

State Law - Drainage-Water Rights and Reclamation, Section 42-4212.

III. AGREEMENT AREA

This cooperative agreement will involve only public lands located within the Shoshone BLM District, and described as follows:

T. 5 S., R. 17 East, Boise Meridian, Lincoln County, Idaho
Section 22: All 640 acres.

The public land in the agreement area is a desert environment and is not within any livestock grazing allotment.

IV. DEFINITIONS

A. Bureau of Land Management (BLM):

The agency in the Department of Interior that has management responsibilities on those lands covered by this agreement.

B. Cooperators:

The governmental body of the Lower Snake River Aquifer Recharge District, chaired by John R. LeMoyne, Rte 1, Box 148, Hagerman, ID 83332.

C. District Manager:

The authorized officer in the Bureau of Land Management who has been delegated the responsibility, by the Secretary of the Interior, for the management of public lands within the Shoshone District.

D. Contractor:

All companies, groups, individuals, or agents to include Federal and State agencies who are retained by the cooperators in their aquifer recharge program for the operation of this agreement.

E. Degradation:

The changing, altering, or lowering in character and quality of the lands as a result of the cooperator use through vegetative and soil disturbance, creating a negative or undesirable effect on the environment. This may be the effects from, but not limited to the hydraulic action of recharge waters or the disturbance by vehicles or heavy equipment.

V. OPERATION AND RESPONSIBILITIES

The Bureau of Land Management, acting through the District Manager, and the Cooperator, acting through the Lower Snake River Aquifer Recharge District Chairman, agree as follows:

A. The Bureau of Land Management shall:

1. Provide only the land used in the operation of this agreement.

2. Continue to allow existing uses on the subject lands and any additional uses which are compatible with this agreement. Existing uses on the subject land may include, but are not limited to recreation, minerals, water conveyance, livestock grazing, wildlife habitat, and public access.

B. The Cooperator shall:

1. Provide all labor, material, equipment, and money needed in the maintenance programs, rehabilitation, or studies authorized by the cooperator for the operation of this agreement.

2. Exercise every reasonable precaution to prevent the degradation of all resources and shall rehabilitate the area, both inside and outside of the agreement area, which has been subject to degradation by the cooperator or their contractor's use.

3. Restrict operations to the existing roads or trails if vehicular equipment is used within the agreement area and no new roads will be constructed.

4. Indemnify and hold harmless the Bureau of Land Management, its officers, agents, and employees from any and all damages and claims for damages of every description or kind whatsoever which may result from the exercise of privileges granted by this agreement or which may result from the exercise of any of the rights reserved herein.

5. Be subject to the provisions of Executive Order 11246 of September 24, 1965 as amended, which sets forth the Equal Opportunity clauses. A copy of this order may be obtained from the district manager.

6. Be responsibile for the prevention and suppression of all range fires resulting from their own or their contractor's actions. This includes responsibility for suppression costs incurred by any party in controlling such fires that are determined to be the cooperator's responsibility.

7. Allow authorized representatives of the Bureau of Land Management and the general public the right of unrestricted ingress and egress within the agreement area.

8. Remove from the public lands all trash, litter, garbage, and other items originating from the cooperator and contractor's use.

9. Notify the district manager immediately if damage has occurred to public lands within or outside the agreement area as a result of the operation of this agreement.

10. If additional development is needed to prevent recharge waters from overflowing the use area to external lands, the cooperator shall provide the district manager with detailed plans for such development for review and concurrence, 30 days prior to development initiation.

11. Restrict development to the approved structures, diversion, and other related facilities allowed under the approved Plan of Development identified as LSRARD Plan 82-1, dated June 1, 1982.

12. Raise or build up the present access road to the cement canal and drops recreation area to prevent flooding during times of aquifer recharge.

13. Fill in the area between the lava rock outcrop, cement canal, present access road, and proposed diversion structure to allow vehicular access to mining claims to the west.

C. Other Items Mutually Agreed by the Bureau of Land Management and Cooperator:

1. This agreement in no way abrogates BLM responsibility and authority as set by the Federal Land Policy and Management Act (Public Law 94-579, 90 Statute 2743), for management of the subject lands.

2. None of the items covered in this cooperative agreement are to be construed as obligating either party to the expenditure of funds in excess of authorized appropriations.

3. This agreement shall remain in full force and effect until modified or terminated by mutual agreement of BLM and the cooperator. This shall be accomplished by a 30 day written notice by either party on the other. Any proposals to change, modify, or otherwise alter any part of this agreement must have total concurrence by the cooperator and BLM.

4, This agreement or any interest therein shall not be transferred or assigned without prior approval, in writing of the district manager and the cooperator.

5. All tools, equipment, and other property taken upon or placed upon the public land by the cooperator or contractor during maintenance or rehabilitation efforts, shall remain the property of the cooperator or contractor and shall be removed by the cooperator or contractor within a

reasonable time, but no later than 30 days after completion of their work. If they are not removed as directed by the district manager, within a reasonable time then trespass actions can be taken towards the cooperator or contractor under the provisions of 43 CFR 9230.

6. No rental or use fees will be charged for the use of the public lands involved with this agreement. However, all damage and rehabilitation of the lands shall be the responsibility of the cooperator or contractor. If mineral materials such as gravel, fill dirt, etc. are needed for any phase of maintaining or rehabilitating the subject land, the cooperators shall notify BLM. These materials shall be applied for under the provisions of 43 CFR 3610 and 3620, whichever is applicable.

D. Effective Date

This cooperative agreement will be in full force and effect as of the last date signed.

LOWER SNAKE RIVER AQUIFER RECHARGE DISTRICT

John R. LeMoyne

John R. LeMoyne, Chairman
Rte 1, Box 148
Hagerman, Idaho 83332

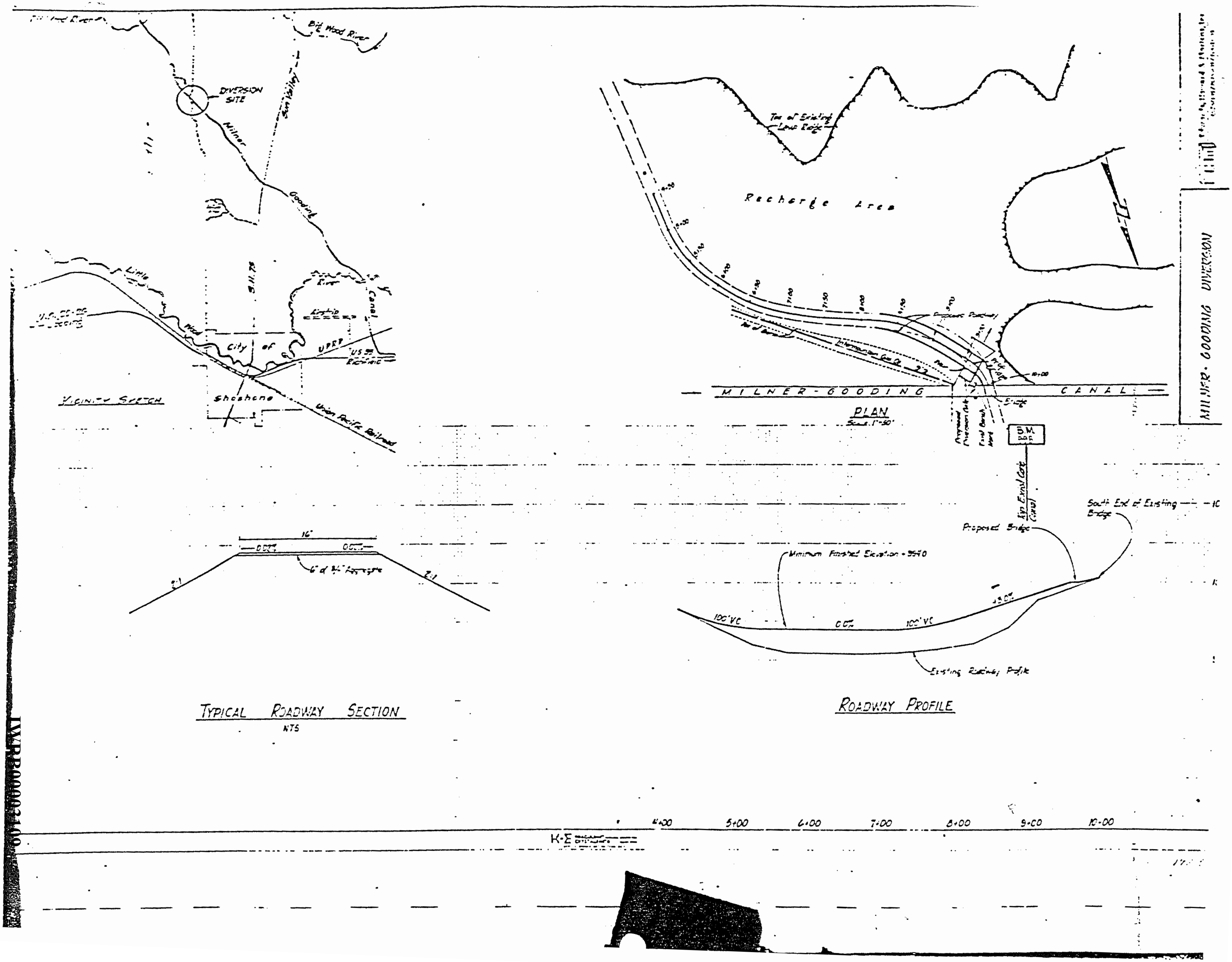
4-18-84
Date

DEPARTMENT OF THE INTERIOR,
BUREAU OF LAND MANAGEMENT

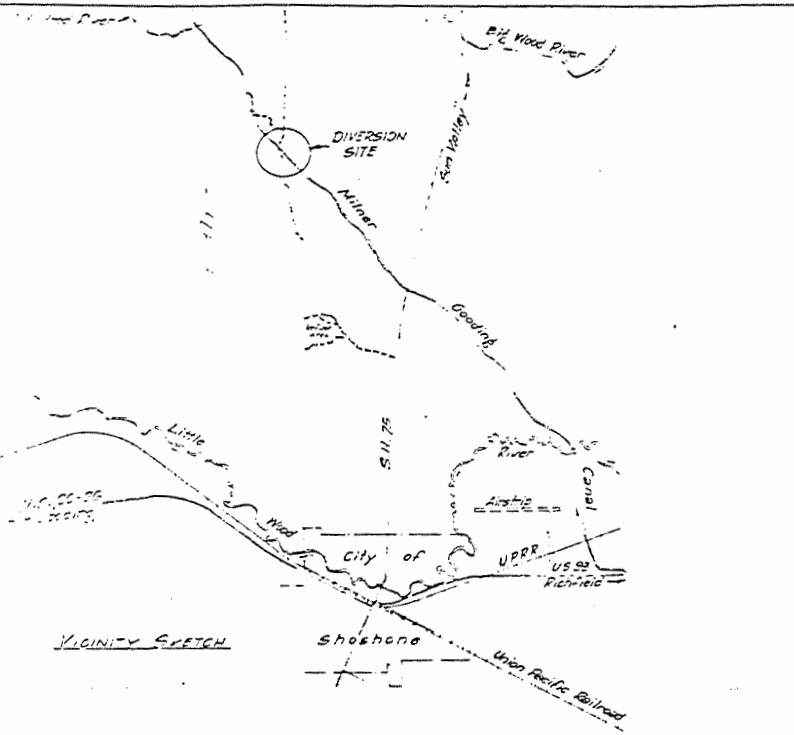
Charles G. Haszier

Charles J. Haszier
Shoshone District Manager
Shoshone, Idaho 83352

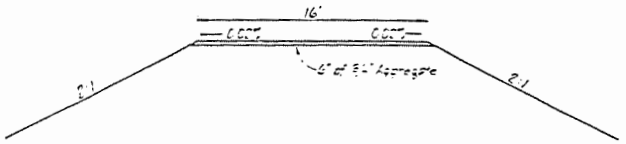
4/19/84
Date



IWRB00003109

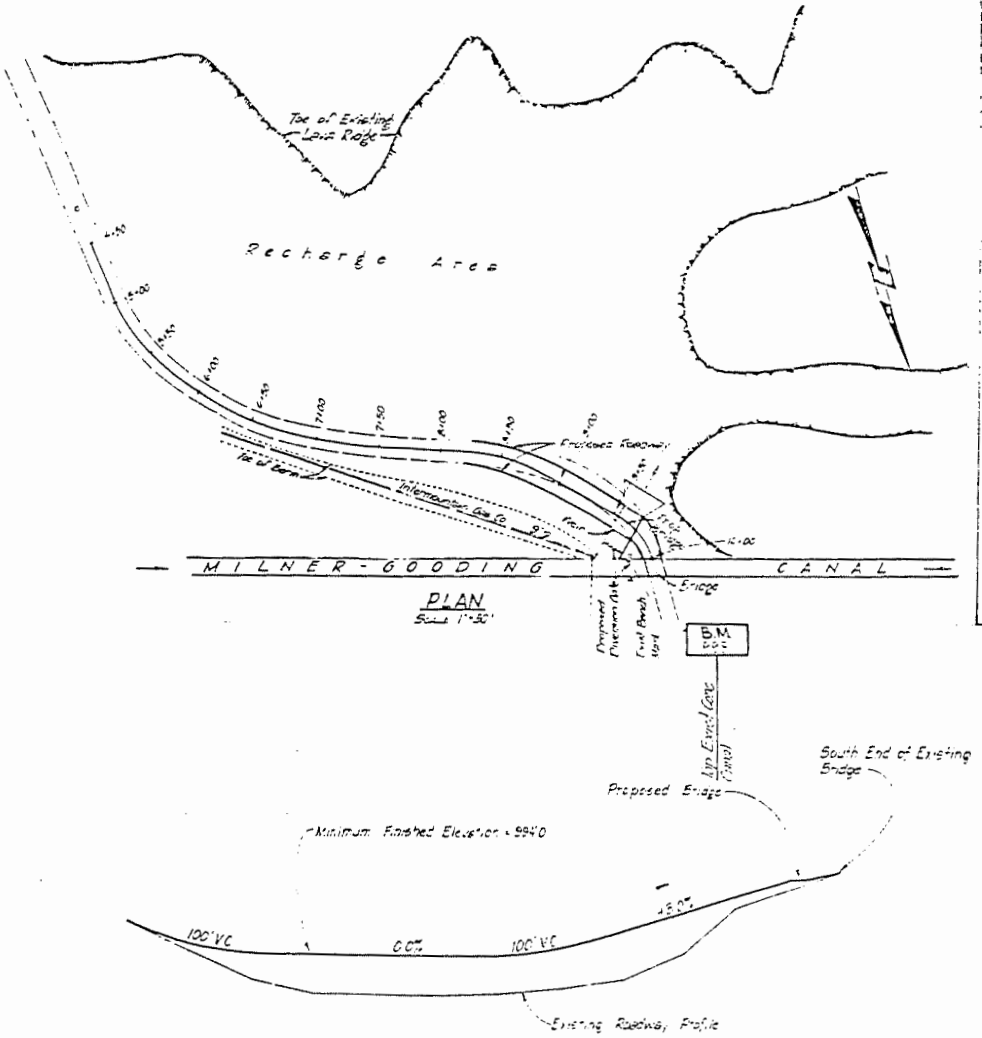


VICINITY SKETCH



TYPICAL ROADWAY SECTION

N.T.S.



PLAN

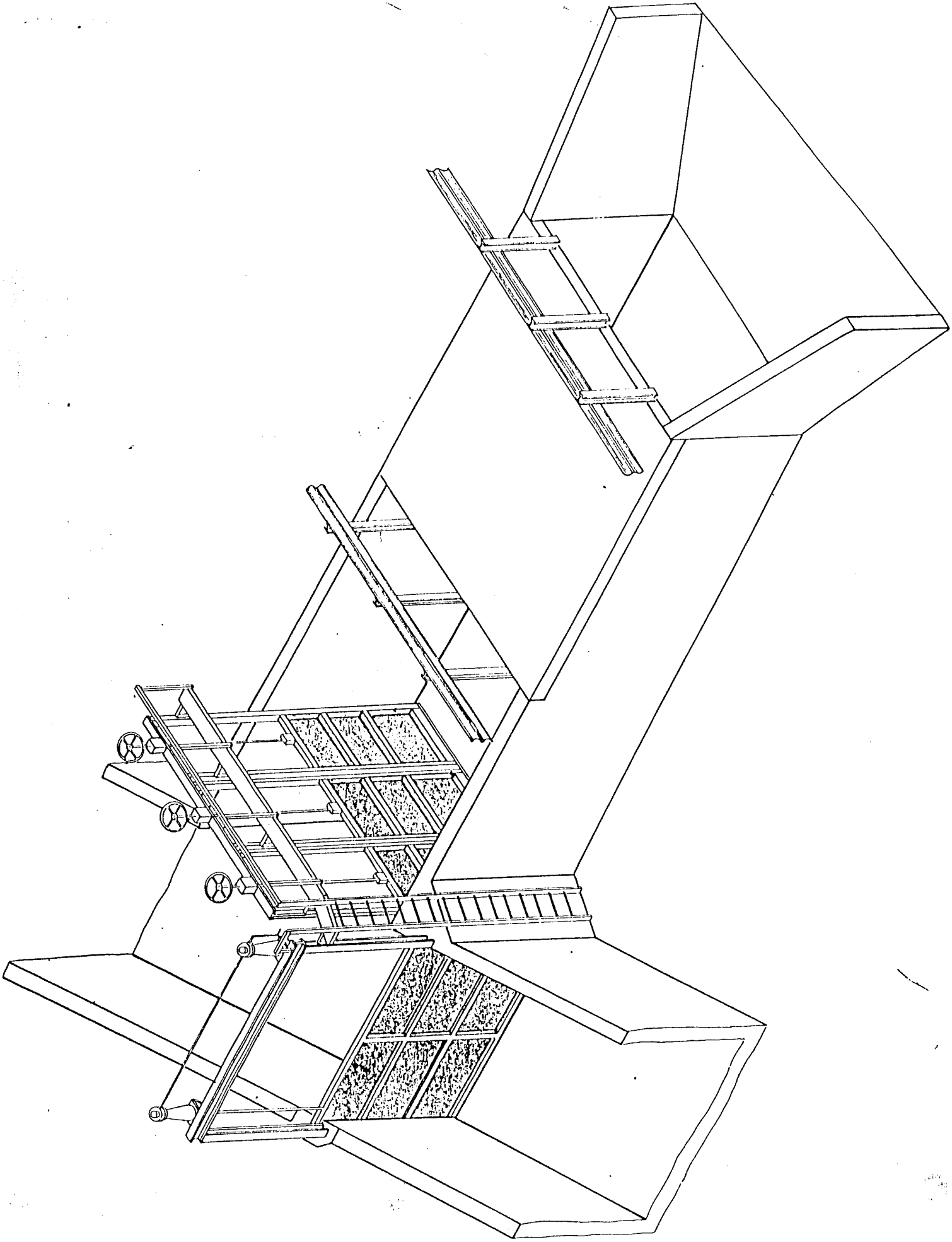
Scale 1"=50'

ROADWAY PROFILE

MILNER - GOODING DIVERSION - DAM UNIT

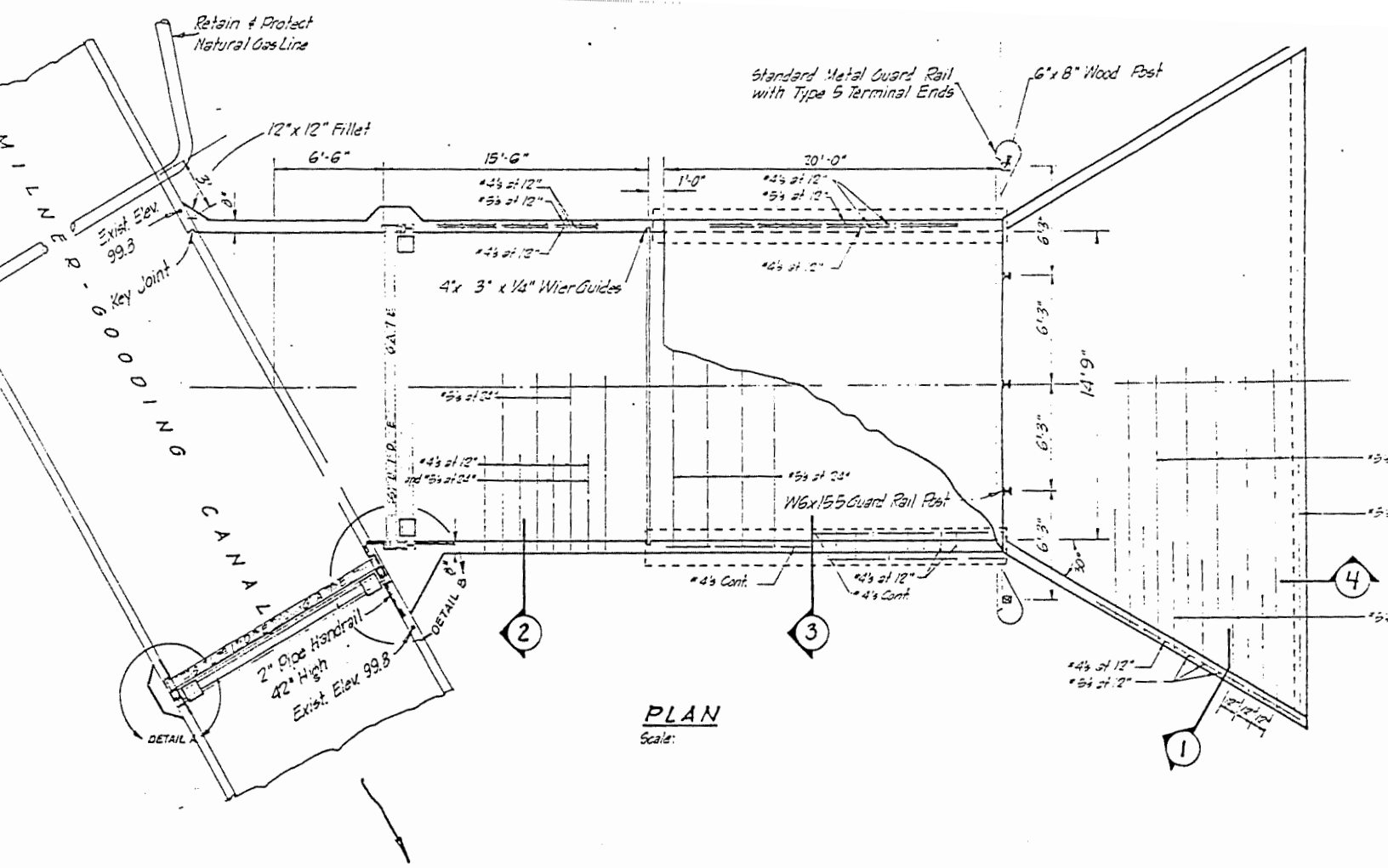
4+00 5+00 6+00 7+00 8+00 9+00 10+00

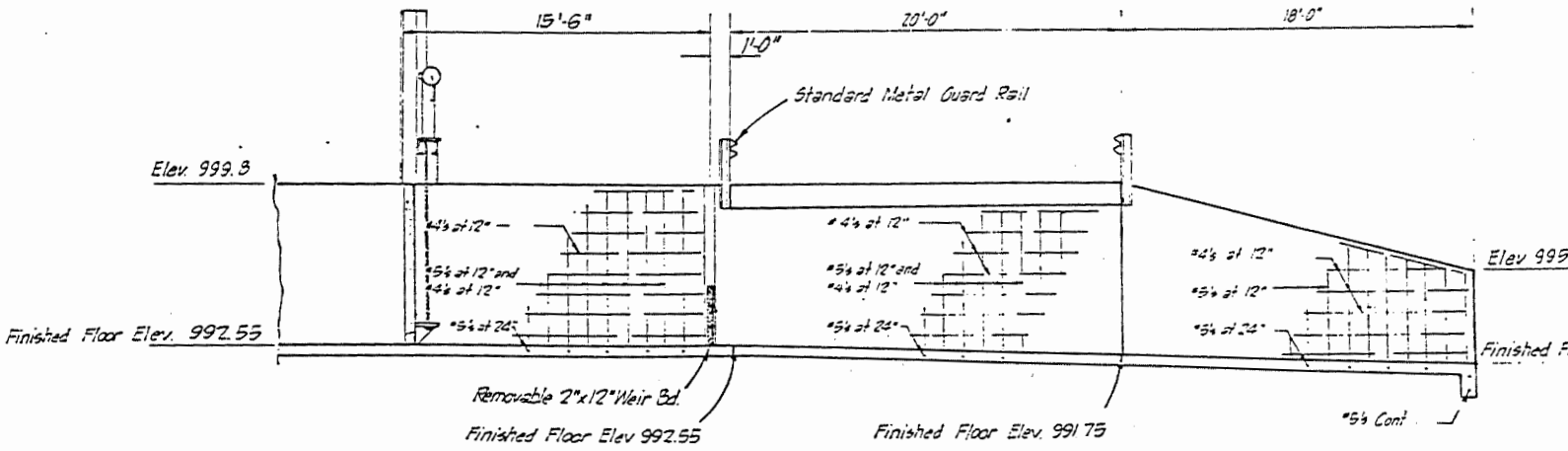
IWRB00003110



IWRB00003111

IWRB00003112





ELEVATION

Appendix E
License Review Prepared by Michelle Edl, IDWR

MEMORANDUM

Date: October 29, 2014

To: Water Right File 37-7842

From: Michele Edl

Re: license review

Background

In July 7, 1986 when John LeMoyne, then chairman of the Lower Snake Aquifer Recharge District (LSARD), submitted a proposal to the USBOR for the High Plains States Groundwater Demonstration Program Act of 1983, he mentioned two sites for aquifer recharge. One location was undeveloped at that time and is now the Shoshone recharge site. The other location was a pre-existing site on the Dietrich Canal near Richfield.

The Beneficial Use Field Reports which have been submitted for the licensing of this permit consider only the Shoshone site. I base my recommendations for this license on the recharge activity which occurred at the other site. See Dietrich Canal site discussion below.

Field visit confirmation

There were two field examiner's reports to review for licensing. Both reports were completed by the same examiner, Gerald Martens. One was signed by Mr. Martens on July 6, 1992 and submitted with a Proof of Beneficial Use statement on July 27, 1992. The second was signed on November 24, 1993 and received by IDWR on November 29, 1993. Neither report was complete enough to be reviewed independently. And although I pooled information from both reports, I found that confirmation of beneficial use remained unclear. It was necessary to revisit some of the relevant locations before I could complete a pre-licensing review.

On July 9, 2014, Shelley Keen and I visited the office of the Big Wood Canal Company (BWCC) and met with Lynn Harmon, the manager of the BWCC. Mr. Harmon provided the as-built engineering plans for the Bification and guided us to the site. He also gave us directions to the Dietrich Canal site. I have attached photos of the bifurcation and the Dietrich site which I took that day.

Shoshone recharge site

After reviewing flow records provided by the field examiner in his November 1993 report, I found that he had recommended the Big Wood River as one source of the recharge water. He appeared to have based his source recommendations on readings which were taken at locations on the Milner-Gooding Canal (a canal segment controlled by North Side Canal Company) and the Dietrich Canal (a canal segment controlled by Big Wood Canal Company). The examiner mislabeled two of the column headings in his spreadsheet. The data in the two columns furthest to the right should be swapped. I have confirmed that the data did come from records kept by the watermaster for Basin 37 and 37M. And in discussions with the watermaster, I have also confirmed that, although unlikely, it is possible to bring water from the Big and Little Wood Rivers to the Shoshone site.

The Shoshone recharge site is located between measuring stations #56 and #57 on the Milner-Gooding Canal. It is also downstream from a structure which carries the nameplate label "Byfication". (The correct spelling for this term is bifurcation). This unique structure is a combination siphon and flow control structure. It was constructed circa 1930 and under certain conditions it could be capable of directing water from the Little Wood River into the Milner-Gooding Canal. But typically water flows in the opposite direction, from the Milner-Gooding Canal into the Little Wood River.

There are two lanes that water can take through the bifurcation. Water can remain in the Milner Gooding Canal and continue to flow northeast after dipping under the Little Wood River in the bifurcation siphon. Or water can exit the Milner-Gooding Canal through the bifurcation's turn-out lane to join the Little Wood River and flow southeast. The direction of flow can be reversed only if the water in the Milner-Gooding Canal has less energy than the water in the Little Wood River. For water from Basin 37 to be the source water for the event on which Mr. Martens bases his recommendations, he would have needed to confirm that the flow in the Little Wood River was greater than the flow in the Milner-Gooding Canal. That was not the case.

Although there was excess water in Basin 37 (the Little Wood and Big Wood Rivers) during April and May of 1986, there was also water flowing in the Milner-Gooding Canal which originated from Basin 1 (the Snake River). The quantity of water flowing in the Milner-Gooding Canal at the time excluded a reversal of the flow through the bifurcation. The water arriving at the Shoshone recharge site in April and May of 1986 was from the Snake River.

Based on the engineering plans, the site visit and the flow data provided, I have concluded that the examiner confirmed a recharge event at the Shoshone recharge site but that little if any of the source water for that event could be attributed to the Big or Little Wood Rivers. The water came from the Snake River through the Milner-Gooding Canal.

Companion water right 1-7054 should be used to authorize the Snake River as a source of recharge water, which leaves water right permit 37-7842 to authorize recharge water from the Big Wood and Little Wood Rivers. The Dietrich Canal site uses water from Basin 37 for recharge.

Dietrich Canal recharge site

When permit 37-7842 was issued in 1982, several new sites within the LSARD were being considered for aquifer recharge. The Shoshone recharge site was developed through that effort. However, even before the LSARD was created, (on August 27, 1981) a site adjacent to the Dietrich Canal had been developed and used for flood/flow control.

The first week in April of 1981, the Shoshone District Manager of the BLM, Commissioners from Gooding and Lincoln County and the Mayors of Shoshone and Gooding signed a cooperative agreement for the use of 2320 acres of public land for flood control. (See attached copy of Cooperative Agreement I-05-63.)

Construction of the Dietrich site preceded the Cooperative Agreement by more than 10 years. According to Lincoln County and Big Wood Canal Company personnel the rediversion structure on the Dietrich Canal had been constructed circa 1970. Lincoln County personnel provided photos (taken July 29, 2014) which show a section of the Dietrich Canal and the wall of the rediversion structure which is etched with the year 1970.

The Lower Snake Aquifer Recharge District considered both the Shoshone site and the Dietrich site as aquifer recharge sites in 1986. In a recharge demonstration proposal to the USBOR, the LSARD Ground Water Recharge Demonstration Proposal states,

> There are two locations where water is being discharged into the aquifer. One is on the Dietrich Canal just south of Richfield. This is a flood control facility used by Lincoln and Gooding Counties to prevent flooding along the Little Wood River. This site will handle 800 cfs of discharge up to a week and continued flow of approximately 200 cfs. [1]

I am recommending the Dietrich Canal site as the place-of-use for this water right. But before I detail the elements of the water right, it's important that I clarify what I mean by aquifer recharge and how this facility qualifies.

[1] Lower Snake Aquifer Recharge District Ground Water Recharge Demonstration Proposal July 7, 1986 for High Plains States Groundwater Demonstration Program Act of 1983, submitted by John LeMoyne,

Activities which enhance aquifer recharge can be put into three categories.[2]

1. Unintentional – the consequences of deliberate activities that have an unrelated purpose. Examples are deep seepage under irrigation areas or leaking water and sewer pipe.
2. Unmanaged – an intentional activity known to increase aquifer recharge, but usually undertaken to dispose of water rather than to recover it. Examples include septic tank leach fields and flood control impoundments. The recharge proponent does not take any responsibility for water recovery.
3. Managed – an intentional activity to increase aquifer recharge and to recover water for economic or environmental purposes. Examples of the mechanisms for managed recharge include injection wells and infiltration basins.

The essential components common to both managed and unmanaged aquifer recharge project are: a source of water, a means to capture that water, sufficient land to harvest the water and an intentional water related activity which can increase the supply of water stored in an aquifer.

Conclusion
Although the agreement with the BLM was for flood control, and the site is not currently approved for managed aquifer recharge, I propose that the Dietrich Canal site qualifies as an unmanaged aquifer recharge site. And that there may be an opportunity to convert the site from unmanaged to managed recharge site by applying conditions on its operation. Therefore, I am recommending the following elements in a license for ground water recharge use.

POD
The permit POD address is incorrect. Glen Saxton recognized the error early on and indicated that the POD should be in section 25, Township 4S, Range 19E. Mr. Saxton's recommended PLSS grid address is the location of the Dietrich Canal's measuring site and/or its diversion from the Little Wood River. And it is the POD address that I identify and recommend for this right.

A licensing amendment will be required.

According to available Lincoln County taxlot information the BLM owns the property at the point-of-diversion.

Source
The permit authorized water diverted from both the Big Wood River and the Little Wood Rivers.

There is a potential path that water from the Big Wood River could take to the POU. But water from the Big Wood River would need to travel a convoluted route involving the Richfield canal and the Jim Byrns Slough before eventually injecting into the Little Wood River near Richfield above the POD. Therefore, the Big Wood River has been eliminated as a source and I am recommending only the Little Wood River as the source for water diverted under this permit.

Cooperative Agreement I-05-63 recognized that the capacity of the Little Wood River and the servant canals could be insufficient to contain all the water periodically available from the Little Wood River drainage.

The Dietrich Canal provides the means to convey the water from the Little Wood River to the recharge site.

Water Use
POU has been used for flood or flow control by the Lincoln and Gooding Counties since the re-diversion

[2]Waterlines Report Series No. 13, Managed aquifer recharge, February 2009, Australian Government National Water Commission.

structure was constructed.
The rediversion structure pre-existed permit 37-7842. Big Wood Canal Company personnel stated that it had been constructed by the Lincoln County in the late 1960's. In response to an information request, the Lincoln County Commissioners office provided the attached photos showing the inscribed date, 1970.

The application for permit states that the applicant expected to use the Dietrich Canal and/or Richfield Canal by contract. The Dietrich Canal is used to convey the water to the site. According to the data in the watermaster's records, the Dietrich Canal has a capacity of nearly 400 cfs. (See May 17, 1984 record). I believe that those records are based on a stage-discharge relationship. The raw, hand-written records show that the relationship was appropriately adjusted throughout that irrigation season.

Based on personal conversations with the current watermaster, Kevin Lakey, and the current manager of the Big Wood Canal Company, Lynn Harmon, the customers served by the Dietrich Canal have an early irrigation season demand of approximately 150 cfs. The water data indicates that almost 400 cfs was flowing in the Dietrich Canal. Given that the daily spot readings may have an error of +/- 10%, there would have been 210 to 250 cfs available through the canal for other uses at this location. (400 cfs – 40 cfs error = 360 cfs. Approximately 150 of the 360 would be dedicated to irrigation use, leaving at least 210 cfs for aquifer recharge.)

According to the current manager of the BWCC, the site can absorb the entire flow that the Dietrich Canal is capable of delivering. (from 7/9/2014 conversation). The quote from the LSARD proposal above indicates that the LSARD believed that the site could absorb more water. However, I do not have data to support either rate statement.

Watermaster records for 1984 indicate that water diverted into and from the Dietrich Canal for flood control (which is unmanaged aquifer recharge), within the development period of the permit (1982-1992). See the attached page from the WM book and my spreadsheet.

My flow rate and volume recommendations are based on watermaster records for the 1984 irrigation season.[3] Although the Little Wood River may have had higher flows in other years, the records from the spring of 1984 show that excess Little Wood River water was channeled into the Dietrich Canal and likely discharged at the Dietrich Canal recharge site. There is no record that the water was subsequently recovered and used.

POU
The POU is located in section 2, Township 5S, Range 19E, which is within the boundary of the LSARD. This specific place-of-use was not advertised but could be included in published "possible sites for recharge" which were in T 5S R 19E. (See the advertisement.)

According to available Lincoln County taxlot information, the BLM owns the place of use. In 1981, before this permit was approved, the BLM, Lincoln and Gooding County Commissions, and the mayors of Shoshone and Gooding signed a cooperative agreement which allowed the public's land to be used for flood control.

The flood control site is a natural basin which has been utilized to capture and hold the water for a short time until it enters the subsurface. I created the POU shape using elevations from the available ArcMap DRG layer. The site is a broad, flat, land surface bounded by the Dietrich Canal bank and low berms to create an infiltration basin.

IDWR knows very little about the soils or subsurface geology at the site. (See Neal Farmer's email.) However, the height of water delivered to site would be limited by the height of the canal bank, which would in turn limit the pressure head available to drive water into the subsurface.
The volume of the infiltration basin likely exceeds the volume I recommend for this license.

[3] Formally titled Water Distribution and Hydrometric Work, Districts Nos. 37 and 37M, Big and Little Wood Rivers, 1984.

Status/combined use
No other water rights overlap the POU.
Several water rights share the POD. Most of those rights are held by the Big Wood Canal Company and when totaled, they exceed what I understood to be the carrying capacity of the Dietrich Canal. (See the water use section above.) I confirmed with the watermaster that the following rights can be diverted into the Dietrich Canal from the Little Wood River: 37-13043, 37-13112 through 37-13114, and 37-21401 through 37-21405 (held by Big Wood Canal Company) and right 37-14264, (held by the BLM). The license will contain a combined limit on the rate.

The licensed right will be subordinated. The following subset of permit condition d will be maintained on the license. This water right shall be secondary to all prior water rights including rights held by any privately owned electrical generating company to appropriate waters in the reaches of the Snake River downstream from the Milner diversion for purposes of hydroelectric power generation.

Priority date
When the permit was reinstated on December 1, 1993 the priority was advanced.

Other Conditions
The recharge site off the Dietrich Canal was developed before this permit was issued. Although IDWR has issued permits to existing facilities in the past, it's not clear that the Department was aware of the Dietrich Canal site. Permit 37-7842 is conditioned looking forward to new facilities rather than backward at a facility that already been developed.

The permit was issued with two conditions which will require additional discussion at the management level. Those conditions are the last two conditions listed under permit condition d. Other. They are:

> Water may not be diverted under this permit until the Board of Directors of the District establish and implement a procedure acceptable to the Director for assuring that the water quality of the Lower Snake Aquifer will not be impaired.
>
> Plans for recharge facilities and any conveyance works needed shall be submitted to the department for approval prior to construction.

It may be possible to acquire plans for the diversion and rediversion structures and therefore satisfy the second of the two conditions above. My preliminary requests for that information have not been successful.

That leaves the first of these two conditions unmet. A plan and procedure for protecting the water quality of the recovered water indicates that IDWR expected that any new facility would be a managed recharge facility. It did not expect that an existing, unmanaged recharge facility would be found to have beneficially used water for recharge.

If the nature-of-use for the Dietrich site is to be changed from an unmanaged recharge site to a managed recharge site through a transfer, then these last two conditions should be reevaluated.

Recommendations
I recommend 250 cfs as the rate for this license. The recommendation is based on a rate derived from the watermaster records for April and May 1984. (See excel spreadsheet)

I recommend 13,900 AF as the volume for this license. This recommendation is again based April and May 1984 watermaster records which indicate that a flow rate exceeding the irrigation requirements was available 28 days of those months. (28 days x 250 cfs x 1.9835 = 13884.5 AF. When rounded to three significant figures = 13,900 AF)

Water District # 37 & 37M

Daily Discharge in second feet of Dietrich Canal #11 for the year ending Sept 30, 1984

Day	April	May	June	July	August	September
1	14	291	238	230	213	197
2	16	309	235	228	214	198
3	16	321	228	233	202	200
4	25	321	227	233	196	200
5	27	319	233	216	197	197
6	27	309	238	217	198	193
7	28	306	226	219	198	193
8	28	300	226	220	196	196
9	29	251	226	223	196	196
10	30	183	227	228	196	196
11	30	184	227	224	196	194
12	30	204	216	223	197	201
13	30	213	213	223	206	185
14	30	219	213	224	214	179
15	30	294	209	230	201	180
16	30	390	206	231	203	179
17	30	396	206	231	204	177
18	30	387	204	230	204	181
19	325	390	207	223	206	168
20	302	387	213	226	206	186
21	259	375	214	237	207	192
22	259	247	213	235	206	196
23	259	209	209	240	207	198
24	259	210	207	240	206	198
25	261	207	204	240	210	188
26	261	207	207	228	213	183
27	259	206	221	217	213	168
28	258	219	228	214	210	159
29	256	226	230	209	213	135
30	256	227	228	213	214	155
31		221		213	217	
24 HR CFS	3694	8528	6579	6998	6359	5568
Mean	123.1	275.1	219.3	225.7	205.1	185.6
Acre Feet	7327.049	16915.29	13049.45	13880.53	12613.08	11044.13

excel calculation

WR# 37-7842 table of differences created by Michele Edl

Day	April	May	June	July	August	September
1		141	88	80	63	47
2		159	85	78	64	48
3		171	78	83	52	50
4		171	77	83	46	50
5		169	83	66	47	47
6		159	88	67	48	43
7		156	76	69	48	43
8		150	76	70	46	46
9		101	76	73	46	46
10		33	77	78	46	46
11		34	77	74	46	44
12		54	66	73	47	51
13		63	63	73	56	35
14		69	63	74	64	29
15		144	59	80	51	30
16		240	56	81	53	29
17		246	56	81	54	27
18		237	54	80	54	31
19	175	240	57	73	56	18
20	152	237	63	76	56	36
21	109	225	64	87	57	42
22	109	97	63	85	56	46
23	109	59	59	90	57	48
24	109	60	57	90	56	48
25	111	57	54	90	60	38
26	111	57	57	78	63	33
27	109	56	71	67	63	18
28	108	69	78	64	60	9
29	106	76	80	59	63	-15
30	106	77	78	63	64	5
31		71		63	67	
sum	1414	2946	6429	6848	6209	5418
	2804.669	5843.391	12751.92	13583.01	12315.55	10746.6

excess of 150

daycount = 28

volume = 28 x 250 x 1.9835 = 13884.5

SCANNED

IWRB00003119

WATER DISTRICT #37 & 37M

DAILY DISCHARGE IN SECOND FEET OF DIETRICH CANAL #11 FOR THE YEAR ENDING SEPT. 30, 1984

DAY	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER
1	14	291	238	230	213	197
2	16	309	235	228	214	198
3	16	321	228	233	202	200
4	25	321	227	233	196	200
5	27	319	233	216	197	197
6	27	309	238	217	198	193
7	28	306	226	219	198	193
8	28	300	226	220	196	196
9	29	251	226	223	196	196
10	30	183	227	228	196	196
11	30	184	227	224	196	194
12	30	204	216	223	197	201
13	30	213	213	223	206	185
14	30	219	213	224	214	179
15	30	294	209	230	201	180
16	30	390	206	231	203	179
17	30	396	206	231	204	177
18	30	387	204	230	204	181
19	325	390	207	223	206	168
20	302	387	213	226	206	186
21	259	375	214	237	207	192
22	259	247	213	235	206	196
23	259	209	209	240	207	198
24	259	210	207	240	206	198
25	261	207	204	240	210	188
26	261	207	207	228	213	183
27	259	206	221	217	213	168
28	258	219	228	214	210	159
29	256	226	230	209	213	135
30	256	227	228	213	214	155
31		221		213	217	
24 HR CFS	3694	8528	6579	6998	6359	5568
MEAN	123	275	219.3	226	205	186
ACRE FEET	7388	17056	13158	13880	12613	11044

TOTAL 24 Hr. C.F.S. 37,726

YEARLY MEAN 206.

YEARLY ACRE FEET 74,828.0

Edl, Michele

From: Lynn Harmon [lynnharmon@cableone.net]
Sent: Tuesday, August 19, 2014 3:14 PM
To: Edl, Michele
Subject: Floodway recharge at Dietrich canal WR#37-7842

Michele, I visited with Curley Sorensen and he stated that the Canal Company installed the structure and the plans were provided by the Corp of Engineers. He said that the plans got destroyed during construction. Perhaps the Corp might have a copy of the Dietrich Floodway plans in their archives. Thanks Lynn Harmon

Edl, Michele

From: Mary Davidson [mdavidson@lincolncountyid.us]
Sent: Thursday, August 07, 2014 5:15 PM
To: Edl, Michele
Subject: RE: Information
Attachments: 003.JPG; 008.JPG; 007.JPG

WR# 37-7842

Here are a few more,
I sure hope this helped, I will let you know if I get any additional information. Did you get a hold of Curly Sorenson?

Mary Davidson
Planning and Zoning Administrator
208-886-9808
208-886-2798 Fax

From: Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]
Sent: Thursday, August 07, 2014 5:04 PM
To: Mary Davidson
Subject: RE: Information

Mary,
It came through just fine. Sorry so long getting back to you. It's been a busy day.

From: Mary Davidson [mailto:mdavidson@lincolncountyid.us]
Sent: Thursday, August 07, 2014 1:09 PM
To: Edl, Michele
Subject: RE: Information

Let me know how this comes thru

Mary Davidson
Planning and Zoning Administrator
208-886-9808
208-886-2798 Fax

From: Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]
Sent: Thursday, August 07, 2014 9:54 AM
To: Mary Davidson
Subject: RE: Information

Thank you very much. If emailing them is a hassle, I'll gladly accept the print outs via snail mail.
Idaho Department of Water Resources
322 E Front St
Boise, 83720

Our flood plain coordinator has been on vacation so I don't know yet if IDWR has any knowledge of the construction specs, date or other details of the Dietrich flood/flow control structure. If you have anything in the way of support documents, please know that I'm interested in them.
Michele Edl
208-287-4946

Edl, Michele

From: Mary Davidson [mdavidson@lincolncountyid.us]
Sent: Monday, August 18, 2014 5:01 PM
To: Edl, Michele
Subject: Pictures WR# 37-7842

Michele,
These picture were taken on July 29th 2014.

Hope this helps!

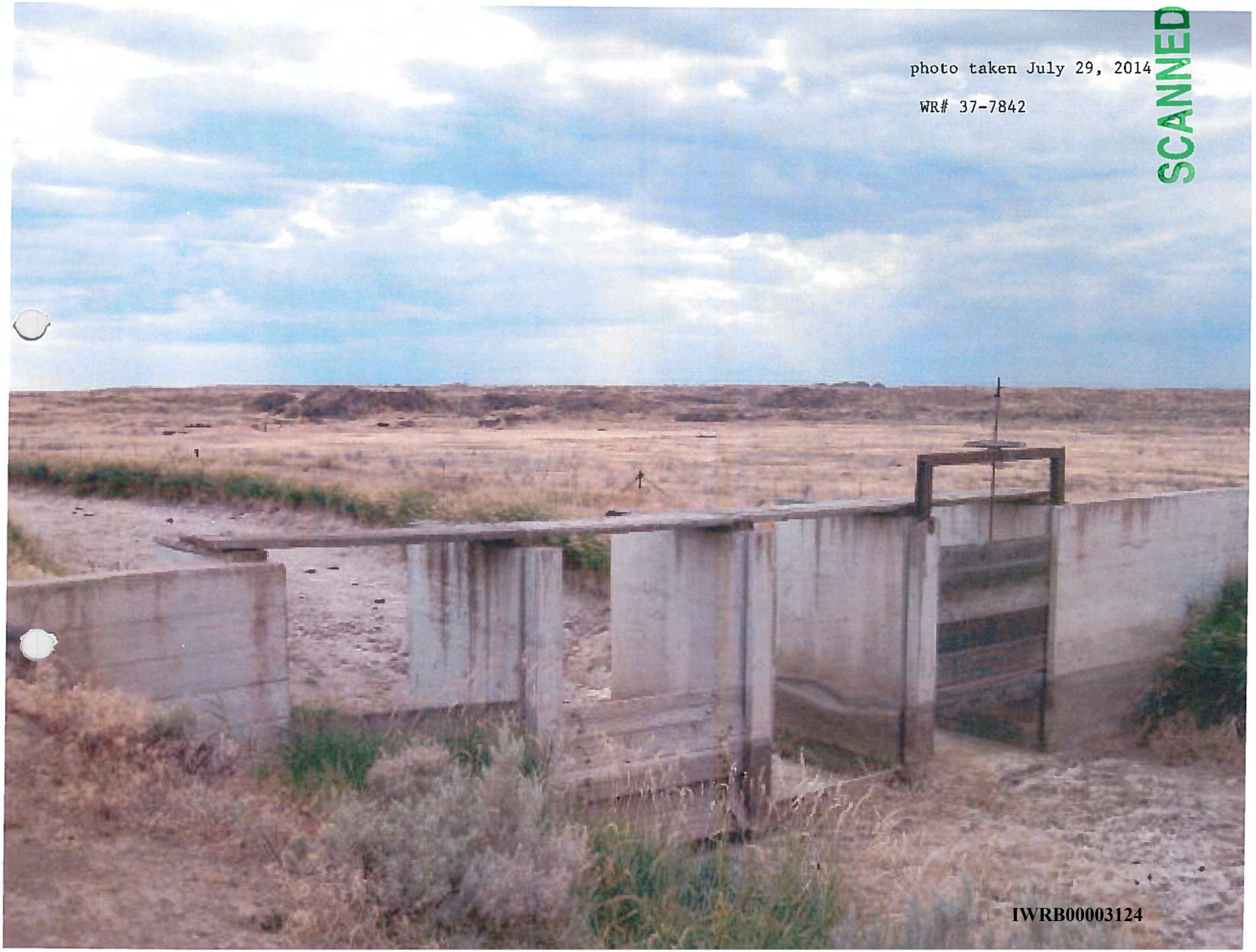


photo taken July 29, 2014
WR# 37-7842
SCANNED
IWRB00003124


photo taken July 29, 2014
WR# 37-7842
SCANNED
IWRB00003125

photo taken July 29, 2014

WR# 37-7842

Edl, Michele

From: Mary Davidson [mdavidson@lincolncountyid.us]
Sent: Thursday, August 07, 2014 1:09 PM
To: Edl, Michele
Subject: RE: Information
Attachments: 010.JPG

Let me know how this comes thru

Mary Davidson
Planning and Zoning Administrator
208-886-9808
208-886-2798 Fax

From: Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]
Sent: Thursday, August 07, 2014 9:54 AM
To: Mary Davidson
Subject: RE: Information

Thank you very much. If emailing them is a hassle, I'll gladly accept the print outs via snail mail.
Idaho Department of Water Resources
322 E Front St
Boise, 83720

Our flood plain coordinator has been on vacation so I don't know yet if IDWR has any knowledge of the construction specs, date or other details of the Dietrich flood/flow control structure. If you have anything in the way of support documents, please know that I'm interested in them.
Michele Edl
208-287-4946

From: Mary Davidson [mailto:mdavidson@lincolncountyid.us]
Sent: Thursday, August 07, 2014 9:41 AM
To: Edl, Michele
Subject: Information

Michele,
I have been out of the office since Monday just returning. I have not be able to download the pictures off the camera as yet. I am waiting for the Clerk to come in today to see if she can download onto her machine and get over to me.

I will let you know if there is a problem and I have to have printed off.

Have a wonderful and productive day☺

Mary Davidson
Planning and Zoning Administrator

208-886-9808
208-886-2798 Fax

photo taken July 29, 2014

WR# 37-7842

LOWER SNAKE AQUIFER RECHARGE DISTRICT

GROUND WATER RECHARGE DEMONSTRATION PROPOSAL

for

High Plains States Groundwater Demonstration Program Act of 1983

submitted by

John LeMoyne, Chairman
Route 1, Box 148
Hagerman, Idaho 83332
837-4887

July 7, 1986

ATTACHMENT TO LICENSE REVIEW WR# 37-7842

springs show the changes in amount of water discharged.

	1902	1910	1914	1917	1918	1924
Blue Lakes Springs	80(A)	118(A)	199(A)	215(O)	216(S)	194(S
Crystal Springs	304(A)	-	-	536(O)	-	486(S
Niagara Springs	107(A)	-	-	242(O)	322(S)	215(S
Briggs Springs	77(A)	_	_	128(S)	130(S)	125(O

(A) August (O) October (S) September

1] Geology and Ground Water, Snake River Plain, ID. Geological Supply Paper #774. Washington 1938.

In addition to this long term effect, there is an annual one demonstrated by the springs from the irrigation season. Approximately 30 days after irrigation starts on the plain above the springs, their flows begin to increase reaching a peak in September and October shortly after the irrigation is turned off. The lowest flows are experienced during April and May which is about the time irrigation water is turned into the canal system. See attachment III - Box Canyon flows.

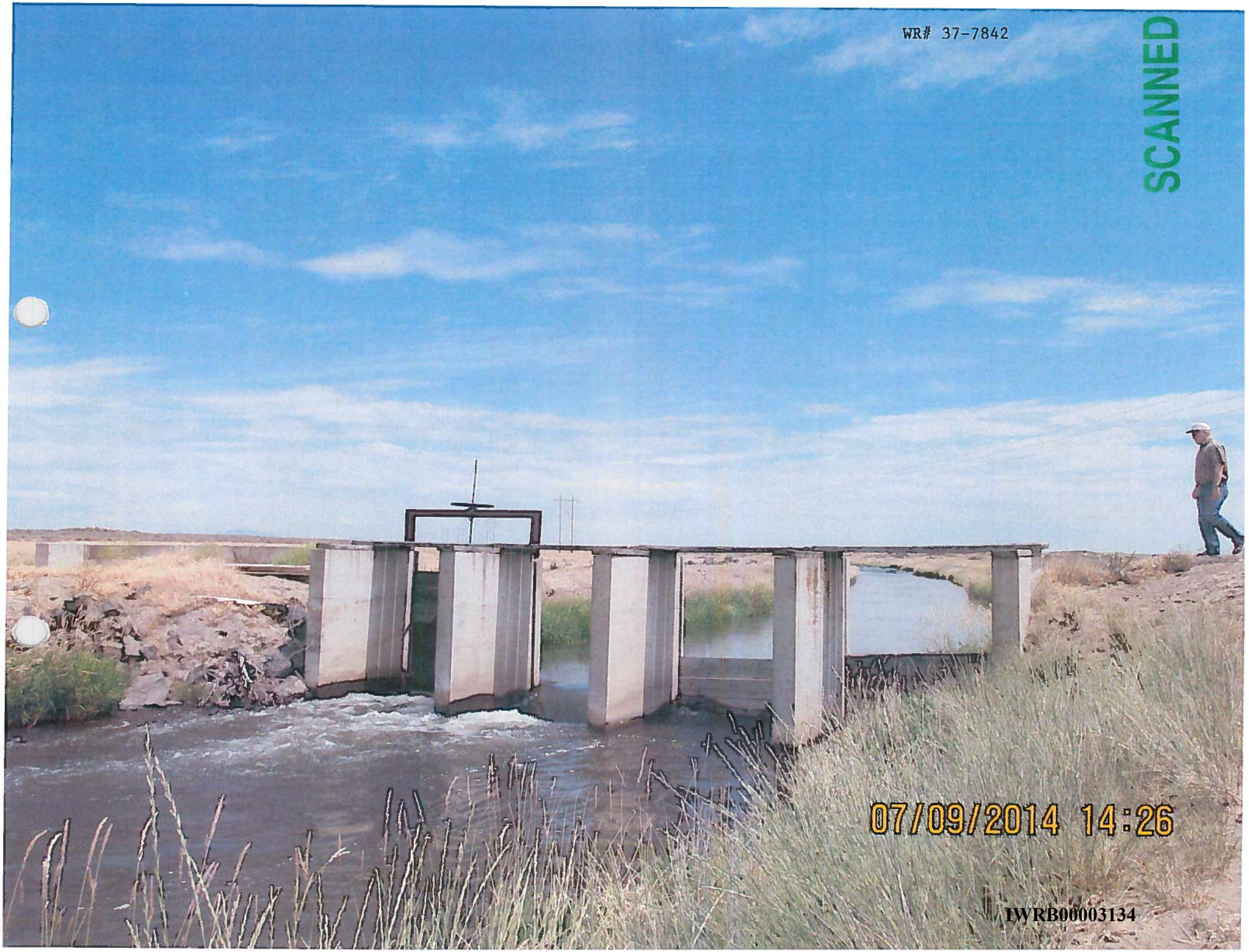
2] Artificial Recharge to the Snake Plain Aquifer in Idaho, R.F. Norvitch, C.A. Thomas, and R.J. Madison; Aug.,1969.

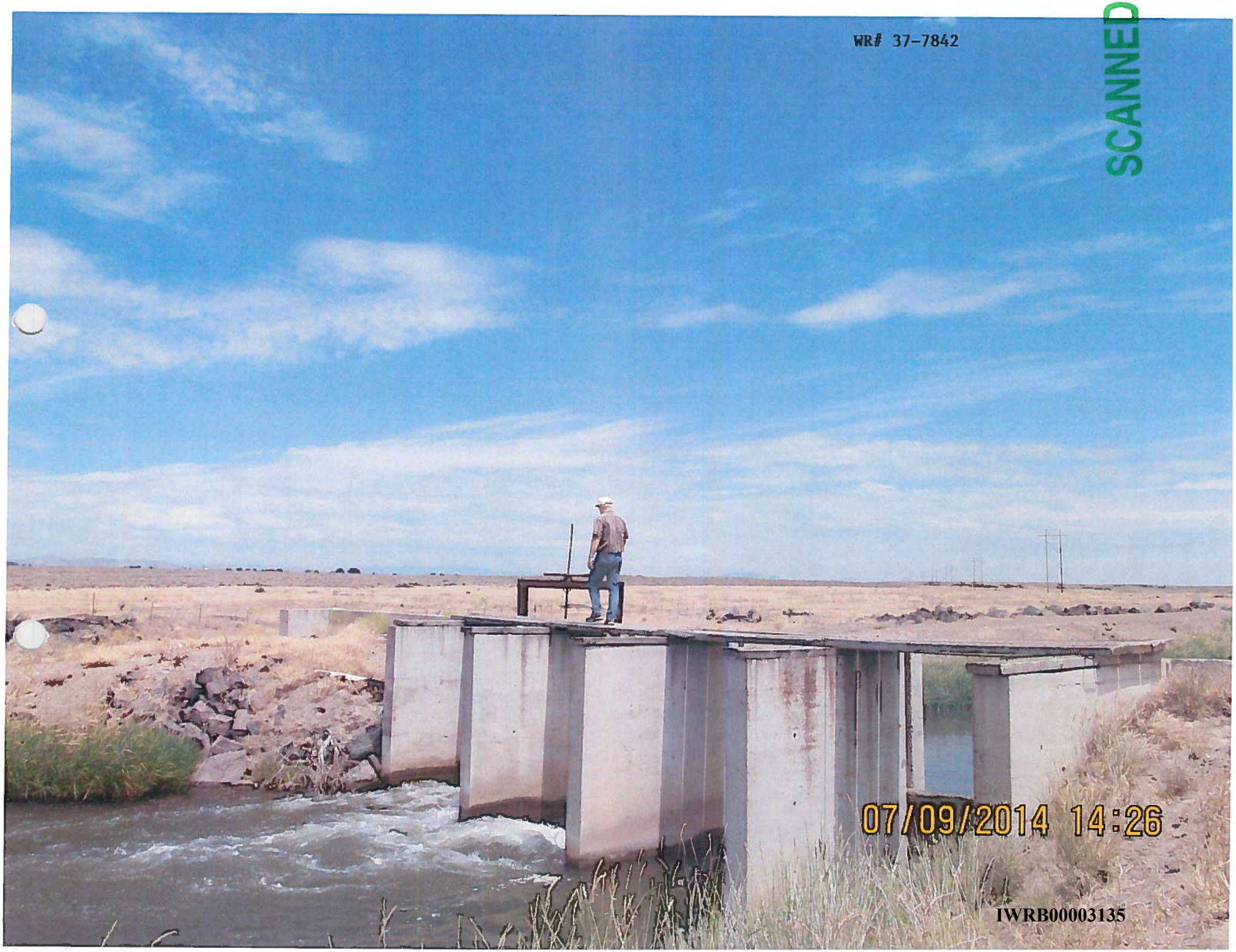
There are two locations where water is being discharged into the aquifer. One is on the Dietrich Canal just south of Richfield. This is a flood control facility used by Lincoln

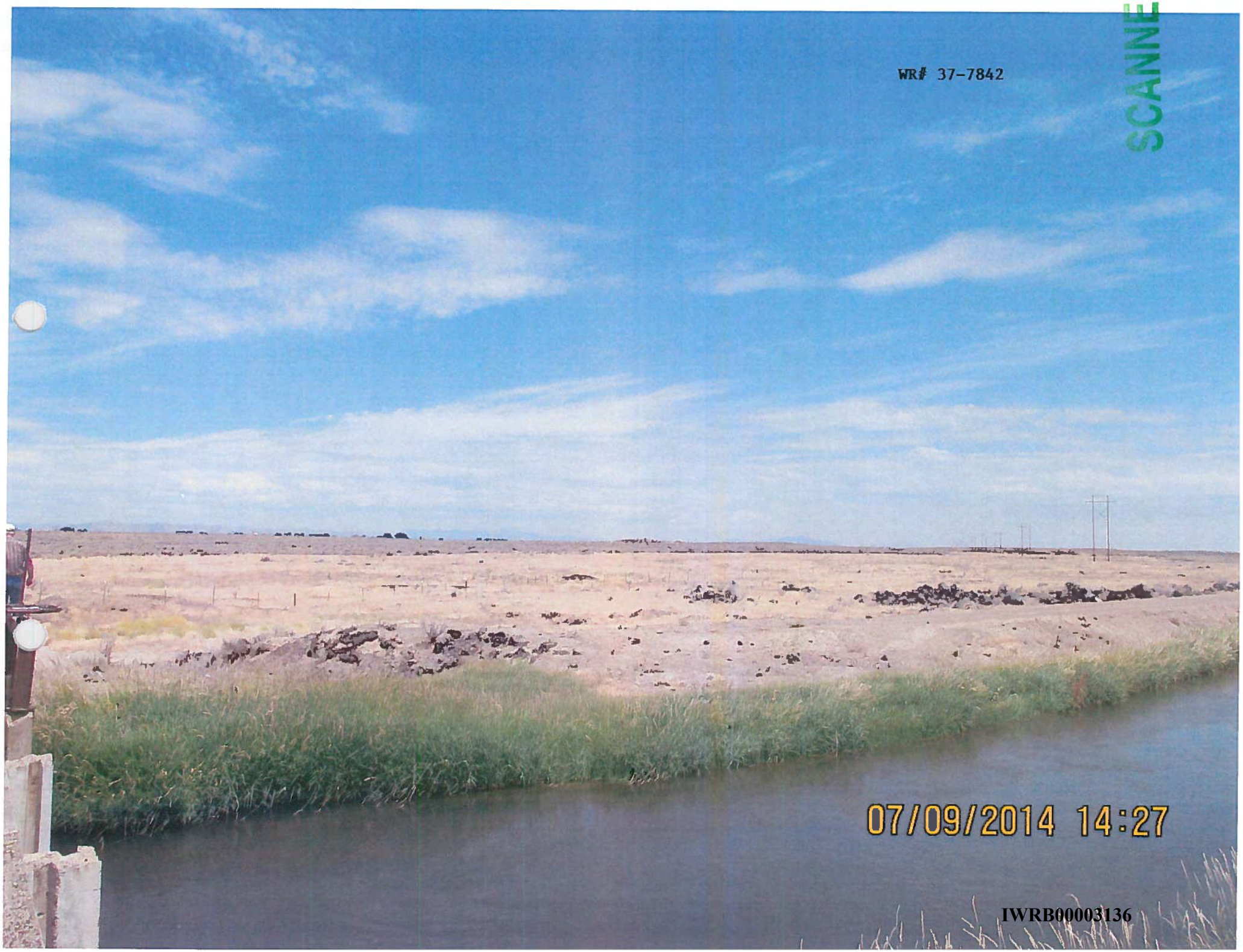
and Gooding Counties to prevent flooding along the Little Wood River. This site will handle 800 CFS of discharge up to a week and a continued flow of approximately 200 CFS. The other site was installed by the Recharge District at a cost of $79,746.00. It is north of Shoshone on the Milner-Gooding Canal and at present can handle about 300 CFS. In 1985, there were 7,800 acre feet discharged at this site over a 16 day period. Monitoring at this site, attachment IV shows the water in the adjacent well increased during the recharge period and was highest just after the recharge period ceased.

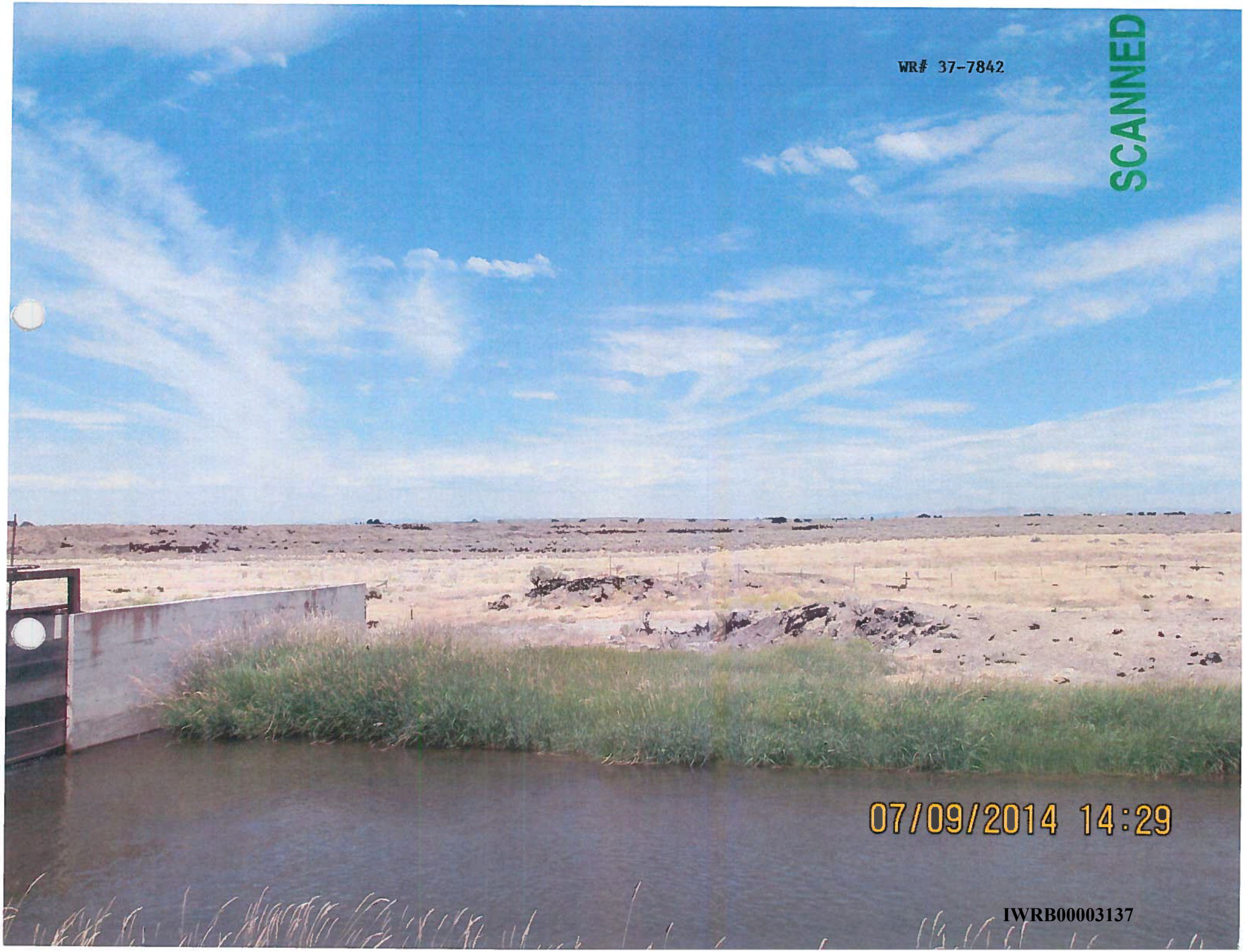
E. Hydrologic Conditions

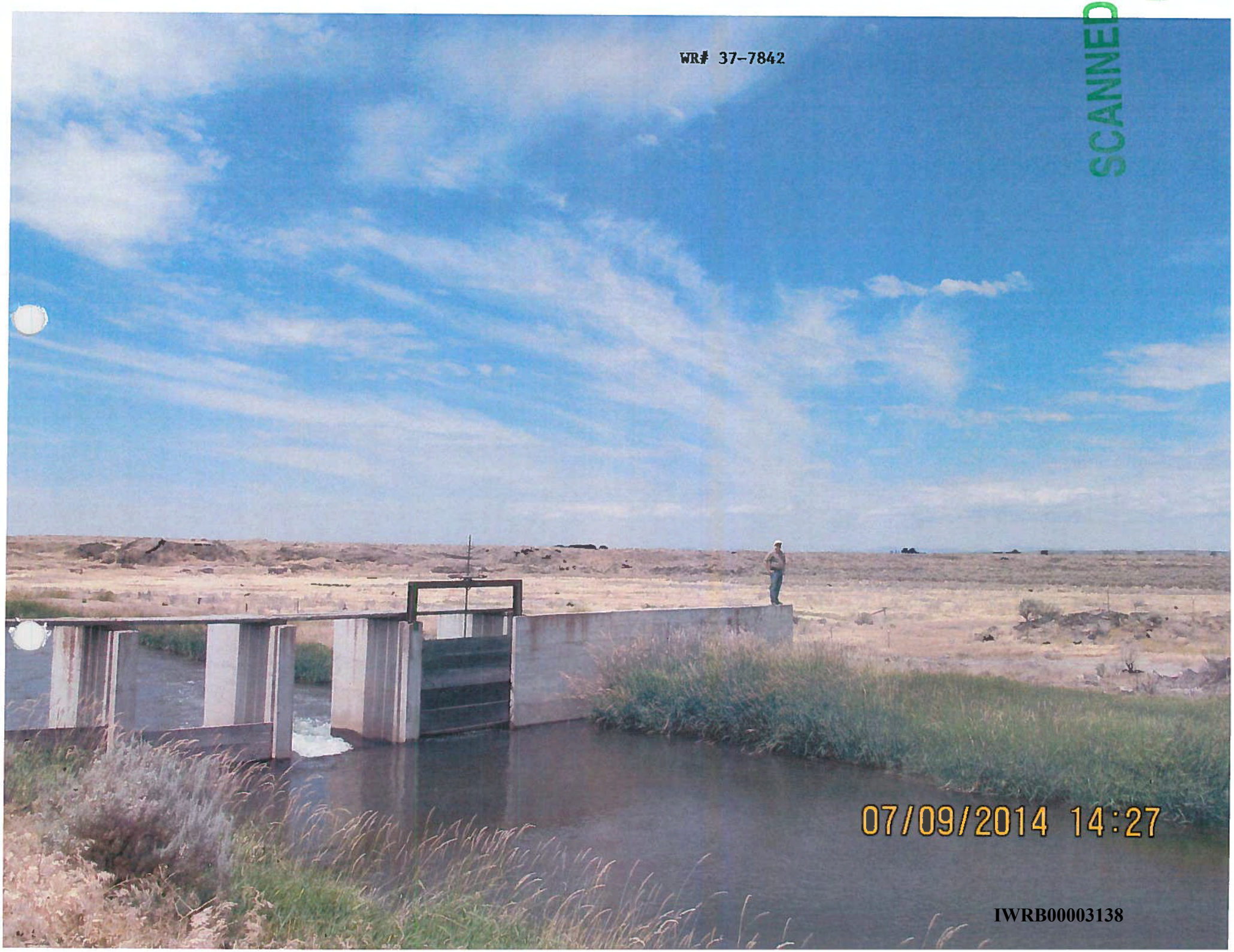
Attachment VA and VB indicate the direction of flow of the Snake River aquifer. If has been a concern among the water users of the aquifer, that the aquifer level has been continually decreasing. We have enclosed information on 8 different wells located on attachment IIC and measurements documented on attachment IIB. Attachment IIB shows that the lowest water level is always a later date than the highest water level. All the lowest levels are in the 1980's with one exception; Well no.4 in 1979. The only data available to us was up through 1982. If we had access to recent data, it would be interesting to see if depth had continued to decline. This drop in water table is also demonstrated from the spring flow as substantiated by attachments IIA and III. The following events have occured over the past years which have led up to the reduced spring flows and a drop in the

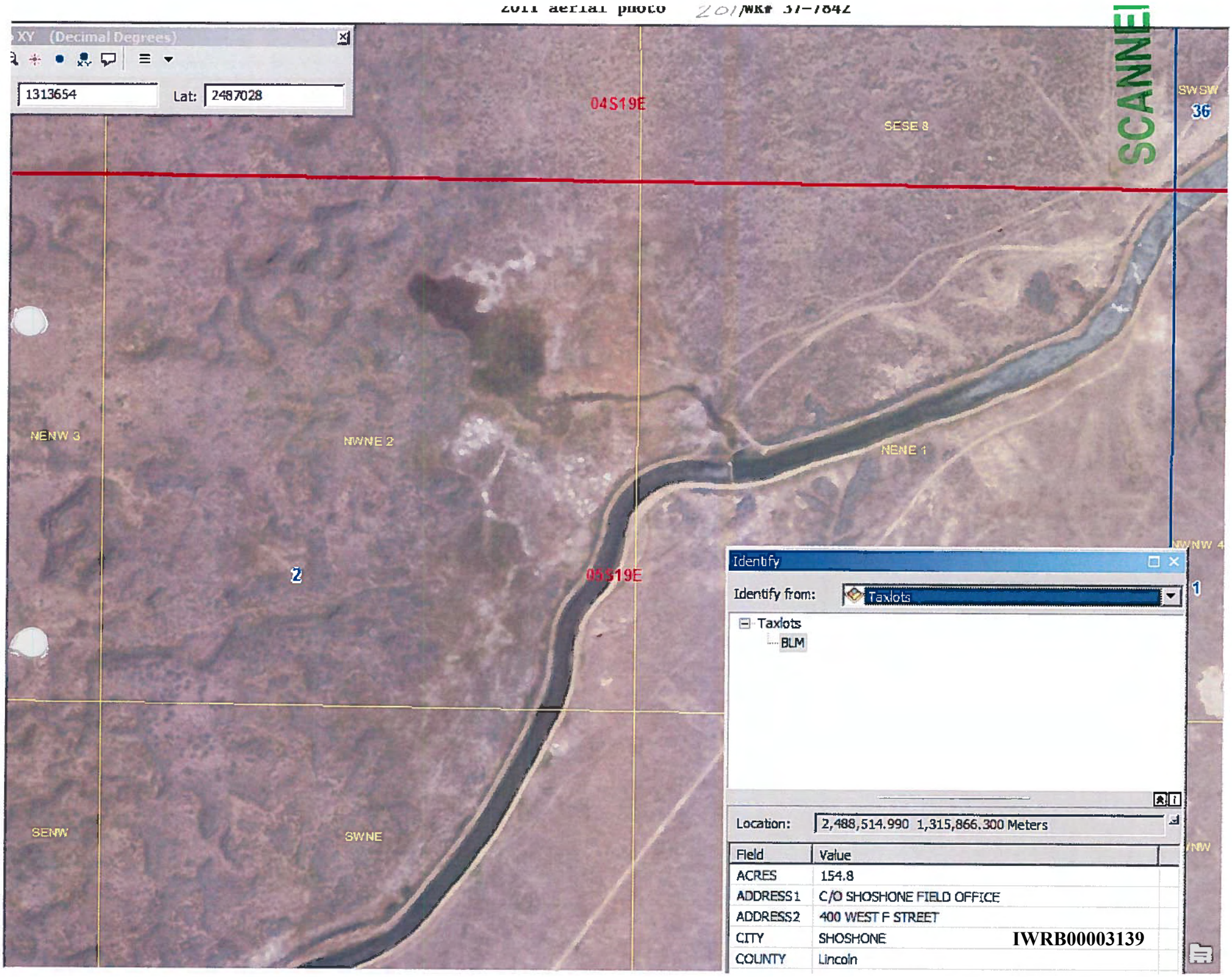

WR# 37-7842
SCANNED
07/09/2014 14:26
IWRB00003134


WR# 37-7842
SCANNED
07/09/2014 14:26
IWRB00003135


WR# 37-7842
SCANNED
07/09/2014 14:27
IWRB00003136


WR# 37-7842
SCANNED
07/09/2014 14:29
IWRB00003137


WR# 37-7842
SCANNED
07/09/2014 14:27
IWRB00003138


2011 aerial photo
SCANNED
XY (Decimal Degrees)
1313654
Lat: 2487028
04S19E
SESE 8
SWSW
36
NENW 3
NWNE 2
NENE 1
2
05S19E
SENW
SWNE
Identify
Identify from:
Taxlots
Taxlots
BLM
Location:
2,488,514.990 1,315,866.300 Meters
Field
Value
ACRES
154.8
ADDRESS1
C/O SHOSHONE FIELD OFFICE
ADDRESS2
400 WEST F STREET
CITY
SHOSHONE
COUNTY
Lincoln
IWRB00003139

Edl, Michele

From: Farmer, Neal
Sent: Friday, August 01, 2014 10:24 AM
To: Edl, Michele; Keen, Shelley
Cc: Patton, Brian; Lynn Harmon
Subject: GPS coordinates for Dietrich canal floodway diversion gates

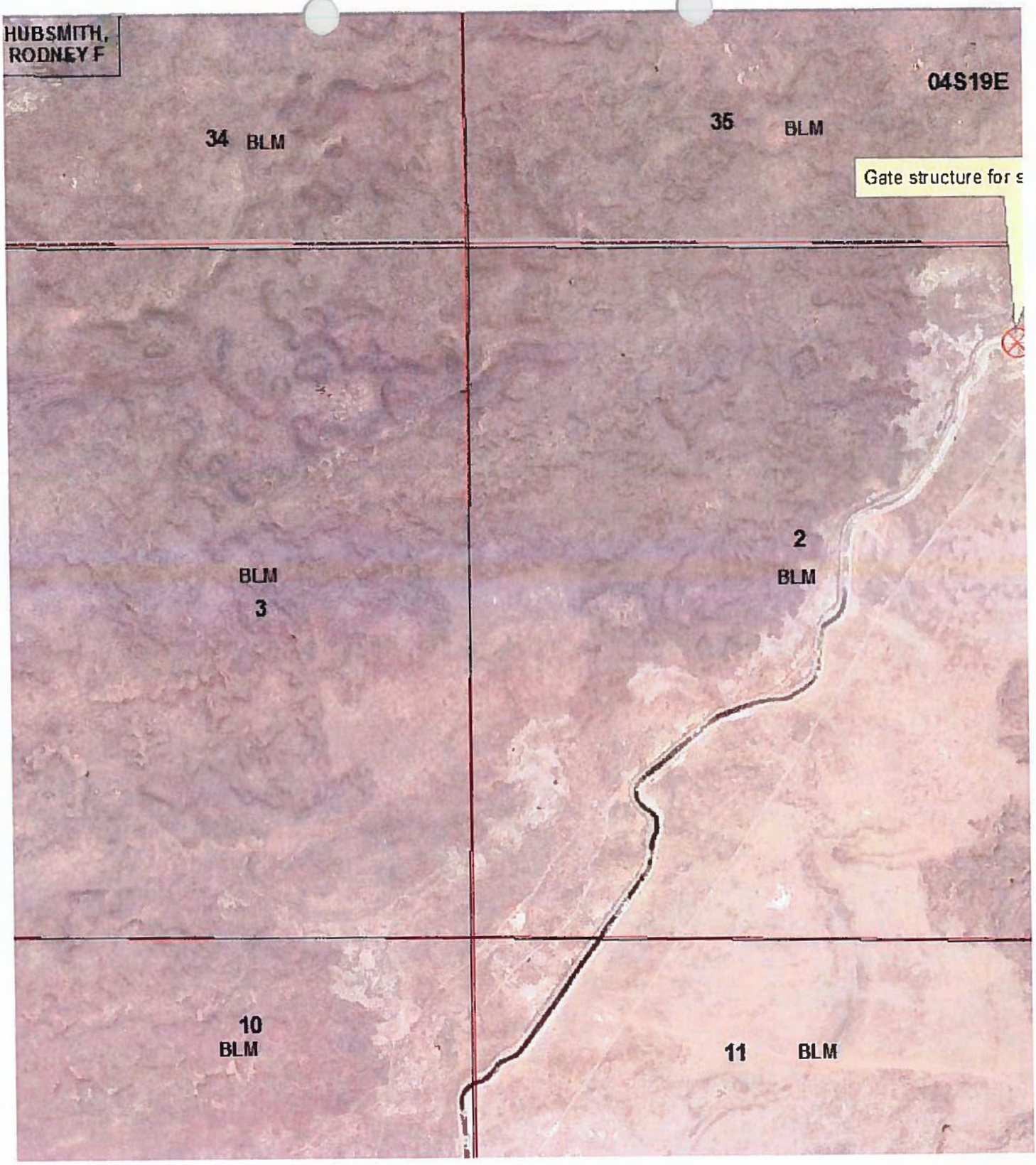
Michele,

Below is the information from a gps point I collected in year 2008 for the location of the diversion headgate structure on the Dietrich canal where water is spilled out into the BLM land.

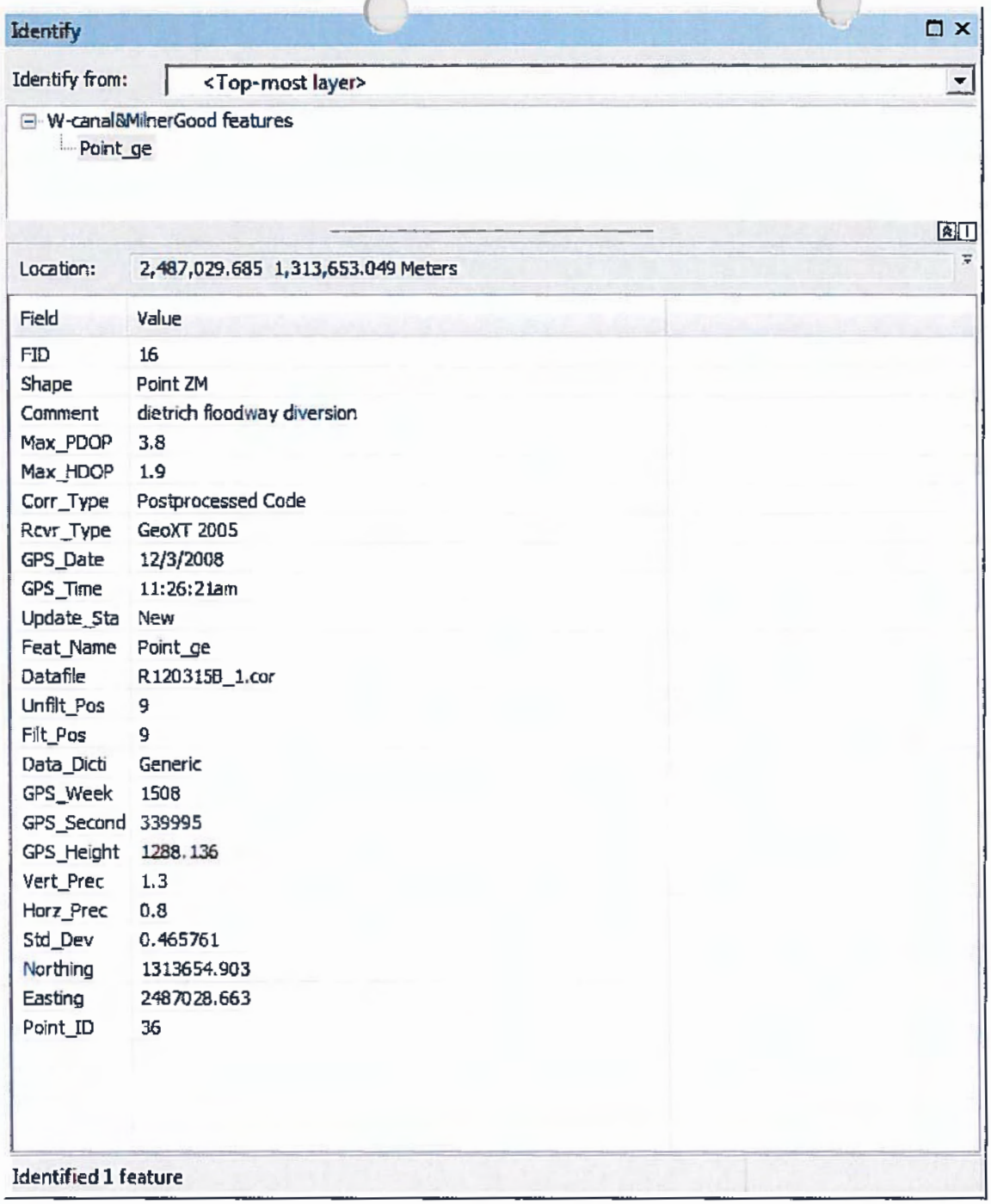
Easting = 2487028.663

Northing = 1313654.903

Neal's coordinates are in the wrong units system



SCANNED



Edl, Michele

From: Farmer, Neal
Sent: Friday, August 01, 2014 8:03 AM
To: Edl, Michele
Subject: dietrich canal hydrogeology

Michele...not much info on the hydrogeology as there hasn't been many wells drilled ...given that it appears to be all basalt for several hundred feet and a depth to water table of about 200 feet....that's about all we know.

Neal

Edl, Michele

WR# 37-7842

From: Farmer, Neal
Sent: Friday, July 11, 2014 9:44 AM
To: Edl, Michele; Keen, Shelley
Subject: BLM agreement for flood water release south of Richfield along Dietrich canal attached
Attachments: BLM Cooperative Agreement I-05-63 (Richfield site).pdf

Just fyi...here is the agreement to release flood waters out of the Dietrich canal onto BLM land that we discussed yesterday...no mention of authorized use as a recharge site.

Neal

IN REPLY REFER TO

2800

United States Department of the Interior

BUREAU OF LAND MANAGEMENT
Shoshone District Office
P.O. Box 2 B
Shoshone, ID 83352

June 15, 1982

Lou Pence
Soil Conservation Service
Wood River Resources RC&D
131 East Avenue E
Gooding, ID 83330

Dear Lou:

Enclosed is a copy of the flood control cooperative agreement I-05-63 that you requested. It should have all the requirements that would be expected of the cooperators, if they should need to use the public lands for this purpose.

Also enclosed is Information Bulletin No. 2, which explains what is required for filing an application for a right-of-way on public lands. You will also find an application form that must be used when making an application. All rights-of-way filings are now sent to this office.

If I can be of further help, please let me know.

Sincerely,

Ervin Cowley

Ervin Cowley
Monument Area Manager

Enclosures

COOPERATIVE AGREEMENT
I-05-63

BETWEEN

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
SHOSHONE DISTRICT OFFICE
P.O. BOX 2B
SHOSHONE, ID 83352

AND

MUTUAL AGREEMENT OF:

GOODING COUNTY COMMISSIONERS
GOODING, IDAHO 83330

LINCOLN COUNTY COMMISSIONERS
SHOSHONE, IDAHO 83352

CITY OF GOODING
GOODING, IDAHO 83330

CITY OF SHOSHONE
SHOSHONE, IDAHO 83352

TABLE OF CONTENTS

COOPERATIVE AGREEMENT
- I-05-63

I. PURPOSE:

The purpose of this agreement is to establish mutual guidelines and provide procedures and authorization so the cooperators can enter public lands administrated by the Bureau of Land Management (BLM) for flood control purposes. The public lands will only be used when there is an emergency to alleviate the dangers of flooding the communities of Shoshone and Gooding and when the natural drainage capacity of the Little Wood River and other canal laterals are insufficient to contain the water.

II. AUTHORITY:

A. Bureau of Land Management:

Section 307, Federal Land Policy and Management Act of 1976, P.L. 94-579, 43 U.S.C. 1737.

B. Cooperators:

III. AGREEMENT AREA

This cooperative agreement will involve only public lands located within the Shoshone BLM District, and described as follows:

T. 5 S., R. 19 E., Boise Meridian, Lincoln County, Idaho		
Section 2:	SW4NE4, SW4, NW4SE4	240 acres
Section 3:	SE4	160 acres
Section 8:	SE4	160 acres
Section 9:	S2	320 acres
Section 10:	NE4, W2, W2SE4	560 acres
Section 11:	NW4NW4	40 acres
Section 15:	NE4NW4, W2W2	200 acres
Section 17:	ALL	640 acres

There are 2,320 acres of public land in the agreement area which is considered a desert environment. The State of Idaho owns 640 acres contiguous on three sides to the agreement area and identified as Section 16, which is not part of this agreement.

The agreement area lies entirely within the Richfield Pasture of the Dietrich Butte Grazing Allotment. This allotment currently has 10 livestock operators who may use up to 5,419 active cattle AUMs each year. Also, there is fall sheep use on these lands by another livestock operator having grazing preference in the adjoining Wildhorse Allotment. Idaho Power Company has a 46 kv transmission line that traverses the tract with a 50 ft. right-of-way. The Dietrich Canal is also authorized by a right-of-way. This agreement is continuing the existing use of the lands for flood control purposes and is no way authorizing addition or new development to occur.

IV. DEFINITIONS

A. Bureau of Land Management (BLM):

The agency in the Department of Interior that has management responsibilities on those lands covered by this agreement.

B. Cooperators:

The governmental bodies of Lincoln and Gooding Counties and the cities of Shoshone and Gooding that have jointly agreed to the provisions of this agreement for the common purpose and effort of controlling flood waters along the Little Wood River.

C. District Manager:

The authorized officer in the Bureau of Land Management who has been delegated the responsibility, by the Secretary of the Interior, for the management of public lands within the Shoshone District.

D. Contractor:

All companies, groups, individuals, or agents to include federal and state agencies who are retained by the cooperators in their flood control program for the operation of this agreement.

E. Degradation:

The changing, altering, or lowering in character and quality of the lands as a result of the cooperators use through vegetative and soil disturbance, creating a negative or undesirable effect on the environment. This may be the effects from, but not limited to, the hydraulic action of flood waters or the disturbance by vehicles or heavy equipment.

V. OPERATION AND RESPONSIBILITIES

The Bureau of Land Management, acting through the District Manager, and the Cooperators, acting through the respective mayors and commission chairmen, agree as follows:

A. The Bureau of Land Management will:

1. Provide only the land used in the operation of this agreement.

2. Continue to allow existing uses on the subject lands and any additional uses which are compatible with this agreement. Existing uses on the subject land may include, but are not limited to recreation, minerals, livestock grazing, wildlife habitat, and public access.

B. The Cooperators will:

1. Provide all labor, material, equipment, and money needed in the maintenance programs, rehabilitation, or studies authorized by the cooperators for the operation of this agreement.

2. Exercise every reasonable precaution to prevent the degradation of all resources and shall rehabilitate the area, both inside and outside of the agreement area, which has been subject to degradation by the cooperators or their contractor's use.

3. Restrict operations to the existing roads or trails if vehicular equipment is used within the agreement area and no new roads will be constructed.

4. Indemnify and hold harmless the Bureau of Land Management, its officers, agents, and employees, from any and all damages and claims for damages of every description or kind whatsoever which may result from the exercise of privileges granted by this agreement or which may result from the exercise of any of the rights reserved herein.

5. Be subject to the provisions of Executive Order 11246 of September 24, 1965, as amended, which sets forth the Equal Opportunity clauses. A copy of this order may be obtained from the district manager.

6. Be responsible for the prevention and suppression of all range fires resulting from their own or their contractor's actions. This includes responsibility for suppression costs incurred by any party in controlling such fires that are determined to be the cooperator's responsibility.

7. Allow authorized representatives of the Bureau of Land Management and the general public the right of unrestricted ingress and egress within the agreement area.

8. Remove from the public lands all trash, litter, garbage, and other items originating from the cooperators and contractor's use.

9. Notify the district manager immediately if damage has occurred to public lands within or outside the agreement area as a result of the operation of this agreement.

10. If additional development is needed, beyond that which now exists, to prevent flood waters from overflowing the use area to external lands, provide the district manager with detailed plans for such development, 30 days in advance, for review and concurrence.

C. Other Items Mutually Agreed by the Bureau of Land Management and Cooperators:

1. This agreement in no way abrogates BLM responsibility and authority as set by the Federal Land Policy and Management Act (Public Law 94-579, 90 Statutes 2743), for management of the subject lands.

2. None of the items covered in this cooperative agreement are to be construed as obligating either party to the expenditure of funds in excess of authorized appropriations.

3. This agreement shall remain in full force and effect until modified or terminated by mutual agreement of BLM and the cooperators. This will be accomplished by a 30-day written notice by either party on the other.

Any proposals to change, modify, or otherwise alter any part of this agreement must have total concurrence by all the cooperators and BLM.

4. This agreement or any interest therein shall not be transferred or assigned without prior approval, in writing, of the district manager and the cooperators.

5. All tools, equipment, and other property taken upon or placed upon the public land by the cooperators or contractor during maintenance or rehabilitation efforts, shall remain the property of the cooperators or contractor and will be removed by the cooperators or contractor within a reasonable time after completion of their work. If they are not removed as directed by the district manager, within a reasonable time, then trespass actions can be taken towards the cooperators or contractor under the provisions of 43 CFR 9230.

6. No rental or use fees will be charged for the use of the public lands involved with this agreement. However, all damage and rehabilitation of the lands will be the responsibility of the cooperators or contractor use. If mineral materials such as gravel, fill dirt, etc., are needed for any phase of maintaining or rehabilitating the subject land, the cooperators will notify BLM. These materials shall be applied for under the provisions of 43 CFR 3610 and 3620, whichever is applicable.

D. Effective Date

This cooperative agreement will be in full force and effect as of the last date signed.

FLOOD CONTROL COOPERATORS

LINCOLN COUNTY COMMISSIONERS

O. J. HARRIS, CHAIRMAN
SHOSHONE, IDAHO
4-10-81
DATE

GOODING COUNTY COMMISSIONERS

RICK BRAILSFORD, CHAIRMAN
GOODING, IDAHO
4-10-81
DATE

CITY OF SHOSHONE

ELWOOD WERRY, MAYOR
SHOSHONE, IDAHO
4-8-81
DATE

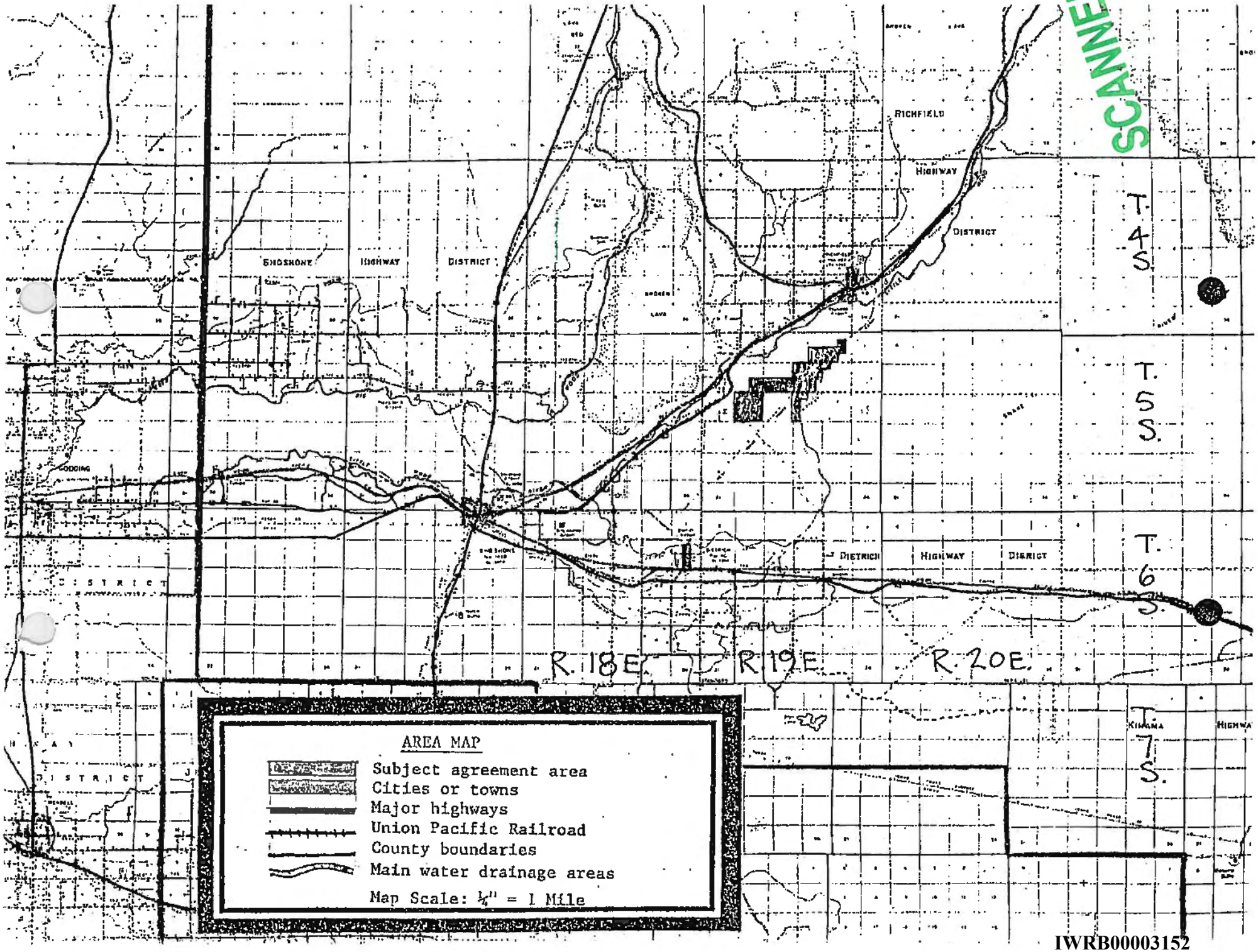
CITY OF GOODING

J. E. HELLER, MAYOR
GOODING, IDAHO
4-17-81
DATE

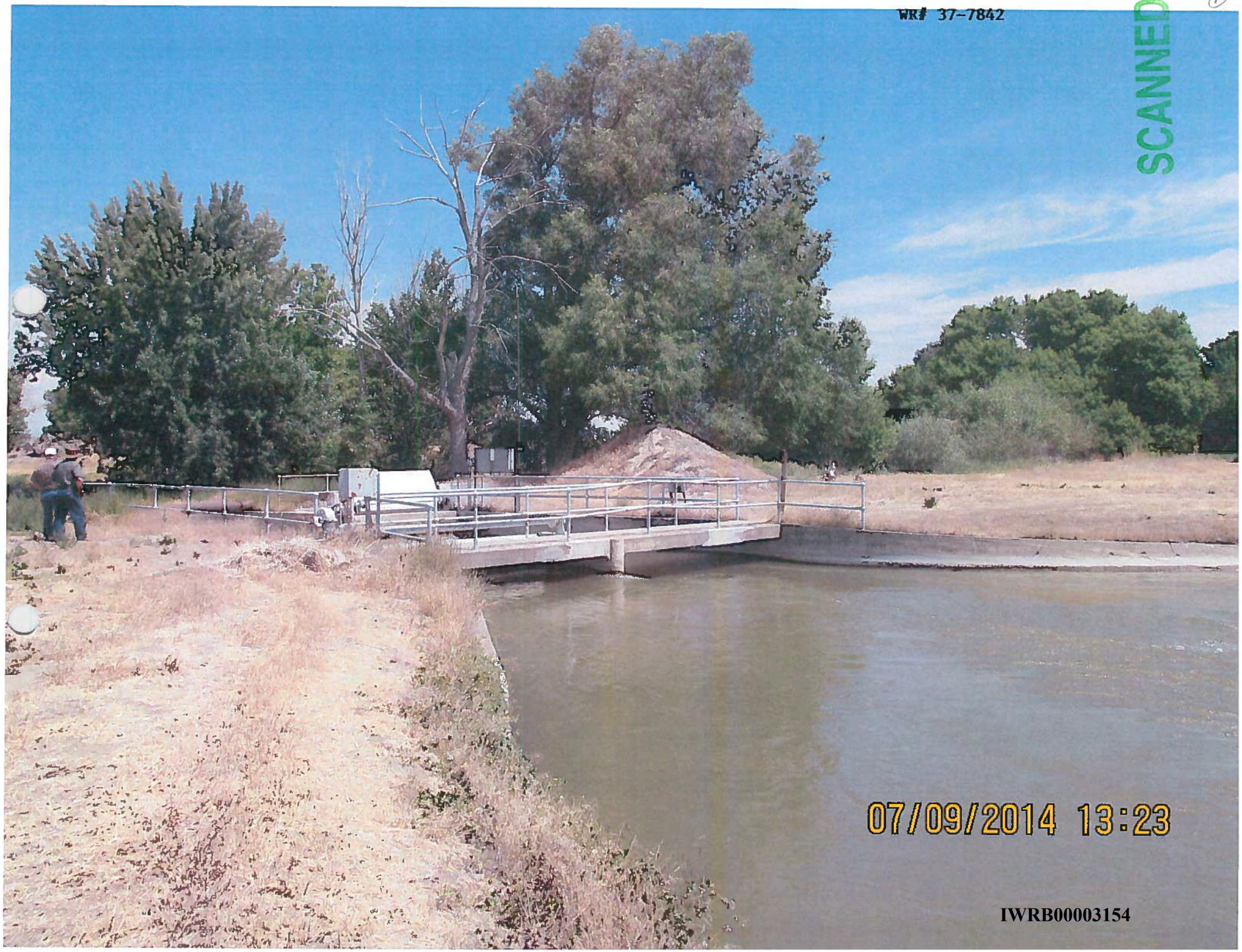
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

for CHARLES J. HASZIER
SHOSHONE DISTRICT MANAGER
SHOSHONE, IDAHO

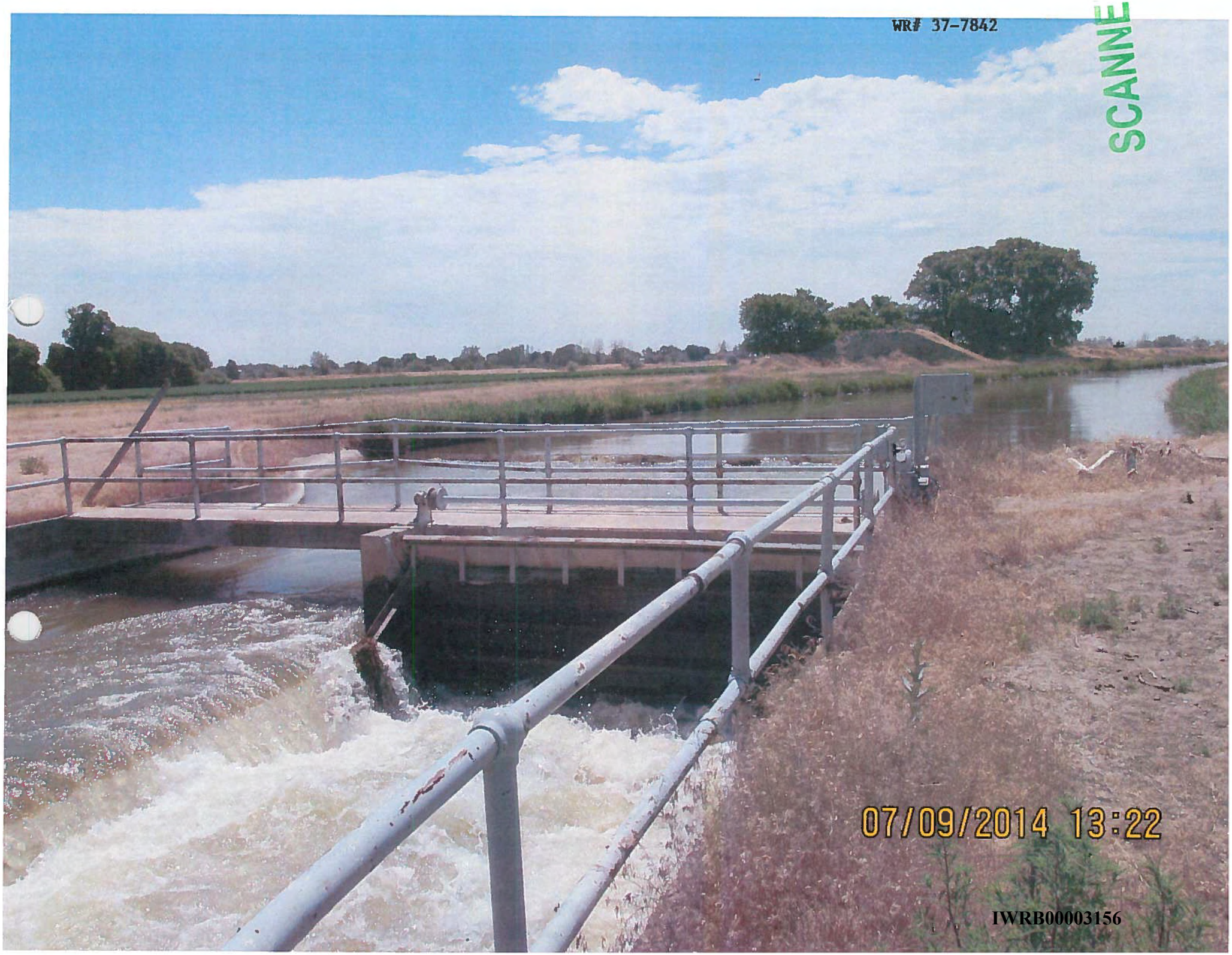
20 April 1981



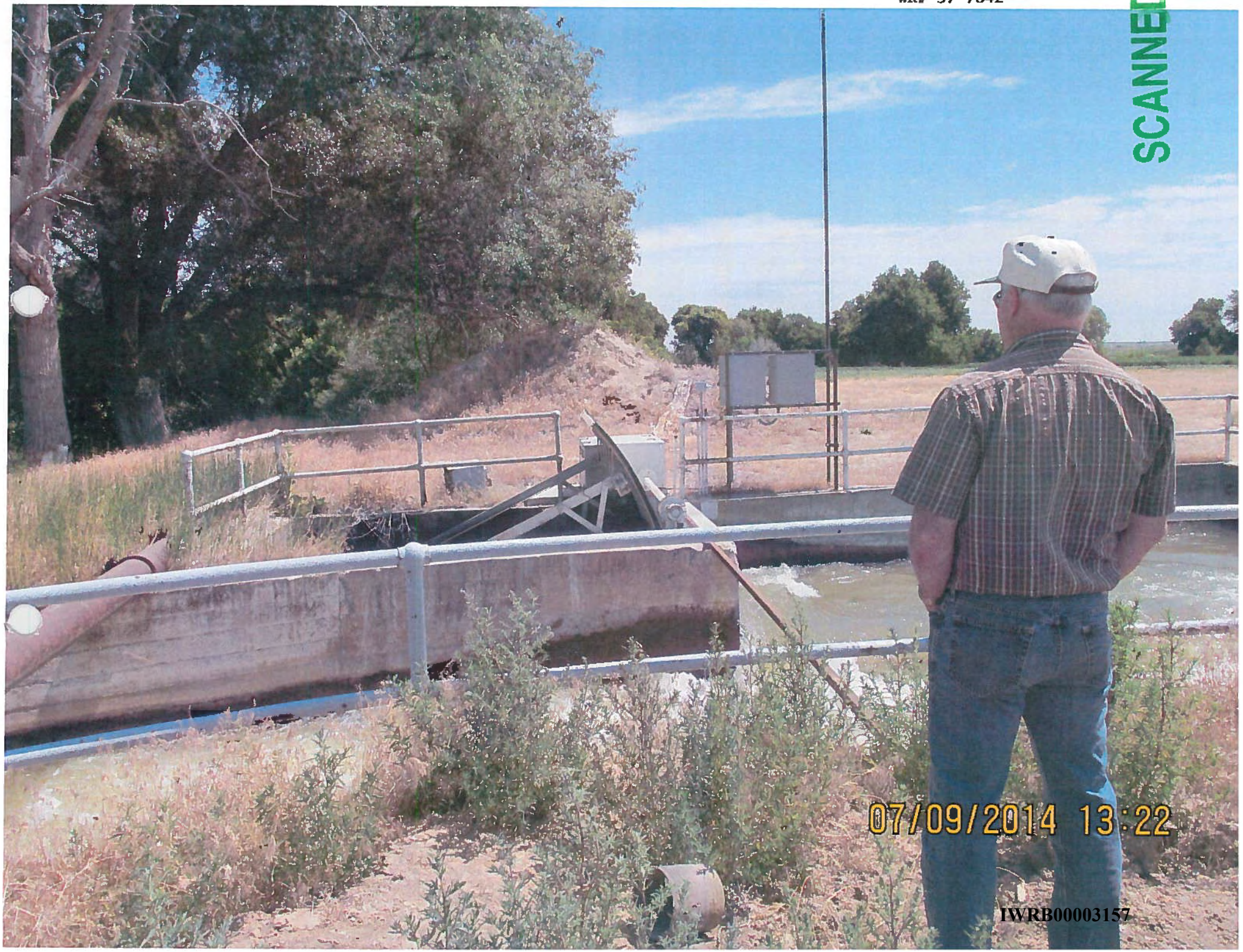
bifurcation 7/9/2014 photo locations WR# 37-7842


WR# 37-7842
SCANNED
07/09/2014 13:23
IWRB00003154

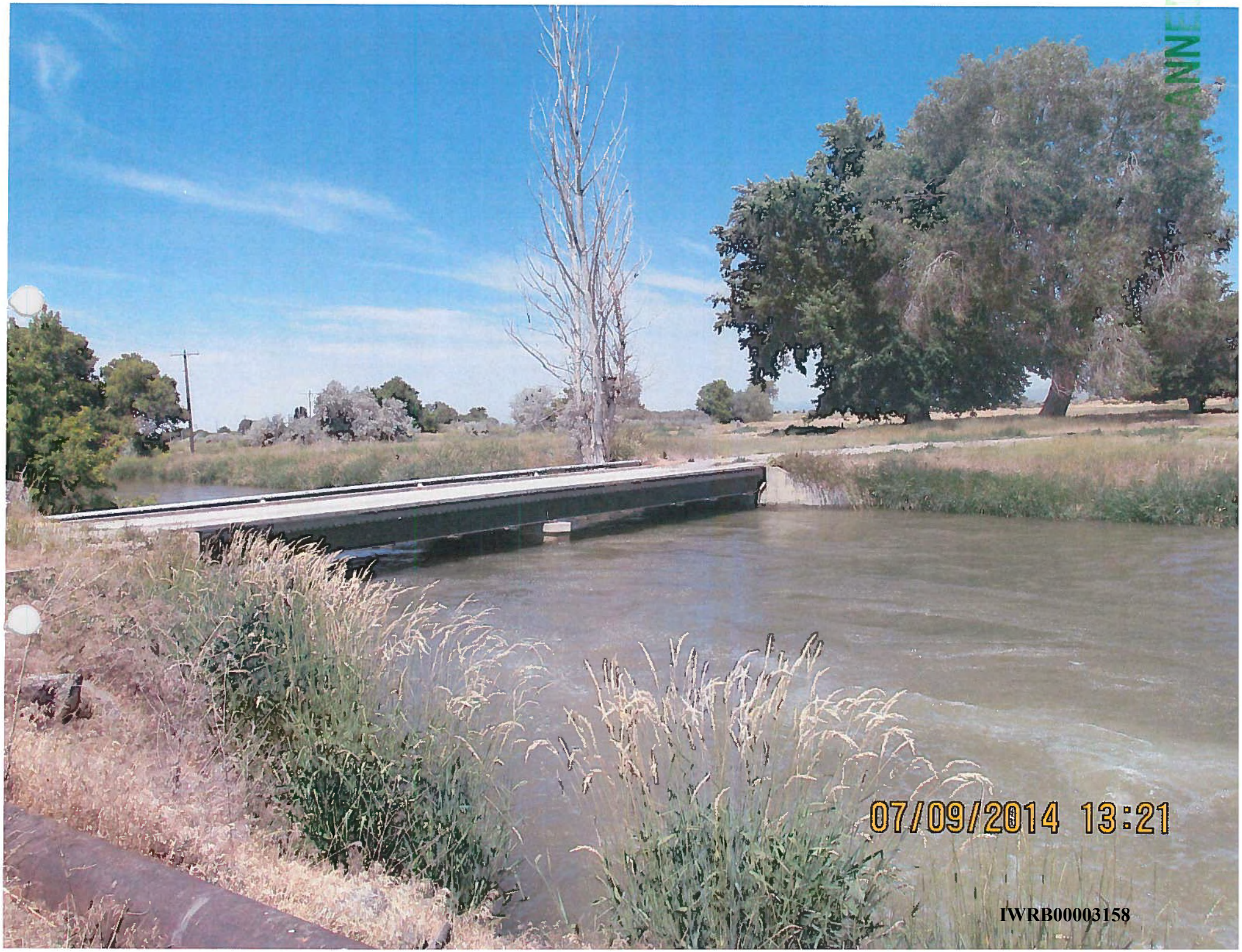
WR# 37-7842


WR# 37-7842
SCANNE
07/09/2014 13:22
IWRB00003156

WR# 37-7842

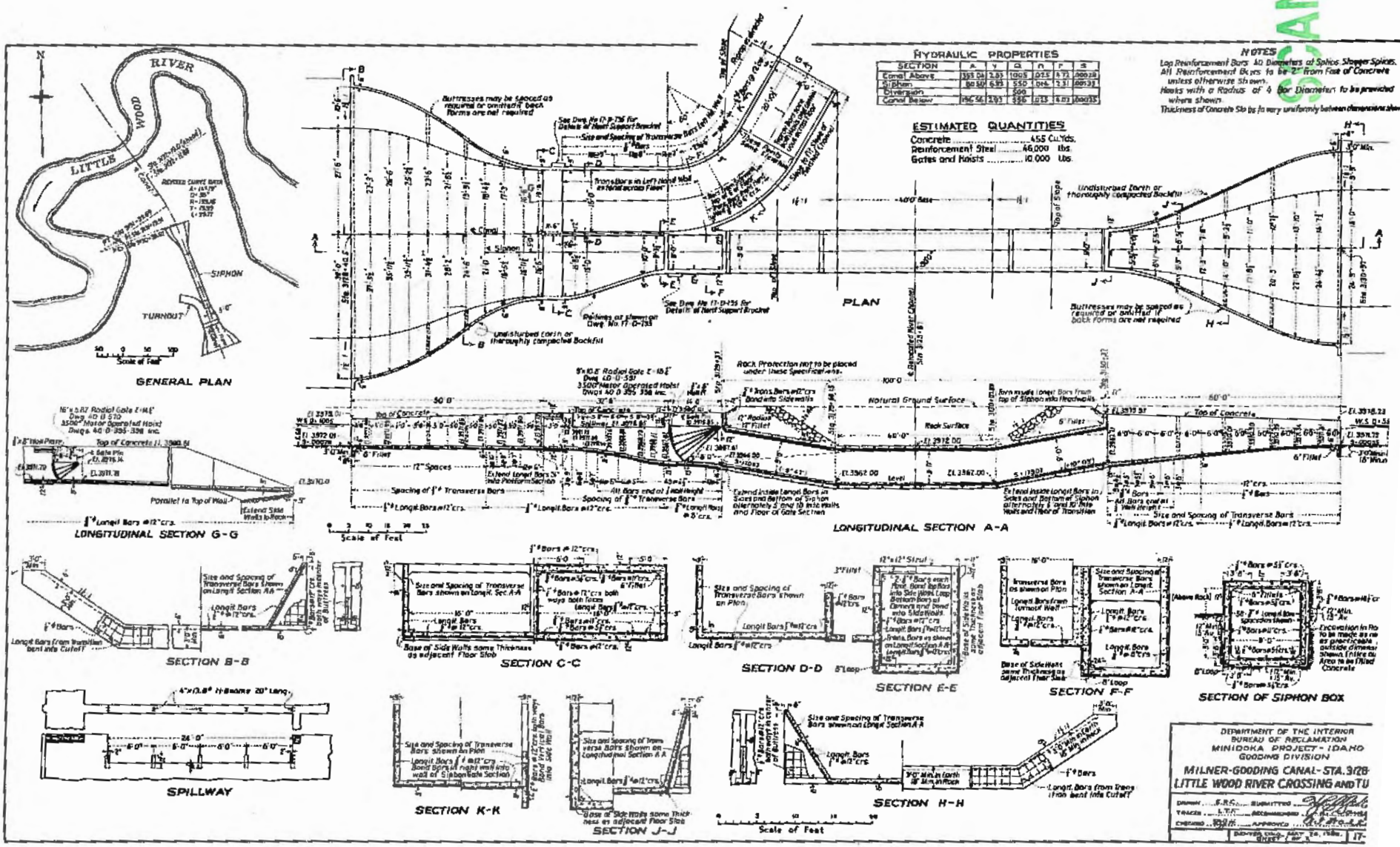


WKF 37-7842



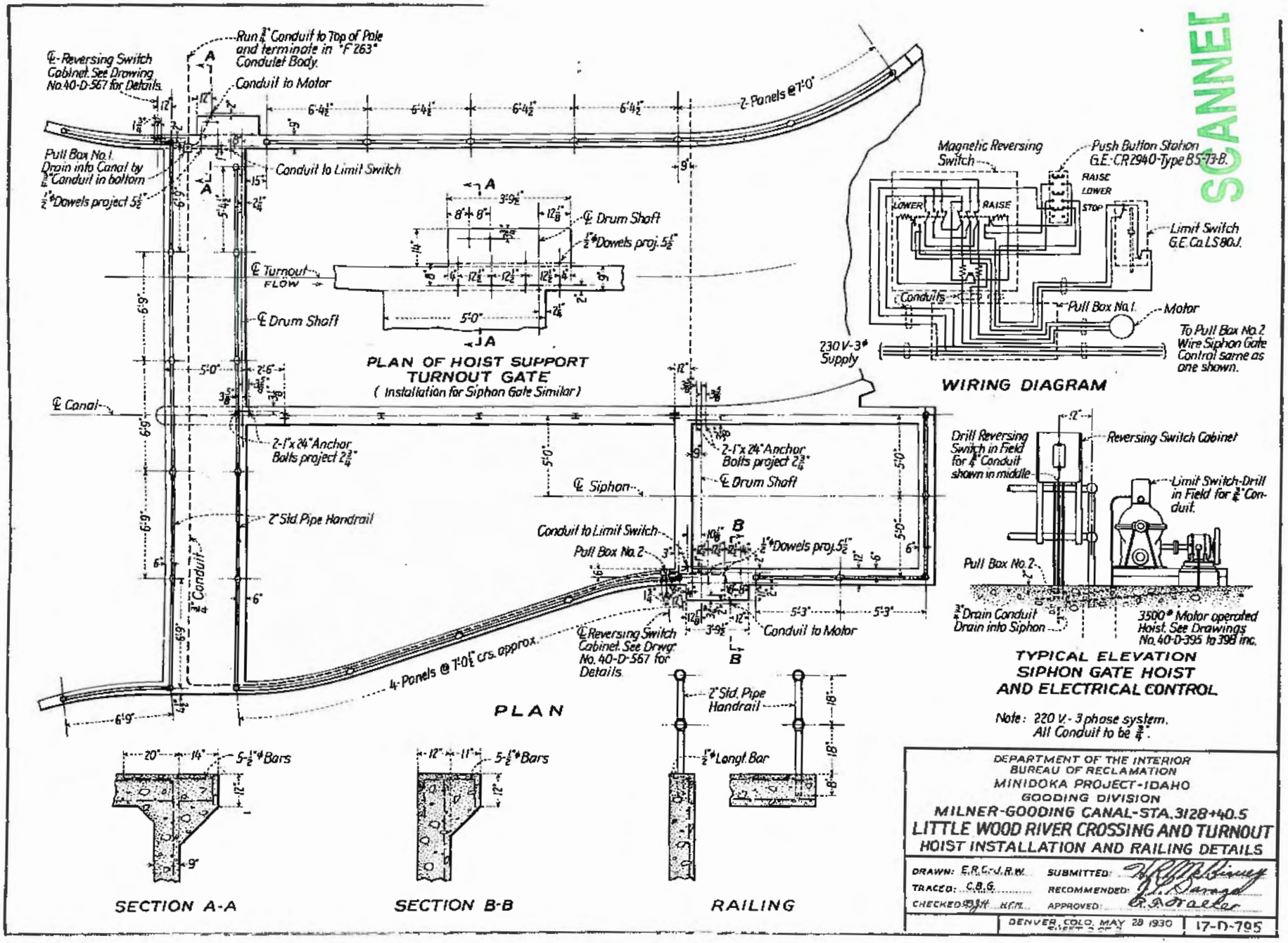
IWRB00003158

Bifacation Works



copy of the bifurcation engineering drawing provided by BWCC 7/9/14
WR# 37-7842

IWRB00003159



copy of the bifurcation engineering drawing provided by BWCC 7/9/14
WR# 37-7842

IWRB00003160

S. Keen's notes RE: Permit 37-7847
7/9/2014

(1)

Difference between 54 + 14 on the LWR could be attributable to losses during high flows. Unlikely that water came from ~~Milner~~ LWR into Milner Gooding because flows were 400+ cfs in the canal.

at Shoshone ⇒ Lynn doesn't think getting LWR water into the canal with 400 cfs in the canal is possible.

No losses from 56 to 57.

Canal is flat from 53 to 56. Can make it look like a gaining reach by setting gates.

April 1984 228' to 258' in the Dietrich Main Canal flood runoff from LWR + BWR to the floodway. Huge area

May 30 still 220 cfs ↖

SCANNED

Would normally run 100 to 150 cfs for irrigation in late May. Would have to find diesel water.

Anything over 150 cfs was probably being dumped. Lynn thinks this would be a conservative estimate. (From Dietrich canal early in the irrigation season.

Edl, Michele

From: Lynn Harmon [lynnharmon@cableone.net]
Sent: Tuesday, June 17, 2014 6:58 AM
To: Edl, Michele
Subject: RE: original readings and rating table WR# 37-7842

Michele, The water source is from Big wood river via the Richfield Main and Jim Burns Slough

---

From: Edl, Michele [mailto:Michele.Edl@idwr.idaho.gov]
Sent: Monday, June 16, 2014 6:26 PM
To: Lynn Harmon
Subject: RE: original readings and rating table

Mr. Harmon,
I have had a chance to compare the field examiner's report with the page of the measurement log that you have provided.
The field examiner's report has spreadsheet with a column labeled with the heading 'JBS'. I am assuming that that signifies the Jim Burns Slough.

My question:
What is the source of water that is traveling in the Jim Burns Slough before it crosses Hwy 93 and joins the Little Wood River?
Thank you.
Michele Edl

From: Lynn Harmon [mailto:lynnharmon@cableone.net]
Sent: Friday, June 13, 2014 11:47 AM
To: Edl, Michele
Subject: original readings and rating table

Keen, Shelley

From: Joe [joe@brownjameslaw.com]
Sent: Friday, April 04, 2014 11:43 AM
To: Keen, Shelley
Subject: Permit No. 37-7842
Attachments: History.pdf; Exhibits.pdf

Dear Mr. Keen:

I write in follow up to our recent telephone conversation regarding Permit No. 37-07842 and the Department's investigation for licensing. I have attached a history regarding the subject water right. The history raises several concerns regarding licensing on the permit.

However, we do have a couple of primary concerns. First, the Department may not be aware that it is impossible to divert water from the Little Wood River through the Gooding Milner Canal at the denoted diversion structure when the Gooding Milner Canal already contains water. For your review, I have attached a couple of exhibits which were included with the Beneficial Use Field Report submitted to the Department in November 1993. The first page of exhibit is a map which shows the measuring stations, diversion structure, and recharge site regarding both permit number 01-07054 and 37-07842. The second page of the exhibit is a Summary of Recharge Records, again, under both permits.

The Field Report appears to indicate that the waters were comingled at the point of the diversion structure where the Gooding Milner Canal crosses the Little Wood River commonly referred to as "the Bifurcation." It is possible to divert water from the Little Wood River into the Gooding Milner Canal at the Bifurcation. However, in order to do so it is necessary to back up the water in the Little Wood River to force the water to go up gradient into the Gooding Milner Canal system. This can only be done when the Gooding Milner Canal is empty. Otherwise the water from the Gooding Milner Canal would simply dump into the Little Wood River.

This fact is recognized by the managers of the Big Wood Canal Company in American Falls Reservoir District #2. This fact provides support for the comments in the Department's file indicating that no recharge took place from the Little Wood River prior to June 1, 1992.

In reviewing the Summary of Recharge Records shows several errors. Some rather obvious. As an example, the columns denoting max possible recharge from Big Wood and max possible recharge from Snake River, appear to be in error in that the numbers under the columns should be in the opposite column based on the formula provided. Also, there is simply straight forward errors such as on April 8, 1986, where it denotes 260cfs was measured at Measuring Station No. 57 resulting in 260cfs recharge possibly from the Big Wood River. When in actuality Measuring Station No. 57 is beyond the recharge site. It would appear to be prudent to review the canal company records directly to determine what recharge occurred prior to June 1, 1992.

Another issue of primary concern is whether the priority date should be advanced to November 29, 1993, the date when satisfactory proof of beneficial use was received by the Department. The record indicates that the permit lapsed and in the case when satisfactory proof was received by the Department following 60 days of a lapse of the permit, the Department may, upon a showing of reasonable cause reinstate the permit, but in reinstating the permit the Department must advance the priority date of the permit to the date the proof of beneficial use was received. In this case, November 29, 1993.

Please review the issues raised in the provided history. If you have any questions, please feel free to give me a call.

Thanks for your time and consideration.

Joe

History
Permit 37-07842

An application was filed on July 2, 1980 seeking a permit to divert 800 cfs from the Little Wood and Big Wood Rivers for purposes of ground water recharge. (Application for Permit 37-07842). The application denoted the point of diversion as the SW¼ of SE¼ of Section 24, Township 4 S, Range 19 E, located within Lincoln County. *Id.* The application proposed diverting the water through the use of the Dietrich and Richfield canal systems. *Id.* It should be noted that neither the Little Wood nor the Big Wood Rivers flow though Section 24, Township 4 S, Range 19 E. However, the Dietrich canal diverts from the Little Wood River in Section 25, Township 4 S, Range 19 E. The Department recognized these errors during an early review and made a note to the file indicating that the point of diversion on the application was in error, and that the only apparent source of water would be the Little Wood River. (Note to File 12-29-81). The applicants never sought to amend their application.

The application was incomplete as to the description of the proposed place of use, but did include a drawing indicating that the water would be diverted from the Little Wood River through the Dietrich Canal to the recharge site southeast of Richfield, Idaho. (Application for Permit 37-07842). The published notice of application for water right clarified that the possible recharge sites were located within Sections 15, 16, 21, 22 and 28, Township 5 S, Range 19 E, Lincoln County. (Affidavit of Publication). The application indicated that five years was required for completion of the works and application of the water for recharge. (Application for Permit 37-07842).

The subject application sought a permit to divert water from the Little Wood River through the Dietrich Canal for purposes of recharge southeast of Richfield. (Application for Permit 37-07842). The applicants filed another application on the same day seeking to divert

water from the Snake River through the Milner-Gooding Canal for purposes of recharge northwest of Shoshone, Idaho. (Application for Permit 37-07842). This other application was ultimately assigned Permit No. 01-07054.

The subject application was approved on June 2,1982, under Permit No. 37-07842, with a completion and submission of beneficial use deadline of June 1, 1987. (Application for Permit 37-07842). A request for extension of time was submitted on June 1, 1987. (Request for Extension 6-1-87). The request was returned by the Department to the applicant on July 16, 1987, for additional information. (IDWR./Saxton ltr 7-16-87). Ultimately, the Department approved the request for extension on October 4, 1989, extending the completion and proof of beneficial use deadline to June 1, 1992. (Request for Extension 6-1-87).

The Department sent a notice of proof of beneficial use due on March 31, 1992, providing notice that proof of beneficial use had to be submitted no later than June 1, 1992. (Proof Due Notice 3-31-92). Proof of beneficial use was not timely submitted and the Department sent a lapsed notice on June 5, 1992. (Lapse Notice 6-5-92). The Department received proof of beneficial use on or about June 15, 1992. (IDWR./Gustafson ltr 6-15-92). The Department returned the proof of beneficial use form to the applicants on June 15, 1992, stating that the proof was unacceptable. *Id.* The Department further informed the permit holder that the permit was still lapsed, and that the priority date would be penalized one day for every day that the proof was not submitted. *Id.* On July 9, 1992, the Department received a beneficial use field report regarding the permit, but did not receive the original proof of beneficial use form. (IDWR/Gustafson ltr 7-9-92). The Department informed the permit holders that they could not continue licencing until it received the original proof of beneficial use form. *Id.* On July 23,

1992, the Department again provided notice that they could not process the permit without an original proof of beneficial use form. (IDWR/Gustafson ltr 7-23-92).

On July 27, 1992, the Department received the original proof of beneficial use form. (Proof Beneficial Use 37-07842). The form listed both Permit No. 37-07842 and Permit No. 01-07054. *Id.* The proof of beneficial use indicated a total of 300 cfs of ground water had been diverted from the Snake River. *Id.* The beneficial use field report denoted the source as the Snake River, provided a point of diversion different from the application, as well as different place of use. *Id.* The beneficial use field report also denoted that the water was diverted through the Milner-Gooding Canal and not the Dietrich Canal. (Field Report 37-07842). The Department accepted the amended proof of beneficial use and beneficial use field report. The Department entered its order reinstating the permit and advancing the priority date to August 25, 1990 on the 29th day of July, 1992. (Order of Reinstatement 7-29-92).

1990 not 1990

On further review, the Department determined that the beneficial use field report was not acceptable. The applicants provided an amended beneficial use field report on October 19, 1993. (IDWR/Saxton ltr 10-21-93). The Department determined that the amended beneficial use field report was still not acceptable and returned it to the applicants on October 21, 1993. *Id.* On November 29, 1993, the Department received another amended beneficial field report denoting both Permit No. 01-07054 and Permit No. 37-07842 with a total diversion of 300 cfs. (Amended Field Report 37-07847). This time the beneficial use field report indicated the source as the Snake River/Big Wood River but did not include the Little Wood River. *Id.* Also, the field report indicated a diversion point distinct from application for permit. *Id.* Again, the total diversion rate was stated at 300 cfs. *Id.* The Department entered a reinstatement order regarding

both permits on December 1, 1993. (Reinstatement Order). The Department failed to advance the priority date in recognition of the continuing lapse. *Id.*

There appears to be little activity in the file until 1999 when the permit holders were anticipating transferring legal ownership to the Idaho Water Resources Board. On March 19, 1999, the Idaho Water Resources Board agreed to accept assignment of the permits. (IDWR/Hass ltr 3-22-99). In its review leading up to the acceptance of the assignment, the Department indicated that both Permit No. 01-07054 and Permit No. 37-07842 had filed proof of beneficial use for diversion rate of 300 cfs each. (Memo to File 1-14-99). This is incorrect. As noted above, the Proof of Beneficial Use form, as well as the Beneficial Use Field Report indicated a combined total of 300 cfs, with the water coming from the Snake River via the Milner-Gooding Canal.

The conclusion that a total of 300 cfs from the Snake River had been put to beneficial use is supported by the Department's own internal review of the permits. A Memo to the file in October 1999 indicated that recharge under Permit No. 01-07054 from the Snake River through the Milner-Gooding Canal could be confirmed and the license for that has been prepared for signature. (Memo to File 10-7-95). However, regarding Permit No. 37-07842 there did not appear to be any application toward beneficial use. Based on the Department's conversation with Dan McFadden of the Lower Snake River Aquifer Recharge District, no ground water recharge had ever taken place from the Little Wood River via the Dietrich Canal. *Id.* Also, based on the Department's conversation with Paul Castelin of the Technical Services Bureau, no recharge from the Little Wood or Big Wood River had taken place. *Id.* The Department concluded that there has been no beneficial use to date and that the permit should be routed for extension or reinstatement processing. *Id.* This conclusion was further supported by the

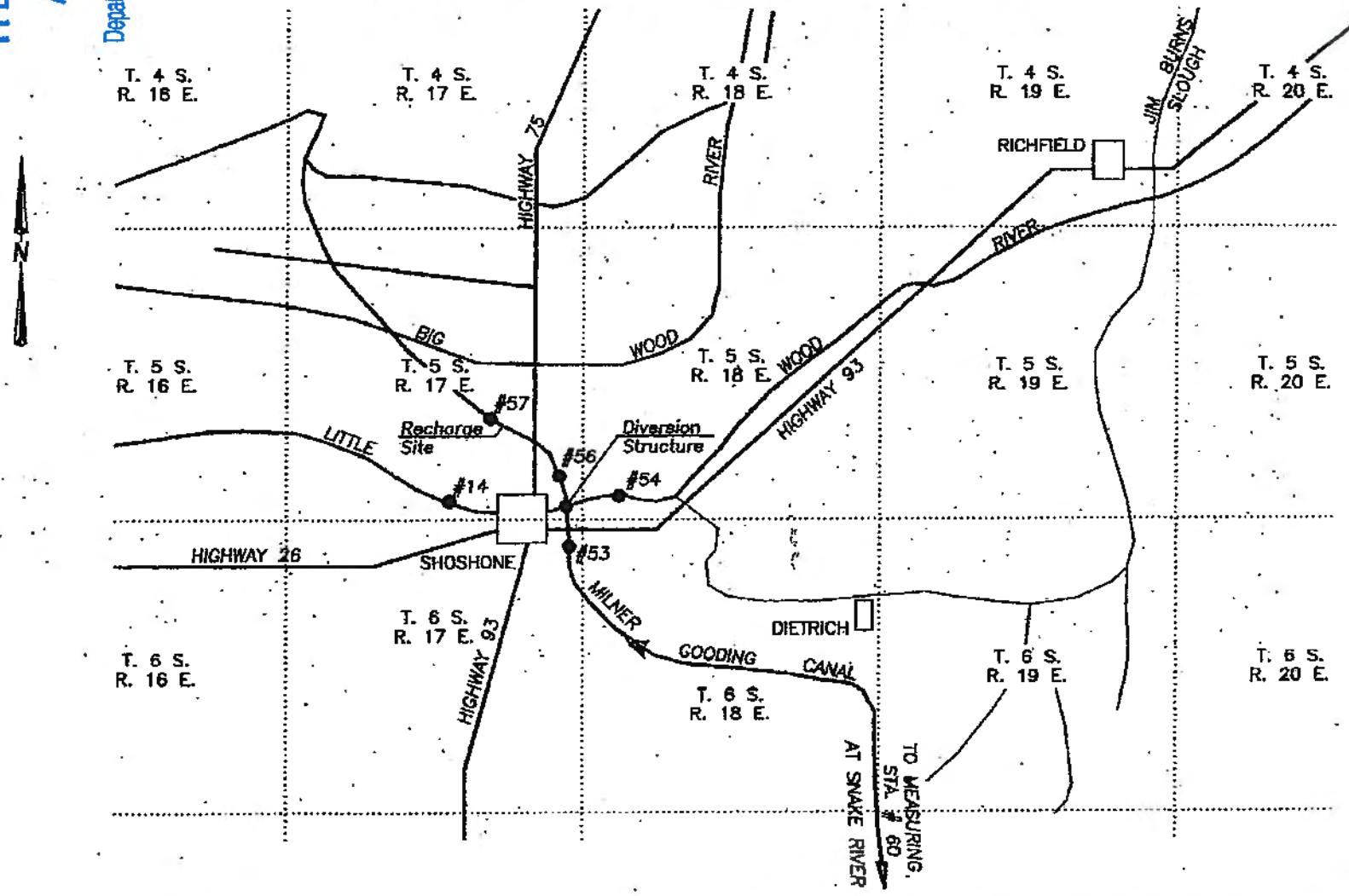
correspondence from the Big Wood Canal Company and American Falls Reservoir District #2 of November 1999, which clarified that all recharge water from 1986 through 1995 was Snake River water delivered via the Milner-Gooding Canal. (Oneida ltr 11-99).

Though the Department's file contains a proof of beneficial use form and beneficial use field report, which has not been withdrawn, the Idaho Water Resources Board adopted a resolution asking the Director to extend the proof date regarding the "undeveloped" portion of the permit. (WRB Resolution 3-21-00). An order was entered on April 3, 2000 extending the proof date for the permit until June 1, 2004. (IDWR 4-3-00). On August 25, 2004, the Idaho Water Resources Board again requested for an extension of time to submit proof of beneficial use resulting in another extension to June 1, 2009. (Request for Extension 8-25-04). On June 1, 2009, the Department received another request for extension of time to submit proof of beneficial use. (Request for Extension 6-1-09). On March 19, 2010, while the request for extension of time was pending, the Director indicated "[It] does not appear the beneficial use of water for recharge purposes has occurred under this permit to date, despite the confusion in the record on this issue." (IDWR./Spackman ltr 3-19-10). The request for extension was granted on the 2nd day of September 2010 and the time within which to submit proof of beneficial use was extended to June 1, 2014. (Request for Extension 6-1-09).

My clients filed a Petition for Hearing, and Petition for Declaratory Ruling on September 22, 2011. In November of 2011, the Hearing Officer issued a Recommended Order wherein he found the Department's actions in granting a series of extensions void and rescinded the Department's order of September 2nd 2010 granting an extension of time within which to submit proof of beneficial use. The hearing officer noted that "The Department will investigate the extent of beneficial use occurring prior to June 1, 1992 as part of the licensing process." (Rec.

Order 11-30-11). If IWRB or the Petitioners disagree with the Department's determination of beneficial use occurring within the authorized development period, the proper venue to raise arguments regarding the true extent of beneficial use would be the licensing process." *Id.* Accordingly, the Hearing Officer ordered: "The Department shall conduct an investigation of Permit 37-7842 for licensing purposes and issue a license consistent with its findings." *Id.* The Director adopted the Recommended Order as his Final Order on February 28, 2014. (Final Order 2-28-12)

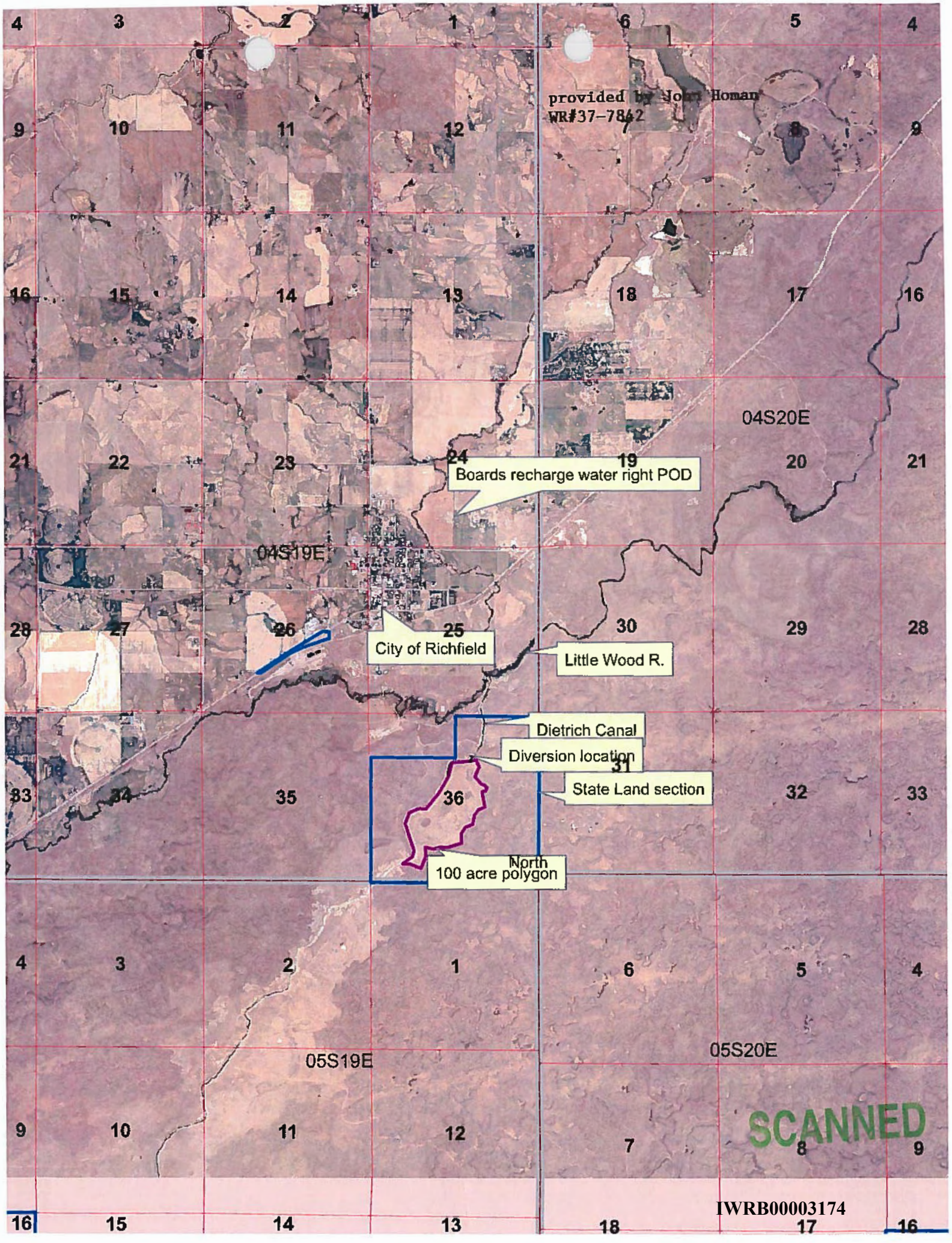
Exhibit For
Lower Snake River Aquifer Recharge
Permit No's. 01-07054 & 37-07842



Summary of Recharge Records for Lower Snake River Recharge Permit No. 01-07054 & 37-07842

DATE	MEASURING STAT ON						RECHARGE	MAX POSSIBLE RECHARGE FROM BIG WOOD	MAX POSSIBLE RECHARGE FROM SNAKE RIVE
	JBS	14	53	54	56	57			
04-07-86			220		252	252	0		
04-08-86						260	260	260	
04-09-86		646	425		432	260	172	172	
04-10-86			401		448	265	183	183	
04-11-86	97	692	472		460	265	195	195	97
04-12-86	57		472			261	261	261	57
04-13-86	62					270	270	270	62
04-14-86	66	717	486	787	486	275	211	211	66
04-15-86	52	681	485	721	482	252	230	230	52
04-16-86	57	659	479	689	470	239	231	231	57
04-17-86	43	636	405	674	496	223	273	273	43
04-18-86	40	604	614	628	632	310	322	322	40
04-19-86	73	556	596	564	618	342	276	276	73
04-20-86	142		596	563			---	---	142
04-21-86	141	615	596	651	618	342	276	276	141
04-22-86	50	526	585	544	604	350	254	254	50
04-23-86	221	454	566	544	580	360	220	220	220
04-24-86	213	596	572	636	586	396	190	190	190
04-25-86	168	560	563	585	580	394	186	186	168
04-26-86	181	500	644	524	654	340	314	314	181
04-27-86	172		644	530				---	172
04-28-86	165	615	696	537	648	466	182	182	165
04-29-86	158	580	670	503	626	465	161	161	158
04-30-86	142	506	661	420	616	459	157	157	142

JBS - Jimmy Byrnes Slough
All flows in CFS as recorded by Bigwood Canal Co.
Recharge = 56-57
Max Recharge (from Snake River): Total discharge but not to exceed flow at M.S. 53. M.S.
Max Recharge (from Big Wood River): Total discharge from JBS but not to exceed total dishcarge.
Measuring stations 14+56 should approximately total measuring stations 53+54


provided by John Homan
WR#37-7862
04S20E
Boards recharge water right POD
04S19E
City of Richfield
Little Wood R.
Dietrich Canal
Diversion location
State Land section
North
100 acre polygon
05S19E
05S20E
SCANNED

MEMORANDUM

DATE: February 27, 2014

TO: Water Right File 37-7842

FROM: Shelley W. Keen SWK

RE: Conversation with Attorney Joe James

This morning I spoke with attorney Joe James (208-934-8185) about the licensing review effort for Permit 37-7842. Mr. James said he represents a group of hydropower producers who do not believe there was any beneficial use of water established in connection with the permit. Mr. James's allegation is that water cannot be diverted from the Wood River into the Milner-Gooding Canal when there is Snake River water in it because of the head differential. Therefore, any water conveyed to recharge would have been from the Snake River.

I invited Mr. James to email me his concerns in detail. I indicated that if he did so, IDWR would evaluate and account for them in its license review.

MEMORANDUM

Date: November 06, 2013

To: Water Right File 37-7842/1-7054

From: Michele Edl

Re: recharge capacity

Initial review

This permit authorizes 800 cfs comingled from both the Big - Little Wood Rivers and the Snake River to be put to beneficial use for groundwater recharge. In spite of a series of processing actions after the amended Beneficial Use Field Report was accepted in 1993, the right is limited by the Proof of Beneficial Use statement to 300 cfs.

The recharge event confirmed by the examiner occurred in April 1986. Discharge data from USGS station #13142500, Big Wood River below Magic Dam near Richfield ID, confirms that Magic reservoir filled early that year and a significant quantity of water was released from the impoundment before the irrigation season began. See the attached graph.

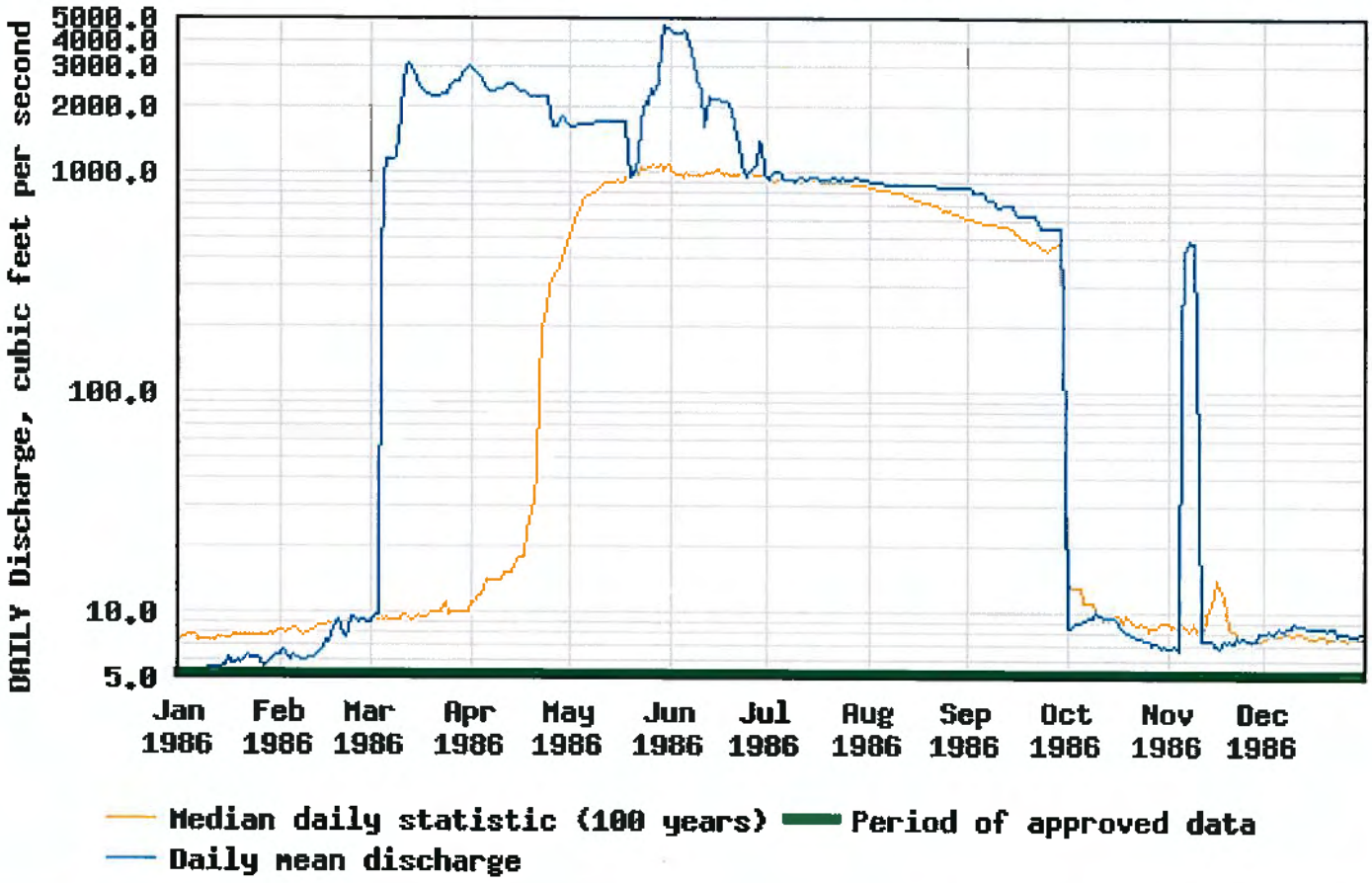
ESPA Modeling

On October 22, 2013, I attended a seminar presentation by Mike McVay (Technical Hydrogeologist, State Office, IDWR). A copy of the seminar announcement is attached. As a result, I recognized similarities between the place of use authorized by this permit and the Shoshone site described in Mr. McVay s presentation. And I anticipated that elements of this water right had been analyzed by Mr. McVay as part of his recharge investigation.

I emailed Mr. McVay a request to confirm if 300 cfs could be beneficially used for recharge at the POU location of this permit. In short, his answer was yes. However, he also stated that the site does have limits on its ability to accept recharge. This site cannot utilize the 800 cfs originally authorized by the permit. It is limited by the infiltration rate to 695 AF or ~ 350 cfs at most.

USGS

USGS 13142500 BIG WOOD RIVER BL MAGIC DAM NR RICHFIELD ID



Idaho Water Resources Research Institute
Water Resources and Hydrology Seminar

IDAHO WATER RESOURCES RESEARCH INSTITUTE

Title: "Using the ESPAM2,1 Aquifer Model to Evaluating Recharge on the Eastern Snake Plain"

Presenter: Mike McVay, IDWR

Date: Tuesday, Oct 22, 2013, 11:30-12:20 Mountain Time
10:30-11:20 Pacific Time

Locations: UI-Boise @ Idaho Water Center – Classroom 162
Idaho Falls @ University Place, Tingy Admin Bldg., 350A
UI-Moscow @ Education Bldg Room 103
Pocatello @ ISU Oboler Library Room B06

Abstract:
Water levels in the Eastern Snake Plain aquifer have been in decline since the 1950's. One mechanism for stabilizing water levels is managed aquifer recharge. However, limited resources require that managed recharge be done efficiently and effectively. Groundwater modeling provides a powerful tool for evaluating recharge activities, but it must be used responsively.

Biographical Info:

Mike McVay is a Technical Hydrogeologist at the Idaho Department of Water Resources. He earned a Bachelor's of Science in Geologic Engineering and a Master's of Science in Hydrology from the University of Idaho. Mike is currently employed at the Idaho Department of Water resources and specializes in aquifer characterization and groundwater modeling. Mike is also registered as both a professional geologist and a professional engineer in the State of Idaho.

The IWRRI Hydrology Seminar Series is open to all interested professionals, legislators, water supply managers, local government representatives, attorneys, students and interested public. Please pass this announcement on to anyone you think may be interested. If you would like to be removed from this list or know someone who should to be added please contact: Deborah Wold (208) 332-4430 or dwold@uidaho.edu.

Edl, Michele

From: McVay, Michael
Sent: Tuesday, November 05, 2013 9:54 AM
To: Edl, Michele
Subject: RE: recharge water right 37-7842

Hi Michelle,

Fortunately for us, we have already modeled recharge at the Shoshone site in an effort to prioritize recharge locations. Part of the analysis entailed investigating the capacity to deliver water to the site and how much the site can infiltrate. I've listed the recharge capacities and how we obtained the information below:

- Diversion Capacity: This is the ability to get water to the site. This number was derived by looking at past recharge effort at the site. The maximum amount of water successfully delivered to the Shoshone recharge site was 19,900 AF/month (19,900/30.5 = **652 Af/day**).
- Infiltration Capacity: This is the ability of the site to infiltrate water. Based on conversations with the canal manager, the maximum infiltration rate is 21,200 AF/month (**695 AF/day**).
- Groundwater Capacity: This is the assessment of "enough room" for recharge. This is based on depth to groundwater and considers if the recharge will immediately return to the surface-water system, or threaten infrastructure. Due to relatively deep groundwater, the site can take **656 AF/day**.
- Recharge you are assessing: In your email you asked if 300 cfs for 21 days is reasonable for recharge. Converting 300 cfs into AF/day is **595 AF/day**.

Therefore, it appears that the 300 cfs applied over 21 days is reasonable. Please feel free to contact me for more information, or if you have any questions about the data.

Best regards,

Mike

From: Edl, Michele
Sent: Sunday, October 27, 2013 7:08 PM
To: McVay, Michael
Subject: recharge water right 37-7842

Mike,
Of my many assignments is one to issue a license for water right 37-7842 which is currently held by the IWRB. It has a colorful past but proof was submitted in the 1990s for 300 cfs put to use as recharge.
I was paying attention during your talk last Tuesday, but I am gonna need your help with confiming the quantity of beneficial use.

The place of use is Tsp 5S 17E sec 22 or ESPAM grid cells **R 42 C 39** and **R 42 C 38**. The site would probably be in your Lower Snake River recharge unit.
Water from the Big Wood and Little Wood were being comingled with a little water from the Snake but it was all conveyed to this location through the Milner-Gooding canal.
The event occurred from April 7 – 30, 1986.

My question: Is 21 days of 300 cfs dumped at this location recharge?

Thanks
Michele

Appendix F
Completed Beneficial use Field Exam Report

Form 219 07/11

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

BENEFICIAL USE FIELD REPORT

A Beneficial Use Field Report is prepared by a water right examiner as the result of an examination to clearly confirm and establish the extent of the beneficial use of water established in connection with a permit during the development period authorized by the permit and any extensions of time previously approved.

A. GENERAL INFORMATION

Permit No. 37-7842

1. Owner Idaho Water Resource Board Phone No. 208-287-4800
   Current address 322 East Front Street, P.O. Box 83720, Boise, ID 83720
2. Examiner's name G. Erick Powell EXAM DATE July 20, 2018
3. Accompanied by Ann Vonde (project scope and data) Email Ann.vonde@ag.idaho.gov
   Address 322 East Front Street, P.O. Box 83720, Boise, ID 83720
   Relationship to permit holder Representative Phone No. 208-334-4141
4. Source Big Wood River and/or Little Wood River tributary to Malad River

B. OVERLAP REVIEW

1. Other water rights with the same place of use See Narrative: Water Right Permit No. 1-7054
2. Other water rights with the same source and point of diversion See Narrative

C. DIVERSION AND DELIVERY SYSTEM

1. **Point(s) of Diversion:**

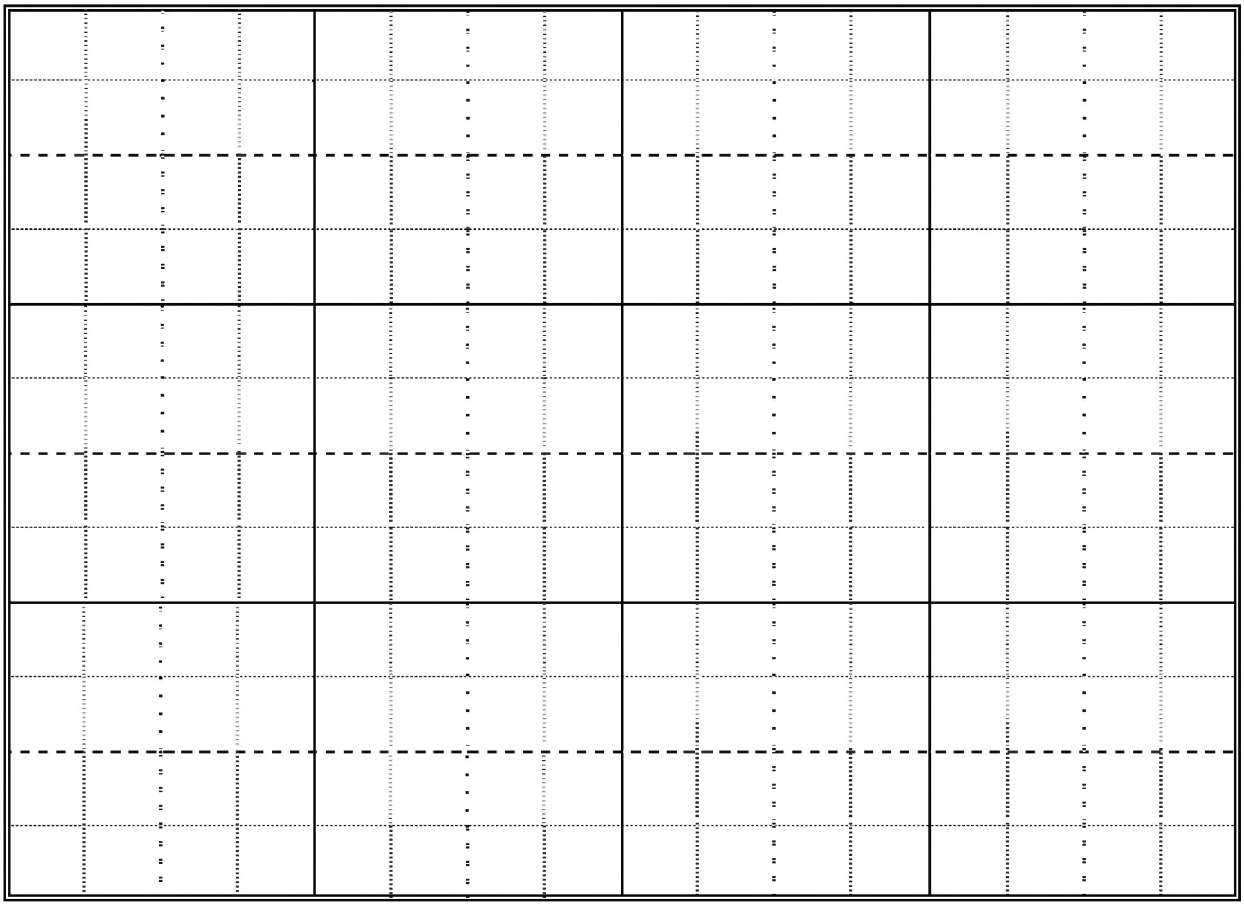
Ident. No.	Gov't Lot	¼	¼	¼	Sec	Twp	Rge	County	Method of Determination/Remarks
BWR 1			SE	NE	30	2S	18E	Blaine County	BWR - Point of Diversion
LWR 1			SW	SE	25	4S	19E	Lincoln County	BWR - POI, POR; LWR - POD
LWR 2			SW	NE	36	5S	17E	Lincoln County	BWR - POR, LWR - POD

2. **Place(s) of Use:** Method of determination Aerial Photograph, GIS, GPS

Twp	Rge	Sec	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	

See Narrative for POU description

3. **Delivery System Diagram**: Indicate all major components and distances between components. Indicate weir size/ditch size/pipe diameter (inside), as applicable. Use the space provided or ☐ see attached.



Scale: 1" = See Map

☐ Copy of USGS Quadrangle attached showing location(s) of point(s) of diversion and place(s) of use (**required**)
☐ Aerial photo attached (required for irrigation of 10+ acres)
☐ Photo of diversion and system attached

4.

Well or Diversion Identification No.*	**Motor Make**	**Hp**	**Motor Serial No.**	**Pump Make**	**Pump Serial No. or Discharge Size**
NA					

Code to correspond with no. on map and aerial photo

D. FLOW MEASUREMENTS

1.

Measurement Equipment	**Type**	**Make**	**Model No.**	**Serial No.**	**Size**	**Calib. Date**
See Report						

2. **Measurements:** See Report

E. NARRATIVE/REMARKS/COMMENTS

See Report

Has the permit holder met all conditions of permit approval, including any mitigation requirements and/or measuring device installation requirements? ☐ Yes ☐ No If no, what must be done to meet the permit requirements?

See Report

F. FLOW CALCULATIONS

☐ Additional computation sheets attached

Measured Method:
See Report

G. VOLUME CALCULATIONS

1. Volume Calculations for Irrigation:

$V_{I.R}$ = (Acres Irrigated) x (Irrigation Requirement) = NA

$V_{D.R}$ = [Diversion Rate (cfs)] x (Days in Irrigation Season) x 1.9835 = _____

V = Smaller of $V_{I.R.}$ and $V_{D.R.}$ = _____

2. Volume Calculations for Other Uses:
See Report

H. RECOMMENDATIONS

1. Recommended Amounts

Beneficial Use	Period of Use From	Period of Use To	Rate of Diversion Q (cfs)	Annual Volume V (afa)
Groundwater Recharge	1/1	12/31	634 cfs	---
		Totals:	634 cfs	---

2. Recommended Amendments

☒ Change P.D. as reflected on page 1 ☐ Add P.D. as reflected on page 1 ☐ None
☒ Change P.U. as reflected on page 1 ☐ Add P.U. as reflected on page 1 ☐ Other

I. AUTHENTICATION

Field Examiner's Signature _____ Date 8/10/18

Reviewer _____ Date _____

PROFESSIONAL ENGINEER LICENSED SEAL 13592 8/10/18 STATE OF IDAHO G. ERICK POWELL

Appendix G
Assignment of Permit from LSARD to IWRB

7/94

For Office Use Only
$25 Filing Fee
Receipt
Date 4/28/99

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES
ASSIGNMENT OF PERMIT

I, Dan McFadden, hereby assign to Idaho Water Resource Board
of, P.O. Box 83720 Boise Idaho (208) 327-7900
(Full Address) 83720-0098 (Phone)

All my right, title, and interest in and to Permit No. 37-07842 ~~BB~~ to appropriate the public waters of the State of Idaho.

OR (for partial assignments)

The following described portion of my right, title, and interest in and to Permit No. 37-07842 to appropriate the public waters of the State of Idaho. (Describe portion of the permit assigned listing the number of acres in each 40 acre subdivision, point of diversion location, and the amount of water in cubic feet per second.)

Made this 28th day of April, 1999.

Dan McFadden Chairman
Permit Holder
Lower Snake River Aquifer
Recharge District

State of Idaho)
) ss
County of GOODING)

On this 28th day of APRIL, 1999, personally appeared before me the signer(s) of the above instrument, who duly acknowledged to me that he (she) (they) executed the same.

SUZANNE K. JENSEN NOTARY PUBLIC STATE OF IDAHO seal

Suzanne K. Jensen
Notary Public residing at
Hagerman, Idaho

My commission expires: 08/04/2004

IWRB00003187

RECEIVED
JUN - 3 1999
Department of Water Resources

AGREEMENT CONVEYING LEGAL TITLE TO WATER RIGHTS FROM THE LOWER SNAKE RIVER AQUIFER RECHARGE DISTRICT TO THE IDAHO WATER RESOURCE BOARD

THIS AGREEMENT is made and entered into this 13th day of May, 1999, by and between the IDAHO WATER RESOURCE BOARD ("BOARD") and the LOWER SNAKE RIVER AQUIFER RECHARGE DISTRICT ("LSRARD").

WITNESSETH:

WHEREAS, the BOARD, pursuant to Section 42-1734, Idaho Code, has authority to acquire, purchase lease, or exchange land, rights, water rights, easements, franchises, and other property deemed necessary or proper for the construction, operation and maintenance of water projects; and

WHEREAS, the LSRARD is the holder of Water Right Permit No. 01-07054 from the Snake River upstream from Milner Dam and Water Right Permit No. 37-07842 from the Little and Big Wood Rivers for aquifer recharge purposes on the Lower Snake River Plain, both permits having a priority date of August 25, 1980; and

WHEREAS, the LSRARD desires to convey and assign all its legal interests in Water Right Permit Nos. 01-07054 and 37-07842 to the BOARD, at no cost, so that the rights may be developed and utilized to the full extent feasible under the law for managed recharge purposes consistent with the State Water Plan; and

WHEREAS, the LSRARD by a majority vote of its Board of Directors taken at a special meeting convened in accordance with the provisions of Section 42-4211, Idaho Code, on the 5th day of April, 1999, has authorized its Chairman to execute the present Agreement Conveying Legal Title to Water Rights on its behalf; and

WHEREAS, the Board by resolution passed and approved on the 19th day of March, 1999, agreed to accept the assignment of Water Right Permit Nos. 01-07054 and 37-07842 as conveyed under this Agreement.

NOW, THEREFORE, in consideration of the mutual covenants and agreements herein contained, and other good and valuable consideration, the receipt of which is hereby acknowledged, the parties hereto agree as follows:

1. The LSRARD shall convey legal title and all ownership rights and interests in Water Right Permit Nos. 01-07054 and 37-07842 to the BOARD. Simultaneously with the execution of this Agreement, the LSRARD shall execute an Assignment of Permit form to be filed with the Idaho Department of Water Resources.

ADA COUNTY RECORDER
J. DAVID NAVARRO
BOISE, IDAHO
RECORDED-REQUEST OF State of Idaho
FEE 9a DEPUTY
1999 MY 28 AM 10: 00
99050398

2. The BOARD shall accept the assignment of Water Right Permit Nos. 01-07054 and 37-07842 from the LSRARD and shall hold legal title to the water rights. The Board shall not assign or convey the water rights represented by Water Right Permit Nos. 01-07054 and 37-07842, or any portion thereof, to any third party or entity without first providing to the LSRARD written notice and opportunity to reacquire title to the water rights, or any portion thereof, from the Board within six (6) months from the date of the written notice.

3. The LSRARD shall exercise full operational and fiscal responsibility for existing recharge projects utilizing Water Right Permit Nos. 01-07054 and 37-07842 and is hereby authorized by the Board to continue the existing use of water under these two rights for recharge purposes.

4. LSRARD shall indemnify and hold harmless the BOARD from all liability and expense on account of claims, suits and costs growing out of or connected with willful or negligent acts, errors, or omissions by its employees or agents with respect to existing or future recharge projects owned or operated by LSRARD that utilize Water Right Permit 01-07054 or 37-07842, provided, however, that the BOARD shall not be relieved hereby from liability for its own willful or negligent acts, errors, or omissions, and those of its employees or agents. This indemnification and hold harmless provision shall not apply to projects utilizing Water Right Permit 01-07054 or 37-07842 that are not owned or operated by LSRARD.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement on the day and year first above written.

IDAHO WATER RESOURCE BOARD

Clarence Parr, Chairman

LOWER SNAKE RIVER AQUIFER RECHARGE DISTRICT

Chairman

ATTEST:

J. David Erickson, Secretary

ATTEST:

Secretary

Approved as to Legal Form and Sufficiency:

Deputy Attorney General

ACKNOWLEDGEMENT

STATE OF IDAHO)
) SS.
County of Gooding)

On this 28TH day of April, 1999, before me, a Notary Public in and for said County and State, personally appeared DAN MCFADDAN, known or identified to me to be the duly elected Chairman of the LOWER SNAKE RIVER AQUIFER RECHARGE DISTRICT, the quasi-municipal district that executed the foregoing instrument, and acknowledged to me that said district executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written.

SUZANNE K. JENSEN NOTARY PUBLIC STATE OF IDAHO

Suzanne K. Jensen
NOTARY PUBLIC FOR IDAHO
Residing at: Hagerman, Id. 83332
My Commission expires: 08/04/2004

180642

STATE OF IDAHO COUNTY OF GOODING
Filed for record at the request of Dept of Water
51 min. past 10 o'clock A m. this 21st
of May, 1999 900
By Penny Archibald Deputy

BEFORE THE WATER RESOURCE BOARD
OF THE STATE OF IDAHO

IN THE MATTER OF BOARD ACCEPTANCE)
OF WATER RIGHT PERMIT NOS. 01-07054)
AND 37-07842 FROM THE LOWER SNAKE) RESOLUTION
RIVER AQUIFER RECHARGE DISTRICT.)
)

WHEREAS, Policy 1J of the Idaho State Water Plan adopted by the Board provides that it is the policy of Idaho that managed recharge be encouraged, pursuant to state law; and

WHEREAS, the Idaho Water Resource Board ("Board") pursuant to Section 42-1734, Idaho Code, has authority to acquire, purchase, lease, or exchange land, rights, water rights, easements, franchises and other property deemed necessary or proper for the construction, operation and maintenance of water projects; and

WHEREAS, the Lower Snake River Aquifer Recharge District ("Recharge District") is the holder of Water Right Permit No. 01-07054 from the Snake River upstream from Milner Dam and Water Right Permit No. 37-07842 from the Little and Big Wood Rivers for aquifer recharge purposes on the Lower Snake River Plain, both permits having a priority date of August 25, 1980; and

WHEREAS, the Recharge District desires to assign all its legal interests in Water Right Permit Nos. 01-07054 and 37-07842 to the Board, at no cost, so that the rights may be developed and utilized to the full extent feasible under the law for managed recharge purposes consistent with the State Water Plan; and

WHEREAS, it is the desire and intention of the Board and the Recharge District that the Recharge District shall have and exercise full operational and fiscal responsibility for existing recharge projects utilizing the assigned water rights pursuant to agreement with the Board; and

WHEREAS, it is the desire and intention of the Board and the Recharge District that the Recharge District shall hold the Board harmless from any and all liability associated with the operation of any recharge project utilizing the assigned water rights.

NOW THEREFORE, BE IT RESOLVED that the Idaho Water Resource Board hereby agrees to accept, without cost, the assignment of all interests held by the Lower Snake River Aquifer Recharge District in Water Right Permit Nos. 01-07054 and 37-07842 contingent upon the Board and the Recharge District executing a written agreement governing the rights and responsibilities of the parties resulting from the assignment of the water rights.

BE IT FURTHER RESOLVED that the Board Chairman is hereby authorized to file with the Idaho Department of Water Resources an Assignment of Permit form for Water Right Permit Nos. 01-07054 and 37-07842, and to file such other pleadings or documents and to take such other actions before the Department as are appropriate and necessary to perfect all vested or inchoate interests acquired under the two water right permits.

PASSED AND APPROVED this 19th day of March, 1999.

Clarence Parr
CLARENCE PARR, Chairman

ATTEST:

J. David Erickson
J. DAVID ERICKSON, Secretary

Appendix H
Notes in Water Right Backfile of Incorrect POD

Note to File:

- P.d. as described on app. appears to be in error.

- P.d. appears to be in SWSE - Sec 25, T45, R19E rather than in Sec 24.

- also ? on source. - appears to be only Little Wood

12-29-81

To

Date Time

WHILE YOU WERE OUT

of

Phone

Telephoned		Please call	
Called to see you		Will call again	
Wants to see you		Returned your	[redacted]

Message

for

Glen's notes are
Correct

Appendix I

Personal Conversation with Lynn Harmon Notes

Phone call notes with Lynn Harmon
August 2, 2018
GEP

1. Magic Reservoir Operations
    a. Irrigation demands begins typically on May 1st
    b. Flood Water Releases
        i. February–April
            1. Flows below Magic more that 7–20 cfs
        ii. May–June
            1. Flows below Magic more than 800 cfs
        iii. July–August
            1. Flows below Magic more than 1000 cfs
2. Richfield Canal System
    a. Big Wood Water diverted into Richfield Canal
    b. Measurement locations on Richfield Canal
        i. Gage # 4= Head of Canal
        ii. Trificates – East Canal, West Canal, and "HJB"= Head of Jimmy Byrnes Slough
        iii. Gage "MJB"= End of Jimmy Byrnes Slough where it enters the Little Wood River.
        iv. Irrigation Season Demand of approximately 10+ cfs: 4 diversions between Gage #4 and Head of HJB
        v. No diversions on Jimmy Byrnes below HJB and where it enters Little Wood, Irrigation demand only (except #257 Lateral – may not even exist now – about 7 ft).
    c. No stockwater run through Richfield Canal during periods of potential recharge
    d. Historically delivery of irrigation water begins on May 1st and ends sometime between 9/1 or 10/1
    e. Richfield Canal ditch capacity 650–700 cfs.
    f. Irrigation demand during spring time (May) is approximately 400 cfs (high side).
    g. No portion of the Richfield Canal is Lined, to Mr. Harmon's knowledge.
    h. Before spring irrigation demand, water in the Richfield Canal was diverted into the Jim Byrns Slough, not the East or West Canals. If water is diverted into the East/West Canals, then it is used for irrigation.
    i. Jim Byrns Slough – can gain during snow melt and runoff, perhaps #4 to HJB a better reflection of recharge to eliminate seasonal gains.
    j. Canal Loss occurs between the #4 and the Slough, BWCC purchased stream measurement device to measure loss, but no records exist during the development period.
3. Dietrich Canal System
    a. Big Wood River water is routinely delivered to the Little Wood River and is diverted into the Dietrich Canal
    b. There is a check structure on the Little Wood River to push Big Wood and Little Wood River water towards the Dietrich Canal
    c. Irrigation season usually begins April 15th, because the ground is sandier and the weather is slightly warmer compared to the ground off of the Richfield Canal system.
    d. Early Irrigation Season Demand (April 15th through May) about 100-120 cfs, which is a good average.
    e. General rule – early irrigation demands met with Little Wood Natural Flow.

f. Canal capacity 320 cfs.
g. Irrigation demand in June about 220 cfs.
h. BWCC stockwater right of 75 cfs in winter. Goes out of priority April 1. (Priority: 11/1 – 4/1)
i. Dietrich flows out of "F Waste" gage and into Little Wood River.
j. No seepage records for Dietrich Canal loss exist for the development period.

4. Milner-Gooding Canal System near Shoshone
    a. Bifurcation is where the MG Canal and the Little Wood River interest.
    b. Between stations #53 and #56, the only possible source of water to the MG Canal is the tail drain from Lateral 1158A, which only occurs during the irrigation season and full delivery of water to the Dietrich Canal.
    c. Witnessed the LWR flowing into the syphon through the bifurcation every fall when the Milner-Gooding is shut off, if a coffer dam was not in place.
        i. Even if the LWR was down to 60-70 cfs, some 20-25 cfs would flow up the bifurcation
        ii. During spring flows, with water in MG, if LWR was high it would flow up the bifurcation and add water to the MG
        iii. Watched it every winter
    d. There is no check structure on the Little Wood River at the Bifurcation.
    e. Syphon is deep, and can pull lots of water through to the north side of the MG Canal.
    f. Shoshone site has taken up to 400 cfs for recharge.

WATER DISTRICT #37 & 37-M

DAILY DISCHARGE IN SECOND FEET OF HEAD OF J.B. SLOUGH

FOR YEAR ENDING SEPTEMBER 30, 1989

DAY	APRIL	MAY	JUNE	JULY	AUG	SEPT
1			122	143	112	102
2		93	116	143	112	86
3		132	104	141	112	-0-
4		130	104	143	120	
5		150	104	143	120	
6		130	104	143	114	
7		161	104	143	114	
8		150	97	141	168	
9		124	97	139	161	124
10		114	126	136	132	74
11		114	126	139	114	76
12		114	126	122	114	73
13		116	126	172	114	86
14		114	122	177	116	86
15		114	132	168	116	84
16		114	147	143	114	74
17		114	145	141	114	68
18		114	145	141	112	71
19		114	145	136	108	66
20		114	147	132	108	59
21		114	143	134	114	62
22		116	143	130	110	57
23		118	139	134	106	Off
24		114	136	126	106	
25		112	136	130	106	
26		112	134	134	106	
27		116	136	126	108	
28		116	136	118	108	
29		120	132	120	106	
30		122	143	118	104	
31		122		110	102	
24 HR. CFS		3608	3817	4266	3571	1248
MEAN		120	127	138	115	57
ACRE FEET		7156	7571	8461	7083	2475

TOTAL 24 HR. CFS 16,510.0 TOTAL MEAN 115

TOTAL ACRE FEET 32,746.0 TOTAL NO. OF DAYS 144

WATER DISTRICT #37 & 37-M

DAULY DISCHARGE IN SECOND FEET FOR MOUTH OF THE J.B.

FOR YEAR ENDING SEPTEMBER 30, 1989

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1		22	174	186	160	174
2		174	144	186	154	158
3		212	127	187	146	152
4		212	158	189	155	42
5		219	158	189	160	Off
6		198	157	194	160	
7		198	159	181	161	
8		215	143	184	166	
9		201	140	182	173	
10		187	161	184	177	
11		198	161	196	171	
12		191	161	192	171	
13		187	165	213	166	
14		181	165	219	168	168
15		194	158	210	168	169
16		198	184	194	169	154
17		198	194	187	165	155
18		201	194	189	163	160
19		191	192	186	158	152
20		187	196	182	158	140
21		187	192	181	176	137
22		181	192	174	176	140
23		194	189	177	171	48
24		187	192	174	174	Dry
25		187	187	177	177	
26		198	186	177	176	
27		191	186	174	181	
28		205	186	168	184	
29		205	186	174	186	
30		194	179	171	186	
31		194		169	181	
24 HOUR CFS		5887	5166	5746	5237	1949
MEAN		190	172	185	170	139
ACRE FEET		11676	10246	11397	10387	3866

TOTAL 24 HR. CFS 23,985.0 YEARLY MEAN 174

TOTAL NO. OF DAYS 138 YEARLY ACRE FEET 47,572.0

WATER DISTRICT #37 & 37-M

DAILY DISCHARGE IN SECOND FEET OF DIETRICH CANAL #11

FOR YEAR ENDING SEPTEMBER 30, 1989

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1		72	171	158	172	150
2		121	173	159	169	143
3		123	173	162	171	35
4		145	174	164	174	35
5		155	170	168	172	35
6		160	170	168	171	35
7		161	173	169	171	35
8	32	160	171	171	171	35
9	35	164	170	172	171	35
10	35	170	172	174	165	156
11	33	170	173	174	164	153
12	34	174	175	174	164	152
13	35	174	178	178	163	153
14	72	168	155	179	163	144
15	72	171	162	178	162	143
16	74	171	170	179	161	136
17	74	173	156	179	158	131
18	74	174	157	179	156	128
19	75	172	158	178	155	124
20	72	170	160	177	156	123
21	72	171	162	177	158	123
22	72	171	163	176	157	123
23	72	172	163	177	156	92
24	100	172	164	175	146	77
25	111	174	165	175	145	70
26	141	174	166	174	143	21
27	121	174	168	174	143	28
28	126	170	161	173	143	28
29	126	170	160	174	140	28
30	128	170	161	173	138	28
31		171		172	145	
24 HOUR CFS	1786	5037	4994	5360	4923	2699
MEAN	78	162	166	173	159	90
ACRE FEET	3542	9990	9905	10631	9764	5353

TOTAL 24 HR, CFS 24,799.0 YEARLY MEAN 141

TOTAL NO. OF DAYS 176 YEARLY ACRE FEET 49,186.0

WATER DISTRICT #37 & 37-M

DAILY DISCHARGE IN SECOND FEET OF RICHFIELD CANAL #4

FOR YEAR ENDING SEPTEMBER 30, 1989

DAY	APRIL	MAY	JUNE	JULY	AUG	SEPT
1		232	507	605	613	528
2		341	501	608	616	508
3		395	503	614	622	508
4		444	506	619	619	-0-
5		483	506	623	613	
6		492	507	624	612	
7		506	507	643	616	
8		506	508	645	572	462
9		507	522	649	563	474
10		498	531	657	554	474
11		501	532	662	554	474
12		502	534	612	547	479
13		500	526	597	550	489
14		498	543	595	552	489
15		500	558	567	553	478
16		498	562	557	547	472
17		501	563	558	547	470
18		500	564	562	542	469
19		501	568	559	543	460
20		504	568	561	550	457
21		503	568	567	548	456
22		503	568	572	546	Off
23		500	563	569	546	
24		501	567	580	552	
25		504	568	579	564	
26		509	568	584	564	
27		508	572	579	562	
28		508	570	584	561	
29		508	587	589	554	
30		508	602	589	547	
31		508		589	540	
24 HR. CFS		14969	16349	18498	17569	8147
MEAN		483	545	597	567	388
ACRE FEET		29689	32427	36689	34846	16159

TOTAL 24 HR. CFS 75,532.0 TOTAL MEAN 525

TOTAL ACRE FEET 149,810.0 TOTAL NO. OF DAYS 144

WATER DISTRICT #37 & 37-M

DAILY DISCHARGE IN SECOND FEET OF MILNER GOODING CANAL #53

FOR YEAR ENDING SEPTEMBER 30, 1989

DAY	APRIL	MAY	JUNE	JULY	AUG.	SEPT.
1		710	953	1022	1121	940
2		667	953	1057	1136	947
3		648	917	1060	1139	953
4		642	923	1064	1139	957
5		725	930	1039	1132	953
6		757	927	1057	1139	950
7		751	920	1074	1143	970
8		751	907	1057	1139	977
9		830	904	1067	1099	984
10		897	897	1089	1089	997
11		930	920	1099	1089	1018
12		950	974	1110	1089	1018
13		970	1022	1107	1081	960
14		987	1035	1114	1074	957
15		1001	1015	1121	1085	957
16		1001	1011	1096	1085	943
17		994	1022	1125	1074	910
18		967	1039	1125	1074	891
19	81	991	1150	1136	1081	859
20	173	987	1132	1117	1103	852
21	282	984	1132	1125	1110	827
22	393	950	1046	1117	1117	787
23	389	933	1060	1139	1132	796
24	389	927	1071	1158	1081	787
25	384	920	1071	1161	1089	781
26	481	963	1057	1154	1081	775
27	530	974	1049	1180	1096	775
28	508	967	1049	1187	1074	784
29	510	957	1057	1187	1046	781
30	525	953	1049	1199	967	787
31		960		1206	937	
24 HOUR CFS	4645	27644	30192	34549	33841	26873
MEAN	387	892	1006	1114	1092	896
ACRE FEET	9213	54829	59882	68524	67120	5330

TOTAL 24 HR. CFS 157,744.0 YEARLY MEAN 956

TOTAL NO. OF DAYS 165 YEARLY ACRE FEET 312,869.0

WATER DISTRICT #37 & 37-M

DAILY DISCHARGE IN SECOND FEET OF MILNER GOODING CANAL #56

FOR YEAR ENDING SEPTEMBER 30, 1989

DAY	APRIL	MAY	JUNE	JULY	AUG	SEPT
1		335	578	568	598	494
2		377	574	584	590	511
3		358	562	584	592	519
4		429	566	586	594	530
5		450	570	586	590	517
6		441	562	588	598	511
7		446	562	584	600	540
8		450	538	574	600	546
9		437	538	580	594	550
10		466	534	590	588	560
11		517	526	598	594	546
12		523	546	602	594	554
13		544	572	613	592	558
14		550	584	613	590	556
15		566	572	611	590	558
16		580	576	596	590	552
17		582	590	598	598	548
18		578	596	598	586	530
19		594	613	598	590	526
20	170	584	576	594	592	519
21	320	578	576	586	590	496
22	403	562	588	586	570	507
23	404	530	576	594	580	505
24	406	546	582	602	570	463
25	392	588	586	602	580	455
26	389	586	580	602	578	459
27	403	582	572	615	578	459
28	356	582	568	611	552	459
29	340	588	570	611	558	461
30	343	582	560	615	524	461
31		586		621	500	
24 HOUR CFS	3926	16117	17093	18490	18040	15450
MEAN	367	520	570	596	582	515
ACRE FEET	7787	31966	33902	36673	35780	30643

TOTAL 24 HR, CFS 89,116.0 YEARLY MEAN 543

TOTAL NO. OF DAYS 164 YEARLY ACRE FEET 176,753.0

WATER DISTRICT #37 & 37-H

WASTEWAYSS F" F WASTE ****

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1		12.00	20.00				1
2		12.00		4.00			2
3		8.00	1.00	8.00			3
4		5.00	1.00	7.00			4
5		4.00	1.00	4.00			5
6			5.00	3.00			6
7	25.00		5.00	6.00			7
8		78.00	8.00				8
9	28.00	78.00	4.00	8.00			9
10	28.00	25.00		8.00			10
11	19.00	22.00		9.00			11
12	14.00	15.00	19.00	8.00			12
13	14.00		5.00	6.00			13
14	12.00	21.00	6.00	8.00			14
15		26.00	8.00				15
16	12.00	20.00	9.00	8.00			16
17	8.00	20.00	7.00	5.00			17
18	8.00	16.00	7.00	4.00			18
19	8.00	15.00	9.00	5.00			19
20	6.00		10.00	6.00			20
21	6.00	20.00	9.00				21
22		20.00	7.00				22
23	10.00	16.00	1.00		49.00		23
24	12.00	15.00	6.00		25.00		24
25	12.00	20.00	6.00				25
26	12.00	105.00	4.00				26
27	12.00		2.00				27
28		5.00	6.00				28
29	12.00	5.00	3.00				29
30		3.00	6.00				30
31		6.00					31
TOTAL	367.00	592.00	175.00	107.00	74.00	0.00	

YEARLY C.F.S. 1315.00

YEARLY ACRE FEET 2630

TOTAL NO. OF DAYS 91

YEARLY MEAN 14.45

WATER DISTRICT #37 & 37-H

CANAL NAME S" WASTE STATION NUMBER "S" YEAR 1990

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1				14			1
2				14			2
3				21			3
4				14			4
5				25			5
6				21			6
7				22			7
8		74		22			8
9		38		21			9
10		35		5			10
11		20		21			11
12		12	23	25			12
13		9	23	25			13
14		2	14	25			14
15		7	14	26			15
16		3	16	21			16
17		6	16	25			17
18		9	16	16			18
19		3	16	12			19
20		3	16				20
21		3	16				21
22		1	16				22
23		11	16				23
24		3	13				24
25		7	13				25
26		7	13				26
27		9	11				27
29		6	11				28
29		4	9				29
30		3	9				30
31		13	9				31
TOTAL		283	290	375	0	0	
MEAN		12	14	20			
A.F.		561	575	744			

YEARLY C.F.S. 949.00

YEARLY ACRE FEET 1,880.00

TOTAL NUMBER OF DAYS 63

YEARLY MEAN 15

WATER DISTRICT #37 & 37-M

CANAL NAME HEAD OF J.B. STATION NUMBER HJB YEAR 1990

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1				136			1
2				136			2
3				134			3
4				128			4
5				130			5
6				130			6
7		177		128			7
8		200	114	130			8
9		170	93	130			9
10		139	124	130			10
11		128	112	130			11
12		116	93	128			12
13		130	78	128			13
14		116	78	130			14
15		122	84	126			15
16		130	84	126			16
17		120	91	130			17
18		120	88	128			18
19		112	88	128			19
20		118	84	81	126		20
21		114	79		106		21
22		112	79		116		22
23		110	81		86		23
24		112	106		60		24
25		112	108				25
26		81	108			20	26
27		81	122			20	27
28		78	124			26	28
29		68	139			12	29
30		76	136				30
31		79					31
TOTAL		2921	2293	2547	494	78	
MEAN		117	100	127	99	18	
A.F.		5792	4548	5051	980	143	

YEARLY C.F.S. 8,326.00

YEARLY ACRE FEET 16,514.00

TOTAL NUMBER OF DAYS 77

YEARLY MEAN 108

WATER DISTRICT #37 & 37-M

CANAL NAME J. B. SLOUGH STATION NUMBER MJB 1990

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1				189			1
2				189			2
3				189			3
4				186			4
5				184			5
6				179			6
7		169		179			7
8		243	140	179			8
9		224	158	176			9
10		173	158	176			10
11		210	147	176			11
12		189	151	169			12
13		173	151	177			13
14		177	139	176			14
15		177	140	100			15
16		182	141	171			16
17		174	143	176			17
18		173	147				18
19		171	160				19
20		176	139				20
21		165	128		30		21
22		169	133		176		22
23		147	140		116		23
24		155	157		95		24
25		163	163		81		25
26		130	163				26
27		102	176				27
28		50	182				28
29		96	189				29
30		130	186				30
31		154					31
TOTAL	0	4078	3531	2971	498	0	
MEAN		163	154	175	100		
A.F.		8076	7003	5893	988		

YEARLY C.F.S. 11,072.00

YEARLY ACRE FEET 21,960.00

TOTAL NUMBER OF DAYS 70

WATER DISTRICT #37 & 37-M

CANAL NAME DIETRICH CANAL STATION NUMBER 11 YEAR 1990

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1	65	59	175	210			1
2	65	59	10	222			2
3	65	58	10	235			3
4	65	58	12	233			4
5	65	58	4	235			5
6	65	58	4	231			6
7	65	58	4	248			7
8	65	151	124	250			8
9	64	200	135	252			9
10	64	198	141	235			10
11	64	208	166	257			11
12	64	208	173	252			12
13	64	216	177	259			13
14	63	214	177	259			14
15	63	214	182	257			15
16	63	216	188	257			16
17	63	218	190	262			17
18	63	214	192	257			18
19	52	218	196	262			19
20	63	214	200	7			20
21	62	220	202				21
22	62	218	208		65		22
23	62	218	224		92		23
24	63	220	239		231		24
25	63	220	250		146		25
26	63	212	259		136		26
27	63	204	271				27
28	64	206	278				28
29	64	208	292				29
30	64	208	304				30
31		214					31
TOTAL	1909	5501	4987	4680	670	0	
MEAN	64	181	166	244	134		
A.F.	3786	11109	9891	24990	1329		

YEARLY C.F.S. 17,847.00

YEARLY ACRE FEET 35,398.00

TOTAL NUMBER OF DAYS 116

YEARLY MEAN 154

WATER DISTRICT #37 & 37-M

CANAL NAME RICHFIELD CANAL STATION NUMBER 4 YEAR 1990

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1				533			1
2				537			2
3				537			3
4		22		544			4
5		77		552			5
6		236		555			6
7		316		555			7
8		539	410	555			8
9		524	446	493			9
10		522	450	506			10
11		533	414	563			11
12		541	410	570			12
13		541	414	592			13
14		550	418	581			14
15		557	432	581			15
16		570	430	583			16
17		566	430	583			17
18		557	424	581			18
19		557	420	583			19
20		561	408		282		20
21		548	418		226		21
22		550	428		265		22
23		557	430		276		23
24		561	450		222		24
25		533	460			200	25
26		510	462			260	26
27		510	499			169	27
28		497	512			232	28
29		495	537			235	29
30		506	535				30
31		58					31
TOTAL		13094	10237	10584	1271	1116	
MEAN		468	445	557	254	223	
A.F.		25971	20304	20992	2521	2213	

YEARLY C.F.S. 36,302.00

YEARLY ACRE FEET 72,001.00

TOTAL NUMBER OF DAYS 84

YEARLY MEAN 432

WATER DISTRICT #37 & 37-M

CANAL NAME MILNER GOODING CANAL STATION NUMBER 53 YEAR 1990

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1		891	849	974	1032	984	1
2		884	868	967	1085	987	2
3		965	862	967	1032	987	3
4		953	859	980	1035	987	4
5	185	957	855	1001	1039	984	5
6	190	950	859	967	1060	977	6
7	193	977	837	953	1060	920	7
8	194	957	830	967	1049	914	8
9	197	957	751	994	1049	910	9
10	312	940	730	1008	1039	923	10
11	399	923	736	994	1039	940	11
12	393	917	722	997	1057	963	12
13	393	904	725	991	1085	904	13
14	368	910	739	987	1078	907	14
15	368	904	736	987	1074	920	15
16	368	914	739	1008	1074	914	16
17	368	970	739	1022	1081	917	17
18	368	894	745	1018	1096	917	18
19	368	888	696	1015	1117	849	19
20	670	888	676	1025	1139	815	20
21	716	894	751	1039	1306	818	21
22	787	891	751	1053	1346	815	22
23	824	888	812	1060	1074	815	23
24	880	866	837	1067	1081	769	24
25	849	898	884	1060	1096	748	25
26	843	884	914	1067	1114	745	26
27	878	878	953	1085	1139	640	27
28	900	878	969	1096	1155	640	28
29	930	862	968	1060	1081	640	29
30	933	852	957	1039	980	634	30
31		904		1035	970		31
TOTAL	13824	28130	24332	31483	33602	25883	
MEAN	359	907	811	1016	1084	863	
A.F.	27418	55793	48260	62443	66646	51336	

YEARLY C.F.S. 157,254.00

YEARLY ACRE FEET 311,898.00

TOTAL NUMBER OF DAYS 179

YEARLY MEAN 879

WATER DISTRICT #37 & 37-M

CANAL NAME MILNER GOODING CANAL STATION NUMBER 56 YEAR 1990

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL.	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1		472	562	570	566	584	1
2		472	574	556	550	588	2
3		459	578	548	570	564	3
4		498	574	558	574	554	4
5	170	513	564	558	578	550	5
6	156	509	550	546	582	542	6
7	162	513	552	538	582	544	7
8	165	540	536	524	576	548	8
9	170	566	511	524	578	548	9
10	175	519	526	534	574	552	10
11	225	517	526	528	570	554	11
12	251	526	505	550	574	554	12
13	250	554	503	544	588	538	13
14	247	542	503	560	570	542	14
15	275	542	503	554	562	530	15
16	305	552	509	556	568	528	16
17	294	574	511	564	588	532	17
18	306	582	509	558	594	530	18
19	326	570	492	554	604	502	19
20	398	544	459	564	602	500	20
21	376	538	481	580	598	515	21
22	376	546	474	584	590	511	22
23	425	540	483	580	602	511	23
24	427	530	481	580	582	488	24
25	434	542	526	586	580	477	25
26	445	540	550	600	588	474	26
27	461	536	550	576	586	437	27
28	472	532	578	576	570	437	28
29	487	538	584	554	546	437	29
30	488	519	582	544	560	437	30
31		546		552	574		31
TOTAL	8266	16471	15836	17300	17920	15608	
MEAN	318	531	528	558	578	520	
A.F.	16395	32668	31409	34313	35542	30957	

YEARLY C.F.S. 91,401.00

YEARLY ACRE FEET 181,284.00

TOTAL NUMBER OF DAYS 179

YEARLY MEAN 510

WATER DISTRICT #37 & 37-M

CANAL NAME HEAD OF J.B. STATION NUMBER HJB YEAR 1991

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1			106	159			1
2			110	161			2
3			108	163			3
4			103	161			4
5			130	166			5
6			152	166			6
7			152	163			7
8			147	163			8
9			143	161			9
10			141	163			10
11			139				11
12			139				12
13			134				13
14			159				14
15			159				15
16			159				16
17			159				17
18			159				18
19			161				19
20			161				20
21			166				21
22		116	156				22
23		159	159				23
24		114	156				24
25		106	152				25
26		93	161				26
27		83	163				27
28		108	163				28
29		112	161				29
30		114	161				30
31		108					31
TOTAL	0	1113	4414	1626	0	0	
MEAN		111	147	163	99	18	
A.F.	0	2204	8740	3219	0	0	

YEARLY C.F.S. 7,153.00

YEARLY ACRE FEET 14,182.94

TOTAL NUMBER OF DAYS 50

YEARLY MEAN 143

WATER DISTRICT #37 & 37-M

CANAL NAME LINCOLN BY-PASS STATION NUMBER 48 YEAR 1991

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1			243	246			1
2			243	234			2
3			233	234			3
4			231	234			4
5			233	240			5
6			236	246			6
7			238	246			7
8			247	246			8
9			251	248			9
10			253	248			10
11			253	246			11
12			251				12
13			251				13
14			251				14
15			251				15
16			251				16
17			246				17
18			243				18
19			241				19
20			241				20
21			241				21
22			241				22
23			240				23
24		169	240				24
25		169	238				25
26		169	236				26
27		195	234				27
28		195	236				28
29		195	234				29
30		233	237				30
31		233					31
TOTAL	0	1559	7264	2668	0	0	
MEAN		195	242	243			
A.F.	0	3085	14383	5283	0	0	

YEARLY C.F.S. 11,490.00

YEARLY ACRE FEET 22,750.20

TOTAL NUMBER OF DAYS 49

YEARLY MEAN 234

WATER DISTRICT #37 & 37-M

CANAL NAME DIETRICH CANAL STATION NUMBER 11 1991

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1		59.00	282.00	255.00			1
2		59.00	287.00	271.00			2
3		59.00	287.00	278.00			3
4	32.00	60.00	292.00	282.00			4
5	31.00	60.00	220.00	287.00			5
6	31.00	60.00	238.00	297.00			6
7	31.00	60.00	235.00	302.00			7
8	31.00	60.00	235.00	307.00			8
9	51.00	60.00	235.00	307.00			9
10	51.00	60.00	237.00	312.00			10
11	51.00	60.00	235.00				11
12	51.00	60.00	239.00				12
13	51.00	60.00	239.00				13
14	51.00	60.00	262.00		80.00		14
15	51.00	60.00	268.00		96.00		15
16	51.00	59.00	271.00		92.00		16
17	51.00	59.00	278.00		25.00		17
18	50.00	58.00	292.00				18
19	48.00	55.00	302.00				19
20	48.00	56.00	312.00				20
21	48.00	56.00	319.00				21
22	48.00	173.00	324.00				22
23	48.00	255.00	332.00				23
24	52.00	252.00	340.00				24
25	57.00	252.00	342.00				25
26	56.00	216.00	222.00				26
27	56.00	241.00	228.00				27
28	56.00	255.00	237.00				28
29	58.00	271.00	246.00				29
30	58.00	278.00	252.00				30
31		280.00					31
TOTAL	1296	3713	7993	2898	293	0	
MEAN	48	120	26	290	79		
A.F.	2570	7352	15826	5738	580		

YEARLY C.F.S. 16,195.00

YEARLY ACRE FEET 32,066.10

TOTAL NUMBER OF DAYS 102

YEARLY MEAN 159

CANAL NAME J. B. SLOUGH STATION NUMBER MJB 1991

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1			139	186			1
2			139	184			2
3			139	182			3
4			141	181			4
5			169	173			5
6			176	174			6
7			176	174			7
8			113	176			8
9			113	176			9
10			157	174			10
11			157				11
12			157				12
13			149				13
14			166				14
15			171				15
16			169				16
17			173				17
18			173				18
19			176				19
20			176				20
21			173				21
22		176	176				22
23		176	174				23
24		173	173				24
25		171	171				25
26		166	166				26
27		182	182				27
28		151	186				28
29		146	186				29
30		149	186				30
31		141					31
TOTAL	0	1631	4902	1780	0	0	
MEAN		163	163	178			
A.F.	0	3229	9706	3524	0	0	

YEARLY C.F.S. 8,313.00

YEARLY ACRE FEET 16,459.74

TOTAL NUMBER OF DAYS 50

YEARLY MEAN 166

WATER DISTRICT #37 & 37-M

CANAL NAME RICHFIELD CANAL STATION NUMBER 4 YEAR 1991

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1			503	539			1
2			506	544			2
3			510	544			3
4			533	544			4
5			577	552			5
6			577	552			6
7			568	552			7
8			559	546			8
9			557	516			9
10			568	520			10
11			555				11
12			546				12
13			550				13
14			577				14
15			581				15
16			581				16
17			579				17
18			585				18
19			583				19
20			583				20
21			585				21
22		298	574				22
23		349	581				23
24		410	572				24
25		430	489				25
26		434	535				26
27		487	535				27
28		491	535				28
29		499	526				29
30		512	535				30
31		497					31
TOTAL	0	4407	16645	5409	0	0	
MEAN		441	555	541			
A.F.		8726	32957	10710			

YEARLY C.F.S. 26,461.00

YEARLY ACRE FEET 52,398.78

TOTAL NUMBER OF DAYS 50

YEARLY MEAN 529

WATER DISTRICT #37 & 37-M

CANAL NAME BIG WOOD RIVER STATION NUMBER 5 YEAR 1991

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1			221	302			1
2			221	275			2
3			217	272			3
4			221	272			4
5			224	286			5
6			230	294			6
7			234	294			7
8			237	294			8
9			240	302			9
10			234	279			10
11			237				11
12			240				12
13			244				13
14			234				14
15			234				15
16			237				16
17			230				17
18			227				18
19			224				19
20			227				20
21			230				21
22			227				22
23			230				23
24		275	224				24
25		290	275				25
26		290	275				26
27		317	272				27
28		334	275				28
29		325	275				29
30		148	275				30
31		217					31
TOTAL	0	2196	7171	2870	0	0	
MEAN		275	239	287			
A.F.	0	4348	14199	5683	0	0	

YEARLY C.F.S. 12,237.00

YEARLY ACRE FEET 24,229.26

TOTAL NUMBER OF DAYS 48

YEARLY MEAN 255

WATER DISTRICT #37 & 37-M

CANAL NAME TABER CANAL NUMBER 66-P1 1991

OWNER DON TABER

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1		1.50		1.50		1.50	1
2		1.50		1.50		1.50	2
3		1.50		1.50		1.50	3
4		1.50		1.50		1.50	4
5		1.50		1.50		1.50	5
6		1.50		1.50		1.50	6
7		1.50		1.50		1.50	7
8		1.50		1.50		1.50	8
9				1.00		1.50	9
10			1.50	1.00			10
11			1.50	1.00			11
12			1.50	1.00			12
13			1.50	1.00	1.50		13
14			1.50	1.00	1.50		14
15			1.50	1.00	1.50		15
16			1.50	1.00	1.50		16
17			1.50	1.00	1.50		17
18				1.50	1.50		18
19				1.50	1.50		19
20				1.50	1.50	2.00	20
21				1.50	1.50	2.00	21
22				1.50	1.50	1.50	22
23				1.50	1.50	1.50	23
24				1.50	1.50	1.50	24
25				1.50	1.50	1.50	25
26				1.50	1.50	1.50	26
27	1.50		1.50		1.50	1.50	27
28	1.50		1.50		1.50	1.50	28
29	1.50		1.50		1.50	1.50	29
30	1.50	1.50	1.50		1.50		30
31		1.50			1.50		31
TOTAL	6.00	15.00	18.00	34.50	28.50	29.50	

YEARLY C.F.S. 131.50

YEARLY ACRE FEET 260.37

TOTAL NO. OF DAYS 90

YEARLY MEAN 1.46

WATER DISTRICT #37 & 37-M

CANAL NAME MILNER GOODING CANAL STATION NUMBER 53 YEAR 199

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1		597	865	1191	1107	1042	1
2		687	927	1176	1110	1049	2
3		690	933	1165	1139	1064	3
4		693	920	1136	1015	1022	4
5		687	937	1161	1042	947	5
6		693	1042	1176	1121	933	6
7		751	1057	1184	1121	940	7
8		736	1065	1191	1125	933	8
9		739	1053	1169	1126	967	9
10		742	1039	1172	1136	1028	10
11		754	1022	1165	1132	1001	11
12		766	1022	1187	1143	900	12
13		769	1085	1199	1114	838	13
14		772	1060	1214	1121	891	14
15		751	1092	987	1126	875	15
16	180	745	1117	1001	1125	891	16
17	177	739	1114	1008	1142	795	17
18	299	745	1096	1015	1143	769	18
19	432	739	1089	1035	1121	769	19
20	435	687	1096	1057	1121	769	20
21	435	676	1096	1078	1092	766	21
22	428	667	1114	1081	1085	775	22
23	417	659	1114	1085	1085	787	23
24	410	722	1117	1099	1085	698	24
25	424	757	1103	1107	1099	676	25
26	568	745	1136	1117	1099	745	26
27	581	745	1165	1117	1078	739	27
28	583	739	1187	1121	1064	736	28
29	591	793	1191	1125	1057	733	29
30	591	859	1202	1114	1049	730	30
31		855		1103	1042		31
TOTAL	6551	22699	32076	34736	34180	25859	
MEAN	437	732	1069	1121	1103	862	
A.F.	12971	44944	63510	68777	67676	51201	

YEARLY C.F.S. 156,101.00

YEARLY ACRE FEET 309,079.98

TOTAL NUMBER OF DAYS 168

YEARLY MEAN 929.

WATER DISTRICT #37 & 37-M

CANAL NAME LITTLE WOOD RIVER STATION NUMBER 54 YEAR 1991

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1		14	16	22	17	20	1
2		14	16	21	17	20	2
3		13	36	24	17	18	3
4	66	16	7	21	17	19	4
5	68	15	18	17	19	15	5
6	73	15	46	14	21	14	6
7	76	16	51	14	18	10	7
8	71	15	44	10	17	10	8
9	58	14	32	10	18	12	9
10	68	15	20	7	18	18	10
11	64	17	15	1	16	21	11
12	64	20	12	7	16	32	12
13	63	23	12	15	15	30	13
14	61	22	6	15	14	25	14
15	58	19	13	16	39	23	15
16	56	18	13	18	15	20	16
17	57	18	13	18	18	18	17
18	55	18	10	17	13	20	18
19	46	20	12	18	10	19	19
20	44	35	14	17	18	18	20
21	46	37	15	18	17	17	21
22	43	30	17	22	18	19	22
23	39	71	14	18	18	24	23
24	46	93	15	15	16	28	24
25	29	50	13	14	16	41	25
26	27	17	16	14	17	80	26
27	18	7	16	17	23	41	27
28	16	3	22	18	19	12	28
29	14	38	29	17	23	19	29
30	16	23	28	16	24	36	30
31		22		16	21		31
TOTAL	1341	742	591	487	565	699	
MEAN	50	24	20	16	18	23	
A.F.	2655	1469	1170	964	1119	1384	

YEARLY C.F.S. 4,425.00

YEARLY ACRE FEET 8,761.50

TOTAL NUMBER OF DAYS 180

YEARLY MEAN 25

WATER DISTRICT #37 & 37-M

CANAL NAME MILNER GOODING CANAL STATION NUMBER 56 YEAR 1991

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1		351	446	627	636	598	1
2		351	450	621	638	600	2
3		364	474	619	594	606	3
4		368	468	606	560	604	4
5		366	464	613	586	548	5
6		368	517	615	611	550	6
7		392	558	617	611	550	7
8		392	560	613	611	550	8
9		392	562	576	611	570	9
10		396	558	586	612	574	10
11		408	546	582	611	550	11
12		415	542	592	611	532	12
13		418	556	594	600	532	13
14		415	564	594	604	528	14
15		406	582	572	606	534	15
16		403	590	606	605	524	16
17		398	586	615	606	488	17
18	258	399	582	619	602	477	18
19	242	399	576	636	602	477	19
20	243	388	576	638	602	477	20
21	245	359	580	640	602	475	21
22	246	364	586	611	598	479	22
23	253	377	590	602	600	485	23
24	253	411	586	615	598	492	24
25	274	420	582	617	606	455	25
26	335	416	604	615	611	463	26
27	350	416	615	615	598	441	27
28	351	415	623	627	592	427	28
29	355	423	625	625	592	429	29
30	359	450	627	631	598	437	30
31		445		636	594		31
TOTAL	3764	12267	16775	18975	18650	15402	
MEAN	290	396	559	612	602	513	
A.F.	7453	24289	33215	37571	36927	30496	

YEARLY C.F.S. 85,833.00

YEARLY ACRE FEET 169,949.34

TOTAL NUMBER OF DAYS 166

YEARLY MEAN 517

WATER DISTRICT #37 & 37-M

CANAL NAME HEAD OF J.B. STATION NUMBER HJB YEAR 1992

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL.	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1		170					1
2		190					2
3		163					3
4		172					4
5		152					5
6		132					6
7		141					7
8		156					8
9		184					9
10		184					10
11		182					11
12		182					12
13		184					13
14		184					14
15		180					15
16		170					16
17		161					17
18		154					18
19		150					19
20		141					20
21		110					21
22							22
23							23
24							24
25					218		25
26					150		26
27			118		79		27
28			118				28
29			154				29
30	132		147				30
31							31
TOTAL	132	3442	537	0	447	0	
MEAN	132	164	134	0	149	0	
A.F.	261	6815	1063	0	885	0	

YEARLY C.F.S. 4,558.00

YEARLY ACRE FEET 9,024.84

TOTAL NUMBER OF DAYS 29

YEARLY MEAN 157

WATER DISTRICT #37 & 37-M

CANAL NAME WEST MAIN STATION NUMBER WEST YEAR 1992

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1		41					1
2		61					2
3		90					3
4		119					4
5		123					5
6		122					6
7		124					7
8		129					8
9		128					9
10		129					10
11		128					11
12		128					12
13		129					13
14		129					14
15		128					15
16		129					16
17		129					17
18		128					18
19		125					19
20		127					20
21		123					21
22							22
23							23
24							24
25							25
26					63		26
27			81		84		27
28			81		82		28
29			103				29
30	40		102				30
31							31
TOTAL	40	2469	367	0	229	0	
MEAN	40	118	67		76		
A.F.	79	4889	727	0	453	0	

YEARLY C.F.S. 3,105.00

YEARLY ACRE FEET 6,147.90

TOTAL NUMBER OF DAYS 29

YEARLY MEAN 107

WATER DISTRICT #37 & 37-M

CANAL NAME MJB CANAL NUMBER MJB 1992

OWNER

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1		212		194			1
2		181					2
3		201					3
4		171					4
5		173					5
6		173					6
7		181					7
8		208					8
9		208					9
10		215					10
11		246					11
12		250					12
13		246					13
14		252					14
15		239					15
16		239					16
17		224					17
18		224					18
19		203					19
20		192					20
21							21
22							22
23							23
24							24
25							25
26						206	26
27						132	27
28							28
29			221				29
30			217				30
31							31
TOTAL	0	4238	438	194	0	338	
MEAN		212	219	194	113		
A. F.	0	8391	867	384	0	669	

YEARLY C.F.S. 5208.00

YEARLY ACRE FEET 10311.84

TOTAL NO. OF DAYS 25

YEARLY MEAN 208.32

WATER DISTRICT #37 & 37-M

CANAL NAME DIETRICH CANAL STATION NUMBER 11 1992

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1		95					1
2		184					2
3		197					3
4		202					4
5		202					5
6		205					6
7		206					7
8		212					8
9		222					9
10		223					10
11		223					11
12		227					12
13		183					13
14		185					14
15		187					15
16		187					16
17		188					17
18		190					18
19		191					19
20		194					20
21		180					21
22	30						22
23	29						23
24	30						24
25	30						25
26	30						26
27	30						27
28	30						28
29	23						29
30	51						30
31							31
TOTAL	283	4083	0	0	0	0	
MEAN	31	194					
A.F.	560	8084	0	0	0		

YEARLY C.F.S. 4,366.00

YEARLY ACRE FEET 8,644.68

TOTAL NUMBER OF DAYS 30

YEARLY MEAN 146

WATER DISTRICT #37 & 37-M

CANAL NAME BIG WOOD RIVER STATION NUMBER 4 YEAR 1992

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1		315		408			1
2		360					2
3		406					3
4		524					4
5		526					5
6		529					6
7		537					7
8		583					8
9		588					9
10		592					10
11		579					11
12		590					12
13		590					13
14		592					14
15		596					15
16		592					16
17		583					17
18		574					18
19		557					19
20		541					20
21		343					21
22							22
23							23
24					295		24
25					414		25
26					362		26
27			334				27
28			426				28
29			434				29
30			426				30
31							31
TOTAL	0	11097	1620	408	1071	0	
MEAN		528	405	408	357		
A.F.	0	21972	3208	808	2121	0	

YEARLY C.F.S. 14,196.00

YEARLY ACRE FEET 28,108.08

TOTAL NUMBER OF DAYS 29

YEARLY MEAN 490

WATER DISTRICT #37 & 37-M

CANAL NAME CANAL NUMBER BWR #3 199:

OWNER

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1		632		521			1
2		744		335			2
3		804		331			3
4		904		335			4
5		911		335			5
6		892		335			6
7		904		335			7
8		937					8
9		976					9
10		976					10
11		976					11
12		1002					12
13		1015					13
14		1002					14
15		995					15
16		1009					16
17		995					17
18		976					18
19		963					19
20		917					20
21							21
22							22
23							23
24					484		24
25					470		25
26					403		26
27			268		297		27
28			317		359		28
29			565		321		29
30			548		125		30
31							31
TOTAL	0	18530	1698	2527	2459	0	
MEAN		927	425	421	351		
A. F.	0	36689	3362	5003	4869	0	

YEARLY C.F.S. 25214.00

YEARLY ACRE FEET 49923.72

TOTAL NO. OF DAYS 38

YEARLY MEAN 663.53

WATER DISTRICT #37 & 37-M

NAL NAME LITTLE WOOD RIVER STATION NUMBER 54 YEAR 1992

DAILY DISCHARGE IN SECOND FEET

TE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
		9	21	20	5	12	1
		24	18	20	5	13	2
		46	17	37	6	12	3
		25	16	25	7	12	4
	61	30	17	27	11	15	5
	58	15	16	23	12	14	6
	58	10	17	18	12	16	7
	54	7	16	17	12	16	8
	42	13	17	16	11	16	9
	38	30	17	16	10	17	10
	38	30	18	17	11	17	11
	37	27	17	15	12	17	12
	33	34	20	14	12	17	13
	17	30	21	17	11	16	14
	10	33	20	17	12	15	15
	14	30	20	16	12	16	16
	15	26	24	16	10	16	17
	17	22	17	16	9	20	18
	18	21	14	13	9	21	19
	18	16	15	5	10	22	20
	19	11	17	5	10	20	21
	20	25	19	6	10	20	22
	22	24	18	9	10	21	23
	21	18	19	9	10	19	24
	17	19	26	8	9	17	25
	15	20	28	8	14	18	26
	12	18	22	7	15	18	27
	9	18	33	3	8	18	28
	8	20	46	5	11	15	29
	10	20	32	5	10		30
		21		5	12		31
OTAL	681	692	618	435	318	486	
EAN	26	22	21	14	10	17	
.F.	1348	1370	1224	861	630	962	

YEARLY C.F.S. 3,230.00

YEARLY ACRE FEET 6,395.40

TOTAL NUMBER OF DAYS 178

YEARLY MEAN 18

WATER DISTRICT #37 & 37-M

CANAL NAME MILNER GOODING CANAL STATION NUMBER 53 YEAR 1992

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1		763	866	940	860		1
2		768	869	955	860		2
3		778	869	946	855		3
4		776	871	891	860		4
5		760	874	869	869		5
6	83	765	871	771	869		6
7	166	763	871	773	866		7
8	252	789	880	781	874		8
9	239	795	877	739	888	813	9
10	229	811	871	755	877	846	10
11	218	816	871	757	874	863	11
12	216	822	857	765	923	852	12
13	219	827	894	771	967	835	13
14	304	827	852	771	979	819	14
15	483	822	888	778	976	800	15
16	563	822	891	773	973	784	16
17	563	822	903	778	985	781	17
18	568	824	886	819	985	765	18
19	656	808	869	857	982	752	19
20	704	805	863	860	979		20
21	710	805	855	860	985		21
22	701	797	855	860	985		22
23	763	797	855	860	988		23
24	713	803	844	852	997		24
25	713	795	852	849	1009		25
26	747	781	937	855	1021		26
27	752	841	920	852	1033		27
28	726	857	906	835			28
29	729	863	906	830			29
30	731	857	932	830			30
31		860		855			31
TOTAL	12748	25019	26355	25687	25319	8910	
MEAN	510	807	879	829	938	810	
A.F.	25241	49538	52183	50860	50132	17642	

YEARLY C.F.S. 124,038.00

YEARLY ACRE FEET 245,595.24

TOTAL NUMBER OF DAYS 155

YEARLY MEAN 800

WATER DISTRICT #37 & 37-M

CANAL NAME TABER CANAL NUMBER 66-P 1992

OWNER DON TABER

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1		3.00	1.40			0.30	1
2	1.40	3.00	1.40			0.30	2
3	1.40	3.00	1.40			0.30	3
4	1.40	3.00	0.35	2.50		0.30	4
5	1.40	3.00	0.35	2.50		0.30	5
6	1.40	3.00	0.80			0.30	6
7	1.40	3.00	0.80			0.30	7
8	1.40	3.00	0.80			0.30	8
9		3.00	0.80			0.30	9
10		3.00	0.80				10
11		3.00	2.20				11
12			2.20				12
13			2.20		0.30		13
14		4.50	2.20		0.30		14
15	1.90	4.50	2.20		0.30		15
16	3.40	2.20	0.80		0.30		16
17	3.40	2.20	0.80		0.30		17
18		2.40	0.80		0.30		18
19		2.40	0.80		0.30		19
20		2.40	0.80		0.30		20
21		0.60	0.80		0.30		21
22		0.60	0.80		0.30		22
23		0.60	0.80		0.30		23
24		0.60	0.80		0.30		24
25		0.60			0.30		25
26		0.60			0.30	1.30	26
27		0.60			0.30	1.30	27
28	4.00	0.60			0.30	1.30	28
29	4.00	0.60			0.30	1.30	29
30	1.00	1.40			0.30	1.30	30
31		1.40			0.30		31
TOTAL	27.50	61.80	27.10	5.00	5.70	9.20	

YEARLY C.F.S. 136.30

YEARLY ACRE FEET 269.874

TOTAL NO. OF DAYS 101

YEARLY MEAN 1.35

WATER DISTRICT #37 & 37-M

CANAL NAME MILNER GOODING CANAL STATION NUMBER 56 YEAR 1992

DAILY DISCHARGE IN SECOND FEET

DATE	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	DATE
1		456	435	492	451		1
2		467	435	500	451		2
3		470	435	500	451		3
4		472	435	470	454		4
5		474	440	458	454		5
6	89	478	440	465	454		6
7	135	470	440	467	452		7
8	177	476	472	470	454		8
9	177	472	472	452	460	483	9
10	189	478	442	454	458	476	10
11	181	490	442	463	452	489	11
12	182	492	440	463	460	479	12
13	180	498	454	465	474	474	13
14	235	470	449	467	528	470	14
15	337	463	449	469	526	467	15
16	377	456	449	465	528	463	16
17	379	452	461	460	532	476	17
18	382	449	451	467	532	483	18
19	403	442	438	467	530	485	19
20	478	437	437	472	526		20
21	481	438	433	513	524		21
22	472	437	435	519	526		22
23	449	449	435	513	530		23
24	463	449	430	517	532		24
25	449	442	442	517	540		25
26	456	431	487	522	534		26
27	458	424	478	519	546		27
28	467	431	472	513			28
29	452	435	478	449			29
30	454	431	485	449			30
31		431		451			31
TOTAL	8502	14160	13491	14868	13359	5245	
MEAN	354	457	450	480	495	477	
A.F.	16834	28037	26712	29439	26451	10385	

YEARLY C.F.S. 69,625.00

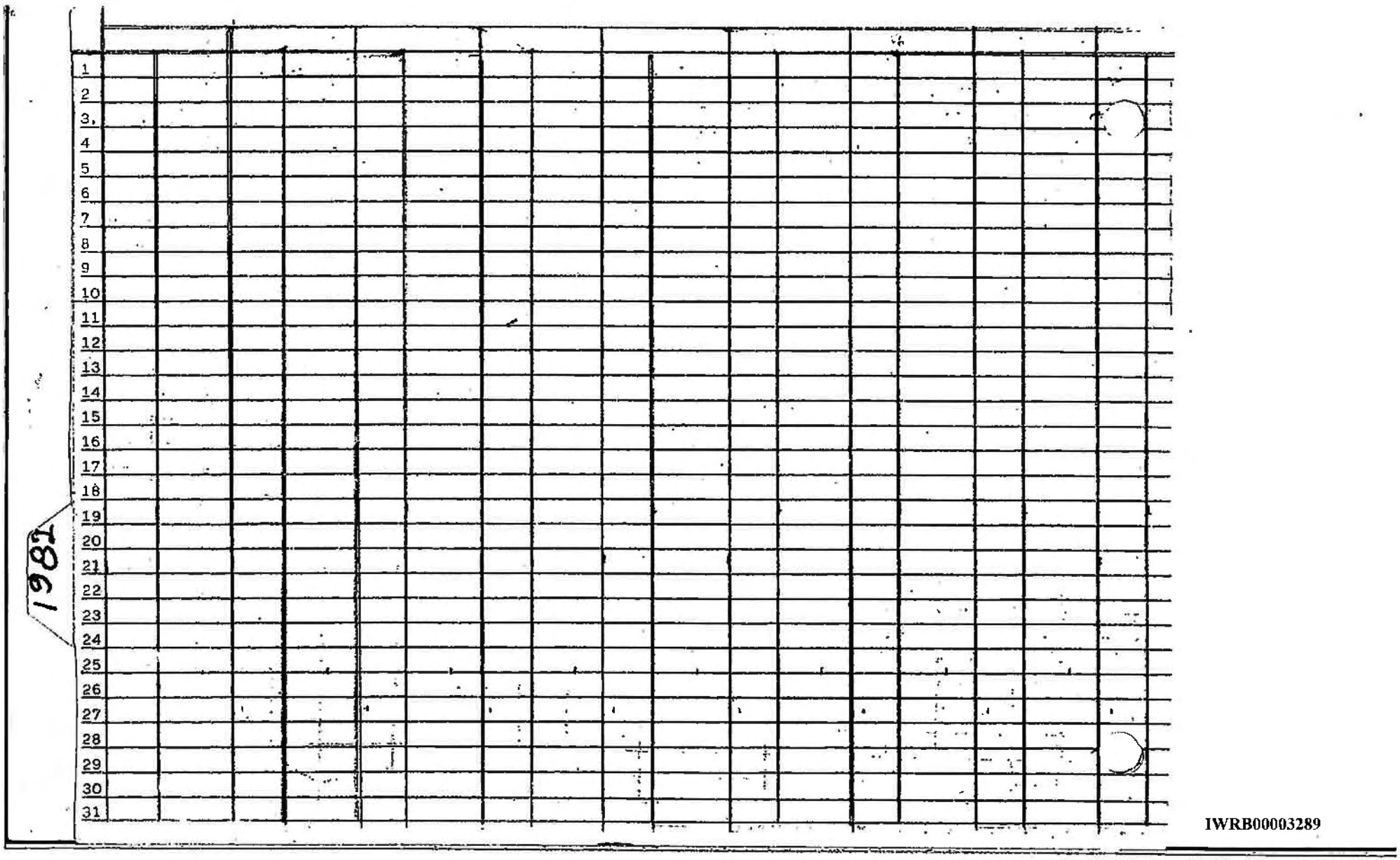
YEARLY ACRE FEET 137,857.50

TOTAL NUMBER OF DAYS 155

YEARLY MEAN 449

Appendix K

Big Wood Canal Company Measurement Records



May 1982

	Magic		#3		#4		#5		East		West		J.B. Head			ESpill	W1	W2	
I																			1
2																			2
3	931.5	178,114	7.76	3680															3
4	931.7	178,858	8.10	3890	3.35	188	6.40	3940	1.16	100	1.08	45				20	28	20	4
5	931.9	179,602	8.30	4100	3.27	177	6.59	4050	1.22	107	1.22	50	.45	29		25	23	20	5
6	931.7	178,858	8.06	3930	3.76	252	6.23	3658	1.10	153	1.34	55	.48	32		15	38	30	6
7	931.5	178,114	7.72	3490	3.63	231	5.80	3270	1.54	146	1.30	53	.48	32		15	18	22	7
8	931.4	177,742	7.48	3250	3.60	226	5.53	3030	1.46	136	1.28	53	.46	30		15	9	15	8
9	931.3	177,370	7.28	3050	3.58	223	5.37	2850	1.35	123	1.26	51	.42	26					9
10	931.2	176,998	7.04	2820	3.90	276	4.96	2774	1.58	151	1.52	63	.58	44		17	7	15	10
11	931.1	176,627	6.94	2720					1.76	172	1.60	67	.38	22		16	7	12	11
12	931.0	176,256	6.70	2500	3.89	274	4.60	2414	1.72	167	1.58	66	.39	23		15	0	5	12
13	930.9	175,890	6.58	2390	3.90	300	4.42	2274	1.70	165	1.58	66	.38	22		15	0	5	13
14	930.8	175,524	6.48	2300	4.25	370	4.25	2104	1.98	199	1.96	88	.44	28		15	15	12	14
15	930.6	175,524	6.48	2300	4.24	368	4.24	2094	1.95	195	1.92	85	.48	32		15	12	12	15
16	930.9	175,890	6.62	2430	4.25	370	4.40	2214	1.94	194	1.90	84	.48	32					16
17	931.0	176,256	6.82	2610	4.25	370	4.53	2404	1.94	194	1.90	84	.47	31			3		17
18	931.2	176,994	7.10	2860	4.45	410	4.69	2544	2.15	220	2.05	94	.49	33		/	8	/	18
19	931.4	177,742	7.48	3210	/		/		2.15	220	2.05	94	.52	36		15	4	13	19
20	931.6	178,486	7.76	3490	4.45	410	5.50	3354	2.27	236	1.98	90	.32	18					20
21	931.6	178,486	7.72	3450	4.71	462	5.44	3294	2.32	242	2.04	94	.66	54		15	11	15	21
22	931.5	178,114	7.64	3370	4.70	460	5.43	3284	2.30	239	2.00	91	.66	54		15	13	18	22
23	931.5	178,114	7.64	3370	4.73	466	5.42	2814	2.28	237	1.98	90	.64	52		15	12	18	23
24	931.6	178,486	7.66	3390	4.71	462	5.45	3304	2.36	247	2.09	97	.57	42		9	7		24
25	931.6	178,486	7.74	3470	4.72 c	456	5.55 c	3024	2.30 c	240	2.09 c	102	.56	41		8	5	15	25
26	931.7	178,858	7.85	3590	4.99	511	5.69	3164	2.48	264	2.22	112	.71	62		8	9	15	26
27	931.8	179,230	8.14	3890	4.98	509	5.93	3404	2.50	266	2.36	125	.64	52		8	5	18	27
28	931.9	179,602	8.28 c	4140	4.99	511	6.22	3694	2.52	269	2.36	125	.65	53		8	4	9	28
29	931.8	179,230	8.00	3840	5.21	561	5.78	3254	2.66	287	2.33	122	.78	73		8	9	10	29
30	931.5	178,114	7.46	3280	5.40	606	5.14	2614	2.60	279	2.30	119	1.06	147					30
31	931.2	176,998	7.04	2870	5.41	608	4.66	2134	2.68	290	2.34	123	.97	106		8	9	6	31
Total	930.9	175,890			5.57	646	4.13	1620	2.76	300	2.52	140	1.07	128					
Mean													1.06						

May 1982

	#60		#53		#54		#14		#56		#51		#52		Dry	Kroll	Main	L.S.	
1																			1
2																			2
3	4.70	606	3.42	385	3.56	494	4.22	604	5.53	416	3.50	318	1.89	83					3
4	5.90	830	3.82	462	3.49	469	4.12	582	5.16	438	3.56	327							4
5	5.90	830	4.44	586	3.60	534	4.62	692	6.10	515	3.52	321	2.68	127	14				5
6	5.90	830	4.40	578	3.59	519	4.64	697	6.08	511	3.56	327	2.92	141					6
7	6.68	986	4.81	652	3.62	533	4.78	728	6.31	555	3.50	318	2.84	136			4	2	7
8	6.68	986	5.07	654	3.56	510	4.82	[c]626	6.41	532	3.30	288	3.32	165					8
9	6.68	986	5.03	645	3.43	462	4.54	609	6.38	526									9
10	6.66	982	5.06	652	3.41	455	4.48	596	6.36	522	3.20	276	3.48	177			6	5	10
11	6.68	986	5.09	658	3.46	473	4.62	626	6.40	530	3.20	276	3.48	177	10	12	7	8	11
12	6.66	982	4.98	635	3.36	437	4.40	578	6.32	515	2.89	239	3.58	184		8	6	8	12
13	7.18	1088	5.09	658	2.90	281	3.34	374	6.31	513	2.80	229	3.61	186	9	8	2	4	13
14	7.18	1088	5.24	694	2.64	173	3.32	373	6.38	526	2.48	194	3.94	209	9	12	0	5	14
15	7.18	1088	5.20	681	2.86	269	3.32	373	6.35	520	2.46	192	4.12	222	9				15
16	7.20	1092	5.14	668	2.82	257	3.26	362	6.32	515					9	8	0	4	16
17	7.18	1088	5.12	664	2.71	224	3.06	326	6.30	511	2.34	180	4.06	217	5	9	1	4	17
18	7.20	1092	4.88	635	2.66	209	5.46	398	5.76	417	1.88	1.28	3.64	188	8	7	4	5	18
19	7.20	1092	4.94	647	2.88	275	3.72	445	5.89	439	1.92	.83	3.88	205	13	9	4	6	19
20	7.18	1088	5.00	660	3.08	336	4.42	582	6.03	463	2.04	.724	3.88	205	13	9	6	4	20
21	7.18	1088	5.06	673	3.18	372	4.34	566	6.11	477	2.04	.72	3.88	205	9	9	3	4	21
22	7.18	1088	5.02	664	3.32	423	4.48	596	6.14	482	1.82	.61	3.89	205					22
23	7.16	1084	4.97	654	3.26	401	4.42	582	6.10	475					7	9	5	4	23
24	7.16	1084	4.96	652	3.27	405	4.42	582	6.10	475	1.86	64	4.01	214	4	7	3	6	24
25	7.16	1084	4.97	654	3.31	419	4.52	604	6.15	484	1.80	55	4.02	214	3	6	3	0	25
26	7.18	1088	4.87	633	3.29	412	4.28	554	6.28	507	1.98	[c]95	4.06	[c]224	4	9	3	5	26
27	7.20	1092	4.88	[c]705	3.13	[c]372	3.99	[c]518	6.19	[c]528	1.89	67	4.00	220	4	6	2	6	27
28	7.20	1092	4.91	712	3.10	361	3.98	516	6.19	528	1.80	61	4.07	225	4	7	3	3	28
29	7.18	1088	4.89	707	3.16	386	4.04	528	6.22	534	1.80	61	4.06	224	—	—	—	5	29
30	7.18	1088	4.83	694	3.00	326	3.79	479	6.09	509					5		4	3	30
31	7.18	1088	4.85	699	3.03	336	3.84	488	6.12	515	1.81	61	4.08	226	5	5	2	3	31
Total	7.18	1088	4.77	681	2.75	251	3.42	410	5.89	473	1.66	52	3.94	216					
Mean	7.64	30772																	

June 1982

	#60		#53		#54		#14		#56		#51		#52		Dry	Krill	Main	L.S.	
1	7.18	1088	4.77	681	275	251	3.42	410	5.89	473	1.66	52	3.94	216	9	4	2	1	1
2	7.69	1199	5.06	746	2.86	284	3.56	434	6.13	517	1.38	38	4.26	238	12	8	3	3	2
3	8.22	1321	5.25	709	2.86	284	3.76	472	6.25	540	1.88	61	4.12	228	9	8	5	4	3
4	8.28	1334	5.88	945	2.86	284	4.04	528	6.62	612	2.52	152	4.20	234	7	8	5	4	4
5	8.28	1334	5.94	960	2.83	275	4.04	528	6.69	626	2.66	177	4.04	223	7	6	5	4	5
6	8.28	1334	6.00	976	2.80	266	4.06	531	6.65	618									6
7	8.28	1334	5.95	963	2.73	245	3.88	496	6.61	610	2.48	145	3.96	219	8	6	5	4	7
8	8.28	1334	5.90	971	2.75	251	3.95	510	6.64	616	2.44	138	4.18	233					8
9	8.26	1330	5.99	974	2.72	242	3.92	504	6.64	616	2.40	131	4.16	231	7	5	5	2	9
10	8.26	1321	5.93	958	2.53	185	3.72	466	6.58	604	2.34	121	4.12	228					10
11	8.46	1367	6.01	979	2.33	129	3.58	439	6.50	588	2.29	123	4.10	227	8	6	5	2	11
12	8.84	1454	6.15	1018	2.40	147	3.64	451	6.61	610	2.24	114	4.28	240					12
13	8.75	1433	6.30	1061	2.34	132	3.90	498	6.49	586					7	6	3	3	13
14	8.78	1440	6.23	1041	2.25	112	3.83	487	6.45	578	2.54	183	4.36	246	12	20	7	5	14
15	8.80	1445	6.24	1044	1.94	59	3.72	466	6.34	557	2.32	129	4.02	222	12	16	7	6	15
16	8.85	1456	6.31	1064	1.98	64	3.76	470	6.37	562	2.30	c 102	4.04	c 199	11	12	7	4	16
17	8.86	1459	6.34	c 1046	2.24	c 84	3.90	c 510	6.47	c 566	2.48	136	3.02	133	15	12	6	5	17
18	8.86	1459	6.41	1069	2.81	230	4.42	629	6.74	620	2.56	154	4.30	217	14	12	8	4	18
19	8.84	1454	6.45	1079	2.95	272	4.62	673	6.83	639	2.74	203	4.08	202	13	10	—	—	19
20	8.78	1440	6.44	1076	3.07	308	4.80	712	6.90	655									20
21	8.84	1454	6.42	1070	3.07	308	4.76	702	6.90	655	2.82	224	4.08	202	12	10	7	5	21
22	8.86	1459	6.24	1018	3.05	302	4.82	717	6.90	655	2.82	224	4.08	202	12	10	6	5	22
23	8.86	1459	6.38	1058	2.85	242	4.52	651	6.71	624	2.66	180	4.00	196	10	9	2	3	23
24	8.86	1459	6.38	1058	2.78	221	4.46	637	6.73	618	2.58	159	4.00	196	9	7			24
25	8.86	1459	6.38	1058	2.95	242	4.50	646	6.75	622	2.58	159	4.00	196	7	6	0	0	25
26	8.88	1463	6.40	1064	2.90	257	4.62	672	6.80	632	2.64	175	4.06	200					26
27	8.88	1463	6.43	1073	2.93	266	4.66	681	6.83	639									27
28	8.90	1468	6.43	1073	2.87	248	4.62	672	6.80	632	2.64	175	4.06	200	6	6	3 1/4	0	28
29	8.98	1486	6.32	1041	2.89	254	4.56	659	6.75	622	2.58	159	4.04	199	6	4	2 1/4	0	29
30	8.94	1477	6.40	1064	2.93	266	4.66	681	6.81	635	2.60	164	4.06	200	5	4	3	2	30
31															6	5	3 1/4	4	31
Total		44965																	
Mean																			

IWRB00003292

June 1982

	Magic		#3		#4		#5		East		West		J.B. Heard			E.Spill	W1	W-2	
																8	9	C	
1	930.9	175,890	6.54	2400	5.57	646	4.13	1620	2.76	300	2.52	140	1.07	128		10	14	18	1
2	930.9	175,890	6.06	1970					2.76	300	2.54	142	1.06	124		13	16	18	2
3	931.3	177,370	4.90	1680	5.58	648	2.29	572	2.78	303	2.54	142	1.02	116		15	18	18	3
4	931.8	179,230	4.92	1090	5.58	648	2.30	576	2.77	302	2.54	142	1.05	122		15	21	15	4
5	932.3	181.108	4.66	912	5.35	601	2.03	465	2.80	305	2.56	144	.80	76		15	23	15	5
6	932.7	182.620	4.50	811	5.13	542	1.92	421	2.95	325	2.54	142	.54	40					6
7	933.3	184.906	4.52	824	5.13	542	1.97	441	2.74	298	2.54	142	.52	36		12	26	15	7
8	933.7	186.442	4.56	848	5.12	540	2.01	457	2.76	300	2.56	144	.52	36		12	26	20	8
9	934.0	187.596	4.53	830	5.13	542	1.98	445	2.72	295	2.56	144	.53	38		12	29	25	9
10	934.2	188.270	4.55	642	5.15	547	1.98	445	2.64	284	2.54	142	.60	46		12	18	25	10
11	934.5	189.546	4.55	842	5.13	542	1.99	449	2.66	287	2.54	142	.61	47		12	—	15	11
12	934.9	191,109	4.58	861	5.13	542	2.00	453	2.68	290	2.54	142	.55	40		12	16	11	12
13	935.4	193,084	4.89	1070	5.14	545	2.36	603	2.70	292	2.54	142	.56	41					13
14	935.3	192,688	6.52	2380	5.18	554	4.12	1612	2.36	248	2.58	146	.38	22		12	0	8	14
15	935.3	192,688	6.80	2640	5.18	554	4.47	2284	2.68	290	2.57	145	.54	40		12	11	5	15
16	935.3	192,688	6.88	2710	5.45	619	4.42	1894	2.76	300	2.66	154	.82	79		12	11	9	16
17	935.3	192,688	7.62	3440	5.47	518	5.31	3234	2.74	298	2.69	155	.79	74		12	12	9	17
18	935.3	192,688	7.62	3440	5.48	520	5.30	3284	2.80	305	2.76	165	.68	57		12	—	10	18
19	935.4	193,084	7.80	3630	5.48	520	5.49	3414	2.80	305	2.81	171	.63	50		12	16	15	19
20	935.3	192,688	7.94	3780	5.49	522	5.66	3258	2.86	313	2.80	170	.62	49					20
21	935.3	192,688	7.94	3780	5.50	525	5.65	3255	2.80	305	2.78	167	.64	52		12	16	10	21
22	935.3	192,688	7.84	3670	5.50	525	5.53	3096	2.80	305	2.78	167	.64	52		15	11	15	22
23	935.2	192,292	7.82	3650	5.51	527	5.54	3109	2.78	303	2.79	168	.60	46		15	—	15	23
24	935.2	192,292	7.84	3670	5.53	531	5.64	3242	2.81	307	2.80	170	.62	49		15	9	15	24
25	935.2	192,292	7.74	3530	5.53	531	5.00	2449	2.78	303	2.78	167	.69	59		15	7	15	25
26	935.2	192,292	7.60	3380	5.50	525	5.30	1798	2.81	307	2.78	167	.58	44		15	8	15	26
27	934.1	191.896	7.28	3060	5.57	540	4.97	2416	2.85	312	2.76	165	.53	40					27
28	935.2	192.292	6.94	2730	5.57	540	4.52	1922	2.80	305	2.75	164	.54	40		15	12	15	28
29	935.3	192,688	7.40	3180	5.58	542	5.15	2504	2.81	307	2.73	162	.57	42		15	12	15	29
30	935.3	192,688	7.57	3300	6.60	547	5.33	2836	2.78	303	2.72	161	.57	42		11	15	15	30
31																			31
Total																			
Mean																			

July 1982

	Magic		# 3		# 4		# 5		East		West		T.B. Head			W-1	W-2	E Spill	
1	935.2	192,292	7.28	3060	5.61	549	5.04	2493	2.82	308	2.74	163	.56	41		15	15	11	1
2	935.2	192,292	6.90	2700	5.63	554	4.60	2009	2.78	303	2.73	162	.60	46		15	15	/	2
3	935.1	191,896	6.58	2600	5.65	558	4.47	1875	2.80	305	2.72	161	.56	41		17	18	15	3
4	935.1	191,896	6.74	2550	/	/	/	/	2.80	305	2.73	162	.56	41		/	/	/	4
5	935.1	191,896	6.52	2340	5.68	565	4.15	1579	2.64	284	2.63	151	.58	57		15	12	8	5
6	935.0	191,500	6.42	2250	5.50	543	4.02	1473	2.66	287	2.14	152	.67	56		15	11	8	6
7	935.0	191,500	5.28	1320	5.57	579	2.84	795	2.86	313	2.78	167	.72	63		29	18	15	7
8	935.1	191 896	5.32	1350	5.57	579	2.86	805	2.84	311	2.80	170	.78	73		27	30	15	8
9	935.1	191 896	5.38	1390	5.55	574	2.91	830	2.79	304	2.80	170	.80	76					9
10	935.1	191 896	5.36	1380	5.33	525	2.96	855	2.69	291	2.68	156	.73	65		13	15	15	10
11	935.1	191 896	5.34	1370	5.43	547	2.92	835	2.68	290	2.72	161	.74	66					11
12	935.1	191,896	5.00	1120	5.42	545	2.57	660	2.72	295	2.72	161	.70	60		10	12	12	12
13	935.2	192,292	4.72	② 1100	5.43	② 527	2.28	② 558	2.71	294	2.72	161	.66	54		10	12	12	13
14	935.1	191,896	5.96	1860	5.66	579	3.50	1178	2.74	298	2.73	162	.90	93		12	12	11	14
15	935.1	191,896	5.42	1430	5.65	577	2.94	880	2.70	292	2.71	160	.89	91		12	9	12	15
16	935.2	192,292	5.08	1370	5.64	574	2.58	709	2.72	295	2.68	156	.84	83		12	9	12	16
17	935.2	192,292	5.04	1340	5.93	644	2.45	635	2.90	318	2.78	167	.98	108					17
18																			18
19	9357	191,896	4.67	1030	5.92	641	1.95	424	2.88	316	2.77	166	.97	106		9	9	11	19
20	9357	191,896	4.64	1050	5.93	644	1.93	416	2.88	316	2.76	165	.98	108		9	9		20
21	9357	191,896	4.66	1060	5.92	641	1.92	412	2.82	308	2.76	165	.96	104		7	8	4	21
22	9357	191,896	4.66	1060	6.09	683	1.83	376	2.92	321	2.82	172	1.06	124		7	8	6	22
23	9350	191,643	4.61	1030	6.11	② 688	1.72	② 333	2.96	326	2.82	172	1.02	116		7	8	6	23
24	9349	191,109	4.60	1020	6.10	683	1.69	329	2.96	326	2.83	173	1.02	116		10	10	4	24
25 Strange	9348	190,718	4.60	1020	6.08	6.76	1.63	307	2.97	327	2.83	173	1.02	116					25
26	9347	190,327	4.68	1080	6.17	702	1.80	372	2.96	326	2.84	174	1.04	120		10	10	9	26
27	9345	189,546	4.68	1080	6.17	702	1.85	392	2.93	322	2.84	174	1.03	118	/	10	10	9	27
28	9343	189,766	4.66	1060	6.19	707	1.80	372	2.97	327	2.83	173	1.02	116		10	12	9	28
29	934.2	189,276	4.62	1030	6.18	705	1.72	340	2.96	326	2.82	172	1.03	118		15	12	11	29
30	934.1	189,986	4.60	1020	6.10	683	1.57	287	2.94	324	2.84	174	1.18	150		15	12	11	30
31	9339	189,211	4.60	1020	5.99	656	1.65	314	2.93	322	2.92	172	1.07	126					31
Total																			
Mean																			

July 1982

	#	15	#	53	#	54	#	14	#	56	#	51	#	52	Dry	Knoll	Main	L.S.	
1	3.32	333	6.36	1052	2.95	272	4.66	681	6.80	632	1.58	159	4.02	196	7	6	3	2	1
2	3.34	337	6.34	1046	2.97	278	4.70	690	6.79	630	2.58	159	4.04	198					2
3	3.32	333	6.31	1038	2.94	269	4.59	666	6.74	620	2.58	159	4.02	196	5				3
4	3.33	335	6.35	1049	3.02	293	4.72	695	6.80	632									4
5	3.20	312	6.45	1079	3.01	290	4.79	710	6.85	643	2.70	192	4.08	202	6	10	5	5	5
6	3.20	312	6.47	1085	3.03	296	4.80	712	6.85	643	2.64	175	4.08	202	9	10	4	4	6
7	3.23	317	6.40	1041	3.05	302	4.79	710	6.83	639	2.18	186	4.10	203	7	10	6	3	7
8	3.25	321	6.43	1073	3.09	314	4.79	710	6.85	643	2.68	186	4.08	202	13	12	5	3	8
9	3.26	322	6.24	1010	3.00	287	4.64	676	6.69	610	2.66	180	4.06	200	12	8	5	3	9
10	3.21	313	6.02	958	2.91	260	4.34	611	6.50	572	2.50	140	4.00	196	9	5			10
11	3.15	303	5.98	947	2.58	161	4.94	528	6.32	538									11
12	3.17	306	5.92	932	2.48	134	3.84	508	6.25	524	2.26	96	3.82	182	0	0	3	2	12
13	3.14	301	6.09	976	2.26	88	3.70	481	6.24	522	1.89	56	4.06	200	0	0	0	2	13
14	3.28	326	6.22	1013	2.17	73	3.78	496	6.32	538	2.00	66	4.14	206	3	2	4	2	14
15	3.30	330	6.33	1044	2.18	74	3.84	508	6.35	543	2.14	94	4.11	235	5	3	3	1	15
16	3.30	330	6.34	1046	2.15	70	3.80	500	6.34	541	2.10	88	4.11	235	5	4	4	2	16
17	3.30	330	6.35	1049	2.14	68	3.80	500	6.35	543	2.06	84	4.10	234	5	4	2	2	17
18																			18
19	3.32	333	6.37	1055	2.24	84	3.88	516	6.39	551	2.05	82	4.09	233	5	4	3	2	19
20	3.26	322	6.36	1052	2.11	64	3.80	508	6.34	541	1.90	66	4.00	227	5	0	1	1	20
21	3.29	360	6.41	1061	2.03	56	3.79	548	6.85	592	1.81	59	4.04	233	2	1	1	3	21
22	3.28	362	6.45	1073	1.97	50	3.74	540	6.36	594	1.78	56	4.06	231	0	0	2	4	22
23	3.31	367	6.49	1085	2.06	60	3.91	554	6.40	602	1.70	50	4.10	234	1	2	1	4	23
24	3.31	367	6.57	1109	2.07	62	3.84	560	6.43	609	1.82	58	4.18	240	3	3	4	2	24
25	3.33	371	6.59	1115	2.07	62	3.90	572	6.47	616									25
26	3.35	375	6.61	1121	2.11	67	3.96	585	6.51	624	1.98	74	4.12	243	2	4	4	6	26
27	3.34	373	6.60	1118	2.14	71	3.97	587	6.50	622	2.20	102	4.22	243	5	4	3	6	27
28	3.35	375	6.65	1133	2.22	84	4.05	604	6.56	635	2.34	127	4.16	238	7	3	5	6	28
29	3.35	375	6.73	1157	2.38	116	4.24	646	6.63	650	2.34	127	4.14	237	7	3	7	6	29
30	3.32	369	6.61	1121	2.38	116	4.20	637	6.55	632	2.28	116	4.12	236	7	3	4	7	30
31	3.33	371	6.53	1103	2.59	170	4.30	659	6.61	646	2.08	106	4.12	236					31
Total																			
Mean																			

	Mag	ic	#	3	#	4	#	5	Aug. 1982 East		West		J.B	Head		W-1	W-2	E.Soil	
1	933.8	186,826	4.57	999	5.97	651	1.66	318	2.91	320	2.83	167	1.07	126		16	12	—	1
2	933.6	186,058	4.58	1010	5.97	651	1.68	325	2.92	321	2.80	164	1.06	124		30	12	20	2
3	933.2	184,522	4.56	992	5.98	653	1.60	297	2.92	321	2.82	166	1.06	124		30	12	23	3
4	933.1	184,138	4.42	899	5.72	591	1.57	287	2.80	305	2.74	158	.86	86		17	12	16	4
5	932.9	183,376	4.50	952	5.74	C615	1.70	C332	2.83	309	2.74	158	.87	88				14	5
6	932.7	182,620	4.50	952	5.74	615	1.68	325	2.82	308	2.71	154	.88	90					6
7	932.4	181,486	4.50	952	5.75	617	1.66	318	2.80	305	2.73	156	.88	90		17	12	12	7
8																			8
9	931.8	179,230	4.46	925	5.74	615	1.62	304	2.83	309	2.68	151	.87	88		15	12	11	9
10	931.5	178,114	4.48	939	5.75	617	1.68	325	2.81	307	2.68	151	.86	86		15	10	10	10
11	931.2	176,988	4.48	939	5.75	617	1.67	322	2.90	316	2.74	158	.78	74		15	10	—	11
12	930.8	175,524	4.47	932	5.76	620	1.67	322	2.87	314	2.72	155	.78	73		15	10	13	12
13	930.4	174,061	4.47	932	5.76	620	1.67	322	2.86	313	2.76	160	.78	73		13	8	—	13
14	930.1	172,966	4.46	925	5.76	620	1.63	307	2.87	314	2.74	158	.78	73		—	—	10.2	14
15																			15
16	929.2	169,727	4.50	952	5.79	627	1.75	352	2.85	312	2.74	156	.79	74		15	15	12	16
17	928.9	168,652	4.50	952	5.79	627	1.77	360	2.86	313	2.72	155	.78	73		15	15	11	17
18	928.5	167,244	4.50	952	5.91	656	1.66	318	2.84	311	2.73	156	.88	90		15	15	12	18
19	928.1	165,832	4.50	952	5.90	653	1.73	344	2.83	309	2.74	158	.90	93		15	15	13	19
20	927.7	164,438	4.50	952	5.91	656	1.72	340	2.84	311	2.70	152	.87	88		15	15	14	20
21	927.4	163,396	4.50	945	5.92	620	1.70	325	2.78	303	2.67	150	.90	93					21
22	—	—	—	—	—	—	—	—	—	—	—	—	—	—					22
23	926.4	159,968	4.50	945	5.93	622	1.70	325	2.80	305	2.67	150	.89	90		15	15	9	23
24	926.1	158,948	4.49	939	5.93	622	1.73	332	2.79	304	2.68	151	.88	90		15	15	9	24
25	925.6	157,270	4.49	939	5.95	627	1.73	332	2.77	302	2.65	148	.88	90		14	15	9	25
26	925.2	155,934	4.49	939	5.95	627	1.71	329	2.77	302	2.65	148	.88	90		14	15	8	26
27	924.8	154,610	4.46	919	5.95	627	1.67	314	2.78	303	2.66	149	.88	90		14	15		27
28	924.4	153,298	4.46	919	5.96	629	1.67	314	2.82	308	2.60	143	.85	84					28
29																			29
30	923.6	150,699	4.44	906	5.96	629	1.71	329	2.81	307	2.60	143	.83	81		15	16	15	30
31	923.2	149,483	4.36	855	6.03	594	1.56	276	2.84	311	2.61	144	.62	49					31
Total																			
Mean																			

Aug. 1987

	#	60	#	17	#	19	1	X		Y		Z	#	21	Tot −	#	93		
1	9.20	1456	2.13	171	1.00	56	5.26	397	2.96	166	0.98	86	3.21	294	+160	3.18	43		1
2	9.20	1456	2.14	171	1.08	66	5.01	352	2.90	158	.98	86	3.26	304	+ 123	3.19	44		2
3	9.18	1454	2.20	180	1.14	76	5.25	395	2.88	156	.98	86	3.23	298	+ 168	3.21	44		3
4	9.18	1454	2.31	196	1.05	64	5.21	388	2.86	153	.96	84	3.40	335	+ 166	3.23	45		4
5	9.18	1454	2.25	186	1.04	62	495	341	2.88	156	.95	83	3.50	357	+ 117	3.22	45		5
6	9.16	1449	2.17	176	1.09	69	4.88	329	2.88	156	.95	83	3.25	302	+ 105	3.20	44		6
7	9.18	1454	2.19	179	1.10	70	4.74	304	2.90	158	.96	84	3.18	288	+ 62	3.21	45		7
8	/	/	2.26	180	108	67	4.79	312	292	161	.96	84	3.08	2.68	+ 79	3.21	45		8
9	9.18	1454	2.14	172	1.03	61	4.75	305	294	164	.96	84	3.14	280	+ 72	3.20	44		9
10	9.18	1454	2.20	180	1.04	62	4.76	(c) 283	2.90	(c) 157	.96	(c) 79	3.08	2.68	+ 62	3.20	(c) 38		10
11	9.18	1454	2.05	159	1.08	67	4.65	264	2.88	154	.96	79	3.10	272	+ 46	3.18	38		11
12	9.20	1459	2.05	159	1.06	65	457	252	2.86	154	.96	79	3.00	252	+ 34	3.16	37		12
13	9.20	1459	2.07	162	1.06	65	4.51	242	2.88	154	.96	79	2.90	233	+ 9	3.15	36		13
14	9.20	1459	2.06	161	1.05	64	4.07	181	2.88	154	.96	79	2.85	220	− 52	3.15	36		14
15	9.20	1459	2.09	165	1.07	66	4.68	270	2.88	154	.96	79	2.77	209	+42	3.17	37		15
16	9.20	1459	2.11	168	1.19	84	4.72	276	2.88	154	.94	79	3.08	268	+53	3.18	37		16
17	9.20	1459	2.04	158	1.20	85	4.68	270	2.84	149	.94	76	3.25	3.02	+45	3.18	37		17
18	9.20	1459	1.93	142	1.21	87	4.63	261	2.90	157	.93	75	3.23	298	+29	3.14	36		18
19	9.20	1401	1.91	140	1.15	77	4.50	241	2.92	160	.92	74	3.14	280	+ 7	3.26	40		19
20	9.20	1401	1.96	147	1.05	64	4.60	256	2.92	160	.92	74	2.99	250	+22	3.30	42		20
21	9.18	1396	1.95	145	1.18	82	4.55	253	2.92	160	.92	74	3.04	260	+ 19	3.25	40		21
22	–	–	2.03	157	1.20	85	4.61	258	2.92	160	.96	79	3.07	266	+ 19	3.27	41		22
23	9.20	1401	2.08	160	1.00	85	4.55	248	2.92	160	.96	79	3.10	272	+ 9	3.29	42		23
24	9.18	1396	2.07	182	1.22	89	4.61	258	2.92	160	.96	79	3.07	(d) 288	+ 19	3.30	42		24
25	9.17	1394	2.06	161	1.24	93	4.65	264	2.92	160	.96	79	3.13	304	+ 25	3.29	42		25
26	9.17	1394	2.00	152	1.26	96	4.65	264	2.90	157	.98	81	3.26	326	+ 26	3.27	41		26
27	9.18	1396	1.97	148	1.23	91	4.57	252	2.90	157	.98	81	3.25	326	+ 19	3.26	40		27
28	9.20	1401	1.98	150	1.13	74	4.27	207	2.94	162	.97	80	3.08	290	− 35	3.30	42		28
29			2.06	161	1.15	77	4.96	220											29
30	9.20	1401	2.16	175	1.24	93	4.46	235	2.94	162	.97	80	3.00	274	+ 8	3.26	40		30
31	8.76	1300	2.35	201	1.25	94	4.60	256	2.88	154	.95	77	3.24	324	+ 40	3.28	41		31
Total	8.77	−100																	
Mean		1401																	

Sept 1982

	Magic		#3		#4		#5		East		West		J.B	Head		W-1	W-2	E Spill	
1	922.8	149,139	4.37	861	5.80	591	1.64	304	2.74	295	2.55	138	.61	47		16	15	19	1
2	922.4	146,877	4.38	867	5.81	593	1.65	307	2.77	302	2.54	137	.61	47		16	15	17	2
3	922.0	145,677	4.38	867	5.81	593	1.66	311	2.72	295	2.54	137	.69	59		16	15	—	3
4	921.6	144,380	4.30	817	5.62	549	1.60	290	2.61	281	2.50	133	.54	40		20	15	23	4
5																			5
6	920.8	141,920	4.38	c 861	5.64	c 518	1.75	c 340	2.60	c 284	2.46	c 136	.55	40		20	15	29	6
7	920.5	141,011	4.28	799	5.64	518	1.62	293	2.61	286	2.45	135	.53	38				30	7
8	920.0	139,498	4.18	735	5.41	470	1.55	270	2.48	269	2.38	128	.31	17		19	20	15	8
9	919.7	138,607	4.18	735	5.41	470	1.57	276	2.49	270	2.40	130	.32	18		21	15		9
10	919.3	137,420	4.17	728	5.42	472	1.55	270	2.40	258	2.27	118	.50	34		15			10
11	919.0	136,532	4.17	728	5.41	470	1.56	273	2.36	253	2.27	118	.50	35					11
12																			12
13	918.3	134,499	4.17	728	5.42	472	1.56	273	2.36	253	2.26	118	.50	35		13	12	12	13
14	917.9	133,345	4.18	735	5.43	474	1.57	276	2.39	257	2.28	119	.51	35		13	12	12	14
15	917.6	132,493	4.17	728	5.42	472	1.56	273	2.35	252	2.26	118	.51	35		14	12	12	15
16	917.3	131,641	4.17	728	5.43	474	1.56	273	2.34	251	2.23	115	.49	33		12	12	17	16
17	917.0	130,789	4.17	728	5.43	474	1.57	276	2.34	251	2.30	121	.50	34		12	12	17	17
18	916.6	129,665	4.16	722	5.43	474	1.55	270	2.38	256	2.30	121	.50	34					18
19	916.3	128,823																	19
20	916.0	127,982	4.16	722	5.44	476	1.55	270	2.38	256	2.29	120	.51	35		17	12	20	20
21	915.6	126,874	4.16	722	5.44	476	1.55	270	2.40	258	2.30	121	.50	34		15	15	24	21
22	915.2	125,766	4.16	722	5.45	479	1.54	267	2.40	258	2.30	121	.52	36					22
23	914.9	124,938	4.08	673	5.29	446	1.51	258	2.25	239	2.26	118	.42	26		15	15	19	23
24	914.6	124,116	4.08	673	5.29	446	1.50	255	2.24	238	2.23	116	.42	26		15	15	21	24
25	914.3	123,294	4.08	673	5.29	446	1.50	255	2.26	240	2.24	116	.41	25					25
26																			26
27	913.6	121,392	4.08	673	5.29	446	1.50	255	2.24	238	2.22	114	.41	25		10	12	21	27
28	913.3	120,859	4.07	667	5.28	444	1.49	252	2.31	247	2.22	114	.41	25		12	12		28
29	912.9	119,505	4.07	667	5.29	446	1.48	249	2.26	240	2.26	118	.48	32		12	12	23	29
30	912.6	118,704	4.07	667	5.29	446	1.49	252	2.28	242	2.24	116	.49	33					30
31																			31
Total																			
Mean																			

IWRB00003298

Sept 1982

	#	15	#	53	#	54	#	14	#	56	#	51	#	52	Dry	Kroll	Main	L.S.	
1	3.09	306	6.46	1092	2.32	104	4.08	611	6.48	616	2.32	107	4.08	236	13	6	4	2	1
2	3.05	299	6.46	1082	2.31	102	4.04	602	6.49	618	2.30	104	4.08	236	10	7	4	2	2
3	3.10	308	6.50	1094	2.37	114	4.12	620	6.52	624	2.34	111	4.10	237	10	7			3
4	3.10	308	6.55	1109	2.39	118	4.16	629	6.55	630	2.31	C 109	4.10	C 235					4
5																			5
6	3.15	C 312	6.44	1076	2.30	100	3.96	585	6.42	604	2.36	118	4.12	236	10	7	4	2	6
7	3.22	324	6.46	C 1067	2.32	C 122	4.00	C 562	6.45	C 610	2.42	127	4.34	253	11	12	5	4	7
8	3.22	324	6.42	1055	2.21	100	3.93	546	6.43	606	2.24	98	4.03	229	12	10	5	4	8
9	3.20	321	6.38	1044	2.03	68	3.81	521	6.44	608	2.08	77	4.14	238	12	10	7	5	9
10	3.17	315	6.33	1030	1.96	59	3.76	512	6.40	600	2.06	75	4.14	238	13	10	5	6	10
11	3.17	315	6.35	1035	1.98	62	3.76	512	6.41	602	2.00	69	4.12	236	15	10	6	7	11
12																			12
13	3.20	321	6.47	1070	2.16	90	3.97	554	6.59	639	2.22	95	4.20	242	12	15	11	9	13
14	3.23	326	6.50	1079	2.24	106	4.06	572	6.57	635	2.32	111	4.28	249	12	17	9	8	14
15	3.15	312	6.49	1073	2.33	124	4.08	576	6.47	614	2.40	125	4.18	241	17	17	8	9	15
16	3.13	308	6.47	1070	2.41	144	4.09	578	6.45	610	2.38	121	4.14	238	14	10	10	9	16
17	3.17	315	6.38	1044	2.46	158	4.02	564	6.23	566	2.40	125	4.16	239	15	15	15	12	17
18	3.09	301	6.31	1024	2.40	142	3.90	540	6.14	549	2.38	121	3.96	225	14	8	17	13	18
19																			19
20	3.10	303	6.38	1030	2.46	158	3.94	548	6.13	547	2.48	142	3.80	221	16	12	15	13	20
21	2.93	272	6.36	1038	2.50	170	4.00	560	6.18	557	2.60	172	3.72	208	14	12	14	12	21
22	2.92	270	6.38	1044	2.52	176	4.02	564	6.18	557	2.62	178	3.68	205	10	10	14	12	22
23	2.93	272	6.37	1041	2.54	182	4.04	568	6.16	553	2.68	194	3.60	200	12	10	13	12	23
24	2.80	250	6.32	1027	2.45	155	3.93	546	6.13	547	2.62	178	3.58	198	13	12	10	12	24
25	2.80	250	6.34	1032	2.48	147	3.92	544	6.17	555	2.66	189	3.58	198	10	12	13	11	25
26																			26
27	2.81	252	6.40	1055	2.50	170	4.04	568	6.86	572	2.74	212	3.64	203	12	20	17	16	27
28	2.82	253	6.45	1064	2.60	200	4.15	591	6.28	576	2.81	230	3.68	205	17	17	16	17	28
29	2.61	219	6.55	1094	2.68	224	4.31	626	6.40	600	3.12	352	3.16	169	10	2	17	16	29
30	2.61	218	6.54	1091	2.69	227	4.34	633	6.35	590		400	2.48	127	4	0	22	19	30
31																			31
Total																			
Mean																			

								OcT		1982									
	#	60	#	17	#	9		X		Y		Z	#	21		#	93		
1	7.70	1075																	1
2	7.76	1075																	2
3																			3
4	7.73	1124																	4
5	7.72	1122																	5
6	7.18	1010																	6
7	7.14	1002																	7
8	7.18	1006																	8
9	7.18	1010																	9
10	7.16	1006																	10
11		0 55																	11
12																			12
13								(Stock Run				Nov. 1982							13
14	#	5	#	51	#	5		E Main		W. Main		#12							14
15	3.96	584	3.98	2.92		250'	1.90	189	1.86	1.5	.05	12							15
16	3.98	595	4.20	3.36		2.00	1.74	170	1.50	[illegible]	[illegible]	[illegible]							16
17																			17
18				200'															18
19	orifice and 305' 1st day 201' Toga down #5 increased to 396 200#5 300#4																		19
20	with 1.60 - 153' East 1.46 west 57 Bal J.B.																		20
21																			21
22																			22
23																			23
24		10,505																	24
25																			25
26																			26
27																			27
28																			28
29																			29
30																			30
31																			31
Total																			
Mean																			

IWRB00003300

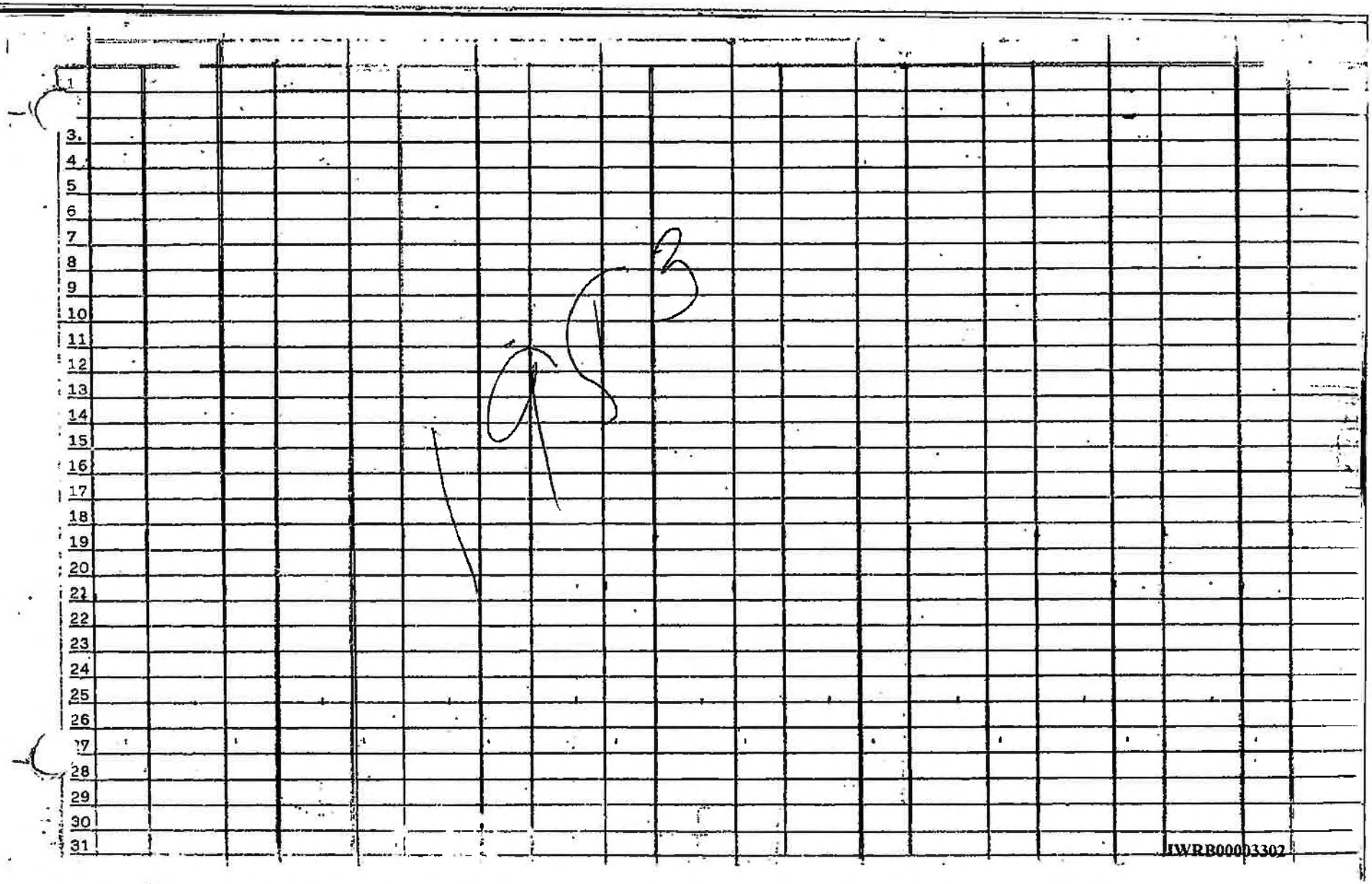
ACOUSTIC CURRENT . . . 35

Rated by U.S. Bureau of Standards, ____

Time	VELOCITY - FT. PER SEC.												
	10 Rev	15 Rev	20 Rev	30 Rev	40 Rev	50 Rev	60 Rev	70 Rev	80 Rev	90 Rev	100 Rev	150 Rev	200 Rev
40	.58		1.10	1.66	2.20	2.75	3.30	3.85	4.40	4.94	[illegible]		
41	.57		1.07	1.62	2.15	2.69	3.22	3.76	4.30	4.8[illegible]	5.37		
42	.56		1.05	1.58	2.10	2.63	3.15	3.67	4.21	4.72	5.25		
43	.55		1.03	1.54	2.05	2.57	3.08	3.59	4.11	4.61	5.13		
44	.54		1.01	1.50	2.00	2.51	3.00	3.50	4.01	4.50	6.01		
45	.53		.99	1.47	1.96	2.45	2.93	3.42	3.92	4.40	4.89		
46	.53		.97	1.44	1.92	2.40	2.87	3.35	3.84	4.31	4.79		
47	.52		.95	1.41	1.88	2.35	2.81	3.28	3.76	4.22	4.69		
48	.51		.93	1.38	1.84	2.30	2.75	3.21	3.66	4.13	4.59		
49	.50		.91	1.35	1.80	2.25	2.69	3.14	3.60	4.04	4.49		
50	.49		.89	1.33	1.76	2.20	2.64	3.08	3.52	3.96	4.40		
51	.49		.88	1.30	1.72	2.16	2.59	3.02	3.46	3.89	4.32		
52	.48		.87	1.27	1.69	2.12	2.54	2.97	3.39	3.82	4.24		
53	.47		.85	1.25	1.66	2.08	2.49	2.91	3.33	3.75	4.16		
54	.46		.83	1.22	1.63	2.04	2.44	2.85	3.26	3.66	4.08		
55	.45		.82	1.20	1.60	2.00	2.40	2.80	3.20	3.61	4.00		
56	.45		.81	1.18	1.5[illegible]	1.86	2.36	2.75	3.15	3.55	3.93		
57	.44		.79	1.16	1.54	1.93	2.32	2.71	3.09	3.49	3.86		
58	.43		.77	1.14	1.52	1.90	2.28	2.66	3.04	3.43	3.79		
59	.43		.76	1.12	1.49	1.86	2.24	2.61	2.98	3.37	3.72		
60	.42		.75	1.11	1.47	1.83	2.20	2.57	2.93	3.31	3.66		
61	.42		.74	1.09	1.44	1.80	2.17	2.53	2.88	3.26	3.60		
62	.41		.73	1.07	1.42	1.77	2.14	2.49	2.84	3.20	3.54		
63	.41		.72	1.05	1.40	1.74	2.10	2.45	2.79	3.15	3.49		
64	.40		.71	1.03	1.37	1.71	2.07	2.41	2.75	3.10	3.43		
65	.40		.70	1.02	1.35	1.69	2.03	2.37	2.70	3.05	3.38		
66	.39		.69	1.00	1.33	1.66	2.00	2.34	2.66	3.01	3.33		
67	.39		.68	.98	1.31	1.64	1.97	2.30	2.62	2.95	3.28		
68	.38		.67	.97	1.29	1.62	1.94	2.27	2.58	2.91	3.23		
69	.38		.66	.95	1.27	1.57	1.91	2.23	2.54	2.86	3.18		
70	.38		.65	.94	1.26	1.57	1.88	2.20	2.51	2.82	3.14		

Test, No. AC11

S.T.9 . . . State Eng. Dept.



April 1983

	#60		#17		#9		#X		#Y		#Z		+or-		#21		#93			
1																				1
2																				2
3																				3
4																				4
5																				5
6																				6
7																				7
8																				8
9																				9
10																				10
11																				11
12																				12
13																				13
14																				14
15																				15
16																				16
17																				17
18																				18
19																				19
20	4.75	615																		20
21			3.25	3.48	5.01	1570	3.79	2.16												21
22			3.30	3.40	5.07	1590	4.20	2.66												22
23																				23
24																				24
25	4.75	615	3.40	3.68	5.25	1697	4.39	2.91												25
26	4.75	615	3.23	3.39	5.22	16.87	4.27	2.75	1.94	45	.36	22	+	223	7.72	2580				26
27	4.75	615	3.20	3.34	5.13	16.30	4.14	2.58	1.92	43	.46	28	+	201	7.70	2560	2.54	21		27
28	4.75	615	3.21	3.36	5.20	16.69	3.68	2.03	1.98	48	.46	28	+	142	7.65	2510	2.53	21		28
29	4.75	615	2.96	2.95	5.25	16.86	4.37	2.88	2.12	62	46	28	+	213	7.62	2480	2.52	21		29
30	5.77	804	3.26	2.80	5.15	1641	4.43	3.09	2.12	62	48	29	+	233	7.72	2580	2.53	29		30
31		9879																		31

April 1983

W-1, W-2

	Magic		#3		#4		#5		East		West		Head J.B		E. Soil		#48	
1		1147																
2																		
3																		
4		11525																
5		114760																
6		113167																
7		111970																
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15																		
16																		
17																		
18																		
19																		
20	916.2	128543																
21	917.9	133345	5.98	1980	2.28	83	4.39	1855										
22	919.4	137766																
23																	283	167
24																		
25	924.0	151967	5.98	1980														
26	925.8	157938	6.06	2050	2.30	84	4.50	1967									284	169
27	927.0	162012	—	—	—	—	—	—									—	—
28	927.7	164438	6.08	2070	2.30	84	4.53	1999									283	167
29	928.2	166185																
30	928.7	167950	6.10	2090	2.30	84	4.54	2009									283	167
31																		

May 1983

	# 60		# 17		# 9		# X		# Y		# Z		+ or -	# 21		# 93		
1	5.94	838	3.27	282	5.51	1845	4.51	319	2.20	71	.48	29	+ 234	7.75	2930	2.55	29	1
2	5.85	820	3.27	282	5.54	1863	4.61	333	2.28	80	.48	29	+ 239	7.92	2800	2.56	29	2
3	5.84	816	3.35	295	5.33	1740	4.45	310	2.38	92	.48	29	+ 177	7.70	2778	2.56	29	3
4	5.84	816	3.37	298	5.85	2104	4.39	304	2.50	106	.49	30	+ 163	8.09	2899	2.56	29	4
5	5.84	816	3.43	307	6.69	2883	4.24	284	2.42	96	.48	29	+ 164	8.48	3438	2.57	29	5
6	5.78	806	3.53	323	7.14	3563	4.01	254	2.44	99	.47	29	+ 141	8.81	3840	2.58	30	6
7	5.83	816	3.53	323	7.49	4141	4.45	312	2.46	101	.51	31	+ 195	9.04	4140	2.59	30	7
8	5.83	816	3.54	325	7.63	4399	4.38	302	2.46	101	.51	31	+ 185	9.09	4200	2.58	30	8
9	5.80	810	3.50	319	7.67	4479	4.20	279	2.44	99	.53	33	+ 168	9.06	4160	2.59	30	9
10	5.82	814	3.32	296	7.46	4087	4.50	318	2.42	116	.53	36	+ 181	8.84	4010	2.57	29	10
11	5.82	814	3.29	285	7.18	3627	4.18	270	2.44	119	.55	37	+ 189	8.64	3630	2.58	30	11
12	5.82	814	3.45	311	6.77	3063	4.12	269	2.44	119	.55	37	+ 128	8.40	3350	2.58	30	12
13	5.78	806	3.53	323	6.30	2529	4.07	262			.71	52	+ 52	8.15	3060	2.58	30	13
14	5.81	812	3.53	323	5.90	2149	3.69	216	2.60	127	.74	55	+ 49	7.84	2710	2.58	30	14
15	5.81	812	3.43	307	5.59	1893	3.28	167	2.50	127	.75	56	- 1	7.67	2530	2.58	30	15
16	5.81	812	3.40	303	5.40	1779	2.95	130	2.50	127	.74	58	- 40	7.56	2420	2.57	29	16
17	5.85	820	3.40	303	5.13	1630	3.27	166	2.50	127	.74	61	- 7	7.40	2260	2.58	30	17
18	6.40	930	3.31	288	4.81	1475	3.28	167	2.62	142	.86	70	+ 30	7.21	2090	2.78	36	18
19	6.40	930	3.14	261	4.80	2086	3.18	156	2.70	153	.89	74	- 56	7.10	1990	2.77	36	19
20	6.90	1030	2.93	213	4.60	1920	3.11	147	2.70	153	.89	74	- 65	6.96	1870	2.72	34	20
21	6.90	1030	3.00	239	4.60	1920	3.48	191	2.76	161	.93	79	- 64	7.23	2110	2.85	39	21
22	6.90	1030	2.98	232	4.86	2140	3.35	175	2.86	175	.93	79	- 34	9.05	1950	2.85	39	22
23	6.88	1026	2.83	213	5.20	2459	3.65	211	2.86	175	.94	80		7.44		2.92	42	23
24	6.90	1060							2.86	175	.95	82	+ 8	7.57	2430			24
25	6.88	1026	2.65	187	5.74	3063	4.00	253	2.88	178	.95	82	- 58	7.73	2590	3.00	45	25
26	7.37	1161	2.50	166	6.06	3485	3.45	197	2.88	178	.95	82	- 66	7.81	2688	2.96	43	26
27	7.38	1164	2.58	178	6.62	4379	3.53	197	2.92	183						3.09	48	27
28	7.37	1161	2.46	161	6.98	5159	3.71	218	2.96	189	.96	83	- 19	8.14	3040	3.07	48	28
29	7.84	1268	2.48	164	7.23	5659	4.10	266	2.98	192	.96	83	+ 6	8.37	3310	3.08	48	29
30	7.83	1265	2.35	145	7.40	5999	4.16	274	2.98	192	.97	84	+ 13	8.56	3540	3.06	47	30
31	7.84	1268	2.23	129	2.61	6019	4.42	308	2.98	192	.98	86	+ 45	8.83	3860	3.06	47	31
		29,207																

May 1983

	Magic		#3		#4		#5		East		West		Head	J.B.	W-1	W-2	E Spill	#48		
1	929.5	170,804																2.52	93.4	1
2	930.1	172,966																2.82	186	2
3	930.9	176,890	6.74	2670	3.40	183	5.00	2515			1.15	48								3
4	931.3	177,370	7.20	3110	4.00	278	5.46	3083	2.00	201	1.45	60	.50	34	4	4		2.85	192	4
5	931.5	178,114	7.75	3670	3.60	212	6.01	3844	1.24	110	1.36	55	.42	26	25	12				5
6	931.8	179,230	8.35	4310	3.49	195	6.89	4110	1.18	103	1.34	55	.46	30	25	12		2.90	203	6
7	932.0	179,974	8.70	4500	3.45	190	7.26	4532	1.12	95	1.30	53	.44	28						7
8																				8
9	931.9	179,602	8.48	4450	3.44	185	6.92	4128	1.18	103	1.46	60	.32	18				2.93	208	9
10	931.7	178,578	8.00	3930	3.45	190	6.41	3585	1.18	103	1.46	60	.34	19	15	10	70			10
11	931.6	178,114	7.64	3560	3.44	185	5.91	3090	1.18	103	1.48	61	.31	17	7	15	10	2.88	198	11
12	931.3	177,370	7.18	3090	3.59	210	5.46	2681	1.30	117	1.70	72	.28	15	0	15	10			12
13	931.0	176,256	6.88	2800	3.59	210	5.13	2400	1.30	117	1.72	73	.30	16	8	20	10	2.86	194	13
14	930.9	175,890	6.74	2670	3.59	210	4.87	2180	1.38	127	1.70	72	.23	11	7	20	10			14
15																				15
16	930.7	175,158	6.44	2390	3.60	212	4.55	1915	1.37	125	1.71	73	.29	12	20	10	6	2.84	190	16
17	930.7	175,158	6.46	2410	3.59	210	4.50	1885	1.50	141	1.74	74	.18	8	15	7				17
18	930.6	174,792	6.34	2300	3.60	212	4.41	1818	1.58	146	1.75	77	.17	8	10	7	4	2.83	188	18
19	930.6	174,792	6.38	2330	3.60	212	4.37	1788	1.50	146	1.74	78	.18	8	7	4	2.5			19
20	930.7	175,158	6.48	2430	4.03	324	4.38	2205	1.70	170	1.91	90	.38	22	20	7	11	2.84	190	20
21	930.9	175,890	6.66	2590	4.30	3.80	4.48	2290	1.92	196	2.10	103	.46	30						21
22																				22
23	931.3	177,370	7.26	3170	4.28	3.76	5.17	2976	2.00	206	2.12	104	.39	23	10	7	8	2.88	198	23
24	931.5	178,114	7.66	3580	4.29	3.78	5.63	3325	2.10	218	2.16	108	.22	10	8	6	4			24
25	931.6	178,486	8.08	4020	4.80	476	6.06	3755	2.38	255	2.59	142	.40	24	15	8	13	2.90	202	25
26	932.0	179,974	8.66	4660	5.04	531	6.73	4520	2.44	262	2.47	135	.79	74	5	8	3	2.95	211	26
27	932.3	181,108	9.26	5362	5.03	529	7.40	5350	3.66	283	3.54	142	.59	45	10	6	8			27
28	932.5	181.654	9.70	6014	5.44	624	7.74	6890	2.72	299	2.77	166	94	101	11	16	11			28
29	932.6	182.242	9.92	6574	5.43	622	8.00	6198	2.77	305	2.78	167	.82	79	—	—	—	—		29
30	932.8	182,998		6848	5.42	620	8.24	6534	2.77	305	2.80	170	.79	74				2.95	211	30
31	933.0	183,754	10.69	7738	5.47	632	8.73	6632	2.80	309	2.80	170	.78	73	8	6	7			31

June 1983

	#51		#52		#15	Main	L.S.	Krall	Dry	#19		#1		#2		
1	2.58	164	4.30	238	3.44	364	5	8	5	4	7.26	4,630			7.08	4,920	1
2	2.66	188	4.16	228	3.40	357	5	6	7	4	7.56	5,030					2
3	2.62	178	4.18	230	3.38	353	5	6	7	5	6.37	4,100					3
4	2.60	172	4.16	228	3.30	339	—	—	—	—	6.17	3,860	6.74	1120	7.13	4363	4
5	—	—	—	—	3.30	339	5	6	7	5	6.50	4260					5
6	2.64	183	4.16	228	3.30	339	5	6	8	4	6.50	4260					6
7	2.64	183	4.16	228	3.29	337	7	6	10	5	6.40	4140	—	—	7.23	4498	7
8	2.60	164	4.12	236	3.28	335	5	6	15	4	6.51	4280					8
9	2.56	154	4.18	240	3.28	335	4	8	15	5	6.80	4680	6.50	1020	7.51	4946	9
10	2.54	149	4.16	238	3.30	339	5	8	8	4	7.07	5000					10
11	2.56	159	4.18	240	3.31	340	7	10	10	5	7.05	4980					11
12					3.20	321					6.99	4900					12
13	2.70	192	4.26	246	3.21	322	7	16	12	4	6.20	3890	6.22	908	7.26	4546	13
14	2.78	224	4.18	240	3.13	308	7	10	10	7	5.62	3230					14
15	2.62	169	4.06	231	3.10	303	5	9	6	8	5.52	3120					15
16	2.54	149	4.00	227	3.01	286	5	8	8	9	5.48	3070	5.86	632	7.14	4314	16
17	2.34	109	3.94	223	2.96	277	0	4	7	7	5.51	3920					17
18	2.14	80	4.20	241	3.02	288					5.77	3190					18
19					3.11	304					5.46	2860					19
20	2.38	116	4.26	245	3.09	301	2	5	7	9	5.00	2400					20
21	2.48	136	4.16	238	3.22	324	4	7	11	9	4.75	2160			7.24		21
22	2.48	136	4.16	238	3.20	321	4	7	10	9	4.55	1980					22
23	2.42	123	4.12	236	3.19	319	5	7	8	9	4.68	2100	5.41	483	8.47	1490	23
24	2.38	116	4.06	231	3.17	315	6	5	11	6	5.33	2730					24
25	2.40	120	4.32	251	3.17	315	5	5	6	6	5.20	2660					25
26	2.48	136	4.04	230	3.14	310	—	—	—	—	5.11	2510					26
27	2.46	131	4.28	248	3.29	337	5	5	11	7	5.20	2600					27
28	2.66	180	4.19	241	3.19	319	5	6	7	7	5.18	2580					28
29	2.64	175	4.18	240	3.23	326	4	5	7	5	4.92	2100					29
30	2.68	186	4.22	243	3.23	326	2	4	7	6	4.92	2100					30
31																	31

July 1983

	# 60		# 17		# 9		# X		# Y		# Z		+/-	# 21		# 93		
1	8.23	1307	2.84	.204	4.19	1177	4.64	355	3.29	219	1.06	92	+ 61	6.68	1580	3.15	44	1
2	7.88	1203	2.86	212	8.98	1077	4.75	377	3.27	216	1.07	94	+ 82	6.80	1860	3.17	45	2
3	7.92	1212	2.90	218	4.09	1124	4.78	383	3.27	216	1.06	92	+ 90	6.73	1800	3.16	44	3
4	7.92	1212	2.88	214	4.38	1268	4.70	369	3.25	213	1.06	92	+ 77	6.80	1860	3.20	46	4
5	7.92	1212	3.06	242	4.21	1187	4.65	357	3.26	214	1.07	94	+ 64	6.90	1950	3.15	44	5
6	7.88	1203	2.88	217	3.98	1077	4.35	309	3.23	210	1.06	92	+ 22	6.79	1850	3.09	41	6
7	7.90	1208	2.77	199	3.09	688	4.19	288	3.20	205	1.06	92	+ 6	6.35	1620	3.08	41	7
8	7.90	1208	2.64	180	3.83	1010	3.91	253	3.26	214	1.07	94	- 55	5.34	997	3.04	40	8
9	7.93	1215	2.57	171	3.77	983	4.00	263	3.28	218	1.07	94	- 34	6.24	1450	3.08	41	9
10	7.97	1224	2.42	150	3.80	996	4.32	305	3.29	219	1.07	94	+ 7"	6.20	1430	3.08	41	10
11	7.93	1215	2.34	138	3.76	978	4.46	323	3.29	219	1.07	94	+ 25	6.37	1530	3.09	41	11
12	7.92	1215	2.32	136	3.15	712	4.65	357	3.27	216	1.07	94	+ 62	6.26	1460	3.08	41	12
13	7.93	1215	2.02	101	1.05	321	4.54	335	3.26	214	1.07	94	+ 42	5.54	1090	3.00	38	13
14	8.79	1413	1.35	24	2.67	527	4.47	3.24	3.27	216	1.06	92	+ 31	3.70	453	2.75	30	14
15	9.25	1519	1.50	36	1.65	211	4.45	3.32	3.26	214	1.07	94	+ 29	4.73	763	3.09	41	15
16	9.25	1519	1.36 ©	73	1.90	277	4.60	347	3.27	216	1.06	92	+ 54	3.26	358	3.02	39	16
17	9.27	1553	1.58	101	1.95	292	4.62	351	3.27	216	1.06	92	+ 58	3.80	478	3.11	42	17
18	9.27	1553	1.37	74	1.96	294	4.58	343	3.27	216	1.06	92	+ 50	3.85	491	3.06	40	18
19	9.27	1553	1.14	47	1.92	283	4.60	347	3.27	216	1.06	92	+ 54	3.76	468	3.21	46	19
20	9.59	1630	.90	25	1.50	176	4.46	323	3.27	216	1.05	91	+ 31	3.51	409	3.13	43	20
21	9.58 ©	1627	.99	33	1.34	142	4.35	309	3.26	214	1.07	94	+ 16	3.65	238	3.15	44	21
22	9.59	1630	1.13	46	1.35	144	4.46	323	3.25	213	1.06	92	+ 33	2.45	205	3.18	45	22
23	9.51	1610	1.20	60 ©	1.32	89 ©	4.42	318	3.25	213	1.04	89	+ 31	2.63	235	3.17	42 ©	23
24	9.59	1630	1.19	59	1.34	93	4.50	328	—	—	—	—	—	—	—	3.17	42	24
25	9.59	1630	1.15	54	1.34	93	4.57	341	3.24	211	1.01	84	+ 61	2.85	276	3.19	43	25
26	9.59	1630	1.31	73	1.32	89	4.55	337	3.24	211	1.00	83	+ 58	2.88	282	3.23	45	26
27	9.30	1560	1.54	102	1.31	87	4.60	347	3.24	211	1.00	83	+ 66	2.90	286	3.09	39	27
28	9.30 ©	1479	1.46	92	1.26	79	4.53 ©	347	3.22 ©	197	1.00 ©	104	+ 61	3.01	308	3.05	38	28
29	9.30	1479	1.38	81	1.22	73	4.51	343	3.23	211	.95	96	+ 51	2.89	284	3.07	39	29
30	9.33	1486	1.47	92	1.21	72	4.58	357	3.23	211	.95	96	+ 45	2.84	274	3.08	39	30
31	9.32	1484	1.47	92	1.19	69	4.61	363	3.23	211	.96	98	+ 69	2.94	294	3.09	39	31

June 1985

	Magic		#3		#4		#5		East		West		Head	T.B.	W-1	W-2	E. Spill		#4R		
1	933.0	183,754	10.80	5,830	5.50	699			2.92	325	2.94	186	.68	57	12	16		9	2.95	211	1
2	932.8	182,988	10.28	5,953	5.40	615	8.88	7,440	2.81	311	2.90	181	.65	53	15	10		16			2
3	932.5	181,684	9.68	4,940	5.39	612		4300	2.82	312	2.87	178	.65	53	15	10		10	3.00	221	3
4	932.4	181,486	9.32	4620	5.39	612		4000	2.86	317	2.87	178	.64	52	15	10		12			4
5	932.3	181,108	9.16	4440	5.38	610		3820	2.82	312	2.87	178	.66	54	15	10		14			5
6	932.3	181,108	9.00	4270	5.37	608		3662	2.82	312	2.87	178	.60	46	—	—		—	2.98	219	6
7	932.2	180,730	8.92	4180	5.38	610		3560	2.84	314	2.88	179	.58	44	20	10		14			7
8	932.1	180,352	8.76	4010	5.32	596	6.68	3493	2.74	302	2.78	167	.65	53	15	10		17	2.97	209	8
9	932.1	180,352	8.84	4090	5.32	577	X	3413	2.75	303	2.76	165	.58	44	10	10		10			9
10	932.2	180,730	8.88	4140	5.31	574	5.85	3546	2.76	304	2.78	167	.58	44	7	10		8	2.98	211	10
11	932.2	180,730	8.90	4160	5.31	574	5.93	3566	2.82	312	2.81	171	.50	34	7	10		8			11
12	932.3	181,108	9.14	4420	5.31	574	6.12	3879	2.83	313	2.82	172	.50	34	—	—		13			12
13	932.2	180,730	9.00	4270	5.31	574	6.02	3676	2.82	312	2.81	171	.49	33	25	10		15	2.99	213	13
14	932.0	179,974	8.46	3690	5.28	568	5.41	3102	2.81	311	2.80	170	.50	34	15	12		15			14
15	931.7	178,858	7.90	3120	5.32	577	4.78	2541	2.77	305	2.80	170	.61	47	18	12		12	2.96	208	15
16	931.4	177,742	7.54	2770	5.31	574	4.35	2180	2.77	305	2.79	168	.60	46	18	12		13		—	16
17	931.4	177,742	7.38	2950	5.26	563	5.28	2040	2.71	299	2.76	165	.58	44	14	12		11	2.94	204	17
18	931.3	177,370	7.16	2740	5.32	577	5.15	1938	2.76	303	2.78	167	.60	46	18	12					18
19	931.3	177,370	7.20	2780	5.32	577	5.14	1930	2.78	307	2.81	171	.56	41							19
20	931.2	176,998	7.12	2700	5.33	579	5.05	1862	2.75	303	2.80	170	.58	44	18	12		14	2.96	208	20
21	931.1	176,627	6.92	2520	5.33	579	4.88	1735	2.72	299	2.79	168	.58	44	18	12					21
22	931.2	176,998	6.20	1880	5.32	577	4.11	1208	2.68	294	2.78	167	.56	41	18	12		14	3.80	347	22
23	931.2	176,998	6.16	1850	5.32	504	4.08	1705	2.67	292	2.79	168	.57	42	15	10		16			23
24	931.8	179,230	4.90	899	5.26	496	2.76	900	2.64	288	2.68	156	.60	46	12	7		14			24
25	932.5	181,684	4.94	932	5.30	501	2.78	890	2.67	292	2.74	163	.58	44	15	7		10	3.46	315	25
26	933.3	184,906	4.98	1240	5.36	494	2.80	725	2.69	295	2.78	167	.60	46	—	—	—	—	—	—	26
27	934.0	187,596	4.94	1210	5.36	494	2.78	710	2.67	292	2.76	165	.59	45	7	15		18	3.68	319	27
28	934.8	190,718	4.94	1210	5.36	494	2.81	740	2.66	291	2.74	163	.60	46	15	7		10			28
29	935.4	193,084	5.22	1820	5.35	492	3.60	1160	2.68	294	2.74	163	.58	44	7	15		7	3.82	352	29
30	935.3	192,688	6.64	2630	5.33	488	4.46	1742	2.59	282	2.72	161	.58	44							30
31																					31

August 1983

	# 60		# 17		# 9		# X		# Y		# Z		+/-		# 21		# 93		
1	9.30	1479	1.52	.99	1.23	74	4.73	387	3.23	211	.96	98	+	93	3.05	316	3.12	40	1
2	9.32	1484	1.55	103	1.25	77	4.71	383	3.24	200	.96	98	+	100	3.19	344	3.12	40	2
3	9.31	1482	1.52	99	1.24	76	4.38	322	3.10	180	.96	98	+	59	3.16	238	3.12	40	3
4	9.31	1482	1.61	111	1.24	76	4.18	296	3.09	179	.94	95	+	37	2.98	302	3.14	41	4
5	8.99	1408	1.75	129	1.35	94	4.15	292	3.09	179	.96	98	+	30	2.90	286	3.17	42	5
6	8.99	1408	1.74	128	1.34	93	4.29	304	3.10	180	.97	100	+	39	3.07	320	3.09	39	6
7	8.99	1408																	7
8	8.98	1406	1.60	110	1.29	84	4.08	282	3.15	187	.96	98	+	12	2.78	263	3.07	39	8
9	8.98	1406	1.65	116	1.26	79	4.05	278	3.15	187	.96	98	+	18	2.87	280	3.09	39	9
10	8.96	1401	1.80	136	1.41	105	4.20	298	3.10	180	.94	95	+	38	2.91	© 251	3.14	41	10
11	8.96	1401	1.84	141	1.36	96	4.20	298	3.05	173	.92	92	+	48	3.40	348	3.15	42	11
12	8.95	1399	1.90	150	1.40	103	4.15	292	2.95	159	.86	83	+	65	3.48	364	3.01	36	12
13	8.96	1408	1.95	157	1.35	94	4.19	297	2.95	159	.86	83	+	70	3.62	© 393	2.89	32	13
14	8.95	1399	2.08	175	1.49	120	4.37	319									2.92	33	14
15	8.96	1408	1.98	161	1.48	118	4.26	306	2.96	161	.86	83	+	77	3.78	427	2.92	33	15
16	8.55	1307	2.14	© 169	1.49	© 140	4.23	© 306	2.94	© 162	.87	© 71	+	62	3.64	397	© 2.95	36	16
17	8.56	1309	2.10	164	1.40	123	4.25	309	2.94	162	.87	71	+	91	3.70	409	2.93	36	17
18	8.56	1309	2.00	150	1.44	130	4.23	306	3.00	170	.87	71	+	80	3.50	368	2.92	35	18
19	8.55	1307	2.16	172	1.41	125	4.24	308	3.00	170	.88	72	+	81	3.46	360	2.96	37	19
20	8.55	1307	2.28	189	1.35	114	4.20	302	3.00	170	.88	72	+	75	3.29	326	2.95	35	20
21	8.55	1307	2.39	206	1.37	118	4.25	309									2.98	38	21
22	8.55	1307	2.36	200	1.38	120	4.35	322	3.00	170	.88	72	+	95	3.60	388	3.00	38	22
23	8.22	1231	2.71	253	1.43	129	4.58	363	3.00	170	.90	75	+	133	3.68	405	3.06	40	23
24	8.22	1231	2.70	251	1.45	132	4.72	391	3.00	170	.88	72	+	164	4.10	506	2.89	34	24
25	8.22	1231	2.68	248	1.46	134	4.61	369	2.96	165	.88	72	+	137	4.17	525	2.88	34	25
26	8.20	1226	2.77	263	1.47	136	4.20	302	2.96	165	.86	69	+	83	4.04	491	2.92	35	26
27	8.22	© 1197	2.83	272	1.45	132	3.96	271	2.96	165	.86	69	+	52	3.86	445	2.93	32	27
28			2.68	248	1.45	132	3.94	2.69									2.92	35	28
29	8.22	1197	2.46	214	1.46	134	3.85	2.57	2.94	162	90	75	+	35	3.59	386	2.88	34	29
30	8.22	1197	2.41	207	1.44	130	3.74	2.44	2.94	162	93	79	+	18	3.46	360	3.07	41	30
31	8.22	1197	2.40	206	1.33	111	3.68	2.36	2.94	162	94	80	+	9	3.27	322	3.18	45	31
		4,143																	

WRB00003310

July [redacted] 1983

	# 14		# 54		# 53		# 56		# 10		# 11		J. B.		Marley		F Waste	S Waste		
1	4.68	686	3.28	472	5.89	961	6.96	646	4.14	545	4.87	221	.32	95	.62	49	20.6	.64	60	1
2	4.81	714	3.39	544	5.87	921	6.93	639	4.12	538	4.86	220	.46	147	.64	52	23.8	.64	60	2
3	4.51	648	3.29	478	5.62	841	6.74	600	—	—	—	—	—	—	—	—	—	—	—	3
4	5.01	761	3.53	643	5.77	888	6.93	639	4.47	669	4.90	226	.40	138	.66	67	27.0	.66	63	4
5	4.95	746	3.48	607	5.71	868	6.89	630	4.18	560	4.85	219	.40	138	.66	67	25.4	.68	66	5
6	4.53	653	3.29	478	5.57	833	6.72	596	4.04	510	4.83	216	.44	150	.66	67	21.8	.66	63	6
7	4.47	640	3.28	472	5.52	825	6.67	586	4.00	496	4.82	214	.48	163	.62	49	21.2	.64	60	7
8	4.42	631	3.27	466	5.41	785	6.60	572	4.02	503	4.82	214	.42	144	.64	52	20.4	.66	63	8
9	4.26	593	3.20	425	5.35	770	6.52	557	3.99	492	4.81	213	.42	144	.60	47	17.6	.64	60	9
10	4.40	624	3.24	448	5.49	806	6.60	572	—	—	—	—	—	—	—	—	17.2	—	—	10
11	4.33	609	3.22	436	5.46	798	6.57	570	3.95	478	4.80	213	.42	144	.64	52	17.6	.64	60	11
12	4.28	598	3.18	415	5.47	801	6.57	566	3.69	372	4.75	204	.38	131	.58	44	17.6	.64	60	12
13	3.84	508	2.95	314	5.36	773	6.37	528	3.28	264	480	213	.42	144	.60	47	17.6	.64	60	13
14	3.43	430	2.64	218	5.57	828	6.34	522	3.13	226	4.76	206	.38	131	.48	32	12	.66	63	14
15	3.83	506	2.58	200	5.97	955	6.41	536	2.98	192	4.83	216	.50	170	.50	34	13.7	.62	57	15
16	3.89	518	2.58	200	6.33	1085	6.91	635	3.24	253	4.87	221	.48	163	.50	34	21.8	.62	57	16
17	3.85	510	2.72	242	6.40	1112	6.95	643	—	—	—	—	—	—	—	—	—	—	—	17
18	3.72	485	2.58	200	6.40	1112	6.90	632	2.95	186	4.81	213	.46	157	.50	34	21.8	.56	48	18
19	3.58	© 483	2.42	© 142	6.37	© 1009	6.84	© 665	2.71	© 144	4.80	© 219	.42	© 141	48	© 42	12.6	.52	41	19
20	3.50	470	2.31	96	6.42	1028	6.82	659	2.75	151	4.86	227	.40	134	.46	39	12.6	.52	42	20
21	3.63	494	2.31	96	6.47	1047	6.76	646	2.67	137	4.89	231	.52	174	.44	37	14.2	.68	66	21
22	3.70	508	2.36	106	6.52	1066	6.81	657	2.58	122	4.89	231	.56	187	.34	25	14.8	.74	76	22
23	3.70	508	2.34	102	6.59	1092	6.84	665	2.60	126	4.88	230	.54	180	.36	27	16.2	.62	© 49	23
24	3.72	512	2.36	106	6.59	1092	6.87	671	—	—	—	—	—	—	—	—	—	—	—	24
25	3.81	530	2.44	122	6.64	1112	6.93	684	2.75	151	4.92	235	.52	174	.38	29	19.2	.56	41	25
26	3.91	550	2.42	118	6.66	1120	6.86	668	2.68	138	4.89	231	.48	160	38	29	19.0	.54	38	26
27	3.82	531	2.40	114	6.53	1069	6.76	646	2.59	124	4.87	228	.48	160	.42	34	20.4	.56	41	27
28	3.74	516	2.27	88	6.63	1069	6.71	635	2.55	118	4.86	227	.46	154	42	34	19.6	.54	38	28
29	3.76	520	2.30	94	6.54	1073	6.73	639	2.55	118	4.86	227	.46	154	.44	37	22.8	.50	32	29
30	3.75	518	2.27	88	6.55	1077	6.74	641	2.55	118	4.85	226	.45	150	.44	37	23.8	.46	27	30
31	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	31

SOPI 1985

	# 51		# 52		# 15		Main	L.S.	Krill	Dry	# 18		# 1		# 2		
1	2.28	98	3.86	206	3.04	288	2	3	7	8	1.89	5.07	3.51	24	4.29	416	1
2	2.16	81	3.92	210	3.02	285	2	4	9	7	1.95	536					2
3	2.12	77	3.86	206	3.05	290	—	—	—	—	1.93	52.6					3
4	—	—	—	—			—	—	—	—							4
5	2.19	79	3.90	209	3.04	288	4	4	9	7	1.83	479					5
6	2.12	77	3.86	206	3.03	286	8	8	5	8	1.81	470					6
7	2.22	89	3.94	212	3.04	288	6	7	8	9	1.68	413					7
8	2.22	89	3.94	212	3.04	288	7	4	11	10	1.76	448	3.36	16	4.29	416	8
9	2.22	89	3.94	212	3.04	288	4	4	12	10	1.73	435					9
10	2.18	84	3.92	210	3.03	286	4	7	12	9	1.74	439					10
11																	11
12	2.28	98	4.02	217	3.05	290	8	10	14	10	1.74	439					12
13	2.30	101	4.02	217	3.05	290	7	10	20	10	1.70	422					13
14	2.30	101	4.02	217	3.07	294	8	11	22	10	1.70	422					14
15	2.10	75	3.84	205	3.05	290	8	11	21	10	1.67	409	3.30	13	3.50	98	15
16	2.10	75	3.83	204	3.10	299	10	15	21	9	1.68	413					16
17	2.16	82	3.90	209	3.06	292	11	15	25	10	1.67	409					17
18	—	—	—	—	—	—	—	—	—	—	—	—					18
19	2.18	84	3.96	213	3.06	292	13	18	25	12	1.65	400					19
20	2.60	162	3.69	189	2.98	277	9	18	23	12	1.65	400			3.60	119	20
21	2.66	178	3.34	170	3.01	283	14	21	18	12	1.68	413					21
22	2.62	167	3.34	170	2.93	269			18	12	1.67	409					22
23	2.70	189	3.40	174	2.93	269	13	21	17	14	1.66	404					23
24	2.84	230	3.10	154	2.74	236					1.65	400					24
25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	25
26	2.80	218	3.08	153	2.67	225	10	16	11	12	1.64	396					26
27	2.82	224	3.09	153	2.68	227	10	9	12	2	1.64	396					27
28	2.84	230	3.10	154	2.76	240	15	13	12	2	1.63	392					28
29	2.86	236	3.12	155	2.62	217	10	11	13	3	1.66	404					29
30	3.02	295	3.18	159	2.64	220					1.81	470	3.36	16	3.58	114	30
31																	31

August 1983

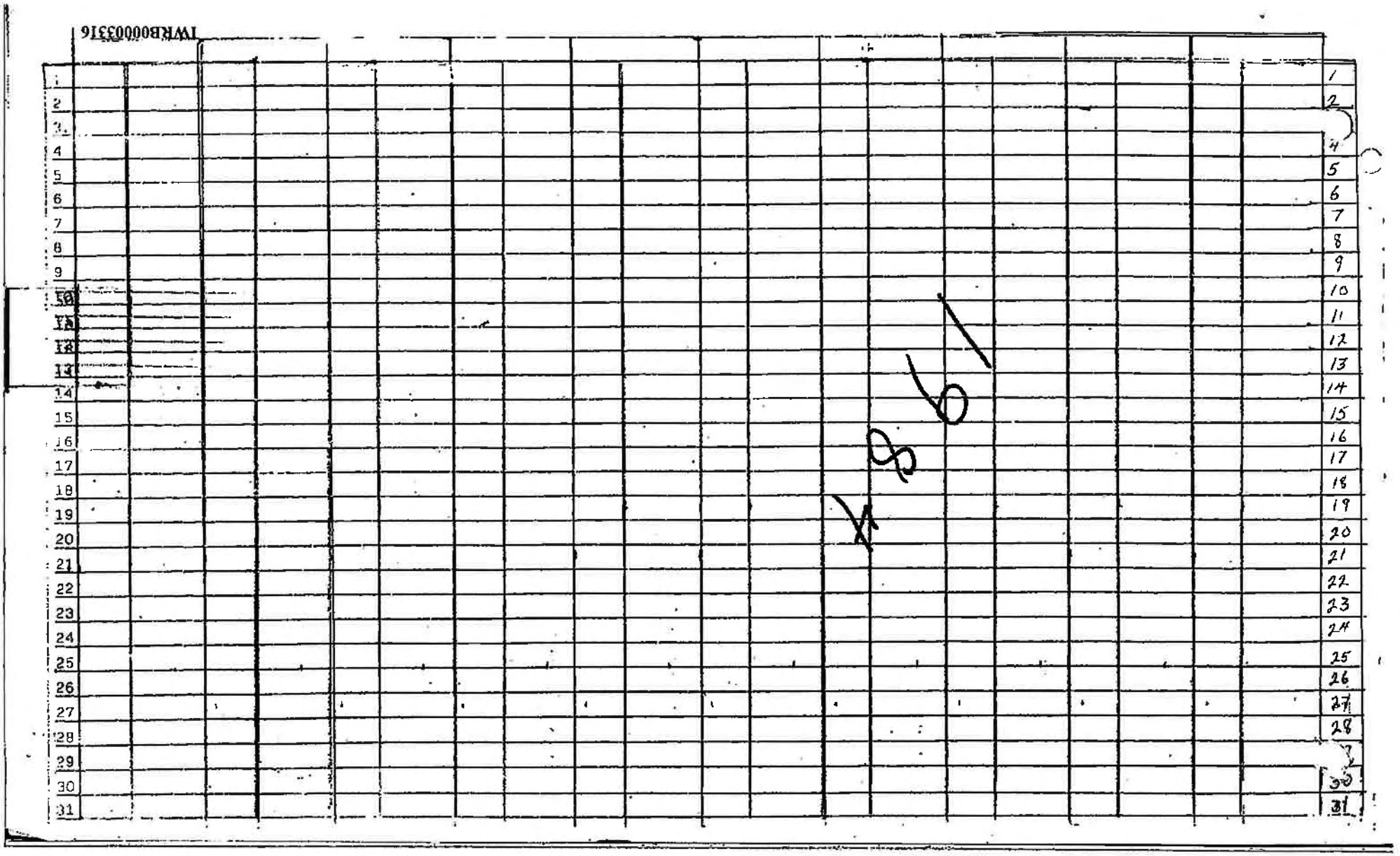
	#14		#54		#53		#56		#10		#11		J.B.		Marley		F. Waste	S. Waste		
1	3.83	534	2.33	100	6.63	1120	6.81	657	2.53	115	4.84	224	.44	147	.58	55	/	23.8	.44	25	1
2	3.83	534	2.33	100	6.58	1088	6.79	652	2.57	121	4.84	224	.44	147	.60	58		23.8	.40	20	2
3	3.87	542	2.36	106	6.61	1100	6.83	662	2.58	122	4.84	224	.43	144	.60	58		25.4	.36	16	3
4	3.92	552	2.40	114	6.67	1123	6.87	671	2.60	126	4.84	224	.42	141	.68	70		28.6	.60	46	4
5	3.81	530	2.35	104	6.47	1047	6.73	639	2.60	126	4.85	226	.42	141	.58	55		28.6	.56	41	5
6	3.80	528	2.40	114	6.35	1002	6.68	628	2.60	126	4.84	224	.44	147	.60	58		30.2	.60	46	6
7	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	/	/	/	—	7
8	3.79	526	2.36	106	6.37	1009	6.68	628	2.59	124	4.85	226	.46	154	.62	61		29.4	.50	32	8
9	3.89	546	2.49	134	6.42	1028	6.74	641	2.64	132	4.86	227	.46	154	.62	61		30.2	.50	32	9
10	3.86	540	2.42	118	6.40	1020	6.70	632	2.63	130	4.84	224	.46	154	.60	58		30.2	.50	32	10
11	3.80	528	2.36	106	6.40	1020	6.65	622	2.63	130	4.84	224	.46	154	.62	61		29.4	.51	33	11
12	3.85	538	2.40	114	6.41	1024	6.67	626	2.63	130	4.86	227	.48	160	.58	55		21.8	.54	38	12
13	3.92	c 556	2.42	139	6.44	1073	6.72	650	2.63	c 124	4.93	c 230	.62	c 207	.62	c 64		22.6	.54	38	13
14																					14
15	3.92	556	2.47	152	6.47	1085	6.72	650	2.65	127	4.88	223	? .50	167	.64	67		25.4	.52	35	15
16	3.90	552	2.54	173	6.31	1024	6.64	632	2.70	135	4.90	226	.54	180	.74	84		21.2	.40	20	16
17	3.96	564	2.66	209	6.34	999	6.65	635	2.69	134	4.93	230	.60	201	.74	84		23.8	.40	c 22	17
18	3.91	554	2.60	191	6.20	985	6.60	624	2.84	161	4.93	230	.62	208	.72	81		20.4	.40	22	18
19	3.98	568	2.67	212	6.19	982	6.62	628	2.87	167	4.93	230	.58	194	.70	77		20.4	.34	16	19
20	4.03	578	2.70	221	6.29	1016	6.70	646	2.85	163	4.96	234	.64	216	.74	84		25.4	.28	10.2	20
21	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	21
22	4.30	637	2.87	272	6.43	1069	6.87	684	3.03	201	4.97	235	.70	238	.82	99		28.6	.24	8	22
23	4.45	670	2.99	310	6.27	1009	6.84	678	3.03	201	4.97	235	.74	254	.82	99		43.2	.34	16	23
24	4.44	668	2.99	310	6.20	985	6.79	666	3.02	199	4.71	200	.62	208	.64	67		37.6	.46	29	24
25	4.33	644	2.92	287	6.16	972	6.72	659	3.12	217	4.78	201	.62	208	.74	84		34.0	.44	27	25
26	4.38	655	2.96	299	6.20	985	6.77	662	3.16	231	4.73	202	.68	230	.70	77		34.0	.47	31	26
27	4.49	679	3.02	322	6.20	985	6.81	671	3.10	217	4.71	200	.56	187	.64	67		41.4	.56	44	27
28	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/	/		/	/	/	28
29	4.19	613	2.85	266	6.15	968	6.67	638	2.99	192	4.71	200	.50	167	.70	77		46.4	.56	44	29
30	4.14	602	2.82	257	6.12	958	6.64	632	2.91	175	4.58	183	.52	174	.70	77		27.	.58	46	30
31	4.07	587	2.73	230	6.00	917	6.43	590	2.95	181	4.59	184	.49	163	.72	81		18	WRB	000003515	31

Cert 4652 Sept 1983

	Magic		#3		#4		#5		East		West		Head	J.B	W-1	W-2	E Soil		#48	
1	924.9	154,938	4.44	773	5.42	520	1.86	262	2.46	256	2.42	118	.80	76	18	.20	—			
2	924.6	153,954	4.44	773	5.43	522	1.87	265	2.50	261	2.45	121	.78	73	18	20	17		3.94	267
3	924.4	153,298	4.44	773	5.44	525	1.85	259	2.46	256	2.45	121	.80	76	18	20	—			
4	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		
5	923.8	151 343	4.44	773	5.45	527	1.85	259	2.47	257	2.42	118	.78	73	15	20	15		3.93	265
6	923.4	150,055	4.44	773	5.45	527	1.85	259	2.50	261	2.42	118	.79	74	15	20	15			
7	923.1	148,771	4.45	780	5.47	531	1.85	259	2.46	256	2.42	118	.78	73	15	20	15		3.93	265
8	922.9	148455	4.45	780	5.48	533	1.86	262	2.51	262	2.41	118	.78	73	15	20	15			
9	922.5	147 192	4.45	780	5.49	536	1.87	265	2.47	257	2.43	119	.77	71	10	20	11		3.94	267
10	922.2	145932	4.45	780	5.50	538	1.85	259	2.50	261	2.42	118	.77	71						
11																				
12	921.4	143,762	4.46	786	5.53	545	1.84	256	2.54	266	2.45	121	.70	60	10	20	11		3.93	265
13	921.1	142,835	4.46	786	5.54	547	1.83	253	2.52	264	2.44	120	.69	59			11		3.93	265
14	920.8	141,920	4.46	786	5.55	549	1.83	253	2.52	264	2.44	120	.70	60	10	20			3.92	256
15	920.4	140,708	4.42	760	5.55	549	1.83	253	2.56	269	2.44	120	.65	53	10	20				
16	920.0	139 498	4.38	735	5.53	c 496	1.87	e 289	2.56	269	2.45	121	.68	57			12			
17	919.6	138,310	4.38	735	5.55	500	1.86	286	2.53	265	2.42	118	.66	54						
18																				
19	918.8	135,950	4.38	735	5.55	500	1.85	283	2.52	264	2.42	118	.63	50	20	20	11		3.90	251
20	918.5	135,079	4.38	735	5.58	507	1.86	286	2.55	268	2.47	120	.64	52	20	20	11			
21	918.1	133,919	4.27	667	5.40	470	1.77	259	2.54	266	2.44	120	.34	19	20	20	13		3.73	215
22	917.8	133,061	4.26	661	5.41	472	1.74	250	2.46	256	2.38	110	.57	42	25	20	7			
23	917.5	132,209	4.26	661	5.41	472	1.75	253	2.45	255	2.33	111	.54	40	—	—	—		3.75	219
24	917.2	131,357	4.26	661	5.41	472	1.75	253	2.54	266	2.31	109	.51	35						
25	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
26	916.6	129,665	4.26	661	5.43	476	1.74	250	2.53	265	2.34	112	.44	28	10	20	—		3.74	217
27	916.2	128,543	4.26	661	5.43	476	1.74	250	2.56	269	2.32	110	.46	30			11			
28	915.9	127,705	4.24	649	5.42	474	1.73	248	2.45	255	2.33	111	.46	30	13	20	10		3.73	2.15
29	915.6	126,874	4.24	649	5.43	476	1.74	250	2.45	255	2.33	111	.45	29						
30	915.4	126,320	4.24	649	5.43	476	1.74	250	2.57	270	2.34	112	.47	31						
31	—	—	404	69	5.22	40	1.59	10			2.21	10	DRY							

Oct 1983

	# 54		# 53		# 56		# 15		# 51		# 52		# 60		S. Waste	L.S.	Main	Dry	Kraft
1	2.98	304	5.82	910	6.53	6.08	2.65	222	3.08	319	[illegible]	1.43	7.27	[illegible]	44	27	10	10	3	8
2													7.31	1044						
3	2.86	272	5.68	898	6.37	5.76	2.65	222	2.92	256	3.16	137	7.30	1042	44	27	13	15	2	14
4	2.89	281	5.68	898	6.39	580	2.47	194	3.18	361	2.56	122	7.29	1040	42	24	14	14	12	17
5	2.95	299	5.76	924	6.47	596	2.47	194	3.20	369	2.58	123	7.30	1042	38	20	12	13	11	16
6	2.85	269	5.77	927	6.42	586	2.30	168	2.98	278	2.20	101	7.30	1042	34	16	12	13	10	21
7	2.85	269	5.68	898	6.38	578	2.30	168	2.90	248	2.12	97	7.28	1038	32	14	10	8	10	15
8																				
9									2.81	218	2.08	95								
10	2.33	120	5.70	904	6.13	530	2.25	161	2.74	200	2.04	93	off	off			10	9	10	15
11																				
12																				
13																				
14																				
15																				
16																				
17																				
18																				
19																				
20																				
21																				
22																				
23																				
24																				
25																				
26																				
27																				
28																				
29																				
30																				
31																				


TWRB0000331G
1961

April 1984

	#14		#54		#53		#56		#10		#11		J.B.		Marley		F Waste		S Waste	
1																				
2																				
3																				
4																				
5																				
6																				
7																				
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				
16																				
17																				
18																				
19																				
20																				
21																				
22																				
23	3.93	536	3.43	574	4.16	536	6.17	543	4.80	842	4.26	258						10.1		
24	3.87	523	3.41	570	4.22	542	6.23	549	4.78	829	4.27	259						7.4		
25	3.91	531	3.43	524	4.08	⑥ 546	6.07	⑥ 540	4.90	912	4.29	262						12.7		
26	4.14	578	3.50	600	4.31	574	6.29	582	4.86	883	4.29	262						11.8		
27	4.10	570	3.47	550	4.29	572	6.26	576	4.78	829	4.27	259						10.1		
28	4.00	550	3.45	537	4.25	567	6.24	572	4.78	829	4.28	261						11.8		
29																				
30	3.49	451	3.27	425	4.26	568	6.25	574	3.30	928	4.05	928						10.9		
31				4472 / 589																

April 1984

	# 60		# 17		# 9		# X		# Y		# Z		+ or -	# 21		# 93		
1																		1
2																		2
3																		3
4																		4
5																		5
6																		6
7																		7
8																		8
9																		9
10																		10
11																		11
12																		12
13																		13
14																		14
15																		15
16																		16
17																		17
18																		18
19																		19
20																		20
21																		21
22																		22
23	5.28	7.10	3.93	466	6.80	3630	7.27	187	2.07	57	44	27					0	23
24	528	7.10	4.08	4.78	6.64	3415	3.60	227	2.21	72	47	29	131	8.33	3170		0	24
25	529	6.94	3.42	370	6.59	[illegible]	3.64	219	2.28	80	48	29	125	8.30	3140		0	25
26	5.29	694	342	370	6.60	3363	4.11	291	2.28	80	48	29	197	9.21	3030			26
27	5.29	6.94	3.43	371	6.30	2993	3.84	256	2.34	87	51	31	153	828	3120		0	27
28	5.27	699	3.38	365	5.83	2429	3.73	209	2.35	88	54	34	102	8.04	2840		0	28
29			3.34	358	5.52	2073	3.69	204										29
30	5.26	689	3.14	323	5.21	1753	4.10	253	2.35	88	.54	34		7.60	2380			30
31													108					31

May 1984

86530

Day	#51		#52		#15		#Main	L.S.	Krall	Dry	#19		#1		#2		
1	2.12	88	2.36	101	1.90	174	7	9	18	10	2.41	661					1
2	2.38	124	2.40	104	2.13	209	4	3	14	11	2.39	651					2
3	2.26	103	2.40	104	2.09	203	15	7	18	9	2.45	680					3
4	2.30	108	2.70	126	2.12	208	14	7	14	11	2.45	680					4
5	2.20	95	2.78	132	2.13	209	8	3	16	12	2.41	661					5
6																	6
7	2.38	121	2.86	139	2.10	204	10	4	14	11	2.32	617					7
8	1.90	64	2.66	122	2.25	© 182	10	4	4	9	2.41	661					8
9	1.94	68	3.50	200	2.46	214	4	0	0	8	2.64	777					9
10	2.70	187	3.82	234	2.49	219	6	6	30	13	2.99	967	6.49	978	5.32	1172	10
11	2.68	181	3.80	232	2.46	214	6	5	25	12	3.01	979					11
12	2.98	300	3.66	216	2.75	262	4	3	25	13	3.32	1168					12
13																	13
14	3.02	321	3.68	218	2.78	267	6	7	25	12	4.69	2239	7.57	1440	7.24	~~3779~~ 2713	14
15	3.14	399	3.68	218	2.84	277	6	7	24	11	5.25	2760					15
16	3.14	399	3.68	218	2.85	279	5	7	27	14	5.14	2650	7.60	1460	7.00	~~3393~~ 2276	16
17	2.98	300	3.76	227	2.83	276	3	5	11	13	4.56	2131					17
18	2.74	199	3.66	216	2.78	267	5	6 !	14	13	4.17	1722	7.14	© 1230	6.60	© 1850	18
19	2.54	147	3.54	204	2.85	279	5	1	18	10	4.17	1722					19
20																	20
21	2.26	103	3.62	180	2.70	253	2	4	5	11	4.91	2437					21
22	2.04	78	3.54	174	2.86	281	0	3	10	11	4.69	2239					22
23	1.92	66	3.98	205	2.92	292	0	4	10	10	4.51	2077					23
24	1.80	56	3.90	199	3.05	315	0	5	10	10	4.51	2077	6.41	932	6.79	2093	24
25	1.86	61	3.96	203	3.00	306	4	6	8	9	4.32	1922					25
26	2.00	74	4.02	208	2.98	303	4½	7	10	9	4.25	1866					26
27																	27
28	1.64	45	3.78	196	2.93	299	5	7	–	8	4.48	2050					28
29	1.86	61	3.94	202	3.11	326	4	5	–	3	4.71	2257	6.07	795	6.75	919	29
30	2.34	© 125	4.24	244	3.10	329	10	7	5	4	5.17	2680					30
31	2.42	138	4.16	238	3.16	© 346	7	9	6	3	5.88	3440	6.12	819		[illegible]	31

+.05 +.32 +15

May 1984

	Magic		# 3		# 4		# 5		East		West		Ht.	J.B.	W-1	W-2	E Spill		# 48	
1	9321	180,358	6.20	2000		250	4.8	1877											1.83	68
	932.0	179,974	6.16	1970		250	4.62	1823											1.83	68
3.	931.9	179,602	6.20	2000	3.65	250	4.40	1640	1.60	153	1.50	62	25	12						68
4	931.9	179,602	6.20	2000	3.55	234	4.00	1320	1.76	172	1.54	64	.28	15					2.32	114
5	931.8	179,230	6.16	②1970	3.68	②244	4.36	②2102	1.58	151	1.50	62	.40	24			35			114
6				1970		244														114
7	931.6	178,486	6.18	2200	3.69	245	4.30	2048	1.60	153	1.51	62	.40	24					2.32	114
8	931.3	177,370	6.18	2200	3.68	244	4.33	2077	1.60	153	1.51	62	.38	22						114
9	931.1	176,627	6.18	2200	3.69	245	4.30	2045	1.60	②160	1.49	69	.40	24			25		2.48	144
10	930.8	175,524	6.16	1970	3.67	242	4.28	2030	1.58	158	1.48	69	.38	22			25			144
11	931.2	176,988	4.88	1160	3.68	244	2.85	892	1.68	170	1.54	72	.32	18	12	12	4		2.69	167
12	931.7	178,858	4.88	1160	3.93	284	3.00	984	1.85	190	1.70	81	.42	24	10	10	5			167
13				1160		284														167
14	933.2	184,522	4.90	1180	4.15	319	2.95	952	1.88	194	1.92	95	.58	44	14	12	9		2.68	155
15	934.4	189,156	4.96	1220	4.41	361	2.92	934	2.04	213	2.04	105	.64	52	15	15	16			155
16	935.1	191,891	6.98	2940	4.57	390	4.74	2480	2.30	247	2.10	110	.57	42	25	12	34		2.90	184
17	935.3	192,688	7.18	3750	4.57	390	5.56	3305	2.22	237	2.07	108	.62	49	25	15				184
18	934.8	190,718	8.86	4940	4.56	388	6.92	4754	2.20	235	2.06	107	.62	49			18		2.91	186
19	934.4	189,156	8.88	4970	4.57	390	6.78	4600	2.28	244	2.14	113	.54	40						186
20				4970		390														186
21	934.3	188,766	7.22	3180	4.57	390	5.19	2930	2.32	249	2.26	124	.42	26	20	10				186
22	934.4	189,156	7.26	3280	4.59	394	5.14	2880	2.30	247	2.24	122	.44	28	19	8	17		2.87	180
23	934.4	189,156	7.24	3200	4.59	394	5.21	2950	2.42	262	2.32	129	.30	16	20	8	16		2.87	180
24	934.2	188,276	7.20	3160	4.58	392	5.16	2900	2.43	264	2.32	129	.31	17	20	8	9			180
25	934.2	188,276	7.12	3080	4.94	439	5.02	2760	2.48	270	2.32	129	.62	49			11		2.85	177
26	934.1	187,986	6.96	2920	4.86	442	4.86	2600	2.48	270	2.32	129	.62	49						177
27				2920		442														177
28	933.9	187,211	6.88	2850	4.85	440	4.59	2330	2.60	286	2.33	130	.49	33	8	8	15		3.25	236
29	933.8	186,626	6.70	2680	5.10	485	4.49	2230	2.62	288	2.41	138	.70	60	8	8	15			236
30	934.0	187,596	6.24	2250	5.11	487	4.10	1868	2.76	307	2.46	143	.61	47	15	12	18		3.29	242
31	934.4	189,156	6.32	2330	5.26	516	4.08	1850	2.80	312	2.62	160	.67	56	18	12	20			244
				49.720		10709														5012

June 1984

	#60		#17		#9		#X		#y		#Z		+ or −		#21		#93		
1	8.72	1447	1.98	.148	3.86	1410	4.82	429	2.84	170	.99	88	+186		6.15	1400	2.96	38.3	1
2	8.68	1438	2.28	190	4.51	2033	4.81	427	2.84	© 165	1.02	® 94	+183		6.57	1680	3.00	39.3	2
3	8.71	1445	2.30	193	5.20	2837	4.75	4.15	2.91	175	1.02	94	+161		7.01	2050	2.97	38.5	3
4	8.68	1438	2.28	190	5.03	2633	4.80	425	2.91	175	1.03	95	+170		7.27	2290	2.95	38	4
5	8.72	1447	2.34	185	4.50	2023	5.08	481	2.86	169	.98	87	+241		7.10	2140	1.97	38.5	5
6	8.70	1442	2.51	224	4.29	1873	5.00	465	2.86	168	.98	87	+225		6.96	2010	3.00	39.3	6
7	8.72	1447	2.67	248	4.19	1713	4.85	435	2.68	144	.90	71	+230		6.90	1960	2.90	36.8	7
8	8.07	1298	2.83	274	4.20	1733	5.00	465	2.68	144	.91	78	+258		6.86	1926	2.92	37.3	8
9	7.44	1155	2.75	261	3.96	1500	5.38		2.60	133	.87	72			6.92	1970	2.90	36.8	9
10	7.44	1155	2.67	248	3.77	1329	5.21		2.60	133	.78	61			6.80	1870	2.90	36.8	10
11	7.45	1157	2.79	267	3.34	971	5.08	481	2.54	126	.78	61	+	309	6.59	1690	2.90	36.8	11
12	7.45	1157	2.90	285	2.84	619	4.45	355	2.54	126	.80	63	+	181	6.30	1490	2.90	36.8	12
13	7.45	1157	2.95	293	2.72	548	4.27	323	2.54	126	.81	64	+	148	5.54	1090	2.91	37.0	13
14	6.71	1002	3.05	309	2.80	595	4.30	327	2.54	126	.80	63	+	153	5.55	1100	2.92	37.3	14
15	6.70	1000	2.95	293	2.70	538	4.25	321	2.54	126	.80	63	+	147	5.58	1110	2.92	37.3	15
16	6.71	1002	2.90	285	2.67	523	4.31	328	2.54	126	.80	63	+	154	5.42	1040	2.90	36.8	16
17			2.85	277	2.60	491	4.18	310	2.54	126	.80	63	+	138	5.33	997	2.90	36.8	17
18	6.70	1000	2.77	264	3.69	1257	4.23	318	2.54	126	.86	71	+	136	6.25	1460	2.88	36.4	18
19	7.74	1222	2.72	256	3.69	1257	3.91	270	2.62	136	.88	74	+	75	6.37	1540	2.92	37.3	19
20	7.74	1222	2.69	251	3.77	1329	3.83	266	2.68	144	.88	74	+	63	6.33	1510	2.92	37.3	20
21	7.77	1229	2.70	253	3.74	1302	4.30	327	2.68	144	.87	72	+	126	6.37	1540	2.93	37.6	21
22	7.77	1229	2.66	247	4.02	1554	4.05	295	2.68	144	.87	72	+	94	6.34	1520	2.93	37.6	22
23	7.75	1224	2.70	253	4.29	1813	3.80	262	2.74	152	.91	78	+	47	6.56	1670	2.93	37.6	23
24			2.50	222	4.25	1773	3.95	282	2.74	152	.91	78	+	67	6.75	1820	2.90	36.8	24
25	18.41	1376	2.57	232	4.25	1773	4.55	375	2.74	152	.91	78	+	160	6.71	1790	2.92	37.3	25
26	8.43	1380	2.44	213	3.92	1446	4.00	288	2.81	161	.92	79	+	63	6.23	1730	2.90	37.	26
27	8.44	1383	2.11	166	3.73	1293	3.93	282	2.90	173	.94	82	+	42	6.34	1520	2.85	35.4	27
28	9.05	1524	2.16	173	3.66	1230	3.95	282	3.06	196	.99	89	+	12	6.05	1350	2.93	37.6	28
29	9.06	1526	2.32	196	3.67	1239	4.20	314	3.17	213	.99	89	+	27	6.03	1320	2.96	38.3	29
30	9.06	1526	2.43	212	3.71	1275	4.43	351	3.18	214	1.00	90	+	62	6.13	1370	3.00	39.3	30
31																			31

38,254 1314

June 1984

	Magic		#3		#4		#5		East		West		H.J.B.		W-1	W-2	E Spill		#1	48 (+28)	
1	934.9	191,109	6.60	2590	5.26	518	4.30	2048	2.74	304	2.55	152	.70	60	13	12			3.37	© 293	1
2	935.1	191,896	6.94	2900	5.26	© 487	4.74	© 2540	2.81	313	2.62	160	.64	52	13	12	19			293	2
3	934.9	191,109	7.40	3360	5.27	489	5.16	2980	2.81	313	2.62	160	.64	52						293	3
4	934.7	190,027	7.00	2960	5.27	489	4.75	2550	2.81	313	2.61	159	.66	54	13	12	19		3.36	290	4
5	934.6	189,936	6.74	2710	5.27	489	4.54	2340	2.80	312	2.66	164	.68	57	23					290	5
6	934.4	189,156	6.71	2690	5.30	494	4.34	2140	2.85	318	2.68	166	.68	57	24	27	13		3.34	287	6
7	934.3	188,766	6.44	2440	5.30	494	4.21	2021	2.79	311	2.63	161	.77	71	25	15	22		3.33	285	7
8	934.2	188,276	6.40	2400	5.28	491	4.15	1913	2.72	302	2.60	158	.81	78	25	15	18			285	8
9	934.0	187,596	6.24	2250	5.27	489	4.00	1832	2.67	295	2.60	188	.77	71	—	—	—			285	9
10	933.8	186,826		2250		484														285	10
11	933.8	186,826	5.52	1640	5.31	496	3.28	1248	2.75	305	2.62	160	.78	73	30	15	23		3.25	272	11
12	934.1	187,986	4.94	1210	5.27	489	2.96	998	2.70	299	2.61	159	.77	71	30	15	23			272	12
13	934.3	188,766	4.94	1210	5.30	494	2.66	820	2.62	288	2.58	155	.80	76	30	15	23		3.22	267	13
14	934.5	189,546	4.96	1220	5.25	485	2.71	845	2.61	287	2.56	153	.79	74	30	15	—	—		267	14
15	934.6	189,936	4.96	1220	5.25	485	2.70	840	2.61	287	2.54	151	.79	74	20	18	23		3.22	267	15
16	934.8	190,718	4.98	1240	5.24	484	2.72	850	2.61	287	2.54	151	.78	73						267	16
17				1240		484														267	17
18	934.9	190,718	6.12	2150	5.33	500	3.83	1688	2.67	295	2.58	155	.76	70	25		25		3.33	285	18
19	934.9	191,109	6.12	2150	5.32	498	3.81	1672	2.58	283	2.52	149	.80	76	25	15	19			285	19
20	934.9	191,109	6.06	2090	5.32	498	3.80	1664	2.60	286	2.56	153	.78	73	20	20			333	285	20
21	935.0	191,500	6.06	2090	5.34	502	3.82	1680	2.60	286	2.55	152	.81	78	20	12	12			285	21
22	935.1	191,896	6.42	2420	5.44	522	4.08	1904	2.46	268	2.56	153	.82	79	4	20	3		3.36	290	22
23	935.0	191,500	6.70	2680	5.45	524	4.34	2140	2.80	312	2.68	166	.68	57						290	23
24				2680		524														290	24
25	934.6	189,936	6.54	2530	5.41	516	4.19	2093	2.79	311	2.67	165	.64	52	18	20	15		3.37	292	25
26	934.4	189,156	6.48	2470	5.46	526	4.11	1931	2.80	312	2.69	167	.68	57	20	20	14			292	26
27	934.3	188,766	6.46	2460	5.67	568	4.04	1868	2.78	309	2.68	166	.93	99	15	20			3.36	290	27
28	934.3	188,766	6.42	2420	5.68	570	4.01	1841	2.94	330	2.67	165	.96	104	15	20	14		3.37	© 260	28
29	934.2	188,276	6.40	© 2310	5.67	© 592	4.00	© 1752	2.76	307	2.71	170	.94	101	15	20	14		3.37	260	29
30	934.2	188,276	6.30	2220	5.69	596	3.98	1736	2.79	311	2.70	168	.90	93						260	30
31																					31
				66,200		15282														8427	

IWRB00003322

JULY 1984

	No. 60		No. 17		No. 9		No. X		No. Y		No. Z		+ or −	No. 21		No. 93		
	9.06	1526	2.35	200	3.22	876	4.56	377	3.17	213	1.03	95	+	160	6.18	1420	2.95	38
	9.04	1522	2.31	194	3.21	869	4.62	389	3.18	214	1.05	98	+	98	5.62	1130	2.95	38
3	9.08	1531	2.21	180	2.47	451	4.54	326	3.26	227	1.05	91	+	23	5.63	1140	2.95	38
4	9.09	1531	1.98	148	2.03	313	4.35	301	3.30	234	1.04	89	−	7	4.19	586	2.90	36
5	9.06	1526	1.95	144	1.96	299	4.30	295	3.30	234	1.05	91	−	30	3.60	431	2.90	36
6	9.23	1558	1.90	137	1.96	299	4.30	295	3.34	240	1.06	92	−	22	3.53	416	2.90	36
7	9.46	1613	1.98	148	1.56	219	4.36	302	3.34	240	1.06	92	−	45	3.44	399	2.96	38
8			2.07	161	1.54	215	4.44	308	3.38	246	1.06	92	−	15	2.64	239	2.97	38
9	9.37	1591	2.01	152	1.58	223	4.67	349	3.37	245	1.06	92	+	27	3.10	328	2.96	38
10	9.37	1581	2.00	151	2.33	383	4.44	313	3.36	242	1.05	91	−	5	2.94	296	3.06	40
11	9.38	1534	1.90	137	1.86	279	4.40	308	3.27	229	1.06	92	+	2	2.88	285	3.03	40
12	9.38	1534	1.84	129	1.50	207	4.36	302	3.27	229	1.06	92	−	4	3.08	324	3.05	40
13	9.38	1534	1.44	78	1.43	193	4.14	274	3.27	229	1.08	95	+	35	2.88	283	3.08	41
14	9.38	1534	1.22	51	1.44	195	4.36	302	3.27	229	1.06	92	+	32	2.10	153	3.08	41
15			1.18	47	1.39	185	4.34	300	3.27	229	1.07	94	−	06	2.24	174	3.07	41
16	9.38	1534	1.21	50	1.42	191	4.32	297	3.27	229	1.08	95	−	12	2.31	185	3.06	40
17	9.37	1531	1.12	35	1.42	60	4.30	295	3.27	229	1.08	95	−	14	2.40	196	3.08	41
18	9.37	1531	1.05	29	1.31	48	4.32	297	3.30	234	1.08	95	−	17	2.33	188	3.06	40
19	9.38	1534	1.00	95	1.33	50	4.32	297	3.28	230	1.05	91	−	16	2.00	139	3.13	43
20	9.36	1534	1.04	28	1.27	43	4.30	295	3.27	229	1.00	83	−	2	2.05	145	3.14	43
21	9.59	1579	1.08	32	1.37	54	4.46	315	3.27	229	1.06	91	−	6	1.90	125	3.14	43
22			1.18	41	1.54	74	4.74	363	3.30	234	1.06	92	+	52	2.18	165	3.16	44
23	9.58	1582	2.16	165	1.53	73	4.78	371	3.27	229	1.06	92	+	65	2.78	265	3.16	44
24	9.24	1522	1.52	80	1.64	89	4.79	373	3.20	218	1.04	89	+	81	3.19	346	3.25	50
25	9.25	1524	1.60	90	1.61	102	4.83	381	3.20	179	1.04	91	+	126	3.30	368	3.16	45
26	9.25	1524	1.63	94	1.59	100	4.69	353	3.21	180	1.05	92	+	196	3.32	372	3.16	45
	9.25	1524	1.65	97	1.60	101	4.65	345	3.19	178	1.00	85	+	196	3.21	350	3.16	45
28	9.05	1477	1.74	108	1.65	108	4.76	367	3.19	178	.97	80	+	124	3.17	342	3.18	46
29			2.10	157	1.71	118	4.80	375	3.21	188	.98	82	+	128	3.36	380	3.18	48
30	9.69	1,482	2.08	154	1.68	113	4.69	353	3.17	175	.99	83	+	110	3.55	420	3.10	43
31	9.06	1479	2.17	166	1.70	116	4.43	312	3.12	168	.98	81	+	77	3.54	419	3.14	44

T 338 72A 1093 — JULY 1984

	No. 14		No. 54		No. 53		No. 56		No. 10		No. 11		M.J.B.		Marley		F		S	
																			.60	73
	4.47	618	2.64	179	6.57	1120	6.69	588	3.18	257	4.15	231	.46	170	658	58		6.3	.60	73
3	4.35	591	2.56	155	6.49	1088	6.61	572	2.93	196	4.11	226	.46	170	.44	39		5.3	.56	66
4	4.15	550	2.37	110	6.47	1081	6.51	553	2.86	178	4.16	233	.40	152	.54	52		6.7	.58	70
5	4.06	531	2.22	81	6.49	1088	6.46	543	2.79	166	4.19	237	.40	152	.50	47		9.2	.58	70
6	4.16	552	2.24	84	6.66	1155	6.57	564	2.80	[c] 154	4.21	[c] 219	.48	[c] 161	.54	[c] 48		11.8	.58	70
7	4.29	578	2.36	108	6.75	1191	6.64	578	2.80	154	4.21	219	.48	161	.54	48		12.7	.48	56
8																				
9	4.25	570	2.30	96	6.71	1174	6.60	572	2.92	178	4.26	226	.60	199	.56	51		12.7	.92	118
10	4.40	602	2.44	124	6.74	1187	6.68	586	2.69	134	4.19	216	.46	155	.40	31		13.7	.68	82.5
11	4.29	578	2.46	129	6.73	1183	6.66	582	2.72	139	4.25	224	.42	143	.48	40		15.8	.54	62
12	4.12	544	2.14	68	6.72	1179	6.57	564	2.57	115	4.22	220	.46	155	.44	35		9.2	.44	48
13	3.73	[d] 506	1.87	[d] 47	6.73	[d] 1050	6.70	[d] 604	2.52	108	4.21	219	.38	132	.36	26		7.7	.48	54
14	3.71	502	1.76	36	6.71	1043	6.66	596	2.44	98	4.21	219	.46	155	.34	24		4.9	.46	51
15																				
16	3.78	516	1.95	56	6.73	1058	6.72	608	2.41	94	4.30	231	.56	186	.50	43		9.2	.40	42
17	3.74	508	1.90	51	6.64	1016	6.63	590	2.39	87	4.28	228	.62	173	.36	26		10.5	.36	36
18	3.71	502	1.87	47	6.63	1012	6.62	588	2.40	89	4.29	228	.50	167	.38	28		8.8	.48	54
19	3.70	500	1.84	44	6.60	1002	6.60	584	2.39	87	4.26	226	.46	155	.42	33		7.1	.48	54
20	3.70	500	1.80	40	6.68	1031	6.64	592	2.40	89	4.25	224	.44	149	.48	40		5.3	.41	[e] 27.1
21	3.75	510	1.79	39	6.79	1073	6.70	604	2.44	94	4.34	237	.50	167	.52	45		6.3	.49	31
22																				
23	3.91	548	1.94	55	6.99	1151	6.88	641	2.45	95	4.35	238	.52	173	.54	48		7.4	.54	38
24	3.91	542	2.05	70	6.86	1100	6.81	627	2.53	105	4.36	240	.49	164	.52	45		13.7	.50	32
25	3.86	531	2.04	68	6.80	1,077	6.77	618	2.55	108	4.37	241	.50	167	.50	43		15.8	.48	26
26	3.89	538	2.07	73	6.80	1,077	6.79	622	2.53	105	4.35	238	.46	155	.48	40		17.9	.54	38
27	3.88	536	2.06	71	6.82	1,085	6.80	624	2.53	105	4.30	231	.48	161	.50	43		16.8	.50	32
28	3.94	548	2.23	102	6.75	1,058	6.78	620	2.59	114	4.35	238	.58	193	.66	66		21.3	.56	41
29																				
30	4.13	587	2.45	152	6.76	1,062	6.88	641	2.84	156	4.28	238	.54	180	.62	60		18.9	.54	38
31	4.32	629	2.52	173	6.74	1,054	6.81	627	2.75	139	4.27	237	.54	180	.60	57		18.9	.58	44

August 1984

	Magic		#3		#4		#5		East		West		H.J.B.		W-1	W-2	East Spill		#6	
1	931.2	176,998	4.88	893	6.17	684	2.01	296	2.96	324	2.87	161	.91	95	15	15		20	3.76	283
2	931.0	176,256	4.88	893	6.18	696	2.00	293	2.91	317	2.84	158	.95	102	15	15		19		283
3	930.8	175,890	4.82	855	6.00	647	1.98	287	2.84	308	2.78	151	.85	84	15	15		16	3.78	287
4	930.5	174,426	4.83	861	5.99	©604	1.99	290	2.83	307	2.79	152	.85	84						287
5				861		604														287
6	930.0	172,601	4.72	793	6.02	610	1.96	282							15	12		14	3.74	280
7	929.8	171,882	4.72	793	5.87	580	1.91	268	2.86	311	2.80	153	.86	86	15	12		16		280
8	929.5	170,804	4.62	728	5.65	536	1.93	273	2.80	303	2.76	149	.68	67	15	12		13	3.80	290
9	929.3	170,086	4.60	©836	5.64	©542	1.95	©282	2.80	303	2.78	151	.64	52	15	12		11		290
10	929.9	168,656	4.60	836	5.64	542	1.96	283	2.86	311	2.74	147	.65	53					3.83	295
11	928.5	167,244	4.58	824	5.65	544	1.93	276	2.84	308	2.76	149	.65	53						295
12				824		544														295
13	929.8	164,785	4.55	805	5.65	544	1.94	279	2.88	313	2.77	150	.54	40					3.86	300
14	927.5	163,742	4.54	799	5.66	546	1.96	284	2.86	311	2.77	150	.56	41						300
15	927.0	162,012	4.62	848	5.88	590	2.01	299	2.98	313	2.79	151	.80	76	16	16		15	4.00	324
16	926.5	160,308	4.60	836	5.89	592	1.97	287	2.80	303	2.84	153	.78	73	—	—		16		324
17	926.2	159,248	4.60	836	5.88	590	2.00	296	2.84	308	2.77	150	.82	79	16	16		16		324
18	925.9	158,273	4.54	799	5.89	592	1.94	279	2.82	305	2.75	148	.82	79					4.01	326
19				799		592														326
20	925.0	155,266	4.52	786	5.91	596	1.93	276	2.88	313	2.78	151	.73	65					3.88	304
21	924.6	153,954	4.52	786	5.91	596	1.92	273	2.87	312	2.78	151	.75	68	14					304
22	924.2	152,642	4.52	786	5.93	600	1.93	276	2.86	311	2.76	149	.75	68	14				3.89	306
23	923.8	151,343	4.52	786	5.94	601	1.90	268	2.86	311	2.78	151	.76	70					3.91	©249
24	923.4	150,055	4.52	786	5.95	©580	1.88	©257	2.87	312	2.76	149	.75	68	20	16		16	3.89	246
25	923.0	148,771	4.52	786	5.96	582	1.88	257	2.88	313	2.78	151	.75	68						246
26				786		582														246
27	922.2	146,247	4.52	786	5.98	586	1.88	257	2.81	307	2.74	147	.77	71					3.92	250
28	921.8	144,998	4.52	786	5.98	586	1.90	262	2.79	304	2.71	144	.76	70	14	18		12		250
29	921.4	143,762	4.52	786	5.99	588	1.88	257	2.79	304	2.72	145	.76	70	18	12			3.95	255
30	921.0	142,527	4.52	©842	6.00	590	1.93	270	2.80	303	2.72	145	.76	70	18	12		14		255
31	920.5	141,011	4.52	842	6.01	592	1.91	265	2.80	303	2.74	147	.76	70	20	12		14	3.97	258
				5K.263		18,248														5845

August 1984

	Nº 51		Nº 52		Nº 15		M&I in	L.S.	Krill	Dry	No 19		Nº 1		Nº 2		
1	2.66	170	4.08	217	3.17	344	8	8	10	5	2.36	746					1
2	2.60	156	4.16	222	3.30	349	5	9	11	6	2.29	710	3.74	340	5.22	398	2
3	2.54	143	4.16	222	3.18	346	8	8	13	5	2.23	680					3
4	2.50	137	4.09	221	3.10	331	8	8	12	5	2.17	651					4
5											2.17	651					5
6	2.50	137	4.20	225	3.10	331	8	7	14	5	2.14	636					6
7	2.42	124	4.12	219	3.17	©301	8	7	14	7	2.06	598	3.53	25	4.84	234	7
8	2.42	124	4.12	219	3.17	301	8	6	18	6	2.02	580	3.49	©25	4.78	215	8
9	2.30	105	3.97 3.96	209	3.07	283	6	3	12	5	1.96	552					9
10	2.18	90	3.92	205	3.08	285	4	2	12	5	1.98	539					10
11	2.10	82	4.12	219	3.10	288	3	3	12	5	1.92	534			4.50	147	11
12											1.93	539					12
13	2.08	80	4.11	219	3.11	290	3	1	11	3	1.88	517					13
14	2.12	84	4.12	219	3.15	297	3	1	11	4	1.88	517					14
15	2.16	88	4.18	224	3.29	322	5	4	14	5	1.83	495					15
16	2.28	103	4.26	229	3.28	321			12	5	1.86	508	3.47	24	©4.29	181	16
17	2.44	127	4.22	226	3.28	321	6	4	8	7	1.93	539					17
18	2.50	137	4.10	218	3.28	321	3	5	8	0	1.82	491					18
19																	19
20	2.30	93	4.10	218	3.26	317	4	2	7	2	1.77	470					20
21	2.30	93	4.16	222	3.27	319	4	5	7	2	1.73	454					21
22	2.36	C 119	4.18	C 222	3.29	C 351	4	5	10	3	1.71	446					22
23	2.32	113	4.18	222	3.27	348	7	7	10	5	1.74	458	3.29	15	4.49	237	23
24	2.34	116	4.16	221	3.28	349	7	6	7	5	1.71	446					24
25	2.30	111	4.30	231	3.28	349	10	5	8	5	1.90	©370					25
26																	26
27	2.40	125	4.16	221	3.29	351	10	5	9	6	1.85	350					27
28	2.40	125	4.16	221	3.18	331	7	4	9	6	1.82	340					28
29	2.32	113	4.12	218	3.20	335	7	4	6	5	1.80	333	3.27	©14	4.49	©212	29
30	2.28	107	4.10	217	3.19	333	3	4	3	6	1.78	©358					30
31	2.36	118	4.12	218	3.20	335	3	4	8	6	1.86	389					31

OcT - 1984

	No	60	NO	14	S	Waste	R	11
1	7.04	1002			54	42		
2	7.04	1002	4.20	602	52	39		
3	7.03	1000	4.22	607	58	48		
4	6.50	894	4.10	580	58	48		
5	6.52	898	3.77	514				
6								
7								
8	6.46	886	3.13	394				
9	6.46	886	3.37	437				
10	6.46	886	3.33	430				
11								
12	2.30	232						
13								
14	T	7686						
15	A	657						
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								
31								

September 1984

	Magic		Nº 3		Nº 4		Nº 5		East		West		H. J.B.		W-1	W-2	East Spill		Nº 48	
1	920.1	139,906	4.52	842	5.94	578	1.94	273	2.82	308	2.68	141	.64	52						270
2				842		578														270
3.	919.3	137,420	4.52	842	5.95	580	1.95	276	2.78	300	2.54	128	.72	63				1.50	4.05	270
4	918.9	136,231	4.52	842	5.91	584	1.94	273	2.75	296	2.54	128	.69	59	15	12		16		270
5	918.4	134,789	4.52	842	5.96	582	1.97	282	2.70	290	2.55	128	.76	70					4.04	269
6	918.0	133,629	4.40	767	5.75	540	1.93	270	2.65	283	2.52	126	.48	32	18	12		20		269
7	917.7	132,777	4.30	703	5.74	538	1.77	231	2.66	284	2.57	130	.48	32				23	4.01	266
8	917.3	131,641	4.42	780	5.75	540	1.92	268	2.57	273	2.46	120	.54	40						266
9				780		540														266
10	916.4	129,103	4.42	780	5.77	544	1.92	268	2.50	264	2.45	119	.61	47	18	20		19	3.97	258
11	916.0	127,982	4.42	780	5.77	544	1.92	268	2.50	264	2.44	118	.61	47	16	20		18		258
12	915.5	126,597	4.42	780	5.78	546	1.92	268	2.40	251	2.38	113	.70	60					3.95	255
13	915.1	125,484	4.46	767	5.78	546	1.90	262	2.40	251	2.36	112	.70	60	7	18		15		255
14	914.8	124,664	4.42	780	5.78	546	1.93	270	2.41	252	2.35	111	.68	57	7	18		15	3.93	252
15	914.4	123,568	4.42	780	5.78	546	1.92	268	2.41	252	2.40	115	.68	57						252
16				780		546														252
17	913.5	121,122	4.41	773	5.77	544	1.91	265	2.43	255	2.38	113	.71	62	7	18			3.90	248
18	913.2	120,312	4.41	773	5.77	544	1.92	268	2.46	258	2.42	117	.66	54				8		248
19	912.7	118,971	4.41	773	5.77	544	1.91	265	2.57	273	2.42	117	.55	40	7	18			3.87	243
20	912.3	117,903	4.40	767	5.78	546	1.87	255	2.62	279	2.52	126	.49	28				11		243
21	911.8	116,575	4.40	767	5.78	541	1.90	262	2.61	278	2.54	128	.47	31	10	18		13	3.84	238
22	911.4	115,520	4.40	767	5.78	546	1.85	250	2.60	277	2.50	124	.50	34						238
23				767		546														238
24	910.5	113,167	4.40	767	5.77	544	1.87	255	2.60	277	2.52	126	.49	33	20	16		18	3.80	232
25	910.0	111,867	4.40	767	5.76	542	1.89	260	2.61	278	2.54	128	.49	33				22		232
26	909.5	110,582	4.40	767	5.76	542	1.86	252	2.49	269	2.40	115	.61	54	18	16		18	3.75	225
27	909.0	109,300	4.40	767	5.76	542	1.85	250	2.51	265	2.40	115	.61	54	18	16		21		225
28	908.6	108,285	4.28	691	5.61	512	1.78	233	2.44	256	2.41	116	.50	34						225
29				691		512														225
30				691		512														225
31																				
				23,215		16,400														7483

September 1984

	Nº 51		Nº 52		Nº 15		Main	L.S.	Krall	Dry	Nº 19		Nº 1		Nº 2		
1	2.48	138	4.22	225	3.22	339	5	5		5	1.90	405					2
2											1.80	366					3
3	2.52	145	4.20	224	3.23	340	7	9	6	6							4
4	2.60	163	4.16	221	3.24	342	7	7	7	6	1.77	355					5
5	2.60	163	4.16	221	3.23	340	7	6	7	8	1.74	343	3.23	12	4.39	186	6
6	2.52	145	4.12	218	3.15	326	5	5	7	8	1.79	362					7
7	1.90	65	3.76	193	3.10	317	6	6	4	8	1.80	366					8
8	2.40	125	4.04	212	3.14	324	8	8	6	8	1.77	355					9
9																	10
10	2.62	168	4.14	219	3.17	330	10	10	6	8	1.74	343					11
11	2.64	173	4.16	221	3.08	313	10	11	8	7	1.73	340					12
12	2.62	168	4.16	221	3.06	310	6	10	8	7	1.72	336					13
13	2.48	138	4.08	215	3.03	304	7	9	4	6	1.70	329					14
14	2.58	158	4.12	218	3.04	306	8	12	6	6	1.70	329					15
15	2.60	163	4.12	218	3.04	306	8	9	10	8	1.69	325					16
16																	17
17	2.62	168	4.14	219	2.96	292	12	9	12	8	1.69	325					18
18	2.62	168	4.14	219	2.96	292	12	14	8	8	1.68	322			4.34	173	19
19	2.52	145	4.12	219	2.95	290	10	11	20	7	1.68	322					20
20	2.30	113	4.00	210	2.80	264	7	8	28	7	1.68	322					21
21	2.30	113	4.00	210	2.85	272	7	8	28	7	1.66	315					22
22	2.36	119	4.02	211	2.86	274	7	8	25	8	1.66	315					23
23																	24
24	2.72	195	3.90	209	2.93	286	19	12	25	12	1.60	294	3.41	21	4.05	114	25
25	2.98	255	3.90	209	2.86	274	19	12	27	12	1.60	294					26
26	3.20	450	3.34	163	2.75	255	20	13	18	10	1.60	294					27
27	2.20	450	3.08	148	2.73	252	21	13	11	8	1.60	294					28
28	3.18	435	3.10	149	2.69	228					1.59	291					29
29																	30
30																	31
31																	

	Magic		No. 3		No. 4		No. 5		East		West		H.J.B.		W1	W2	East Spill		No. 48	
1	9.074	105,267	4.28	.691	5.60	570	1.73	221	.242	253	240	115	60	46	20	15		21	3.52	237
2	9.070	104,268	4.26	679	5.58	506	1.74	299	2.42	253	9.41	116	59	45				22		
3	9.067	103,627	4.21	679	5.59	508	1.74	222	2.36	246	2.40	115	.63	50						
4	9063	102,541	4.26	678	5.57	504	1.74	222	235	244	2.40	115	.62	99	25	15		21	348	231
5	9059	101,560	4.24	667	5.57	504	1.72	216	2.57	273	2.40	115	.63	50						
6																				
7																				
8																				
9																				
10							Stock Run Nov. 12 1984													
11																				
12	9125	118,437	3,05	201			3.05	201		All to Shoshone										
13			3,88	500	402	300	.96	198	1.60	153	1.40	57	Bad.							
14																				
15	—	Off	—	50' Too Much in Richfield																
16																				
17																				
18																				
19																				
20	9131	120,042																		
21																				
22																				
23																				
24																				
25																				
26	9145	123,842																		
27																				
28																				
29																				
30																				
31																				
			3394		2532															

DEPOSITION EXHIBIT 21

1986

APRIL 1986

	No 60		No 17		No 9		No X		No Y		No Z		+ or Rain		No 21		No 93		R 57 to 100	
1																				
2			4.28	541	5.62	2946													93	
3			4.23	531	5.14	2370														
4			4.22	529	5.14	2370														
5			4.18	520	4.95	2142														
6			4.17	517	4.73	1878														
7	3.11	3.64	4.04	4.89	4.57	1712														252
8	4.61	5.91	3.84	448	4.45	1592														260
9	4.65	597	3.85	450	4.52	1662														260
10	4.62	592	3.85	450	4.98	2178														265
11	462	592	3.92	464	4.57	1652													2.61	265
12			3.97	4.74	5.10	2322													2.50	261
13			3.96	472	5.20	2442														270
14	4.64	596	3.97	474	5.25	2502														275
15	4.64	596	4.01	482	5.08	2298	1.80	322	1.91	32	47	29	+286						2.44	252
16	4.64	596	3.93	466	4.90	2092	1.65	287	2.05	55	47	29	+217		7.45	2409	2.03	18	2.58	239
17	5.74	798	3.86	452	4.78	1938	1.46	240	2.05	55	47	29	+171	273	7.31	2254	2.04	19	2.40	223
18	5.73	796	3.71	422	4.83	1998	1.20	178	2.12	62	47	29	+102	322	7.25	2190	2.00	18	3.34	310
19	5.99	846	3.45	376	4.60	1742	1.38	221	2.20	71	51	31	+144	280	7.18	2118	1.98	17	3.34	342
20	5.71	792																		
21	5.68	786	3.45	376	4.45	1592	1.36	216	2.40	94	57	36	+101	276	7.04	1980	2.10	20	3.34	342
22	5.69	788	3.32	354	4.34	1482	1.20	178	2.54	111	64	42	+40	254	6.98	1922	2.08	19	3.41	350
23	5.63	777	3.03	307	3.81	1010	1.24	188	2.54	111	74	51	+41	280	6.76	1724	2.07	19	3.48	360
24	5.71	792	3.00	301	3.83	1026	1.12	160	2.60	119	72	49	+7	190	6.24	1337	2.07	19	3.75	396
25	5.73	796	3.05	309	3.85	1042	1.40	226	2.60	119	76	53	+67	186	6.44	1486	2.07	19	3.74	394
26	6.66	982	2.97	296	2.95	467	1.40	226	2.60	119	76	53	+69	256	6.53	1541	2.07	19	3.32	340
27			3.06	311	3.07	527	1.70	312	2.60	119	77	54			6.58	1579	2.22	22		
28	6.49	948	3.06	311	3.07	527	1.70	312	2.60	119	77	54	+154	182	6.58	1579	2.22	22	4.50	466
29	6.48	880	3.10	317	3.14	562	1.61	276	2.65	126	80	57	+108	159	6.01	1189	2.21	21	4.48	465
30	6.43	870	2.92	288	3.19	587	1.50	250	2.70	132	83	61	+72	157	5.94	1147	2.20	21	4.44	459
31																				

18127A753

May 1986

	No. 60		No. 17		No. 9		No. X		No. Y		No. Z		T.V. −	No. 21		No. 93		
	6.42	868	2.41	208	2.96	426	1.43	255	2.70	132	.85	63	+75	5.96	1159	2.14	20	
2	6.40	864	2.38	204	2.71	366	1.55	284	2.75	138	.86	64	+77	5.33	826	2.42	26	
3	7.16	1016	2.10	165	2.67	353	1.50	272	2.75	138	.98	67	+82	5.20	826	2.78	34	
4	7.08	1000	2.65	245	2.65	347	1.48	267	2.75	138	.93	74	+70	5.01	757	2.90	37	
5	7.15	1014	2.49	218	2.67	353	1.69	312	2.75	138	.92	72	+117	5.08	782	3.00	39	
6	7.08	1000	2.85	277	2.93	457	1.68	315	2.82	148	.92	72	+110	5.38	896	3.09	42	
7	7.16	1016	3.03	306	2.92	452	1.66	310	2.82	148	.93	74	+103	5.67	1014	3.02	40	
8	7.12	1008	2.50	222	2.99	487	1.86	354	2.82	148	.93	74	+147	5.77	1059	2.92	37	
9	7.16	1016	2.57	232	2.93	457	1.90	360	2.82	148	.93	74	+153	5.79	1068	3.02	40	
10	7.12	1008	2.54	228	2.96	472	1.95	371	2.75	138	.90	70	+178	5.82	1082	3.00	39	
11			2.54	224	2.96	472	2.00	380	2.75	138	.90	70	+187	5.80	1073	2.99	39	
12	7.16	1016	2.49	220	2.98	487	1.93	366	2.80	145	.87	66	+174	5.83	1086	2.99	39	
13	7.12	1008	2.43	212	2.97	477	1.73	327	2.80	145	.87	66	+116	5.76	1054	2.97	38	
14	7.16	1016	2.16	173	2.91	447	1.66	310	2.80	145	.93	74	+106	5.69	1023	2.92	37	
15	7.96	1186	1.97	147	2.88	434	1.75	332	2.80	145	.97	79	+123	5.46	928	2.97	38	
16	7.97	1188	2.03	155	2.98	482	1.82	348	2.86	153	.97	79	+131	5.40	904	3.00	39	
17	7.90	1178	2.25	186	2.90	448	1.84	346	2.90	158	.97	79	+124	5.56	968	3.05	40	
18			2.24	185	2.86	426	1.75	332	2.90	158	1.00	86	+103	5.48	936	3.00	39	
19	7.94	1181	1.95	144	2.82	410	1.76	334	2.90	158	1.02	86	+105	5.36	888	2.84	38	
20	8.64	1341	1.64	103	2.17	212	1.70	©279	2.90	©154	1.02	©88	+52	5.12	797	2.94	39	
21	8.84	1387	1.83	128	1.54	104	1.80	341	2.90	154	1.05	92	+110	3.90	434	3.08	41	
22	8.86	1392	1.95	144	1.71	128	1.85	351	2.90	154	.97	80	+132	3.63	373	3.09	42	
23	8.98	1406	2.63	242	1.73	131	1.86	352	2.96	162	.97	80	+125	3.90	434	3.12	42	
24	8.24	1249	3.11	319	1.80	142	1.85	351	2.96	#162	.97	80	+124	4.15	495	3.05	41	
25			2.70	258	3.14	562	1.68	318	2.90	154	.97	80	+97	4.38	557	2.90	36	
26	8.25	1252	2.20	179	3.05	517	1.71	320	2.90	154	.97	80	+101	5.73	1041	2.98	38	
27	8.25	1252	2.14	171	3.56	824	1.65	365	2.90	154	1.01	96	+80	5.53	956	2.97	38	
28	8.23	1247	1.82	127	3.03	507	1.44	255	2.95	161	1.03	89	+20	6.10	1245	2.98	C 34	
29	8.64	1341	1.50	C 80	3.60	852	1.49	267	2.97	164	1.03	89	+29	5.14	804	3.16	38	
30	8.64	1341	2.20	173	5.04	2207	1.60	293	2.98	165	1.05	92	+51	6.00	1183	3.22	40	
31	8.68	1341	2.55	224	6.72	~~4500~~	1.55	281	2.98	165	1.05	92	+39	4.23	2179	3.16	38	

35.555 A 1147

7.15

APRIL 1986

	Mayic		No. 3		No. 4		No. 5		East		West		H.T.B.						No. 48	
1																				
2																				
3																				
4																				
5																				
6																				
7	933.1	184,138	6.44	2390	2.47	42	4.56	2196												
8	933.1	184,138																		
9	933.1	184,138																		
10	933.2	184,522																		
11	933.2	184,522	6.40	2400	2.57	46	4.58	2228												
12	933.3	184,906	6.44	2440	2.55	47	4.62	2296												
13	933.3	184,906	6.58	2570	2.58	49	4.74	2440												
14	933.3	184,906	6.62	2,600	2.60	50	4.74	2,512											2.34	120
15	933.2	184,522	6.62	2,600	2.56	48	4.62	2296												
16	933.0	183,754	6.42	2420	2.53	46	4.56	2196											2.34	120
17	932.8	182,994	6.42	2420	2.52	45	4.55	2180												
18	932.6	182,242	6.40	2460	2.50	44	4.51	2116												
19	932.4	181,496	6.32	2330	3.08	92	4.38	1908												
20																				
21	931.9	179,602	6.32	2330	3.34	120	4.27	1732											2.62	153
22	931.8	179,230	6.24	2250	3.30	116	4.30	1780	1.00	81	.70	48	.40	24						
23	931.9	179,602	6.24	2250	4.45	286	4.10	1480	1.30	117	1.04	55	1.10	132					2.63	154
24	932.1	180,352	6.24	2250	4.25	248	4.10	1480	1.29	116	1.04	55	1.10	132	6	10				
25	932.3	181,108	6.26	2270	4.26	250	4.09	1468	1.37	125	1.67	76	1.00	112	6	10		9		
26	933.7	182,620	5.14	1740	4.44	284	3.30	740	1.51	142	1.71	78	.99	110	13	12		12	2.74	168
27																				
28	933.3	184,906	5.50	1630	4.45	286	3.36	776	1.72	167	1.76	85	.80	76	12	12		9	2.85	183
29	933.4	185,290	5.52	1640	4.45	286	3.47	849	1.72	167	1.76	80	.86	76	14	12		12		
30	933.5	185,674	5.78	1860	4.43	282	3.61	959	1.88	187	1.76	80	.68	57	12	12			2.84	188
31															7	12		10		

54,020 3,168 2460

May 1986

	No 14		No 54		N 53		No 56		No 10		No 11		M.T.B.		Marley		F Waste		S Waste		
1	3.55	439	3.13	358	5.01	650	6.56	598	3.67	278	3.84	168	2.56	139	0.52	47		19.6	.46	41	1
2	3.36	405	3.06	329	4.86	623	6.44	574	3.57	252	3.92	185	2.64	152	0.66	61		24	.46	41	2
3	3.41	414	3.08	337	5.10	666	6.60	606	3.48	230	3.91	183	2.68	158	-				.42	35	3
4									3.50	235	3.92	185	2.70	162	—	—	—	—	—	—	4
5	3.70	468	2.98	287	5.31	708	6.39	564	4.11	423	3.98	198	2.68	158					.44	38	5
6	4.48	626	3.31	448	5.46	744	6.70	626	3.97	371	3.97	196	2.70	162	.75	76		23.0	.46	41	6
7	4.36	600	3.26	420	5.48	749	6.67	620	3.90	347	3.96	193	2.68	158	-				.45	39	7
8	4.52	635	3.33	460	5.60	778	6.79	644	3.97	371	3.97	196	2.72	165	.72	70		25.4	.46	41	8
9	4.58	648	3.33	460	5.52	759	6.71	688	3.89	344	3.97	196	2.74	168					.46	41	9
10	4.36	600	3.24	410	5.45	742	6.65	616	3.79	316	3.96	193	2.72	165	.70	67		28.6	.46	41	10
11									3.79	316	3.96	193	2.76	172					.48	44	11
12	4.40	609	3.26	420	5.49	752	6.67	620	3.70	287	3.95	191	2.73	167							12
13	4.25	576	3.19	384	5.53	761	6.55	596	3.52	246	3.93	187	2.70	162	.70	67		26.2	.48	44	13
14	4.09	544	3.13	358	5.22	680	6.43	572	3.35	199	3.91	183	2.66	155					.48	44	14
15	3.99	523	3.03	318	5.56	768	6.59	604	3.17	160	3.90	180	2.65	154	.68	66		26.2	.48	44	15
16	4.10	546	2.97	296	5.96	870	6.81	648	3.34	196	3.91	183	2.63	150					.44	38	16
17	4.27	580	2.92	281	5.94	864	6.56	598	3.15	156	3.89	178	2.52	133	.66	61		23.0	.46	41	17
18									2.79	95	3.85	170	2.46	123							18
19	3.79	485	2.53	164	5.81	841	6.25	536	2.75	94	3.93	187	2.39	113					.44	38	19
20	3.82	490	2.40	129	6.11	913	6.37	560	2.62	78	3.93	187	2.42	117	.68	64		10.2	.22	12	20
21	3.85	496	2.20	88	6.46	1034	6.50	586	2.55	115	4.29	208	2.56	136					.69	76	21
22	4.18	562	2.54	167	6.63	1102	6.77	640	3.43	313	4.61	290	2.62	146	.64	58		26.2	.82	82	22
23	5.04	751	2.99	303	6.77	1158	6.72	630	3.58	360	4.63	296	2.51	128					.52	49	23
24	4.94	724	2.92	281	6.57	1078	6.59	604	3.21	252	4.41	237	2.26	152	.60	52		30.2	.58	58	24
25									3.13	232	4.37	227	2.36	106					—	—	25
26	4.03	531	2.63	194	6.24	952	6.57	600	3.11	228	4.37	227	2.36	106					.60	62	26
27	3.94	514	2.55	170	6.19	937	6.49	584	2.98	220	4.32	215	2.19	86	.60	52		26.2	.58	58	27
28	3.74	475	2.37	122	6.08	904	6.33	552	2.69	138	4.33	217	2.40	112					.56	49	28
29	3.87	500	2.34	116	6.40	1010	6.58	602	3.53	344	4.61	290	2.60	142	.54	44		25.4	.59	54	29
30	4.47	626	2.99	303	6.38	1002	6.87	660	4.01	521	4.42	239	2.54	133					.54	76	30
31	4.80	697	3.19	384	6.40	1010	7.00	686	4.15	583	4.44	244	2.52	130	.47	48	18.2		[illegible]	[illegible]	37

T 26,415 A 852

16422

June 1986

	No 60		No 17		No 9		No x		No y		No z		+/-		No 21		No 93		
1			2.95	.287	6.55	4270	1.63	300	3.04	173	1.05	92		+50	7.74	2717	3.22	40	
2	8.63	1339	2.98	291	6.31	3920	1.77	320	3.05	175	1.06	94		+66	7.87	2862	3.14	38	
3	8.67	1348	2.90	279	6.23	3520	1.80	341	3.05	175	1.05	92		+89	7.84	2873	3.12	37	
4	8.66	1346	2.88	275	6.11	3500	1.80	341	3.04	173	1.02	85		+98	7.84	2980	3.01	35	
5	8.67	1348	2.91	293	6.36	3900	1.90	358	3.04	173	.99	83		+117	7.74	2867	3.02	35	
6	8.65	1344	3.04	301	6.40	4040	1.81	344	3.05	175	1.00	85		+99	7.93	3090	3.05	36	
7	8.65	1344	3.02	298	6.12	3601	1.84	349	3.05	175	.97	80		+109	7.97	3141	3.03	35	
8	[illegible]		3.13	315	5.39	2130	2.11	407	2.98	165	.94	76		+181	7.76	2885	3.05	36	
9	8.71	1357	3.16	323	4.94		2.01	383	2.98	165	.93	75		+158	7.50	2578	2.70	28	
10	8.68	1351	2.92	282	4.10	1250	1.99	375	2.94	159	.90	71		+460	7.21	2286	2.68	27	
11	8.72	1360	3.07	306	3.75	962	2.14	414	2.94	159	.91	72		+194	6.63	1721	2.68	27	
12	8.67	1348	2.95	287	2.56	320	2.01	⑥409	2.94	⑥170	.95	⑥86		+168	6.49	1609	1.67	④32	
13	8.72	1360	2.83	267	2.93	457	1.88	378	2.93	169	.97	89		+135	5.09	934	2.73	34	
14	8.71	1357	2.77	258	3.46	754	1.80	360	3.00	179	.95	86		+110	6.18	1343	2.84	37	
15			2.87	274	3.44	740	1.93	390	3.00	179	.95	86		+140	6.22	1412	2.85	37	
16	8.70	1355	2.77	258	3.43	733	2.04	416	3.00	179	.95	86		+166	6.84	1426	3.02	41	
17	8.70	1355	2.77	258	3.35	686	1.99	404	3.00	179	.98	91		+149	6.21	1405	3.00	41	
18	8.72	1360	2.70	247	3.27	634	1.79	358	3.14	199	.98	91		+83	6.10	1330	3.08	44	
19	8.71	1357	2.65	239	3.22	604	1.55	308	3.22	211	1.01	95		+17	5.82	1153	3.06	43	
20	8.67	1348	2.65	239	3.20	598	1.63	327	3.28	221	1.00	94		+27	5.67	1077	3.07	43	
21	8.70	c 1387	2.60	231	2.77	390	1.91	360	3.28	221	1.00	94		+45	5.70	1086	3.05	42	
22			2.54	224	2.20	218	1.70	344	3.28	221	1.01	95		+43	5.22	884	3.03	42	
23	8.69	1385	2.31	189	1.97	172	1.80	360	3.34	230	1.04	99		+46	4.04	500	3.11	44	
24	9.10	1479	2.02	148	1.89	156	1.88	378	3.34	230	1.06	102		+41	3.90	465	3.05	42	
25	9.10	1479	1.98	143	1.47	94	1.90	383	3.40	240	1.06	102		+56	3.48	369	3.20	51	
26	9.10	1479	1.98	143	1.43	⑥111	1.77	355	3.40	240	1.08	106		+24	3.09	291	3.15	45	
27	9.23	1510	1.60	92	1.40	106	1.85	371	3.38	237	1.07	104		+45	2.83	243	3.10	44	
28	9.15	1491	1.86	125	1.30	93	2.00	407	3.38	237	1.07	104		+81	2.68	217	3.13	45	
29			1.83	122	1.05	67	2.02	411	3.38	237	1.09	107		+82	2.76	231	3.11	44	
30	9.18	1498	1.75	112	1.98	145	2.00	407	3.38	237	1.09	107		+78	2.75	229	3.10	44	
31																			

411.1603 1387

June 1986

	Magic		No 3		No 4		No 5		East		West		H+B		IN1	W2	E SAC II		No 48	
1																				
2	935.4	193,084	8.54	4470	5.48	645	6.24	4225	2.77	291	2.85	179	0.65	104	6	15	8		3.78	338
3	935.4	193,084	8.54	4470	5.48	645	6.23	4225	2.84	300	2.85	179	.55	86	8	18	10			
4	935.4	193,084	8.48	4400	5.47	641	6.28	3759	2.83	299	2.84	178	.55	86	10	16	12		3.80	342
5	935.4	193,084	8.48	4400	5.47	641	6.21	3762	2.84	300	2.85	179	.55	86	10	18	11			
6	935.4	193,084	8.48	4400	5.48	645	6.20	3759	2.84	300	2.85	179	.55	86	7	18	11		3.81	344
7	935.2	192,292	8.32	4220	5.48	645	6.08	3575	2.84	300	2.85	179	.55	86	10	18	11			
8																				
9	935.0	191,500	8.28	4180	5.48	645	4.77	3525	2.84	313	2.84	184	.60	95	11	18	10		3.73	329
10	935.0	191,500	6.34	2250	5.48	645	4.16	1636	2.86	303	2.84	178	.55	86	11	18	16		3.68	321
11	934.9	191,109	6.32	2240	ⓒ5.49	558	ⓒ4.13	1748	2.86	303	2.86	180	.56	88	14	20	17		3.68	321
12	935.3	192,688	5.04	1210	5.44	542	3.05	690	2.84	300	2.85	179	.55	86	14	20	19			
13	935.3	192,688	6.20	2130	5.50	561	ⓒ3.97	1536	2.80	295	2.83	176	.67	108	15	20	16		3.72	328
14	935.3	192,688	6.20	2130	5.57	584	3.96	1522	2.76	290	2.80	173	.74	122	16	20	18			
15																				
16	935.3	192,688	6.20	2130	5.58	587	3.98	1550	2.75	288	2.80	173	.70	114	15	20	14		3.75	333
17	935.2	192,292	6.18	2110	5.58	587	3.98	1550	2.73	286	2.78	171	.72	118	15	20	14			
18	935.2	192,292	6.18	2110	5.59	590	3.93	1480	2.72	284	2.78	171	.71	116	15	20	15		3.75	333
19	935.1	191,896	6.14	2080	5.59	590	3.92	1468	2.69	281	2.77	170	.70	114	11	20	14			
20	935.0	191,500	6.12	2060	5.60	593	3.89	1432	2.69	281	2.77	170	.70	114	12	20	11		3.78	338
21	934.9	191,109	5.76	1810	5.60	593	3.54	1050	2.68	279	2.75	167	.68	110	12	20	11			
22																				
23	934.9	191,109	5.16	1340	5.60	593	2.90	628	2.69	281	2.77	170	.62	99	11	20	9		3.57	302
24	935.0	191,500	4.62	952	5.73	635	2.12	ⓒ373	2.76	290	2.80	173	.75	124	12	20	9			
25	935.2	192,292	4.64	965	5.76	645	2.12	373	2.71	283	2.79	172	.73	120	12	20	7		3.91	342
26	935.2	192,292	4.64	965	5.91	696	2.19	393	2.78	292	2.77	170	.81	147	14	20	4		3.76	335
27	935.3	192,688	4.78	1060	5.98	720	2.17	387	2.82	316	2.80	173	.88	152	13	20	7		3.63	312
28	935.3	192,688	4.84	1100	5.98	720	2.34	435	2.82	316	2.80	173	.88	152	13	20	8			
29																				
30	934.9	191,109	5.00	1220	6.01	730	2.54	493	2.80	313	2.80	173	.86	147	4	20	6		3.68	321
31				14,132		18,863														

9910

July 1986

	No 60		No 17		No 9		No X		No Y		No Z		+ or -		No 21		No 93			
	9.20	1502	1.65	99	1.40	106	2.02	411	3.38	237	1.10	108	+ 81		3.68	113	3.08	43		
2	9.20	1502	1.37	65	1.68	148	2.02	411	3.38	237	1.10	105	+61		2.87	215	3.01	41		
3	9.20	1502	1.19	44	1.06	41	2.03	414	3.38	237	1.10	108	+84		2.50	197	2.93	39		
4	9.39	1548	1.11	36	1.16	78	2.05	419	3.38	237	1.09	107	+88		2.31	159	2.99	40		
5	9.40	1550	1.21	46	1.26	88	2.34	486	3.30	208	1.04	100	+195		2.48	184	3.02	41		
6			1.95	138	1.34	98	2.03	414	3.30	208	1.04	100	+121		3.12	297	3.10	44		
7	9.38	1546	1.86	127	1.24	86	1.87	375	3.28	205	1.01	95	+90		3.18	308	3.08	43		
8	9.40	1518	1.88	129	1.15	77	1.83	366	3.26	218	1.04	© 100	+63		2.83	243	3.11	© 38		
9	9.34	1536	1.69	© 116	1.21	© 50	1.96	© 397	3.26	© 210	1.07	104	+98		2.71	222	3.06	36		
10	9.34	1536	1.62	107	1.21	50	1.94	392	3.26	210	1.06	102	+95		2.89	241	3.10	37		
11	9.40	1550	1.40	79	1.21	50	1.94	392	3.20	200	1.03	98	+109		2.74	228	3.06	36		
12	9.40	1550	1.15	49	1.22	51	1.93	390	3.20	200	1.02	97	+106		2.69	219	3.07	36		
13	9.40	1550	1.08	42	1.26	54	1.95	395	3.20	200	1.02	97	+113		2.59	202	3.09	37		
14	9.40	1550	1.02	37	1.23	52	2.02	411	3.20	200	1.02	97	+129		2.76	231	3.08	37		
15	9.38	1546	1.04	38	1.22	51	2.03	414	3.20	200	0.99	92	+137		2.70	221	3.10	37		
16	9.40	1550	0.96	31	1.18	47	2.03	414	3.20	200	1.00	94	+135		2.66	214	3.07	36		
17	9.39	1548	1.02	37	1.15	45	1.99	406	3.20	200	1.00	94	+125		2.67	216	3.07	36		
18	© 9.40	© 1493	1.08	42	1.22	51	2.00	407	3.20	200	1.00	94	+128		2.58	200	3.10	37		
19	9.39	1491	1.14	48	1.17	47	1.93	390	3.20	200	0.96	88	+117		2.64	210	3.10	37		
20			1.12	46	1.13	44	1.96	397	3.20	200	.95	86	+106		2.41	174	3.08	37		
21	9.40	1493	1.06	40	1.18	47	2.00	407	3.20	200	.96	88	+124		2.62	207	3.07	36		
22	9.35	1482	1.20	56	1.33	61	1.99	404	3.20	200	.97	89	+130		2.64	210	3.13	38		
23	9.41	1498	1.16	50	1.15	45	2.04	412	3.20	200	.97	89	+142		2.77	233	3.10	37		
24	9.41	1498	.98	33	1.07	38	2.09	428	3.20	200	.97	89	155		2.66	214	3.03	36		
25	9.41	1498	1.40	79	1.24	52	2.01	409	3.20	206	.97	89	+135		2.56	197	3.16	39		
26	9.41	1498	1.20	118	1.30	58	1.88	378	3.12	189	.95	86	+118		2.89	254	3.11	38		
27	9.43	1500	1.78	124	1.38	65	1.74	351	3.04	178	.93	83	+104		3.10	293	2.94	33		
28	9.43	1500	1.77	127	1.41	68	1.81	361	3.04	178	.89	78	+120		3.14	301	2.96	34		
29	9.40	1493	1.98	155	1.48	69	1.73	349	3.05	179	.97	89	+96		3.06	285	3.01	35		
30	8.93	1385	2.06	166	1.42	69	1.67	337	3.05	179	.97	89	+84		3.00	274	3.02	35		
31	8.98	© 1385	1.99	157	1.37	64	1.71	346	3.05	179	.98	98	+84		3.12	297	3.00	35		
		46,839	1541																	

July 1986

	No. 14		No. 54		No. 53		No. 56		No. 10		No. 11		MJB		Marley		F. Waste		S. Waste		
1	4.01	504	2.00	48	6.70	1062	6.44	574	2.38	80	4.47	242	2.60	142	0.63	56	14.8		.56	49	1
2	3.84	471	1.99	47	6.69	1058	6.55	596	2.38	80	4.44	234	2.55	134	.				.52	44	2
3	3.84	471	1.93	41	6.67	1050	6.54	594	2.40	85	4.48	244	2.62	146	.68	64	11.2		.72		3
4	3.85	472	2.03	52	6.79	1098	6.69	624	2.35	77	4.50	250	2.66	152					.76	82	4
5	4.06	514	2.04	53	7.01	1186	6.88	662	2.35	77	4.55	263	2.72	162	.75	76	21.2		.90	89	5
6									2.36	78	4.53	258	2.68	155							6
7	4.25	552	2.13	64	6.91	1146	6.58	602	2.39	81	4.54	261	2.66	152					.52	44	7
8	4.20	542	2.10	60	6.86	1046	6.54	594	2.46	90	4.58	271	2.70	158	.64	58	23.8		.44	32	8
9	4.01	504	2.14	65	6.86	1046	6.72	630	2.33	74	4.60	250	2.72	162					.30	16	9
10	3.96	©526	2.11	©76	6.75	©1118	6.64	©628	2.35	©84	4.50	©237	2.72	©185	.71	©60	11.2		.16	7	10
11	3.74	483	2.05	66	6.73	1110	6.72	644	2.32	80	4.51	239	2.72	185					.46	35	11
12	3.75	485	2.05	66	6.74	1114	6.74	648	2.35	84	4.51	239	2.68	177	.68	55	9.0		.35	21	12
13									2.36	85	4.54	247	2.74	188					[illegible]	0	13
14	3.79	492	2.04	65	6.84	1154	6.80	660	2.35	84	4.53	244	2.73	186					.24	10	14
15	3.85	504	2.03	64	6.77	1126	6.69	638	2.29	77	4.52	242	2.74	188	0.64	49	10.2		.32	22	15
16	3.81	496	2.01	61	6.73	1110	6.65	630	2.30	78	4.52	242	2.70	181					.42	29	16
17	3.81	496	1.97	56	6.75	1118	6.65	630	2.28	76	4.51	239	2.64	170	0.66	52	9.0		.39	26	17
18	3.84	502	1.94	53	6.79	1134	6.68	636	2.28	76	4.51	239	2.65	172					.32	17.6	18
19	3.82	498	1.94	53	6.79	1134	6.69	638	2.27	75	4.50	237	2.64	170	0.65	51	10.2		.28	19	19
20									2.24	71	4.52	242	2.68	177							20
21	3.92	498	1.93	52	6.77	1126	6.67	634	2.25	72	4.50	237	2.62	167					.50	41	21
22	3.79	492	1.91	50	6.75	1118	6.66	632	2.24	71	4.47	229	2.56	157	.59	43	7.8		.52	44	22
23	3.75	485	1.88	46	6.65	1078	6.58	616	2.28	76	4.50	237	2.58	160					.50	41	23
24	3.84	502	1.88	46	6.87	1166	6.77	644	2.31	79	4.50	237	2.58	166	.61	46	12		.52	44	24
25	4.04	550	1.93	52	6.89	1170	6.65	630	2.30	78	4.49	234	2.56	157					.54	46	25
26	4.04	550	1.95	54	6.95	1198	6.72	644	2.38	87	4.52	242	2.56	157	.58	52	16.8		.58	52	26
27	4.12	554	[illegible]						2.40	90	4.53	244	2.60	163							27
28	4.12	558	2.03	64	7.00	1218	6.78	656	2.42	92	4.54	247	2.48	160					.74	78	28
29	4.25	585	2.13	79	7.03	1230	6.79	658	2.38	87	4.47	229	2.56	157	.64	49	23.8		.76	82	29
30	4.18	570	2.17	86	6.80	1138	6.64	628	2.38	87	4.48	232	2.60	163					.80	89	30
31	4.06	546	2.18	88	6.74	1114	6.57	614	2.37	86	4.48	232	2.61	165	.71	60	19				31

T34998 #1129

2520

IWRB000[illegible]

Aug. 1986

	No 14		No 54		No 53		No 56		No 10		No 11		M.J.B.		Marley		F. Waste		S. Waste	
1	4.12	558	2.18	88	6.77	1126	6.60	620	2.41	91	4.50	237	2.63	168					0.84	97
2	4.09	552	2.21	94	6.73	1110	6.58	616	2.41	91	4.50	237	2.62	167	0.70	58		18.2	.80	89
3									2.40	90	4.50	237	2.67	175					.75	58
4	4.13	562	2.25	102	6.74	1114	6.61	622	2.40	90	4.51	239	2.66	174					.75	58
5	4.03	540	2.25	102	6.49	1014	6.46	592	2.40	81	4.52	205	2.66	168	0.74	64		21.8	.76	60
6	3.91	516	2.28	108	6.30	946	6.35	570	2.42	84	4.48	195	2.66	168					.80	66
7	3.90	536	2.30	92	6.29	978	6.32	530	2.39	80	4.47	193	2.64	165	0.72	61		15.4	.72	54
8	3.90	536	2.28	88	6.27	970	6.31	528	2.38	79	4.48	195	2.66	168				15.4	.72	54
9	3.93	540	2.28	88	6.34	998	6.36	538	2.34	75	4.47	193	2.66	168	0.70	58		14.8	.74	57
10									2.38	79	4.49	198	2.68	172						
11	3.95	544	2.26	84	6.33	994	6.38	542	2.38	79	4.49	198	2.70	175					.74	57
12	3.93	540	2.27	86	6.29	978	6.35	536	2.39	80	4.50	201	2.72	179	.66	52		11.2	.70	51
13	3.91	536	2.27	86	6.29	978	6.35	536	2.36	77	4.51	203	2.74	183					.70	51
14	4.06	568	2.27	86	6.54	1074	6.57	568	2.44	86	4.51	203	2.66	168	.67	54		10.2	.74	57
15	4.05	564	2.27	86	6.54	1074	6.50	566	2.44	86	4.51	203	2.69	174					.78	57
16	4.01	556	2.25	88	6.58	1094	6.49	564	2.48	91	4.53	208	2.76	186	.65	50		12	.78	63
17									2.47	90	4.52	205	2.72	179						
18	4.05	564	2.28	88	6.62	1110	6.56	578	2.44	86	4.51	203	2.66	168					.76	60
19	4.03	560	2.25	82	6.62	1110	6.54	574	2.45	87	4.51	203	2.64	165	.63	48		9	.72	54
20	4.00	554	2.22	78	6.59	1098	6.53	572	2.46	88	4.52	205	2.65	167					.72	54
21	4.00	554	2.20	74	6.62	1110	6.51	568	2.44	86	4.51	203	2.62	162	.60	44		8.4	.74	57
22	3.97	548	2.17	70	6.61	1106	6.51	568	2.45	87	4.52	205	2.61	160					.74	57
23	4.03	560	2.16	68	6.66	1126	6.55	576	2.50	94	4.52	208	2.60	158	.60	44		10.6	.74	57
24	4.02	562	2.1						2.51	95	4.53	208	2.58	155					.74	57
25	4.05	564	2.19	72	6.69	1138	6.57	580	2.52	96	4.54	210	2.59	157					.72	54
26	4.07	568	2.20	74	6.70	1142	6.59	584	2.56	101	4.54	210	2.55	150	.60	44		13.2	.72	54
27	4.05	564	2.22	78	6.58	1094	6.53	572	2.57	103	4.54	210	2.57	154					.72	54
28	3.98	550	2.21	76	6.50	1062	6.47	560	2.50	94	4.53	208	2.54	149	.59	43		13.2	.76	60
29	3.91	536	2.18	71	6.44	943	6.40	546	2.49	92	4.53	208	2.52	146					.78	63
30	3.95	544	2.18	71	6.44	943	6.43	552	2.48	91	4.54	210	2.56	152	.65	50		15.4	.82	70
31					T	31,758			2.48	91	4.54	210	2.56	152						
					4	1054					10541									

Aug 1986

	No. 60		No. 17		No 9		No X		No. Y		No. Z		+ or -		No 21		No 93				
1	9.00	1390	1.99	157	1.41	68	1.82	363	3.05	179	.98	90	+	109	3.09	291	3.00	35			1
2	8.98	1385	1.98	155	1.39	66	1.82	363	3.05	179	.98	90	+	109	3.21	(c) 310	3.00	35			2
3.			1.96	152	1.36	63	1.82	363	3.12	189	.98	90	+	99	3.14	297	3.00	35			3
4	8.96	1380	1.98	155	1.28	65	1.78	357	3.12	189	.98	90	+	93	3.19	307	3.07	37			4
5	8.54	1284	1.85	137	1.41	68	1.81	361	3.12	189	.98	90	+	97	3.10	289	3.13	38			5
6	8.54	1284	1.69	116	1.30	58	1.76	354	3.12	189	.99	92	+	88	3.08	283	3.10	37			6
7	8.54	1284	1.65	111	1.17	47	1.68	349	3.12	189	.98	90	+	85	2.88	248	3.08	37			7
8	8.54	1284	1.56	99	1.15	45	1.64	329	3.12	189	.97	89	+	66	2.57	195	3.06	36			8
9	8.54	1284	1.52	(c) 101	1.15	(c) 38	1.85	371	3.10	186	.96	88	+	112	2.51	186	3.07	37			9
10			1.66	114	1.16	38	1.88	378	3.10	186	.97	89	+	116	2.80	234	3.09	37			10
11	8.55	1286	1.45	86	1.17	39	1.91	385	3.05	179	.98	90	+	131	2.91	254	3.09	37			11
12	8.56	1288	1.65	112	1.18	40	1.87	375	3.05	179	.98	90	+	121	2.86	245	3.13	38			12
13	8.88	1362	1.57	102	1.38	55	1.84	368	3.05	179	.98	90	+	114	2.87	247	3.12	38			13
14	8.87	1360	1.55	99	1.21	42	1.86	373	3.05	179	.98	90	+	119	2.90	252	3.13	38			14
15	8.88	1362	1.68	116	1.25	44	1.90	383	3.05	179	.98	90	+	129	2.88	248	3.15	38			15
16	8.88	1362	1.44	85	1.25	44	1.92	387	3.05	179	.98	90	+	118	2.97	265	3.16	39			16
17	8.88	1362	1.80	132	1.25	44	1.92	387	3.05	179	.99	92	+	116	3.00	270	3.15	38			17
18	8.88	1362	1.73	128	1.26	45	1.94	392	3.05	179	.97	89	+	124	3.13	295	3.16	39			18
19	8.88	1362	1.69	118	1.21	42	1.92	387	3.05	179	.96	88	+	120	2.96	263	3.16	39			19
20	8.88	1362	1.70	119	1.22	42	1.97	(c) 352	3.05	(c) 172	.96	(c) 78	+	102	2.94	259	3.16	(c) 35			20
21	8.90	1367	1.71	120	1.23	43	1.75	303	3.05	172	.96	78	+	53	3.01	301	3.15	35			21
22	8.88	1362	1.75	125	1.26	45	1.84	324	3.00	165	.96	78	+	81	2.80	234	3.17	36			22
23	8.88	1362	1.85	138	1.24	44	1.94	348	3.00	165	.96	78	+	105	2.98	266	3.08	34			23
24	8.88	1362	1.95	152	1.31	49	1.95	349	3.00	165	.96	78	+	101	3.12	293	3.09	34			24
25	8.88	1362	1.86	140	1.32	50	1.80	315	3.00	165	.94	75	+	75	3.23	314	3.07	33			25
26	8.90	1367	1.78	129	1.30	48	1.73	298	3.00	165	.92	72	+	61	3.02	274	3.07	33			26
27	8.67	1311	1.85	138	1.32	49	1.70	291	3.00	165	.91	71	+	55	2.90	252	3.08	34			27
28	8.68	1316	1.70	119	1.25	44	1.65	279	3.00	165	.97	79	+	35	2.86	245	3.03	32			28
29	8.68	1316	1.67	115	1.24	42	1.62	272	3.00	165	.98	80	+	27	2.72	221	3.07	33			29
30	8.67	1311	1.79	130	1.19	40	1.67	284	3.00	165	.97	79	+	40	2.62	204	3.09	34			30
31	--	—	1.70	119	1.73	90	1.68	286	3.00								78[illegible]	1			31

↑ 41459 41337

253 ave.

Sept 1986

	No 14		No 54		No 53		No 56		No 10		No 11		M.T.B		Marley		F. Waste		S Waste	
1	3.99	552	2.24	.81	6.50	1002	6.48	562	2.48	91	4.55	213	2.58	155					.86	76
2	4.08	570	2.28	88	6.56	1086	6.55	576	2.55	98	4.56	215	2.60	158	.65	51	24.6		.82	70
3	4.10	574	2.32	96	6.58	1094	6.58	582	2.51	95	4.50	201	2.49	141					.62	39
4	4.06	566	2.31	94	6.62	1110	6.56	578	2.44	90	4.49	191	2.50	142	.63	48	18		.62	39
5	4.08	570	2.28	88	6.64	1118	6.59	584	2.42	87	4.49	191	2.47	138					.56	31
6	4.07	568	2.29	90	6.49	1058	6.54	574	2.41	86	4.50	193	2.48	139	.70	58	27.8		.52	26
7	4.00	554							2.39	84	4.40	178	2.40	126						
8	3.95	544	2.30	92	6.38	1014	6.43	552	2.40	85	4.40	178	2.36	120					.46	18
9	4.03	560	2.28	88	6.45	1042	6.50	566	2.41	86	4.41	174	2.40	126	.65	51	23.8		.42	15
10	4.12	578	2.33	98	6.49	1058	6.56	578	2.42	87	4.32	156	2.31	113					.26	3.3
11	4.07	568	2.33	98	6.47	1050	6.53	572	2.45	91	4.32	156	2.30	112	.67	53	23		.42	15
12	4.11	576	2.35	102	6.51	1066	6.57	580	2.47	94	4.25	143	2.30	118					.50	23
13	4.03	560	2.36	104	6.30	989	6.45	556	2.48	95	4.25	143	2.30	112	.64	49	19.6		.56	31
14									2.53	101	4.26	145	2.28	109						/
15	4.11	576	2.45	122	6.21	952	6.48	562	2.60	111	4.28	148	2.34	117					.56	31
16	4.13	580	2.50	134	6.23	958	6.49	564	2.69	124	4.27	147	2.22	107	.66	52	26.2		.58	33
17	3.59	478	2.50	134	6.35	1002	6.97	660	2.73	131	4.13	123	2.14	92					.60	36
18	3.53	464	2.51	137	6.04	901	6.78	622	2.77	138	4.12	122	2.12	89	.69	57	18.2		.64	42
19	3.44	445	2.53	142	5.80	836	6.61	588	2.77	138	4.14	125	2.26	106					.72	54
20	3.49	454	2.55	147	5.87	854	6.66	598	2.73	131	4.14	125	2.30	112	.72	61	19		.68	48
21									2.72	129	4.11	120	2.26	106						
22	3.53	462	2.58	155	5.90	862	6.69	604	2.73	131	4.11	120	2.27	108					.64	48
23	3.47	451	2.59	158	5.57	778	6.44	562	2.80	143	4.10	119	2.10	87	.68	55	18.6		.48	21
24	3.27	414	2.57	152	5.35	725	6.28	522	2.85	152	4.13	123	2.10	87					.48	21
25	3.35	428	2.55	147	5.40	737	6.34	534	2.91	164	4.13	123	2.10	87	.64	49	19		.48	21
26	3.42	441	2.54	154	5.40	737	6.38	542	2.84	158	4.13	123	2.06	82					.58	33
27	3.17	396	2.62	167	5.48	756	6.65	596	2.86	154	4.12	122	2.04	80	.65	51	23.8		.66	45
28									2.97	176	4.05	112	2.10	87					.64	42
29	3.38	434	2.70	191	5.58	780	6.74	614	3.02	186	3.96	101	2.11	88					.64	42
30	3.42	441	2.74	203	5.65	797	6.77	620	3.04	192	3.96	101	2.12	89	.69	57	18.2			
31					T	28079														
					A	9nb						4419								

Sept. 1996

	No 60		No 17		No 9		No X		No Y		No Z		+ or −		No 21		No 93		
1	8.70	1321	1.73	122	1.33	51	1.73	298	3.00	165	0.97	79	+	54	2.84	241	3.08	34	
2	8.70	1321	1.81	133	1.36	53	1.86	329	3.00	165	.97	79	+	85	3.14	297	3.00	32	
3.	8.69	1316	1.84	137	1.39	56	1.90	339	2.95	158	.94	75	+	106	3.32	332	3.01	32	
4	8.70	1321	1.95	152	1.32	50	1.86	329	2.90	152	.94	75	+	102	3.31	330	3.02	32	
5	8.70	1321	2.02	162	1.37	54	1.90	339	2.85	145	.90	70	+	124	3.45	359	3.03	32	
6	8.47	1268	2.12	176	1.38	55	1.92	344	2.85	145	.90	70	+	129	3.50	369	3.05	33	
7	-		2.03	164	1.40	57	1.77	308	2.85	145	90	70	+	93	3.58	387	3.03	32	
8	8.47	1268	1.97	155	1.31	49	1.79	312	2.85	145	.90	70	+	97	3.46	361	2.93	30	
9	8.47	1268	2.00	159	1.38	55	2.02	316	2.75	132	.90	70	+	114	3.58	344	2.94	30	
10	8.48	1270	2.02	162	1.44	61	2.02	316	2.75	132	.85	63	+	131	3.72	418	2.98	31	
11	8.46	1265	2.34	207	1.46	62	1.90	339	2.76	132	.84	41	+	166	3.91	462	2.99	31	
12	8.47	1268	2.45	224	1.53	69	1.93	346	2.68	123	.81	58	+	165	3.98	479	2.91	30	
13	8.01	1164	2.55	239	1.60	76	1.88	334	2.68	123	.81	58	+	153	4.13	518	2.89	29	
14	8.01	1164	2.45	224	1.55	71	1.64	276	2.68	123	.81	58	+	95	4.20	537	2.88	28	
15	8.01	1164	2.46	225	1.57	73	1.74	300	2.65	119	.81	58	+	123	3.96	474	2.89	29	
16	8.01	1164	2.64	253	1.64	80	1.84	324	2.58	110	81	58	+	156	4.10	510	2.70	25	
17	7.94	1146	2.56	240	1.66	82	1.86	329	2.58	110	.81	58	+	161	4.31	568	2.68	25	
18	7.43	1040	2.31	203	1.68	84	1.77	308	2.58	110	.78	55	+	143	4.22	543	2.65	24	
19	7.45	1044	2.14	179	1.55	71	1.84	324	2.62	102	.76	53	+	169	4.12	515	2.62	24	
20	7.46	1046	2.40	216	1.61	77	1.80	315	2.46	95	.76	53	+	167	4.06	500	2.66	24	
21			2.49	228	1.65	81	1.83	322	2.46	95	.76	53	+	174	4.21	540	2.68	25	
22	7.46	1046	2.42	219	1.67	83	1.64	276	2.45	94	.76	53	+	119	4.23	545	2.67	25	
23	6.91	936	2.50	231	1.67	83	1.62	272	2.45	94	.75	52	+	126	4.17	529	2.68	25	
24	6.94	942	2.38	213	1.50	66	1.60	267	2.40	88	.71	48	+	131	4.19	534	2.67	25	
25	6.94	942	2.30	201	1.49	65	1.69	288	2.35	82	.70	47	+	159	4.04	495	2.65	24	
26	6.94	942	2.48	224	1.61	77	1.60	267	2.35	82	.69	46	+	154	4.08	505	2.68	25	
27	6.92	938	2.08	171	1.60	74	1.62	272	2.35	82	.70	47	+	158	4.18	534	2.62	24	
28			2.32	204	1.55	71	1.87	332	2.28	74	.67	44	+	229	4.05	497	2.65	24	
29	6.92	938	2.49	230	1.54	70	1.75	303	2.23	80	.67	44	+	194	4.29	563	2.67	25	
30	6.92	938	2.70	263	1.70	86	1.47	236	2.18	63	.54	34	+	154	4.31	568	2.31	23	
31															13.54	4624	Avg. dry flows		

34,013 1097

Oct 1986

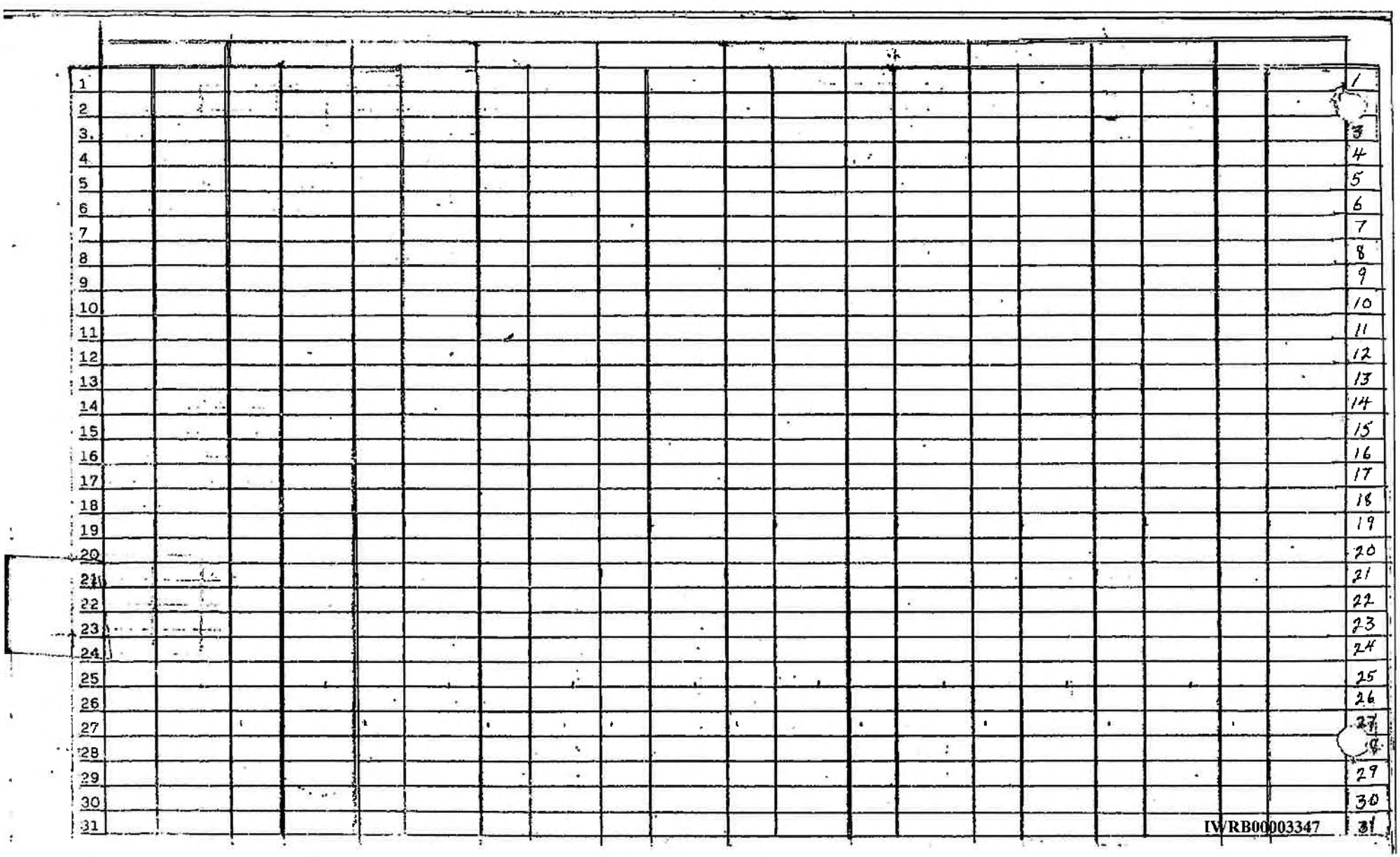
	No 57		Re chg	No 21		No 11			Magic							
1	4.25	390	236													
2	4.21	384	214													
3	4.20	383	213	4.13	518											
4	4.19	382	208													
5	4.22	386	212													
6	4.22	386	212	4.12	515											
7	4.23	387	213													
8	4.24	386	214													
9	4.25	390	212													
10	4.27	392	210													
11	2.83	211	44													
12																
13						4.20	135									
14																
15																
16	3.52	295	105													
17	2.70	196	224													
18	2.30	157	247													
19	2.33	161	243													
20	2.38	167	233			4.12	122									
21	2.41	170	268						9998	87287						
22	2.41	170	251													
23	2.44	174	243													
24	2.50	181	240	2.08	124											
25	2.50	181	240													
26	2.60	193	228													
27	2.60	193	228						9009	89767						
28	2.62	196	228													
29	2.67	202	222													
30	2.62	196	230													
31	2.63	197	224	4.02	489											
			6922				2409									

Nov. 1986

	No. 21		Magic		No 3		No 4		No 5		East		West		T.B.		No 17		#1	#2
1			9072	104,767																
2																				
3					3.22	2.02		860												
4																				
5					391	500	452	300	1.55	201	160	157	113	57	Bal.					
6			9026	96,683					1.55	201										
7	389	458			3.89	453	3.96	300	1.79	2.50	2.40	254	1.30	62	60	24				
8																				
9																				
10			901.6	91.367	—	off	—	—	—	—	—	off	—	—	—					
11																				
12																				
13	4.05	497															3.23	361		
14																			3.09 27	4.33 142
15																				
16																				
17																				
18																				
19																				
20																				
21	3.98	455																		
22																				
23																				
24																				
25																				
26																				
27																				
28																				
29																				
30																				
31																				

Dec 1986

	No 21		Magic		No 3	No 4	No 5	L		Hill 1		K 2				
1			9055	10@ 586						358	28	438	186			
2																
3.																
4																
5.																
6	3.48	365														
7																
8	3.10	287														
9																
10																
11																
12	2.68	202								3.42	19.5	4.21	152			
13																
14																
15																
16																
17																
18																
19																
20																
21																
22																
23																
24																
25																
26																
27																
28																
29																
30																
31																


IWRB00003347

Oct 1985

	Magic		No. 3		No. 4		No. 5		East		West		H.J.B		W-1	W-2	East Spill		No. 5 S	
1	885.7	58,354	3.70	379	4.36	310	1.27	132	1.85	167	1.55	74	.32	18	10	5		13		0
2	885.5	57,968	3.70	379	4.35	309	1.27	132	1.80	161	1.55	74	.26	13	10	5		18		3
3	885.2	57,391	3.70	379	4.15	277	1.43	154	1.88	171	1.57	75		0	10	5		19	.14	6
4	885.0	57,077	3.68	371	4.12	272	1.43	154	1.90	173	1.57	75		0	12	10		21	.34	23
5																				
6																				
7	884.4	55,861		off																
8						171														
9				250																
10																				
11																				
12																				
13																				
14																				
15																				
16																				
17																				
18																				
19																				
20																				
21																				
22																				
23																				
24																				
25																				
26	Total	230,796		1504		1168		572		672		298		31		25		71		32
27																				
28	Mean	46158		301		292		143		168		74		15		6		17		8
29																				
30														77						
31																				

Sept. 1985

	Magic		No 3		No 4		No 5		East		West		H.J.B.		W-1	W-2	East Sp-11		No. 49	
1																				
2	888.8	64,407	4.50	811	6.01	590	1.84	257	2.61	262	2.42	131	.29	74	10	10		9	3.97	270
3	888.1	63,028	4.50	811	6.01	590	1.85	260	2.61	262	2.41	130	.79	74	10	10		11		
4	887.4	61,655	4.50	811	6.01	590	1.83	255	2.61	262	2.41	130	.79	74	12	10		11	3.92	262
5	886.7	60,290	4.48	799	6.02	592	1.80	248	2.61	262	2.41	130	.79	74	12	10		14		
6	886.0	58,931	4.48	799	5.99	587	1.79	245	2.60	261	2.40	129	.78	73	12	10		12	3.91	261
7	885.3	57,583	4.48	799	5.98	585	1.81	250	2.59	260	2.40	129	.78	73	12	12		17		
8																				
9	884.2	55,481	4.48	799	6.00	588	1.78	243	2.62	264	2.41	130	.81	78	12	12		17	3.79	243
10	883.8	54,723	4.36	722	5.77	547	1.73	231	2.50	248	2.35	125	.70	60	25	12		23		
11	883.7	54,534	4.20	625	5.53	504	1.63	207	2.36	229	2.30	120	.65	53	30	20		28	3.44	191
12	883.2	53,593	4.20	625	5.53	504	1.57	192	2.30	222	2.24	115	.63	50	22					
13	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
14	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
15	—	—																		
16	—	—																		
17	4885.3	58,547																		
18																				
19																				
20	4886.3	59,513																		
21																				
22																				
23	887.0	60,873																		
24	887.2	61,263																		
25	891.0	60,870	3.74	396	4.00	278	1.22	116	1.80	161	1.50	78	.10	4						
26	886.7	60,290	3.78	413	4.30	306	1.39	140	1.70	149	.90	54	.44	28						
27	886.7	60,290	3.50	301	3.46	173	1.29	121	1.22	98	.90	54		0	5	10				
28	886.4	59,707	3.70	379	4.65	357	1.03	83	1.87	170	1.62	97	.53	36	5	10		14		
29																				
30	885.8	58,740	3.70	379	4.62	353	1.12	95	1.87	170	1.60	76	.50	34						
31		Total		9469		7132		2943		3274		1472		786		126		156		
		Mean		631.26		475.46		196.2		218.26		98.13		56.07		9.69		14.18		

IWRB00003349

Sept. 1985

	No 51		No. 52		No 15		B-1		Main	L.S.	Krall		Dry		No 19		No 1		No 2		
1																			3.60	82	
2	2.18	113	4.16	217	3.43 3.39	346			2	3		5		0	1.25	204					
3.	2.18	113	4.22	224	3.40	348			7	9		6		3	1.29	215			3.93	114	3
4	2.24	122	4.26	228	3.46	353			7	9		10		4	1.23	199					4
5	2.26	125	4.22	224	3.51 3.26	317			4	9		12		5	1.20	191					5
6	2.20	116	4.20	222	3.26	317			5	7		10		4	1.24	202					6
7	2.30	132	4.14	215	3.26	317			6	8		10		5	1.97	454					7
8																					8
9	2.60	202	4.30	233	3.34	331			7	10		25		9	2.47	680					9
10	2.70	238	4.16	217	3.24	313			19	18		20		11	2.55	720					10
11	2.84	305	3.94	194	2.96	264			16	15		20		11	2.34	617	3.30	12.5	5.03	402	11
12	2.76	264	3.82	182	2.94	260			15	15		16		7	2.22	561					12
13	2.70	238	3.80	180	3.72 2.64	211			12	12		15		6	2.04	484					13
14	2.44	158	3.70	171	3.56 2.62	208			—	—					1.93	437					14
15																					15
16	2.44	158	3.58	161	2.92	257			10	7		17		10	1.81	417			4.46	217	16
17	2.58	195	3.40	147	3.30 2.92	257			10	9		17		10	1.77	401			4.41	203	17
18	2.56	189	3.36	144	3.03 2.92	257			11	8		20		9	1.81	417					18
19	2.56	189	3.36	144	2.90	253			11	9		15		8	1.75	393			4.40	201	19
20	2.52	178	3.00	124	2.92	257			11	9		14		7	1.72	381					20
21	2.56	189	3.00	124	2.90	253			11	9		12		6	1.69	370					21
22																					22
23	2.56	189	2.98	122	2.90	253			11	9		14		7	1.62	343					23
24	2.64	215	2.98	122	2.90	253			10	10		14		6	1.62	343			4.17	145	24
25	2.60	202	2.98	122	2.90	253			9	10		12		8	1.57	325					25
26	2.40	150	2.94	120	2.86	246			9	10		15		6	1.55	318			4.13	136	26
27	2.60	202	2.98	122	2.92	257			9	11		14		5	1.53	311					27
28	2.48	168	2.94	120	2.90	253			9	12		14		5	1.53	311					28
29																					29
30	2.80	284	2.70	111	2.96	264									1.52	308					30
31																					31

IWRB00003350

Aug. 1985

	No 14		No. 54		No 53		No 56		No 70		No 11		M.J.B.		Marley		F Waste		S Waste	
1	4.63	564	2.23	100	6.77	1104	6.72	600	2.40	89	4.69	172	2.39	97	.64	64		14.8	.46	39
2	3.93	523	2.03	65	6.53	1012	6.50	552	2.34	84	4.70	176	2.33	81					.44	36
3	3.69	496	2.04	69	6.33	944	6.34	532	2.34	81	4.68	172	2.29	71	.74	81		13.2	.44	36
4									2.33	80	4.70	176	2.30	74						
5	3.65	488	1.98	59	6.30	934	6.31	526	2.34	81	4.69	169	2.20	108					.38	28
6	3.60	479	1.93	53	6.27	924	6.30	525	2.32	79	4.63	162	2.25	110	.70	74		1.8	.38	28
7	3.64	468	1.82	41	6.22	907	6.25	516	2.30	77	4.70	176	2.20	108					.36	26
8	3.49	458	1.75	34	6.19	898	6.20	507	2.29	76	4.70	176	2.30	113	.65	66		2.6	.44	36
9	3.56	471	1.84	43	6.32	955	6.36	536	2.23	69	4.73	183	2.38	120					.48	42
10	3.60	479	1.80	39	6.47	992	6.44	550	2.23	69	4.72	180	2.37	119	.60	58		7.4	.48	42
11									2.22	68	4.74	185	2.38	120						
12	3.60	479	1.82	41	6.50	1002	6.45	552	2.23	69	4.72	180	2.36	118					.48	42
13	3.62	483	1.85	44	6.46	989	6.44	550	2.22	68	4.70	196	2.34	117	.56	52		9.6	.50	45
14	3.60	479	1.78	37	6.45	985	6.40	543	2.21	67	4.84	208	2.64	153					.34	23
15	3.62	483	1.88	47	6.42	975	6.40	543	2.21	67	4.75	187	2.44	127	.44	36		17.6	.40	31
16	3.64	487	1.77	36	6.57	1028	6.49	559	2.15	62	4.80	198	2.60	147					.40	31
17	3.70	498	1.89	48	6.64	1054	6.55	570	2.16	63	4.80	198	2.60	147	.43	35		17.6	.48	42
18									2.17	64	4.80	198	2.61	149						
19	3.77	512	1.90	50	6.77	1104	6.66	589	2.16	63	4.78	193	2.58	144					.48	42
20	3.70	498	1.80	39	6.66	1062	6.58	575	2.21	67	4.79	196	2.60	147	.38	29		19.6	.48	42
21	3.70	498	1.83	42	6.64	1054	6.58	575	2.19	65	4.79	196	2.60	147					.48	42
22	3.67	492	1.76	34	6.64	1054	6.55	570	2.19	65	4.78	193	2.60	147	.34	25		12.9	.48	42
23	3.67	492	1.77	36	6.62	1047	6.55	570	2.18	64	4.78	193	2.59	146					.48	42
24	3.70	498	1.76	34	6.66	1062	6.59	577	2.18	64	4.78	193	2.60	147	.32	22		12.0	.50	45
25									2.11	58	4.77	191	2.62	150						
26	3.68	494	1.74	33	6.68	1069	6.58	575	2.10	57	4.74	185	2.58	144					.50	45
27	3.65	488	1.68	28	6.68	1069	6.56	571	2.15	62	4.77	191	2.62	150	.40	32		8.4	.48	42
28	3.69	496	1.74	33	6.69	1073	6.58	575	2.13	60	4.78	193	2.61	149					.44	36
29	3.69	496	1.74	33	6.69	1073	6.59	577	2.16	63	4.78	193	2.61	149	.38	29		9.6	.42	33
30	3.74	506	1.87	46	6.74	1092	6.64	586	2.16	63	4.78	193	2.60	147					.40	31
31	3.76	510	1.93	53	6.75	1096	6.65	588	2.17	64	4.77	191	2.57	143	.52	47		10.2	[illegible]	[illegible]

T 27.585 Ave 1021

5766

Aug. 1985

	No 60		No 17		No 9		No X		No Y		No Z		+ or −		No 21		No 93		
1	9.14	1510	2.01	145	1.51	96	4.34	309	3.20	172	1.02	86	+	51	2.88	250	2.94	35	
2	8.66	1399	2.03	148	1.41	66	4.38	314	3.20	172	1.00	83	+	59	3.08	287	2.88	34	
3	8.67	1401	1.80	118	1.20	47	4.29	300	3.20	172	1.00	93	+	45	2.93	259	2.85	33	3
4	8.67	1401	1.76	111	1.14	43	4.27	300	3.20	172	1.00	83	+	45	2.77	231	2.84	33	4
5	8.68	1403	1.65	98	1.10	40	4.24	296	3.20	172	1.02	86	+	38	2.40	177	2.99	36	
6	8.64	1394	1.56	86	1.14	43	4.18	288	3.20	172	1.01	85	+	31	2.32	159	2.98	36	
7	8.66	1399	1.44	72	0.99	32	4.11	279	3.20	172	1.00	83	+	24	2.16	136	3.02	37	
8	8.84	1440	1.35	61	.86	25	3.98	262	3.20	172	1.00	83	+	7	1.93	107	3.00	37	
9	8.89	1452	1.18	42	1.07	38	4.02	267	3.20	172	1.00	83	+	12	1.66	75	3.08	39	
10	8.85	1442	1.34	60	1.15	44	3.98	262	3.20	172	1.00	83	+	7	1.68	77	3.10	39	
11	8.85	1442	1.37	63	1.05	37	4.01	266	3.20	172	1.02	86	+	8	1.80	91	3.10	39	
12	8.86	1445	1.27	51	1.10	40	4.09	276	3.20	172	1.03	88	+	16	1.93	107	3.08	39	
13	8.86	1445	1.29	55	1.27	53	4.14	283	3.19	170	1.03	88	+	25	2.08	125	3.09	39	
14	8.81	1433	1.27	51	1.12	42	4.14	283	3.19	170	1.03	88	+	25	2.06	123	3.08	39	
15	8.87	1447	1.15	39	.90	27	4.12	280	3.19	170	1.02	86	+	22	1.91	104	3.04	37	
16	9.11	1502	1.10	34	.90	27	4.06	272	3.19	170	1.02	86	+	16	1.62	76	3.09	39	
17	9.12	1505	1.18	42	1.09	40	4.04	270	3.19	170	1.03	88	+	12	1.56	54	3.10	39	
18	9.11	1502	1.28	53	1.15	44	4.04	270	3.23	176	1.03	88	+	2	1.62	70	3.10	39	
19	9.11	1502	1.22	46	1.23	49	4.08	275	3.23	176	1.05	91	+	8	1.71	80	3.08	39	
20	9.06	1495	1.18	42	1.20	47	4.08	275	3.23	176	1.05	91	+	8	1.75	85	3.08	39	
21	9.05	1486	1.17	41	1.10	40"	4.06	272	3.23	176	1.05	91	+	5	1.77	87	3.08	39	
22	9.12	1505	1.20	44	1.07	38	4.04	270	3.23	176	1.04	89	+	5	1.73	83	3.09	39	
23	9.11	1502	1.19	43	1.00	33	4.10	274	3.25	179	1.03	88	+	11	1.64	72	3.08	39	
24	9.11	1426	1.22	46	1.10	40	4.11	279	3.25	179	1.03	88	+	12	1.67	76	3.09	39	
25	9.11	1426	1.23	47	1.18	46	4.16	286	3.25	179	1.02	86	+	21	1.80	90	3.08	39	
26	9.12	1429	1.20	44	1.15	44	4.17	287	3.25	179	1.02	86	+	22	1.98	113	3.08	39	
27	9.14	1433	1.14	38	1.12	42	4.21	292	3.24	178	1.02	86	+	28	2.03	119	3.08	39	
28	9.14	1433	1.10	34	1.07	38	4.07	274	3.24	178	1.02	86	+	10	1.92	105	3.08	39	
29	9.14	1433	1.14	38	1.03	35	4.02	267	3.24	178	1.06	92	−	3	1.85	97	3.05	38	
30	9.14	1433	1.19	40	1.05	37	4.05	271	3.24	178	1.08	95	−	2	1.59	63	3.12	40	
31	9.16	1438	1.27	51	1.14	43	3.98	262	3.24	178	1.10	98	−	10	1.62	70	3.13	40	31

T445 91449

July 1985

	No 14		No 54		No 53		No 56		No 10		No 11		M.T.B.		Marley		F. waste		S Waste	
1	3.93	520	2.13	74	6.61	1050	6.59	604	2.27	74	4.69	244	2.76	152					.50	43
2	3.95	523	2.22	90	6.61	1050	6.63	611	2.28	75	4.72	252	2.74	146	0.43	35		12.6	.54	49
3.	3.84	502	2.09	68	6.56	1031	6.54	595	2.26	72	4.73	255	2.74	146					.52	[c]46
4	3.81	496	1.95	51	6.54	1024	6.50	588	2.26	72	4.74	258	2.72	140	0.45	38		11.2	.56	54
5	3.25	485	1.88	43	6.51	1012	6.45	579	2.20	66	4.73	255	2.70	134					.56	54
6	3.91	477	1.85	40	6.47	999	6.42	573	2.19	65	4.73	255	2.69	132	0.46	40		5.6	.56	54
7									2.17	65	4.76	263	2.70	134						
8	3.79	492	1.87	42	6.66	1069	6.53	593	2.16	63	4.75	261	2.68	128					.54	49
9	3.75	485	1.80	35	6.60	1047	6.47	582	2.20	66	4.76	263	2.62	113	0.49	43		6.0	.54	49
10	3.74	483	1.80	35	6.56	1081	6.47	582	2.22	68	4.77	266	2.60	107					.54	49
11	3.70	475	1.67	25	6.59	1043	6.45	579	2.25	71	4.85	288	2.70	134	.54	49		2.6	.56	26
12	3.79	492	1.87	42	6.62	1054	6.50	588	2.26	72	4.84	285	2.70	134	[d]				.46	39
13	3.92	498	1.96	52	6.65	1066	6.55	597	2.34	81	4.87	293	2.72	140	.52	47		12.6	.48	42
14									2.43	98	4.90	302	2.77	137						
15	3.85	504	1.93	48	6.68	1077	6.58	602	2.36	84	4.89	[d] 299	2.70	[d] 134					.46	39
16	3.83	500	1.92	47	6.68	1077	6.57	600	2.33	[d] 79	4.89	[d] 213	2.68	[d] 149	0.42	25		12.6	.40	31
17	3.83	500	1.91	46	6.71	1088	6.57	600	2.30	76	4.90	215	2.70	155					.40	31
18	3.84	502	1.92	47	6.70	1085	6.57	600	2.27	72	4.90	215	2.70	155	0.44	37		15.4	.37	27
19	3.84	502	1.92	47	6.72	1092	6.58	602	2.23	68	4.91	217	2.69	149					.32	21
20	3.86	506	1.93	48	6.75	1104	6.59	604	2.18	63	4.84	201	2.70	155	0.46	40		14.8	.32	21
21									2.19	64	4.86	205	2.69	149						
22	3.97	528	2.20	86	6.82	1137	6.72	627	2.20	65	4.88	210	2.76	173					.24	13
23	4.03	540	2.20	86	6.83	1135	6.74	631	2.20	65	4.88	210	2.72	161	.65	66		15.4	.28	16
24	4.11	556	2.30	106	6.86	1147	6.80	642	2.30	76	4.90	215	2.72	161					.30	19
25	4.10	554	2.25	96	6.91	1166	6.82	646	2.27	72	4.78	187	2.52	105	.54	55		20.4	.48	42
26	3.96	526	2.10	70	6.73	1096	6.66	616	2.28	73	4.80	191	2.51	102					.50	45
27	3.89	502	2.04	62	6.58	1039	6.53	593	2.27	72	4.73	176	2.50	99	.56	52		18.2	.6	
28									2.23	68	4.74	178	2.52	105					.50	45
29	3.84	502	2.04	62	6.56	1024	6.53	593	2.19	64	4.73	176	2.51	102					.54	51
30	3.85	504	2.07	[c] 71	6.57	1035	6.55	597	2.28	73	4.76	183	2.53	107	.68	70		15.4	.54	51
31	4.02	[c] 652	2.36	[c] 127	6.73	[d] 1088	6.73	[d] 602	2.41	[c] 90	4.80	[c] 198	2.60	[c] 155						

T29899A 1167

T229

WRB00003353

July 1985

	No 60		No 17		No 9		No X		No Y		No Z		Dir -		No 21		No 93		
1	9.12	1505	1.70	111	1.43	105	4.55	337	3.42	210	1.09	96	+	46	2.88	250	3.10	40	
2	9.12	1505	1.55	c 84	1.29	c 64	4.48	c 322	3.42	c 200	1.11	c 98	+	39	2.76	209	3.12	c 44	
3	9.10	1500	1.58	88	1.30	65	4.39	310	3.42	200	1.10	97	+	28	2.60	202	3.13	44	
4	9.09	1498	1.48	75	1.31	66	4.28	296	3.42	200	1.11	98	+	13	2.41	172	3.11	44	
5	9.10	1500	1.34	57	1.24	60	4.40	312	3.42	200	1.12	100	+	27	2.01	116	3.08	43	
6	9.13	1507	1.30	54	1.18	54	4.33	302	3.42	200	1.14	102	+	15	2.25	149	3.13	44	
7			1.37	62	1.05	44	4.28	296	3.45	205	1.14	102	+	4	1.87	99	3.14	44	
8	9.38	1567	1.35	20	1.15	52	4.30	298	3.45	205	1.14	102	+	6	1.84	96	3.12	44	
9	9.38	1567	1.34	57	1.16	52	4.24	291	3.45	205	1.14	102	−	16	1.86	98	3.13	44	
10	9.37	1565	1.24	47	1.13	50	4.24	291	3.45	205	1.15	104	−	18	1.74	84	3.10	41	
11	9.38	1567	1.27	50	1.22	58	4.28	286	3.44	203	1.12	100	−	17	1.64	72	3.14	44	
12	9.39	1570	1.18	41	1.05	44	4.14	278	3.45	205	1.14	102	−	27	1.68	78	3.12	44	
13	9.38	1567	1.29	53	1.20	56	4.19	284	3.45	205	1.12	100	-	21	1.51	58	3.14	44	
14			1.40	66	1.23	59	4.07	269	3.45	205	1.10	97	−	33	1.58	66	3.17	45	
15	9.44	1582	1.36	61	1.21	57	4.24	291	3.40	197	1.12	100	−	6	1.60	68	3.12	44	
16	9.42	1577	1.34	57	1.25	61	4.25	292	3.40	197	1.13	101	−	6	1.71	80	3.12	44	
17	9.42	1577	1.30	54	1.24	60	4.24	291	3.38	194	1.15	104	−	7	1.80	91	3.12	44	
18	9.44	1582	1.40	66	1.19	55	4.25	292	3.30	183	1.14	102	+	5	1.77	87	3.14	44	
19	9.44	1582	1.44	71	1.19	55	4.19	284	3.30	183	1.14	102	−	1	1.84	96	3.14	44	
20	9.43	1579	1.51	79	1.23	59	4.25	292	3.28	180	1.10	97	+	15	1.96	100	3.16	45	
21	·		1.61	91	1.19	55	4.28	296	3.28	180	1.07	92	+	24	2.14	138	3.19	46	
22	9.44	1582	1.53	81	1.22	58	4.47	321	3.24	175	1.08	94	+	52	2.25	149	3.14	44	
23	9.45	1584	1.70	103	1.30	65	4.54	330	3.24	175	1.08	94	+	61	2.62	205	3.17	45	
24	9.46	1586	1.84	121	1.35	70	4.76	373	3.24	175	1.06	90	+	8	2.76	229	3.20	46	
25	9.48	1591	1.95	136	1.45	80	4.35	305	3.24	175	1.07	92	+	36	2.96	265	3.15	43	
26	9.06	1491	1.89	128	1.49	87	4.38	309	3.24	175	1.06	90	+	44	2.83	241	3.14	44	
27	9.08	1495	1.76	111	1.35	70	4.44	317	3.20	169	1.01	83	+	65	2.87	248	3.12	44	
28			1.76	111	1.22	58	4.30	304	3.20	169	1.01	83	+	52	2.82	240	3.12	44	
29	9.08	1495	1.69	102	1.25	61	4.19	c 289	3.10	c 172	1.01	c 85	+	32	2.62	205	3.10	43	
30	9.09	1498	1.70	c 104	1.30	c 56	4.19	289	3.20	172	1.02	86	+	31	2.57	197	3.18	c 41	
31	9.10	1500	1.98	141	1.39	64	4.34	309	3.20	172	1.03	88	+	49	2.52	189	3.07	38	

Tu 6315 A 1494

Phone # 986-2760

June 1985

	No. 51		No. 52		No. 15		B-L Main		Main L.S.		Krall		Dry		No. 19		No. 1		No. 2	
1	2.40	127	4.16	223	3.21	316									3.00	916				
2																	4.42	136	5.27	426
3	2.60	165	4.24	232	3.22	321	1.48	51	3	4		8		7	2.77	793				
4	2.58	135	4.16	223	3.28	344	1.50	56	5	5		9		8	2.88	851				
5	2.40	127	4.06	214	3.25	339			6	5		6		7	2.85	835				
6	2.34	117	4.18	227	3.22	333			6	6		6		6	2.84	830	4.17	90	5.01	331
7	2.30	111	4.16	225	3.22	333			5	6		7		6	2.79	803				
8	2.38	124	4.20	229	3.21	331			6	7		6		5	3.42	1168				
9									4	7		6		5						
10	2.44	133	4.22	232	3.23	335			5	8		8		9	3.08	961				
11	2.44	133	4.22	232	3.24	337			6	8		7		8	2.97	933	3.98	64	5.24	499
12	2.46	137	4.23	233	3.18	326			6	8		6		7	2.96	927				
13	2.56	156	4.22	232	3.17	324			5	8		7		7	2.96	927				
14	2.52	147	4.20	229	3.16	322			4	8		8		7	2.94	916				
15	2.48	130	4.18	227	3.16	322			1	4		8		6	2.88	883				
16																				
17	2.40	127	4.14	224	3.09	310	1.44	58	3	6					2.85	867				
18	2.40	127	4.16	225	3.17	324			3	7		12		9	2.90	840	3.62	27	4.80	331
19	2.34	117	4.14	224	3.17	324			3	5		10		6	2.71	793				
20	2.32	114	4.12	221	3.26	340			2	3		10		7	2.70	788				
21	2.26	105	4.10	218	3.10	312	1.46		4	4 2		10		6	2.60	736				
22	2.20	97	4.08	216	3.28	344			4	5		10		7	2.43	651	3.43	17	4.60	266
23									2	3		6		5						
24	2.02	78	4.24	234	3.28	344			1	0		8		6	2.25	566				
25	2.10	86	4.18	227	3.34	355			4	3		6		4	2.17	530	3.40	16	4.20	158
26	2.30	111	4.28	239	3.37	360			4	4		6		6	2.12	508				
27	2.46	137	4.16	225	3.32	351			12	2		4		8	2.05	479	3.37	14.5	4.17	151
28	2.46	139	4.18	227	3.34	355			3	3		2		5	2.02	466				
29	2.42	130	4.16	225	3.30	348									1.98	450				
30																				
31																				

May 1985

	No. 60		No. 17		No. 9		No. X		No. Y		No. Z		+ or -	No. 21		No. 93		
1	7.20	1092	1.83	128	2.20	206	3.60	2.15	2.64	141	.75	48		+42	5.22	880	2.52	27
2	7.16	1084	2.02	154	2.25	216	3.32	181	2.64	141	.77	50		+40	3.76	430	2.56	28
3	7.16	1084	1.38	71	2.00	1.66	3.40	191	2.71	150	.78	51		+5	4.06	5.02	2.43	26
4	7.66	1192	1.15	44	1.83	137	3.86	247	2.80	162	.93	68		+31	3.26	322	2.80	93
5			2.06	159	2.83	390	4.04	271	2.80	162	.83	56	+	47	3.04	280	3.20	44
6	7.64	1188	2.23	183	3.25	587	4.01	265	2.86	170	.84	57	+	53	5.00	797	3.00	35
7	7.62	1183	1.88	134	3.00	462	3.93	254	2.90	176	.90	65	+	28	5.68	1073	2.95	37
8	8.18	1311	1.44	78	2.57	305	3.54	207	2.96	185	.94	69	-	32	5.10	834	3.10	41
9	8.64	1417	1.19	48	2.31	230	3.19	166	2.98	187	.97	73	-	79	4.02	492	3.13	42
10	8.44	1325	1.72	101	2.17	200	3.40	191	3.06	199	.96	72	-	107	3.55	382	3.34	48
11	864	1315	1.86	132	2.07	180	4.25	296	3.06	199	.91	66	+	46	3.48	367	3.30	47
12			2.06	159	2.10	186	4.08	274	3.06	199	.88	62	+	28	4.00	497	3.28	51
13	8.60	1309	2.03	155	2.05	176	4.28	300	3.05	197	.88	62	+	56	4.24	551	3.29	51
14	8.60	1309	2.03	155	2.02	166	4.27	298	3.00	190	.90	65	+	58	4.20	540	3.29	51
15	8.60	1309	2.00	151	1.57	99	4.27	298	3.00	190	.98	75	+	48	4.02	492	3.26	46
16	8.60	1309	1.86	132	1.65	111	4.21	291	3.00	190	1.00	78	+	38	3.38	346	3.20	44
17	8.60	1309	1.98	148	1.70	118	4.33	306	2.95	183	.99	76	+	62	3.48	368	3.22	45
18	8.60	1309	2.00	151	1.65	111	4.31	304	2.92	179	.99	76	+	44	3.63	400	3.22	45
19	8.60	1309	1.95	144	1.62	106	4.24	295	2.92	179	.99	76	+	55	3.50	371	3.19	44
20	8.60	1309	1.83	128	1.57	99	4.20	289	2.97	186	1.05	85	+	33	3.39	348	3.19	44
21	8.60	1309	1.81	125	1.61	105	4.27	298	3.00	190	1.03	82	+	41	3.22	314	3.18	44
22	8.60	1309	1.72	114	1.55	97	4.23	293	3.03	194	1.03	82	+	32	3.36	342	3.08	41
23	8.60	1309	1.64	103	1.49	90	4.24	295	3.03	194	1.03	82	+	32	3.10	291	3.10	41
24	8.60	1309	1.43	77	1.39	79	4.22	292	3.03	194	1.03	82	+	16	2.94	261	3.04	40
25	9.04 9.06	1415	1.18	47	1.36	76	4.13	280	3.10	205	1.07	94	-	19	2.71	221	3.06	40
26			1.30	61	1.53	94	4.47	324	3.12	208	1.07	94	+	37	2.46	180	3.10	41
27	9.10	1424	1.23	53	1.62	106	4.58	343	3.10	205	1.04	83	+	70	2.98	168	3.09	41
28	9.10	1424	1.25	55	1.70	118	4.52	331	3.10	205	1.07	94	+	32	3.25	320	3.15	43
29	9.10	1424	1.34	66	2.33	235	4.39	308	3.16	214	1.06	86	+	23	3.34	328	3.22	45
30	9.10	1424	1.55	92	2.07	180	4.37	312	3.24	227	1.07	94	+	18	4.23	543	3.22	45
31	9.08	1419	1.80	124	1.99	164	4.55	337	3.18	218	1.06	86	+	52	4.01	489	3.27	46

WRB00003356

May 1985

	Magic		No. 3		No. 4		No. 5		East		West		H.J.B.		W-1	W-2	East Spill		No. 48	
1	9346	189.936	3.90	491	2.06	20	2.35	510												
2	9349	191.109	3.80	444	3.21	© 127	1.91	330	1.09	91	1.26	61	.16	7					2.72	146
3.	9352	192.292	3.80	444	3.54	176	1.75	282	.005	87	1.38	62	.72	12	5	7	0			
4	935.4	193,084	4.56	880	4.22	278	2.52	611	1.62	155	1.70	78	.79	74	8	12	15		2.86	151
5																				
6	935.3	192,688	5.52	1570	4.24	282	3.37	1192	1.64	158	1.70	78	.79	74	12	12	17		2.94	162
7	935.2	192,292	5.36	1450	4.22	278	3.32	1152	1.81	178	1.90	88	.60	46	12	10	7			
8	935.1	191,896	5.12	1270	4.53	333	3.01	928	1.92	191	1.94	90	.85	84	10	12	6		2.93	160
9	935.1	191,896	5.04	1210	4.79	370	2.92	862	2.12	216	2.02	94	.89	90	10	10	0		3.22	
10	935.1	191,896	4.98	1170	5.18	434	2.68	720	2.25	230	2.23	109	1.10	132	15	15	12		3.25	204
11	935.1	191,896	5.00	1190	5.19	436	2.67	713	2.25	230	2.23	109	1.14	141	25	15	17			
12																				
13	934.8	190,718	5.06	1230	5.20	437	2.66	706	2.24	231	2.22	108	1.12	136	25	15	14		3.34	218
14	934.8	190,718	4.42	793	5.19	436	1.88	320	2.24	231	2.22	108	1.12	136	20	20	10			
15	934.8	190,718	4.42	793	5.20	437	1.83	299	2.24	231	2.22	108	1.12	136	15	20	15		3.24	203
16	934.9	191,109	4.42	793	5.20	437	1.86	314	2.24	231	2.22	108	1.12	136	10	20	9			
17	934.9	191,109	4.44	805	5.22	441	1.88	320	2.35	246	2.24	110	1.06	124	10	19	6		3.18	© 223
18	935.0	191.500	4.44	805	5.20	© 504	1.85	© 255	2.36	© 230	2.25	© 116.	1.06	124	10	19	11			
19																				
20	935.0	191,500	4.44	805	5.20	504	1.86	257	2.38	232	2.27	118	1.08	128	10	14	10		2.37	261
21	935.0	191,500	4.44	805	5.21	506	1.97	287	2.38	232	2.26	117	1.08	128	10	14	7			
22	935.1	191,896	4.44	8.05	5.21	506	1.89	265	2.44	240	2.26	117	1.01	114	10	.14	5		3.20	235
23	935.2	192,292	4.46	817	5.21	506	1.90	268	2.44	240	2.26	117	1.01	114	10	.14	8			
24	935.2	192,292	4.50	842	5.20	504	1.95	282	2.53	252	2.38	128	0.90	93	7	14	8		3.37	261
25	935.3	192,688	4.52	855	5.19	502	2.08	3.20	2.52	251	2.37	127	.90	93	8	15	12			
26																				
27	935.4	193,084	5.00	1190	5.20	504	2.63	555	2.56	256	2.44	133	.81	78	8	15	9		3.54	288
28	935.3	192,688	5.54	1590	5.28	578	3.21	928	2.62	264	2.47	136	.85	84	—	—	12			
29	935.2	192,292	5.20	1330	5.22	507	2.85	699	2.72	277	2.50	139	.79	74	12	14	6		4.33	436
30	935.0	191,500	5.10	1260	5.30	522	2.67	589	2.57	257	2.40	129	.98	108	13	14	20			
31	935.0	191,500	4.54	867	5.30	522	1.92	273	2.69	273	2.47	136	.86	.86	14	14	16			
			4.69	+100	5.55	245	2.07	1079.59	—		—		1.10	136.391						8664

IWRB00003357

April 1985

	No. 60		No. 17		No. 9		No. X		No. Y		No. Z		+ or −		No. 21		No. 93	
1																		
2																		
3																		
4																		
5																		
6																		
7																		
8																		
9																		
10																		
11																		
12																		
13																		
14																		
15	3.17	372																
16	5.16	689																
17	5.13	683	3.45	376	4.82		2.73	96										
18	6.49	948	3.44	375	4.55		4.02	244										
19	6.48	946	3.29	349	3.65	712	4.00	241										
20																		
21																		
22	6.55	960	2.98	298	3.57	831	4.91	373										
23	6.56	962	2.87	280	4.43	1512	4.60	318	2.25	77	47	29					2.00	18
24	6.53	956	2.33	197	3.68	966	4.38	289	2.37	90	47	29		+155	7.02	2019	1.96	17
25	6.58	966	2.72	256	3.71	987	4.03	267	2.36	105	52	29		+148	6.68	1707	1.99	17
26	6.52	954	2.74	259	3.35	646	3.92	241	2.41	111	55	31		+ 84	6.45	1527	2.20	21
27	6.54	958	2.69	251	3.32	628	3.78	224	2.41	111	58	34		+ 94	6.18	1377	2.18	21
28			2.36	201	3.14	532	4.18	287	2.46	118	62	36		+148	6.05	1290		
29	6.56	962	2.20	179	3.10	512	4.39	314	2.52	126	62	36		+167	5.84	1159	2.55	28
30	6.60	970	2.06	159	2.96	442	3.90	251	2.62	136	71	44		+ 86	5.76	1117	2.53	28
31	7.19	1070																

F 12301 A-4.9.5

April 1985

	Magic		No. 3		No. 4		No. 5		East		West		H.J.B.		W-1	W-2	East Spill		No 48		
1																					1
2																					2
3																					3
4																					4
5																					5
6																					6
7																					7
8																					8
9																					9
10																					10
11																					11
12																					12
13																					13
14																					14
15	932.4	181,496	6.29	2250																	15
16	932.9	183,376																			16
17	933.3	184,906	6.30	2220																	17
18	933.6	186,058	5.86	1900																	18
19	934.1	187,986	4.96	1150																	19
20	934.7	190,327																			20
21	935.0	191,500																			21
22	935.2	192,292	6.16	2040																	22
23	935.0	191,500	6.04	2030	2.18	68	4.22	1696													23
24	934.9	191,109	5.40	1500	2.45	94	3.68	1264											2.09	94	24
25	934.8	190,718	5.40	1510	2.37	86	3.64	1238											2.06	165	25
26	934.7	190,327	4.92	1160	2.33	82	3.32	984											2.05	65	26
27	934.7	190,327	4.92	1160	2.38	87	3.33	1160													27
28																					28
29	934.5	189,536	4.92	1130	2.37	86	3.32	1152													29
30	934.4	189,136	4.92	1130	2.37	86	3.31	1148											2.04	63	30
31																					31

1987

To

1988

APRIL 1987

	No 14		No. 54		No 53		No 56		No 10		No 11		Mo. J.B.		Marley		E. Waste		S. Waste	
1																				
2																				
3																				
4																				
5																				
6				180																
7																				
8			2.20	94	225	265	4.68	279												
9			2.20	100	3.69	451	4.71	283												
10	2.54	374	2.21	102	3.82	467	4.81	297												
11	2.54	374																		
12									2.68	145	2.95	49								
13	2.56	378	2.19	98	3.85	528	4.81	295	2.68	145	2.95	49								
14	2.57	380	2.21	102	3.88	533	4.83	297	2.67	143	2.95	49					9.6			
15	2.77	416	2.18	96	4.51	654	5.19	350	2.64	138	2.95	49								
16	2.89	437	1.89	52	4.66	687	5.25	360	2.62	134	3.52	100					35.8			
17	2.84	428	1.61	21	4.39	740	5.40	386	2.57	126	3.41	88								
18	2.95	449	1.66	26	5.95	1003	6.37	562	2.50	115	3.20	68					0.8			
19									2.50	115	3.20	68								
20	2.91	441	1.72	32	585	977	6.29	546	2.52	118	3.20	68								
21	2.85	430	1.62	22	5.83	972	6.27	542	2.52	118	3.20	68					6			
22	2.79	418	1.63	23	5.74	949	6.20	529	2.48	112	3.20	68								
23	3.18	494	2.33	127	5.70	899	6.32	552	2.43	105	3.80	133	2.72	163			25.4	.58	0	
24	3.13	483	2.24	108	5.61	887	6.23	535	2.36	96	3.90	133	2.68	157				.68	74.7	
25	2.93	445	1.85	48	5.48	853	6.03	497	2.23	78	3.73	155[c]	2.14	84[c]			2.7	.60	61.5	
26									2.15	69	3.76	159	2.48	131						
27	2.95	449	1.80	42	5.81	936	6.26	541	2.14	68	3.76	159	2.48	131			.5	.44	37.7	27
28	2.96	451	1.89	52	5.73	915	6.20	529	2.17	71	3.88	176	2.58	147	.020	11	7.4			28
29	2.98	454	1.87	50	5.73	915	6.21	531	2.16	70	3.88	176	2.58	147			4.2	.64	1.9	
30	3.03	464	2.00	66	5.74	917	6.25	539	2.15	69	3.90	179	2.72	170	.060	52	5.6	.49	45	
31					T A	17803 742														

APRIL 1987

	No 60		No 17		No 9		No X		No Y		No Z		+ or −		No 21		No 93		
1			1.40	101															
2			1.35	94															
3			1.35	94			1.15	179											
4			1.35	94			1.09	166											
5			1.24	80			1.10	168											
6			1.19	74			1.12	173											
7	3.23	380	1.13	⊙ 67			1.07	161											
8	5.15	647	0.90	41			1.43	247											
9	5.28	710	1.54	119			1.91	383											
10	5.27	710	1.95	175	1.20	54	1.15	179											
11			1.90	168	1.18	48	1.20	191											
12			1.90	168	1.17	46	1.48	260											
13	5.28	710	1.91	169	1.20	⊙ 51	1.48	260	2.30	82	.42	26	+	167	3.45	⊙ 374			
14	5.82	814	2.31	226	1.34	⊙ 64	.56	68	2.36	⊙ 64	.48	29	+	29	3.46	376			
15	6.16	882	1.85	161	1.29	57	.76	90	2.42	71	.54	34		0	2.88	259			
16	6.42	934	2.36	234	1.50	91	.55	66	2.50	80	.58	36	−	35	2.79	242	2.17	21	
17	7.34	1122	2.06	190	1.26	53	.81	110	2.58	89	.63	41	−	05	2.96	274	2.11	20	
18	7.46	1148	1.90	168	1.44	80	.70	90	2.66	99	.68	45	−	39	2.76	236	2.06	19	
19	7.45	1146	2.07	192	1.30	58	.82	112	2.66	99	.68	45	−	17	2.33	161	2.12	20	
20	7.47	1150	2.06	190	1.35	66	.85	137	2.68	92	.68	45	−	7	2.68	223	2.11	20	
21	7.46	1148	2.05	189	1.08	33	.99	145	2.60	92	.74	50	+	18	2.75	234	2.11	20	
22	7.46	1148	1.38	98	1.22	48	1.19	189	2.60	92	.77	53	+	32	2.38	162	1.93	16	
23	7.48	1153	1.12	66	1.16	40	1.25	202	2.60	92	.80	56	+	69	2.27	⊙ 150	2.14	20	
24	7.45	1196	1.64	132	1.38	70	1.00	147	2.66	99	.86	64	−	1	2.21	141	2.16	23	
25	7.45	1146	1.21	77	1.34	64	1.10	168	2.70	104	.88	67	+	12	2.40	170	2.66	31	
26			1.22	24	1.23	49	1.10	168	2.70	104	.90	70	+	9	2.08	122	2.52	28	
27	7.89	1245	1.16	11	1.29	57	1.14	177	2.70	104	.90	70	+	18	1.30	27	2.68	31	
28	7.89	1245	1.17	114	1.42	77	1.22	196	2.70	104	.94	76	+	31	1.72	70	2.86	36	
29	7.90	1247	1.40	8.	1.32	61	1.62	298	2.75	110	.94	76	+	127	2.00	106	2.78	34	
30	7.91	1249	1.37	74	1.19	44	1.85	347	2.75	110	.96	79	+	173	2.41	166	2.75	33	
31		24822 965																	

May 1787

	No 14		No 54		No 53		No 56		No 10		No 11		Mc J.B		Marley		F Waste		S Waste	
1	3.21	49.8	2.36	134	5.78	928	6.38	563	2.29	85	3.99	192	2.86	196			6 1/4	10.4	.28	17
2	3.50	556	2.55	188	6.05	998	6.63	613	2.33	90	3.98	192	2.86	196	.68	64	"	12.9	.16	7.6
3									2.35	92	3.98	192	2.86	196						
4	3.57	570	2.54	185	6.23	1046	6.75	648	2.37	95	3.99	193	2.88	200				12.0	.50	46
5	3.56	568	2.48	167	6.19	1039	6.73	636	2.36	94	3.99	193	2.87	198	.59	43		15.4	.48	
6	3.41	538	2.43	152	6.03	995	6.59	605	2.29	85	3.96	188	2.78	181	.43	30		13.6	.38	
7	3.25	506	2.30	120	5.93	967	6.46	579	2.26	81	3.95	186	2.76	177	.44	32		16.2	.29	18.6
8	3.24	504	2.31	122	5.80	933	6.38	563	2.22	77	3.94	185	2.68	163	.47	35		10.2	.24	
9	3.12	481	2.16	92	5.76	923	6.35	558	2.16	70	3.94	185	2.64	157	.40	27		8.4	.16	8
10									2.22	77	3.95	186	2.71	168				6	.16	8
11	3.14	485	2.25	110	5.70	907	6.34	556	2.20	75	3.95	186	2.70	167				6	.23	13
12	2.99	456	2.07	76	5.50	858	6.18	525	2.24	79	4.06	204	2.67	162	.36	23		10.2	.22	12
13	3.03	464	2.10	81	5.63	889	6.23	535	2.25	80	4.08	207	2.81	186	.42	29	4 3/4	6.5	.29	18.6
14	3.16	488	2.13	86	5.83	941	6.42	571	2.20	69	4.08	193	2.71	179	.46	40		4.6	.20	10.2
15	3.12	481	2.08	78	5.87	951	6.41	569	2.20	69	4.19	210	2.74	185	.49	44	7 1/2	12.4	.16	7.6
16	3.12	481	2.10	81	5.87	951	6.43	573	2.21	70	4.18	209	2.63	165	.45	40		9.6	.35	26
17									2.35	86	4.24	218	3.01	236					.40	
18	3.38	531	2.47	164	5.96	975	6.59	605	2.57	116	4.26	222	2.87	209	.54	51		15.5	.29	18.6
19	3.55	485	2.59	200	6.00	962	6.68	640	2.64	126	4.26	222	2.83	202	.57	55		17	.31	20
20	3.49	472	2.60	203	6.10	988	6.73	651	2.60	120	4.26	222	2.86	207	.54	51		16	.31	20
21	3.35	447	2.55	192	5.72	889	6.44	589	2.56	114	4.20	212	2.84	204	.59	58		19	.31	20
22	3.30	437	2.51	176	5.60	860	6.34	569	2.57	115	4.20	212	2.79	192	.34	26		20	.24	13
23	3.36	430	2.49	170	5.65	872	6.36	573	2.54	111	4.14	202	2.74	185	.46	40		16	.24	13
24									2.44	98	4.13	199	2.78	192						
25	3.24	427	2.49	170	5.62	865	6.33	567	2.46	100	4.14	202	2.76	188	.53	49		20	.24	13
26	3.32	441	2.54	185	5.69	882	6.42	585	2.46	100	4.07	191	2.84	204	.55	52		14	.24	13
27	3.39	454	2.54	185	5.75	897	6.43	587	2.51	107	4.04	186	2.48	141	.50	45		15	.26	15
28	3.24	427	2.43	152	5.72	889	6.39	579	2.65	128	4.06	190	2.50	144	.49	45		17 1/2	.28	18
29	3.29	434	2.43	152	5.68	880	6.36	573	2.65	128	3.95	173	2.06	83	.39	32		10	.28	18
30	3.12	405	2.21	102	5.67	877	6.27	556	2.65	129	3.95	173	2.04	81	.42	35		13	.34	25
31					T 5.67 A	27901 930			2.64	129	3.96	174	2.03	80						

May 1986

	No 60		No 17		No 9		No X		No Y		No Z		+ or -		No 21		No 93	
1	7.90	1247	37	7	1.44	80	2.04	437	2.75	110	.90	70	+	272	2.59	198	2.82	35
2	8.25	1327	.80	32	1.38	70	1.87	371	2.70	104	.87	66	+	216	3.10	295	2.90	37
3	8.23	1323	1.05	56	1.44	80	1.97	383	2.70	104	.87	66	+	228	—	—	2.90	37
4	8.23	1323	1.12	64	1.50	91	1.94	374	2.70	104	.87	66	+	219	3.39	355	2.92	37
5	8.21	1321	1.00	51	1.57	104	1.90	380	2.70	104	.88	67	+	224	3.51	371	2.92	37
6	8.03	1277	0.97	48	1.54	98	1.86	350	2.76	150	.89	76	+	181	3.53	374	2.90	37
7	8.03	1277	.58	15	1.30	58	1.67	311	2.80	155	.92	80	+	91	3.38	353	2.83	35
8	8.02	1275	.53	14	1.28	56	1.63	300	2.95	176	.98	91	+	48	2.72	221	2.80	34
9	8.05	1286	.52	14	1.23	49	1.66	308	2.95	176	.96	87	+	60	2.25	143	2.82	35
10			.40	8	1.16	40	1.62	298	2.90	169	.95	85	+	59	2.19	134	2.72	32
11	8.04	1284	.38	8	1.16	40	1.61	295	2.90	169	.99	93	+	48	2.16	129	2.79	34
12	8.04	1284	.30	15	1.09	32	1.56	279	2.95	176	.98	91	+	27	2.06	115	2.79	33
13	8.39	1364	.16	8.°	1.09	32	1.61	292	2.95	176	.98	91	+	40	1.68	66	2.66	30
14	8.33	1351	.18	9.°	1.21	43	1.70	317	3.00	183	.99	93	+	56	1.58	55	2.89	35
15	8.33	1340	.16	8.°	1.22	44	1.66	306	3.00	183	1.03	101	+	37	2.04	112	2.83	34
16	8.32	1339	.16	8.°	1.27	50	1.66	306	3.00	183	1.00	95	+	43	2.01	108	2.84	34
17			.32	16	1.45	77	1.71	320	2.96	178	.98	91	+	66	2.05	113	2.85	34
18	8.35	1346	.65	41	1.50	85	1.73	326	2.90	169	.94	83	+	89	2.57	194	3.00	38
19	8.35	1346	1.02	84	1.50	85	1.74	329	2.85	162	.91	79	+	103	2.96	267	2.92	36
20	7.89	1240	1.01	83	1.50	85	1.77	338	2.85	162	.91	79	+	97	3.12	299	2.92	36
21	7.91	1245	.97	78	1.45	77	1.84	354	2.83	159	.89	76	+	139	3.28	332	2.91	36
22	7.87	1235	.85	63	1.46	78	1.85	362	2.83	159	.90	77	+	141	3.26	328	2.90	35
23	7.84	1229	.75	57	1.38	66	1.87	368	2.83	159	.94	84	+	110	3.14	304	2.86	34
24	7		.75	51	1.37	64	1.93	386	2.85	162	.94	84	+	155	3.10	295	2.85	34
25	7.88	1238	.68	44	1.42	72	1.91	380	2.85	162	.94	84	+	150	3.04	283	2.86	34
26	7.90	1242	.93	73	1.50	85	2.02	401	2.85	162	.95	85	+	169	3.09	293	2.88	35
27	7.91	1245	.97	78	1.53	91	2.20	467	2.86	164	.92	80	+	238	3.48	372	2.90	35
28	7.92	1247	.86	65	1.48	82	2.09	434	2.80	155	.87	73	+	221	3.70	421	2.87	35
29	7.85	1231	.94	74	1.47	80	1.83	356	2.80	155	.87	73	+	143	3.50	376	2.89	35
30	7.87	1235	.97	78	1.45	77	1.78	341	2.85	162	.91	79			3.31	338	2.88	35
31			1.01	83	1.44	75	1.79	344	2.90	169	.92	80	+	110	3.08	291	2.88	35

36,551 A 1285

June 1987

	No. 14		No. 54		No. 53		No. 56		No. 10		No. 11		Ma. J.B.		Marley		F	Waste	S. Waste	
1	3.12	405	2.10	81	5.70	884	6.28	558	2.65	128	3.97	176	2.05	82	40	33		5.5	.32	22
2	3.05	392	2.13	86	5.63	868	6.21	544	2.60	120	3.96	174	2.00	76	.45	40		7.8	.30	19
3	2.98	380	2.04	71	5.62	865	6.19	541	2.54	111	3.95	173	2.00	76	.41	34		4.0	.32	22
4	2.95	374	1.94	58	5.64	870	6.18	539	2.38	87	4.02 3.94	183 172	1.92	67	.41	34		7.4	.32	22
5	2.88	362	1.78	39	5.88	930	6.32	565	2.31	81	4.02	183	2.14	93	.44	38		8	.20	10
6	2.95	374	1.81	43	5.97	954	6.43	587	2.23	72	4.06	190	2.36	122	.40	33		4.6	.24	14
7									2.25	75	4.13	201	2.36	122						
8	3.30	437	2.12	84	6.05	975	6.46	593	2.43	96	4.19	209	2.46	138	.46	40		15	.24	14
9	3.39	454	2.02	82	6.06	977	6.50	601	2.54	111	4.18	209	2.40	128	.43	37		19.4	.17	8
10	3.45	466	1.98	63	6.06	977	6.53	607	2.52	108	4.12	199	2.44	134	48	43		16	.12	6
11	3.45	466	1.90	54	5.97	954	6.47	595	2.53	110	4.10	196	2.28	110	48	43		19	.18	9
12	3.19	418	2.23	106	5.62	865	6.19	541	2.51	107	4.02	183	2.26	108	.50	46		14	.18	9
13	3.14	409	2.17	94	5.59	858	6.15	533	2.49	104	4.02	183	2.28	110	.49	44		14	.10	3
14	"	"	"						2.47	101	4.02	183	2.30	113				4		
15	3.10	401	2.14	84	5.44	822	6.04	512	2.46	100	4.02	183	2.28	110	.48	43			.08	2
16	2.97	385 (M)	1.98	64	5.34 (C)	834	5.91 (C)	440	2.42 (C)	96	4.13 (C)	165	2.44 (C)	133	.43 (C)	40		6	0	
17	3.09	405	2.04	71	5.63	904	6.12	522	2.41	95	4.22	177	2.64	165	42	38		7	.11	4
18	3.36	454	2.13	86	5.70	913	6.09	516	2.40	94	4.30	193	2.65	167	.38	33		10	.22	12
19	3.36	454	2.10	81	5.78	943	6.13	524	2.40	94	4.32	196	2.63	163	40	35		7	.23	12
20	3.42	466	2.03	70	5.88	969	6.20	537	2.35	87	4.34	199	2.58	155	.37	32		10	.24	14
21		477							2.38	91	4.35	201	2.61	160					.18	
22	3.18	468	2.05	73	5.99	998	6.25	547	2.43	98	4.36	202	2.62	162	43	40		8	.16	7
23	3.39	460	2.00	66	6.00	1001	6.26	548	2.27	78	4.33	198	2.59	157	.37	32		4	.12	5
24	3.28	439	1.80	42	6.00	1001	6.25	547	2.23	74	4.38	206	2.70	175	.60	63		1	.11	4
25	3.37	456	1.89	52	6.14	1038	6.34	563	2.22	72	4.49	223	2.70	175	.36	29		9	.11	4
26	3.40	462	1.87	50	6.20	1054	6.40	575	2.19	69	4.49	223	2.68	172	.37	32		6	.33	23
27	3.40	462	1.85	48	6.20	1054	6.40	575	2.23	74	4.51	226	2.69	174	.42	38		9	.33	23
28									2.23	74	4.52	228	2.68	172						
29	3.38	458	1.90	54	6.24	1066	6.40	575	2.22	72	4.52	228	2.67	170	.40	35		6	.39	25
30	3.40	462	1.80	42	6.30	1083	6.48	591	2.13	65	4.49	223	2.64	165	.32	26		5.6	.28	18
31					T	29,312														
					A	979														

June 1987

	No. 60		No. 17		No. 9		No. X		No. Y		No. Z		+ or −	No. 21		No. 93		
1	7.92	1252	1.00	81	1.44	75	1.80	347	2.90	169	.91	79	+	114	3.00	275	2.88	35
2	7.88	1242	0.83	61	1.37	64	1.74	329	2.90	169	.85	85	+	94	2.96	266	2.85	34
3	7.88	1242	.74	50	1.32	57	1.95	380	2.95	176	.91	79	+	140	2.80	224	2.85	34
4	7.92	1252	.73	49	1.35	61	1.98	401	2.95	176	.93	82	+	158	2.92	247	2.83	34
5	8.27 8.30	1334	.30	15	1.30	54	1.94	387	2.95	176	.98	91	+	125	2.88	240	2.72	31
6	8.32	1348	.36	18	1.40	69	1.90	377	3.00	183	.98	91	+	118	2.30	141	2.74	32
7	8.29	1332	.82	60	1.35	61	1.85	362	3.05	190	.96	87	+	100	2.52	176	2.80	33
8	8.29	1332	.98	79	1.64	112	2.12	443	3.00	183	.96	87	+	188	2.54	179	2.86	34
9	8.29	1332	1.18	104	1.60	104	2.02	413	3.02	186	.91	79	+	163	3.58	380	2.88	35
10	8.31	1337	1.40	132	1.58	100	2.00	407	2.96	178	.91	79	+	165	3.56	376	2.94	36
11	7.83	1226	1.47	143	1.60	104	1.95	380	3.00	183	.94	84	+	128	3.57	395	2.94	36
12	7.85	1231	1.34	125	1.39	67	1.87	368	3.00	183	.94	84	+	116	3.53	371	2.94	36
13	7.86	1238	.60	36	1.27	50	1.73	326	3.00	183	.95	85	÷	73	3.02	261	2.82	33
14	7.86	1233	.49	35	1.20	42	1.81	350	3.05	190	.99	93	+	62	2.45	164	2.88	35
15	7.87	1235	.42	21	1.12	34	1.98	410	3.10	197	.99	93	+	135	2.30	141	2.81	33
16	7.90	1242	.37	19	.97	25	1.92	383	3.20	213	1.01	97	+	88	2.39	155	2.80	33
17	8.32	1339	.26	⑤ 11	.66	⑤ 9	1.77	⑤ 338	3.30	⑤ 237	1.02	⑤ 99	+	45	2.18	123	2.70	34
18	8.34	1344	.70	41	.77	15	1.87	368	3.30	237	1.02	99	+	49	1.63	54	2.98	41
19	8.52	1385	.46	21	.88	20	1.88	371	3.26	199	1.02	99	+	88	1.97	94	2.85	38
20	8.54	1394	.47	24	.85	18	1.83	356	3.26	199	1.02	99	+	73	2.09	104	2.93	40
21	8.76	1440	.48	22	.84	18	1.91	380	3.26	199	1.03	101	+	80	2.47	167	2.92	40
22	8.80	1449	.55	28	.92	23	1.91	380	3.26	199	.99	93	+	82	2.10	117	2.95	41
23	8.72	1447	.56	28	.84	18	1.99	404	3.26	199	1.01	97	+	123	2.34	147	2.97	41
24	8.78	1445	.49	23	.87	20	1.73	386	3.26	199	1.00	95	+	117	2.20	126	2.89	39
25	9.09	1522	.40	17	.77	15	1.88	371	3.26	199	.94	84	+	103	1.78	70	2.88	39
26	9.10	1519	.40	17	.98	26	1.85	362	3.26	199	1.00	95	+	83	1.91	86	2.92	40
27	9.09	1479	.46	21	1.13	50	1.80	347	3.32	230	1.01	97	+	35	2.08	110	2.90	39
28			.35	15	1.05	29	1.62	284	3.35	213	0.99	93	−	7	1.69	60	2.90	39
29	9.24 9.26	1514	.43	19	1.06	30	1.72	311	3.35	213	.98	91	+	22	1.38	32	2.90	39
30	9.26	1519	.34	15	1.03	28	1.84	347	3.35	213	1.06	107	+	42	1.51	42	2.85	38
31	T A	40.67 1356																

July 1987

	No. 14		No. 54		No. 53		No. 56		No. 10		No. 11		Mo. J.B.		Marley		F. Waste	S Waste	
1	3.32	447	1.65	.25	6.28	1077	6.45	585	2.16	66	4.55	233	2.72	179	.27	21		4.2	.30 .32 .30	20 21 20
2	3.37	456	1.70	30	6.35	1097	6.60	595	2.21	71	4.56	234	2.70	175	.33	27		6.8		
3.	3.42	466	1.79	40	6.29	1080	6.46	587	2.24	75	4.58	238	2.70	175				6	.33	23
4	3.41	464	1.84	46	6.30	1083	6.46	587	2.22	72	4.56	234	2.65	167	0.40	35		5.4		
5									2.26	77	4.62	2.44	2.71	169						
6	3.43	468	1.85	48	6.33	1091	6.44	583	2.24	75	4.61	242	2.64	172	.41	37		5	.24	.17
7	3.40	462	1.80	51	6.30	1083	6.45	585	2.21	71	4.60	241	2.66	168	.38	33		1	.29	18
8	3.37	456	1.80	51	6.32	1088	6.42	579	2.10	61	4.58	238	2.69	174	.40	35		2.5	.28	17
9	3.35	449	1.78	39	6.31	1086	6.45	589	2.11	62	4.57	236	2.65	167	.38	33		2	.28	17
10	3.30	443	1.61	21	6.34	1094	6.41	577	2.13	65	4.61	242	2.68	172	.38	33		1	.28	17
11	3.49	479	1.77	38	6.35	1097	6.34	563	2.18	68	4.65	249	2.72	179	.42	38		5	.48	44
12									2.20	70	4.67	252	2.71	177						
13	3.58	496	1.83	45	6.40	1111	6.39	573	2.23	73	4.66	2.50	2.66	168	.38	33		6	.50	46
14	3.46	512	1.84	41	6.39	1108	6.32	560	2.22	72	4.65	249	2.66	168	.37	31		11	.56	55
15	3.63	506	1.79	40	6.30	1083	6.27	550	1.16	66	4.60	241	2.67	170	.35	29		15	.58	64
16	3.57	488	1.90	50	6.23	1041	6.24	544	2.14	64	4.65	249	2.74	183	.42	38		10	.46	36
17	3.62	498	1.95	56	6.24	1044	6.28	552	2.12	63	4.65	249	2.86	209	.48	45		16	.38	25
18	3.87	548	2.43	144	6.44	1100	6.55	597	2.16	63	4.64	218	2.98	228					.38	25
19									2.27	80	4.55	204	2.98	228						
20	4.20	615	2.43	144	6.58	1139	6.58	603	2.31	84	4.55	204	2.94	221	.51	49		15	.28	14
21	4.10	596	2.43	144	6.44	1100	6.35	563	2.37	90	4.56	206	2.96	224	.51	49		19	.28	14
22	4.05	585	2.47	155	6.27	1052	6.39	573	2.39	92	4.41	182	2.88	209	.54	54		12	.40	28
23	3.92	558	2.32	118	6.29	1055	6.33	562	2.39	92	4.40	180	2.79	192	.44	40		8"	.37	25
24	3.64	502	2.11	78	5.95	967	6.10	518	2.38	91	4.39	179	2.64	165	.38	33		2"	.38	25
25	3.30	409	1.95	56	5.76	917	5.98	495	2.30	81	4.44	186	2.61	168	.38	33		1.2	.29	16
26									2.24	75	4.52	199	2.64	165				1		
27	3.23	425	1.81	38	5.75	915	5.95	489	2.20	70	4.51	198	2.63	162	.36	30		4.2	.26	13
28	3.18	416	1.80	38	5.69	899	5.90	480	2.19	69	4.54	202	2.72	179	.46	43		5.2	.32	18
29	3.33	443	2.03	66	5.73	910	6.00	499	2.21	71	4.56	206	2.78	190	.43	40		5.4	.27	11
30	3.28	451	2.00	62	5.91	956	6.10	518	2.22	72	4.56	206	2.74	183	.43	40		3.4	.41	6
31	3.43	462	1.96	57	6.02	980	6.13	524	2.20	72	4.61	214	2.74	183	.43	40		5.2		

T 32470A 1047

July 1987

	No. 60		No. 17		No. 9		No. X		No. y		No. Z		+ or -		No. 21		No. 93		No. 17X	
1	9.25	1517	.34	15	1.00	27	1.81	350	3.35	213	1.04	103	+	22	1.66	57	284	38		
2	9.25	1517	.38	16	1.19	40	1.73	314	3.35	213	1.05	105	−	4	1.66	57	303	43		
3	9.23	1426	.29	12	1.15	36	1.74	329	3.35	213	1.06	107	+	9	1.72	63	3.00	42		
4	9.25	1431	.32	14	1.16	37	1.80	347	3.35	213	1.05	105	+	29	1.65	56	3.01	42		
5	9.25	1431	43	19	1.15	36	1.74	329	3.35	213	1.07	109	+	7	1.91	74	3.02	43		
6	9.25	1431	.35	15	1.10	32	1.73	328	3.30	205	1.03	101	+	8	1.94	96	2.98	41		
7	9.26	1433	.35	15	1.13	35	1.72	323	3.30	205	1.02	99	+	19	1.84	77	2.99	42	4.09	
8	926	1433	.35	15	1.17	38	1.72	323	3.30	205	1.02	99	+	19	1.75	67	2.96	41	4.10	
9	9.26	1433	.30	13	1.17	38	1.74	329	3.30	205	1.03	101	+	8	1.77	70	2.94	40	4.10	
10	9.27	1436	.25	11	1.18	39	1.75	332	3.30	205	1.03	101	+	11	1.76	68	2.95	41	4.10	
11	9.25	1431	.45	20	1.20	42	1.84	359	3.30	205	1.02	99	+	40	1.87	81	3.02	43	4.18	
12			.67	38	1.30	54	1.81	350	3.30	205	1.03	101	+	44	2.08	109	3.07	44	4.20	
13	9.26	1433	.70	41	1.28	51	1.82	353	3.30	205	1.03	101	+	47	2.32	104	3.00	42	4.20	
14	9.26	1433	.85	69	1.34	60	1.80	347	3.30	205	1.04	103	+	39	2.37	152	3.02	43	4.20	
15	9.02	1378	.113	91	1.32	57	1.80	347	3.30	205	1.03	101	+	41	2.34	147	3.09	44	4.24	
16	9.09	1383	.97	72	1.25	48	1.75	332	3.25	197	1.03	101	+	34	2.41	158	2.04	43	4.20	
17	9.04	1393	1.02	78	1.19	39	1.76	335	3.30	205	1.00	95	+	95	2.21	138	3.07	44	4.20	
18	9.02	1378	1.59	1.52	1.39	67	1.58	356	3.20	190	.98	91	+	41	2.28	149	3.16	47	4.28	
19			1.79	180	1.42	72	1.88	371	3.15	183	.93	82	+	95	300	277	3.02	43	4.38	
20	9.04	1383	205	216	1.46	78	1.85	362	3.10	176	.93	82	+	138	326	334	308	44	4.40	
21	8.57	1275	207	224	1.41	70	1.92	383	3.05	169	93	82	+	132	343	365	308	44	4.44	
22	8.57	1275	1.95	122	1.50	102	1.90	377	3.05	186	.94	85	+	106	3.50	378	307	44	4.40	
23	8.58	1277	2.11	189	1.44	91	1.97	398	3.05	186	.94	85	+	127	3.53	384	308	42	4.46	89
24	8.14	1177	1.94	165	1.40	84	1.92	383	3.05	186	.96	89	+	108	3.60	399	304	41	4.44	
25	8.12	1123	1.56	114	1.10	40	1.80	347	3.05	186	.96	89	+	57	3.32	342	2.93	38	4.50	
26	8.13	1175	1.39	92	.85	25	1.62	295	3.05	186	.94	85	+	84	2.72	223	2.99	39	4.40	
27	8.13	1175	1.15	62	.83	23	1.83	356	3.05	186	.95	87	+	83	2.20	137	2.96	38	4.42	
28	8.11	1170	0.98	43	.59	11	1.95	392	3.05	186	.96	89	+	117	2.27	147	2.94	38	4.5	
29	8.13	1175	.82	28	.52	7	1.97	398	3.05	186	.96	89	+	123	2.24	143	2.97	39	4.50	
30	8.45	1247	.91	36	.80	21	1.88	371	3.05	186	.96	89	+	96	2.21	140	2.99	39	4.46	
31	8.45	1247	.79	26	.89	26	1.79	344	3.00	179	.96	89	+	76	2.22	144	2.99	39	4.48	

+ 418655A 1350

August 1987

	No. 14		No. 54		No. 53		No. 56		No. 10		No. 11		Mo. J.B.		Marley		F Waste	S Waste	
1	3.40	456	1.96	57	5.94	964	6.09	516	2.21	71	4.61	214	2.73	181	0.40	35	6.8	0.22	9.5
2									2.20	70	4.61	214	2.70	175					
3.	3.43	462	1.94	55	6.12	1011	6.10	518	2.29	80	4.62	215	2.71	177	0.43	40	5.2	.38	26
4	3.48	471	2.00	62	6.04	990	6.15	527	2.27	78	4.60	212	2.68	172	.36	31	6.9	.35	22
5	3.90	456	1.90	50	6.03	988	6.12	522	2.25	76	4.62	215	2.74	183	.37	32	4	.41	29
6	3.48	471	1.90	50	6.15	1019	6.21	539	2.23	©74	4.64	©207	2.81	©192	.42	©32	5.6	.44	33
7	3.55	485	2.00	62	6.16	1021	6.20	537	2.18	68	4.63	206	2.79	188	.41	31	4.8	.43	32
8	3.58	490	2.02	64	6.20	1032	6.22	541	2.17	67	4.62	204	2.77	185	.44	34	7.4	.40	28
9									2.15	65	4.62	204	2.74	179				.40	33
10	3.61	496	1.98	60	6.29	1058	6.26	548	2.18	68	4.62	204	2.72	175	.43	35	5	.37	24
11	3.58	©494	1.94	©49	6.26	1021	6.24	©593	2.18	68	4.61	202	2.69	170	.41	31	4	.30	17
12	3.45	468	1.87	40	6.08	975	6.12	550	2.15	65	4.61	202	2.70	172	.40	29	4	.24	11
13	3.44	449	1.89	43	6.06	969	6.14	573	2.14	64	4.60	201	2.70	172	.37	26	6	.19	7
14	3.37	454	1.89	43	6.12	985	6.19	583	2.14	64	4.61	202	2.70	172	.38	27	7		4
15	3.36	452	1.76	38	6.11	982	6.16	577	2.13	64	4.54	186	2.57	150	.31	21	8		0
16	3.28	437	1.60	15	6.08	975	6.12	550	2.10	61	4.54	186	2.56	149				.30	23
17	3.28	437	1.57	13	6.13	988	6.09	563	2.11	62	4.59	199	2.68	160	.28	18	8.4	.48	39
18	3.37	454	1.86	39	6.11	982	6.19	583	2.14	64	4.58	198	2.64	162	.32	22	6	.48	39
19	3.40	460	1.88	42	6.14	990	6.21	587	2.15	65	4.58	198	2.64	162	.27	17	10.6	.32	19
20	3.37	454	1.78	30	6.14	990	6.20	585	2.14	64	4.57	196	2.64	162	.29	19	7	.30	17
21	3.34	449	1.79	31	6.09	977	6.16	577	2.16	66	4.57	196	2.63	160			4	.10	2
22	3.38	456	1.84	37	6.12	985	6.20	585	2.20	70	4.56	194	2.63	160	.31	21	8.4	.34	21
23									2.16	66	4.56	194	2.65	163					
24	3.39	458	1.87	40	6.12	985	6.21	587	2.15	65	4.55	193	2.62	158	.33	23	7.8	.38	25
25	3.40	460	1.85	38	6.11	982	6.20	585	2.22	72	4.58	198	2.67	167	.33	23	9.6	.62	60
26	3.43	466	193	48	6.14	990	6.23	591	2.20	70	4.56	194	2.66	165	.31	21	5.5	.48	39
27	3.45	470	1.92	46	6.17	998	6.23	591	2.20	70	4.57	196	2.67	167	.30	20	19.2	.18	7
28	3.46	471	1.91	44	6.15	993	6.21	587	2.18	68	4.58	198	2.71	174	.31	21	6.0	—0—	—0—
29	3.44	468	1.87	40	6.17	998	6.23	591	2.18	68	3.51	66	1.00	12	.08	5	5.2		
30									2.19	69	2.50	7.2							
31	3.43	466	1.81	33	6.12	985	6.25	595	2.19	69	2.36								

T 3081214-994

August 1987

	No. 60		No. 17		No. 9		No X		No y		No z		+ or −		No. 21		No. 93		No 17X	
1	8.45	1247	0.81	28	0.82	22	1.70	317	3.00	179	0.96	89	+	42	2.20	137	2.98	39		
.	8.45	1247	0.87	33	0.80	21	1.70	317	3.00	179	0.97	91	+	47	2.01	109	2.98	39	4.32	
3.	8.45	1247	0.79	25	0.95	28	1.71	320	3.00	179	0.97	91	+	50	1.96	102	3.00	39	4.32	
4	8.45	1219	0.77	24	1.02	33	1.68	311	3.00	179	0.98	93	+	39	2.07	118	3.00	39	4.32	
5	8.61	1256	0.67	17	1.01	32	1.65	300	3.05	186	0.97	91	+	23	2.00	108	3.00	39	4.32	
6	8.60	1254	0.62	15	0.98	30	1.63	298	3.05	186	0.93	84	+	28	1.88	91	3.01	40	4.28	
7	8.60	1254	0.77	24	1.05	36	1.65	300	3.05	186	0.95	87	+	30	1.56	54	3.10	42	4.30	
8	8.61	1256	.90	35	1.03	34	1.63	298	3.05	186	.95	87	+	25	1.99	106	3.09	42		
9	8.60	1254	.96	41	1.04	35	1.64	300	3.05	186	.95	87	+	27	2.08	119	3.10	42	4.30	
10	8.61	1256	.85	31	1.05	36	1.67	308	3.10	196	.95	87	+	27	1.94	105	3.10	42	4.30	
11	8.59	1252	1.17	64	1.03	34	1.66	306	3.10	196	.98	93	+	17	2.00	108	3.12	43	4.34	
12	8.32	1190	1.22	70	.93	27	1.70	317	3.10	196	.99	95	+	26	2.13	126	3.07	41	4.34	
13	8.32	1190	.86	32	.78	20	1.74	329	3.10	196	.99	95	+	38	2.08	119	3.00	39	4.36	
14	8.31	1188	.75	22	.88	25	1.64	300	3.05	186	.98	93	+	23	1.88	91	3.04	40	4.34	
15	8.30	1186	.88	34	.92	27	1.60	289	3.05	186	.98	93	+	10	1.91	95	3.04	40	4.30	
16	8.31	1188	.88	34	.90	26	1.62	295	3.05	186	1.00	97	+	12	1.97	104	3.04	40	4.30	
17	8.30	1186	.71	20	1.03	34	1.52	268	3.05	186	1.00	97	−	15	1.93	99	3.03	40	4.30	
18	8.31	1188	.74 ©	42	1.28 ©	44	1.51	265	3.00	179	.95	87	−	1	1.84	86	3.03 ©	39	3.82	
19	8.30	1186	.90	60	1.21	45	1.44	247	3.00	179	.96	89	−	21	1.89	92	3.05	40	3.82	
20	8.31	1188	.87	56	1.09	33	1.37	© 242	3.00	© 176	.96	© 84	−	13	1.87	90	3.07	41	3.90 ©	
21	8.28	1181	.79	47	1.02	27	1.41	257	3.00	176	.95	82	−	11	1.65	63	3.04	40	3.90	
22	8.31	1188	.85	54	.97	26	1.42	260	3.00	176	.95	82	+	2	1.70	69	3.04	40	3.90	
23	8.29	1186	.90	60	1.07	32	1.46	270	3.00	176	.95	82	+	12	1.62	60	3.03	39	3.90	
24	8.32	1190	.85	54	1.06	31	1.50	281	3.00	176	.96	84	+	21	1.76	76	3.03	39	3.90	
25	8.32	1190	.82	50	1.05	30	1.55	295	3.00	176	.95	82	+	37	1.88	91	3.04	40	3.92	
26	8.31	1188	.85	54	1.25	50	1.55	295	3.00	176	.94	81	+	38	1.90	94	3.05	40	3.92	19.6
27	8.32	1190	.92	62	1.14	37	1.63	317	3.00	176	.95	82	+	59	2.08	119	3.06	41	3.94	
28	8.31	1188	1.00	72	1.06	31	1.62	314	3.00	176	.92	78	+	60	2.12	125	3.08	41	3.96	
29	8.32	1190	1.06	79	.99	27	1.60	308	3.00	176	.95	82	+	50	2.20	137	3.09	42	3.96	
30	8.32	1190	1.13	88	.99	27	1.65	323	2.95	169	.92	78	+	76	2.06	116	3.09	42	3.98	
31	8.32	1190	1.06	79	.98	26	1.66	326	2.95	169	.93	79	+	78	2.23	141	3.09	42	[illegible]	

r-37503 #1210

September 1987

	No 14		No 54		No 53		No 56		No 10		No 11		Mo. S.B.		Morley		F. Waste		S. Waste	
1	3.41	462	1.63	17	6.22	1011	6.24	593	2.15	65	2.80	26					0			
2	3.36	458	1.55	12	6.21	1008	6.21	587	2.14	64	2.79	26					0			
3	3.37	454	1.50	8	6.24	1016	6.22	589	2.16	66	2.83	28					0			
4	3.38	456	1.58	9	6.24	1016	6.23	591	2.17	67	2.84	28								
5	3.41	462	1.59	14	6.27	1024	6.25	595	2.19	69	2.84	28					.8			
6									2.19	69	2.84	28								
7	3.46	471	1.60	15	6.34	1044	6.30	605	2.20	70	2.84	28					.5			
8	3.41	462	1.62	16	6.20	1006	6.22	589	2.21	71	2.84	28					.6			
9	3.18	419	1.62	16	6.19	1003	6.35	615	2.20	70	2.84	28								
10	3.23	©445	1.52	©14	6.19	©995	6.32	©544	2.20	70	3.00	37					0			
11	3.22	443	1.62	21	6.21	1001	6.34	548	2.20	70	3.00	37					6			
12	3.21	441	1.60	20	6.20	998	6.33	546	2.20	70	3.00	37					4"			
13									2.21	71	3.00	37								
14	3.23	445	1.62	21	6.22	1003	6.34	548	2.23	74	3.00	37					6			
15	3.22	443	1.59	19	6.20	998	6.32	544	2.21	71	3.00	37					5"			
16	3.14	428	1.58	19	5.98	941	6.17	516	2.23	74	3.00	37					6			
17	3.09	419	1.65	24	5.87	912	6.11	504	2.21	71	3.00	37					5"			
18	3.10	421	1.59	19	5.92	925	6.14	510	2.22	72	3.00	37					6			
19	3.11	423	1.59	19	5.93	928	6.14	510	2.23	74	3.00	37					6.0			
20									2.22	72	3.00	37								
21	3.12	425	1.61	21	5.90	920	6.14	510	2.22	72	2.99	37					6.0			
22	2.99	401	1.59	19	5.53	829	5.89	463	2.21	71	2.99	37					5.6			
23	2.78	363	1.53	15	5.36	788	5.85	455	2.21	71	3.03 3.07	42 42					6.0			
24	2.77	360	1.53	15	5.35	786	5.81	448	2.24	75	3.06	41					3.4			
25	2.77	360	1.53	15	5.35	786	5.83	452	2.24	75	3.06	41					2.5			
26	2.77	360	1.48	11	5.34	784	5.89	450	2.22	72	3.05	40					1.8			
27									2.22	72	3.04	40								
28	2.78	363	1.46	10	5.34	784	5.84	454	2.22	72	3.04	40					4.2			
29	2.78	363	1.50	13	5.38	793	5.86	457	2.22	72	3.03	39					3.4			
30	2.78	363	1.46	10	5.37	791	5.86	457	2.22	72	3.07	42					2	.54	48	
31					T A	27824 927														

September 1987

	No 10		No 17		No 9		No X		No Y		No Z		+ or -		No 21		No 93		NO. 17X
1	8.32	1190	.98	69	.97	26	1.62	314	2.95	169	.93	79	+	86	2.22	140	3.07	41	3.96
2	8.32	1190	.91	61	.98	26	1.50	281	2.90	162	.92	78	+	41	2.05	150	3.03	39	3.98
3.	8.34	1194	.88	57	1.05	30	1.36	244	2.90	162	.92	78	+	4	1.88	91	3.05	40	3.90
4	8.34	1198	.90	60	1.10	34	1.32	234	2.90	162	.94	80	-	8	1.62	60	3.05	40	3.90
5	8.34	1194	1.03	75	1.16	39	1.37	247	2.90	162	.92	78	+	7	1.68	66	3.07	41	3.92
6	8.34	1194	1.17	92	1.16	39	1.38	250	2.90	162	.88	71	+	17	1.90	92	3.09	41	3.94
7	8.33	1192	1.08	81	1.20	44	1.43	262	2.90	162	.88	71	+	25	2.17	132	2.98	39	3.94
8	8.05	1188	1.04	81	1.12	36	1.44	265	2.90	162	.88	71	+	32	2.32	155	2.96	35	3.94
9	8.05	1188	.84	53	1.08	32	1.37	247	2.90	162	.89	71	+	14	2.18	134	2.80	33	3.94
10	8.05	1188	.78	46	1.13	36	1.36	244	2.90	162	.87	70	+	12	2.03	112	1.80	33	3.94
11	8.05	1188	.80	48	1.18	42	1.41	257	2.90	162	.87	70	+	15	2.02	116	2.80	33	3.94
12	8.04	1186	.75	43	1.16	39	1.51	284	2.85	155	.87	70	+	59	2.15	129	2.80	33	3.94
13	8.05	1188	.76	44	1.20	44	1.57	300	2.77	145	.88	72	+	83	2.28	149	2.79	34	3.96
14	8.05	1188	.78	46	1.25	50	1.55	295	2.77	145	.85	67	+	88	2.50	184	2.88	35	3.96
15	8.05	1188	.80	48	1.18	42	1.42	260	2.77	145	.85	67	+	48	2.56	194	2.84	35	3.94
16	7.81	1137	1.43	127	1.20	44	1.24	214	2.77	145	.84	66	+	3	2.43	174	2.93	37	3.96
17	7.80	1133	1.42	125	1.10	34	1.35	242	2.72	138	.80	61	+	43	2.36	161	2.72	32	3.96
18	7.80	1133	1.53	140	1.10	34	1.40	254	2.68	133	.80	61	+	60	2.51	186	2.74	32	4.00
19	7.79	1131	1.58	144	1.14	37	1.58	303	2.68	133	.84	66	+	104	2.67	214	2.60	29	4.00
20	7.79	1131	1.58	147	1.15	38	1.57	300	2.67	132	.83	65	+	103	2.91	259	2.61	29	4.06
21	7.79	1131	1.60	150	1.16	39	1.57	300	2.67	132	.83	65	+	103	2.98	274	2.60	29	4.06
22	7.17	1002	1.54	141	1.15	38	1.55	295	2.67	132	.84	66	+	97	3.00	277	2.61	29	4.06
23	7.17	1002	1.27	106	0.95	25	1.64	320	2.67	132	.84	66	+	122	2.97	271	2.55	28	4.04
24	7.18	1004	1.07	80	.90	23	1.54	292	2.65	129	.84	66	+	97	2.74	226	2.61	29	3.96
25	7.18	984	0.89	59	.91	23	1.45	262	2.63	127	.85	67	+	68	2.50	184	2.57	29	3.96
26	7.21	990	.91	61	.88	21	1.45	262	2.63	127	.81	62	+	73	2.24	143	2.58	28	3.96
27	7.20	988	.92	62	.85	20	1.38	250	2.63	127	.81	62	+	61	2.30	152	2.57	29	3.96
28	7.15	978	.85	66	.94	30	1.44	265	2.58	120	.81	.62	+	83	2.23	141	2.15	20	3.96
29	7.19	986	.73	41	.93	24	1.45	268	2.58	120	.79	59	+	69	2.40	167	2.11	19	3.96
30	7.18	984	.71	39	1.08	32	1.49	279	2.58	120	.78	58	+	101	2.41	169	2.12	20	3.96
31	T	33664	cfs	12,088	c.f.s.	8,165													
	A	1119	A.F. = 24,176		Total A.F. 16,330														

October 1987

	No. 14		No. 54		No. 53		No. 56		No. 10		No. 11		Mo. J.B.		Marley		F. Waste		S. Waste	
1	3.18	427	2.98	114	5.40	798	6.10	503							.08	74		42	.26	13
2	3.11	423	2.76	110	5.40	798	6.11	504							.10	9		5"		
3.	3.15	430	2.40	142	5.40	798	6.16	514							.08	74		5"		
4																				
5	2.82	371	163	22	5.35	786	5.88	461												
6	2.81	369	160	20	5.38	793	5.87	459										3		
7	2.82	371	162	21	5.38	793	5.87	459												
8	2.84	374	1.60	20	5.43	805	5.90	465										3		
9	2.80	367	1.54	16	5.40	798	5.91	466												
10					T	7167														
11					A	796	"													
12																				
13																				
14																				
15																				
16																				
17																				
18																				
19																				
20																				
21																				
22																				
23																				
24																				
25																				
26																				
27																				
28																				
29																				
30																				
31																				

October 1987

	No 60		No 17	No 9	No X	No Y	No Z	+/-	No 21	No 93
1	7.18	984								
2	7.19	986								
3.	7.18	984								
4	7.20	988								
5	7.20	988								
6	7.16	980								
7	7.17	1004								
8	7.18	1006								
9	7.18	1006								
10	Off									
11										
12	+	8926								
13	#	992								
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										
26										
27										
28										
29										
30										
31										

Nov. 1987 Stock Run

	Magic		No. 3		No. 4		No. 5		East		West		Hd.	J.B	W-1	W-2	E spill		No. 48	
1	348.6	8,204	4.02	515	4.18	300	1.72	200												
2			4.06	536	4.30	316	1.56	158	2.18	231	1.68	73	.58	90				16	3.08	191
3	345.2	6,089	4.06	536	4.32	320	1.54	154	1.88	194	1.67	72	.82	120				18		
4			4.04	526	4.24	306	1.52	150	1.66	167	1.65	71	.88	132						
5	341.7	4,355	3.29	222															4.20	374
6	340.4	3,816	3.90	149	3.90	248	1.52	150												
7		4,304	off		off		off													
8																				
9																				
10																				
11																				
12																				
13																				
14																				
15																				
16																				
17																				
18																				
19																				
20																				
21																				
22																				
23																				
24																				
25																				
26																				
27																				
28																				
29																				
30																				
31																				

1988

APRIL 1988

	No 60		No. 51		No. 52		No. 15		Main	LS	Dry	Krall	No. 19		No. 1		No. 2		Weekly	
	GH	Q	GH	Q	GH	Q	GH	Q	Q	Q	Q	Q	GH	Q	GH	Q	GH	Q		
1																				1
2																				2
3																				3
4																				4
5																				5
6																				6
7																				7
8																				8
9																				9
10																				10
11																109		120		11
12	3.43	407												240						12
13	3.36	397																		13
14	3.36	397													4.12	87	4.19	134	6 hr.	377
15	5.24	703											1.55	785						167
16	5.23	701																		108
17	5.32	718													4.12	87	4.30	160		138
18	5.31	716											2.00	586						150
19	5.28	710			.34		1.50	78					1.99	589						84
20	5.28	710	1.26	95	1.44	50							1.94	564						89
21	5.28	710	1.26	95	1.45	57	1.61	86		7			2.14	667	4.33	125	5.00	370		90
22	5.31	716	1.18	85	1.42	56	1.61	86					1.92	554						90
23	5.30	714	98	65	1.66	61	1.99	121	9	5			1.78	487						80
24	5.31	716																		93
25	5.31	716	.86	59	1.52	40	2.27	154												Off
26	5.30	714	1.14	81	2.38	88	2.24	155												
27	5.30	714	1.00	67	2.32	85	2.28	155	15	5	—	20	1.61	368						
28	5.86	@798	.70	46	2.54	95	2.52	194	5	2		16	1.50	364	4.10	84	4.32	158		
29	5.87	800	.74	48.2	2.54 2.62	102	2.49	188	3	2		18	1.51	368						
30	5.14	954	.42	33	2.80	114	2.49	188	.5	4	—	0	1.55	396						146
31	5.14	13,016	Ave	6.85 dof																142

APRIL 1988

	Magic		No. 3		No. 4		No. 5	East	West	Head J.B.	W-1	W-2	R-Spill	No. 48
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12	878.5	45,025												
13	878.8	45,553												
14	879.1	46,086												
15														
16														
17														
18	880.3	48,241												
19	880.5	48,605												
20	880.8	49,155												
21	881.3	50,067												
22	881.9	51,121												
23	882.6	52,471												
24	883.1	53,305												
25	883.5	54,157												
26	883.8	54,723												
27	884.4	55,961												
28	884.7	56,434												
29	885.0	57,007												
30	885.3	57,578												
31														

MAY 1988

	No. 60		No. 51		No. 52		No. 15		Main LS		Dry Krall		No. 19		No. 1		No. 2			
	GH	Q	GH	Q	GH	Q	GH	Q	Q	Q	Q	Q	GH	Q	GH	Q	GH	Q		
1		7.01																		1
2	6.63	952	1.02	69	2.98	127	2.49	188	4	4	-	8	1.48	356						2
3	7.14	1054	1.58	151	3.38	155	2.49	188	5	6	-	4	1.45	344						3
4	7.13	1052	1.52	138	3.28	148	2.64	216	0	0	6	4	1.43	312	3.89	57	4.73	136		4
5	7.12	1050	1.56	147	3.40	164	2.64	244	6	3	7	10	1.46	348						5
6	7.13	1058	1.46	126	3.24	151	2.64	244	3.5	2.5	6	7	1.38	316						6
7	7.13	1052	1.46	126	3.35	151	2.74	264	2	3	7	7	1.40	324						7
8	7.12	1050							7	4	6	5								8
9	7.12	1050	1.48	130	3.34	151	2.72	260	8	3	5	6	1.32	290						9
10	7.05	1036	1.36	109	3.30	148	2.72	260	4.5	1.5	2	5	1.28	279						10
11	7.11	1048	1.19	86	3.36	152	2.72	260	6	2	3	5			3.77	45	4.05	96		11
12	7.47	1124	.84	55	3.56	152	2.80	296	11	4 3/4	0	4	1.45	344						12
13	7.48	1126	.90	60	3.70	181	2.90	296	10.8	2	3.0	6.0	1.73	469						13
14	7.42	1113	.84	55	3.66	179	2.91	298					1.84 @	515	@ 3.82	49	@ 4.27	138		14
15	7.81	1199					2.90	296	10.5	4.5	2	6								15
16	7.77	1190	1.06	72	3.78	190	2.90	296	8	2	3	8	2.17	683						16
17	7.78	1192	.99	66	3.76	187	2.90	296	7	1	6	8	2.69	987	3.65	33	4.45	183		17
18	7.80	1197	.99	66	3.76	187	2.91	298	10.5	4.5	5	6	2.47	853						18
19	7.86	1210	.90	60	3.69	187	2.91	298	10.6	4.5	6	6	2.21	705	3.63	32	4.97	338		19
20	7.78	1192	1.10	76	3.80	191	2.90	296	5.5	3.2	7	6	2.07	630						20
21	8.08	1261	1.00	66	3.76	187	2.91	298	1	4	3	4	2.15	672						21
22	8.11	1268																		22
23	8.12	1270	1.10	76	3.82	193	2.91	298	0	0	4	5	2.67	975	3.69	37	4.84	294		23
24	8.43 13.48	1270	.96 @	65	3.72 @	177	2.97 @	264	2	1	3	2	2.70	994						24
25	8.45	1346	.94	64	3.80	184	2.97	264	0	0	3	1	2.94	1150						25
26	8.44	1344	1.05	73	3.88	192	3.09	288	0	1	3	1	2.87	1103						26
27	8.46	1348	1.06	74	3.89	193	3.16	302	1	3	3	4	2.89	1116						27
28	8.66	1394	1.06	74	3.88	192	3.20	310					2.67	975						28
29																				29
30	8.70	1403	1.45	128	3.91	195	3.19	308	5	4	3	-	2.46	847						30
31	8.69	1401	1.16	85	3.36	142	3.19	308			4	8	2.34	744	3.68	36	5.08	377		31

19490

MAY 1988

	MAGIC		No. 3		No. 4		No. 5		East		West		Head J.B.		W-1	W-2	E-Spill		No. 48	
2	8853	57583	3.90	476	360	203	1.58	162		4		12	1.15	143					2.98	201
3	8849	56 818	4.02	536	379	232	1.61	280	.30	10	.50	22	1.12	136					3.10	219
4	8845	56052	4.02	536	433	329	1.23	169	1.26	112	1.15	44	1.12	136					2.59	149
5	8840	55101	4.26	673	4.70	4.02	1.49	247	1.48	155	1.64	62	1.11	134						
6	8833	53781	4.38	747	5.01	4.69	1.55	256	2.05	207	1.87	75	1.11	134		8	10			
7	882.7	52,657	4.38	747	5.02	4.72	1.54	253	1.89	200	1.87	82	1.11	134	8	8	10			
8									2.09	212	1.98	83	1.06	124	8	8	2			
9	881.4	50251	4.38	747	5.01	469	1.54	253	2.09	212	1.98	83	1.05	122	8	8	8		3.05	212
10	880.4	48787	4.36	735	5.02	472	1.50	250	2.09	212	1.98	83	1.05	122	8	8	7		3.05	212
11	879.9	47518	4.36	735	5.04	476	1.48	244	2.17	222	1.98	83	1.00	112	7	8	11		3.01	⑥ 216
12	879.2	46265	4.36	735	5.03	⑤ 483	1.50	④ 238	2.16	③ 214	1.97	② 200	1.00	112	8	7	11			
13	878.5	45025	4.36	735	5.06	490	1.48	232	2.19	218	2.15	115	.96	104	14	8	13		2.91	201
14	877.6	43449	4.40	① 824	5.06	490	1.56	256	2.19	218	2.30	129	.90	93	13	14	8			
15									2.19	218	2.30	129	.90	93	12	14	8			
16	876.1	40,879	4.40	824	5.07	492	1.53	247	2.19	218	2.30	129	.90	93	12	17	10		3.05	222
17	875.4	39,707	4.40	824	5.06	490	1.54	250	2.18	217	2.28	127	.90	93	12	10	9			
18	874.7	38,549	4.40	824	5.07	492	1.53	247	2.18	217	2.28	127	.90	93	10	10	8		3.01	216
19	874.1	37,730	4.38	813	5.09	497	1.49	235	2.19	218	2.29	128	.90	93	10	10	5			
20	873.7	36,924	4.40	824	5.04	485	1.55	253	2.19	218	2.29	128	.90	93	4	8	7		3.03	219
21	873.2	36,124	4.44	843	5.14	508	1.65	292	2.18	217	2.28	127	.97	106	4	12	5		3.05	222
22									2.19	218	2.29	128	1.00	112	4	12	4			
23	871.6	33,632	4.44	843	5.22	528	1.60	272	2.18	217	2.28	127	1.01	117	4.6	12.5	3.8		3.15	237
24	870.9	32,521	4.44	843	5.22	528	1.58	264	2.20	220	2.29	128	1.00	112	4	12	4.7		3.13	⑧ 234
25	870.3	31,677	4.43	842	5.21	⑦ 518	1.59	⑨ 280	2.22	222	2.30	129	1.01	114	4	12	5		3.09	228
26	869.7	30,798	4.42	836	5.21	518	1.57	272	2.22	222	2.30	129	1.01	114	4	8	6			
27	869.3	30218	4.42	836	5.23	523	1.55	264	2.21	221	2.29	128	1.00	112	3	8	7		3.06	224
28	868.9	29,641	4.40	824	5.22	520	1.51	250	2.20	220	2.28	127	.99	110	5	8	9			
29									2.20	220	2.28	127	.99	110						
30	867.8	28,093	4.44	848	5.16	506	1.52	251	2.20	220	2.28	127	99	110	8	8	105		319	243
31	867.3	27,403	4.44	848	5.16	530	1.59	280	2.23	222	2.30	129	1.00	112						
				23,136																

JUNE 1988

	No. 14		NO. 54		No. 53		No. 56		No. 57		No. 10		No. 11		M.J.B.		Marley		F	S	
	GH	Q	GH	Q	GH	Q	GH	Q	GH	Q	GH	Q	GH	Q	GH	Q	GH	Q	Waste	Waste	
	3.62	474	2.20	.89	6.35	1103	6.60	599			2.48	105	4.02	189			.002	—		Off	1
2	3.63	475	2.12	73	6.36	1106	6.60	599			2.51	109	2.75	45							2
3	3.44	444	1.93	49	6.28	1085	6.48	575	3.89	371	2.41	95	2.74	45							3
4	3.35	430	1.85	40	6.24	1074	6.40	560	4.66	472	2.37	90	2.74	45							4
5																					5
6	3.23	410	1.71	28	6.06	1028	6.30	541	4.79	488	2.24	74	2.75	45							6
7	3.19	404	1.70	27	6.02	1015	6.28	537			2.22 ②	76	2.70 ②	28							7
8	3.45	446	2.24	93	5.92	991	6.37	554			2.20	73	3.80	109	2.76	182				.34	23.2 8
9	3.33	426	2.30	103	5.97	1004	6.40	560			2.17	70	4.57 ②	228 ②	2.70	171	.24	14	26.5	.49	43.5 9
10	3.32	425	2.26	96	6.02	1017	6.42	563			2.14	67	4.61	235	2.80	210	.32	21	26.0	.36	26.2 10
11	3.37	433	2.00	59	6.00	1012	6.36	552			2.13	66	4.48	212	2.66	163	.36	26	24.0	.22	11.1 11
12																					12
13	3.30	422	1.89	44	5.92	991	6.29	539			2.17	70	4.50	216	2.60	153	.30	19	25.0	.34	26.0 13
14	3.29	420	1.87	42	5.91	989	6.27	535			2.19	72	4.46	209	2.60	153	.39	19	24.0	.38 .34	28.2 14
15	3.28	418	1.80	36	5.92	991	6.25	531			2.24	78	4.43	204	2.62	156	.30	19	11.0	.30 .38	18.5 15
16	3.31	423	1.78	34	5.91	989	6.24	529			2.24	78	4.45	207	2.60	153	.30	19	12.0	.28	16.7 16
17	3.29	420	1.74	30	5.89	983	6.20	522			2.25	80	4.46	209	2.60	153	.24	14	12.0	.22	11 17
18	3.34	428	1.80	36	5.98	1007	6.28	537			2.25	80	4.50	216	2.60	153	.26	16	12.0	.16	7 18
19																					19
20	3.30	422	1.73	30	5.94	996	6.22	525			2.21	75	4.52	219	2.60	153	.24	14	10.5	.12	4.4 20
21	3.28 ②	447	1.72 ②	32	5.87 ②	963	6.18 ②	558			2.17 ②	60	4.52 ②	207	2.56 ②	147	30 ②	19	12	.58	57.0 21
22	3.25	442	1.72	32	5.89	968	6.17	556			2.20	63	4.55	212	2.54	144	.18	10	8	.54	51.0 22
23	3.33	455	1.64	26	5.84	955	6.05	533			2.13	56	4.58	214	2.56	147	.24	14	12	.44	36.2 23
24	3.38	463	1.68	29	5.98	991	6.16	554			2.16	59	4.60	221	2.54	144	.24	14	12	.38	28.2 24
25	3.34	457	1.59	22	5.98	991	6.19	559			2.15	58	4.53	209	2.44	129	.20	11	2	.30	19 25
6																					26
27	3.31	452	1.41	11	6.01	999	6.19	560			2.18	61	4.60	221	2.44	127	.02	0	24	.67	71 27
28	3.30	450	1.38	9	6.00	996	6.17	556			2.20	63	4.65	230	2.46	130	.14	7	2	.52	98 28
29	3.39	465	1.32	7	6.01	999	6.09	541			2.24	67	4.64	228	2.40	121	.25	15	5	.37	21 29
30	3.46	477	1.30	6	6.19	1046	6.28	577			2.18	61	4.61	223	2.36	114	.30	19	0	.18	78 30
31																					31

JUNE 1988

	No. 60		No. 51		No. 52		No. 15		Main LS		Dry Krall		No. 19		NO. 1		No. 2			
	GH	Q	GH	Q	GH	Q	GH	Q	Q	Q	Q	Q	GH	Q	GH	Q	GH	Q		
	8.69	1401	098	6.7	3.30	143	3.19	308	10	10	3	8	2.14	667						1
2	8.65	1392	0.89	61	3.24	138	3.19	308	8	7	4	5	2.29	749	3.73	39	4.90	3.14		2
3	8.65	1392	1.92	267	0	180	3.19	308	8	8	3	4	2.17	672						3
4	8.69	1401	198	68	3.20	136	3.19	308	10	9	0	3	2.69	987						4
5	8.68	1399							8	9	2	3	3.25	1375						5
6	8.70	1403	.84	56	3.56	161	3.19	308	5	7	5	5	3.17	1315						6
7	8.73	1413	1.14	83	3.76	180	3.19	308	4	6	5	5	2.84	1083	3.50	22.7	5.40	496		7
8	8.70	1403	1.36	112	3.90	194	3.20	310	4	7	8	8	2.56	907						8
9	8.68	1399	1.52	143	3.94	198	3.19 (R)	302	3	6	7	10	2.31	756						9
10	8.71 (C)	1449	1.52	143	3.94	198	3.19	302	6	6	4	6	2.32	760						10
11	8.69	1445	1.36	112	3.88	192	3.19	302	4	4	7	8	2.32	760						11
12	8.73	1454					3.19	302												12
13	8.68	1442	1.34	109	3.87	191	3.19	302	8	4	7	6	2.24	710						13
14	8.71	1448	1.34	109	3.87	191	3.19	302	8	3	7	6	2.18	678						14
15	8.72	1452	1.30	103	3.85	189	3.19	302	3	3	2	6	2.25	705	3.10	6.8	4.69	2.49		15
16	8.73	1454	1.24	95	3.86	190	3.19	302	7	6	2	6	2.25	705	3.01	5	4.66	240		16
17	8.96	1507	1.04	71	3.90	194	3.19	302	7	1	3	4	2.25	705						17
18	8.96	1507	1.10	78	3.94	197	3.19	302	5	3	4	4	2.18	678						18
19																				19
20	8.93	1500	1.02	70	3.93	197	3.19	302	2	1	3	4	2.11	641						20
21	8.97	1510	1.25	96	4.05	210	3.19	302	3	1	2	2	2.02	594	2.88	2.6	4.05	196		21
22	8.97	1510	1.32	106	4.10	215	3.19	302	0	0	3	6	1.99	579						22
23	9.23	1572	1.10	78	3.97	201	3.22	308	1	0	2	5	1.90	535						23
24	9.21	1567	1.20	90	4.00	204	3.25	315	2	1	3	4	1.96	515						24
25	9.23	1572	1.10	78	3.97	201	3.25	315					1.75	464						25
6	9.24	1574					3.25	315	1	2	4	4								26
27	9.24	1574	1.46	196	4.16	220	3.26	317	2	0	4	5	1.62	406						27
28	9.25	1577	1.36	112	4.02	202	3.25	315	1	0	5	5	1.56	(C) 428			4.05	109		28
29	9.46 (B)	1519	1.18 (C)	87	3.96 (C)	205	3.26	317	2	1	0	3	1.52	312						29
30	9.50	1529	1.54	147	4.10	221	3.31	328	4	2	0	3	1.54	432						30
31		42712	1424 Ave.																	31

JULY 1988

	No. 60		No. 51		No. 52		No. 15		Main LS		Dry Krall		No. 19		No. 1		No. 2		
	GH	Q	GH	Q	GH	Q	GH	Q	Q	Q	Q	Q	GH	Q	GH	Q	GH	Q	
1	9.51	1531	1.49	136	4.08	218	3.31	328	4	2	0	3	1.41	376	2.91	4	3.99	94	1
2	9.51	1531	1.23	93	3.96	205	3.31	328	4	3	2	3	1.35	352					2
3	9.72 9.70	1582 1577	1.06	74	4.10	221					3								3
4	9.68	1572					3.31	328	8	4	2	3	1.24	308					4
5	9.71	1579	1.10	78	4.11	222	3.31	328	7	2	3	3	1.25	312	2.86	2.9	3.89	74	5
6	9.64	1562	1.10	78	4.11	222	3.31	328	5	1	2	2	1.22	304					6
7	9.71	1579	1.07	75	4.10	221	3.31	328	5	3	3	4	1.16	279					7
8	9.72	1582	1.14	83	4.11	222	3.31	328	5	2	3	4	1.12	264					8
9	9.72	1582	1.10	78	4.08	218	3.31	328	5	1	1	3	1.09	254					9
10	9.72	1582					3.31	328					1.06	243					10
11	9.78	1596	1.16	85	4.05	215	3.31	328	4	1	1	0	1.09	254					11
12	9.74	1586	1.14	82	4.05	215	3.31	339	2	1	1	2	1.08	250	Gal	2.0	3.90	76	12
13	9.78	1596	1.11	80	4.05	215	3.31	339	3	3	1	2	1.06	243					13
14	9.72	1577	1.08	76	4.02	212	3.31	339	2	5	2	2	1.03	234	2.78	2.6	3.84	57	14
15	9.73	1519	1.00	69	3.98	207	3.31	339	2	5	2	2	1.01	228					15
16	9.62 9.61	1494 1491	1.06	74	3.94	203	3.31	339	2	6	1	2							16
17	9.61	1491																	17
18	9.69	1494	1.00	69	3.90	199	3.31	339	6	8	1	1	.96	213					18
19	9.63	1495	1.04	72	3.96	205	3.31	339	7	5	2	2	.94	208					19
20	9.63	1495	1.10	78	3.97	206	3.31	339	5	5	1	1	.93	205					20
21	9.63	1495	1.10	78	3.97	206	3.31	339	8	5	2	2	.91	200	2.76	2.1	3.80	58.6	21
22	9.67	1494	1.20	90	4.06	216	3.31	339	7	5	2	2	.86	192					22
23	9.62	1494	1.20	90	4.06	216	3.31	339	8	2	3	4	.86	188					23
24																			24
25	9.62	1494	1.20	90	4.02	212	3.31	339	8	2	3	4	.84	182					25
26	9.62	1494	1.16	85	4.04	214	3.31	339	8	3	2	3	.84	182	—		3.82	54.0	26
27	9.63	1495	1.16	85	4.04	214	3.31	339	5	4	3	3	.84	182					27
28	9.52	1442	1.21	87	4.01	229	3.31	339	4	4	2	2	.86	188					28
29	9.53	1445	1.24	91	4.16	238	3.31	339	4	4	2	3	.84	182					29
30	9.53	1445	1.30	98	4.12	234	3.31	339					.82	177					30
31		45,752																	31

JULY 1988

	No. 14		No. 54		No. 53		No. 56		No. 57		No. 10		No. 11		M.J.B.		Marley		F	S	
	GH	Q	GH	Q	GH	Q	GH	Q	GH	Q	GH	Q	GH	Q	GH	Q	GH	Q	Waste	Waste	
	3.49	482	1.30	6	6.24	1059	6.31	583			2.23	66	4.65	230	2.40	121	.28	17	0	1.59	1
2	3.49	482	1.46	13	6.25	1061	6.29	579			2.20	63	4.55	204	2.25	98	.29	18			2
3													2.20	11	—	—					3
4	3.49	482	1.26	5	6.31	1077	6.31	583			2.24	67	2.00	7	—	—					4
5	3.58	497	1.75	36	6.32	1080	6.37	595			2.18	61	2.08	9							5
6	3.55	492	1.69	30	6.25	1061	6.28	575			2.17	② 56	2.07	8							6
7	3.55	492	1.75	36	6.27	1067	6.30	581			2.14	56	2.07	8							7
8	3.59	499	1.71	31	6.39	1098	6.39	599			2.11	54	1.96	6							8
9	3.60	501	1.69	30	6.42	1106	6.47	615			2.13	55	2.50	⑥ 11							9
10																					10
11	3.59	499	1.66	27	6.41	1103	6.50	622			2.11	54	2.21	5							11
12	3.60	501	1.64	26	6.40	1100	6.50	622			2.09	51	2.29	7							12
13	3.63	506	1.65	26	6.40	1100	6.47	615			2.10	52	2.29	7							13
14	3.66	511	1.63	25	6.40	1100	6.42	605			2.11	54	2.29	7							14
15	3.73	523	1.65	26	6.36	1090	6.37	595			2.11	54	2.27	6.4							15
16	3.66	511	1.57	21	6.31	1077	6.39	599			2.09	51	2.29	7							16
17																					17
18	3.64	508	1.54	18	6.29	1072	6.35	591			2.09	51	2.26	6.4							18
19	3.67	513	1.52	17	6.36	1090	6.33	587			2.06	⑤ 46	2.26	6.4							19
20	3.71	520	1.54	18	6.39	1095	6.35	591			2.10	48	2.30	7							20
21	3.72	521	1.53	17	6.40	1100	6.42	605			2.12	50	2.26	6.							21
22	3.71	520	1.57	20	6.37	1093	6.40	601			2.13	51	2.29	7							22
23	3.65	509	1.59	22	6.38	1095	6.45	611			2.14	52	2.29	7							23
24																					24
25	3.68	514	1.61	23	6.43	1108	6.46	613			2.12	50	2.28	6.8							25
26	3.68	514	1.61	23	6.44	1111	6.46	613			2.16	54	2.29	7.2							26
27	3.68	514	1.60	23	6.45	1113	6.45	611			2.14	52	2.28	6.8							27
28	3.69	516	1.62	24	② 6.44	② 1125	6.44	609			2.13	⑥ 59	2.27	6.6							28
29	3.59	499	1.59	22	6.47	1134	6.53	629			2.10	56	2.25	6							29
30	3.60	501	1.56	20	6.51	1146	6.55	633			2.09	55	2.36	12	2.60	154					30
31											2.09	55	4.09	698	2.76	184					31

AUGUST 1988

	MAGIC		No. 3		No. 4		No. 5		East		West		Head J.B.		W-1 - W-2		E-Spill		No. 48	
1	8340	1862	364	374	374	224	132	202	1.24	110	1.30	55	67	56						
2	½	Hole	292	144	217	51	116	188		15	1.00		0	15						
3	830.5	1105					.75	40												
4																				
5	831.2	1241																		
6																				
7																				
8	835.5	2246																		
9	836.0	2381																		
10	836.5	2521																		
11	837.0	2664																		
12	837.2	2724																		
13	837.4	2784																		
14	837.8	2904																		
15	838.2	3030																		
16	838.5	3129																		
17	838.8	3228																		
18	839.0	3296																		
19	839.6	3512																		
20	840.1	3699																		
21																				
22	840.7	3936																		
23	841.0	4056																		
24	841.3	4183																		
25	841.6	4312																		
26	841.8	4398																		
27	841.9	4441																		
28	842.0	4484																		
29	842.3	4622																		
30	842.4	4668																		
31	842.6	4760																		
				518		275														

* S. [illegible] AUGUST 1988

Day	No. 60		No.51		No. 52		No. 15		Main LS		Dry Krall		No. 19		No. 1		No.2		Day
1	9.53	1445	1.50	132	4.18	240	3.31	339	7	3	4	5	.82	177					1
2	9.52	1442	1.54	140	4.00	221	3.31	339	8	4	4	5	.81	175			3.78	47	2
3	9.30	1392	1.48	128	4.04	225	3.31	339	8	4	3	3	.85	195					3
4	9.30 9.31	1392 1394	1.46	125	4.06	227	3.31	339	7	3	3	4	.87	153					4
5	9.31	1394	1.44	121	4.08	229	3.31	339	6	4	0	2	.86	151					5
6	9.30	1392	1.40	114	4.08	229	3.31	339	7	6	1	4	.86	151					6
7	9.30	1392					3.31	339	7	4	2								7
8	9.20	1392	1.38	110	4.04	225	3.31	339	7	4	4	4	.86	151					8
9	9.17	1362	1.34	104	4.06	227	3.31	339	5	4	4	4	.86	151			3.81	52	9
10	9.18	1364	1.28	96	4.00	221	3.31	339	4	4	4	1	.82	142					10
11	9.17	1362	1.24	80	4.00	221	3.31	339	5	4	5	0	.82	142					11
12	9.16	1360	1.24	80	4.00	221	3.31	339	5	6	4	0	.80	137					12
13	9.17	1362	1.28	96	4.06	227	3.31	339	5	6	4	1	.83	149					13
14	9.16	1360					3.31	339											14
15	9.17	1362	1.36	108	4.02	223	3.31	337	7	6	5	4	.86	137					15
16	9.16	1360	1.40	114	4.05	226	3.31	318	5	3	4	4	.78	133	—	—	3.81	52	16
17	9.17	1362	1.34	104	4.08	229	3.31	318	5	2	4	3	.78	133					17
18	8.95 8.97	1316	1.38	110	4.08	229	3.31	318	5	3	4	2	.76	129		[illegible]	3.77	45	18
19	8.97	1316	1.24	91	4.00	221	3.31	318	5	3	4	2	.74	125					19
20	8.96	1360	1.26	93	4.04	225	3.31	318	4	4	4	2	.74	125					20
21																			21
22	8.97	1362	1.34	104	4.02	223	3.31	318	5	7	5	4	.73	123					22
23	8.97	1362	1.34	104	4.02	223	3.31	318	5	6	4	5	.73	123			3.77	45	23
24	8.75	1311	1.24	91	4.00	221	3.31	318	6	4	5	5	.71	119					24
25	8.75	1311	1.20	86	4.00	221	3.31	318	6	5	5	3	.70	118			3.75	43	25
26	8.75	1311	1.18	84	3.98	218	3.31	318	7	4	4	1	.69	116					26
27	8.75	1311	1.20	86	4.10	232	3.31	318	7	3	2	1	.68	114					27
28	8.75	1311					3.31	318											28
29	8.74	1309	1.34	104	4.16	238	3.31	318	8	4	2	4	.69	116					29
30	8.75	1311	1.34	104	4.16	238	3.29	314	5	3	3	5	.69	116					30
31	8.75	1311	1.28	96	4.10	232	3.31	318	5	3	3	5	.68	114					31
		42.089																	

IWRB00003386

SEPTEMBER 1988

	MAGIC		No. 3		No. 4		No. 5		East		West		Head J.B.		W-1	W-2	E-Spill		No. 48		
1	842.7	4,806																			1
2	842.9	4,898																			2
3	843.1	4,993																			3
4	843.3	5,091																			4
5	843.5	5,191																			5
6	843.7	5,291																			6
7	843.8	5,341																			7
8	843.9	5,391																			8
9	844.1	5,494																			9
10	844.3	5,600																			10
11	844.4	5,653																			11
12	844.6	5,759																			12
13	844.7	5,813																			13
14	8449	5,921																			14
15	845.1	6,032																			15
16	845.2	6,089																			16
17	845.4	6,203																			17
18	845.5	6,260																			18
19	845.6	6,317																			19
20	845.8	6,374																			20
21	845.9	6488																			21
22	846.1	6605																			22
23	846.3	6725																			23
24	846.4	6,786																			24
25	846.6	6,908																			25
26	846.8	6969																			26
27	846.9	7,091																			27
28	847.0	7,152																			28
29	847.1	7,216																			29
30	847.3	7,344																			30
31																					31

SEPTEMBER 1988

	No. 60		No. 51		No. 52		No. 15		Main LS		Dry Krall		No. 19		No. 1		No. 2			
	GH	Q	GH	Q	GH	Q	GH	Q	Q		Q		GH	Q	GH	Q	GH	Q		
1	8.75	1311	1.30	99	4.12	234	3.31	318	5	3	4	5	.68	114	2.79	1.24	3.70	35		1
2	8.75	1311	1.26	92	4.18	240	3.31	318	7	3	4	6	.68	114						2
3	8.75	1311	1.32	107	4.16	238	3.31	318	8	5	3		.67	113						3
4																				4
5	8.75	1311					3.31	318	8	4	4	8	.67	113						5
6	8.75	1311	1.44	121	4.18	240	3.31	318	8	5	4	10	.67	113			3.70	35		6
7	9:33 8.75	1256 1311	1.49	130	4.18	244	3.31	318	8	8	4	25	.67	113	2.77	1.2				7
8	8.51	1256	1.49	130	4.18	244	3.31	318	8	6	6	25	.66	111						8
9	8:28 8.28	12:04 1203	1.32	102	4.12	234	3.31	318	7	5	5	20	.66	111						9
10	8.28	1203	1.24	86	4.06	227	3.31	318	7	6	5	16	.67	113						10
11													.68	114						11
12	8.28	1190	1.20	86	4.06	227	3.31	318	8	5	6	14	.70	118						12
13	8.28	1190	1.30	99	4.10	232	3.31	318	8	5	6	18	.72	121			3.70	35		13
14	8.28	1190	1.30	99	4.10	232	3.28	312	7	6	5	18	.72	121						14
15	7.82	1090	1.30	99	4.10	232	3.28	312	4	3	6	20	.72	121			3.71	37		15
16	7.82	1090	1.08	73	3.98	218	3.28	312	5	3	6	16	.71	119						16
17	7.34	1000	1.06	71	3.96	216	3.28	312	7	5	6	16	.70	118						17
18	7.36	1000											.70	118						18
19	7.35	994	1.08	73	4.00	221	3.01	256	8	6	10	16	.70	118						19
20	7.35	994	1.06	71	4.02	224	3.16	303	3	6	11	20	.73	123			3.71	37		20
21	7.36	996	1.04	70	4.01	222	3.28	312	7	6	11	20	.71	119						21
22	7.36	996	1.10	75	3.80	199	3.28	312	7	6	11	25	.74	125						22
23	7.34	992	1.10	65	3.80	171	3.25	296	8	6	11	30	.74	125						23
24	7.34	992	1.10	65	3.80	171	3.25	296	7	6	11	30	.73	116						24
25	7.34	1040																		25
26	6.59	890	1.04	62	3.75	167	3.25	296	7	6	12	30	.72	114						26
27	6.58	888	.50	31	3.46	144	9.12	270	3	3	10	22	.71	113						27
28	6.60	892		0	3.32	134	3.16	278	6	4	10	15	.71	113						28
29	6.58	888	40	27	3.22	127	3.20	284	7	5	6	5	.71	113						29
30	6.59	890	.90	51	3.44	143	3.00	247					.71	113						30
31		24,434																		31

OCT 1988

	#	60	#	51	#	52	#	14	#	54	#	53	#	56	Magic	
1	6.59	890													847.4	7536
2	6.58	888													847.8	7666
3	6.58	888	.90	51	3.46	144	2.61	337	1.74	31	4.85	6.72	5.66	428	847.9	7731
4	6.59	890	.88	50	3.44	143	2.62	338	1.76	33	4.87	6.77	5.68	432	848.0	7796
5	6.59	890	1.06	62	3.30	133	2.62	339	1.78	35	4.87	6.77	5.68	432	848.2	7932
6	6.59	890	1.06	62	3.30	133	2.61	337	1.74	31	4.88	6.79	5.68	432	848.3	8000
7	6.59	890	1.00	58	3.30	133	2.61	337	1.78	35	4.87	6.77	5.66	432	848.4	8068
8		off													848.6	8204
9															848.7	8272
10															848.8	8340
11																
12																
13																
14																
15																
16																
17															848.7	8977
18	Mar 14		865.8	25,390				Nov	-8						852.3	10,983
19								Nov	17						853.5	11,994
20								Nov	29						855.4	13,701
21								Nov	30						855.6	13,889
22								Dec	9							14,947
23								Dec	16						857.4	15,643
24								Dec	19						857.6	15,845
25								Jan	5						859.2	17,520
26								Jan	11						859.8	18,162
27								Jan	16						860.2	18,604
28								Jan	23						860.9	19,388
29								Jan	30						861.2	19,730
30								Feb 1	1						861.5	20,077
31								Mar	6						864.3	23,459
		6,226						March	9						864.6	23,840

IWRB00003389

1989

APRIL

	# 14		# 54		# 53		# 56		# 57		# 10		# 11		MJB		Marley		F	S
1																				
2																				
3																				
4																				
5											2.94	187								
6											2.90	178								
7											2.87	172								
8																				
9																				
10																				
11																				
12	3.02	352									3.84	330+	3.71	28						
13	302	352											2.71	28						
14	3.02	352									3.84	330	3.02	53					20	
15																				
16																				
17	2.42	265									3.50	317	3.02	53					15	
18	2.38	259						2:06 P/M.			3.37	289	3.02	53					15	
19	2.80	319			2.40		4.01	193			3.77	416	3.03	54					9	
20	2.77	314	3.00	346	2.74		3.96	175			3.80	426	3.03	54					9.5	
21	2.73	308	2.99	336	3.50		4.68	256	3.90	405	3.77	416	3.03	54					9.	
22	2.69	303	2.97	332	4.38	3.89	5.58	389	2.89	2.79	3.70	392	3.04	55						
23	2.44	268	2.94	318	4.33		5.61	394			3.56	345	3.03	54					6.2	
24	2.44	268	2.94	318	4.33		5.61	394			3.56	345	3.03	54					6.2	
25	2.36	257	2.80	259	4.34	435	5.60	393			3.40	297	3.60	108					26.4	
26	1.70	177	2.51	162	4.65	500	5.90	443			3.20	244	3.48	104					4	
27	2.32	252	2.40	136	4.97	572	5.62	396			3.06	211	3.60	122					7.2	
28	2.10	224	2.06	76	4.89	554	6.04	304			2.87	170	3.57	118					25	
29	3.05	356	1.75	38	4.84	542	4.27	199			2.72	140	3.67	133					3.2	
30	3.15	372			5.70	774	5.12	316												
31																				

APRIL 1969

	No. 60		#51		#52		#15		Main LS	Dry Krall	#19		#1		#12		
	GH	Q	GH	Q	GH	Q	GH	Q			GH	Q	GH	Q	GH	Q	
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8											1.77						
9																	
10											1.74	410					
11																	
12																	
13																	
14																	
15																	
16																	
17		246									1.56	907					
18	2.83	309									2.54	907	7.09	1192	5.58	588	
19	2.83	309					2.61	219			2.84	1025					
20	2.83	309									3.07	1177					
21	4.85	606									3.22	1240					
22	4.86	608					2.59	215			3.46	1470			6.38	1064	
23	4.86	608					2.57	212									
24	4.86	608	1.80	209	1.88	66	2.56	210			2.77	981					
25	4.85	606	1.85	226	2.06	72	2.35	177			2.53	835	6.01	742	5.76	690	
26	5.85	790	1.113	117	2.42	90	2.11	145			2.34	727					
27	5.86	798	1.52	134	2.42	90	2.56	208			2.21	656					
28	5.86	792	1.30	90	2.38	93	2.45	192			2.11	604					
29	5.83	786	.44	.54	2.30	88	2.95	280			2.04	569					
30																	
31							2.73	238									

May 1989

10 +05

	#	14	#	54	#	53	#	56	#	57	#	10	#	11	M	J. B	Marley		F	S	Drains
1	3.10	364	1.36	9	5.64	754	5.19	326			2.55	110	3.62	126					0		
2	3.00	349	1.31	5	5.43	706	4.98	296			2.52	106	2.86	41	2.38	121			0		
3	2.94	340	2.01	68	5.34	679	5.43	348			2.40	88	3.70	138	2.78	192					
4	3.17	375	2.33	122	5.32	673	5.41	360			2.40	88	3.88	171	2.88	212			10.2	11'	
5	2.94	340	2.28	113	5.64	769	6.01	463			2.30	76	3.90	175	2.96	230			0	28.3	
6	3.18	377	2.30	117	5.75	807	5.95	452			2.27	73	4.06	209	2.86	208	.60	20	10	0	
7																				56	
8	3.14	370	2.28	113	5.68	782	5.86	437			2.20	65	4.08	213	2.96	230	.60	20	5	63.2	
9	3.14	370	2.12	86	5.94	874	6.01	463			2.20	65	4.06	209	2.82	200	.32	21	3	48	
10	3.21	382	1.98	64	6.12	945	6.03	466			2.16	61	4.20	240	2.74	184	.34	24	10	39	
11	3.26	390	2.01	68	6.26	1002	6.16	491			2.05	51	4.18 ©	211	2.74	184	.30	19	8	19.5	
12	3.18	377	1.88	51	6.28	1010	6.25	508			2.10	55	4.18	211	2.72	180	.30	19	10	30	
13	3.42	415	2.09	81	6.37	1051	6.37	531			2.25	70	4.22	220	2.87	200	.38	28	10	70	13
14																				32	22
15	3.47	423	2.22	103	6.45	1087	6.51	558			2.45	95	4.26	229	2.78	192	.42	38	20	.32	27 13
16	3.58	441	2.33	122	6.49	1103	6.55	568			2.43	92	4.30	238	2.80	196	.44	36	24	.35	25 17
17	3.55	436	2.39	134	6.35	1042	6.49	557			2.60	118	4.28	233	2.80	196	.36	26	24	.38	29 16
18	3.64	450	2.49	154	6.39	1060	6.55	525			2.70	136	4.30	238	2.82	200	.32	21	16	.38	29 18
19	3.63	449	2.52	165	6.40	1064	6.59	573			2.70	136	4.30	238	2.76	188	.36	26	16	.18	9 17
20	3.61	446	2.43	143	6.44	1082	6.54	563			2.37	84	4.28	233	2.76	188	.40	31	24	.35	25 17
21																					
22	3.49	426	2.33	122	6.39	1060	6.46	548			2.30	76	4.28	233	2.76	188	.42	34	24	.33	27 13
23	3.32 ©	486 ©	2.25 ©	110 ©	6.23 ©	965 ©	6.30 ©	575 ©			2.26	77	4.26	229	2.76	188	.40	31	20	27	25 16
24	3.19	463	2.15	93	6.10	913	6.17	550			2.25 ©	75 ©	4.26	229	2.74 ©	186 ©	.36	26	20	.29	8 15
25	2.94	423	2.14	91	6.18	945	6.51	618			2.35	88	4.30	238	2.74	186	.40	31	12	.18	7 15
26	2.97	429	2.15	93	6.38	1028	6.65	648			2.26	76	4.30	238	2.80	198	.44	36	12	.22	16
27	3.22	468	2.20	101	6.40	1046	6.52	620			2.28	78	4.30	238	2.80	198	.42	34	.5	.35	22 27
28																					28
29	3.25	474	2.20	101	6.40	1046	6.53	626			2.27	77	4.38	238	2.84	206	40	31	5	32	16 16
30	3.23	470	2.15	93	6.44	1056	6.54	624			2.25	75	4.31	240	2.80	198	34	24	5	29	16
31	3.23	470	2.14	91	6.41	1042	6.54	624			2.26	76	4.30	238	2.78	194	32	21			16

May 1989

	# 60		# 57		# 52		# 15		Main	L S	Dry	Krall	# th 19		# 1		# 2		
1	6.89	1018	1.00	62	3.16	145	2.73	238					2.06	579					
2	7.01	1022	.76	45	3.06	138	2.73	238	11	3	—	—	2.12	610	537	467	468	264	
3	7.01	1022	.80	49	3.22	150	2.73	238	11	3	—	—	2.16	630					
4	7.03	1026	.70	42	3.20	148	2.88	266	8	6	—	—	2.24	672	5.27	442	4.79	310	
5	7.74	1177	1.14	72	3.34	159	2.88	266	5	4	—	—	2.37	744					
6	7.75	1179	1.16	74	3.58	180	2.98	286	6	6		8	2.54	841					
7	7.76	1181					2.98	286											
8	7.76	1181	1.20	78	3.70	192	2.98	286					3.78	1330	5.06	439	5.84	730	
9	8.27	1298	1.10	69	3.62	184	3.07	305	7	4	9	12	3.60	1582	5.30	454	6.18	972	
10	8.41	1330	1.12	70	3.88	211	3.07	305	7	4	8	12	3.66	1630					
11	8.42	1332	1.10	69	3.88	211	3.07	305	7	3	10	16	3.76	1710	5.53	544	6.59	1192	
12	8.42	1332	1.19	77	3.90	213	3.06	303	10	4	10	24	3.50	1502					
13	8.42	1332	1.34	94	3.96	220	3.08	307	8	5	9	24	3.23	1292					
14	8.42	1332																	
15	8.42	1332	1.34	94	3.96	220	3.08	307	10	7	10	30	2.84	1012	5.03	3.26	5.95	740	
16	8.43	1334	1.54	126	4.00	224	3.08	307	12	8	12	30	2.85	1032					
17	8.43	1334	1.58	134	3.90	213	3.08	307	12	8	13	36	2.80	1000					
18	8.42	1332	1.62	143	3.92	215	3.08	307	9	4	12	24	2.89	1057	4.88	274	5.87	700	
19	8.43	1334	1.62	143	3.92	215	3.08	307	9	4	12	30	2.82	1012					
20	8.42	1332	1.56	130	3.86	208	3.08	307	9	4	11	26	2.71	944					
21																			
22	8.43	1334	1.54	126	3.84	206	3.08	307	8	5	11	16	2.66	913					
23	8.41	(c) 1456	1.30	90	3.80	202	3.07	305	6	6	10	8	2.79	(c) 1000		(c)		(c)	
24	8.38	1449	1.20	78	3.78	200	3.00	290	3	4	8	3	2.69	937	4.64	202	5.65	600	
25	8.39	1452	1.50	119	3.88	211	3.08	307	6	3	4	5	2.55	853					
26	8.62	1505	1.62	143	4.06	230	3.06	307	7	4	5	6	2.41	772					
27	8.64	1510	1.52	119	4.02	226	3.08	307	6	4	6	6	2.32	721					
28	8.64	1510																	
29	8.64	1510	1.56	130	4.04	228	3.08	307	4	7	6	0	2.28	700					
30	8.64	1510	1.58	134	4.04	228	3.07	305	4	6	5	8	2.21	662	4.30	120	5.06	373	
31	8.64	1510	1.58	126	4.02	226	3.07	305	4	11	9	10	2.20	656	4.27	114	4.98	345	

40 1826 40 4

June 1989

	#17		#9		#X		#Y		#Z		+ or -		#21		#93		#17X	
1	1.15	75	1.41	.85	2.15	427	2.80	145	.99	89	+	203	3.30	338	3.07	38	4.34	57
2	1.10	68	1.30	67	2.10	422	2.90	145	1.02	95	+	182	3.26	330	3.05	37	4.34	57
3.	.95	57	1.25	60	1.95	377	2.80	145	1.02	95	+	152	3.06	289	3.02	36	4.32	55
4	.83	48	1.22	57	1.93	371	280	145	101	93	+	133	280	239	296	34	4.30	52
5	.90	53	1.36	77	1.95	377	278	142	101	93	+	162	276	232	300	35	4.30	52
6	.85	49	1.40	83	1.95	377	280	145	102	95	+	152	289	256	298	35	4.28	50
7	.65	34	1.34	73	1.86	350	280	145	103	97	+	173	290	258	292	33	4.24	45
8	.47	24	1.35	75	1.77	323	280	145	101	93	+	85	274	228	300	35	4.26	48
9	.30	16	1.20	54	1.71	306	280	145	103	97	+	79	253	191	285	31	4.24	45
10	.15	10	1.12	44	1.68	298	287	161	103	97	+	55	224	145	258	24	4.29	45
11	.05	dry	1.00	31	1.60	276	2.94	179	102	95	+	17	208	121	239	20	4.26	48
12	.40	13	.99	30	1.59	273	2.94	179	1.00	91	+	18	1.88	94	3.08	38	4.26	48
13	.70	27	1.10	41	1.52	254	3.00	196	1.03	97	+	24	1.93	101	3.04	37	4.28	50
14	.76	39	1.22	57	1.52	265	3.06	215	1.03	97	−	32	1.89	96	3.07	38	4.12	32
15	.70	27	1.27	63	1.54	260	3.12	235	1.05	101	−	61	2.18	136	3.03	36	4.12	32
16	.43	14	1.20	54	1.43	232	3.10	228	1.07	105	−	86	1.98	108	3.00	35	4.14	34
7:14 17	.58	21	1.21	56	1.48	244	3.05	212	1.04	99	−	52	1.72	34	3.10	39	4.18	38
18	.62	23	1.24	59	1.45	237	3.08	222	1.09	109	−	72	1.53	53	3.13	40	4.20	41
19	.60	22	1.28	64	1.44	234	3.08	222	1.06	103	−	76	1.53	55	3.13	40	4.18	38
20	52	18	1.20	54	1.39	222	3.08	222	1.07	105	−	90	1.56	56	3.12	39	4.18	26
21	54	18.5	1.07	38	1.40	224	3.05	212	1.04	99	−	72	1.30	33	3.11	38	4.18	26
22	57	20	1.18	51	1.38	220	3.00	196	.98	87	−	50	1.24	29	3.14	39	4.18	26
23	44	14	1.38	80	1.45	237	3.04	209	1.01	93	−	50	1.36	37	3.10	38	4.18	26
24	80	33	1.27	63	1.56	265	3.05	212	1.05	101	−	33	2.80	71	3.12	39	4.24	32
25	1.13	58	1.24	59	1.58	270	3.08	222	1.04	97	−	34	2.01	197	3.11	38	4.24	32
26	1.10	56	1.25	61	1.64	287	3.08	222	1.05	101	−	21	2.10	109	3.14	39	4.24	32
27	90	40	1.23	58	1.60	276	308	222	1.07	105	−	34	213	113	310	38	4.24	32
28	.74	29	1.17	50	1.49	247	3.08	222	1.07	105	−	65	1.75	66	3.08	37	4.22	30
29	.66	25	1.17	50	1.43	232	3.12	235	1.06	103	−	91	1.41	33	3.05	37	4.22	30
30	.69	26	1.17	50	1.53	257	3.12	235	.95	82	−	45	1.30	25	3.05	36	4.22	30
31																		

June 1989

	Magic		# 3		# 4		# 5		East		West		Head	J.B.	W-1	W-2	E. Spill		# 48	
1	922.7	147,923	4.58	831	5.33	537	2.15	289	2.34	240	2.43	131	1.05	122	15	3	9			
2	922.5	147,192	4.58	831	5.33	537	2.16	293	2.30	236	2.41	130	1.02	116	10	3	7		3.19	247
3	922.1	145932	4.58	831	5.34	539	2.20	310	2.34	240	2.48	135	.96	104	8	2	10			
4	921.9	145,307	4.59	838	5.35	541	2.23	326	2.39 2.43	252	2.49 2.53	139	.94 .96	104	12	3	10			
5	921.7	144,689	4.59	838	5.36	544	2.25	333	2.42	251	2.52	139	.96	104	12	3	10		3.25	256
6	921.5	144,071	4.59	838	5.36	544	2.21	315	2.42	251	2.53	139	.96	104	13	3	10			
7	921.3	143453	4.62	857	5.40	552	2.22	320	2.42	251	2.53	139	.96	104	13	3	10		3.26	258
8	921.2	143,144	4.58	831	5.39	550	2.18	302	2.40	248	2.64	148	.92	97	13	6	9		3.24	288
9	921.1	142.835	4.60	844	5.40	555	2.18	324	2.40	248	2.64	148	.92	97	16	6	6		3.24	288
10	921.2	143,144	4.66	883	5.56	590	2.16	315	2.40	248	2.64	148	1.07	126	13	6	5			
11	921.1	142,835	4.66	883	5.56	590	2.16	315	2.40	248	2.64	148	1.07	126	10	6	6			
12	921.0	142,526	4.68	896	5.57	592	2.15	310	2.41	249	2.65	149	1.07	126	10	6	6		3.25	290
13	921.0	142526	4.70	909	5.58	594	2.14	306	2.41	249	2.65	149	1.07	126	10	8	6			
14	920.9	142,233	4.70	909	5.59	596	2.14	306	2.37	244	2.63	147	1.05	122	10	8	4		3.15	274
15	920.8	141920	4.78 4.78	962 962	5.75 5.78	632 638	2.17 2.15	320 310	2.47 2.48	255 258	2.65 2.68	146	1.10	132	12	7	6		3.17	277
16	920.7	141627	4.82	990	5.87	656 659	2.15	310	2.57 2.54	262 266	2.64	148	1.17	147	12	11	10		3.17	277
17	920.6	141,214	4.83 4.86	996 1.017	5.82 5.89	656 663	2.18 2.18	324 324	2.52	264	2.64	148	1.16	145	14	12	10			
18	920.5	141,011	4.86	1017	5.91	668	2.16	315	2.52	264	2.64	148	1.16	145	-	-	10			
19	920.4	140,708	4.86	1017	5.91	668	2.20	333	2.52	264	2.63	147	1.16	145	14	12	10		3.20	282
20	920.2	140,102	4.86	1017	5.97	680	2.14	306	2.54	266	2.65	149	1.17	147	13	7	11			
21	919.9	139,201	4.86	1017	5.92	669	2.21	338	2.50	261	2.62	147	1.15	143	13	4	16		3.25	290
22	919.6	138,310	4.92	1058	5.97	680	2.29	378	2.50	261	2.62	147	1.15	143	16	4	9			
23	919.3	137,420	4.88	1031	5.93	671	2.20	333	2.48	258	2.58	143	1.13	139	12	4	7		3.27	293
24	919.0	136,532	4.88	1031	5.93	671	2.21	338	2.46	256	2.51	138	1.12	136	12	9	10			
25	918.6	135,569	4.88	1031	5.99	685	2.17	306	2.46	256	2.51	138	1.12	136	12	9	11			
26	918.1	133,919	4.88	1031	5.96	678	2.19	328	2.44	253	2.50	137	1.11	134	12	9	10		3.26	292
27	917.6	132,493	4.88	1031	5.99	685	2.19	328	2.45	255	2.51	138	1.12	136	13	9	9			
28	917.1	131,073	4.88	906	6.00	687	2.21	338	2.45	255	2.51	138	1.12	136	9	3	7		3.27	293
29	916.6	129,665	4.88	906	6.01	690	2.24	352	2.42	251	2.50	137	1.10	132	8	2	7			
30	916.1	128,263	4.92	936	6.22	629	2.23	320	2.50	261	2.53	139	1.15	143	7	2	11		3.40	302
31																				

27936.93

Dick Carl - Mike = 432-5423
Ralp 487-2311

IWRB00003396

July 1989

	# 60		# 51		# 52		# 15		Main L.S.		Dry Krall		# 19		# 1		# 2		#16	48 hr
1	9.48	1546	1.40	116	4.10	230	3.32	370	3	4	2	4	1.99	599						
2																				
3.	9.60	1574	1.38	112	4.10	230	3.32	370	3	2	2	—	1.97	559						
4	9.52	1555	1.44	123	4.06	226	3.32	370	2	2	3	4	1.88	544			4.15	110		
5	9.57	1567	1.44	123	4.06	226	3.31	367	2	2	2	4	1.87	540						
6	9.81	1625	1.44	98	4.08	221	3.32	332	0	0	1	0	1.83	520	3.12	11.1	4.21	123		
7	9.81	1625	1.42	96	4.08	221	3.34	336	0	1	0	0	1.80	506					4½	36
8	9.81	1625	1.46	102	4.10	223	3.35	338	0	0	1	1	1.74	478	3.08	8	3.89	76	7	70
9									—	—	—	—	1.70	459						
10	9.79	1620	1.50	108	4.11	224	3.36	341	3	1	1	4	1.66	441					7"	71
11	9.85	1591	1.50	108	4.11	224	3.36	341	0	0	0	7	1.63	428	2.95	5.4	4.05	88	8"	87
12	9.83	1586	1.40	93	4.04	216	3.39	348	3	2	0	4	1.53	385						
13	9.85	1591	1.44	98	4.08	221	3.40	350	4	3	0	4	1.62	424	2.90	4.0	4.02	82	8"	87
14	9.82	1584	1.44	98	4.08	221	3.43	358	5	4	0	4	1.57	402					8"	87
15	9.81	1582	1.44	98	4.08	221	3.41	353	6	5	1	4	1.53	385					8"	87
16	9.85	1591	1.40	93	4.10	223	3.41	353	—	—	—	—	1.62	381					8"	87
17	9.79	1577	1.44	98	4.14	227	3.41	353	8	6	1	6	1.47	360					9	104
18	9.79	1577	1.40	93	4.14	227	3.38	346	5	6	4	6	1.39	328			3.99	76	8"	104
19	9.79	1577	1.34	86	4.10	223	3.38	346	8	7	3	4	1.36	316					8"	87
20	9.78	1574	1.40	93	4.12	225	3.38	346	5	5	3	4	1.30	293	2.95	3.0	3.75	35	8"	87
21	9.79	1577	1.42	96	4.12	225	3.39	346	4	5	4	4	1.28	286					8	
22	9.78	1574	1.36	89	4.08	221	3.38	346	5	5	4	5	1.							
23													1.11	251						
24	9.77	1572	1.54	114	4.20	234	3.38	346	8	5	3	6	1.21	261					9"	104
25	9.74	1565	1.50	108	4.18	232	3.36	341	5	6	4	6	1.17	247			3.81	44	9"	104
26	9.75	1567	1.46	102	4.17	230	3.36	341	5	6	4	7	1.17	247					9"	104
27	9.80	1579	1.40	93	4.16	229	3.36	341	6	7	3	7	1.20	257	2.87	3.3	3.83	47.4	9"	104
28	9.79	1577	1.44	99	4.18	232	3.36	341	7	7	4	7	1.13	240					9"	104
29	9.79	1577	1.46	102	4.19	233	3.33	334	9	5	3	7	1.15	240					8"	87
30	9.79	1577											1.08	219						
31	9.80	1579	1.56	117	4.22	236	3.33	334					1.04	205						

49.1<6

Separate

	July 1989																			
	Magic		#3		#4		#5		East		West		Head	J.B.	W-1	W-2	E	Spill	#48	
1	4915.6	126,874	4.90	922	6.24	©605	2.23	©306	2.51	262	2.54	140	1.15	143	10	4	12		3.40	©302
2	4915.1	125,489	4.90	922	6.05	607	2.24	310	2.50	261	2.54	140	1.15	143	9	4	7			
3	4914.6	123,842	4.90	922	6.26	610	2.25	315	2.49	260	2.54	140	1.14	141	9	4	5		3.35	293
4	914.0	122,475	4.88	909	6.32	623	2.22	302	2.54	266	2.53	139	1.15	143	4	3	6			
5	913.5	121,122	4.87	903	6.36	632	2.21	297	2.55	268	2.53	139	1.15	143	2	2	6		3.36	295
6	912.9	119,505	4.90	922	6.41	643	2.30	338	2.54	266	2.53	139	1.15	143	2	2	5			
7	912.2	117,636	4.90	922	6.50	663	2.25	315	2.61	275	2.57	143	1.15	143	0	0	7			
8	911.6	116,047	4.88	909	6.55	675	2.26	320	2.61	275	2.57	143	1.14	141	5	2	7			
9	910.8	113,947	4.88	909	6.60	686	2.30	338	2.59	273	2.52	142	1.13	139	6	2	5			
10	910.2	112,387	4.90	922	6.61	688	2.33	352	2.58	272	2.55	141	1.12	136	6	2	4		3.51	320
11	909.6	110,829	4.90	922	6.73	716	2.27	324	2.62	277	2.57	143	1.13	139	3	3	7			
12	908.8	109,046	4.90	922	6.[illegible]	716	2.27	324	2.69	286	2.59	144	1.05	122	6	3	11		3.45	293
13	908.2	107,273	4.88	909	6.16	659	2.18	286	2.64	279	2.58	143	1.28	172	6	3	24			
14	907.3	105,017	4.90	922	6.16	659	2.22	302	2.56	269	2.60	145	1.30	177	24	6	15		3.28	282
15	906.7	103,577	4.90	922	6.15	656	2.24	310	2.66	282	2.54	140	1.26	168	14	8	9			
16	905.6	101,317	4.84	883	6.01	625	2.26	320	2.59	273	2.53	139	1.15	143	6	2	7			
17	905.1	99,616	4.84	883	6.01	625	2.26	320	2.57	270	2.51	138	1.14	141	3	1	7		3.47	©307
18	904.5	98,173	4.80	©1024	6.07	©652	2.21	©347	2.58	272	2.53	139	1.14	141	6	3	7			
19	903.8	96,503	4.80	1024	6.04	645	2.21	347	2.55	268	2.51	138	1.12	136	6	1	4		3.27	274
20	903.1	94,851	4.80	1024	6.03	643	2.23	358	2.51	262	2.49	136	1.10	132	4	4	2			
21	902.4	93,217	4.80	1024	6.05	647	2.23	358	2.53	265	2.50	137	1.11	134	3	3	3		3.27	274
22	901.5	91,138	4.80	1024	6.09	656	2.22	352	2.48	258	2.50	137	1.09	130	3	3	1.4			
23	900.8	89,551	4.84	1051	6.15	670	2.26	373	2.53	265	2.52	139	1.11	134	5	3	1.4			
24	900.1	87,595	4.84	1051	6.07	652	2.34	416	2.53	265	2.45	125	1.07	126			2		3.49	317
25	899.3	86,174	4.84	1056	6.16	672	2.26	373	2.55	268	2.49	136	1.09	130	7	7	1.4			
26	898.6	84,629	4.84	1051	6.21	684	2.25	363	2.58	272	2.53	139	1.11	134	5	6	1.4		3.48	314
27	897.7	82,667	4.84	1051	6.20	689	2.26	373	2.55	268	2.53	139	1.07	126	.4	1	.0			
28	896.9	80,988	4.84	1051	6.14	668	2.30	389	2.54	266	2.48	135	1.03	118	3	0	.2		3.47	307
29	896.3	79,669	4.83	1044	6.28	700	2.26	373	2.56	269	2.51	138	1.04	120	2	2	4.8			
30	895.3	77,566	4.85	1058	6.21	684	2.32	400	2.50	261	2.43	131	1.03	118	4	1	6.4			
31	894.6	76,111	4.84	1051	6.23	688	2.30	389	2.49	260	2.44	132	.99	110	4	1	5.8			

31,164-971

Aug 1989

	# 60		# 51		# 52		# 15		Main	2.5.	Dry	Krull	# 19		# 1		# 2		#16
1	9.74	1565	1.61	.126	4.24	238	3.29	315	10	3	7	8	110	225	2.76	1.3	3.84	79	10
2	9.56	1522	1.54	114	4.22	236	3.29	325	8	3	8	15	1.07	216					9
3.	9.54	1517	1.55	116	4.22	236	3.28	323	4	3	7	15	1.04	208	2.85		3.79	41	10
4	9.55	1519	1.55	116	4.18	232	3.30	327					1.01	200	—				
5	9.52	1512					3.30	327							—				
6	9.55	1519					—	—							—				
7	9.54	1517	1.54	114	4.10	223	3.30	3.27	7	4	7	14	0.96	188	—				9"
8	9.51	1526	1.47	103	4.11	224	3.30	3.27	8	7	8	—	0.95	185	—		3.72	31	9."
9	9.29	1476	1.52	110	4.14	227	3.30	327	7	4	7	12	0.97	192	2.73	1.60	3.75	79	10"
10	9.28	1472	1.60	125	4.14	227	3.30	327	7	7	6	12	0.96	180	2		3.76	84	10"
11	9.28	1472	1.61	126	4.14	227	3.30	327	5	5	3	10	.96	180					10"
12	9.28	1472	1.64	130	4.20	234	3.30	327	9	6	2	10	.94	175					9"
13																			10"
14	9.20	1454	1.64	130	4.18	232	3.30	327	8	5	3	10	.91	167					
15	9.16	1445	1.48	104	4.16	229	3.30	327	10	7	6	12	.90	165			3.75	80	9"
16	9.19	1452	1.50	106	4.14	227	3.30	327	9	5	6	6	.89	162					10"
17	9.19	1452	1.56	117	4.18	232	3.30	327	9	4	7	5	.88	160	2.73	1.60	3.71	72	10"
18	9.19	1452	1.55	116	4.18	232	3.30	327	8	3	5	4	.88	160					10"
19	9.20	1454	1.54	114	4.16	229	3.30	327	8	2	5	5	.93	172					10"
20																			
21	8.20	1454	1.56	117	4.18	232	3.30	327	8	1	5	5	.93	172					9
22	9.21	1458	1.35	91	4.08	229	3.30	327	7	3	6	7	90	165			3.67	64	10
23	9.12	1436	1.40	84	4.08	234	3.30	350	8	2	5	5	.90	165	2.81	2.3	3.62	56	10
24	8.90	1385	1.52	98	4.11	237	3.30	350	7	3	2	5	1.00	190					10
25	8.89	1383	1.48	93	4.10	236	3.30	350	8	4	5	5	1.02	195					10
26	8.90	1385	1.54	102	4.08	234	3.30	350	10	7	5	7	1.03	197			3.72	74	10
27																			
28	8.90	1385	1.48	93	4.10	236	3.30	350	10	6	8	10	.96	180					10
29	8.90	1385	1.46	91	4.08	234	3.30	350	7	6	7	10	.95	177			3.72	74	10
30	8.47	1286	1.40	84	4.02	227	3.30	350	6	7	7	4	92	170					10
31	8.44	1279	1.22	.66	3.94	218	3.29	348	6	7	7	5	.90	165					

44 of 43

Aug 1989

	Magic		#3		#4		#5		East		West		Head	J.B.	E.	W-1	W-2		#48	
1	893.8	74,459	4.84	1051	6.26	695	2.28	378	2.48	246	240	134	100	112	1.4	6	4			
2	892.9	72,618	4.84	1051	6.34	618	2.27	347	2.48	246	242	135	100	112	5.2	3	3		3.55	303
3	892.2	71,195	4.84	1051	6.39	629	2.25	338	2.46	243	241	135	100	112	5.8	4	3			
4	891.5	69,788	4.84	1051	6.37	625	2.26	342	2.44	240	240	134	1.04	120	6	6	8		3.57	307
5	890.5	67783	4.84	1051	6.32	614	2.23	328	2.47	244	234	129	1.04	120	6	7	9			
6	889.4	65595	4.84	1051	6.39	629	2.24	333	2.43	239	2.36	121	1.01	114	7.6	6	9			
7	888.7	642.18	4.84	1051	6.42	636	2.22	324	2.46	243	2.41	135	1.01	114	7.6	6	9		3.47	290
8	888.0	62831	4.82	1037	5.77	554	2.11	278	2.38	232	2.39	133	1.26	168	14.0	6	8			
9	887.2	61068	4.85	970	5.46	535	2.23	328	2.29	221	2.34	129	1.23	161	7.0	16.0	7.0		3.47	324
10	886.3	59813	4.84	863	5.63	529	2.24	333	2.34	237	2.36	131	1.10	132	2.4	6.0	7.0			
11	885.4	57775	4.88	890	5.65	533	2.24	333	2.44	240	2.44	137	1.01	114	5.8	3.0	7.0			
12	884.7	56434	4.86	876	5.64	531	2.22	324	2.46	243	2.44	137	1.01	114	5.2	6.0	9.0		3.67	324
13	883.7	54,534	4.85	870	5.64	531	2.22	324	2.47	244	2.42	135	1.01	114	6.4	6	9			
14	882.8	52.843	4.85	870	5.65	533	2.19	310	2.42	238	2.43	136	1.02	116	6.4	6	9		3.65	320
15	881.9	51,171	4.84	863	5.67	537	2.16	297	2.42	238	2.43	136	1.02	116	8	5	8			
16	881.0	49,575	4.88	890	5.61	524	2.20	315	2.40	236	2.42	135	1.01	114	8.5	6	10		3.77	341
17	880.0	47,697	4.88	890	5.61	524	2.20	315	2.40	236	2.43	136	1.01	114	7	7	9			
18	879.2	46,265	4.86	876	5.59	520	2.18	306	2.46	236	2.43	136	1.00	112	7	6	4		3.75	337
19	878.3	44,673	4.88	890	5.55	512	2.20	315	2.38	232	2.42	135	.98	108	6	7	4			
20	877.2	42,757	4.88	890	5.65	533	2.14	289	2.49	247	2.49	141	.98	108	5.2	6	4			
21	876.1	40,879	4.87	883	5.64	531	2.13	286	2.50	248	2.41	135	1.01	114	5.8	6	4		3.25	235
22	875.3	39,540	4.88	890	5.67	537	2.14	289	2.50	247	2.43	133	.99	110	3.2	7	4			
23	874.4	38,056	4.84	863	5.57	516	2.16	297	2.47	243	2.40	131	.97	106	3.	6	4		3.69	242
24	873.4	36,444	4.88	890	5.61	568	2.20	338	2.52	249	2.42	132	.97	106	4.2	5	4			
25	872.4	34868	4.86	876	5.60	566	2.19	333	2.52	249	2.42	132	.97	106	6.2	10	4		3.76	252
26	871.4	33,328	4.83	857	5.58	562	2.17	324	252	249	242	132	.97	106	8.6	11	4			
27	870.3	31,677	4.84	863	5.47	544	2.03	263	254	253	2.43	133	.98	108	18.6	10	13			
28	869.2	30,073	4.82	850	5.58	562	2.17	324	254	253	243	133	.98	108	7.6	10	3		3.71	244
29	868.1	28,510	4.82	850	5.52	555	2.18	328	252	249	242	132	.97	106	11	10	5		3.75	250
30	866.9	26,859	4.80	838	5.49	548	2.17	324	250	247	242	132	.96	104	11	14	7		3.70	242
31	865.7	25,259	4.76	812	5.44	537	2.15	315	244	239	240	131	.95	102	10.6	13	7			

IWRB000003400

September 1989

44-28

	# 14		# 54		# 53		# 56		# 57		# 10		# 11		M.T.B		Marley		F	S.	
1	3.57	4.96	1.97	.48	6.52	940	6.14	562			2.20	76	4.96	192	2.88	176	.36	26	15	52-15	3
2	3.56	4.94	1.92	43	6.55	953	6.15	563			2.18	74	4.88	179	2.76	154	.13	19	17	"	4½
3																					
4	3.28	4.47	1.64	20	6.56	965	6.30	593			2.14	69	2.80	0	0	0	.14	0	15		
5	3.35	458	1.80	32	6.57	961	6.31	595			2.13	68	1.80	0	0	0	0	0	0		
6	3.25	442	1.48	10	6.56	957	6.30	593			2.12	67	2.80	0	0	0	0	0	0		
7	3.26	444	1.51	12	6.58	965	6.30	593			2.16	72	2.70	10	0	0	0	0	0		
8	3.19	433	1.61	18	6.63	985	6.45	624			2.18	74	2.66	10.4	0	0	0	0	0		
9	3.16	428	1.55	14	6.64	989	6.47	629			2.16	72	2.67	109						80-83	
10											2.16	72									10
11	3.26	444	1.70	24	6.78	1046	6.58	653			2.16	72	4.85	292	2.64	134	.32	21	24	86-94	
12	3.47	479	1.73	26	6.79	1056	6.40	613			2.18	74	4.78	278	2.64	134	.36	26	24	70-	8
13	3.46	477	1.79	31	6.59	969	6.30	593			2.18	74	4.78	278	2.62	130	.34	24	24	38-21	
14	3.40	467	2.00	51	6.58	965	6.39	611			2.18	74	4.80	282	2.74	151	.40	31	26	20-6	
15	3.44	474	2.05	58	6.58	965	6.41	615			2.18	74	4.67	252	2.74	151	.40	31	22	20-6	
16	3.42	470	2.07	60	6.54	949	6.41	615			2.19	75	4.65	247	2.68	140	.36	26	30	36-18	
17																					
18	3.37	462	2.09	63	6.38	885	6.29	591			2.24	81	4.54	222	2.70	144	.36	26	30	38-21	
19	3.36	460	2.18	76	6.28	849	6.25	583			2.33	92	4.44	200	2.70	144	.28	17	20	28-11	
20	3.36	460	2.20	79	6.26	842	6.24	581			2.33	92	4.42	196	2.70	144	.26	16	20	20-6	
21	3.24	441	2.10	64	6.18	814	6.07	548			2.34	94	4.44	200	2.60	127	.30	19	20	38-21	
22	3.23	439	2.14	70	6.05	769	6.07	548			2.30	88	4.40	189	2.54	118	.30	19	18		
23	3.20	434	2.08	61	6.08	779	6.06	546			2.30	88	4.34	179		Water gage	.20	11	18		
24																					
25	2.97	398	1.87	38	6.03	763	5.87	519			2.27	84	3.11	30							
26	2.97	398	1.42	8	6.01	757	5.88	512			2.26	85	2.66	19						19 Ave	
27	3.01	404	1.59	16	6.02	760	591	518			2.25	82	2.89	30							
28	3.02	406	1.53	13	6.03	763	592	520			2.27	84	2.89	30							
29	3.01	404	1.51	12	6.05	769	591	519			2.26	83	2.90	31						88"	
30																					
31																					

September 1989

	# 60		# 51		# 52		# 15		Main L.S.		Dry Krall		# 19		# 1		# 2		# 16	
1	8.44	1279	1.16	.62	3.92	216	3.30	350	4	4	8	3	.89	162					10	
2	8.44	1279	1.20	64	3.94	218	3.30	350	5	6	7	3	.88	160					9	
3							3.30	3.50												
4	8.44	1279	1.26	69	3.88	212	3.30	350	5	5	1	-	.90	165					5	
5	8.42	1275	1.20	64	4.02	227	3.30	350	7	4	2	2	.90	165					6	
6	8.42	1275	1.22	66	4.00	225	3.30	350	8	4	3	5	.90	165					6	
7	8.42	1275	1.22	66	4.00	225	3.30	350	8	6	2	7	.90	165	2.87	3.5	3.67	64.5	7	
8	8.42	1275	1.20	64	3.99	224	3.30	350	8	5	3	8	.89	162					5	
9	8.42	1275	1.26	69	4.02	227	3.30	350	9	6	3	8	.89	162					6	
10	8.42	1275					3.30	350					.89	162						
11	8.42	1275	1.70	128	4.24	252	3.30	350	8	3	7	10	.86	155					5	
12	8.42	1275	1.70	128	4.10	236	3.26	341	8	6	6	12	.84	151			3.65	61	7	
13	8.10	1201	1.60	110	4.08	234	3.26	341	7	4	8	13	.85	153					7	
14	8.10	1201	1.38	92	3.92	216	3.26	341	6	4	7	14	.85	153					7	
15	8.10	1201	1.44	89	3.96	218	3.26	341	7	6	9	20	.85	153					6	
16	8.10	1201	1.57	106	3.98	223	3.26	341	8	7	8	20	.84	151					7	
17																			7	
18	7.74	11.20	1.54	102	3.96	218	3.26	341	9	7	9	20	1.05	202					7	
19	7.74	1120	1.50	96	3.88	212	3.23	334	10	8	9	24	.95	167			3.71	72	8	
20	7.74	1120	1.52	98	3.74	197	3.23	334	5	5	8	20	.90	165					8	
21	7.49	1069	1.62	114	3.78	201	3.23	334	9	6	10	20	.89	162					7	
22	7.49	1069	1.52	98	3.74	197	3.23	334	10	6	8	20	.87	158	2.82	© 2.9	3.69	© 63	7	
23	7.49	1069	1.40	84	3.70	193	3.23	334	10	7	7	20	.86	© 144					7	
24									10	7	9	22							4	
25	7.49	1069	1.16	62	3.60	183	3.21	329	10	7	10	29	.83	137						
26	7.49	1069	1.10	57	3.58	181	3.21	329	10	7	10	20	.82	135					4	
27	7.49	1069	1.16	62	3.50	174	3.23	334	9	6	9	20	.81	133					4	
28	7.49	1069	1.18	63	3.50	174	3.23	334	9	4	11	22	.87	146					4	
29	7.49	1069	1.50	96	3.10	142	3.23	334	10	4	10	22	.83	137					4	
30			1.30	73	3.58	155	3.23	334												
31		35597																		

October 1989

	Magic		F waste	
2	842.0	4484		
3				
4	842.9	4898	3.5"	4'
5			2.25	2.2
6			1.25	1.8
7			1.5	1.6
8			2	1.8
9	844.4	5653		
10	844.6	5867		
11				
12				
13	845.5	6,260		
14				
15				
16	846.2	6665		
17				
18				
19				
20				
21				
22				
23	848.7	8,272		
24				
25				
26	849.5	8833		
27	849.7	8977		
28				
29				
30				
31	850.8	9795		

Nov. 1989

	Magic		# 4		# 5		# 3		East		West		T+B		# 46		# 5		#		
1	851.8	10579																			1
2																					2
3																					3
4																					4
5																					5
6																					6
7	852.0	10737	3.62	200	2.12	297	4.23	500	1.68	1.63	1.45	59	.60	46	284	187	2.24	416	4.00	267	7
8	850.5	9568	4.00	267	2.24	416	4.08	612		40		50		30							8
9	849.2	8618	210	40	2.16	373	3.60	378	94	74		54	0	9	284	187					9
10	848.7	8272	3.15	140	1.94	274	3.60	378													10
11	846.9	6068	26	69 AF	used			off	4:00	PM on 10											11
12																					12
13																					13
14	849.4	8696																			14
15																					15
16	849.9	9121																			16
17																					17
18																					18
19																					19
20																					20
21																					21
22																					22
23																					23
24																					24
25										1726.04 AF per day Ave From Magic											25
26	852.8	11,398																			26
27															41.7 cfs Ave Waste.						27
28																					28
29																					29
30																					30
31	853.4	11908						1868													31

1990

April 1990

	#15		Main L.S.		Dry Knoll		#15		Main L.S.		Dry Knoll		#16		#19		#1		#2		
	#	60	#	51	#	52	#	15	Main	L.S.	Dry	Knoll	#	16	#	19	#	1	#	2	
1																	3.44	349	3.24	3.56	1
2		400											1		1.32	282					2
3	3.81	461													1.52	360					3
4	3.68	439													1.62	398					4
5	3.46	411													1.62	c 298					5
6	3.45	410	1.52	132											1.63	394					6
7		-10													1.64	402					7
8	4.73	611													1.59	381					8
9	5.04	667	1.02	90	1.72	62	2.17	162							1.59	381					9
10	5.06	653	1.30	96	.94	15?	2.16	161	30	10					1.55	364					10
11	5.04	649	1.82	153	1.24	53	2.57	214	20	20			3"	20	1.59	381					11
12	5.06	653	1.60	128	1.54	59	2.55	234	20	9	15	0	3"	20	1.60	385	4.15	113	4.44	195	12
13	5.04	649	1.58	126	1.54	59	2.45	234	20	12	15	0	3"	20	1.59	381					13
14	5.04	649	1.22	89	2.20	73	1.55	134	25	5	15	—	3	20	1.62	393					14
15	5.94	818									15				1.74	450					15
16	6.00	830	1.52	119	2.26	76	2.67	239	15	5	10	12	5"	57	1.85	496					16
17	6.04	838	1.10	77	2.66	98	2.67	239	10	3	10	10	5"	57	1.86	501	3.89	80	4.69	247	17
18	6.01	838	1.00	68	2.62	95	2.66	237	5	4	11	0	5"	57	1.86	501					18
19	7.36	1106	.30	17	3.08	127	2.64	234	5	2	10	7	1"	4	1.78	464					19
20	7.31	1085	.46	27	3.10	129	2.47	207					0"	0	1.79	469					20
21	7.81	1203					2.75	251	4	2	12	16	5	57	1.83	487					21
22	7.82	1206													2.13	636					22
23	7.82	1206	.84	55	3.28	144	2.78	256	5	3	10	10	7	72	2.12	630					23
24	7.84	1210	.82	53	3.28	144	2.79	257	10	4	10	8	8	87	2.05	594					24
25	7.84	1210	.79	51	3.24	140	2.80	259	14	6	11	8	9	103	1.88	511					25
26	7.84	1210	.88	58	3.28	144	2.80	259	15	7	10	8	8	87	1.85	496	3.93	84	4.24	262	26
27	7.84	1210	.86	57	3.28	144	2.80	259	14	3	10	8	8	87	1.75	450					27
28	7.82	1206	1.00	68	3.30	145	2.85	267	15	5	8	12	8	87	1.91	525					28
29																					29
30	7.83	1208	1.10	77	3.34	149	2.85	267	13	4	6	14	9	103	1.76	455					30
31	Total	29,699																			31

April 1990

	Magic		# 3	# 4	# 5	East	West	Head T.B.	E. Spill	W-1	# 48	
1												1
2	882.2	51,727										2
3	882.6	52,471										3
4												4
5	883.1	53,305										5
6	883.4	53,969										6
7												7
8												8
9	884.1	55,291										9
10	884.6	56,243										10
11	885.1	57,199										11
12	885.5	58,161										12
13	885.9	58,547										13
14	886.1	59,126										14
15												15
16	886.7	60,290										16
17	887.1	61,068										17
18	887.4	61,655										18
19	887.8	62,439										19
20	888.1	63,028										20
21	888.4	63,619										21
22												22
23	889.3	65,397										23
24	889.6	65,991										24
25	890.0	66,787										25
26	890.4	67,583										26
27	890.8	68,383										27
28	891.1	68,983										28
29												29
30	892.1	70,995										30
31												31

~~Magic~~ May 1990

	Magic		# 3		# 4		# 5		East		West		Head IR		E. Spill (W-1)		W-2	W-1	A 48		
1	892.5	71,806																			1
2	892.8	72,415																			2
3.	892.1	73,025																			3
4	893.4	73,639																			4
5	893.7	74,254	3.89	500	3.58	200	1.96	298													5
6	893.4	73,639	3.90	505	3.80	233	2.08	346											2.55	155	6
7	893.1	73,076	3.90	505	4.24	309	1.78	234	.85	66	.75	34	1.30	171							7
8	892.7	72,212	4.40	792	5.34	524	1.97	302	1.98	197	1.94	94	1.39	200	21				2.84	.187	8
9	892.1	70,995	4.46	829	5.11	476	2.11	359	1.92	177	2.00	99	1.27	170	5	30	35		3.05	ⓞ222	9
10	891.9	69,788	4.46	829	5.11	ⓞ522	2.11	ⓞ261	2.10	ⓞ204	2.05	ⓞ105	1.13	139	10	18	10				10
11	890.9	68,583	4.45	823	5.13	526	2.08	250	2.18	215	2.04	105	1.08	128	5	20	5		3.07	221	11
12	890.3	67,364	4.46	8.29	5.13	526	2.08	250	2.32	233	2.24	120	1.02	116	5	8	5				12
13	889.5	65,793	4.54	879	5.34	566	2.11 2.06	244	2.40	244	2.30	125	1.09	130	9	10	5				13
14	888.9	64,605	4.52	866	5.18	537	2.14	2.72	2.31	230	2.24	120	1.02	116	3	10	5				14
15	888.1	63,028	4.54	879	5.27	557	2.14	272	2.36	238	2.30	125	1.05	122	5.2	20	—		3.19	238	15
16	887.3	61,459	4.54	879	5.37	572	2.12	264	2.43	248	2.35	129	1.09	130	9	20	—		3.13	230	16
17	886.5	59,901	455	885	5.32	562	2.15	275	2.40	244	2.34	129	1.04	120	7.6	22	-				17
18	885.8	58,547	4.55	885	5.31	560	2.15	275	2.40	244	2.34	129	1.04	120	9	20	—		3.14	237	18
19	884.9	56,818	4.50	854	5.21	544	2.12	264	2.36	238	2.30	125	1.00	112	7.6	21	—				19
	884.2	55,481	4.55	885	5.31	564	2.14	272	2.39	242	2.31	126	1.03	118	8.6	19	—				20
21	883.4	53,969	4.54	879	5.29	560	2.13	268	2.38	241	2.30	125	1.01	114	7.6	19	—		3.13	230	21
22	882.7	52,657	4.54	879	5.26	555	2.13	268	2.36	238	2.28	124	1.00	112	5	19	5				22
23	881.8	50,987	4.56	892	5.25	552	2.17	283	2.36	238	2.28	124	.99	110	5	14	5		3.20	240	23
24	881.0	49,515	4.58	904	5.27	551	2.17	283	2.38	241	2.30	125	1.00	112	7.6	17	6		3.20	240	24
25	880.1	47,878	4.58	904	5.27	557	2.17	28.3	2.38	244	2.30	125	100	112	9.2	18	12				25
26	879.4	46,623	4.52	866	5.05	510	2.18	286	2.33	234	2.26	122	.83	81	7	16	12		3.20	240	26
27	878.6	45,301	453	873	5.06	512	2.19	290	2.34	236	2.27	123	.83	81	.64	12	10		.		27
28	877.8	43,797	453	873	5.03	506	2.18	286	2.34	236	2.27	123	.81	78	7	12	10		3.20	240	28
29	877.1	42,584	4.50	854	4.85	468	2.18	286	2.22	220	2.20	117	.75	68	4	5	6				29
30	876.5	41,559	4.54	879	5.04	508	2.19	290	2.32	233	2.24	120	.80	76	5	3	3		3.21	241	30
31	876.1	40,879	4.54	879 off	5.00	499	2.19	290	2.35	237	2.26	122	.81	78	12	4	6				31
				22,306		13,562		7261													

IWRB00003408

5615

May 1990

	# 60		# 51		# 52		# 15		Main L.S.		Dry Krall		# 16		# 19		# 1		# 2		
1	7.84	1210	1.10	77	3.34	149	2.85	267	16	6	6	22	9"	103	1.71	432	424	130	4.56	215	1
2	7.83	1208	1.06	©84	3.38	©176	2.85	267	15	6	11	28	9	103	1.69	424					2
3.	7.83	1208	1.06	84	3.38	176	2.85	267	15	5	12	25	9	103	1.65	406					3
4	8.25	1304	1.06	84	3.36	174	2.85	267	12	4	11	30	9	103	1.65	406					4
5	8.25	1304	1.32	100	3.44	182	2.85	267	8	7	13	23	9	103	1.68	419					5
6															1.85	496					6
7	8.27	1309	1.21	99	3.44	182	2.85	267	7	5	12	22	9	103	1.96	549					7
8	8.26	1307	1.74	158	3.70	210	2.92	278	10	12	11	20	10	121	1.91	525	3.90	81	4.45	187	8
9	8.26	1307	1.70	©153	3.64	©203	2.92	278	12	8	13	11	10	121	1.83	487					9
10	8.25	1304	1.60	140	3.66	206	2.92	278	13	6	12	10	11	140	1.77	459	3.77	66	4.24	143	10
11	8.25	1304	1.40	118	3.56	195	2.92	278	12	3	11	10	11	140	1.74	446					11
12	8.27	1309	1.12	90	3.68	208	2.93	279	2	1	12	10	12	159	1.73	441					12
13	8.25	1304													1.69	424					13
14	8.26	1307	1.10	88	3.70	210	2.95	283	4	3	12	12	11	140	1.65	406					14
15	8.27	1309	1.11	89	3.70	210	2.98	288	8	4	7	17	12	159	1.63	398	3.60	48	3.80	78	15
16	8.27	1309	1.10	88	3.70	210	2.98	288	7	6	13	8	12	159	1.59	381					16
17	8.27	1309	.94	73	3.60	199	2.98	288	7	3	11	10	12	159	1.52	352	3.53	40	3.78	76	17
18	8.27	1309	1.06	84	4.06	258	3.08	304	3	2	11	6	5	43	1.50	343					18
19	8.27	1309	1.02	80	4.06	253	3.04	304	8	5	12	12	4"	31	1.40	336					19
20	8.27	1309	.86	66	3.98	243	3.08	304							1.50	343					20
21	8.27	1309	.86	66	3.98	243	3.09	306	9	5	12	10	6	57	1.55	364					21
22	8.28	1311	1.64	82	4.06	253	3.08	304	11	6	11	12	8	97	1.52	352					22
23	8.27	1309	1.04	82	4.06	253	3.09	306	8	5	12	16	7	71	1.67	415	3.55	43	3.94	96	23
24	8.26	1307	.94	73	4.01	246	3.06	304	8	9	11	20	7	71	1.76	455					24
25	8.27	1309	1.00	74	4.06	253	3.09	306	9	6	12	18	7	71	1.78	464					25
26	8.28	1311	1.02	80	4.06	253	3.09	306	12	8	11	22	8	87	1.72	437					26
27	8.26	1307							10	8	10	—	8	87							27
28	8.27	1309	94	73	4.02	248	3.09	306							1.72	437					28
29	8.28	©1290	94	73	4.02	248	3.08	304	12	8	11	20	8	87	2.14	641			4.32	163	29
30	8.27	1288	1.00	78	4.04	250	3.08	304	12	10	12	24	7	71	2.33	©755					30
31	8.29	1293	1.20	92	4.08	255	3.09	306	12	10	11	24	8	87	2.57	895	4.17	107	5.12	323	31
Total		40,177																			

June 1990

4.17 107 5.12 - 373

Day	# 60		# 51		# 52		# 15		Main L.S.		Dry Krall		# 16		# 19		# 1		# 2		
1	8.24	1281	1.42	121	4.10	258	3.09	306	18	14	12	30	9	104	2.46	829					1
2	8.26	1286	1.40	118	3.96	240	3.09	306	19	10	12	25	9	104	2.32	749					2
3.	8.28	1290																			3
4	8.29	1293	1.44	123.	3.98	243	3.09	306	19	9	11	25	.10	121	2.14	651					4
5	8.29	1293	1.40	118	3.96	240	3.08	304	19	10	11	20	9	104	2.19	678	398	82	475	253	5
6	8.28	1290	1.36	114	3.94	238	3.08	304	17	9	10	24	8	87	2.21	689					6
7	8.29	1293	1.36	114	3.77 3.90	218 233	3.09	306	15	9	10	24	9	104	2.26	716	392	75	4.82	274	7
8	8.24	1281	1.54	134	3.60	199	309	306	9	12	11	20	4.	31	2.36	772					8
9	7.87	1197	1.48	127	3.56	195	3.08	304	7	7	10	20	4.5	37	2.46	829					9
10	7.86	1194	1.48	127	3.56	195									2.95	1136	[illegible]				10
11	7.86	1194	1.48	127	3.56	195	3.09	306	7	5	11	17	7"	71	3.39 3.31	1278 1298	4.04	90	6.22	945	11
12	7.85	1192	1.36	114	3.50	188	3.08	304	5	4	10	17	7'	71	2.85	1077	–	–	5.85	695	12
13	7.85	1192	1.40	118	3.52	190	3.09	306	8	7	10	17	8	87	2.59	901					13
14	7.92	1208	1.38	116	3.51	189	3.09	304	8	7	11	18	5"	43	2.37	777					14
15	7.87	1197	1.44	123	354	193	3.09	306	9	7	10	18	6"	57	2.40	794					
16	7.89	1201	1.49	128	3.56	159	3.09	306	10	7	10	18	6"	57	2.25	710					
17																					
18	7.87	1197	1.56	136	3.52	190	3.09	306	11	7	10	18	6"	57	214	651	3.83	65	4.81	271	
19	7.87	1197	1.38	116	3.49	187	3.09	306	12	7	11	16	5"	43	2.27	721					
20	7.89	1201	1.22	100	3.40	178	3.08	304	10	5	11	14	2½"	15	2.47	835					
21	8.29	1293	.98	78	360	199	3.09©	291	5	5	0	10	4	31	2.67	956					
22	8.30	1295	1.10	88	3.68	208	3.09	291	6	5	0	8	6	51	2.81	1044					
23	8.76 8.79	1408	1.10	88	3.68	208	3.16	303	2	4	1	6	4	31	2.85	1070					
24	8.80	1410					3.16	303					8½	95	2.88	1090					
25	8.85	1421	1.14	92	3.90	233	3.16	303	4	3	0	3	8½	95	2.85	1070					
26	9.25	1514	1.18	95	3.94	238	3.25	318	7	4	0	0	6	57	2.75	1006	3.32	21'	5.92	730	26
27	9.29	1470	1.08	86	4.16	265	3.25	318	4	1	2	4	6	57	2.70	975					27
28	9.50	1519	1.14	92	4.12	260	3.25	318	0	2	5	8	7	71	2.49	840	3.15	12	5.82	680	28
29	9.50	1519	1.17	95	4.13	262	3.25	318	3	2	3	8	7	71	2.37	777					
30	9.48	1514	1.10	88	4.20	271	3.31	329	1	0	5	7	6	57	2.32	749					
31		39040					3.31														

39,084

WRB00003410

June 1990

	Magic		#3		#4		#5		East		West		Head J.B.		E spill	W-1	W-2		#48	
	876.7	41,899		off		off		off		off		off		off		off	off			off
2	877.3	42,930																		
3	878.0	44,145																		
4	878.7	45,337																		
5	879.0	45,906																		
6	879.5	46,802																		
7	879.9	47,518																		
8	879.8	47,229	4.34	744	5.20	541	1.64	128	2.08	202	215	113	1.10	132						
9	879.5	46,802	4.43	798	5.02	5.03	2.16 1.98	2.14 217	1.86	174	1.92	96	.90	93	1					
10	879.3	46,444	4.48	829	5.05	570	2.12	2.64	2.17	213	2.04	105	1.06	124		1	4			
11	879.2	46,265	4.42	792	4.91	480	2.12	264	1.99	190	1.96	99	1.00	112	14	1	4			
12	879.3	46,444	4.49	835	4.87	472	2.22	302	2.05	198	1.99	101	.90	93				3.01	213	
13	879.3	46,444	4.49	835	4.89	476	2.24	309	2.19	216	2.02	103	.81	74	10.2	1	5			
14	879.2	46,265	4.48	829	4.89	476	2.23	306	2.17	213	2.06	106	.91	78	10	11	7	3.21	241	
15	878.9	45,730	4.49	835	4.97	493	2.23	306	2.22	220	2.08	108	.85	84	12	10	9	3.21	241	
16	878.6	45,301	4.49	835	4.97	493	2.24	309	2.22	220	2.08	108	.85	84	14	12	8			
17									2.14	210	2.00	108	.89	91	14	16	9			
18	877.8	43,797	4.48	829	4.94	487	2.24	309	2.10	204	2.08	108	.87	88	13	16	9	3.21	©277	
19	877.4	43,103	4.48	829	4.92	© 428	2.24	© 306	2.10	204	2.08	108	.87	88	12	10	8			
20	877.0	42,411	4.46	817	4.85	414	2.24	306	2.07	201	2.06	106	.85	84	13	12	13	3.19	274	
21	876.4	41,389	4.47	823	4.86	416	2.25	309	2.02	194	2.04	105	.82	79	10	8	13			
22	876.0	40,709	4.50 4.41	841	4.95	434	2.24	306	2.12	207	2.06	106	.82	79	14	8	12	3.20	275	
23	875.7	40,208	4.51	848	4.99	442	2.25	309	2.16	212	2.08	108	.83	81	9	8	11			
24	875.3	39,540	4.59	898	5.19	482	2.27	317	2.25	224	2.12	111	.97	106	7	10	13			
25	875.0	39,041	4.57	885	5.16	476	2.24	306	2.18	215	2.10	109	.98	108	4	—	—	3.17	271	
26	874.4	38,056	4.59	898	5.20	484	2.24	306	2.28	228	2.09	108	.98	108	9	0	10			
27	873.7	36,924	4.62	917	5.34	514	2.24	306	2.29	229	2.10	109	1.05	122	8	3	8	3.15	268	
28	873.2	36,124	4.64	930	5.39	524	2.24	306	2.31	232	2.11	110	1.06	124	9	2	3			
29	872.5	35,024	4.69	963	5.54	557	2.25	309	2.40	244	2.20	117	1.13	139	13	4	3	3.16	269	
30	871.7	33,785	4.70	969	5.53	555	2.29	3.25	2.40	244	2.20	117	1.12	136	12	9	1			
31				19614		11,150		7040											887	

July 1990

Day	# 60		# 51		# 52		# 15		Main L.S.		Dry Knoll		# 16		# 19		# 1		# 2	
1	9.49	1517																		
2	9.49	1517	1.20	97	4.10	258	3.33	332	5	1.5	5	5	6	56.6	2.20	693				
3	9.56	1534	1.04	82	4.02	246	3.37	339	5	2	0	6	6.5	64	2.11	636	3.00	7	5.41	486
4	9.60	1584	1.04	82	4.18	268	3.38	341	6	3	0	No call	6.5	64	1.92	540				
5	9.59	1582	1.14	92	4.20	271	3.38	341	5	3	0	6	7	71	1.87	515	2.96	3	4.60	215
6	9.50	1560	1.18	95	4.20	271	3.37	339	5	3	4	7	7	71	1.86	511				
7	9.57	1577	1.16	94	4.14	263	3.37	339	4	0	4	7	7	71	1.73	450				
8	9.63	1591																		
9	9.64	1594	1.22	100	4.18	268	3.38	341	4	4	2	7	7	71	1.64	410				
10	9.65	1596	1.26	104	4.14	263	3.38	341	7	5	4	8	7	71	1.73	450			3.81	74.5
11	9.62	1589	1.14	92	4.10	2.58	3.38	341	7	3	4	6	7	71	1.63	406				
12	9.62	1589	1.18	95	4.16	265	3.37	339	7	3	4	4	7	71	1.58	385				
13	9.58	1579	1.18	95	4.16	265	3.38	341	5	3	4	4	7.5	79	1.53	364				
14	9.63	1591	1.06	84	4.12	260	3.38	341	6	2	4	4	7.5	79	1.50	352				
15	9.62	1589																		
16	9.65	1596	1.18	95	4.16	265	3.38	341	5	3	4	4	7	71	1.41	316				
17	9.64	1594	1.24	102	4.18	268	3.38	341	6	4	4	4	7	71	1.37	301	2.80	19	3.74	67
18	9.65	1596	1.22	100	4.13	262	3.38	341	5	4	4	3	7	71	1.30	275				
19	9.64	1594	1.19	96	4.11	259	3.38	341	6	5	5	4	7	71	1.29	272				
20	9.65	1596	1.12	90	4.14	263	3.38	341	6	3	3	5	7	71	1.28	268				
21	9.66	1598	1.11	89	4.13	262	3.38	341	5	4	3	6	7	71	1.31	279				
22																				
23	9.65	1596	1.17	95	4.04	250	3.39	343	6	5	3	4	8	87	1.25	257				
24	9.65	1596	1.20	97	4.04	250	3.39	343	5	6	3	8	8	87	1.24	254				
25	9.51	1562	1.20	97	4.06	253	3.40	339	8	8	4	6	8	87	1.21	243				
26	9.58	1579	1.21	99	4.07	254	3.38	336	5	6	1	6	7.5	79	1.21	243	2.74	3	3.69	62
27	9.62	1589	1.25	103	4.07	254	3.37	334	5	5	1	8	8	87	1.20	240				
28	9.50	1560	1.24	102	4.10	258	3.38	336	5	6	1	8	8	87	1.15	225				
29	9.32	1517					3.38	336												
30	9.29	1510	1.20	97	4.08	255	3.38	336	6	5	2	8	8	87	1.10	210				
31	9.30	1512	1.14	92	4.06	253	3.32	325	8	5	3	8	8.5	95	1.07	212				
		48782																		

July 1990

	Magic		#3		#4		#5		East		West		Head J.B.			E. Spill	W-1	W-2	#48	
1	870.8	32,422	4.75	1002	5.56	561	2.36	355	2.41	245	2.20	117	1.12	136		12	12	4		
2	870.0	31,233	4.70	969	5.57	563	2.26	313	2.40	244	2.20	117	1.12	136		11	12	4	3.16	269
3.	869.1	29,928	4.70	969	5.56	561	2.35	350	2.38	241	2.19	116	1.11	134		11	11	3		
4	868.2	28,651	4.64	939	5.50	548	2.28	321	2.32	223	2.20	117	1.08	128		7	10	2		
5	867.0	26,982	4.72	982	5.62	574	2.39	368	2.40	244	2.31	126	1.09	130		11	-	—	3.30	290
6	865.9	25,521	4.70	969	5.60	570	2.36	355	2.39	242	2.30	125	1.09	130		10	8	6	3.33	295
7	864.4	23,586	4.70	969	5.60	570	2.36	355	2.37	240	2.30	125	1.08	128		9	5	4		
8	863.3	22,220	4.68	956	5.60	570	2.36	355	2.40	244	2.31	126	1.09	130		9	5	4		
9	861.6	20,193	4.68	956	5.62	574	2.38	363	2.39	242	2.31	126	1.09	130		9	5	4	3.32	293
10	860.2	18,380	4.70	969	5.66	583	2.42	381	2.40	244	2.32	127	1.09	130		0	7	4		
11	858.8	17,086	4.70	969	5.68	588	2.42	381	2.40	244	2.32	127	1.09	130		7	0	4	3.39	304
12	857.2	15,441	4.68	956	5.66	583	2.39	368	2.36	238	2.32	127	1.08	128		7	3	5		
13	855.5	13,795	4.66	943	5.71	594	2.39	368	2.38	241	2.33	128	1.08	128		6	1	6	3.29	289
14	853.5	11,994	4.70	969	5.74	601	2.41	376	2.43	248	2.36	130	1.09	130		9	1	5		
15	851.5	10,342	4.66	943	5.74	601	2.39	368	2.40	244	2.35	129	1.07	126		7	3	5		
16	849.6	8,689	4.66	943	5.73	599	2.38	363	2.40	244	2.34	129	1.07	126		6	3	5	3.31	292
17	846.5	6,847	4.68	956	5.77	607	2.44	390	2.44	249	2.32	127	1.09	130		6	2	4	3.34	296
18	842.6	4,760	4.66	943	5.77	607	2.44	390	2.40	244	2.34	129	1.08	128		6	2	4	3.33	295
off 12:00 19	838.5	3,129	4.63	924	5.76	605	2.43	385	2.40	244	2.36	130	1.08	128		6	1	4		
20	off		off		off		off		off		off		off			off	off	off		5,195
21																				
22																				
23	839.9	3,623		14,226		11,059		6905												
24																				
25																				
26	840.0	3,660																		
27																				
28																				
29																				
30	842.5	4,718																		
31	842.8	4,852																		

Power off 1:00pm

IWRB00003413

August 1990

	# 60		# 51		# 52		# 15		Main L.S.		Dry Well		# 16		# 19		# 1		# 2		
1	9.28	1507	1.20	.97	4.10	258	3.32	325	8	6	3	8	8	87	1.04	©202	©		©		1
2	9.32	©1461	1.17	95	4.04	250	3.32	325	4	5	4	7	8	87	1.02	197			3.58	61	2
3	9.30	1456	1.10	88	4.02	248	3.32	325	4	4	4	6	8	87	.99	190					3
4	9.30	1456	1.17	95	4.00	245	3.32	325	4	4	4	6	8	87	.96	182					4
5																					5
6	9.29	1454	1.16	94	4.06	253	3.32	325	3	3	4	6	7	71	94	177					6
7	9.33	1463	1.14	92	4.08	255	3.38	336							.93	175		2	3.60	63	7
8	9.32	1461	1.12	90	4.08	255	3.32	325	7	3	0	5	7⁵	79	91	170					8
9	9.31	1459	1.10	88	4.08	255	3.32	325	7	3	2	5	8	87	90	167			3.56	59	9
10	9.30	1456	1.14	92	4.10	258	3.32	325	3.5	1	1	5	7⁵	79	.89	165					10
11	9.31	1459	1.14	92	4.08	255	3.32	325	3.5	3	2	4	8	87	.91	170					11
12	9.32	1461																			12
13	9.34	1465	1.20	97	4.10	258	3.32	325	5	3	2	4	8	87	.92	172					13
14	9.34	1465	1.20	97	4.12	260	3.30	288	5	4	3	6	0		.89	165			3.66	69	14
15	9.34	1465	1.14	92	4.10	258	3.32	325	6	3	3	4	8	87	.87	160					15
16	9.36	1470	1.10	88	4.06	253	3.32	325	3.5	4	1	6	8	87	.87	160					16
17	9.36	1470	1.14	92	4.10	258	3.32	325	3	4	3	4	8	87	.90	167					17
18	9.35	1468	1.20	©79	4.06	©235	3.32	325	5	5	3	6	8	87	.90	167					18
19															.97	185					19
20	9.35	1468	1.18	77	4.04	233	3.32	325	7	7	1	6	8	87	1.23	261			3.81	86	20
21	9.35	1468	1.24	83	4.08	238	3.32	325	9	8	2	8	8	87	1.24	264					21
22	9.06	1401	1.22	91	4.06	235	3.32	325	8	5	2	10	8	87	1.12	225					22
23	9.05	1399	1.21	80	4.06	235	3.32	325	8	5	3	10	8	87	1.09	216		4		75	23
24	9.02	1392	1.20	79	4.07	237	3.32	325	7	5	3	10	8	87	1.09	216					24
25	9.03	1394	1.16	76	4.06	235	3.32	325	6	5	2	8	8	87	1.06	208					25
26																					26
27	9.03	1394	1.18	77	4.07	237	3.32	325	7	6	4	8	8	87	1.08	213					27
28	8.76	1331	1.16	76	4.06	235	3.32	325	9	7	4	8	8	87	1.03	200					28
29	8.73	1325	1.10	70	4.04	233	3.25	313	3	4	3	4	5	43	99	190					29
30	8.72	1323	1.00	62	4.00	228	3.32	325	3	5	4	6	8	87	.95	180	2.84	4	3.58	61	30
31	8.72	1323	1.06	67	4.00	228	3.29	320	5	5	4	6	9	104	.93	175					31
		44432																			

August 1990

	Magic		#3		#4		#5		East		West		Head S.B.		E Spill		W-1	W-2	# 48	
1	843.0	4,944																		
2	843.3	5,091																		
3	843.5	5,191																		
4																				
5	844.3	5,600																		
6																				
7																				
8																				
9																				
10	845.2	6,089																		
11																				
12																				
13	846.1	6,605																		
14	846.4	6,785																		
15																				
16	847.7	7 601																		
17	848 0	7796																		
18			4.10	600	4.24	300	2.24	300	1.31	1.09	1.38	60	1.07	125						
19	848.8	8340																		
20																				
21	847.5	7472	4.06	582	3.90	242	2.36	283	1.38	117	1.20	53	.97	106					2.80	210
22	845.6	6374	4.08	593	4.14	282	2.30	261	.88	63	1.18	52	1.06	124						
23	847.8	4852	4.06	582	4.20	293	2.12	207	1.68	152	1.34	60	.86	86		3'	0		2.48	173
24	840.2	3738	4.00	548	3.88	138	2.25	249	1.51	132	1.28	57	.70	60					2.70	203
25	8-24-90 ofs																			
26				580		1055		990												796
27	841.4	4,226																		
28	841.9	4,441		2905																
29																				
30																				
31																				

September 1990

	#	60	#	51	#	52	#	15	Main L.S.		Dry Krall		#	16	#	19	#	1	#	2
1	8.75	1330	1.14	.74	4.02	231	3.29	320	4	4	4	6	9	104	93	175				
2																				
3	8.76	1332	1.10	70	4.04	233	329	320	5	6	4	—	7	79	.89	165				
4	8.74	1327	1.00	62	4.00	228	3.29	320	6	5	4	6	8	87	.88	163				
5	8.76	1332	.96	58	3.98	226	3.29	320	4	6	4	8	8	87	.90	167			3.65	68
6	8.56	1286	1.14	74	3.76	201	3.29	320	4	5	4	8	8	87	.98	188			3.63	66
7	8.56	1286	1.14	74	3.78	203	3.29	320	5	4	3	6	8	87	.96	180				
8	8.46	1263	1.16	76	3.78	203	3.29	320	8	5	4	6	8	87	.94	177				
9																				
10	8.48	1268	1.16	76	3.78	203	329	320	9	6	4	6	7	71	.89	165				
11	8.48	1268	1.16	76	3.78	203	329	320	12	7	2	6	7	71	.88	163				65
12	8.30	1226	1.20	79	3.82	208	3.27	316	6	7	1	6	7	71	.87	160				
13	8.25	1215	1.14	74	3.78	203	3.26	315	6	6	0	8	7	71	.85	155	2.72	1.7		67
14	8.24	1212	1.18	77	3.80	206	3.24	311	7	6	3	8	0		.84	153				
15	8.24	1212	1.12	72	3.76	218	3.26	315	9	7	7	8	5	43	83	146				
16																				
17	8.25	1215	1.10	70	3.78	203	3.26	315	9	6	7	10	6.5	63.8	83	146				
18	8.01	1135	1.18	77	3.80	206	3.26	315	6	4	9	12	6.5	63.8	.82	143	2.76	1.7	3.61	68
19	8.00	1133	1.16	76	3.80	206	3.23	309	10	6	8	14	6.5	63.8	83	146				
20	7.99	1131	1.06	67	3.74	199	3.24	311	10	7	7	14	5	43	.84	148	2.75	1.6	3.57	64
21	7.98	1128	1.16	76	3.80	206	3.23	309	11	6	9	14	5	43	.83	146				
22	7.98	1128	1.18	77	3.80	206	3.20	304	10°	6°	10°	20°	5	43	.83	146				
23	7.98	1128	1.18	77	3.80	206	3.20	304	10	6	10	20	5	43	.83	146				
24	7.68	1065	1.14	74	3.80	206	3.20	304	9	6	9	28	5	43	.82	143				
25	7.67	1063	.96	58	3.72	197	3.20	304	12	9	7	26	5	43	.81	142			3.57	64
26	7.38	1004	.94	57	3.70	195	3.20	304	14	6	7	26	5	43	.81	142				
27	7.36	1000	.94	57	3.70	196	3.20	304	15	6	7	20	5	43	.85	151			3.60	67
28	7.27	982	.76	42	3.58	182	3.20	304	14	7	7	20	3	10	.94	148				
29	7.26	980	.88	47	3.60	184	3.20	304	7	6	7	10	2	11	83	146				
30																				
31		34,578																		

September 1990

	Magic		# 3		# 4		# 5		East		West		Total S.B.		E Spill		U-1	W-2	# 48		
1																					1
2																					2
3																					3
4	8443	5600																			4
5																					5
6																					6
7																					7
8																					8
9																					9
10	845.6	6317																			10
11	845.8	6431																			11
12																					12
13	847.5	7472																			13
14	847.6	7536																			14
15																					15
16																					16
17	848.3	8,000																			17
18	848.7	8,272																			18
19	849.3	8476																			19
20																					20
21																					21
22																					22
23																					23
24	849.6	8,905		525		100		130		100		60		40							24
25	849.9	9,049																			25
26	848.5	8136	3.95	521	3.74	2.60	2.30	266	2.10	104	1.50	69		20'?					148	173	26
27	847.1	7216	3.86	475	3.55	1.89	2.32	268	4.74	160	1.48	68		20	"	1/2	—	—			27
28	84.50	5706	3.98	5.37	3.84	2.32	2.35	279	2.04	197	1.54	71		20		16					28
29	842.6	4,760	3.98	5.37	3.86	2.35	2.34	275	1.89	178	1.50	69	.24	12		11				692	29
30				2595																	30
31		Total		65646.		916		1083													31

OCTOBER 1990

	# 60		# 51		# 52		# 15		Main L.S.		Dry Krall		# 16		#	#	#	#	#	#
1	7.26	980	.76	42	3.56	179	3.20	304	7	6	6	10	3	20						
2	7.27	982	.72	40	3.54	177	3.18	301	8	6	6	—	0	0.						
3.	7.25	975	.71	39	3.54	177	3.18	301	8	5	8	6	0	0						
4	7.27	1022	.80	45	3.58	181	3.15	296	10	6	8	10	.2	11						
5	7.27	1022	.94	57	3.64	187	3.15	296	10	7	8	12	3	28						
6																				
7																				
8	7.26	980	1.00	62	3.68	192	3.13	293	13	8	8	26	4	30						
9	7.34	1036	1.06	67	3.70	194	3.13	293	17	6	8	36	4	30						
10	7.38	1044	.80	45	3.60	183	3.13	293	19	5	10	-	6	56						
11	OFF																			
12		10,085																		
13																				
14																				
15		241,753 CFS																		
16																				
17																				
18		48350		A.F. used																
19	—	109,942		Channel flow																
20		37,564		Storage us. d.																
21		- 1472		Inc. B.																
22		1731.32																		
23																				
24																				
25																				
26																				
27																				
28																				
29																				
30																				
31																				

1991

April 1991

	# 60		# 51		# 52		# 15		Main L.S.		Dry Krall		# 16		# 19		# 1		# 2		
1																					1
2																					2
3																					3
4																					4
5																					5
6																					6
7																					7
8																					8
9																					9
10																					10
11																					11
12	3.95	480																			12
13	3.84	466																			13
14	3.76	454																			14
15	3.70	445															3.36	① 24	3.28	② 29	15
16	3.72	448	.84	55	2.12	70	2.13	157					0	00							16
17	3.63	435	.86	57	2.16	72	2.10	154	30	14				—	.95	155					17
18	5.01	③644	.80	52	2.10	69	2.15	159	15	14				—	.93	151					18
19	5.06	653	1.50	117	2.34	80	2.65	226	8	10				—	.92	④ 165			3.23	④ 31	19
20														—							20
21																					21
22	5.07	655	1.20	87	2.22	74	2.62	271	14	10					.95	172					22
23	5.06	653	1.00	68	2.68	99	2.55	211	15	16					1.06	200					23
24	5.69	760	.74	44	2.98	112	2.43	195	12	7				—	1.15	219					24
25	5.64	760	.22	13	3.12	130	2.37	187	14	7				—	1.18	234	3.60	40	3.38	40	25
26	6.15	860	.46	28	3.22	139	2.45	198	13	7				—	1.15	219					26
27	6.13	856	.95	64	3.42	156	2.46	199	15	7	7	14	1	3.8	1.10	210					27
28	6.13	856																			28
29	6.13	856	.96	65	3.48	162	2.45	198	15	8	9	11	0	—	1.06	200					29
30	6.13	856	.98	67	3.48	162	2.45	199	14	7	8	—			1.06	200					30
31		12,443																			31

April 1997

	#14		#54		#53		#56		#57		#10		#11		M.J.B.		Marley		F.S.		
1																					1
2																					2
3																					3
4																					4
5																					5
6																					6
7																					7
8											2.58	@125	2.60	@31					9		8
9											2.52	114	2.83	51					3		9
10											2.53	116	2.83	51					14.6		10
11											2.51	113	2.83	51					14		11
12											2.51	113	2.83	51					14.8		12
13																					13
14																			15		14
15	1.86	146	1.96	57	3.62	264	4.16	207			2.50	111	2.83	51					15		15
16	1.74	135	2.00	63	3.44	234	4.00	187			2.50	111	2.83	51					13		16
17	1.77	138	2.06	73	3.38	224	3.98	184			2.50	111	2.82	49					12		17
18	1.99	@29	1.96	57	4.00	335	4.49	250			2.50	@108	2.82	49					10		18
19	1.77	280	1.95	55	4.35	408	4.65	173			2.41	94	2.80	48					7		19
20																					20
21																					21
22	2.36	278	1.82	38	4.34	432	4.61	267			2.48	100	2.80	48					5		22
23	2.28	267	1.84	41	4.26	415	4.64	@139			2.48	100	2.80	48					3.5		23
24	2.16	251	1.80	36	4.25	412	4.76	156			2.45	96	2.80	48					1		24
25	2.18	253	1.78	34	4.44	455	4.99	273			2.43	93	2.92	50					0		25
26	2.29	268	1.76	32	4.98	589	5.40	351			2.42	91	2.91	49					0		26
27	2.30	270	1.62	21	4.98	589	5.42	355			2.40	89	2.90	48					2		27
28																					28
29	226	264	1.58	79	5.00	594	5.43	356			2.38	86	2.90	48					2		29
30	227	266	1.50	16	4.97	586	5.44	358			2.32	78	2.90	48					2		30
31														1116							31

May 1991

	# 14		# 54		# 53		# 56		# 57		# 10		# 11		M.J.B.		Marley		F. S.		
1	2.25	263	1.39	13	4.96	583	5.47	363	Drains	5	2.37	85	2.90	48					2		1
2	2.46	293	1.45	15	5.27	667	5.60	384			2.32	80	2.90	48					3		2
3	2.61	315	1.32	10	5.34	687	5.49	366			2.39	87	2.90	48					2		3
4	2.66	323	1.53	17	5.35	690	5.45	359			2.39	87	2.92	49					0		4
5																					5
6	2.62	316	1.37	12	5.34	687	5.48	364			2.37	85	2.92	49					0		6
7	2.70	329	1.51	16	5.51	736	5.62	387			2.34	81	2.92	49					0		7
8	2.68	326	1.48	16	5.50	733	5.64	391			2.32	80	2.92	49					0		8
9	2.68	326	1.41	14	5.55	748	5.67	396			2.29	75	2.91	49					—		9
10	2.69	327	1.40	13	5.54	745	5.66	394			2.31	77	2.92	50					—		10
11	2.71	330	1.52	17	5.56	751	5.70	401			2.39	87	2.92	50					—		11
12																			—		12
13	2.78	341	1.66	24	5.64	775	5.79	416			2.45	96	2.93	51					—		13
14	2.80	345	1.65	24	5.64	775	5.78	415			2.41	90	2.92	50					—		14
15	2.76	338	1.60	20	5.57	754	5.73	406			2.38	86	2.92	50					—		15
16	2.74	335	1.53	17	5.55	748	5.71	403			2.36	83	2.92	50					—		16
17	2.72	330	1.58	19	5.54	745	5.68	398			2.32	78	2.91	49					—		17
18	2.73	332	1.59	20	5.53	742	5.69	399			2.32	78	2.91	49					—		18
19																					19
20	2.75	335	1.77	33	5.32	681	5.55	376			2.48	100	2.87	45					1		20
21	2.74	334	1.79	36	5.28	670	5.54	374			2.44	94	2.88	46					—		21
22	2.71	329	1.75	31	5.26	665	5.48	364			2.40	89	2.88	46					—		22
23	2.55	297	1.63	22	5.20	648	5.54	381			2.37	85	3.70	173	2.98	215			17 6 3		23
24	2.91	361	2.14	87	5.47	725	5.76	411			2.37	85	4.10	233	2.64	156	0		3ϕ	14-3	24
25	2.82	346	1.91	51	5.58	757	5.83	423			2.33	80	4.09	231	2.60	152			22		25
26																					26
27	2.55	304	1.25	6	5.55	748	5.81	422			2.90	71	4.06	224	2.30	109	.12	5	.1		27
28	2.52	300	1.10	3	5.52	739	5.76	420			2.22	67	4.10	233	2.62	155	.42	33	4		28
29	2.74	334	1.25	31	5.71	796	5.94	443			2.18	62	4.10	233	2.60	152	.24	14	5		29
10	2.86	353	1.63	22	5.91	859	5.99	452		5	2.18	62	4.20	255	2.62	155		20	7		30
11	2.89	358	1.65	24	5.90	855	5.99	452		4	2.20	64	4.20	258	2.58	149	.21	17	8		31
											Total		2141						6		

IWRB000054223

May 1997

	# 60		# 51		# 52		# 15		Main	L. S.	Dry	Krall	# 16		# 19		# 1		# 2		
1	6.13	856	3.68	.58	3.42	156	2.45	198	7	3	7	7	2	11	1.07	202	3.60	40	3.42	42	1
2	6.68	966	.70	44	3.34	149	2.45	198	6	2	7	—			1.07	202	3.26	14	3.50	48	2
3	6.68	966	.76	49	3.40	154	2.45	198	1	1	7	—	6	56	1.10	210					3
4	6.68	©984	.70	44	3.38	153	2.45	198	7	3	7	8	6	56	1.07	202					4
5	6.69	986																			5
6	6.93	1038	.66	34	3.34	149	2.55	211	9	5	7	8	6	56	1.05	197					6
7	6.93	1034	.66	34	3.36	151	2.55	211	12	3	7	10	7	71	1.15	225					7
8	6.93	1034	.82	53	3.42	156	2.55	211	9	3	6	11	7	71	1.21	243					8
9	6.84	1036	.78	50	3.40	154	2.55	211	6	5	7	12	7	71	1.70	435					9
10	6.93	1034	.78	50	3.42	156	2.55	211	8	6	7	12	7	71	1.54	368	3.44	29	4.10	120	10
11	6.93	1038	.84	55	3.44	158	2.56	211	7	6	7	13	7	71	1.49	345					11
12		1034																			12
13	6.93	1038	.96	65	3.48	162	2.55	211	8	9	7	15	8	87	1.40	310					13
14	6.92	1032	.98	67	3.48	162	2.55	211	9	8	9	15	7	71	1.45	329	3.64	48	3.92	93	14
15	6.93	1034	.96	©75	3.48	©167	2.55	211	9	8	8	15	8	87	1.56	372					15
16	6.94	1036	.94	73	3.46	165	2.55	211	9	5	8	11	8	87	1.67	418					16
17	6.94	1036	.86	66	3.46	165	2.55	©216	10	5	8	8	8	87	1.91	528					17
18	6.92	1032	.86	66	3.46	165	2.55	216	8	2		11			2.20	676					18
19																					19
20	6.57	962	.85	67	3.44	164	2.55	216	8	4	3	15	8	87	1.92	533					20
21	6.68	984	.60	45	3.34	154	2.55	216	8	4	3	15	8	87	1.96	552	3.92	76	4.52	205	21
22	6.71	990	.64	48	3.34	154	2.55	216	6	4	3	6	8	87	2.03	587					22
23	6.67	982	.60	45	3.34	154	2.55	216	1	0	3	5	8	87	2.31	737					23
24	7.23	1096	.62	46	3.34	154	2.55	216	3	3	0	0	5	42	2.58	897					24
25	7.23	1096	.84	64	3.46	165	2.55	216	4	3	0	0	6½		2.79	1031					25
26																					26
27	7.24	1098	.80	61	3.40	160	2.60	223	2	3	0	0	5	42	9.90	1105					27
28	7.23	1096	.90	61	3.40	160	2.58	220	1	1	0	0	0		2.47	800	3.84	66	5.02	350	28
29	7.53	1161	.80	61	3.40	160	2.61	224	2	3	0	0	2	11	1.85	499	3.80	55	4.85	295	29
30	7.81	1204	.84	64	3.42	162	2.65	230	1	2	0	0	6	56	2.05	597					30
31	7.78	1217	1.02	80	3.50	169	2.65	230	1	2	0	0	7	71	2.21	©681	3.40	74	©4.81	©335	31
	+8.14	1300																		42.67	

June 1991

	No 60		No 51		No 52		No 15		Main	LS	Dry	Krall		No 16	no 19		No 1		NO 2		
	7.81	1229	.98	.76	3.50	169	265	230	0	3	0	2	7	71	220	676					1
		1302					278	244					6	47							2
	8.16	1288	1.06	84	3.52	171	2.75	244	0	2	0	0	7	71	3.01	1182					3
	8.18	1288	.80	61	3.56	175	2.91	252	5	3	1	0	8	87	3.18	1305	3.19	.58	5.29	500	4
	8.18	1288	.82	62	3.56	175	2.82	254	3	1	3	0	8	87	3.76	1769	K 11.9	1940			5
	8.65	1396	.90	69	3.58	177	2.82	254	7	4	2	1	8	87	3.54	1585	3.84	77	6.28	1042	6
	8.65	1396	1.12	90	3.60	179	2.82	254	8	4	3	2	9	104	3.21	1327					7
	8.60	1385	1.16	94	3.64	183	2.82	254	7	5	3	3	9	104	3.16	1190					8
			1.16	94	3.64	183	2.82	254	4	6	5	2.5	10	121							9
	8.64	1394	1.16	94	3.64	183	2.82	254	4	6	5	2.5	10	121	3.38	1458					10
	8.63	1392	1.06	84	3.66	187	2.82	254	6	6	3	7	10	121	3.94	1927	3.64	53	6.36	1099	11
	8.63	1392	.88	67	3.78	198	2.88	262	1	3	0	0	9	104	4.33	2291					12
	8.84	1440	.92	71	3.84	204	2.97	279	3	4	0+	0	8	87	3.96	1945	3.52	41	6.54	1243	13
	9.91	1433	.94	73	3.84	204	2.97	279	7	4	0	1.5	9	87	3.58	1618					14
	8.85	1442	.90	69	3.90	211	2.97	279	6	3	3	5	8	87	3.30	1396					15
																					16
	8.84	1440	.92	71	4.02	225	2.97	279	5	6	4	5	9	104	3.16	1290					17
	8.84	1406	.88	67	4.06	229	3.09	294	0	4	5	5	8	87	3.05	1210	3.23	21	5.36	531	18
	8.85	1408	.90	69	4.06	229	3.09	294	4	4	5	6	8	87	3.15	1283					19
	8.88	1415	.88	67	4.06	229	3.09	294	1	4	5	7	8	87	3.23	1342	3.17	17	5.54	615	20
	8.89	1417	.84	64	4.04	227	3.15	303	2	3	4	2	8	87	2.97	1168					21
	9.11	1428	.84	64	4.04	207	3.15	303	2	4	3	4	7.5	79	2.82	1951					22
																					23
	9.11	1469	.90	69	4.08	211	3.15	303	3	3	3	3	7.5	79	2.73	992					24
	9.11	1468	.90	69	4.06	209	3.20	311	4	1	2	2	7	71	2.55	878	3.08	13	4.58	247	25
	9.43	1543	.90	69	4.08	211	3.20	311	6	3	3	4	7	71	2.52	860					26
	9.43	1543	1.00	78	4.08	211	3.20	311	4	3	2	4	7	71	—	—	2.92	10	4.35	140	27
	9.42	1541	1.04	82	4.08	211	3.20	311	5	3	2	4	7	71	2.48	836					28
	9.44	1546	1.02	80	4.06	209	3.20	311	6	4	3	5	7½	79	2.35	759					29
		42496																			30
		Ton Used																			31

June 1991

	Magic		No. 3		No. 4		No. 5		East		West		HJB*		East Waste Spill	East Waste #1	Waste #2		No. 48		
	8709	32571	443	©792	4.97	©493	258	594	200	199	209	105	97	106	5	10		5	3.15	©243	1
			4.46	810																	
2									2.06	207	2.10	106	99	110	7	—		—			2
3.	8694	30,363	4.46	810	4.99	510	2.58	594	2.04	204	2.10	106	98	108	3				3.16	238	3
4	868.8	29499	4.47	817	4.97	506	2.57	589	2.04	204	2.10	106	98	108	3	5		5			4
5	868.4	28,833	4.56	873	5.34	585	2.54	594	2.20	225	2.24	117	1.04	120	10	5		—	3.16	244	5
6	868.6	29,215	4.58	885	5.29	574	2.63	623	2.12	215	2.20	114	1.14	141	9						6
7	868.8	29499	4.59	892	5.30	577	2.62	617	2.13	216	2.20	114	1.14	141	9	10			3.17	246	7
8	868.7	29,357	4.59	892	5.26	568	2.60	©290	2.10	212	2.18	112	1.12	136	6	9					8
9			4.59	892	5.26	568	2.63	300	2.10	212	2.18	112	1.09	130							9
10	868.3	28,792	4.59	892	5.22 5.27	559 551	2.65 2.63	300 301	2.10	212	2.18	112	1.09	130	7	—			3.22	253	10
11	867.6	27817	4.60	898	5.20	555	2.62	298	2.09	211	2.18	112	1.08	128	6	6		5			11
12	867.8	28.093	4.60	898	5.16	546	2.62	298	2.09	211	2.18	112	1.08	128	7	5		5	3.21	251	12
13	868.5	28.904	4.60	898	5.18	550	2.62	298	2.06	207	2.16	111	1.06	124	4	7		10			13
14	868.7	29,357	4.65	930	5.30	577	2.63	302	2.10	212	2.18	112	1.17	147	6	3		10	3.15	243	14
15	8687	29,357	4.65	930	5.32	584	2.60	290	2.10	212	2.18	112	1.17 1.20	147 151	5	11		5			15
16			4.63	918	5.33	583	2.60	290	2.10	212	2.18	112	1.17	147	5	10		5			16
17	868.2	28,657	4.65	930	531	579	2.61	294	2.10	212	2.18	112	1.17	147	4	10		5	3.17	246	17
18	867.8	28093	4.65	930	5.30	577	2.62	298	2.10	212	2.18	112	1.17	147	6	6		5			18
19	867.3	27,403	4.65	930	5.32	581	2.59	286	2.14	©212	2.20	©114	1.18	150	7	6		5	3.18	247	19
20	866.8	26,859	4.65	930	531	579	259	286	2.12	210	2.20	114	1.18	150	7	9		5	3.13	240	20
21	866.4	26,184	4.65	930	5.32	581	2.60	290	2.16	215	2.22	115	1.20	154	5	6		5	3.17	246	21
22	865.8	25,390	4.65	930	5.26	568	2.60	290	2.09	206	2.18	112	1.16	145	4	6		5			22
23									2.10	207	2.19	113	1.17	147	3	5		5			23
24	864.5	23,713	4.66	937	5.28	572	2.11	294	2.08	204	2.18	112	1.16	145	3	6		5	3.13	240	24
25	863.6	22,589	4.66	937	5.28	572	2.59	296	2.06	202	2.18	112	1.14	141	1	3		5			25
26	862.7	21,491	4.73	982	5.37	592	2.61	294	2.11	208	2.20	114	1.18	150	5	6		5	3.12	©231	26
27	861.8	20,426	4.70	963	5.41	©533	258	©272	2.14	210	2.21	115	1.19	151	5	2		—			27
28	860.7	19,164	4.69	956	5.42	535	2.59	275	2.15	213	2.22	115	1.19	152	7	7		5	3.09	235	28
29	859.6	17944	4.68	950	5.37	524	2.59	275	2.12	210	2.20	114	1.18	150	5	11		4			29
30									2.16	215	2.22	115	1.19	152	4	—		—			30
31			4.720	6				10586						4135							31

July 1[illegible]

	Magic		No. 3		No. 4		No. 5		East		West		Hi. J.B.		E. Spill W.J		Waste #2		No. 48		
1	857.1	15,340	4.66	937	5.37	524	2.66	302	2.10	207	2.20	114	1.17	147	5	—	—		3.18	246	1
2	855.7	13,983	4.60	898	5.39	529	2.59	275	2.12	210	2.20	114	1.18	150	6	—	—				2
3	854.3	12,698	4.62	911	5.46	544	2.59	275	2.16	215	2.22	115	1.19	152	6	9					3
4									2.13	211	2.21	115	1.18	150	5	—	—				4
5	851.4	10,263	4.60	898	5.49	550	2.59	275	2.17	216	2.23	116	1.20	154	5	—	—				5
6	849.6	8,905	4.62	911	5.50	552	2.64	294	2.17	216	2.23	116	1.20	154	5						6
7									2.13	211	2.22	115	1.19	152	4	—	—				7
8	844.5	5,706	4.58	885	5.47	546	2.64	294	2.14	212	2.24	117	1.19	152	6	—	—		3.20	248	8
9	841.7	4,355	4.55	866	5.41	533	2.64	294	2.09	206	2.21	115	1.18	150	3	—	—				9
10	838.7	3,195	4.54	860	5.42	535	2.65	298	2.12	210	2.22	115	1.19	152	5	—	—				10
11	837.2	2,724	At 12:15 P.M.				10th at 12:00 P.M.													2466	11
12	838.0	2,964																			12
13	838.8	3,228		8908				1876													13
14	839.5	3,476																			14
15	840.0	3664																			15
	840.4	3816																			
16	841.1	4098																			16
17	841.3	4,183																			17
18	841.6	4,317												1513							18
19	841.9	4,441																			19
20	842.2	4,576																			20
21																					21
22	842.8	4,852																			22
23	843.3	5,091																			23
24	843.7	5,291																			24
25	844.0	5,441																			25
26	844.3	5,600																			26
27	844.5	5,706																			27
28	844.7	5,813																			28
29	845.0	5,975																			29
30	845.2	6,089																			30
31	845.4	6,203																			31

842.2

July 19[illegible]

	No 60		No 51		No 52		No 15		Main L.S.		Dry Krall		No 16		No 19		No 1		No 2		
1	9.81	1553	1.14	92	4.11	216	3.30	311	6	5	3	5	8	87	2.43	806					1
2	9.47	1553	1.12	89	4.12	216	3.20	311	6	3	3	6	8	87	2.57	890					2
3	9.48	1555	1.06	84	4.10	213	3.20	311	6	2	2	1	8	87	2.71	929			2.46	169	3
4									0	2	0	1	7	71							4
5	9.70	1608	.90	69	4.08	211	3.25	320	0	0	7	1	6	57	269	966					5
6	9.78	1627	1.00	78	4.12	216	3.30	329					6	57	272	985					6
7																					7
8	9.82	1637	1.02	80	4.12	216	3.35	338	0	2	3	0	5.5	49	2.42	800					8
9	9.83	1639	1.02	80	4.18	222	3.35	338	0	2	3	1	6	57	2.36	765			3.93	110	9
10	9.84	1666	.86	66	4.10	213	3.40	347	0	1	2	1			2.28	720		©			10
11	9.82	©1586	.88	67	4.10	213	3.40	347	2	2	0	0	5	49	2.18	665			3.50	56	11
12	10.09	1651	.86	66	4.10	213	3.40	347	1	1	0	0	5	49	1.76	458					12
13	10.11	1656	.86	66	4.10	213	3.45	356	0	0	0	0	5		1.71	436					13
14																					14
15	10.04	9645	.80	61	4.08	211	3.50	365	2	3	0	0	6	57	1.68	423					15
16	10.06	1642	.90	69	4.12	216	3.45	©338	5	1	0*	0	6	57	1.60	389			3.18	34	16
17	10.04	1639	.94	73	4.14	218	3.45	338	5	3	0	0	6	57	1.46	333					17
18	10.03	1637	.88	67	4.10	213	3.45	338	6	2	1	0	6	57	1.37	299			3.07	28	18
19	10.05	1642	1.08	86	4.02	208	3.45	338	4	4	0	0	6.5	64	1.30	274					19
20	10.10	1654	1.10	88	4.08	211	3.45	338	5	4	1	1	6½	64	1.25	257					20
21																					21
22	10.10	1654	1.12	90	4.06	209	3.45	338	6	5	1	1	7	71	1.26	260					22
23	10.06	1644	1.06	84	4.09	207	3.45	338	6	6	2	0½	8	87	1.25	257			3.11	©57	23
24	10.06	1644	1.16	94	4.08	211	3.45	338	6	5	2	½	8	87	1.28	267					24
25	10.09	1649	1.10	88	4.06	209	3.45	338	6	6	2	0	8	87	1.37	199			3.09	65	25
26	9.96	1620	1.16	94	4.08	211	3.35	332	6	7	2	1.5	9	103	1.55	368					26
27	9.82	1586	1.18	95	4.08	211	3.32	327	6	5	2	3½	9	103	1.40	310					27
28																					28
29	9.79	1579	1.22	108	4.08	211	3.32	327	7	5	2	-	9.5	112	1.20	240					29
30	9.72	1562	1.16	94	4.08	211	3.32	327	7	4	2	2	9.5	112	1.16	228			3.06	62	30
31	9.69	1559	1.20	97	4.06	209	3.32	327	3	2	3	2	8.5	95	1.11	213					31
		48 692																			

-26

Aug 1964

	No. 60		No. 51		No. 52		No. 15		Main L.S.		Dry Well		No. 76		No. 19		No. 1		No. 2		
1	9.65	1546	1.20	.97	4.06	209	3.32	327	4	3	3	2	8.5	95	1.10	210			3.03	.59	1
2	9.65	1546	1.24	102	4.08	211	3.32	327	2	4	3	3	8.5	95	Recorder out of order						2
3.	9.67	1550	1.24	102	4.08	211	3.32	327	3	3	4	3.5	8.5	95	1.02	189					3
4																					4
5	9.70	1582	.90	69	3.96	198	3.32	327	2	3	4	3	3.5	25	1.15	225					5
6	9.59	1531	1.30	108	4.10	213	3.32	327	4	3	4	0	8.5	95	1.08	205			3.06	62	6
7	9.60	1534	1.26	104	4.10	213	3.32	327	3	3	4	5	9	104	1.06	199					7
8	9.60	1534	1.28	106	4.10	213	3.32	327	2	3	4	7	9	104	.94	170					8
9	9.59	1531	1.24	102	4.08	211	3.32	327	4	3	4	8	9	104	.90	160					9
10	9.58	1529	1.28	106	4.08	211	3.32	327	3	3	4	3.5	9	104	.88	155					10
11																					11
12	9.60	1534	1.22	100	4.06	209	3.32	327	4	2	3	7	9	104	.86	151					12
13	9.44	1495	1.26	104	4.06	209	3.32	327	3	2	2	2	9	104	.84	146			3.01	57	13
14	9.45	1498	1.24	102	4.06	209	3.32	327	2	2	3	3	8	86	.83	144	283	35			14
15	9.44	1496	1.26	104	4.06	209	3.32	327	2	2	2	1	9	104	.82	142			3.01	57	15
16	9.42	1543	1.32	110	4.08	211	3.32	327	1	2	4	1	9	104	.82	142					16
17	9.44	1548	1.28	106	4.06	209	3.32	327	2	2	4	1.5	9	104	.89	158					17
18																					18
19	9.27	1495	1.26	104	4.06	209	3.32	327	3	2	4	2	9	104	.83	144					19
20	9.21	1493	1.28	106	4.08	211	3.32	327	3	3	3	5	8	86	.86	151			3.09	85	20
21	9.18	1486	1.28	106	4.08	211	3.32	327	4	2	4	2	8	86	.96	174					21
22	9.24	1500	1.28	106	4.10	213	3.32	327	3	2	3	3	8	86	.94	170			3.01	57	22
23	9.21	1493	1.30	108	4.10	213	3.32	327	2	2	3	4	8.5	95	.92	165					23
24	9.24	1500	1.30	108	4.10	213	3.32	327	3	2	3	2	8.5	95	.89	158					24
25																					25
26	9.21	1493	1.30	108	4.10	213	3.32	327	4	3	3	4	8	86	.87	153					26
27	9.23	1498	1.30	108	4.10	213	3.32	327	7	5	2	2	8	86	.86	151					27
28	8.83	1406	1.24	102	4.10	213	3.32	327	7	4	3	2	8	86	.92	165					28
29	9.07	1449	1.26	104	4.06	211	3.32	327	8	4	1	1	8	86	.94	170			2.97	60	29
30	9.01	1447	1.30	108	4.04	207	3.32	327	7	4	1	1	8	86	.91	163					30
31	9.01	1447	1.30	108	4.00	204	3.32	327	8	4	1	1	8	86	.90	160					31

46830

Aug 199?

	No 14		No 54		No 53		No 56		No 10		No 11		M.J.B.		Marley		ABCOOK		F.S.		
1	3.46	416	1.47	15	7.25	1110	6.92	636	2.10	40											1
2	3.48	421	1.48	16	7.24	1107	6.92	636	2.09	39											2
3	3.47	419	1.47	15	7.33	1139	6.98	6.48	2.09	39											3
4																					4
5	3.40	402	1.54	18	7.16	1078	6.75	6.00	2.09	39											5
6	3.59	447	1.54	18	7.30	1128	6.87	6.25	2.10	40											6
7	3.71	477	1.54	18	7.35	1143	6.82	6.15	2.10	40											7
8	3.71	477	1.49	17	7.31	1132	6.80	6.11	2.09	39											8
9	3.71	477	1.52	17	7.33	1139	6.83	6.17	2.09	39											9
10	3.67	467	1.49	17	7.31	1132	6.81	6.13	2.06	38											10
11																					11
12	3.65	462	1.49	14	7.34	1143	6.82	6.15	2.06	36											12
13	3.61	452	1.63	23	7.30	1128	6.79	609	2.06	38	3.85	106	2.22	105							13
14	3.64	460	1.61	22	7.29	1125	6.78	606	2.04	37	3.88	110	2.72	179							14
15	3.83	508	1.81	39	7.30	1128	6.80	611	2.03	35	4.16	155	2.42	125		4			32	8	15
16	3.58	445	1.43	15	7.30	1128	6.78	606	2.03	35	4.16	155	2.48	141		1			12	13	16
17	3.64	460	1.55	18	7.36	1150	6.82	615			3.67	DRAINAGE 82									17
18																					18
19	3.65	462	1.20	—	7.34	1143	6.74	598	2.06	38											19
20	3.43	409	1.43	15	7.22	1099	6.81	613	2.13	47											20
21	3.52	431	1.49	16	7.20	1092	6.76	602	2.14	47		608									21
22	3.53	433	1.47	15	7.18	1085	6.75	6.00	2.13	47											22
23	3.54	435	1.48	15	7.20	1092	6.76	602	2.13	47											23
24	3.53	433	1.48	15	7.18	1085	6.74	598	2.13	47											24
25																					25
26	3.53	433	1.49	16	7.24	1107	6.77	604	2.17	50											26
27	3.55	438	1.55	18	7.23	1103	6.77	609	2.15	48											27
28	3.49	423	1.58	20	7.16	1074	6.74	598	2.15	48											28
29	3.53	433	1.63	23	7.10	1057	6.70	590	2.17	50											29
30	3.47	419	1.63	23	7.10	1057	6.76	602	2.17	50											30
31	3.44	412	1.59	20	7.06	1042	6.73	596	2.18	50											31

Sept 1991

	No 14		No 54		No 53		No 56		No 10		No H		M.J.B.		Marley		ABCD Dr		F	S	
1									2.14	47											1
2	3.41	405	1.63	23	7.10	1057	6.76	602	2.14	47											2
3	3.41	405	1.55	17	7.11	1060	6.78	606	2.14	47											3
4	3.46	416	1.59	20	7.16	1078	6.77	604	2.16	49											4
5	3.41	405	1.61	19	6.96 ②	967	6.65	580	2.15	48											5
6	3.29	378	1.63	23	6.86	940	6.64	578	2.10	44											6
7	3.18 ②	391	1.49 ②	12	6.75	897	6.59 ②	532	2.06	42											7
8																					8
9	3.19	393	1.35	4?	6.92	953	6.73	560	2.16	49											9
10	3.40	443	1.71	19	7.15	1032	6.76	566	2.20	52											10
11	3.58	487	1.74	21	7.08	1005	6.70	554	2.20	52											11
12	3.56	482	1.91	35	6.78	907	6.50	515	2.36	68											12
13	3.29	416	1.94	38	6.72	888	6.63	540	2.30	61											13
14	3.30	419	1.83	28	6.75	897	6.60	534	2.28	59											14
15																					15
16	3.28	414	1.74	21	6.73	891	6.60	534	2.25	57											16
17	3.18	391	1.68	18	6.49	815	6.48	511	2.24	56											17
18	3.10	373	1.71	19	6.35	772	6.31	479	—	—											18
19	3.09	371	1.72	20	6.34	769	6.30	477	2.26	57											19
20	3.09	371	1.71	19	6.32	763	6.29	475	2.26	57											20
21	3.07	367	1.65	17	6.35	772	6.27	472	2.28	59											21
22																					22
23	3.14	382	1.69	18	6.40	787	6.34	485	2.28	59											23
24	3.07	367	1.83	28	6.08	693	6.13	446	2.31	62											24
25	3.03	377	1.90	34	6.02	676	6.13	446	2.32	63											25
26	3.10	370	2.42	122	5.98	665	6.31	479	2.41	73	3.00	47								.68 = 74	26
27	2.92	325	1.92	36	5.95	656	6.15	450	2.37	69											27
28	2.82	314	1.60	16	5.93	651	6.03	429	2.35	67										.42 = 35	28
29																			7		29
30	2.88	326	1.92	36	5.91	645	6.08	455	2.40	72	3.36	48									30
31												264									31

Sept 1991

	No 60		No 51		No 52		No 15		Main L.S.		Dry Krall		No 16		No 19		No 1		No 2		
1				100	3.98	200	3.32	327	6	4	1	3	8	86							1
2	9.01	1447	1.52	100	3.98	200	3.32	327	7	4	1	1	8	8.6	92	165					2
3	9.00	1445	1.30	108	3.98	200	3.32	327	7	4	1	1	8	86	90	160			2.98	64	3
4	9.98	1440	1.30	108	3.98	200	3.32	327	5	3	2	0	8	86	.85	155					4
5	8.70	1376	1.26	104	3.98	200	3.32	327	8	7	1	1	8	86	.87	153			2.98	64	5
6	8.71	1378	1.26	104	3.92	194	3.32	327	6	4	0	3	7	71	.84	146					6
7	8.71	1383	1.28	106	3.96	198	3.32	327	5	4	0	3	6	57	.82	142					7
8																					8
9	8.69	1378	1.32	110	4.00	202	3.32	327	9	6	0	7	6	57	.89	158					9
10	8.70	1380	1.38	116	4.02	204	3.32	327	10	9	6	13	7	71	1.21	243			3.16	80	10
11	8.69	1378	1.46	125	3.98	200	3.32	327	9	8	8	15	7	71	1.16	228					11
12	8.27	1281	1.50	129	3.98	192	3.32	327	10	7	6	12	7	71	1.19	237					12
13	8.26	1279	1.56	136	3.92	194	3.32	327	10	5	6	20	7	71	1.13	219					13
14	8.26	1279	1.50	129	3.92	194	3.32	327	10	6	7	12	6	57	1.09	207					14
15																					15
16	8.19	1263	1.52	132	3.92	194	3.32	327	10	6	7	12	6	57	1.03	192					16
17	7.77	1168	1.60	141	3.78	179	3.32	327	13	8	9	—	6	57	1.00	184			3.00	63	17
18	7.78	1170	1.40	118	3.70	171	3.32	327	9	5	9	10	5	42	.97	177					18
19	7.79	1172	1.38	116	3.68	169	3.32	327	10	6	9	11	4.5	37	.95	172			2.98	61	19
20	7.78	1170	1.38	116	3.68	169	3.32	327	11	6	9	11	4.5	37	.93	167					20
21	7.76	1166	1.40	118	3.68	169	3.22	309	9	4	9	11	5	42	.93	167					21
22																					22
23	7.77	1168	1.50	129	3.74	175	3.22	309	8	3	9	10	5	42	.90	160					23
24	7.20	1028	1.45	124	3.65	166	3.17	301	9	3	8	10	6	57	.89	158			2.98	61	24
25	7.31	1050	1.30	109	3.48	148	3.10	290	8	4	8	10	6	57	.88	156					25
26	7.22	1034	1.42	121	3.52	154	3.10	290	6	3	9	9	6	57	.87	153			2.98	61	26
27	7.19	1026	1.42	121	3.58	160	3.10	290	6	4	9	8	6	57	.87	153					27
28	7.19	1026	1.48	127	3.58	160	3.10	290	6	4	9	9	6	57	.87	153					28
29																					29
30	7.18	1024	1.28	106	3.50	153	3.10	290	7	2	9	9	4	30	.94	170					30
31																					31

37,210

Oct 1991

	No 14		No 54		No 53		No 56		No 60		No 15		Main L.S.		Dry Kwall		No 16		Poor Man		
1	2.81	312	1.50	12	5.90	6.42	6.01	4.25	7.19	1026	3.10	290	6	4	9	7	4	30		1	1
2	2.72	294	1.38	0	5.91	6.45	6.05	4.32	7.18	1024	3.08	286	6	3	8	7	0	—		1	2
3	2.73	296	1.38	8	5.90	6.42	6.03	4.29	7.19	1026	3.08	286	5	3	8	7	1	4		0	3
4	2.74	298	1.42	10	5.93	6.51	6.06	4.34	7.16	1020	3.06	283	.6	3	9	8	0	—		1	4
5																					5
6																					6
7	2.76	302	1.41	10	5.95	6.56	6.08	4.37	7.18	1024	307	285	6	4	9	8	0	—	1	1	7
8	2.77	304	1.43	10	5.98	6.65	6.12	4.45	7.16	1020	3.06	283	6	4	9	9	1	4	—	—	8
9	2.77	304	1.40	10	5.99	6.67	6.13	4.46	7.15	1018	3.06	283	7	3	8	10	1	4		1	9
10	2.79	308	1.41	10	6.04	6.81	6.16	4.52	7.21	1030	3.04	280	6	5	8	11	1	4		1	10
11	2.82	314	1.42	10	6.15	7.13	6.24	4.66		Off Site Pull											11
12																					12
13																11/10	1.48	82			13
14																	2.96	80			14
15																					15
16																					16
17																					17
18																					18
19																					19
20																					20
21																					21
22																					22
23																					23
24																					24
25																					25
26																					26
27																					27
28																					28
29																					29
30																					30
31																					31

10,228

	Nov 1991																		
	Magic		Dec		Jan - 1992		Feb		Mar 1992				# 56		# 53		# 14		# 60		
1	848.6	8204						190							2.94	159	2.42	213	196	226	1
2			8538	12,654	857.7	15,946			867.5	27,679					3.14	70	—	—			2
3							860.6	19052													3
4	849.1	8547							867.9	28,231									1.59	190	4
5															2.68	126	1.88	137	1.49	180	5
6			8544	12,788	858.2	16,957			868.2	28,651					2.38	92	1.96	147	1.99	229	6
7							860.9	19386							2.50	105	2.00	152	2.00	230	7
8					858.4	16,666							3.10	71	1.56	112			2.30	263	8
9									868.9	29,499											9
10							861.3	19,845													10
11									869.2	30,073			3.18	78	2.64	121			2.22	254	11
12	850.4	9493							868.6	30,653			3.40	98	2.64	121			1.59	190	12
13			855.5	13,295	858.8	17,086							3.20	80	2.40	94			1.16	153	13
14							862.7	21,491					3.00	63	2.14	70			1.69	199	14
15					859.0	17,296							3.04	66	2.20	75			2.30	263	15
16									869.9	31,088											16
17					859.2	17518															17
18	851.4	10,963							870.1	31,381			3.30	89	2.50	105			2.00	230	18
19			856.3	14,554			863.5	22,466					3.28	87	2.40	94			1.95	225	19
20	851.7	10,500	856.4	14,653					870.4	31,826			3.20	80	2.23	77			1.96	226	20
21					859.5	17,836	864.1	23,207					3.20	80	2.34	88			1.38	171	21
22													3.04	66	2.16	66			0	00	22
23									870.7	32,273											23
24					859.8	18,167	865.2	24,608											2	24844	24
25	1,149						865.6	25,128	871.0	32,720											25
26									871.1	132,872											26
27					860	18,380	866.3	26,054	871.2	33,024								AC	.49	9688	27
28																					28
29																					29
30									871.6	33,632											30
31																					31

APRIL 1992

	NO 60		NO 51		NO 52		NO 15		NO 16		MAIN LS		DRY	KRALL	POORMAN		NO 19		NO 1		NO 2		
1																							1
2																							2
3																							3
4																							4
5																							5
6	3.15	320					1.50	96															6
7	4.69	540	.90	60	1.00	65	1.70	115	1"	3.8													7
8	4.74	548	1.42	109	1.90	67	1.95	142	4"	31'													8
9	4.67	530	.76	49	2.40	83	1.95	142	7"	71'													9
10	4.74	548	.78	50	2.84	110	1.95	142	7½"	99'													10
11	4.73	547	.40	23	2.70	100	1.96	143	6	56"													11
12																							12
13	4.89	573	.36	21	2.68	99	1.87	133	6	56													13
14	6.03	780	.14	6	2.62	95	2.10	159	4	31													14
15	7.12	998	1.06	70	2.94	117	2.10	159	4½	37							1.40	322			3.74	85	15
16	7.30	1034	1.37	95	3.52	165	2.19	170	7	71	7	3			7		1.42	329	3.34	15	3.77	90	16
17	7.32	1038	1.30	93	3.50	164	2.33	187	7	71'	3	2											17
18	7.37	1038	1.34	96	3.84	198	2.42	199	6½	64	2	2											18
19																							19
20	7.80	1139	1.62	126	3.40	154	2.42	199	9	103	9	6											20
21	7.76	1131	1.44	107	3.76	189	2.42	199	9	103	6	2	8	12	5								21
22	7.78	©1137	1.26	89	3.96	211	2.58	220	9"	103	8	4	9	—	—								22
23	7.14	1079	1.16	79	3.92	207	2.57	219	9	103	12	7	8	12	5								23
24	7.23	1098	1.06	79	3.90	204	2.57	219	4½	37	12	6	9	10	5								24
25	1.23 7.22	1 to 98 1096	.90	57	3.84	198	2.60	223	7½	79	7	6	5	10	5								25
26																							26
27	7.57	1172	.90	57	3.82	196	2.60	223	7	71	8	2	6	8	1								27
28	7.56	1170	1.08	72	3.90	204	2.60	©200	6½	64	8	4	9	8									28
29	7.69	1199	1.00	65	3.76	©177	2.60	200	6½	64	3	0	7	—	—		1.57	377	3.19	12	3.71	83	29
30	7.69	1199	1.00	65	3.72	173	2.60	200	5½	49	3	4	7	1.5	6		2.00	587			3.86	103	30
31		77,595					2.74	211															31

1/23.1993

APRIL 1992

	MAGIC		NO 3		NO 4		NO 5		EAST		WEST		HJB		EAST SPILL		WASTE #1		WASTE #2		NO 48		
1	871.9	34.091																					1
2																							2
3	872.1	34,400																					3
4																							4
5																							5
6	872.5	35,024																					6
7	872.8	35,498																					7
8																							8
9																							9
10	873.1	35964																					10
11	873.2	36 124																					11
12																							12
13	873.5	36 604																					13
14	873.6	36764																					14
15	873.8	37084																					15
16	873.9	37244																					16
17	874.1	37567																					17
18	874.2	37730																					18
19																							19
20	874.6	38 385																					20
21	874.7	38 549																					21
22	874.9	38,877																					22
23	875.1	39,207																					23
24	875.2	39,373																					24
25	875.4	39707																					25
26																							26
27	875.7	40,208																					27
28	875.8	40,375																					28
29	875.9	40 542																					29
30	876.3	39,540							60		.95	41	1.10	132									30
31																							

MAY 1992

	NO 17		NO 9		X		Y		Z		NO 21		+ OR −		NO 93		NO 17X						
1	.42	18	.70	13	1.56	②238	1.80	③142	0.77	59	2.28	143	37		3.00	13	4.10	19					1
2	.30	78	.54	10	1.60	249	2.80	1.42	.86	71	2.14	122	36		3.20	16	4.10	19					2
3	Sunday																						3
4	1.00	52	.72	13	1.64	259	2.90	142	.96	71	2.36	156	46		3.22	17	4.12	20					4
5	.98	44	.69	12	1.50	223	2.80	142	.98	80	2.30	146	1		3.26	18	4.10	19					5
6	.50	21	.58	11	1.48	218	2.90	153	.98	80	2.30	146		15	3.20	12	4.10	19					6
7	.50	21	.50	6	1.44	208	2.90	153	.98	80	1.80	78		25	3.28	12	4.10	19					7
8	0	0	.40	1	1.70	275	2.90	153	.98	80	1.72	68	42		2.98	13	4.14	21					8
9	.22	10	.44	3	1.58	243	2.90	153	.98	80	2.00	103		10	3.30	18	4.14	21					9
10	Sunday																						10
11	.96	49	.76	14	1.68	270	2.90	153	.98	80	2.40	162	37		3.34	19	4.22	28					11
12	.80	38	.78	15	1.68	270	2.90	153	.98	80	2.48	175	37		3.30	18	4.18	25					12
13	.70	32	.82	16	1.70	275	2.90	153	.98	80	2.50	178	42		3.30	18	4.20	26					13
14	.60	26	.82	16	1.70	275	2.90	153	.98	80	2.40	162	42		3.28	18	4.20	26					14
15	.60	26	.80	16	1.68	270	2.90	153	.98	80	2.40	162	37		3.28	18	4.20	26					15
16	.60	26	.80	16	1.64	259	2.90	153	.98	80	2.40	①160	26		3.32	19	4.20	26					16
17	.98	44	.78	15	1.58	243	2.90	153	.98	80	2.18	127	10		3.30	18	4.20	26					17
18	.98	44	.78	15	1.58	243	2.90	153	.98	80	2.18	127	10		3.30	18	4.20	26					18
19	.64	29	.70	13	1.06	125	2.80	142	.82	71	1.01	14		88	3.26	18	4.20	26					19
20	.54	23	.62	12	.98	109	2.72	133	.76	63	1.01	14		87	3.26	18	4.16	23					20
21	.60	26	.52	6	.96	105	2.66	127	.75	62	1.04	15		84	3.24	17	4.16	23					21
22	.70	17	.52	6	.92	78	2.62	123	.61	45	0	1		70	3.22	17	4.12	20					22
23	.20	9	.40	1	1.26	167	2.62	123	.70	55	.93	11		11	3.20	16	4.16	23					23
24	Sunday																						24
25	.12	5	.52	6	1.28	171	2.60	121	.80	68	1.27	27		18	3.06	14	4.16	23					25
26	.10	3	.50	5	1.26	167	2.62	123	.80	68	1.12	19		24	3.16	16	4.16	23					26
27	.16	7	.46	1	1.18	149	2.62	123	.75	62	.94	12		36	3.14	15	4.16	23					27
28	.18	9	.40	1	1.16	145	2.63	124	.70	55	.90	10		34	3.08	14	4.20	26					28
29	.14	5	.52	6	1.36	199	2.59	120	.70	55	.93	12	14		3.12	15	4.30	36					29
30	.22	10	.54	7	1.46	213	2.59	120	.80	68	1.17	21	25		3.12	15	4.30	36					30
31																							31

MAY 1992 60

	NO 14		NO 53		NO 56		NO 10		NO 54		NO 11		MJB		MARLEY		A B C D E		F		S		
1	2.72	300	5.92	757	5.87	466	2.07	57	1.40	12	5.00	50	2.78	181							.24	14	1
2	3.13	387	5.87	772	5.87	466	2.06	56	1.90	43	3.88	171	2.96	212					8	13			2
3	3.06	371	5.89	778	5.90	472					4.15	220	2.78	181						10			3
4	2.96	349	5.91	784	5.91	474	2.10	59	1.70	24			2.90	201		11		8		10	.20	10	4
5	3.01	360	5.85	766	5.85	463	2.12	61	1.80	32	4.20	237	2.76	171		2				10	.10	2	5
6	2.73	302	5.85	766	5.98	483	2.08	57	1.61	18	4.18	233	2.68	173		2		3	8		.16	7	6
7	2.74	304	5.84	763	5.90	472	2.09	58	1.39	11	4.18	233	2.68	173		2		3	8		.14	5	7
8	2.74	304	5.99	805	6.03	496	2.05	55	1.36	10	4.22	241	2.78	181		2		3	6		.14	5	8
9	2.86	328	5.98	805	5.91	474	2.07	57	1.50	15	4.30	259	2.94	208		4		3	5		.24	14	9
10	Sunday																						10
11	3.06	371	6.08	837	6.03	496	2.00	50	1.83	35	4.30	259	2.98	215	6/2	5		0	5		.24	14	11
12	3.05	369	6.07	833	6.02	494	2.07	©42	1.80	32	4.32	264	2.94	©246		4		3	5		.24	(14)	12
13	3.07	373	6.10	843	6.06	502	2.06	41	1.80	32	4.32	264	2.96	250	.18	4		2	4		.26	16	13
14	3.05	369	6.10	843	6.05	500	2.05	40	1.80	©36	4.32	©264	2.94	242	.10	4		3	4		.26	16	14
15	3.03	©354	6.09	840	6.06	©474	2.06	41	1.78	34	4.35	208	2.96	230	.10	4		2	3		.26	16	15
16	3.11	371	6.09	840	6.00	463	2.03	39	1.80	36	4.35	208	2.90	239	.14	7		4	5		.28	18	16
17	Sunday																						17
18	3.10	369	6.09	840	5.97	457	2.11	44	1.70	27	4.40	218	2.82	224	.04	4		—	2		.28	18	18
19	3.08	364	6.04	824	5.93	450	2.10	44	1.68	25	4.37	212	2.82	224	.02	2		4	2		.24	14	19
20	3.04	356	6.04	824	5.88	441	2.08	42	1.62	21	4.40	218	2.70	203		2		6	2		.24	14	20
21	2.99	345	6.04	824	5.89	443	2.10	44	1.48	16	4.39	216	2.64	192		—		2	1½		.20	10	21
22	2.97	341	5.98	805	5.87	439	2.05	40	1.23	4		Off				—		—	—				22
23	3.13	375	5.99	805	5.93	450	2.07	42	1.80	36													23
24	Sunday																						24
25	2.98	343	6.00	812	5.95	457	2.13	46	1.60	20													25
26	3.00	347	5.95	796	5.95	436	2.11	44	1.62	21													26
27	2.98	343	5.89	778	5.81	429	2.06	41	1.58	19													27
28	2.98	343	6.00	©852	5.83	432	2.14	47	1.54	18													28
29	3.02	351	6.03	962	5.87	439	2.12	45	1.65	23													29
30	2.98	343	5.92	859	5.86	437	2.13	46	1.62	21													30
31	Sunday									Total		4602											31

JUNE 1992

	NO 17		NO 9		X		Y		Z		NO 21		+ OR −		NO 93		NO 17X						
1	24	11	57	6	1.47	204	2.59	120	.90	18	1.50	45	4		3.04	14	4.32	43					1
2	.16	10	.54	7	1.56	283	2.65	126	.81	70	1.53	47	37		3.08	19	4.40	47					2
3	.22	16	.40	1	1.56	233	2.70	128	.80	67	1.40	32	38		3.06	18	4.40	47					3
4	.18	16	.56	7	1.54	228	2.70	128	.80	67	1.43	35	33		3.08	19	4.40	47					4
5	.18	3	.64	11	1.50	218	2.70	128	.80	67	1.34	26	93		3.06	18	4.40	47					5
6	.36	19	.64	11	1.50	218	2.70	128	.80	67	1.37	29	23		2.90	15	4.40	47					6
7	...	...	...	...			...	...	...	...	...	...	...				...	...					7
8	.48	22	.70	12	1.56	233	2.70	128	.81	70	1.47	39	35		2.88	15	4.46	47					8
9	.34	18	.62	10	1.54	228	2.75	134	.81	70	1.57	50	24		2.84	14	4.38	45					9
10	.14	10	.68	9	1.52	223	2.75	132	.81	63	1.28	20	28		2.96	16	4.40	47					10
11	.12	0	.54	7	1.50	218	2.75	132	.80	62	1.11	05	24		2.96	16	4.40	47					11
12	.18	3	.50	5	1.54	228	2.75	132	.80	62	1.00	0	16		3.00	17	4.40	47					12
13	26	15	.54	7	1.70	269	2.75	132	.81	63	1.02	0	74		2.96	16	4.50	27					13
14	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—					14
15	60	22	.82	16	1.62	248	2.75	136	.75	45	1.85	64	67		3.12	19	4.42	21					15
16	.28	16	.82	16	1.64	253	2.75	136	.77	47	1.89	89	70		3.12	19	4.40	19					16
17	.82	32	.88	19	1.74	280	2.75	136	.77	47	2.05	111	97		3.16	20	4.46	24					17
18	.74	18	.94	22	1.58	238	2.75	136	.75	45	2.21	134	57		3.16	20	4.46	24					18
19	.50	20	.88	19	1.98	213	2.75	136	.77	47	1.93	95	30		3.12	19	4.40	19					19
20	.40	19	.76	14	1.49	204	2.75	136	.77	47	1.53	46	21		3.10	19	4.40	19					20
21	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—					21
22	.18	3	.50	5	1.50	218	2.75	136	.66	38	.90	0	48		2.94	16	4.36	17					22
23	.18	3	.54	7	1.40	194	2.75	136	.55	27	.77	5	27		2.90	15	4.40	19					23
24	.14	1	.48	5	1.54	228	2.75	136	.55	27	.81	6	65		2.80	14	4.50	27					24
25	.14	1	.22	0	1.58	213	2.75	136	.80	50	1.26	16	27		2.62	11	4.50	27					25
26	.16	2	.18	0	1.76	245	2.85	147	.81	57	1.21	21	86		3.12	19	4.50	27					26
27	.68	25	.18	0	1.90	325	2.85	147	.85	56	1.68	73	112		3.12	19	4.50	27					27
28	—	—	—	—	—																		28
29	.54	21	.44	3	1.84	308	2.85	147	.85	56	1.71	69	105		3.14	20	4.50	27					29
30	.98	35	.54	7	1.90	325	2.85	147	.84	55	1.80	98	123		3.16	20	4.54	31					30
31																							31

JUNE 1992

	MAGIC		NO 3		NO 4		NO 5		EAST		WEST		HJB		EAST SPILL		WASTE #1		WASTE #2		NO 4B		
1	845.4	6203																					1
2	845.7	6374																					2
3	846.1	6605																					3
4	847.5	7472																					4
5	847.7	7601																					5
6	847.9	7731																					6
7																							7
8	848.4	8068																					8
9	848.6	8204																					9
10	848.8	8340																					10
11	849.0	8476																					11
12	849.2	8618																					12
13	849.4	8761																					13
14	8																						14
15	849.8	9049																					15
16	850.0	9193																					16
17	850.3	9418																					17
18	850.5	9568																					18
19	850.7	9719																					19
20	850.9	9871																					20
21	—	—																					21
22	851.4	10263																					22
23	851.6	10421																					23
24	851.8	10579																					24
25	851.9	10658	6 A.M.																				25
26	852.1	10815																					26
27	851.0	9944	3.97	500	4.45	347			1.69	161	1.74	81	1.03	118									27
28			4.16	604	5.20	480			2.05	206	2.06	103	1.18	150									28
29	848.1	7464	4.16	604	501	456			2.10	212	2.06	103	1.20	154									29
30	845.5	6260	4.12	542	4.95	444			2.06	207	2.04	102	1.17	147									30
31		Total		2250		1827		—															31

JULY 1992

	NO 60		NO 51		NO 52		NO 15		NO 16		MAIN LS		DRY	KRALL	POORMAN		NO 19		NO 1		NO 2		
1	8.64	1327	1.18	100	3.24	129	3.14	290	2	10	5	3	1	4	1		1.19	393			3.88	65	1
2	8.64	1327	1.26	114	3.54	154	3.15	292	3	19	5	3	2	4	1		1.41	352					2
3	8.65	1330	1.28	117	3.54	154	3.15	292	2.5	15	6	4	1	1	0		1.35	326			3.97	75	3
4	8.30	1249	1.20	103	3.52	152	3.15	292	3	20	6	5	1	4	1		1.28	302			3.88	65	4
5	8.31																						5
6	8.30	1249	1.08	60	3.46	148	3.14	290	2	10	5	4	1	5	0		1.18	265					6
7	8.30	1249	1.20	103	3.26	131	3.13	289	2	10	6	5	1	1	0		1.13	248			3.79	56	7
8	8.29	1247	1.22	107	3.28	132	3.16	292	1½	7	4	3	1	1	0		1.09	234					8
9	8.02	1186	1.22	107	3.26	131	3.15	280	1½	7	5	4	0	2	0		1.08	230			3.78	55	9
10	8.07	1197	1.08	85	3.22	127	3.14	278	1	4	4	5	0	2	0		1.06	224					10
11	8.07	1197	1.20	103	3.12	113	3.14	278	0		2	2	0	0	0		1.03	213					11
12																							12
13	8.08	1199	1.34	128	3.16	123	3.13	277	0	—	4	3	1	0	0		1.00	203					13
14	8.08	1199	1.30	121	3.14	121	3.13	277	0	—	2	5	1	6	2		.97	194			3.74	52	14
15	8.08	1199	1.34	92	3.14	129	3.11	273	0		2	4	1	3	0		.94	187					15
16	8.07	1197	1.34	92	3.10	126	3.10	272	0		2	3	1	0	0		.93	181			3.70	48	16
17	8.19	1224	1.30	86	3.10	126	3.19	287	0		0	1	0	2	1		.91	174					17
18	8.43	1279	1.30	86	3.10	126	3.22	292	0		1	1	0	2	0		.89	168			3.71	49	18
19																							19
20	8.41	1275	1.36	95	3.12	127	3.16	299	1½	7	4	4	0	0	0		.89	168					20
21	8.41	1275	1.40	102	3.12	127	3.35	315	0		1	2	1	1	3		.86	159			3.71	49	21
22	8.41	1275	1.38	98	3.12	127	3.36	317	0		1	4	0	1	4		.85	155					22
23	8.32	1254	1.40	102	3.10	126	3.36	317	½	1.9	1	2	0	1	4		.85	155			3.70	48	23
24	8.31	1252	1.40	102	3.12	127	3.46	336	2	10	0	2	1	1	4		.82	146					24
25	8.30	1249	1.40	102	3.10	126	3.44	332	2	10	2	1	1	1	2		.80	140			3.68	47	25
26	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—					26
27	8.31	1252	1.42	105	3.12	127	3.45	334	½	1.9	3	1	0	1	3		.76	128					27
28	8.19	1224	1.34	92	3.18	132	3.40	319	0	0	2	1	0	4	4		.76	128			3.63	43	28
29	8.19	1224	1.36	91	3.24	132	3.32	305	0	0	1	0	0	2	3		.75	125					29
30	8.20	1226	1.32	85	3.26	134	3.35	310	0	0	0	0	1	1	0		.73	119			3.56	39	30
31	8.37	1252	1.32	85	3.26	134	3.35	310	0	0	0	2	0	1	0		.76	125					31

Total 37260/38587

JULY 1992

	NO 14		NO 53		NO 56		NO 10		NO 54		NO 11		MJB		MARLEY		A B C D E		F		S		
1	3.06	353	6.29	934	6.16	489	2.17	50	1.62	15	4.51	2.14	2.68	194		1		3		10			1
2	3.08	356	6.36	955	6.22	500	2.18	51	1.64	15	—	—	—	—		—		—		9			2
3	3.17	373	6.36	955	6.27	509	2.20	54	1.68	18											.16	7	3
4	3.00	342	6.14	891	6.05	469	2.32	55	1.69	17										-	.20	10	4
5																							5
6	2.95	333	6.04	863	5.99	458	2.15	48	1.72	18											.12	3	6
7	2.90	324	6.03	©768	5.97	©461	2.11	45	1.64	©20													7
8	2.90	324	6.07	778	6.02	470	2.09	43	1.57	17													8
9	2.87	©333	5.98	755	5.94	456	2.09	43	1.52	16													9
10	2.81	322	5.93	742	5.88	444	2.18	44	1.53	16													10
11	2.79	317	5.97	752	5.98	463	2.06	41	1.60	18													11
12																							12
13	2.81	322	6.02	765	5.97	461	2.13	46	1.49	15													13
14	2.83	325	6.04	771	6.00	467	2.03	39	1.60	19													14
15	2.82	324	6.05	773	6.01	469	2.07	©32	1.53	16													15
16	2.80	320	6.03	768	5.99	465	2.04	33	1.49	15													16
17	2.89	336	6.07	778	5.97	461	2.04	33	1.56	17													17
18	2.97	351	6.19	811	6.00	467	1.90	24	1.54	16													18
19	3.12	379	6.36	857	6.06	478			—														19
20	3.09	373	6.34	852	6.03	472	1.96	27	1.41	12	2.35	©7											20
21	3.14	383	6.42	874	6.08	481	1.97	28	1.41	©7													21
22	3.17	389	6.37	©846	6.09	©519	2.00	30	1.43	8													22
23	3.16	387	6.34	836	6.06	513	1.97	28	1.50	10													23
24	3.19	393	6.37	946	6.08	517	1.92	25	1.52	10													24
25	3.21	©395	6.35	841	6.06	513	1.90	27	1.52	10													25
26	—	—	—	—	—	—	—	—	—	—													26
27	3.21	395	6.40	©855	6.11	522	1.86	24	1.45	8													27
28	3.14	381	6.33	835	6.03	507	1.86	24	1.38	4													28
29	3.02	358	6.20	927	6.10	521	1.85	24	1.42	15													29
30	3.02	358	6.29	824	6.08	©449	1.85	24	1.40	4													30
31	3.05	364	6.36	944	6.12	456	1.86	24	1.41	4													31

Total 251

AUGUST 1992

	NO 17		NO 9		X		Y		Z		NO 21		+ OR −		NO 93		NO 17X						
1	.36	15	.24	0	1.50	221	2.78	145	.75	57	.96	0	19		3.06	15	4.24	7					1
2	—	—	—	—																			2
3	.70	21	.30	0	1.54	230	2.78	145	.82	66	1.02	4	19		3.14	16	4.50	16					3
4	.66	20	.28	0	1.57	226	2.78	145	.85	70	1.13	13	11		3.14	16	4.50	16					4
5	.68	21	.20	0	1.54	230	2.78	145	.82	66	1.07	8	19		3.14	D 18	4.50	D 18					5
6	.72	22	.30	4	1.56	235	2.77	144	.83	68	1.07	8	23		3.06	17	4.50	18					6
7	.84	26	.32	4	1.56	235	2.78	145	.85	70	1.11	13	20		3.08	17	4.60	25					7
8	.92	30	.44	4	1.56	C 243	2.78	C 146	.88	C 88	1.24	24	9		3.10	17	4.50	18					8
9																							9
10	.90	29	.48	4	1.54	238	2.78	146	.87	86	1.23	23	6		3.10	17	4.50	18					10
11	.86	27	.56	6	1.54	238	2.78	146	.87	86	1.21	21	6		3.10	17	4.50	18					11
12	.98	28	.52	4	1.54	238	2.78	146	.88	88	1.22	22	4		3.10	17	4.50	18					12
13	.76	23	.46	4	1.56	243	2.78	146	.88	88	1.17	17	9		3.10	17	4.50	18					13
14	.84	26	.58	4	1.56	243	2.78	146	.85	83	1.25	25	14		3.12	18	4.60	16					14
15	1.06	37	.72	12	1.56	243	2.78	146	.87	86	1.27	27	11		3.14	18	4.50	18					15
16	—	—	—	—	—	—	—	—	—	—	—	—	—		—	—	—	—					16
17	1.04	36	.54	4	1.56	243	2.78	146	.86	85	1.50	51	12		3.14	18	4.50	18					17
18	1.10	40	.54	4	1.56	243	2.78	142	85	83	1.70	75	14		3.14	18	4.50	18					18
19	1.06	37	.62	4	1.60	253	2.78	146	.86	85	1.52	54	22		3.12	18	4.50	18					19
20	1.00	34	.48	4	1.58	246	2.78	146	.86	85	1.56	58	15		3.12	18	4.50	18					20
21	1.00	34	.50	4	1.56	243	2.78	146	.86	85	1.46	47	12		3.14	18	4.50	18					21
22	.96	32	.44	3	1.56	243	2.78	146	.87	86	1.46	47	11		3.14	18	4.50	18					22
23																							23
24	.92	30	.68	3	1.62	259	2.78	146	.87	86	1.48	49	27		3.14	18	4.50	18					24
25	.99	33	.80	7	1.64	264	2.78	146	.87	86	1.55	57	32		3.14	18	4.50	18					25
26	1.22	49	.72	8	1.68	275	2.78	146	.87	86	1.69	73	43		3.18	19	4.50	18					26
27	1.26	51	.66	6	1.36	194	2.78	146	.84	82	1.86	96		34	3.20	19	4.50	18					27
28	1.34	57	.72	8	1.36	194	2.75	143	.85	83	1.46	47	32		3.20	19	4.50	18					28
29	.36	14	.60	3	1.40	204	2.75	143	.85	83	1.41	41		22	3.02	16	4.40	12					29
30																							30
31																							31

AUGUST 1992

	MAGIC		NO 3		NO 4		NO 5		EAST		WEST		HJB		EAST SPILL		WASTE #1		WASTE #2		NO 48		
1	3.0	4944																					1
2	—																						2
3	843.2	5042																					3
4	843.3	5091																					4
5	843.4	5141																					5
6	843.5	5191																					6
7	843.6	5241																					7
8	843.7	5291																					8
9																							9
10	843.9	5391																					10
11	844.0	5441																					11
12	844.1	5494																					12
13	844.2	5547																					13
14	844.3	5600																					14
15	844.4	5653																					15
16	—	—																					16
17	844.6	5759																					17
18	844.7	5813																					18
19	844.8	5867																					19
20	844.8	5867																					20
21	844.9	5921																					21
22	845.0	5975																					22
23	/	/																					23
24	845.1	6032																					24
25	843.5	5791	4.02	490	4.23	416			1.02	84	1.44	63	1.46	214									25
26	841.7	4355	3.99	475	4.22	@414			1.56	145	1.76	84	1.18	150		4							26
27	839.9	3625	5.84	407	3.95	362			1.75	168	1.76	82	.82	79								175	27
28	6.2	3030	3.56	300.	Off		1.90		Off				.01								1.80	188	28
29	836.2	2457	3.73	359			2.15	202													3.96	253	29
30	833.5	1742	3.63	321			2.08	179													3.14	235	30
31	829.7	958	3.97	125			1.98	@127													7.02	WRB0000343	
		Total		2477		1192		909														1069	

SEPTEMBER 1992

	NO 60		NO 51		NO 52		NO 15		NO 16		MAIN LS		DRY	KRALL	POORMAN		NO 19		NO 1		NO 2		
1																	.64	61			3.48	22	1
2																	.66	61					2
3																	.65	64			3.48	22	3
4																	.65	64					4
5																					3.48	22	5
6																							6
7	4.92	599															66	66					7
8	5.52	714															69	72			3.47	22	8
9	7.89	1186					3.02	254									67	69					9
10	7.94	1197	1.00	44	3.60	163	3.23	289	—	—							66	66			3.46	21	10
11	7.89	1186	1.26	76	3.48	152	3.35	310		0	15	15	1	7	0		65	69					11
12	7.89	1186	1.10	83	3.74	159	3.36	312		0	13	9	1	5	1½								12
13																							13
14	7.62	1126	1.00	69	3.80	165	3.38	315		0	5	3	1	16	3		68	72			3.46	②23	14
15	7.66	1135	.98	67	3.80	165	3.32	305		0	8	5	2	20½	5		70	77			3.32	15	15
16	7.66	1135	.98	67	3.76	161	3.28	②297		0	7	3	2	24	7		67	69					16
17	7.65	1133	1.02	72	3.80	165	3.30	303		0	7	3	2	24	7		67	69			3.27	12	17
18	767	1137	.92	59	3.72	158	3.15	277		0	7	2	2	18	6		66	66					18
19	765	1133	.80	46	3.60	147	3.15	277		0	5	2	2	12.5	5.5		.65	64					19
20	0																						20
21																	.65	64					21
22																	.65	64			3.27	12	22
23																	.64	61					23
24																	.63	59			3.26	11	24
25																	.67	59					25
26																							26
27																							27
28																							28
29																							29
30																							30
31	total	14053																					31

SEPTEMBER 1992 Nov. Dec Jan 1993 Feb 1993 March

	MAGIC		NO 3		NO 4 Aug '92		NO 5		EAST		WEST		HJB		EAST SPILL		WASTE #1		WASTE #2		NO 48		
1	830	1010					847.1	7601			852.9	11,841	856.0	14,956									1
2	831.0	1029																					2
3	831.8	1364																					3
4	832.5	1515							850.9	9,871													4
5																							5
6																							6
7																							7
8													854.4	14453									8
9																							9
10													856.6	14847									10
11							848.8	8,340			854.1	12,518											11
12									851.4	10,263			856.7	14945									12
13																							13
14	836.0	2381																					14
15	836.3	2465									854.5	12,878											15
16	836.5	2521			845.1	6,039																	16
17	836.7	2577											857.4	15,643									17
18	837.0	2664					849.4	8,761			854.5	13,148											18
19	837.2	2724							852.1	10,819													19
20																							20
21	837.5	2814							853.4	11,066													21
22	837.7	2874									855.7	13,514	858.6	16,876									22
23					845.9	6,488																	23
24													859.4	17,788									24
25	838.2	3030											859.8	18162									25
26									852.8	11,398			861.2	19,730									26
27																							27
28																							28
29													869.4	30,363									29
30													871.8	3409									30
31													774.6	37,409									

Appendix L
Spreadsheet Calculations of Dietrich Site Flows

Calculations for Dietrich Site Flow
1982
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
4/1/1982	25	75	0	0	0
4/2/1982	25	75	0	0	0
4/3/1982	25	75	0	0	0
4/4/1982	25	75	0	0	0
4/5/1982	25	75	0	0	0
4/6/1982	25	75	0	0	0
4/7/1982	25	75	0	0	0
4/8/1982	31	75	0	0	0
4/9/1982	31	75	0	0	0
4/10/1982	31	75	0	0	0
4/11/1982	31	75	0	0	0
4/12/1982	31	75	0	0	0
4/13/1982	32	75	0	0	0
4/14/1982	32	75	0	0	0
4/15/1982	86	75	0	11	22
4/16/1982	186	120	0	66	131
4/17/1982	186	120	0	66	131
4/18/1982	198	120	0	78	155
4/19/1982	200	120	0	80	159
4/20/1982	200	120	0	80	159
4/21/1982	197	120	0	77	153
4/22/1982	201	120	0	81	161
4/23/1982	198	120	0	78	155
4/24/1982	200	120	0	80	159
4/25/1982	310	120	0	190	377
4/26/1982	337	120	0	217	430
4/27/1982	334	120	0	214	424
4/28/1982	312	120	0	192	381
4/29/1982	337	120	0	217	430
4/30/1982	376	120	0	256	508
5/1/1982	304	120	0	184	365
5/2/1982	245	120	0	125	248
5/3/1982	244	120	0	124	246
5/4/1982	244	120	0	124	246
5/5/1982	245	120	0	125	248
5/6/1982	245	120	0	125	248
5/7/1982	244	120	0	124	246
5/8/1982	258	120	0	138	274
5/9/1982	266	120	0	146	290
5/10/1982	266	120	0	146	290
5/11/1982	262	120	0	142	282
5/12/1982	248	120	0	128	254
5/13/1982	234	120	0	114	226
5/14/1982	231	120	0	111	220
5/15/1982	228	120	0	108	214
5/16/1982	224	120	0	104	206
5/17/1982	234	120	0	114	226
5/18/1982	213	120	0	93	184
5/19/1982	187	120	0	67	133
5/20/1982	192	120	0	72	143
5/21/1982	193	120	0	73	145
5/22/1982	194	120	0	74	147
5/23/1982	194	120	0	74	147
5/24/1982	197	120	0	77	153

Calculations for Dietrich Site Flow
1982
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
5/25/1982	197	120	0	77	153
5/26/1982	190	120	0	70	139
5/27/1982	188	120	0	68	135
5/28/1982	188	120	0	68	135
5/29/1982	195	120	0	75	149
5/30/1982	183	120	0	63	125
5/31/1982	176	120	0	56	111
6/1/1982	176	220	0	0	0
6/2/1982	176	220	0	0	0
6/3/1982	176	220	0	0	0
6/4/1982	193	220	0	0	0
6/5/1982	190	220	0	0	0
6/6/1982	188	220	0	0	0
6/7/1982	201	220	0	0	0
6/8/1982	203	220	0	0	0
6/9/1982	197	220	0	0	0
6/10/1982	190	220	0	0	0
6/11/1982	194	220	0	0	0
6/12/1982	194	220	0	0	0
6/13/1982	192	220	0	0	0
6/14/1982	188	220	0	0	0
6/15/1982	189	220	0	0	0
6/16/1982	203	220	0	0	0
6/17/1982	219	220	0	0	0
6/18/1982	224	220	0	0	0
6/19/1982	230	220	0	0	0
6/20/1982	230	220	0	0	0
6/21/1982	230	220	0	0	0
6/22/1982	223	220	0	0	0
6/23/1982	226	220	0	0	0
6/24/1982	230	220	0	0	0
6/25/1982	231	220	0	0	0
6/26/1982	233	220	0	0	0
6/27/1982	234	220	0	0	0
6/28/1982	234	220	0	0	0
6/29/1982	235	220	0	0	0
6/30/1982	235	220	0	0	0
7/1/1982	241	220	0	0	0
7/2/1982	241	220	0	0	0
7/3/1982	241	220	0	0	0
7/4/1982	238	220	0	0	0
7/5/1982	238	220	0	0	0
7/6/1982	245	220	0	0	0
7/7/1982	247	220	0	0	0
7/8/1982	234	220	0	0	0
7/9/1982	244	220	0	0	0
7/10/1982	226	220	0	0	0
7/11/1982	214	220	0	0	0
7/12/1982	213	220	0	0	0
7/13/1982	227	220	0	0	0
7/14/1982	235	220	0	0	0
7/15/1982	227	220	0	0	0
7/16/1982	226	220	0	0	0
7/17/1982	233	220	0	0	0

Calculations for Dietrich Site Flow
1982
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
7/18/1982	233	220	0	0	0
7/19/1982	234	220	0	0	0
7/20/1982	237	220	0	0	0
7/21/1982	237	220	0	0	0
7/22/1982	234	220	0	0	0
7/23/1982	234	220	0	0	0
7/24/1982	234	220	0	0	0
7/25/1982	235	220	0	0	0
7/26/1982	235	220	0	0	0
7/27/1982	231	220	0	0	0
7/28/1982	234	220	0	0	0
7/29/1982	231	220	0	0	0
7/30/1982	228	220	0	0	0
7/31/1982	231	220	0	0	0
8/1/1982	231	220	0	0	0
8/2/1982	223	220	0	0	0
8/3/1982	204	220	0	0	0
8/4/1982	196	220	0	0	0
8/5/1982	190	220	0	0	0
8/6/1982	190	220	0	0	0
8/7/1982	189	220	0	0	0
8/8/1982	190	220	0	0	0
8/9/1982	188	220	0	0	0
8/10/1982	190	220	0	0	0
8/11/1982	193	220	0	0	0
8/12/1982	204	220	0	0	0
8/13/1982	204	220	0	0	0
8/14/1982	213	220	0	0	0
8/15/1982	213	220	0	0	0
8/16/1982	213	220	0	0	0
8/17/1982	213	220	0	0	0
8/18/1982	214	220	0	0	0
8/19/1982	214	220	0	0	0
8/20/1982	214	220	0	0	0
8/21/1982	217	220	0	0	0
8/22/1982	219	220	0	0	0
8/23/1982	220	220	0	0	0
8/24/1982	217	220	0	0	0
8/25/1982	217	220	0	0	0
8/26/1982	219	220	0	0	0
8/27/1982	219	220	0	0	0
8/28/1982	218	220	0	0	0
8/29/1982	220	220	0	0	0
8/30/1982	218	220	0	0	0
8/31/1982	210	220	0	0	0
9/1/1982	200	220	0	0	0
9/2/1982	192	220	0	0	0
9/3/1982	192	220	0	0	0
9/4/1982	186	220	0	0	0
9/5/1982	184	220	0	0	0
9/6/1982	184	220	0	0	0
9/7/1982	184	220	0	0	0
9/8/1982	177	220	0	0	0
9/9/1982	174	220	0	0	0

Calculations for Dietrich Site Flow
1982
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
9/10/1982	175	220	0	0	0
9/11/1982	194	220	0	0	0
9/12/1982	196	220	0	0	0
9/13/1982	197	220	0	0	0
9/14/1982	190	220	0	0	0
9/15/1982	181	220	0	0	0
9/16/1982	180	220	0	0	0
9/17/1982	179	220	0	0	0
9/18/1982	161	220	0	0	0
9/19/1982	153	220	0	0	0
9/20/1982	150	220	0	0	0
9/21/1982	144	220	0	0	0
9/22/1982	144	220	0	0	0
9/23/1982	143	220	0	0	0
9/24/1982	142	220	0	0	0
9/25/1982	142	220	0	0	0
9/26/1982	143	220	0	0	0
9/27/1982	147	220	0	0	0
9/28/1982	149	220	0	0	0
9/29/1982	145	220	0	0	0
9/30/1982	147	220	0	0	0
10/1/1982	0	75	0	0	0
10/2/1982	0	75	0	0	0
10/3/1982	0	75	0	0	0
10/4/1982	0	75	0	0	0
10/5/1982	0	75	0	0	0
10/6/1982	0	75	0	0	0
10/7/1982	0	75	0	0	0
10/8/1982	0	75	0	0	0
10/9/1982	0	75	0	0	0
10/10/1982	0	75	0	0	0
10/11/1982	0	75	0	0	0
10/12/1982	0	75	0	0	0
10/13/1982	0	75	0	0	0
10/14/1982	0	75	0	0	0
10/15/1982	0	75	0	0	0
10/16/1982	0	75	0	0	0
10/17/1982	0	75	0	0	0
10/18/1982	0	75	0	0	0
10/19/1982	0	75	0	0	0
10/20/1982	0	75	0	0	0
10/21/1982	0	75	0	0	0
10/22/1982	0	75	0	0	0
10/23/1982	0	75	0	0	0
10/24/1982	0	75	0	0	0
10/25/1982	0	75	0	0	0
10/26/1982	0	75	0	0	0
10/27/1982	0	75	0	0	0
10/28/1982	0	75	0	0	0
10/29/1982	0	75	0	0	0
10/30/1982	0	75	0	0	0
10/31/1982	0	75	0	0	0
				256	10259
				Maximum	Total

Calculations for Dietrich Site Flow
1983
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
4/1/1983	25	75	0	0	0
4/2/1983	22	75	0	0	0
4/3/1983	21	75	0	0	0
4/4/1983	18	75	0	0	0
4/5/1983	20	75	0	0	0
4/6/1983	21	75	0	0	0
4/7/1983	22	75	0	0	0
4/8/1983	22	75	0	0	0
4/9/1983	22	75	0	0	0
4/10/1983	22	75	0	0	0
4/11/1983	22	75	0	0	0
4/12/1983	22	75	0	0	0
4/13/1983	22	75	0	0	0
4/14/1983	22	75	0	0	0
4/15/1983	22	75	0	0	0
4/16/1983	22	120	0	0	0
4/17/1983	22	120	0	0	0
4/18/1983	23	120	0	0	0
4/19/1983	36	120	0	0	0
4/20/1983	56	120	0	0	0
4/21/1983	57	120	0	0	0
4/22/1983	57	120	0	0	0
4/23/1983	57	120	0	0	0
4/24/1983	57	120	0	0	0
4/25/1983	42	120	41	0	0
4/26/1983	31	120	13	0	0
4/27/1983	30	120	6	0	0
4/28/1983	31	120	6	0	0
4/29/1983	57	120	29	0	0
4/30/1983	57	120	0	0	0
5/1/1983	80	120	0	0	0
5/2/1983	80	120	24	0	0
5/3/1983	80	120	24	0	0
5/4/1983	82	120	24	0	0
5/5/1983	80	120	25	0	0
5/6/1983	77	120	27	0	0
5/7/1983	76	120	27	0	0
5/8/1983	76	120	0	0	0
5/9/1983	76	120	27	0	0
5/10/1983	75	120	27	0	0
5/11/1983	75	120	27	0	0
5/12/1983	75	120	27	0	0
5/13/1983	75	120	27	0	0
5/14/1983	75	120	22	0	0
5/15/1983	75	120	0	0	0
5/16/1983	74	120	20	0	0
5/17/1983	81	120	176	0	0
5/18/1983	116	120	16	0	0
5/19/1983	130	120	30	0	0
5/20/1983	130	120	27	0	0
5/21/1983	130	120	20	0	0
5/22/1983	131	120	0	11	22
5/23/1983	146	120	18	8	17
5/24/1983	160	120	11	29	57
5/25/1983	190	120	7	63	124

Calculations for Dietrich Site Flow
1983
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
5/26/1983	226	120	11	95	188
5/27/1983	245	120	12	113	224
5/28/1983	262	120	0	142	282
5/29/1983	262	120	20	122	241
5/30/1983	266	120	24	122	242
5/31/1983	272	120	0	152	301
6/1/1983	275	220	30	0	0
6/2/1983	272	220	30	0	0
6/3/1983	261	220	30	0	0
6/4/1983	262	220	34	0	0
6/5/1983	262	220	37	0	0
6/6/1983	254	220	31	0	0
6/7/1983	248	220	31	0	0
6/8/1983	244	220	38	0	0
6/9/1983	241	220	38	0	0
6/10/1983	242	220	36	0	0
6/11/1983	244	220	32	0	0
6/12/1983	245	220	30	0	0
6/13/1983	235	220	30	0	0
6/14/1983	228	220	38	0	0
6/15/1983	224	220	30	0	0
6/16/1983	223	220	34	0	0
6/17/1983	219	220	29	0	0
6/18/1983	216	220	30	0	0
6/19/1983	216	220	25	0	0
6/20/1983	217	220	24	0	0
6/21/1983	217	220	27	0	0
6/22/1983	216	220	24	0	0
6/23/1983	216	220	24	0	0
6/24/1983	213	220	24	0	0
6/25/1983	209	220	22	0	0
6/26/1983	214	220	204	0	0
6/27/1983	219	220	15	0	0
6/28/1983	220	220	17	0	0
6/29/1983	223	220	18	0	0
6/30/1983	223	220	20	0	0
7/1/1983	221	220	21	0	0
7/2/1983	220	220	24	0	0
7/3/1983	227	220	0	0	0
7/4/1983	226	220	27	0	0
7/5/1983	219	220	25	0	0
7/6/1983	216	220	22	0	0
7/7/1983	214	220	21	0	0
7/8/1983	214	220	20	0	0
7/9/1983	213	220	18	0	0
7/10/1983	216	220	18	0	0
7/11/1983	213	220	18	0	0
7/12/1983	204	220	18	0	0
7/13/1983	213	220	18	0	0
7/14/1983	206	220	12	0	0
7/15/1983	216	220	13	0	0
7/16/1983	221	220	22	0	0
7/17/1983	223	220	0	0	0
7/18/1983	213	220	22	0	0
7/19/1983	219	220	13	0	0

Calculations for Dietrich Site Flow
1983
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
7/20/1983	227	220	13	0	0
7/21/1983	231	220	14	0	0
7/22/1983	231	220	15	0	0
7/23/1983	230	220	16	0	0
7/24/1983	231	220	0	0	0
7/25/1983	235	220	19	0	0
7/26/1983	231	220	19	0	0
7/27/1983	228	220	20	0	0
7/28/1983	227	220	20	0	0
7/29/1983	227	220	24	0	0
7/30/1983	226	220	24	0	0
7/31/1983	221	220	0	0	0
8/1/1983	224	220	24	0	0
8/2/1983	224	220	24	0	0
8/3/1983	224	220	25	0	0
8/4/1983	224	220	29	0	0
8/5/1983	226	220	29	0	0
8/6/1983	224	220	30	0	0
8/7/1983	219	220	0	0	0
8/8/1983	226	220	29	0	0
8/9/1983	227	220	30	0	0
8/10/1983	224	220	30	0	0
8/11/1983	224	220	29	0	0
8/12/1983	227	220	22	0	0
8/13/1983	230	220	22	0	0
8/14/1983	223	220	0	0	0
8/15/1983	223	220	25	0	0
8/16/1983	226	220	21	0	0
8/17/1983	230	220	24	0	0
8/18/1983	230	220	20	0	0
8/19/1983	230	220	20	0	0
8/20/1983	234	220	25	0	0
8/21/1983	233	220	0	0	0
8/22/1983	235	220	29	0	0
8/23/1983	235	220	43	0	0
8/24/1983	200	220	38	0	0
8/25/1983	201	220	34	0	0
8/26/1983	202	220	34	0	0
8/27/1983	200	220	41	0	0
8/28/1983	198	220	0	0	0
8/29/1983	200	220	41	0	0
8/30/1983	183	220	27	0	0
8/31/1983	184	220	18	0	0
9/1/1983	180	220	18	0	0
9/2/1983	186	220	12	0	0
9/3/1983	190	220	18	0	0
9/4/1983	189	220	0	0	0
9/5/1983	189	220	18	0	0
9/6/1983	189	220	18	0	0
9/7/1983	190	220	24	0	0
9/8/1983	190	220	27	0	0
9/9/1983	190	220	29	0	0
9/10/1983	190	220	27	0	0
9/11/1983	190	220	0	0	0
9/12/1983	190	220	30	0	0

Calculations for Dietrich Site Flow
1983
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
9/13/1983	189	220	27	0	0
9/14/1983	189	220	24	0	0
9/15/1983	188	220	24	0	0
9/16/1983	192	220	27	0	0
9/17/1983	192	220	27	0	0
9/18/1983	192	220	0	0	0
9/19/1983	190	220	27	0	0
9/20/1983	190	220	27	0	0
9/21/1983	190	220	30	0	0
9/22/1983	192	220	30	0	0
9/23/1983	192	220	30	0	0
9/24/1983	190	220	30	0	0
9/25/1983	192	220	0	0	0
9/26/1983	192	220	30	0	0
9/27/1983	192	220	34	0	0
9/28/1983	179	220	41	0	0
9/29/1983	171	220	38	0	0
9/30/1983	171	220	41	0	0
10/1/1983	0	75	0	0	0
10/2/1983	0	75	0	0	0
10/3/1983	0	75	0	0	0
10/4/1983	0	75	0	0	0
10/5/1983	0	75	0	0	0
10/6/1983	0	75	0	0	0
10/7/1983	0	75	0	0	0
10/8/1983	0	75	0	0	0
10/9/1983	0	75	0	0	0
10/10/1983	0	75	0	0	0
10/11/1983	0	75	0	0	0
10/12/1983	0	75	0	0	0
10/13/1983	0	75	0	0	0
10/14/1983	0	75	0	0	0
10/15/1983	0	75	0	0	0
10/16/1983	0	75	0	0	0
10/17/1983	0	75	0	0	0
10/18/1983	0	75	0	0	0
10/19/1983	0	75	0	0	0
10/20/1983	0	75	0	0	0
10/21/1983	0	75	0	0	0
10/22/1983	0	75	0	0	0
10/23/1983	0	75	0	0	0
10/24/1983	0	75	0	0	0
10/25/1983	0	75	0	0	0
10/26/1983	0	75	0	0	0
10/27/1983	0	75	0	0	0
10/28/1983	0	75	0	0	0
10/29/1983	0	75	0	0	0
10/30/1983	0	75	0	0	0
10/31/1983	0	75	0	0	0
				152	1699
				Maximum	Total

Calculations for Dietrich Site Flow
1984
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
4/1/1984	14	75	0	0	0
4/2/1984	16	75	0	0	0
4/3/1984	16	75	0	0	0
4/4/1984	25	75	0	0	0
4/5/1984	27	75	0	0	0
4/6/1984	27	75	0	0	0
4/7/1984	28	75	0	0	0
4/8/1984	28	75	0	0	0
4/9/1984	29	75	0	0	0
4/10/1984	30	75	0	0	0
4/11/1984	30	75	0	0	0
4/12/1984	30	75	0	0	0
4/13/1984	30	75	0	0	0
4/14/1984	30	75	0	0	0
4/15/1984	30	75	0	0	0
4/16/1984	30	120	0	0	0
4/17/1984	30	120	10.1	0	0
4/18/1984	30	120	7.4	0	0
4/19/1984	325	120	12.7	192	381
4/20/1984	302	120	11.8	170	338
4/21/1984	259	120	10.1	129	256
4/22/1984	259	120	11.8	127	252
4/23/1984	259	120	0	139	276
4/24/1984	259	120	10.9	128	254
4/25/1984	261	120	0	141	280
4/26/1984	261	120	0	141	280
4/27/1984	259	120	0	139	276
4/28/1984	258	120	0	138	274
4/29/1984	256	120	0	136	270
4/30/1984	256	120	0	136	270
5/1/1984	291	120	0	171	339
5/2/1984	309	120	0	189	375
5/3/1984	321	120	0	201	399
5/4/1984	321	120	0	201	399
5/5/1984	319	120	0	199	395
5/6/1984	309	120	0	189	375
5/7/1984	306	120	0	186	369
5/8/1984	300	120	0	180	357
5/9/1984	251	120	0	131	260
5/10/1984	183	120	0	63	125
5/11/1984	184	120	0	64	127
5/12/1984	204	120	0	84	167
5/13/1984	213	120	0	93	184
5/14/1984	219	120	0	99	196
5/15/1984	294	120	0	174	345
5/16/1984	390	120	0	270	536
5/17/1984	396	120	0	276	547
5/18/1984	387	120	0	267	530
5/19/1984	390	120	0	270	536
5/20/1984	387	120	0	267	530
5/21/1984	375	120	0	255	506
5/22/1984	247	120	0	127	252
5/23/1984	209	120	0	89	177
5/24/1984	210	120	0	90	179
5/25/1984	207	120	0	87	173
5/26/1984	207	120	0	87	173

Calculations for Dietrich Site Flow
1984
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
5/27/1984	206	120	0	86	171
5/28/1984	219	120	0	99	196
5/29/1984	226	120	0	106	210
5/30/1984	227	120	0	107	212
5/31/1984	221	120	0	101	200
6/1/1984	238	220	0	0	0
6/2/1984	235	220	0	0	0
6/3/1984	228	220	0	0	0
6/4/1984	227	220	0	0	0
6/5/1984	233	220	0	0	0
6/6/1984	238	220	0	0	0
6/7/1984	226	220	0	0	0
6/8/1984	226	220	0	0	0
6/9/1984	226	220	0	0	0
6/10/1984	227	220	0	0	0
6/11/1984	227	220	0	0	0
6/12/1984	216	220	0	0	0
6/13/1984	213	220	0	0	0
6/14/1984	213	220	0	0	0
6/15/1984	209	220	0	0	0
6/16/1984	206	220	0	0	0
6/17/1984	206	220	0	0	0
6/18/1984	204	220	0	0	0
6/19/1984	207	220	0	0	0
6/20/1984	213	220	0	0	0
6/21/1984	214	220	0	0	0
6/22/1984	213	220	0	0	0
6/23/1984	209	220	0	0	0
6/24/1984	207	220	0	0	0
6/25/1984	204	220	0	0	0
6/26/1984	207	220	6.3	0	0
6/27/1984	221	220	5.3	0	0
6/28/1984	228	220	6.7	0	0
6/29/1984	230	220	8.2	0	0
6/30/1984	228	220	11.8	0	0
7/1/1984	230	220	12.7	0	0
7/2/1984	228	220	0	0	0
7/3/1984	233	220	12.7	0	0
7/4/1984	233	220	13.7	0	0
7/5/1984	216	220	15.8	0	0
7/6/1984	217	220	9.2	0	0
7/7/1984	219	220	7.4	0	0
7/8/1984	220	220	4.9	0	0
7/9/1984	223	220	0	0	0
7/10/1984	228	220	8.2	0	0
7/11/1984	224	220	10.5	0	0
7/12/1984	223	220	8.8	0	0
7/13/1984	223	220	7.1	0	0
7/14/1984	224	220	5.3	0	0
7/15/1984	230	220	6.3	0	0
7/16/1984	231	220	0	0	0
7/17/1984	231	220	7.4	0	0
7/18/1984	230	220	13.7	0	0
7/19/1984	223	220	15.8	0	0
7/20/1984	226	220	17.9	0	0
7/21/1984	237	220	16.8	0	0

Calculations for Dietrich Site Flow
1984
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
7/22/1984	235	220	21.3	0	0
7/23/1984	240	220	0	0	0
7/24/1984	240	220	18.9	0	0
7/25/1984	240	220	18.9	0	0
7/26/1984	228	220	0	0	0
7/27/1984	217	220	0	0	0
7/28/1984	214	220	0	0	0
7/29/1984	209	220	0	0	0
7/30/1984	213	220	0	0	0
7/31/1984	213	220	0	0	0
8/1/1984	213	220	0	0	0
8/2/1984	214	220	0	0	0
8/3/1984	202	220	0	0	0
8/4/1984	196	220	0	0	0
8/5/1984	197	220	0	0	0
8/6/1984	198	220	0	0	0
8/7/1984	198	220	0	0	0
8/8/1984	196	220	0	0	0
8/9/1984	196	220	0	0	0
8/10/1984	196	220	0	0	0
8/11/1984	196	220	0	0	0
8/12/1984	197	220	0	0	0
8/13/1984	206	220	0	0	0
8/14/1984	214	220	0	0	0
8/15/1984	201	220	0	0	0
8/16/1984	203	220	0	0	0
8/17/1984	204	220	0	0	0
8/18/1984	204	220	0	0	0
8/19/1984	206	220	0	0	0
8/20/1984	206	220	0	0	0
8/21/1984	207	220	0	0	0
8/22/1984	206	220	0	0	0
8/23/1984	207	220	0	0	0
8/24/1984	206	220	0	0	0
8/25/1984	210	220	0	0	0
8/26/1984	213	220	0	0	0
8/27/1984	213	220	0	0	0
8/28/1984	210	220	0	0	0
8/29/1984	213	220	0	0	0
8/30/1984	214	220	0	0	0
8/31/1984	217	220	0	0	0
9/1/1984	197	220	0	0	0
9/2/1984	198	220	0	0	0
9/3/1984	200	220	0	0	0
9/4/1984	200	220	0	0	0
9/5/1984	197	220	0	0	0
9/6/1984	193	220	0	0	0
9/7/1984	193	220	0	0	0
9/8/1984	196	220	0	0	0
9/9/1984	196	220	0	0	0
9/10/1984	196	220	0	0	0
9/11/1984	194	220	0	0	0
9/12/1984	201	220	0	0	0
9/13/1984	186	220	0	0	0
9/14/1984	179	220	0	0	0
9/15/1984	180	220	0	0	0

Calculations for Dietrich Site Flow
1984
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
9/16/1984	179	220	0	0	0
9/17/1984	177	220	0	0	0
9/18/1984	181	220	0	0	0
9/19/1984	186	220	0	0	0
9/20/1984	168	220	0	0	0
9/21/1984	192	220	0	0	0
9/22/1984	196	220	0	0	0
9/23/1984	198	220	0	0	0
9/24/1984	198	220	0	0	0
9/25/1984	188	220	0	0	0
9/26/1984	183	220	0	0	0
9/27/1984	168	220	0	0	0
9/28/1984	159	220	0	0	0
9/29/1984	135	220	0	0	0
9/30/1984	155	220	0	0	0
10/1/1984	0	75	0	0	0
10/2/1984	0	75	0	0	0
10/3/1984	0	75	0	0	0
10/4/1984	0	75	0	0	0
10/5/1984	0	75	0	0	0
10/6/1984	0	75	0	0	0
10/7/1984	0	75	0	0	0
10/8/1984	0	75	0	0	0
10/9/1984	0	75	0	0	0
10/10/1984	0	75	0	0	0
10/11/1984	0	75	0	0	0
10/12/1984	0	75	0	0	0
10/13/1984	0	75	0	0	0
10/14/1984	0	75	0	0	0
10/15/1984	0	75	0	0	0
10/16/1984	0	75	0	0	0
10/17/1984	0	75	0	0	0
10/18/1984	0	75	0	0	0
10/19/1984	0	75	0	0	0
10/20/1984	0	75	0	0	0
10/21/1984	0	75	0	0	0
10/22/1984	0	75	0	0	0
10/23/1984	0	75	0	0	0
10/24/1984	0	75	0	0	0
10/25/1984	0	75	0	0	0
10/26/1984	0	75	0	0	0
10/27/1984	0	75	0	0	0
10/28/1984	0	75	0	0	0
10/29/1984	0	75	0	0	0
10/30/1984	0	75	0	0	0
10/31/1984	0	75	0	0	0
				276	12942
				Maximum	Total

Calculations for Dietrich Site Flow
1985
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
4/1/1985	0	75	0	0	0
4/2/1985	0	75	0	0	0
4/3/1985	0	75	0	0	0
4/4/1985	0	75	0	0	0
4/5/1985	0	75	0	0	0
4/6/1985	0	75	0	0	0
4/7/1985	0	75	0	0	0
4/8/1985	0	75	0	0	0
4/9/1985	0	75	0	0	0
4/10/1985	0	75	0	0	0
4/11/1985	40	75	0	0	0
4/12/1985	40	75	0	0	0
4/13/1985	40	75	0	0	0
4/14/1985	40	75	0	0	0
4/15/1985	40	75	0	0	0
4/16/1985	40	120	0	0	0
4/17/1985	40	120	0	0	0
4/18/1985	40	120	0	0	0
4/19/1985	39	120	0	0	0
4/20/1985	39	120	0	0	0
4/21/1985	39	120	0	0	0
4/22/1985	39	120	0	0	0
4/23/1985	46	120	0	0	0
4/24/1985	83	120	0	0	0
4/25/1985	84	120	0	0	0
4/26/1985	116	120	0	0	0
4/27/1985	109	120	0	0	0
4/28/1985	109	120	0	0	0
4/29/1985	113	120	0	0	0
4/30/1985	113	120	0	0	0
5/1/1985	135	120	0	15	30
5/2/1985	147	120	0	27	54
5/3/1985	154	120	0	34	67
5/4/1985	162	120	0	42	83
5/5/1985	187	120	0	67	133
5/6/1985	185	120	0	65	129
5/7/1985	170	120	0	50	99
5/8/1985	180	120	0	60	119
5/9/1985	193	120	0	73	145
5/10/1985	203	120	0	83	165
5/11/1985	205	120	0	85	169
5/12/1985	205	120	0	85	169
5/13/1985	203	120	0	83	165
5/14/1985	203	120	0	83	165
5/15/1985	208	120	0	88	175
5/16/1985	201	120	0	81	161
5/17/1985	203	120	0	83	165
5/18/1985	203	120	0	83	165
5/19/1985	203	120	0	83	165
5/20/1985	213	120	0	93	184
5/21/1985	205	120	0	85	169
5/22/1985	203	120	0	83	165
5/23/1985	201	120	0	81	161
5/24/1985	198	120	0	78	155
5/25/1985	201	120	0	81	161

Calculations for Dietrich Site Flow
1985
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
5/26/1985	201	120	0	81	161
5/27/1985	201	120	0	81	161
5/28/1985	222	120	0	102	202
5/29/1985	234	120	0	114	226
5/30/1985	252	120	0	132	262
5/31/1985	252	120	0	132	262
6/1/1985	213	220	0	0	0
6/2/1985	208	220	0	0	0
6/3/1985	213	220	0	0	0
6/4/1985	213	220	0	0	0
6/5/1985	213	220	0	0	0
6/6/1985	213	220	0	0	0
6/7/1985	213	220	0	0	0
6/8/1985	210	220	0	0	0
6/9/1985	213	220	0	0	0
6/10/1985	215	220	0	0	0
6/11/1985	215	220	0	0	0
6/12/1985	217	220	0	0	0
6/13/1985	239	220	0	0	0
6/14/1985	234	220	0	0	0
6/15/1985	217	220	0	0	0
6/16/1985	220	220	0	0	0
6/17/1985	220	220	0	0	0
6/18/1985	217	220	0	0	0
6/19/1985	217	220	0	0	0
6/20/1985	220	220	0	0	0
6/21/1985	220	220	0	0	0
6/22/1985	217	220	0	0	0
6/23/1985	217	220	0	0	0
6/24/1985	227	220	0	0	0
6/25/1985	247	220	0	0	0
6/26/1985	247	220	0	0	0
6/27/1985	244	220	0	0	0
6/28/1985	247	220	0	0	0
6/29/1985	244	220	0	0	0
6/30/1985	242	220	0	0	0
7/1/1985	220	220	0	0	0
7/2/1985	225	220	0	0	0
7/3/1985	225	220	0	0	0
7/4/1985	222	220	0	0	0
7/5/1985	222	220	0	0	0
7/6/1985	222	220	0	0	0
7/7/1985	225	220	0	0	0
7/8/1985	227	220	0	0	0
7/9/1985	229	220	0	0	0
7/10/1985	229	220	0	0	0
7/11/1985	225	220	0	0	0
7/12/1985	225	220	0	0	0
7/13/1985	232	220	0	0	0
7/14/1985	234	220	0	0	0
7/15/1985	213	220	0	0	0
7/16/1985	213	220	0	0	0
7/17/1985	213	220	0	0	0
7/18/1985	215	220	0	0	0
7/19/1985	205	220	0	0	0

Calculations for Dietrich Site Flow
1985
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
7/20/1985	201	220	0	0	0
7/21/1985	205	220	0	0	0
7/22/1985	210	220	0	0	0
7/23/1985	213	220	0	0	0
7/24/1985	203	220	0	0	0
7/25/1985	196	220	0	0	0
7/26/1985	185	220	0	0	0
7/27/1985	180	220	0	0	0
7/28/1985	183	220	0	0	0
7/29/1985	185	220	0	0	0
7/30/1985	191	220	0	0	0
7/31/1985	185	220	0	0	0
8/1/1985	191	220	0	0	0
8/2/1985	187	220	0	0	0
8/3/1985	185	220	0	0	0
8/4/1985	180	220	0	0	0
8/5/1985	174	220	0	0	0
8/6/1985	187	220	0	0	0
8/7/1985	183	220	0	0	0
8/8/1985	198	220	0	0	0
8/9/1985	196	220	0	0	0
8/10/1985	196	220	0	0	0
8/11/1985	198	220	0	0	0
8/12/1985	196	220	0	0	0
8/13/1985	193	220	0	0	0
8/14/1985	220	220	0	0	0
8/15/1985	205	220	0	0	0
8/16/1985	213	220	0	0	0
8/17/1985	210	220	0	0	0
8/18/1985	210	220	0	0	0
8/19/1985	210	220	0	0	0
8/20/1985	215	220	0	0	0
8/21/1985	213	220	0	0	0
8/22/1985	210	220	0	0	0
8/23/1985	210	220	0	0	0
8/24/1985	208	220	0	0	0
8/25/1985	203	220	0	0	0
8/26/1985	201	220	0	0	0
8/27/1985	206	220	0	0	0
8/28/1985	206	220	0	0	0
8/29/1985	206	220	0	0	0
8/30/1985	206	220	0	0	0
8/31/1985	206	220	0	0	0
9/1/1985	208	220	0	0	0
9/2/1985	215	220	0	0	0
9/3/1985	215	220	0	0	0
9/4/1985	201	220	0	0	0
9/5/1985	193	220	0	0	0
9/6/1985	180	220	0	0	0
9/7/1985	178	220	0	0	0
9/8/1985	183	220	0	0	0
9/9/1985	187	220	0	0	0
9/10/1985	168	220	0	0	0
9/11/1985	131	220	0	0	0
9/12/1985	108	220	0	0	0

Calculations for Dietrich Site Flow
1985
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
9/13/1985	99	220	0	0	0
9/14/1985	78	220	0	0	0
9/15/1985	76	220	0	0	0
9/16/1985	79	220	0	0	0
9/17/1985	63	220	0	0	0
9/18/1985	53	220	0	0	0
9/19/1985	53	220	0	0	0
9/20/1985	53	220	0	0	0
9/21/1985	61	220	0	0	0
9/22/1985	66	220	0	0	0
9/23/1985	76	220	0	0	0
9/24/1985	78	220	0	0	0
9/25/1985	78	220	0	0	0
9/26/1985	85	220	0	0	0
9/27/1985	82	220	0	0	0
9/28/1985	83	220	0	0	0
9/29/1985	85	220	0	0	0
9/30/1985	85	220	0	0	0
10/1/1985	0	75	0	0	0
10/2/1985	0	75	0	0	0
10/3/1985	0	75	0	0	0
10/4/1985	0	75	0	0	0
10/5/1985	0	75	0	0	0
10/6/1985	0	75	0	0	0
10/7/1985	0	75	0	0	0
10/8/1985	0	75	0	0	0
10/9/1985	0	75	0	0	0
10/10/1985	0	75	0	0	0
10/11/1985	0	75	0	0	0
10/12/1985	0	75	0	0	0
10/13/1985	0	75	0	0	0
10/14/1985	0	75	0	0	0
10/15/1985	0	75	0	0	0
10/16/1985	0	75	0	0	0
10/17/1985	0	75	0	0	0
10/18/1985	0	75	0	0	0
10/19/1985	0	75	0	0	0
10/20/1985	0	75	0	0	0
10/21/1985	0	75	0	0	0
10/22/1985	0	75	0	0	0
10/23/1985	0	75	0	0	0
10/24/1985	0	75	0	0	0
10/25/1985	0	75	0	0	0
10/26/1985	0	75	0	0	0
10/27/1985	0	75	0	0	0
10/28/1985	0	75	0	0	0
10/29/1985	0	75	0	0	0
10/30/1985	0	75	0	0	0
10/31/1985	0	75	0	0	0
				132	4786
				Maximum	Total

Calculations for Dietrich Site Flow
1986
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
4/1/1986	47	75	0	0	0
4/2/1986	53	75	0	0	0
4/3/1986	62	75	0	0	0
4/4/1986	63	75	0	0	0
4/5/1986	62	75	0	0	0
4/6/1986	62	75	0	0	0
4/7/1986	63	75	0	0	0
4/8/1986	63	75	0	0	0
4/9/1986	63	75	0	0	0
4/10/1986	63	75	0	0	0
4/11/1986	63	75	0	0	0
4/12/1986	63	75	0	0	0
4/13/1986	64	75	0	0	0
4/14/1986	73	75	0	0	0
4/15/1986	82	75	0	7	14
4/16/1986	82	120	0	0	0
4/17/1986	82	120	0	0	0
4/18/1986	82	120	0	0	0
4/19/1986	82	120	0	0	0
4/20/1986	82	120	0	0	0
4/21/1986	90	120	0	0	0
4/22/1986	125	120	0	5	10
4/23/1986	147	120	0	27	54
4/24/1986	147	120	17	10	20
4/25/1986	158	120	17	21	42
4/26/1986	158	120	21	17	34
4/27/1986	156	120	21	15	30
4/28/1986	172	120	21	31	61
4/29/1986	174	120	38	16	32
4/30/1986	170	120	38	12	24
5/1/1986	170	120	39	11	21
5/2/1986	185	120	39	26	51
5/3/1986	185	120	49	17	33
5/4/1986	183	120	49	15	29
5/5/1986	196	120	49	28	55
5/6/1986	193	120	49	24	48
5/7/1986	193	120	49	24	48
5/8/1986	198	120	33	45	90
5/9/1986	195	120	33	42	84
5/10/1986	191	120	35	36	72
5/11/1986	195	120	35	40	80
5/12/1986	189	120	35	34	68
5/13/1986	187	120	36	31	62
5/14/1986	183	120	6	57	113
5/15/1986	180	120	35	25	50
5/16/1986	183	120	35	28	56
5/17/1986	178	120	35	23	46
5/18/1986	180	120	35	25	50
5/19/1986	189	120	35	34	68
5/20/1986	187	120	35	32	63
5/21/1986	234	120	35	79	157
5/22/1986	293	120	44	129	256
5/23/1986	261	120	44	97	193
5/24/1986	234	120	38	76	150
5/25/1986	227	120	38	69	136

Calculations for Dietrich Site Flow
1986
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
5/26/1986	225	120	38	67	132
5/27/1986	220	120	35	65	128
5/28/1986	234	120	35	79	156
5/29/1986	261	120	35	106	210
5/30/1986	237	120	35	82	162
5/31/1986	242	120	34	88	175
6/1/1986	244	220	34	0	0
6/2/1986	239	220	34	0	0
6/3/1986	239	220	39	0	0
6/4/1986	247	220	39	0	0
6/5/1986	255	220	35	0	0
6/6/1986	244	220	35	0	0
6/7/1986	244	220	36	0	0
6/8/1986	239	220	36	0	0
6/9/1986	244	220	36	0	0
6/10/1986	234	220	40	0	0
6/11/1986	222	220	40	0	0
6/12/1986	225	220	45	0	0
6/13/1986	234	220	45	0	0
6/14/1986	234	220	42	0	0
6/15/1986	234	220	42	0	0
6/16/1986	237	220	42	0	0
6/17/1986	215	220	45	0	0
6/18/1986	237	220	45	0	0
6/19/1986	227	220	36	0	0
6/20/1986	227	220	36	0	0
6/21/1986	220	220	35	0	0
6/22/1986	295	220	35	0	0
6/23/1986	189	220	35	0	0
6/24/1986	217	220	33	0	0
6/25/1986	222	220	33	0	0
6/26/1986	242	220	26	0	0
6/27/1986	242	220	26	0	0
6/28/1986	242	220	34	0	0
6/29/1986	237	220	34	0	0
6/30/1986	237	220	34	0	0
7/1/1986	225	220	40	0	0
7/2/1986	222	220	40	0	0
7/3/1986	232	220	39	0	0
7/4/1986	237	220	39	0	0
7/5/1986	247	220	45	0	0
7/6/1986	247	220	45	0	0
7/7/1986	250	220	45	0	0
7/8/1986	244	220	39	0	0
7/9/1986	237	220	39	0	0
7/10/1986	237	220	39	0	0
7/11/1986	237	220	39	0	0
7/12/1986	237	220	35	0	0
7/13/1986	239	220	35	0	0
7/14/1986	242	220	35	0	0
7/15/1986	242	220	41	0	0
7/16/1986	237	220	41	0	0
7/17/1986	239	220	37	0	0
7/18/1986	239	220	37	0	0
7/19/1986	227	220	31	0	0

Calculations for Dietrich Site Flow
1986
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
7/20/1986	227	220	31	0	0
7/21/1986	222	220	31	0	0
7/22/1986	222	220	46	0	0
7/23/1986	225	220	46	0	0
7/24/1986	222	220	46	0	0
7/25/1986	225	220	46	0	0
7/26/1986	258	220	50	0	0
7/27/1986	217	220	50	0	0
7/28/1986	213	220	50	0	0
7/29/1986	208	220	40	0	0
7/30/1986	208	220	40	0	0
7/31/1986	213	220	41	0	0
8/1/1986	201	220	31	0	0
8/2/1986	201	220	42	0	0
8/3/1986	203	220	42	0	0
8/4/1986	203	220	45	0	0
8/5/1986	196	220	41	0	0
8/6/1986	196	220	41	0	0
8/7/1986	193	220	43	0	0
8/8/1986	196	220	43	0	0
8/9/1986	196	220	46	0	0
8/10/1986	198	220	46	0	0
8/11/1986	201	220	46	0	0
8/12/1986	201	220	51	0	0
8/13/1986	203	220	51	0	0
8/14/1986	203	220	43	0	0
8/15/1986	205	220	43	0	0
8/16/1986	205	220	48	0	0
8/17/1986	205	220	48	0	0
8/18/1986	205	220	48	0	0
8/19/1986	208	220	42	0	0
8/20/1986	205	220	42	0	0
8/21/1986	205	220	39	0	0
8/22/1986	295	220	39	0	0
8/23/1986	208	220	41	0	0
8/24/1986	208	220	41	0	0
8/25/1986	210	220	41	0	0
8/26/1986	210	220	37	0	0
8/27/1986	210	220	37	0	0
8/28/1986	210	220	39	0	0
8/29/1986	205	220	39	0	0
8/30/1986	250	220	49	0	0
8/31/1986	210	220	49	0	0
9/1/1986	205	220	49	0	0
9/2/1986	203	220	43	0	0
9/3/1986	193	220	43	0	0
9/4/1986	191	220	42	0	0
9/5/1986	191	220	42	0	0
9/6/1986	180	220	51	0	0
9/7/1986	170	220	51	0	0
9/8/1986	172	220	51	0	0
9/9/1986	167	220	46	0	0
9/10/1986	156	220	46	0	0
9/11/1986	147	220	50	0	0
9/12/1986	143	220	50	0	0

Calculations for Dietrich Site Flow
1986
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
9/13/1986	145	220	50	0	0
9/14/1986	145	220	50	0	0
9/15/1986	135	220	50	0	0
9/16/1986	135	220	51	0	0
9/17/1986	125	220	51	0	0
9/18/1986	123	220	54	0	0
9/19/1986	125	220	54	0	0
9/20/1986	123	220	53	0	0
9/21/1986	122	220	53	0	0
9/22/1986	120	220	53	0	0
9/23/1986	119	220	51	0	0
9/24/1986	125	220	51	0	0
9/25/1986	123	220	49	0	0
9/26/1986	122	220	49	0	0
9/27/1986	116	220	50	0	0
9/28/1986	105	220	50	0	0
9/29/1986	101	220	50	0	0
9/30/1986	101	220	50	0	0
10/1/1986	0	75	0	0	0
10/2/1986	0	75	0	0	0
10/3/1986	0	75	0	0	0
10/4/1986	0	75	0	0	0
10/5/1986	0	75	0	0	0
10/6/1986	0	75	0	0	0
10/7/1986	0	75	0	0	0
10/8/1986	0	75	0	0	0
10/9/1986	0	75	0	0	0
10/10/1986	0	75	0	0	0
10/11/1986	0	75	0	0	0
10/12/1986	0	75	0	0	0
10/13/1986	0	75	0	0	0
10/14/1986	0	75	0	0	0
10/15/1986	0	75	0	0	0
10/16/1986	0	75	0	0	0
10/17/1986	0	75	0	0	0
10/18/1986	0	75	0	0	0
10/19/1986	0	75	0	0	0
10/20/1986	0	75	0	0	0
10/21/1986	0	75	0	0	0
10/22/1986	0	75	0	0	0
10/23/1986	0	75	0	0	0
10/24/1986	0	75	0	0	0
10/25/1986	0	75	0	0	0
10/26/1986	0	75	0	0	0
10/27/1986	0	75	0	0	0
10/28/1986	0	75	0	0	0
10/29/1986	0	75	0	0	0
10/30/1986	0	75	0	0	0
10/31/1986	0	75	0	0	0
11/1/1986	0	75	0	0	0
11/2/1986	0	75	0	0	0
11/3/1986	0	75	0	0	0
11/4/1986	0	75	0	0	0
11/5/1986	0	75	0	0	0
11/6/1986	0	75	0	0	0

Calculations for Dietrich Site Flow
1986
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
11/7/1986	0	75	0	0	0
				129	3363
				Maximum	Total

Calculations for Dietrich Site Flow
1987
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
4/1/1987	0	75	7	0	0
4/2/1987	0	75	7	0	0
4/3/1987	0	75	7	0	0
4/4/1987	0	75	7	0	0
4/5/1987	0	75	7	0	0
4/6/1987	0	75	7	0	0
4/7/1987	0	75	3	0	0
4/8/1987	0	75	3	0	0
4/9/1987	0	75	4	0	0
4/10/1987	0	75	4	0	0
4/11/1987	0	75	9	0	0
4/12/1987	49	75	9	0	0
4/13/1987	49	75	9	0	0
4/14/1987	49	75	10	0	0
4/15/1987	49	75	10	0	0
4/16/1987	100	120	36	0	0
4/17/1987	88	120	17	0	0
4/18/1987	68	120	1	0	0
4/19/1987	68	120	1	0	0
4/20/1987	68	120	1	0	0
4/21/1987	68	120	6	0	0
4/22/1987	68	120	6	0	0
4/23/1987	133	120	25	0	0
4/24/1987	133	120	25	0	0
4/25/1987	155	120	2	33	65
4/26/1987	159	120	2	37	73
4/27/1987	159	120	2	37	73
4/28/1987	176	120	7	49	97
4/29/1987	176	120	4	52	103
4/30/1987	179	120	6	53	106
5/1/1987	192	120	10	62	122
5/2/1987	192	120	13	59	117
5/3/1987	192	120	13	59	117
5/4/1987	193	120	12	61	121
5/5/1987	193	120	15	58	114
5/6/1987	188	120	14	54	108
5/7/1987	186	120	16	50	99
5/8/1987	185	120	10	55	109
5/9/1987	185	120	8	57	112
5/10/1987	186	120	8	58	114
5/11/1987	186	120	6	60	119
5/12/1987	204	120	10	74	146
5/13/1987	207	120	7	81	160
5/14/1987	193	120	5	68	136
5/15/1987	210	120	12	78	154
5/16/1987	209	120	10	79	157
5/17/1987	218	120	10	88	175
5/18/1987	222	120	16	87	172
5/19/1987	222	120	17	85	169
5/20/1987	222	120	16	86	171
5/21/1987	212	120	19	73	145
5/22/1987	212	120	20	72	143
5/23/1987	202	120	19	63	125
5/24/1987	199	120	16	63	125
5/25/1987	202	120	20	62	123
5/26/1987	191	120	15	56	111
5/27/1987	186	120	15	51	101
5/28/1987	190	120	18	52	103
5/29/1987	173	120	10	43	85

Calculations for Dietrich Site Flow
1987
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
5/30/1987	173	120	13	40	79
5/31/1987	174	120	13	41	81
6/1/1987	176	220	6	0	0
6/2/1987	174	220	8	0	0
6/3/1987	173	220	4	0	0
6/4/1987	172	220	7	0	0
6/5/1987	183	220	1	0	0
6/6/1987	190	220	5	0	0
6/7/1987	201	220	5	0	0
6/8/1987	209	220	15	0	0
6/9/1987	209	220	20	0	0
6/10/1987	199	220	16	0	0
6/11/1987	196	220	19	0	0
6/12/1987	183	220	14	0	0
6/13/1987	183	220	14	0	0
6/14/1987	183	220	14	0	0
6/15/1987	183	220	5	0	0
6/16/1987	165	220	6	0	0
6/17/1987	177	220	7	0	0
6/18/1987	193	220	10	0	0
6/19/1987	196	220	7	0	0
6/20/1987	199	220	10	0	0
6/21/1987	201	220	10	0	0
6/22/1987	202	220	10	0	0
6/23/1987	198	220	5	0	0
6/24/1987	206	220	5	0	0
6/25/1987	223	220	10	0	0
6/26/1987	223	220	6	0	0
6/27/1987	226	220	9	0	0
6/28/1987	228	220	9	0	0
6/29/1987	228	220	6	0	0
6/30/1987	223	220	6	0	0
7/1/1987	233	220	4	0	0
7/2/1987	234	220	7	0	0
7/3/1987	238	220	6	0	0
7/4/1987	234	220	3	0	0
7/5/1987	244	220	3	0	0
7/6/1987	242	220	5	0	0
7/7/1987	241	220	2	0	0
7/8/1987	238	220	3	0	0
7/9/1987	236	220	2	0	0
7/10/1987	242	220	1	0	0
7/11/1987	249	220	5	0	0
7/12/1987	252	220	5	0	0
7/13/1987	250	220	6	0	0
7/14/1987	249	220	11	0	0
7/15/1987	241	220	15	0	0
7/16/1987	249	220	10	0	0
7/17/1987	249	220	16	0	0
7/18/1987	218	220	21	0	0
7/19/1987	204	220	21	0	0
7/20/1987	204	220	15	0	0
7/21/1987	206	220	19	0	0
7/22/1987	182	220	12	0	0
7/23/1987	180	220	8	0	0
7/24/1987	179	220	2	0	0
7/25/1987	186	220	1	0	0
7/26/1987	199	220	1	0	0
7/27/1987	198	220	4	0	0

Calculations for Dietrich Site Flow
1987
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
7/28/1987	202	220	5	0	0
7/29/1987	206	220	5	0	0
7/30/1987	206	220	3	0	0
7/31/1987	214	220	5	0	0
8/1/1987	214	220	7	0	0
8/2/1987	214	220	7	0	0
8/3/1987	215	220	5	0	0
8/4/1987	212	220	7	0	0
8/5/1987	215	220	4	0	0
8/6/1987	207	220	6	0	0
8/7/1987	206	220	5	0	0
8/8/1987	204	220	7	0	0
8/9/1987	204	220	7	0	0
8/10/1987	204	220	5	0	0
8/11/1987	202	220	4	0	0
8/12/1987	202	220	4	0	0
8/13/1987	201	220	6	0	0
8/14/1987	202	220	7	0	0
8/15/1987	186	220	8	0	0
8/16/1987	186	220	8	0	0
8/17/1987	199	220	8	0	0
8/18/1987	198	220	6	0	0
8/19/1987	198	220	10	0	0
8/20/1987	196	220	7	0	0
8/21/1987	196	220	4	0	0
8/22/1987	194	220	8	0	0
8/23/1987	194	220	8	0	0
8/24/1987	193	220	8	0	0
8/25/1987	198	220	10	0	0
8/26/1987	194	220	6	0	0
8/27/1987	196	220	10	0	0
8/28/1987	198	220	6	0	0
8/29/1987	66	220	5	0	0
8/30/1987	72	220	5	0	0
8/31/1987	26	220	5	0	0
9/1/1987	26	220	0	0	0
9/2/1987	28	220	0	0	0
9/3/1987	28	220	0	0	0
9/4/1987	28	220	0	0	0
9/5/1987	28	220	1	0	0
9/6/1987	28	220	1	0	0
9/7/1987	28	220	1	0	0
9/8/1987	28	220	1	0	0
9/9/1987	28	220	0	0	0
9/10/1987	37	220	0	0	0
9/11/1987	37	220	6	0	0
9/12/1987	37	220	5	0	0
9/13/1987	37	220	5	0	0
9/14/1987	37	220	6	0	0
9/15/1987	37	220	5	0	0
9/16/1987	37	220	6	0	0
9/17/1987	37	220	6	0	0
9/18/1987	37	220	6	0	0
9/19/1987	37	220	6	0	0
9/20/1987	37	220	6	0	0
9/21/1987	37	220	6	0	0
9/22/1987	37	220	6	0	0
9/23/1987	42	220	6	0	0
9/24/1987	41	220	3	0	0

Calculations for Dietrich Site Flow
1987
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
9/25/1987	41	220	3	0	0
9/26/1987	40	220	2	0	0
9/27/1987	40	220	2	0	0
9/28/1987	40	220	4	0	0
9/29/1987	39	220	3	0	0
9/30/1987	42	220	2	0	0
10/1/1987	0	75	4	0	0
10/2/1987	0	75	5	0	0
10/3/1987	0	75	5	0	0
10/4/1987	0	75	0	0	0
10/5/1987	0	75	0	0	0
10/6/1987	0	75	3	0	0
10/7/1987	0	75	0	0	0
10/8/1987	0	75	3	0	0
10/9/1987	0	75	0	0	0
10/10/1987	0	75	0	0	0
10/11/1987	0	75	0	0	0
10/12/1987	0	75	0	0	0
10/13/1987	0	75	0	0	0
10/14/1987	0	75	0	0	0
10/15/1987	0	75	0	0	0
10/16/1987	0	75	0	0	0
10/17/1987	0	75	0	0	0
10/18/1987	0	75	0	0	0
10/19/1987	0	75	0	0	0
10/20/1987	0	75	0	0	0
10/21/1987	0	75	0	0	0
10/22/1987	0	75	0	0	0
10/23/1987	0	75	0	0	0
10/24/1987	0	75	0	0	0
10/25/1987	0	75	0	0	0
10/26/1987	0	75	0	0	0
10/27/1987	0	75	0	0	0
10/28/1987	0	75	0	0	0
10/29/1987	0	75	0	0	0
10/30/1987	0	75	0	0	0
10/31/1987	0	75	0	0	0
11/1/1987	0	75	0	0	0
11/2/1987	0	75	0	0	0
11/3/1987	0	75	0	0	0
11/4/1987	0	75	0	0	0
11/5/1987	0	75	0	0	0
11/6/1987	0	75	0	0	0
				88	4431
				Maximum	Total

Calculations for Dietrich Site Flow
1988
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
4/1/1988	31	75	0	0	0
4/2/1988	31	75	0	0	0
4/3/1988	32	75	0	0	0
4/4/1988	32	75	0	0	0
4/5/1988	32	75	0	0	0
4/6/1988	31	75	0	0	0
4/7/1988	34	75	17	0	0
4/8/1988	34	75	0	0	0
4/9/1988	34	75	0	0	0
4/10/1988	34	75	0	0	0
4/11/1988	34	75	14	0	0
4/12/1988	34	75	10	0	0
4/13/1988	34	75	0	0	0
4/14/1988	33	75	9	0	0
4/15/1988	33	75	0	0	0
4/16/1988	33	120	0	0	0
4/17/1988	32	120	0	0	0
4/18/1988	32	120	8	0	0
4/19/1988	32	120	8	0	0
4/20/1988	32	120	10	0	0
4/21/1988	32	120	10	0	0
4/22/1988	32	120	8	0	0
4/23/1988	32	120	10	0	0
4/24/1988	32	120	0	0	0
4/25/1988	32	120	8	0	0
4/26/1988	32	120	8	0	0
4/27/1988	32	120	4	0	0
4/28/1988	31	120	4	0	0
4/29/1988	31	120	3	0	0
4/30/1988	32	120	2	0	0
5/1/1988	32	120	0	0	0
5/2/1988	103	120	4	0	0
5/3/1988	179	120	24	35	69
5/4/1988	217	120	27	70	139
5/5/1988	217	120	27	70	139
5/6/1988	217	120	26	71	141
5/7/1988	220	120	24	76	151
5/8/1988	22	120	0	0	0
5/9/1988	220	120	28	72	143
5/10/1988	222	120	28	74	147
5/11/1988	217	120	20	77	153
5/12/1988	204	120	20	64	127
5/13/1988	204	120	15	70	138
5/14/1988	200	120	7	73	144
5/15/1988	200	120	0	80	159
5/16/1988	200	120	5	75	148
5/17/1988	200	120	2	78	155
5/18/1988	204	120	2	82	163
5/19/1988	202	120	1	81	161
5/20/1988	206	120	0	86	171
5/21/1988	217	120	5	92	182
5/22/1988	222	120	0	102	202
5/23/1988	222	120	2	100	198
5/24/1988	226	120	2	104	206
5/25/1988	222	120	3	99	196
5/26/1988	226	120	3	103	204

Calculations for Dietrich Site Flow
1988
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
5/27/1988	231	120	2	109	215
5/28/1988	229	120	5	104	207
5/29/1988	233	120	0	113	224
5/30/1988	242	120	7	115	228
5/31/1988	250	120	1	129	255
6/1/1988	189	220	7	0	0
6/2/1988	45	220	0	0	0
6/3/1988	45	220	0	0	0
6/4/1988	45	220	0	0	0
6/5/1988	31	220	0	0	0
6/6/1988	45	220	0	0	0
6/7/1988	28	220	0	0	0
6/8/1988	109	220	0	0	0
6/9/1988	228	220	27	0	0
6/10/1988	235	220	26	0	0
6/11/1988	212	220	24	0	0
6/12/1988	202	220	0	0	0
6/13/1988	216	220	25	0	0
6/14/1988	209	220	24	0	0
6/15/1988	204	220	11	0	0
6/16/1988	207	220	12	0	0
6/17/1988	209	220	12	0	0
6/18/1988	216	220	12	0	0
6/19/1988	200	220	0	0	0
6/20/1988	219	220	10	0	0
6/21/1988	207	220	12	0	0
6/22/1988	212	220	8	0	0
6/23/1988	214	220	12	0	0
6/24/1988	221	220	12	0	0
6/25/1988	209	220	2	0	0
6/26/1988	196	220	0	0	0
6/27/1988	221	220	2	0	0
6/28/1988	230	220	2	0	0
6/29/1988	228	220	5	0	0
6/30/1988	223	220	0	0	0
7/1/1988	230	220	0	0	0
7/2/1988	204	220	0	0	0
7/3/1988	11	220	0	0	0
7/4/1988	7	220	0	0	0
7/5/1988	9	220	0	0	0
7/6/1988	8	220	0	0	0
7/7/1988	8	220	0	0	0
7/8/1988	6	220	0	0	0
7/9/1988	11	220	0	0	0
7/10/1988	2	220	0	0	0
7/11/1988	5	220	0	0	0
7/12/1988	7	220	0	0	0
7/13/1988	7	220	0	0	0
7/14/1988	7	220	0	0	0
7/15/1988	6	220	0	0	0
7/16/1988	7	220	0	0	0
7/17/1988	9	220	0	0	0
7/18/1988	64	220	0	0	0
7/19/1988	6	220	0	0	0
7/20/1988	7	220	0	0	0
7/21/1988	6	220	0	0	0

Calculations for Dietrich Site Flow
1988
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
7/22/1988	7	220	0	0	0
7/23/1988	7	220	0	0	0
7/24/1988	9	220	0	0	0
7/25/1988	7	220	0	0	0
7/26/1988	7	220	0	0	0
7/27/1988	7	220	0	0	0
7/28/1988	7	220	0	0	0
7/29/1988	6	220	0	0	0
7/30/1988	12	220	0	0	0
7/31/1988	2	220	0	0	0
8/1/1988	78	220	42	0	0
8/2/1988	24	220	0	0	0
8/3/1988	12	220	0	0	0
8/4/1988	9	220	0	0	0
8/5/1988	6	220	0	0	0
8/6/1988	6	220	0	0	0
8/7/1988	6	220	0	0	0
8/8/1988	6	220	0	0	0
8/9/1988	6	220	0	0	0
8/10/1988	6	220	0	0	0
8/11/1988	6	220	0	0	0
8/12/1988	5	220	0	0	0
8/13/1988	5	220	4	0	0
8/14/1988	5	220	0	0	0
8/15/1988	5	220	0	0	0
8/16/1988	2	220	0	0	0
8/17/1988	0	220	0	0	0
8/18/1988	0	220	0	0	0
8/19/1988	0	220	0	0	0
8/20/1988	0	220	0	0	0
8/21/1988	0	220	0	0	0
8/22/1988	0	220	0	0	0
8/23/1988	0	220	0	0	0
8/24/1988	0	220	0	0	0
8/25/1988	0	220	0	0	0
8/26/1988	0	220	0	0	0
8/27/1988	0	220	0	0	0
8/28/1988	0	220	0	0	0
8/29/1988	0	220	4	0	0
8/30/1988	0	220	0	0	0
8/31/1988	0	220	0	0	0
9/1/1988	0	220	0	0	0
9/2/1988	0	220	0	0	0
9/3/1988	0	220	4	0	0
9/4/1988	0	220	0	0	0
9/5/1988	0	220	0	0	0
9/6/1988	0	220	0	0	0
9/7/1988	0	220	0	0	0
9/8/1988	0	220	0	0	0
9/9/1988	0	220	4	0	0
9/10/1988	0	220	0	0	0
9/11/1988	0	220	0	0	0
9/12/1988	0	220	0	0	0
9/13/1988	0	220	0	0	0
9/14/1988	0	220	0	0	0
9/15/1988	0	220	0	0	0

Calculations for Dietrich Site Flow
1988
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
9/16/1988	0	220	0	0	0
9/17/1988	0	220	4	0	0
9/18/1988	0	220	0	0	0
9/19/1988	0	220	0	0	0
9/20/1988	0	220	0	0	0
9/21/1988	0	220	0	0	0
9/22/1988	0	220	0	0	0
9/23/1988	0	220	0	0	0
9/24/1988	0	220	0	0	0
9/25/1988	0	220	0	0	0
9/26/1988	0	220	0	0	0
9/27/1988	0	220	0	0	0
9/28/1988	0	220	0	0	0
9/29/1988	0	220	0	0	0
9/30/1988	0	220	0	0	0
10/1/1988	0	75	0	0	0
10/2/1988	0	75	0	0	0
10/3/1988	0	75	0	0	0
10/4/1988	0	75	0	0	0
10/5/1988	0	75	0	0	0
10/6/1988	0	75	0	0	0
10/7/1988	0	75	0	0	0
10/8/1988	0	75	0	0	0
10/9/1988	0	75	0	0	0
10/10/1988	0	75	0	0	0
10/11/1988	0	75	0	0	0
10/12/1988	0	75	0	0	0
10/13/1988	0	75	0	0	0
10/14/1988	0	75	0	0	0
10/15/1988	0	75	0	0	0
10/16/1988	0	75	0	0	0
10/17/1988	0	75	0	0	0
10/18/1988	0	75	0	0	0
10/19/1988	0	75	0	0	0
10/20/1988	0	75	0	0	0
10/21/1988	0	75	0	0	0
10/22/1988	0	75	0	0	0
10/23/1988	0	75	0	0	0
10/24/1988	0	75	0	0	0
10/25/1988	0	75	0	0	0
10/26/1988	0	75	0	0	0
10/27/1988	0	75	0	0	0
10/28/1988	0	75	0	0	0
10/29/1988	0	75	0	0	0
10/30/1988	0	75	0	0	0
10/31/1988	0	75	0	0	0
				129	4765
				Maximum	Total

Calculations for Dietrich Site Flow
1989
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
4/1/1989	0	75	0	0	0
4/2/1989	0	75	0	0	0
4/3/1989	0	75	0	0	0
4/4/1989	0	75	0	0	0
4/5/1989	0	75	0	0	0
4/6/1989	0	75	0	0	0
4/7/1989	0	75	0	0	0
4/8/1989	32	75	0	0	0
4/9/1989	35	75	0	0	0
4/10/1989	35	75	0	0	0
4/11/1989	33	75	0	0	0
4/12/1989	28	75	0	0	0
4/13/1989	28	75	0	0	0
4/14/1989	53	75	0	0	0
4/15/1989	72	75	0	0	0
4/16/1989	74	120	0	0	0
4/17/1989	53	120	15	0	0
4/18/1989	53	120	9	0	0
4/19/1989	54	120	9	0	0
4/20/1989	54	120	10	0	0
4/21/1989	54	120	9	0	0
4/22/1989	55	120	9	0	0
4/23/1989	54	120	9	0	0
4/24/1989	54	120	6	0	0
4/25/1989	108	120	26	0	0
4/26/1989	104	120	1	0	0
4/27/1989	122	120	7	0	0
4/28/1989	118	120	1	0	0
4/29/1989	133	120	3	10	19
4/30/1989	128	120	3	5	10
5/1/1989	126	120	0	6	12
5/2/1989	41	120	0	0	0
5/3/1989	139	120	0	19	38
5/4/1989	171	120	11	41	80
5/5/1989	175	120	0	55	109
5/6/1989	209	120	10	79	157
5/7/1989	161	120	5	36	71
5/8/1989	213	120	5	88	175
5/9/1989	209	120	3	86	171
5/10/1989	240	120	10	110	218
5/11/1989	211	120	8	83	165
5/12/1989	211	120	10	81	161
5/13/1989	220	120	10	90	179
5/14/1989	168	120	10	38	75
5/15/1989	229	120	20	89	177
5/16/1989	238	120	24	94	186
5/17/1989	233	120	24	89	177
5/18/1989	238	120	16	102	202
5/19/1989	238	120	16	102	202
5/20/1989	233	120	24	89	177
5/21/1989	171	120	24	27	54
5/22/1989	233	120	24	89	177
5/23/1989	229	120	20	89	177
5/24/1989	229	120	20	89	177
5/25/1989	238	120	12	106	210

Calculations for Dietrich Site Flow
1989
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
5/26/1989	238	120	12	106	210
5/27/1989	238	120	5	113	224
5/28/1989	170	120	5	45	89
5/29/1989	238	120	5	113	224
5/30/1989	240	120	5	115	228
5/31/1989	238	120	5	113	224
6/1/1989	171	220	5	0	0
6/2/1989	173	220	4	0	0
6/3/1989	173	220	5	0	0
6/4/1989	174	220	5	0	0
6/5/1989	170	220	5	0	0
6/6/1989	170	220	8	0	0
6/7/1989	173	220	9	0	0
6/8/1989	171	220	9	0	0
6/9/1989	170	220	6	0	0
6/10/1989	172	220	2	0	0
6/11/1989	173	220	2	0	0
6/12/1989	175	220	2	0	0
6/13/1989	178	220	1	0	0
6/14/1989	155	220	1	0	0
6/15/1989	162	220	6	0	0
6/16/1989	170	220	4	0	0
6/17/1989	156	220	10	0	0
6/18/1989	157	220	10	0	0
6/19/1989	158	220	8	0	0
6/20/1989	160	220	8	0	0
6/21/1989	162	220	8	0	0
6/22/1989	163	220	8	0	0
6/23/1989	163	220	8	0	0
6/24/1989	164	220	8	0	0
6/25/1989	165	220	8	0	0
6/26/1989	166	220	8	0	0
6/27/1989	168	220	8	0	0
6/28/1989	161	220	8	0	0
6/29/1989	160	220	8	0	0
6/30/1989	161	220	8	0	0
7/1/1989	158	220	8	0	0
7/2/1989	159	220	8	0	0
7/3/1989	162	220	7	0	0
7/4/1989	164	220	7	0	0
7/5/1989	168	220	8	0	0
7/6/1989	168	220	8	0	0
7/7/1989	169	220	8	0	0
7/8/1989	171	220	8	0	0
7/9/1989	172	220	8	0	0
7/10/1989	174	220	8	0	0
7/11/1989	174	220	7	0	0
7/12/1989	174	220	5	0	0
7/13/1989	178	220	6	0	0
7/14/1989	179	220	8	0	0
7/15/1989	178	220	8	0	0
7/16/1989	179	220	8	0	0
7/17/1989	179	220	8	0	0
7/18/1989	179	220	8	0	0
7/19/1989	178	220	8	0	0

Calculations for Dietrich Site Flow
1989
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
7/20/1989	177	220	6	0	0
7/21/1989	177	220	6	0	0
7/22/1989	176	220	6	0	0
7/23/1989	177	220	6	0	0
7/24/1989	175	220	8	0	0
7/25/1989	175	220	7	0	0
7/26/1989	174	220	9	0	0
7/27/1989	174	220	9	0	0
7/28/1989	173	220	9	0	0
7/29/1989	174	220	9	0	0
7/30/1989	173	220	9	0	0
7/31/1989	172	220	9	0	0
8/1/1989	172	220	9	0	0
8/2/1989	169	220	9	0	0
8/3/1989	171	220	8	0	0
8/4/1989	174	220	9	0	0
8/5/1989	172	220	10	0	0
8/6/1989	171	220	10	0	0
8/7/1989	171	220	9	0	0
8/8/1989	171	220	9	0	0
8/9/1989	171	220	9	0	0
8/10/1989	165	220	8	0	0
8/11/1989	164	220	14	0	0
8/12/1989	164	220	16	0	0
8/13/1989	163	220	16	0	0
8/14/1989	163	220	15	0	0
8/15/1989	162	220	17	0	0
8/16/1989	161	220	18	0	0
8/17/1989	158	220	17	0	0
8/18/1989	156	220	17	0	0
8/19/1989	155	220	15	0	0
8/20/1989	156	220	15	0	0
8/21/1989	158	220	14	0	0
8/22/1989	157	220	14	0	0
8/23/1989	156	220	17	0	0
8/24/1989	146	220	20	0	0
8/25/1989	145	220	17	0	0
8/26/1989	143	220	20	0	0
8/27/1989	143	220	20	0	0
8/28/1989	143	220	20	0	0
8/29/1989	140	220	20	0	0
8/30/1989	138	220	16	0	0
8/31/1989	145	220	16	0	0
9/1/1989	192	220	15	0	0
9/2/1989	179	220	17	0	0
9/3/1989	35	220	16	0	0
9/4/1989	0	220	15	0	0
9/5/1989	0	220	0	0	0
9/6/1989	0	220	0	0	0
9/7/1989	10	220	0	0	0
9/8/1989	104	220	0	0	0
9/9/1989	104	220	0	0	0
9/10/1989	156	220	0	0	0
9/11/1989	292	220	24	0	0
9/12/1989	278	220	24	0	0

Calculations for Dietrich Site Flow
1989
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
9/13/1989	278	220	24	0	0
9/14/1989	282	220	26	0	0
9/15/1989	252	220	22	0	0
9/16/1989	247	220	30	0	0
9/17/1989	131	220	30	0	0
9/18/1989	222	220	30	0	0
9/19/1989	200	220	20	0	0
9/20/1989	196	220	20	0	0
9/21/1989	200	220	20	0	0
9/22/1989	189	220	18	0	0
9/23/1989	179	220	18	0	0
9/24/1989	77	220	0	0	0
9/25/1989	30	220	0	0	0
9/26/1989	19	220	0	0	0
9/27/1989	30	220	0	0	0
9/28/1989	30	220	0	0	0
9/29/1989	31	220	0	0	0
9/30/1989	0	220	0	0	0
10/1/1989	0	75	0	0	0
10/2/1989	0	75	0	0	0
10/3/1989	0	75	0	0	0
10/4/1989	0	75	4	0	0
10/5/1989	0	75	2	0	0
10/6/1989	0	75	1	0	0
10/7/1989	0	75	3	0	0
10/8/1989	0	75	2	0	0
10/9/1989	0	75	0	0	0
10/10/1989	0	75	0	0	0
10/11/1989	0	75	0	0	0
10/12/1989	0	75	0	0	0
10/13/1989	0	75	0	0	0
10/14/1989	0	75	0	0	0
10/15/1989	0	75	0	0	0
10/16/1989	0	75	0	0	0
10/17/1989	0	75	0	0	0
10/18/1989	0	75	0	0	0
10/19/1989	0	75	0	0	0
10/20/1989	0	75	0	0	0
10/21/1989	0	75	0	0	0
10/22/1989	0	75	0	0	0
10/23/1989	0	75	0	0	0
10/24/1989	0	75	0	0	0
10/25/1989	0	75	0	0	0
10/26/1989	0	75	0	0	0
10/27/1989	0	75	0	0	0
10/28/1989	0	75	0	0	0
10/29/1989	0	75	0	0	0
10/30/1989	0	75	0	0	0
10/31/1989	0	75	0	0	0
11/1/1989	0	75	0	0	0
11/2/1989	0	75	0	0	0
11/3/1989	0	75	0	0	0
11/4/1989	0	75	0	0	0
11/5/1989	0	75	0	0	0
11/6/1989	0	75	0	0	0

Calculations for Dietrich Site Flow
1989
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
11/7/1989	0	75	0	0	0
11/8/1989	0	75	0	0	0
11/9/1989	0	75	0	0	0
11/10/1989	0	75	0	0	0
11/11/1989	0	75	0	0	0
11/12/1989	0	75	0	0	0
11/13/1989	0	75	0	0	0
11/14/1989	0	75	0	0	0
11/15/1989	0	75	0	0	0
11/16/1989	0	75	0	0	0
				115	4753
				Maximum	Total

Calculations for Dietrich Site Flow
1990
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
4/1/1990	65	75	0	0	0
4/2/1990	65	75	0	0	0
4/3/1990	65	75	0	0	0
4/4/1990	65	75	0	0	0
4/5/1990	65	75	0	0	0
4/6/1990	65	75	0	0	0
4/7/1990	65	75	25	0	0
4/8/1990	64	75	0	0	0
4/9/1990	64	75	28	0	0
4/10/1990	64	75	28	0	0
4/11/1990	64	75	19	0	0
4/12/1990	64	75	14	0	0
4/13/1990	63	75	14	0	0
4/14/1990	63	75	12	0	0
4/15/1990	63	75	0	0	0
4/16/1990	63	120	12	0	0
4/17/1990	63	120	8	0	0
4/18/1990	52	120	8	0	0
4/19/1990	63	120	8	0	0
4/20/1990	62	120	8	0	0
4/21/1990	62	120	8	0	0
4/22/1990	62	120	0	0	0
4/23/1990	63	120	10	0	0
4/24/1990	63	120	12	0	0
4/25/1990	63	120	12	0	0
4/26/1990	63	120	12	0	0
4/27/1990	64	120	12	0	0
4/28/1990	64	120	0	0	0
4/29/1990	64	120	12	0	0
4/30/1990	64	120	0	0	0
5/1/1990	59	120	12	0	0
5/2/1990	59	120	12	0	0
5/3/1990	58	120	8	0	0
5/4/1990	58	120	5	0	0
5/5/1990	58	120	4	0	0
5/6/1990	58	120	0	0	0
5/7/1990	151	120	0	31	61
5/8/1990	200	120	78	2	4
5/9/1990	198	120	78	0	0
5/10/1990	208	120	25	63	125
5/11/1990	208	120	22	66	131
5/12/1990	216	120	15	81	161
5/13/1990	214	120	0	94	186
5/14/1990	214	120	21	73	145
5/15/1990	216	120	26	70	139
5/16/1990	218	120	20	78	155
5/17/1990	214	120	20	74	147
5/18/1990	218	120	16	82	163
5/19/1990	214	120	15	79	157
5/20/1990	220	120	0	100	198
5/21/1990	218	120	20	78	155
5/22/1990	218	120	20	78	155
5/23/1990	220	120	16	84	167
5/24/1990	220	120	15	85	169
5/25/1990	212	120	20	72	143

Calculations for Dietrich Site Flow
1990
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
5/26/1990	204	120	105	0	0
5/27/1990	206	120	0	86	171
5/28/1990	208	120	5	83	165
5/29/1990	208	120	5	83	165
5/30/1990	214	120	3	91	180
5/31/1990	214	120	5	89	177
6/1/1990	174	220	20	0	0
6/2/1990	10	220	0	0	0
6/3/1990	10	220	1	0	0
6/4/1990	12	220	1	0	0
6/5/1990	4	220	1	0	0
6/6/1990	4	220	5	0	0
6/7/1990	4	220	5	0	0
6/8/1990	124	220	8	0	0
6/9/1990	135	220	4	0	0
6/10/1990	141	220	0	0	0
6/11/1990	166	220	0	0	0
6/12/1990	173	220	19	0	0
6/13/1990	177	220	5	0	0
6/14/1990	177	220	6	0	0
6/15/1990	182	220	8	0	0
6/16/1990	188	220	9	0	0
6/17/1990	190	220	7	0	0
6/18/1990	192	220	7	0	0
6/19/1990	196	220	9	0	0
6/20/1990	200	220	10	0	0
6/21/1990	202	220	9	0	0
6/22/1990	208	220	7	0	0
6/23/1990	224	220	1	0	0
6/24/1990	239	220	6	0	0
6/25/1990	250	220	6	0	0
6/26/1990	259	220	4	0	0
6/27/1990	271	220	2	0	0
6/28/1990	278	220	6	0	0
6/29/1990	292	220	3	0	0
6/30/1990	304	220	6	0	0
7/1/1990	210	220	0	0	0
7/2/1990	222	220	4	0	0
7/3/1990	235	220	8	0	0
7/4/1990	233	220	7	0	0
7/5/1990	235	220	4	0	0
7/6/1990	231	220	3	0	0
7/7/1990	248	220	6	0	0
7/8/1990	250	220	0	0	0
7/9/1990	252	220	8	0	0
7/10/1990	235	220	8	0	0
7/11/1990	257	220	9	0	0
7/12/1990	252	220	8	0	0
7/13/1990	259	220	6	0	0
7/14/1990	259	220	8	0	0
7/15/1990	257	220	0	0	0
7/16/1990	257	220	6	0	0
7/17/1990	262	220	5	0	0
7/18/1990	257	220	4	0	0
7/19/1990	262	220	5	0	0

Calculations for Dietrich Site Flow
1990
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
7/20/1990	7	220	6	0	0
7/21/1990	0	220	0	0	0
7/22/1990	0	220	0	0	0
7/23/1990	0	220	0	0	0
7/24/1990	0	220	0	0	0
7/25/1990	0	220	0	0	0
7/26/1990	0	220	0	0	0
7/27/1990	0	220	0	0	0
7/28/1990	0	220	0	0	0
7/29/1990	0	220	0	0	0
7/30/1990	0	220	0	0	0
7/31/1990	0	220	0	0	0
8/1/1990	0	220	0	0	0
8/2/1990	0	220	0	0	0
8/3/1990	0	220	0	0	0
8/4/1990	0	220	0	0	0
8/5/1990	0	220	0	0	0
8/6/1990	0	220	0	0	0
8/7/1990	0	220	0	0	0
8/8/1990	0	220	0	0	0
8/9/1990	0	220	0	0	0
8/10/1990	0	220	0	0	0
8/11/1990	0	220	0	0	0
8/12/1990	0	220	0	0	0
8/13/1990	0	220	0	0	0
8/14/1990	0	220	0	0	0
8/15/1990	0	220	0	0	0
8/16/1990	0	220	0	0	0
8/17/1990	0	220	0	0	0
8/18/1990	0	220	0	0	0
8/19/1990	0	220	0	0	0
8/20/1990	0	220	0	0	0
8/21/1990	0	220	0	0	0
8/22/1990	65	220	0	0	0
8/23/1990	92	220	49	0	0
8/24/1990	231	220	25	0	0
8/25/1990	146	220	0	0	0
8/26/1990	136	220	0	0	0
8/27/1990	0	220	0	0	0
8/28/1990	0	220	0	0	0
8/29/1990	0	220	0	0	0
8/30/1990	0	220	0	0	0
8/31/1990	0	220	0	0	0
9/1/1990	0	220	0	0	0
9/2/1990	0	220	0	0	0
9/3/1990	0	220	0	0	0
9/4/1990	0	220	0	0	0
9/5/1990	0	220	0	0	0
9/6/1990	0	220	0	0	0
9/7/1990	0	220	0	0	0
9/8/1990	0	220	0	0	0
9/9/1990	0	220	0	0	0
9/10/1990	0	220	0	0	0
9/11/1990	0	220	0	0	0
9/12/1990	0	220	0	0	0

Calculations for Dietrich Site Flow
1990
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
9/13/1990	0	220	0	0	0
9/14/1990	0	220	0	0	0
9/15/1990	0	220	0	0	0
9/16/1990	0	220	0	0	0
9/17/1990	0	220	0	0	0
9/18/1990	0	220	0	0	0
9/19/1990	0	220	0	0	0
9/20/1990	0	220	0	0	0
9/21/1990	0	220	0	0	0
9/22/1990	0	220	0	0	0
9/23/1990	0	220	0	0	0
9/24/1990	0	220	0	0	0
9/25/1990	0	220	0	0	0
9/26/1990	0	220	0	0	0
9/27/1990	0	220	0	0	0
9/28/1990	0	220	0	0	0
9/29/1990	0	220	0	0	0
9/30/1990	0	220	0	0	0
10/1/1990	0	75	0	0	0
10/2/1990	0	75	0	0	0
10/3/1990	0	75	0	0	0
10/4/1990	0	75	0	0	0
10/5/1990	0	75	0	0	0
10/6/1990	0	75	0	0	0
10/7/1990	0	75	0	0	0
10/8/1990	0	75	0	0	0
10/9/1990	0	75	0	0	0
10/10/1990	0	75	0	0	0
10/11/1990	0	75	0	0	0
10/12/1990	0	75	0	0	0
10/13/1990	0	75	0	0	0
10/14/1990	0	75	0	0	0
10/15/1990	0	75	0	0	0
10/16/1990	0	75	0	0	0
10/17/1990	0	75	0	0	0
10/18/1990	0	75	0	0	0
10/19/1990	0	75	0	0	0
10/20/1990	0	75	0	0	0
10/21/1990	0	75	0	0	0
10/22/1990	0	75	0	0	0
10/23/1990	0	75	0	0	0
10/24/1990	0	75	0	0	0
10/25/1990	0	75	0	0	0
10/26/1990	0	75	0	0	0
10/27/1990	0	75	0	0	0
10/28/1990	0	75	0	0	0
10/29/1990	0	75	0	0	0
10/30/1990	0	75	0	0	0
10/31/1990	0	75	0	0	0
				100	3416
				Maximum	Total

Calculations for Dietrich Site Flow
1991
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
4/1/1991	0	75	0	0	0
4/2/1991	0	75	0	0	0
4/3/1991	0	75	0	0	0
4/4/1991	32	75	0	0	0
4/5/1991	31	75	0	0	0
4/6/1991	31	75	0	0	0
4/7/1991	31	75	0	0	0
4/8/1991	31	75	0	0	0
4/9/1991	51	75	0	0	0
4/10/1991	51	75	0	0	0
4/11/1991	51	75	0	0	0
4/12/1991	51	75	0	0	0
4/13/1991	51	75	0	0	0
4/14/1991	51	75	0	0	0
4/15/1991	51	75	0	0	0
4/16/1991	51	120	0	0	0
4/17/1991	49	120	0	0	0
4/18/1991	49	120	0	0	0
4/19/1991	48	120	0	0	0
4/20/1991	48	120	0	0	0
4/21/1991	48	120	0	0	0
4/22/1991	48	120	0	0	0
4/23/1991	48	120	0	0	0
4/24/1991	48	120	0	0	0
4/25/1991	50	120	0	0	0
4/26/1991	49	120	0	0	0
4/27/1991	48	120	0	0	0
4/28/1991	56	120	0	0	0
4/29/1991	48	120	0	0	0
4/30/1991	48	120	0	0	0
5/1/1991	48	120	2	0	0
5/2/1991	48	120	3	0	0
5/3/1991	48	120	2	0	0
5/4/1991	49	120	0	0	0
5/5/1991	60	120	0	0	0
5/6/1991	49	120	0	0	0
5/7/1991	49	120	0	0	0
5/8/1991	49	120	0	0	0
5/9/1991	49	120	0	0	0
5/10/1991	50	120	0	0	0
5/11/1991	50	120	0	0	0
5/12/1991	60	120	0	0	0
5/13/1991	51	120	0	0	0
5/14/1991	50	120	0	0	0
5/15/1991	50	120	0	0	0
5/16/1991	50	120	0	0	0
5/17/1991	49	120	0	0	0
5/18/1991	49	120	0	0	0
5/19/1991	55	120	0	0	0
5/20/1991	45	120	1	0	0
5/21/1991	46	120	0	0	0
5/22/1991	46	120	0	0	0
5/23/1991	173	120	3	50	99
5/24/1991	233	120	31	82	163
5/25/1991	234	120	22	92	182

Calculations for Dietrich Site Flow
1991
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
5/26/1991	216	120	0	96	190
5/27/1991	224	120	1	103	204
5/28/1991	233	120	4	109	216
5/29/1991	233	120	5	108	214
5/30/1991	255	120	7	128	254
5/31/1991	255	120	6	129	256
6/1/1991	282	220	0	0	0
6/2/1991	287	220	0	0	0
6/3/1991	287	220	0	0	0
6/4/1991	202	220	0	0	0
6/5/1991	220	220	0	0	0
6/6/1991	233	220	0	0	0
6/7/1991	235	220	0	0	0
6/8/1991	235	220	0	0	0
6/9/1991	235	220	0	0	0
6/10/1991	237	220	0	0	0
6/11/1991	235	220	0	0	0
6/12/1991	239	220	0	0	0
6/13/1991	239	220	0	0	0
6/14/1991	262	220	0	0	0
6/15/1991	268	220	0	0	0
6/16/1991	271	220	0	0	0
6/17/1991	278	220	0	0	0
6/18/1991	292	220	0	0	0
6/19/1991	302	220	0	0	0
6/20/1991	312	220	0	0	0
6/21/1991	319	220	0	0	0
6/22/1991	324	220	0	0	0
6/23/1991	332	220	0	0	0
6/24/1991	340	220	0	0	0
6/25/1991	342	220	0	0	0
6/26/1991	222	220	0	0	0
6/27/1991	228	220	0	0	0
6/28/1991	237	220	0	0	0
6/29/1991	243	220	0	0	0
6/30/1991	252	220	0	0	0
7/1/1991	255	220	0	0	0
7/2/1991	271	220	0	0	0
7/3/1991	278	220	0	0	0
7/4/1991	282	220	0	0	0
7/5/1991	287	220	0	0	0
7/6/1991	297	220	0	0	0
7/7/1991	302	220	0	0	0
7/8/1991	307	220	0	0	0
7/9/1991	307	220	0	0	0
7/10/1991	312	220	0	0	0
7/11/1991	0	220	0	0	0
7/12/1991	0	220	0	0	0
7/13/1991	0	220	0	0	0
7/14/1991	0	220	0	0	0
7/15/1991	0	220	0	0	0
7/16/1991	0	220	0	0	0
7/17/1991	0	220	0	0	0
7/18/1991	0	220	0	0	0
7/19/1991	0	220	0	0	0

Calculations for Dietrich Site Flow
1991
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
7/20/1991	0	220	0	0	0
7/21/1991	0	220	0	0	0
7/22/1991	0	220	0	0	0
7/23/1991	0	220	0	0	0
7/24/1991	0	220	0	0	0
7/25/1991	0	220	0	0	0
7/26/1991	0	220	0	0	0
7/27/1991	0	220	0	0	0
7/28/1991	0	220	0	0	0
7/29/1991	0	220	0	0	0
7/30/1991	0	220	0	0	0
7/31/1991	0	220	0	0	0
8/1/1991	0	220	0	0	0
8/2/1991	0	220	0	0	0
8/3/1991	0	220	0	0	0
8/4/1991	0	220	0	0	0
8/5/1991	0	220	0	0	0
8/6/1991	0	220	0	0	0
8/7/1991	0	220	0	0	0
8/8/1991	0	220	0	0	0
8/9/1991	0	220	0	0	0
8/10/1991	0	220	0	0	0
8/11/1991	0	220	0	0	0
8/12/1991	0	220	0	0	0
8/13/1991	0	220	0	0	0
8/14/1991	80	220	0	0	0
8/15/1991	96	220	8	0	0
8/16/1991	92	220	13	0	0
8/17/1991	25	220	0	0	0
8/18/1991	0	220	0	0	0
8/19/1991	0	220	0	0	0
8/20/1991	0	220	0	0	0
8/21/1991	0	220	0	0	0
8/22/1991	0	220	0	0	0
8/23/1991	0	220	0	0	0
8/24/1991	0	220	0	0	0
8/25/1991	0	220	0	0	0
8/26/1991	0	220	0	0	0
8/27/1991	0	220	0	0	0
8/28/1991	0	220	0	0	0
8/29/1991	0	220	0	0	0
8/30/1991	0	220	0	0	0
8/31/1991	0	220	0	0	0
9/1/1991	0	220	0	0	0
9/2/1991	0	220	0	0	0
9/3/1991	0	220	0	0	0
9/4/1991	0	220	0	0	0
9/5/1991	0	220	0	0	0
9/6/1991	0	220	0	0	0
9/7/1991	0	220	0	0	0
9/8/1991	0	220	0	0	0
9/9/1991	0	220	0	0	0
9/10/1991	0	220	0	0	0
9/11/1991	0	220	0	0	0
9/12/1991	0	220	0	0	0

Calculations for Dietrich Site Flow
1991
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
9/13/1991	0	220	0	0	0
9/14/1991	0	220	0	0	0
9/15/1991	0	220	0	0	0
9/16/1991	0	220	0	0	0
9/17/1991	0	220	0	0	0
9/18/1991	0	220	0	0	0
9/19/1991	0	220	0	0	0
9/20/1991	0	220	0	0	0
9/21/1991	0	220	0	0	0
9/22/1991	0	220	0	0	0
9/23/1991	0	220	0	0	0
9/24/1991	0	220	0	0	0
9/25/1991	0	220	0	0	0
9/26/1991	47	220	0	0	0
9/27/1991	0	220	0	0	0
9/28/1991	0	220	0	0	0
9/29/1991	0	220	0	0	0
9/30/1991	48	220	0	0	0
10/1/1991	0	75	0	0	0
10/2/1991	0	75	0	0	0
10/3/1991	0	75	0	0	0
10/4/1991	0	75	0	0	0
10/5/1991	0	75	0	0	0
10/6/1991	0	75	0	0	0
10/7/1991	0	75	0	0	0
10/8/1991	0	75	0	0	0
10/9/1991	0	75	0	0	0
10/10/1991	0	75	0	0	0
10/11/1991	0	75	0	0	0
10/12/1991	0	75	0	0	0
10/13/1991	0	75	0	0	0
10/14/1991	0	75	0	0	0
10/15/1991	0	75	0	0	0
10/16/1991	0	75	0	0	0
10/17/1991	0	75	0	0	0
10/18/1991	0	75	0	0	0
10/19/1991	0	75	0	0	0
10/20/1991	0	75	0	0	0
10/21/1991	0	75	0	0	0
10/22/1991	0	75	0	0	0
10/23/1991	0	75	0	0	0
10/24/1991	0	75	0	0	0
10/25/1991	0	75	0	0	0
10/26/1991	0	75	0	0	0
10/27/1991	0	75	0	0	0
10/28/1991	0	75	0	0	0
10/29/1991	0	75	0	0	0
10/30/1991	0	75	0	0	0
10/31/1991	0	75	0	0	0
11/1/1991	0	75	0	0	0
11/2/1991	0	75	0	0	0
11/3/1991	0	75	0	0	0
11/4/1991	0	75	0	0	0
11/5/1991	0	75	0	0	0
11/6/1991	0	75	0	0	0

Calculations for Dietrich Site Flow
1991
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
11/7/1991	0	75	0	0	0
11/8/1991	0	75	0	0	0
11/9/1991	0	75	0	0	0
11/10/1991	0	75	0	0	0
11/11/1991	0	75	0	0	0
11/12/1991	0	75	0	0	0
11/13/1991	0	75	0	0	0
11/14/1991	0	75	0	0	0
11/15/1991	0	75	0	0	0
11/16/1991	0	75	0	0	0
11/17/1991	0	75	0	0	0
11/18/1991	0	75	0	0	0
11/19/1991	0	75	0	0	0
11/20/1991	0	75	0	0	0
11/21/1991	0	75	0	0	0
11/22/1991	0	75	0	0	0
				129	1779
				Maximum	Total

Calculations for Dietrich Site Flow
1992
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
4/1/1992	0	75	0	0	0
4/2/1992	0	75	0	0	0
4/3/1992	0	75	0	0	0
4/4/1992	0	75	0	0	0
4/5/1992	0	75	0	0	0
4/6/1992	0	75	0	0	0
4/7/1992	0	75	0	0	0
4/8/1992	0	75	0	0	0
4/9/1992	0	75	0	0	0
4/10/1992	0	75	0	0	0
4/11/1992	0	75	0	0	0
4/12/1992	0	75	0	0	0
4/13/1992	0	75	0	0	0
4/14/1992	0	75	0	0	0
4/15/1992	0	75	0	0	0
4/16/1992	0	120	0	0	0
4/17/1992	0	120	0	0	0
4/18/1992	0	120	0	0	0
4/19/1992	0	120	0	0	0
4/20/1992	0	120	0	0	0
4/21/1992	0	120	0	0	0
4/22/1992	30	120	0	0	0
4/23/1992	29	120	0	0	0
4/24/1992	30	120	0	0	0
4/25/1992	30	120	0	0	0
4/26/1992	30	120	0	0	0
4/27/1992	30	120	0	0	0
4/28/1992	30	120	0	0	0
4/29/1992	23	120	0	0	0
4/30/1992	51	120	0	0	0
5/1/1992	50	120	13	0	0
5/2/1992	171	120	10	41	81
5/3/1992	220	120	10	90	179
5/4/1992	202	120	10	72	143
5/5/1992	237	120	0	117	232
5/6/1992	233	120	0	113	224
5/7/1992	233	120	0	113	224
5/8/1992	241	120	0	121	240
5/9/1992	259	120	0	139	276
5/10/1992	223	120	0	103	204
5/11/1992	259	120	0	139	276
5/12/1992	264	120	0	144	286
5/13/1992	264	120	0	144	286
5/14/1992	204	120	0	84	167
5/15/1992	208	120	0	88	175
5/16/1992	208	120	0	88	175
5/17/1992	188	120	0	68	135
5/18/1992	218	120	0	98	194
5/19/1992	212	120	0	92	182
5/20/1992	218	120	0	98	194
5/21/1992	216	120	0	96	190
5/22/1992	0	120	0	0	0
5/23/1992	0	120	0	0	0
5/24/1992	0	120	0	0	0
5/25/1992	0	120	0	0	0

Calculations for Dietrich Site Flow
1992
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
5/26/1992	0	120	0	0	0
5/27/1992	0	120	0	0	0
5/28/1992	0	120	0	0	0
5/29/1992	0	120	0	0	0
5/30/1992	0	120	0	0	0
5/31/1992	0	120	0	0	0
6/1/1992	0	220	0	0	0
6/2/1992	0	220	0	0	0
6/3/1992	0	220	0	0	0
6/4/1992	0	220	0	0	0
6/5/1992	0	220	0	0	0
6/6/1992	0	220	0	0	0
6/7/1992	0	220	0	0	0
6/8/1992	0	220	0	0	0
6/9/1992	0	220	0	0	0
6/10/1992	0	220	0	0	0
6/11/1992	0	220	0	0	0
6/12/1992	0	220	0	0	0
6/13/1992	0	220	0	0	0
6/14/1992	0	220	0	0	0
6/15/1992	0	220	0	0	0
6/16/1992	0	220	0	0	0
6/17/1992	0	220	0	0	0
6/18/1992	0	220	0	0	0
6/19/1992	0	220	0	0	0
6/20/1992	0	220	0	0	0
6/21/1992	0	220	0	0	0
6/22/1992	0	220	0	0	0
6/23/1992	0	220	0	0	0
6/24/1992	0	220	0	0	0
6/25/1992	0	220	0	0	0
6/26/1992	0	220	0	0	0
6/27/1992	0	220	0	0	0
6/28/1992	0	220	0	0	0
6/29/1992	0	220	0	0	0
6/30/1992	0	220	0	0	0
7/1/1992	214	220	0	0	0
7/2/1992	0	220	0	0	0
7/3/1992	0	220	0	0	0
7/4/1992	0	220	0	0	0
7/5/1992	0	220	0	0	0
7/6/1992	0	220	0	0	0
7/7/1992	0	220	0	0	0
7/8/1992	0	220	0	0	0
7/9/1992	0	220	0	0	0
7/10/1992	0	220	0	0	0
7/11/1992	0	220	0	0	0
7/12/1992	0	220	0	0	0
7/13/1992	0	220	0	0	0
7/14/1992	0	220	0	0	0
7/15/1992	0	220	0	0	0
7/16/1992	0	220	0	0	0
7/17/1992	0	220	0	0	0
7/18/1992	0	220	0	0	0
7/19/1992	0	220	0	0	0

Calculations for Dietrich Site Flow
1992
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
7/20/1992	7	220	0	0	0
7/21/1992	0	220	0	0	0
7/22/1992	0	220	0	0	0
7/23/1992	0	220	0	0	0
7/24/1992	0	220	0	0	0
7/25/1992	0	220	0	0	0
7/26/1992	0	220	0	0	0
7/27/1992	0	220	0	0	0
7/28/1992	0	220	0	0	0
7/29/1992	0	220	0	0	0
7/30/1992	0	220	0	0	0
7/31/1992	0	220	0	0	0
8/1/1992	0	220	0	0	0
8/2/1992	0	220	0	0	0
8/3/1992	0	220	0	0	0
8/4/1992	0	220	0	0	0
8/5/1992	0	220	0	0	0
8/6/1992	0	220	0	0	0
8/7/1992	0	220	0	0	0
8/8/1992	0	220	0	0	0
8/9/1992	0	220	0	0	0
8/10/1992	0	220	0	0	0
8/11/1992	0	220	0	0	0
8/12/1992	0	220	0	0	0
8/13/1992	0	220	0	0	0
8/14/1992	0	220	0	0	0
8/15/1992	0	220	0	0	0
8/16/1992	0	220	0	0	0
8/17/1992	0	220	0	0	0
8/18/1992	0	220	0	0	0
8/19/1992	0	220	0	0	0
8/20/1992	0	220	0	0	0
8/21/1992	0	220	0	0	0
8/22/1992	0	220	0	0	0
8/23/1992	0	220	0	0	0
8/24/1992	0	220	0	0	0
8/25/1992	0	220	0	0	0
8/26/1992	0	220	0	0	0
8/27/1992	0	220	0	0	0
8/28/1992	0	220	0	0	0
8/29/1992	0	220	0	0	0
8/30/1992	0	220	0	0	0
8/31/1992	0	220	0	0	0
9/1/1992	0	220	0	0	0
9/2/1992	0	220	0	0	0
9/3/1992	0	220	0	0	0
9/4/1992	0	220	0	0	0
9/5/1992	0	220	0	0	0
9/6/1992	0	220	0	0	0
9/7/1992	0	220	0	0	0
9/8/1992	0	220	0	0	0
9/9/1992	0	220	0	0	0
9/10/1992	0	220	0	0	0
9/11/1992	0	220	0	0	0
9/12/1992	0	220	0	0	0

Calculations for Dietrich Site Flow
1992
Brockway Engineering, PLLC
3-Aug-18

Date	No. 11 Flow (cfs)	WR Demand (cfs)	F-Waste (cfs)	Recharge (cfs)	Recharge Vol (acft)
9/13/1992	0	220	0	0	0
9/14/1992	0	220	0	0	0
9/15/1992	0	220	0	0	0
9/16/1992	0	220	0	0	0
9/17/1992	0	220	0	0	0
9/18/1992	0	220	0	0	0
9/19/1992	0	220	0	0	0
9/20/1992	0	220	0	0	0
9/21/1992	0	220	0	0	0
9/22/1992	0	220	0	0	0
9/23/1992	0	220	0	0	0
9/24/1992	0	220	0	0	0
9/25/1992	0	220	0	0	0
9/26/1992	0	220	0	0	0
9/27/1992	0	220	0	0	0
9/28/1992	0	220	0	0	0
9/29/1992	0	220	0	0	0
9/30/1992	0	220	0	0	0
10/1/1992	0	75	0	0	0
10/2/1992	0	75	0	0	0
10/3/1992	0	75	0	0	0
10/4/1992	0	75	0	0	0
10/5/1992	0	75	0	0	0
10/6/1992	0	75	0	0	0
10/7/1992	0	75	0	0	0
10/8/1992	0	75	0	0	0
10/9/1992	0	75	0	0	0
10/10/1992	0	75	0	0	0
10/11/1992	0	75	0	0	0
10/12/1992	0	75	0	0	0
10/13/1992	0	75	0	0	0
10/14/1992	0	75	0	0	0
10/15/1992	0	75	0	0	0
10/16/1992	0	75	0	0	0
10/17/1992	0	75	0	0	0
10/18/1992	0	75	0	0	0
10/19/1992	0	75	0	0	0
10/20/1992	0	75	0	0	0
10/21/1992	0	75	0	0	0
10/22/1992	0	75	0	0	0
10/23/1992	0	75	0	0	0
10/24/1992	0	75	0	0	0
10/25/1992	0	75	0	0	0
10/26/1992	0	75	0	0	0
10/27/1992	0	75	0	0	0
10/28/1992	0	75	0	0	0
10/29/1992	0	75	0	0	0
10/30/1992	0	75	0	0	0
10/31/1992	0	75	0	0	0
				144	4062
				Maximum	Total

Appendix M

Spreadsheet Calculations of Shoshone Site Flows

Calculations for Shoshone Site Flow
1982
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
4/1/1982	0	0	0	0	0	0
4/2/1982	0	0	0	0	0	0
4/3/1982	0	0	0	0	0	0
4/4/1982	0	0	0	0	0	0
4/5/1982	0	0	0	0	0	0
4/6/1982	0	0	0	0	0	0
4/7/1982	0	0	0	0	0	0
4/8/1982	0	0	0	0	0	0
4/9/1982	0	0	0	0	0	0
4/10/1982	0	0	0	0	0	0
4/11/1982	0	0	0	0	0	0
4/12/1982	0	0	0	0	0	0
4/13/1982	0	52	0	52	52	103
4/14/1982	0	100	0	100	100	198
4/15/1982	0	152	0	152	152	301
4/16/1982	0	85	0	85	85	169
4/17/1982	0	103	0	103	103	204
4/18/1982	109	196	0	196	87	173
4/19/1982	147	212	0	212	65	129
4/20/1982	150	210	0	210	60	119
4/21/1982	153	213	0	213	60	119
4/22/1982	156	209	0	209	53	105
4/23/1982	273	292	0	292	19	38
4/24/1982	414	378	0	378	0	0
4/25/1982	422	386	0	386	0	0
4/26/1982	97	205	0	205	108	214
4/27/1982	82	205	0	205	123	244
4/28/1982	405	339	0	339	0	0
4/29/1982	412	388	0	388	0	0
4/30/1982	410	392	0	392	0	0
5/1/1982	412	390	0	390	0	0
5/2/1982	408	421	0	421	13	26
5/3/1982	385	416	258	158	31	61
5/4/1982	462	438	272	166	0	0
5/5/1982	586	515	319	196	0	0
5/6/1982	578	511	317	194	0	0
5/7/1982	652	555	344	211	0	0
5/8/1982	654	532	330	202	0	0
5/9/1982	645	526	326	200	0	0
5/10/1982	652	522	324	198	0	0
5/11/1982	658	530	329	201	0	0
5/12/1982	635	515	319	196	0	0
5/13/1982	658	513	318	195	0	0
5/14/1982	694	526	326	200	0	0
5/15/1982	681	520	322	198	0	0
5/16/1982	668	515	319	196	0	0
5/17/1982	664	511	317	194	0	0
5/18/1982	635	417	259	158	0	0
5/19/1982	647	439	272	167	0	0
5/20/1982	660	463	287	176	0	0
5/21/1982	673	477	296	181	0	0
5/22/1982	664	482	299	183	0	0
5/23/1982	654	475	295	181	0	0
5/24/1982	652	475	295	181	0	0

Calculations for Shoshone Site Flow
1982
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
5/25/1982	654	484	300	184	0	0
5/26/1982	633	507	314	193	0	0
5/27/1982	705	528	327	201	0	0
5/28/1982	712	528	327	201	0	0
5/29/1982	707	534	331	203	0	0
5/30/1982	694	509	316	193	0	0
5/31/1982	699	515	319	196	0	0
6/1/1982	681	473	0	0	0	0
6/2/1982	746	517	0	0	0	0
6/3/1982	709	540	0	0	0	0
6/4/1982	945	612	0	0	0	0
6/5/1982	960	626	0	0	0	0
6/6/1982	976	618	0	0	0	0
6/7/1982	963	610	0	0	0	0
6/8/1982	971	616	0	0	0	0
6/9/1982	974	616	0	0	0	0
6/10/1982	958	604	0	0	0	0
6/11/1982	979	588	0	0	0	0
6/12/1982	1018	610	0	0	0	0
6/13/1982	1061	586	0	0	0	0
6/14/1982	1041	578	0	0	0	0
6/15/1982	1044	557	0	0	0	0
6/16/1982	1064	562	0	0	0	0
6/17/1982	1046	566	0	0	0	0
6/18/1982	1067	620	0	0	0	0
6/19/1982	1079	639	0	0	0	0
6/20/1982	1076	655	0	0	0	0
6/21/1982	1070	655	0	0	0	0
6/22/1982	1018	655	0	0	0	0
6/23/1982	1058	624	0	0	0	0
6/24/1982	1058	618	0	0	0	0
6/25/1982	1058	622	0	0	0	0
6/26/1982	1064	632	0	0	0	0
6/27/1982	1073	639	0	0	0	0
6/28/1982	1073	632	0	0	0	0
6/29/1982	1041	622	0	0	0	0
6/30/1982	1064	635	0	0	0	0
7/1/1982	1052	632	0	0	0	0
7/2/1982	1046	630	0	0	0	0
7/3/1982	1038	620	0	0	0	0
7/4/1982	1049	632	0	0	0	0
7/5/1982	1079	643	0	0	0	0
7/6/1982	1085	643	0	0	0	0
7/7/1982	1041	639	0	0	0	0
7/8/1982	1073	643	0	0	0	0
7/9/1982	1010	610	0	0	0	0
7/10/1982	958	572	0	0	0	0
7/11/1982	947	538	0	0	0	0
7/12/1982	932	524	0	0	0	0
7/13/1982	976	522	0	0	0	0
7/14/1982	1013	538	0	0	0	0
7/15/1982	1044	543	0	0	0	0
7/16/1982	1046	541	0	0	0	0
7/17/1982	1049	543	0	0	0	0

Calculations for Shoshone Site Flow
1982
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
7/18/1982	1049	602	0	0	0	0
7/19/1982	1055	551	0	0	0	0
7/20/1982	1052	541	0	0	0	0
7/21/1982	1061	592	0	0	0	0
7/22/1982	1073	594	0	0	0	0
7/23/1982	1085	602	0	0	0	0
7/24/1982	1109	608	0	0	0	0
7/25/1982	1115	616	0	0	0	0
7/26/1982	1121	624	0	0	0	0
7/27/1982	1118	622	0	0	0	0
7/28/1982	1133	635	0	0	0	0
7/29/1982	1157	650	0	0	0	0
7/30/1982	1121	632	0	0	0	0
7/31/1982	1103	646	0	0	0	0
8/1/1982	1115	643	0	0	0	0
8/2/1982	1112	641	0	0	0	0
8/3/1982	1115	474	0	0	0	0
8/4/1982	1124	641	0	0	0	0
8/5/1982	1118	630	0	0	0	0
8/6/1982	1121	626	0	0	0	0
8/7/1982	1124	626	0	0	0	0
8/8/1982	1127	624	0	0	0	0
8/9/1982	1124	620	0	0	0	0
8/10/1982	1124	618	0	0	0	0
8/11/1982	1121	614	0	0	0	0
8/12/1982	1115	612	0	0	0	0
8/13/1982	1109	610	0	0	0	0
8/14/1982	1109	608	0	0	0	0
8/15/1982	1121	612	0	0	0	0
8/16/1982	1130	614	0	0	0	0
8/17/1982	1127	614	0	0	0	0
8/18/1982	1124	612	0	0	0	0
8/19/1982	1127	620	0	0	0	0
8/20/1982	1133	622	0	0	0	0
8/21/1982	1135	627	0	0	0	0
8/22/1982	1142	630	0	0	0	0
8/23/1982	1148	635	0	0	0	0
8/24/1982	1160	630	0	0	0	0
8/25/1982	1160	632	0	0	0	0
8/26/1982	1154	632	0	0	0	0
8/27/1982	1151	630	0	0	0	0
8/28/1982	1160	635	0	0	0	0
8/29/1982	1181	646	0	0	0	0
8/30/1982	1212	666	0	0	0	0
8/31/1982	1124	639	0	0	0	0
9/1/1982	1082	616	0	0	0	0
9/2/1982	1082	618	0	0	0	0
9/3/1982	1094	624	0	0	0	0
9/4/1982	1109	630	0	0	0	0
9/5/1982	1070	604	0	0	0	0
9/6/1982	1076	604	0	0	0	0
9/7/1982	1067	610	0	0	0	0
9/8/1982	1055	606	0	0	0	0
9/9/1982	1044	608	0	0	0	0

Calculations for Shoshone Site Flow
1982
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
9/10/1982	1030	600	0	0	0	0
9/11/1982	1035	602	0	0	0	0
9/12/1982	1073	600	0	0	0	0
9/13/1982	1070	609	0	0	0	0
9/14/1982	1079	605	0	0	0	0
9/15/1982	1073	614	0	0	0	0
9/16/1982	1070	610	0	0	0	0
9/17/1982	1044	566	0	0	0	0
9/18/1982	1024	549	0	0	0	0
9/19/1982	976	590	0	0	0	0
9/20/1982	1030	547	0	0	0	0
9/21/1982	1038	557	0	0	0	0
9/22/1982	1044	557	0	0	0	0
9/23/1982	1041	553	0	0	0	0
9/24/1982	1027	547	0	0	0	0
9/25/1982	1032	555	0	0	0	0
9/26/1982	1016	592	0	0	0	0
9/27/1982	1055	572	0	0	0	0
9/28/1982	1064	576	0	0	0	0
9/29/1982	1094	600	0	0	0	0
9/30/1982	1091	590	0	0	0	0
10/1/1982	0	0	0	0	0	0
10/2/1982	0	0	0	0	0	0
10/3/1982	0	0	0	0	0	0
10/4/1982	0	0	0	0	0	0
10/5/1982	0	0	0	0	0	0
10/6/1982	0	0	0	0	0	0
10/7/1982	0	0	0	0	0	0
10/8/1982	0	0	0	0	0	0
10/9/1982	0	0	0	0	0	0
10/10/1982	0	0	0	0	0	0
10/11/1982	0	0	0	0	0	0
10/12/1982	0	0	0	0	0	0
10/13/1982	0	0	0	0	0	0
10/14/1982	0	0	0	0	0	0
10/15/1982	0	0	0	0	0	0
10/16/1982	0	0	0	0	0	0
10/17/1982	0	0	0	0	0	0
10/18/1982	0	0	0	0	0	0
10/19/1982	0	0	0	0	0	0
10/20/1982	0	0	0	0	0	0
10/21/1982	0	0	0	0	0	0
10/22/1982	0	0	0	0	0	0
10/23/1982	0	0	0	0	0	0
10/24/1982	0	0	0	0	0	0
10/25/1982	0	0	0	0	0	0
10/26/1982	0	0	0	0	0	0
10/27/1982	0	0	0	0	0	0
10/28/1982	0	0	0	0	0	0
10/29/1982	0	0	0	0	0	0
10/30/1982	0	0	0	0	0	0
10/31/1982	0	0	0	0	0	0
					152	2204
					Maximum	Total

Calculations for Shoshone Site Flow
1983
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
4/1/1983	0	0	0	0	0	0
4/2/1983	0	0	0	0	0	0
4/3/1983	0	0	0	0	0	0
4/4/1983	0	0	0	0	0	0
4/5/1983	0	0	0	0	0	0
4/6/1983	0	0	0	0	0	0
4/7/1983	0	0	0	0	0	0
4/8/1983	0	0	0	0	0	0
4/9/1983	0	0	0	0	0	0
4/10/1983	0	0	0	0	0	0
4/11/1983	0	0	0	0	0	0
4/12/1983	0	0	0	0	0	0
4/13/1983	0	0	0	0	0	0
4/14/1983	0	0	0	0	0	0
4/15/1983	0	0	0	0	0	0
4/16/1983	0	0	0	0	0	0
4/17/1983	0	0	0	0	0	0
4/18/1983	150	170	105	65	20	40
4/19/1983	289	284	176	108	0	0
4/20/1983	466	275	171	105	0	0
4/21/1983	478	468	290	178	0	0
4/22/1983	478	470	291	179	0	0
4/23/1983	480	477	296	181	0	0
4/24/1983	483	484	300	184	1	2
4/25/1983	483	486	301	185	3	6
4/26/1983	481	484	300	184	3	6
4/27/1983	482	488	303	185	6	12
4/28/1983	480	484	300	184	4	8
4/29/1983	477	495	307	188	18	36
4/30/1983	550	555	344	211	5	10
5/1/1983	613	662	410	252	49	97
5/2/1983	609	662	410	252	53	105
5/3/1983	609	666	413	253	57	113
5/4/1983	623	680	422	258	57	113
5/5/1983	632	698	433	265	66	131
5/6/1983	642	694	430	264	52	103
5/7/1983	630	694	430	264	64	127
5/8/1983	635	682	423	259	47	93
5/9/1983	630	678	420	258	48	95
5/10/1983	635	687	426	261	52	103
5/11/1983	640	687	426	261	47	93
5/12/1983	637	680	422	258	43	85
5/13/1983	651	687	426	261	36	71
5/14/1983	649	682	423	259	33	65
5/15/1983	640	673	417	256	33	65
5/16/1983	647	665	412	253	18	36
5/17/1983	628	650	403	247	22	44
5/18/1983	675	673	417	256	0	0
5/19/1983	683	708	439	269	25	50
5/20/1983	743	705	437	268	0	0
5/21/1983	743	665	412	253	0	0
5/22/1983	727	659	409	250	0	0
5/23/1983	731	648	402	246	0	0
5/24/1983	611	639	396	243	28	56
5/25/1983	663	618	383	235	0	0

Calculations for Shoshone Site Flow
1983
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
5/26/1983	704	741	459	282	37	73
5/27/1983	706	639	396	243	0	0
5/28/1983	691	626	388	238	0	0
5/29/1983	748	657	407	250	0	0
5/30/1983	770	671	416	255	0	0
5/31/1983	795	705	437	268	0	0
6/1/1983	847	751	0	0	0	0
6/2/1983	862	760	0	0	0	0
6/3/1983	847	737	0	0	0	0
6/4/1983	853	737	0	0	0	0
6/5/1983	856	745	0	0	0	0
6/6/1983	862	751	0	0	0	0
6/7/1983	847	745	0	0	0	0
6/8/1983	839	733	0	0	0	0
6/9/1983	830	658	0	0	0	0
6/10/1983	817	756	0	0	0	0
6/11/1983	847	799	0	0	0	0
6/12/1983	856	816	0	0	0	0
6/13/1983	901	836	0	0	0	0
6/14/1983	868	774	0	0	0	0
6/15/1983	801	733	0	0	0	0
6/16/1983	743	698	0	0	0	0
6/17/1983	733	564	0	0	0	0
6/18/1983	788	580	0	0	0	0
6/19/1983	841	606	0	0	0	0
6/20/1983	833	602	0	0	0	0
6/21/1983	841	600	0	0	0	0
6/22/1983	839	580	0	0	0	0
6/23/1983	836	588	0	0	0	0
6/24/1983	989	606	0	0	0	0
6/25/1983	944	604	0	0	0	0
6/26/1983	938	606	0	0	0	0
6/27/1983	958	628	0	0	0	0
6/28/1983	968	639	0	0	0	0
6/29/1983	972	639	0	0	0	0
6/30/1983	806	669	0	0	0	0
7/1/1983	961	646	0	0	0	0
7/2/1983	921	639	0	0	0	0
7/3/1983	841	600	0	0	0	0
7/4/1983	888	639	0	0	0	0
7/5/1983	868	630	0	0	0	0
7/6/1983	833	496	0	0	0	0
7/7/1983	825	586	0	0	0	0
7/8/1983	785	572	0	0	0	0
7/9/1983	770	557	0	0	0	0
7/10/1983	806	572	0	0	0	0
7/11/1983	798	570	0	0	0	0
7/12/1983	801	566	0	0	0	0
7/13/1983	773	528	0	0	0	0
7/14/1983	828	522	0	0	0	0
7/15/1983	955	536	0	0	0	0
7/16/1983	1085	635	0	0	0	0
7/17/1983	1112	643	0	0	0	0
7/18/1983	1112	632	0	0	0	0
7/19/1983	1009	665	0	0	0	0

Calculations for Shoshone Site Flow
1983
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
7/20/1983	1028	659	0	0	0	0
7/21/1983	1047	646	0	0	0	0
7/22/1983	1066	657	0	0	0	0
7/23/1983	1092	665	0	0	0	0
7/24/1983	1092	671	0	0	0	0
7/25/1983	1112	688	0	0	0	0
7/26/1983	1120	668	0	0	0	0
7/27/1983	1069	646	0	0	0	0
7/28/1983	1069	635	0	0	0	0
7/29/1983	1073	679	0	0	0	0
7/30/1983	1077	641	0	0	0	0
7/31/1983	1126	673	0	0	0	0
8/1/1983	1120	657	0	0	0	0
8/2/1983	1088	652	0	0	0	0
8/3/1983	1100	662	0	0	0	0
8/4/1983	1123	671	0	0	0	0
8/5/1983	1047	639	0	0	0	0
8/6/1983	1002	628	0	0	0	0
8/7/1983	1031	632	0	0	0	0
8/8/1983	1009	628	0	0	0	0
8/9/1983	1028	641	0	0	0	0
8/10/1983	1020	632	0	0	0	0
8/11/1983	1020	622	0	0	0	0
8/12/1983	1024	626	0	0	0	0
8/13/1983	1073	650	0	0	0	0
8/14/1983	1089	652	0	0	0	0
8/15/1983	1085	650	0	0	0	0
8/16/1983	1024	632	0	0	0	0
8/17/1983	999	635	0	0	0	0
8/18/1983	985	624	0	0	0	0
8/19/1983	982	628	0	0	0	0
8/20/1983	1016	646	0	0	0	0
8/21/1983	1077	662	0	0	0	0
8/22/1983	1069	684	0	0	0	0
8/23/1983	1009	678	0	0	0	0
8/24/1983	985	666	0	0	0	0
8/25/1983	972	650	0	0	0	0
8/26/1983	985	662	0	0	0	0
8/27/1983	985	671	0	0	0	0
8/28/1983	985	643	0	0	0	0
8/29/1983	968	639	0	0	0	0
8/30/1983	958	632	0	0	0	0
8/31/1983	917	590	0	0	0	0
9/1/1983	955	584	0	0	0	0
9/2/1983	955	584	0	0	0	0
9/3/1983	951	578	0	0	0	0
9/4/1983	958	572	0	0	0	0
9/5/1983	951	586	0	0	0	0
9/6/1983	978	592	0	0	0	0
9/7/1983	1002	586	0	0	0	0
9/8/1983	992	586	0	0	0	0
9/9/1983	982	576	0	0	0	0
9/10/1983	999	552	0	0	0	0
9/11/1983	1006	590	0	0	0	0
9/12/1983	1020	598	0	0	0	0

Calculations for Shoshone Site Flow
1983
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
9/13/1983	1039	520	0	0	0	0
9/14/1983	894	553	0	0	0	0
9/15/1983	853	538	0	0	0	0
9/16/1983	850	541	0	0	0	0
9/17/1983	859	541	0	0	0	0
9/18/1983	865	545	0	0	0	0
9/19/1983	853	545	0	0	0	0
9/20/1983	884	564	0	0	0	0
9/21/1983	921	572	0	0	0	0
9/22/1983	924	570	0	0	0	0
9/23/1983	934	570	0	0	0	0
9/24/1983	931	564	0	0	0	0
9/25/1983	924	550	0	0	0	0
9/26/1983	972	558	0	0	0	0
9/27/1983	958	578	0	0	0	0
9/28/1983	965	578	0	0	0	0
9/29/1983	992	562	0	0	0	0
9/30/1983	1009	652	0	0	0	0
10/1/1983	910	608	0	0	0	0
10/2/1983	0	0	0	0	0	0
10/3/1983	898	576	0	0	0	0
10/4/1983	898	580	0	0	0	0
10/5/1983	924	596	0	0	0	0
10/6/1983	927	586	0	0	0	0
10/7/1983	898	578	0	0	0	0
10/8/1983	0	0	0	0	0	0
10/9/1983	0	0	0	0	0	0
10/10/1983	904	530	0	0	0	0
10/11/1983	0	0	0	0	0	0
10/12/1983	0	0	0	0	0	0
10/13/1983	0	0	0	0	0	0
10/14/1983	0	0	0	0	0	0
10/15/1983	0	0	0	0	0	0
10/16/1983	0	0	0	0	0	0
10/17/1983	0	0	0	0	0	0
10/18/1983	0	0	0	0	0	0
10/19/1983	0	0	0	0	0	0
10/20/1983	0	0	0	0	0	0
10/21/1983	0	0	0	0	0	0
10/22/1983	0	0	0	0	0	0
10/23/1983	0	0	0	0	0	0
10/24/1983	0	0	0	0	0	0
10/25/1983	0	0	0	0	0	0
10/26/1983	0	0	0	0	0	0
10/27/1983	0	0	0	0	0	0
10/28/1983	0	0	0	0	0	0
10/29/1983	0	0	0	0	0	0
10/30/1983	0	0	0	0	0	0
10/31/1983	0	0	0	0	0	0
					66	1839
					Maximum	Total

Calculations for Shoshone Site Flow
1984
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
4/1/1984	0	0	0	0	0	0
4/2/1984	0	0	0	0	0	0
4/3/1984	0	0	0	0	0	0
4/4/1984	0	0	0	0	0	0
4/5/1984	0	0	0	0	0	0
4/6/1984	0	0	0	0	0	0
4/7/1984	0	0	0	0	0	0
4/8/1984	0	0	0	0	0	0
4/9/1984	0	0	0	0	0	0
4/10/1984	106	0	0	0	0	0
4/11/1984	128	0	0	0	0	0
4/12/1984	205	205	127	78	0	0
4/13/1984	202	201	84	117	0	0
4/14/1984	194	353	148	205	159	315
4/15/1984	222	438	184	254	216	428
4/16/1984	222	507	213	294	285	565
4/17/1984	222	517	217	300	295	585
4/18/1984	521	545	229	316	24	48
4/19/1984	540	560	235	325	20	40
4/20/1984	552	584	245	339	32	63
4/21/1984	572	568	239	329	0	0
4/22/1984	560	560	235	325	0	0
4/23/1984	536	543	228	315	7	14
4/24/1984	542	549	231	318	7	14
4/25/1984	546	540	227	313	0	0
4/26/1984	574	582	244	338	8	16
4/27/1984	572	576	242	334	4	8
4/28/1984	567	572	240	332	5	10
4/29/1984	564	568	239	329	4	8
4/30/1984	568	574	241	333	6	12
5/1/1984	825	643	399	244	0	0
5/2/1984	825	694	430	264	0	0
5/3/1984	825	610	378	232	0	0
5/4/1984	850	655	406	249	0	0
5/5/1984	836	650	403	247	0	0
5/6/1984	833	632	392	240	0	0
5/7/1984	830	627	389	238	0	0
5/8/1984	844	568	352	216	0	0
5/9/1984	839	558	346	212	0	0
5/10/1984	820	572	355	217	0	0
5/11/1984	1016	627	389	238	0	0
5/12/1984	1123	562	348	214	0	0
5/13/1984	1085	620	384	236	0	0
5/14/1984	1069	665	412	253	0	0
5/15/1984	1069	684	424	260	0	0
5/16/1984	1062	666	413	253	0	0
5/17/1984	847	590	366	224	0	0
5/18/1984	847	566	351	215	0	0
5/19/1984	739	555	344	211	0	0
5/20/1984	729	538	334	204	0	0
5/21/1984	724	493	306	187	0	0
5/22/1984	711	536	332	204	0	0
5/23/1984	706	524	325	199	0	0
5/24/1984	697	572	355	217	0	0
5/25/1984	790	562	348	214	0	0
5/26/1984	803	500	310	190	0	0

Calculations for Shoshone Site Flow
1984
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
5/27/1984	776	500	310	190	0	0
5/28/1984	667	489	303	186	0	0
5/29/1984	958	555	344	211	0	0
5/30/1984	1139	618	383	235	0	0
5/31/1984	1187	598	371	227	0	0
6/1/1984	1159	614	0	0	0	0
6/2/1984	1131	639	0	0	0	0
6/3/1984	1126	618	0	0	0	0
6/4/1984	1159	618	0	0	0	0
6/5/1984	1191	641	0	0	0	0
6/6/1984	1227	671	0	0	0	0
6/7/1984	1236	701	0	0	0	0
6/8/1984	1108	673	0	0	0	0
6/9/1984	881	608	0	0	0	0
6/10/1984	894	608	0	0	0	0
6/11/1984	904	637	0	0	0	0
6/12/1984	907	655	0	0	0	0
6/13/1984	773	665	0	0	0	0
6/14/1984	801	618	0	0	0	0
6/15/1984	780	600	0	0	0	0
6/16/1984	724	564	0	0	0	0
6/17/1984	711	560	0	0	0	0
6/18/1984	706	606	0	0	0	0
6/19/1984	891	610	0	0	0	0
6/20/1984	910	600	0	0	0	0
6/21/1984	898	604	0	0	0	0
6/22/1984	898	582	0	0	0	0
6/23/1984	878	558	0	0	0	0
6/24/1984	944	574	0	0	0	0
6/25/1984	955	534	0	0	0	0
6/26/1984	921	534	0	0	0	0
6/27/1984	921	534	0	0	0	0
6/28/1984	1062	570	0	0	0	0
6/29/1984	1116	594	0	0	0	0
6/30/1984	1085	582	0	0	0	0
7/1/1984	1100	588	0	0	0	0
7/2/1984	1116	588	0	0	0	0
7/3/1984	1085	570	0	0	0	0
7/4/1984	1088	558	0	0	0	0
7/5/1984	1100	549	0	0	0	0
7/6/1984	1031	572	0	0	0	0
7/7/1984	1062	586	0	0	0	0
7/8/1984	1058	588	0	0	0	0
7/9/1984	1054	582	0	0	0	0
7/10/1984	1054	598	0	0	0	0
7/11/1984	1054	594	0	0	0	0
7/12/1984	1054	578	0	0	0	0
7/13/1984	1058	604	0	0	0	0
7/14/1984	1042	596	0	0	0	0
7/15/1984	1043	600	0	0	0	0
7/16/1984	1035	596	0	0	0	0
7/17/1984	1016	584	0	0	0	0
7/18/1984	1009	580	0	0	0	0
7/19/1984	1002	580	0	0	0	0
7/20/1984	1035	580	0	0	0	0
7/21/1984	1050	596	0	0	0	0

Calculations for Shoshone Site Flow
1984
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
7/22/1984	1088	612	0	0	0	0
7/23/1984	1108	620	0	0	0	0
7/24/1984	1062	608	0	0	0	0
7/25/1984	1043	600	0	0	0	0
7/26/1984	1043	600	0	0	0	0
7/27/1984	1047	606	0	0	0	0
7/28/1984	1043	620	0	0	0	0
7/29/1984	1050	628	0	0	0	0
7/30/1984	1050	618	0	0	0	0
7/31/1984	1028	610	0	0	0	0
8/1/1984	1035	598	0	0	0	0
8/2/1984	1035	586	0	0	0	0
8/3/1984	1035	582	0	0	0	0
8/4/1984	1035	582	0	0	0	0
8/5/1984	1043	582	0	0	0	0
8/6/1984	1058	584	0	0	0	0
8/7/1984	1050	579	0	0	0	0
8/8/1984	965	541	0	0	0	0
8/9/1984	944	541	0	0	0	0
8/10/1984	934	545	0	0	0	0
8/11/1984	917	545	0	0	0	0
8/12/1984	910	543	0	0	0	0
8/13/1984	920	545	0	0	0	0
8/14/1984	924	549	0	0	0	0
8/15/1984	941	568	0	0	0	0
8/16/1984	951	582	0	0	0	0
8/17/1984	1047	582	0	0	0	0
8/18/1984	985	574	0	0	0	0
8/19/1984	982	568	0	0	0	0
8/20/1984	985	572	0	0	0	0
8/21/1984	1039	590	0	0	0	0
8/22/1984	1050	590	0	0	0	0
8/23/1984	1058	592	0	0	0	0
8/24/1984	1066	596	0	0	0	0
8/25/1984	1066	600	0	0	0	0
8/26/1984	1077	604	0	0	0	0
8/27/1984	1104	608	0	0	0	0
8/28/1984	1092	600	0	0	0	0
8/29/1984	1081	592	0	0	0	0
8/30/1984	1062	600	0	0	0	0
8/31/1984	1081	610	0	0	0	0
9/1/1984	1088	608	0	0	0	0
9/2/1984	1100	614	0	0	0	0
9/3/1984	1126	628	0	0	0	0
9/4/1984	1123	628	0	0	0	0
9/5/1984	1009	596	0	0	0	0
9/6/1984	891	549	0	0	0	0
9/7/1984	878	522	0	0	0	0
9/8/1984	978	586	0	0	0	0
9/9/1984	1020	604	0	0	0	0
9/10/1984	1028	604	0	0	0	0
9/11/1984	1031	592	0	0	0	0
9/12/1984	904	568	0	0	0	0
9/13/1984	924	576	0	0	0	0
9/14/1984	940	580	0	0	0	0
9/15/1984	917	588	0	0	0	0

Calculations for Shoshone Site Flow
1984
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
9/16/1984	825	588	0	0	0	0
9/17/1984	788	600	0	0	0	0
9/18/1984	783	553	0	0	0	0
9/19/1984	801	538	0	0	0	0
9/20/1984	828	530	0	0	0	0
9/21/1984	865	517	0	0	0	0
9/22/1984	878	545	0	0	0	0
9/23/1984	809	549	0	0	0	0
9/24/1984	788	590	0	0	0	0
9/25/1984	795	557	0	0	0	0
9/26/1984	801	557	0	0	0	0
9/27/1984	798	555	0	0	0	0
9/28/1984	798	555	0	0	0	0
9/29/1984	798	558	0	0	0	0
9/30/1984	798	558	0	0	0	0
10/1/1984	0	0	0	0	0	0
10/2/1984	0	0	0	0	0	0
10/3/1984	0	0	0	0	0	0
10/4/1984	0	0	0	0	0	0
10/5/1984	0	0	0	0	0	0
10/6/1984	0	0	0	0	0	0
10/7/1984	0	0	0	0	0	0
10/8/1984	0	0	0	0	0	0
10/9/1984	0	0	0	0	0	0
10/10/1984	0	0	0	0	0	0
10/11/1984	0	0	0	0	0	0
10/12/1984	0	0	0	0	0	0
10/13/1984	0	0	0	0	0	0
10/14/1984	0	0	0	0	0	0
10/15/1984	0	0	0	0	0	0
10/16/1984	0	0	0	0	0	0
10/17/1984	0	0	0	0	0	0
10/18/1984	0	0	0	0	0	0
10/19/1984	0	0	0	0	0	0
10/20/1984	0	0	0	0	0	0
10/21/1984	0	0	0	0	0	0
10/22/1984	0	0	0	0	0	0
10/23/1984	0	0	0	0	0	0
10/24/1984	0	0	0	0	0	0
10/25/1984	0	0	0	0	0	0
10/26/1984	0	0	0	0	0	0
10/27/1984	0	0	0	0	0	0
10/28/1984	0	0	0	0	0	0
10/29/1984	0	0	0	0	0	0
10/30/1984	0	0	0	0	0	0
10/31/1984	0	0	0	0	0	0
					295	2126
					Maximum	Total

Calculations for Shoshone Site Flow
1985
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
4/1/1985	0	0	0	0	0	0
4/2/1985	0	0	0	0	0	0
4/3/1985	0	0	0	0	0	0
4/4/1985	0	0	0	0	0	0
4/5/1985	0	0	0	0	0	0
4/6/1985	0	0	0	0	0	0
4/7/1985	0	0	0	0	0	0
4/8/1985	0	0	0	0	0	0
4/9/1985	0	0	0	0	0	0
4/10/1985	0	0	0	0	0	0
4/11/1985	0	0	0	0	0	0
4/12/1985	0	0	0	0	0	0
4/13/1985	0	0	0	0	0	0
4/14/1985	0	0	0	0	0	0
4/15/1985	0	232	144	88	232	460
4/16/1985	442	627	389	238	185	367
4/17/1985	455	652	404	248	197	391
4/18/1985	473	550	341	209	77	153
4/19/1985	628	589	365	224	0	0
4/20/1985	644	611	379	232	0	0
4/21/1985	657	627	389	238	0	0
4/22/1985	663	648	402	246	0	0
4/23/1985	652	640	397	243	0	0
4/24/1985	668	652	404	248	0	0
4/25/1985	668	602	373	229	0	0
4/26/1985	632	568	352	216	0	0
4/27/1985	621	521	323	198	0	0
4/28/1985	614	503	312	191	0	0
4/29/1985	603	499	309	190	0	0
4/30/1985	598	555	344	211	0	0
5/1/1985	613	543	337	206	0	0
5/2/1985	649	523	324	199	0	0
5/3/1985	635	512	317	195	0	0
5/4/1985	693	512	317	195	0	0
5/5/1985	755	534	331	203	0	0
5/6/1985	758	541	335	206	0	0
5/7/1985	713	507	314	193	0	0
5/8/1985	768	534	331	203	0	0
5/9/1985	891	530	329	201	0	0
5/10/1985	910	555	344	211	0	0
5/11/1985	904	570	353	217	0	0
5/12/1985	934	577	358	219	0	0
5/13/1985	944	582	361	221	0	0
5/14/1985	938	584	362	222	0	0
5/15/1985	965	591	366	225	0	0
5/16/1985	1002	640	397	243	0	0
5/17/1985	995	642	398	244	0	0
5/18/1985	972	631	391	240	0	0
5/19/1985	965	629	390	239	0	0
5/20/1985	965	631	391	240	0	0
5/21/1985	958	631	391	240	0	0
5/22/1985	938	615	381	234	0	0
5/23/1985	914	604	374	230	0	0
5/24/1985	898	602	373	229	0	0
5/25/1985	978	593	368	225	0	0

Calculations for Shoshone Site Flow
1985
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
5/26/1985	1043	633	392	241	0	0
5/27/1985	1058	648	402	246	0	0
5/28/1985	1043	620	384	236	0	0
5/29/1985	1010	591	366	225	0	0
5/30/1985	1043	613	380	233	0	0
5/31/1985	1043	620	384	236	0	0
6/1/1985	1058	633	0	0	0	0
6/2/1985	1081	650	0	0	0	0
6/3/1985	1116	648	0	0	0	0
6/4/1985	1112	638	0	0	0	0
6/5/1985	1096	631	0	0	0	0
6/6/1985	1081	631	0	0	0	0
6/7/1985	1073	627	0	0	0	0
6/8/1985	1077	627	0	0	0	0
6/9/1985	1058	634	0	0	0	0
6/10/1985	1073	640	0	0	0	0
6/11/1985	1081	636	0	0	0	0
6/12/1985	1081	627	0	0	0	0
6/13/1985	1058	625	0	0	0	0
6/14/1985	1077	625	0	0	0	0
6/15/1985	1085	633	0	0	0	0
6/16/1985	1088	633	0	0	0	0
6/17/1985	1092	629	0	0	0	0
6/18/1985	1088	620	0	0	0	0
6/19/1985	1073	613	0	0	0	0
6/20/1985	1050	606	0	0	0	0
6/21/1985	1020	597	0	0	0	0
6/22/1985	1035	595	0	0	0	0
6/23/1985	1028	591	0	0	0	0
6/24/1985	972	597	0	0	0	0
6/25/1985	1073	640	0	0	0	0
6/26/1985	1136	650	0	0	0	0
6/27/1985	1151	652	0	0	0	0
6/28/1985	1112	631	0	0	0	0
6/29/1985	1066	618	0	0	0	0
6/30/1985	1066	609	0	0	0	0
7/1/1985	1035	600	0	0	0	0
7/2/1985	1043	591	0	0	0	0
7/3/1985	1035	582	0	0	0	0
7/4/1985	1012	616	0	0	0	0
7/5/1985	992	606	0	0	0	0
7/6/1985	985	600	0	0	0	0
7/7/1985	1009	613	0	0	0	0
7/8/1985	1050	609	0	0	0	0
7/9/1985	1028	606	0	0	0	0
7/10/1985	1028	606	0	0	0	0
7/11/1985	1039	570	0	0	0	0
7/12/1985	1050	580	0	0	0	0
7/13/1985	1047	582	0	0	0	0
7/14/1985	1054	582	0	0	0	0
7/15/1985	1066	584	0	0	0	0
7/16/1985	1069	580	0	0	0	0
7/17/1985	1073	579	0	0	0	0
7/18/1985	1081	582	0	0	0	0
7/19/1985	1092	588	0	0	0	0

Calculations for Shoshone Site Flow
1985
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
7/20/1985	1096	589	0	0	0	0
7/21/1985	1104	595	0	0	0	0
7/22/1985	1123	609	0	0	0	0
7/23/1985	1126	613	0	0	0	0
7/24/1985	1155	622	0	0	0	0
7/25/1985	1154	593	0	0	0	0
7/26/1985	1058	571	0	0	0	0
7/27/1985	1028	568	0	0	0	0
7/28/1985	1012	564	0	0	0	0
7/29/1985	1020	570	0	0	0	0
7/30/1985	1028	600	0	0	0	0
7/31/1985	1077	600	0	0	0	0
8/1/1985	1066	588	0	0	0	0
8/2/1985	985	548	0	0	0	0
8/3/1985	931	525	0	0	0	0
8/4/1985	931	523	0	0	0	0
8/5/1985	931	523	0	0	0	0
8/6/1985	884	516	0	0	0	0
8/7/1985	856	507	0	0	0	0
8/8/1985	931	532	0	0	0	0
8/9/1985	972	532	0	0	0	0
8/10/1985	999	539	0	0	0	0
8/11/1985	992	532	0	0	0	0
8/12/1985	1006	539	0	0	0	0
8/13/1985	995	534	0	0	0	0
8/14/1985	982	528	0	0	0	0
8/15/1985	985	528	0	0	0	0
8/16/1985	1043	546	0	0	0	0
8/17/1985	1062	553	0	0	0	0
8/18/1985	1085	561	0	0	0	0
8/19/1985	1092	544	0	0	0	0
8/20/1985	1066	553	0	0	0	0
8/21/1985	1066	552	0	0	0	0
8/22/1985	1058	548	0	0	0	0
8/23/1985	1062	552	0	0	0	0
8/24/1985	1062	552	0	0	0	0
8/25/1985	1069	552	0	0	0	0
8/26/1985	1073	552	0	0	0	0
8/27/1985	1077	557	0	0	0	0
8/28/1985	1077	556	0	0	0	0
8/29/1985	1081	552	0	0	0	0
8/30/1985	1096	555	0	0	0	0
8/31/1985	1096	559	0	0	0	0
9/1/1985	1039	539	0	0	0	0
9/2/1985	1043	546	0	0	0	0
9/3/1985	1047	550	0	0	0	0
9/4/1985	1054	553	0	0	0	0
9/5/1985	982	530	0	0	0	0
9/6/1985	989	532	0	0	0	0
9/7/1985	1006	546	0	0	0	0
9/8/1985	1043	566	0	0	0	0
9/9/1985	1096	588	0	0	0	0
9/10/1985	985	541	0	0	0	0
9/11/1985	871	510	0	0	0	0
9/12/1985	844	498	0	0	0	0

Calculations for Shoshone Site Flow
1985
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
9/13/1985	844	486	0	0	0	0
9/14/1985	850	457	0	0	0	0
9/15/1985	856	453	0	0	0	0
9/16/1985	853	453	0	0	0	0
9/17/1985	853	455	0	0	0	0
9/18/1985	763	424	0	0	0	0
9/19/1985	720	410	0	0	0	0
9/20/1985	728	410	0	0	0	0
9/21/1985	733	413	0	0	0	0
9/22/1985	738	413	0	0	0	0
9/23/1985	743	415	0	0	0	0
9/24/1985	743	416	0	0	0	0
9/25/1985	668	388	0	0	0	0
9/26/1985	649	394	0	0	0	0
9/27/1985	645	400	0	0	0	0
9/28/1985	640	394	0	0	0	0
9/29/1985	625	406	0	0	0	0
9/30/1985	666	431	0	0	0	0
10/1/1985	0	0	0	0	0	0
10/2/1985	0	0	0	0	0	0
10/3/1985	0	0	0	0	0	0
10/4/1985	0	0	0	0	0	0
10/5/1985	0	0	0	0	0	0
10/6/1985	0	0	0	0	0	0
10/7/1985	0	0	0	0	0	0
10/8/1985	0	0	0	0	0	0
10/9/1985	0	0	0	0	0	0
10/10/1985	0	0	0	0	0	0
10/11/1985	0	0	0	0	0	0
10/12/1985	0	0	0	0	0	0
10/13/1985	0	0	0	0	0	0
10/14/1985	0	0	0	0	0	0
10/15/1985	0	0	0	0	0	0
10/16/1985	0	0	0	0	0	0
10/17/1985	0	0	0	0	0	0
10/18/1985	0	0	0	0	0	0
10/19/1985	0	0	0	0	0	0
10/20/1985	0	0	0	0	0	0
10/21/1985	0	0	0	0	0	0
10/22/1985	0	0	0	0	0	0
10/23/1985	0	0	0	0	0	0
10/24/1985	0	0	0	0	0	0
10/25/1985	0	0	0	0	0	0
10/26/1985	0	0	0	0	0	0
10/27/1985	0	0	0	0	0	0
10/28/1985	0	0	0	0	0	0
10/29/1985	0	0	0	0	0	0
10/30/1985	0	0	0	0	0	0
10/31/1985	0	0	0	0	0	0
					232	1371
					Maximum	Total

Calculations for Shoshone Site Flow
1986
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
4/1/1986	92	105	0	105	13	26
4/2/1986	185	162	0	162	0	0
4/3/1986	277	239	0	239	0	0
4/4/1986	370	244	0	244	0	0
4/5/1986	371	259	0	259	0	0
4/6/1986	371	250	0	250	0	0
4/7/1986	371	250	252	0	0	0
4/8/1986	424	355	260	95	0	0
4/9/1986	458	448	260	188	0	0
4/10/1986	472	455	265	190	0	0
4/11/1986	475	457	265	192	0	0
4/12/1986	474	466	261	205	0	0
4/13/1986	476	470	270	200	0	0
4/14/1986	487	478	275	203	0	0
4/15/1986	486	464	252	212	0	0
4/16/1986	468	444	239	205	0	0
4/17/1986	575	602	223	379	27	54
4/18/1986	625	624	310	314	0	0
4/19/1986	621	630	342	288	9	18
4/20/1986	619	636	342	294	17	34
4/21/1986	607	620	342	278	13	26
4/22/1986	591	614	350	264	23	46
4/23/1986	563	584	360	224	21	42
4/24/1986	575	594	396	198	19	38
4/25/1986	569	586	394	192	17	34
4/26/1986	664	670	340	330	6	12
4/27/1986	696	650	403	247	0	0
4/28/1986	684	644	466	178	0	0
4/29/1986	680	626	465	161	0	0
4/30/1986	643	610	459	151	0	0
5/1/1986	637	592	454	138	0	0
5/2/1986	621	578	452	126	0	0
5/3/1986	680	570	454	116	0	0
5/4/1986	694	570	461	109	0	0
5/5/1986	723	596	490	106	0	0
5/6/1986	742	626	521	105	0	0
5/7/1986	761	670	565	105	0	0
5/8/1986	764	638	544	94	0	0
5/9/1986	754	628	540	88	0	0
5/10/1986	744	620	538	82	0	0
5/11/1986	748	624	545	79	0	0
5/12/1986	737	618	543	75	0	0
5/13/1986	704	590	521	69	0	0
5/14/1986	688	586	519	67	0	0
5/15/1986	854	638	567	71	0	0
5/16/1986	864	616	548	68	0	0
5/17/1986	849	590	525	65	0	0
5/18/1986	844	564	502	62	0	0
5/19/1986	851	542	482	60	0	0
5/20/1986	943	582	518	64	0	0
5/21/1986	1042	562	500	62	0	0
5/22/1986	1134	616	548	68	0	0
5/23/1986	1190	624	555	69	0	0
5/24/1986	1034	598	532	66	0	0
5/25/1986	955	592	527	65	0	0

Calculations for Shoshone Site Flow
1986
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
5/26/1986	949	592	527	65	0	0
5/27/1986	916	564	502	62	0	0
5/28/1986	901	548	488	60	0	0
5/29/1986	1006	596	530	66	0	0
5/30/1986	1006	682	607	75	0	0
5/31/1986	998	644	573	71	0	0
6/1/1986	994	626	0	0	0	0
6/2/1986	974	622	0	0	0	0
6/3/1986	943	590	0	0	0	0
6/4/1986	937	606	0	0	0	0
6/5/1986	982	618	0	0	0	0
6/6/1986	1006	612	0	0	0	0
6/7/1986	1038	618	0	0	0	0
6/8/1986	1102	622	0	0	0	0
6/9/1986	1098	598	0	0	0	0
6/10/1986	1134	612	0	0	0	0
6/11/1986	1126	602	0	0	0	0
6/12/1986	1118	586	0	0	0	0
6/13/1986	1086	586	0	0	0	0
6/14/1986	1102	610	0	0	0	0
6/15/1986	1086	614	0	0	0	0
6/16/1986	1094	618	0	0	0	0
6/17/1986	1078	618	0	0	0	0
6/18/1986	1070	608	0	0	0	0
6/19/1986	1054	598	0	0	0	0
6/20/1986	1062	590	0	0	0	0
6/21/1986	1062	584	0	0	0	0
6/22/1986	1062	574	0	0	0	0
6/23/1986	1062	566	0	0	0	0
6/24/1986	1106	506	0	0	0	0
6/25/1986	1126	602	0	0	0	0
6/26/1986	1114	604	0	0	0	0
6/27/1986	1138	606	0	0	0	0
6/28/1986	1138	598	0	0	0	0
6/29/1986	1130	590	0	0	0	0
6/30/1986	1110	578	0	0	0	0
7/1/1986	1106	608	0	0	0	0
7/2/1986	1090	608	0	0	0	0
7/3/1986	1090	628	0	0	0	0
7/4/1986	1114	636	0	0	0	0
7/5/1986	1178	640	0	0	0	0
7/6/1986	1182	620	0	0	0	0
7/7/1986	1170	616	0	0	0	0
7/8/1986	1162	630	0	0	0	0
7/9/1986	1154	640	0	0	0	0
7/10/1986	1114	640	0	0	0	0
7/11/1986	1098	644	0	0	0	0
7/12/1986	1126	648	0	0	0	0
7/13/1986	1146	652	0	0	0	0
7/14/1986	1146	646	0	0	0	0
7/15/1986	1122	632	0	0	0	0
7/16/1986	1102	624	0	0	0	0
7/17/1986	1130	628	0	0	0	0
7/18/1986	1142	634	0	0	0	0
7/19/1986	1134	628	0	0	0	0

Calculations for Shoshone Site Flow
1986
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
7/20/1986	1150	628	0	0	0	0
7/21/1986	1142	626	0	0	0	0
7/22/1986	1110	620	0	0	0	0
7/23/1986	1109	498	0	0	0	0
7/24/1986	1178	694	0	0	0	0
7/25/1986	1202	622	0	0	0	0
7/26/1986	1226	630	0	0	0	0
7/27/1986	1234	636	0	0	0	0
7/28/1986	1238	634	0	0	0	0
7/29/1986	1246	632	0	0	0	0
7/30/1986	1154	608	0	0	0	0
7/31/1986	1162	612	0	0	0	0
8/1/1986	1166	600	0	0	0	0
8/2/1986	1150	596	0	0	0	0
8/3/1986	1158	600	0	0	0	0
8/4/1986	1154	600	0	0	0	0
8/5/1986	1038	560	0	0	0	0
8/6/1986	990	538	0	0	0	0
8/7/1986	964	530	0	0	0	0
8/8/1986	976	530	0	0	0	0
8/9/1986	982	530	0	0	0	0
8/10/1986	986	534	0	0	0	0
8/11/1986	978	538	0	0	0	0
8/12/1986	967	532	0	0	0	0
8/13/1986	1022	550	0	0	0	0
8/14/1986	1078	568	0	0	0	0
8/15/1986	1070	566	0	0	0	0
8/16/1986	1066	570	0	0	0	0
8/17/1986	1102	560	0	0	0	0
8/18/1986	1114	578	0	0	0	0
8/19/1986	1102	572	0	0	0	0
8/20/1986	1094	570	0	0	0	0
8/21/1986	1102	568	0	0	0	0
8/22/1986	1110	574	0	0	0	0
8/23/1986	1126	580	0	0	0	0
8/24/1986	1142	584	0	0	0	0
8/25/1986	1138	582	0	0	0	0
8/26/1986	1142	588	0	0	0	0
8/27/1986	1070	566	0	0	0	0
8/28/1986	1054	554	0	0	0	0
8/29/1986	1034	554	0	0	0	0
8/30/1986	1046	560	0	0	0	0
8/31/1986	1054	566	0	0	0	0
9/1/1986	1078	574	0	0	0	0
9/2/1986	1086	582	0	0	0	0
9/3/1986	1102	584	0	0	0	0
9/4/1986	1114	582	0	0	0	0
9/5/1986	1110	584	0	0	0	0
9/6/1986	1038	566	0	0	0	0
9/7/1986	998	552	0	0	0	0
9/8/1986	1022	554	0	0	0	0
9/9/1986	1050	568	0	0	0	0
9/10/1986	1054	514	0	0	0	0
9/11/1986	1058	576	0	0	0	0
9/12/1986	1066	580	0	0	0	0

Calculations for Shoshone Site Flow
1986
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
9/13/1986	946	548	0	0	0	0
9/14/1986	943	550	0	0	0	0
9/15/1986	952	562	0	0	0	0
9/16/1986	974	604	0	0	0	0
9/17/1986	986	634	0	0	0	0
9/18/1986	877	620	0	0	0	0
9/19/1986	841	612	0	0	0	0
9/20/1986	862	604	0	0	0	0
9/21/1986	862	604	0	0	0	0
9/22/1986	820	602	0	0	0	0
9/23/1986	752	544	0	0	0	0
9/24/1986	725	532	0	0	0	0
9/25/1986	742	536	0	0	0	0
9/26/1986	756	572	0	0	0	0
9/27/1986	773	600	0	0	0	0
9/28/1986	783	608	0	0	0	0
9/29/1986	788	616	0	0	0	0
9/30/1986	800	626	0	0	0	0
10/1/1986	0	0	0	0	0	0
10/2/1986	0	0	0	0	0	0
10/3/1986	0	0	0	0	0	0
10/4/1986	0	0	0	0	0	0
10/5/1986	0	0	0	0	0	0
10/6/1986	0	0	0	0	0	0
10/7/1986	0	0	0	0	0	0
10/8/1986	0	0	0	0	0	0
10/9/1986	0	0	0	0	0	0
10/10/1986	0	0	0	0	0	0
10/11/1986	0	0	0	0	0	0
10/12/1986	0	0	0	0	0	0
10/13/1986	0	0	0	0	0	0
10/14/1986	0	0	0	0	0	0
10/15/1986	0	0	0	0	0	0
10/16/1986	0	0	0	0	0	0
10/17/1986	0	0	0	0	0	0
10/18/1986	0	0	0	0	0	0
10/19/1986	0	0	0	0	0	0
10/20/1986	0	0	0	0	0	0
10/21/1986	0	0	0	0	0	0
10/22/1986	0	0	0	0	0	0
10/23/1986	0	0	0	0	0	0
10/24/1986	0	0	0	0	0	0
10/25/1986	0	0	0	0	0	0
10/26/1986	0	0	0	0	0	0
10/27/1986	0	0	0	0	0	0
10/28/1986	0	0	0	0	0	0
10/29/1986	0	0	0	0	0	0
10/30/1986	0	0	0	0	0	0
10/31/1986	0	0	0	0	0	0
11/1/1986	0	0	0	0	0	0
11/2/1986	0	0	0	0	0	0
11/3/1986	0	0	0	0	0	0
11/4/1986	0	0	0	0	0	0
11/5/1986	0	0	0	0	0	0
11/6/1986	0	0	0	0	0	0

Calculations for Shoshone Site Flow
1986
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
11/7/1986	0	0	0	0	0	0
					27	327
					Maximum	Total

Calculations for Shoshone Site Flow
1987
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
4/1/1987	0	0	0	0	0	0
4/2/1987	0	0	0	0	0	0
4/3/1987	0	0	0	0	0	0
4/4/1987	50	50	0	50	0	0
4/5/1987	60	49	0	49	0	0
4/6/1987	300	243	151	92	0	0
4/7/1987	378	178	110	68	0	0
4/8/1987	365	279	173	106	0	0
4/9/1987	451	283	175	108	0	0
4/10/1987	467	297	184	113	0	0
4/11/1987	522	295	183	112	0	0
4/12/1987	529	297	184	113	0	0
4/13/1987	528	295	183	112	0	0
4/14/1987	533	297	184	113	0	0
4/15/1987	654	350	217	133	0	0
4/16/1987	687	360	223	137	0	0
4/17/1987	740	386	239	147	0	0
4/18/1987	1003	532	330	202	0	0
4/19/1987	928	556	345	211	0	0
4/20/1987	977	546	339	207	0	0
4/21/1987	972	542	336	206	0	0
4/22/1987	949	529	328	201	0	0
4/23/1987	899	552	342	210	0	0
4/24/1987	887	535	332	203	0	0
4/25/1987	853	497	308	189	0	0
4/26/1987	917	541	335	206	0	0
4/27/1987	936	541	335	206	0	0
4/28/1987	915	529	328	201	0	0
4/29/1987	915	531	329	202	0	0
4/30/1987	917	539	334	205	0	0
5/1/1987	938	599	371	228	0	0
5/2/1987	1003	633	392	241	0	0
5/3/1987	1035	651	404	247	0	0
5/4/1987	1035	657	407	250	0	0
5/5/1987	1016	646	401	245	0	0
5/6/1987	959	603	374	229	0	0
5/7/1987	930	591	366	225	0	0
5/8/1987	910	583	361	222	0	0
5/9/1987	899	565	350	215	0	0
5/10/1987	892	565	350	215	0	0
5/11/1987	880	562	348	214	0	0
5/12/1987	846	541	335	206	0	0
5/13/1987	897	573	355	218	0	0
5/14/1987	925	585	363	222	0	0
5/15/1987	933	589	365	224	0	0
5/16/1987	930	585	363	222	0	0
5/17/1987	951	611	379	232	0	0
5/18/1987	967	631	391	240	0	0
5/19/1987	959	622	386	236	0	0
5/20/1987	938	609	378	231	0	0
5/21/1987	884	581	360	221	0	0
5/22/1987	851	575	357	219	0	0
5/23/1987	851	571	354	217	0	0
5/24/1987	846	565	350	215	0	0
5/25/1987	858	573	355	218	0	0
5/26/1987	875	589	365	224	0	0
5/27/1987	875	571	354	217	0	0
5/28/1987	899	571	354	217	0	0
5/29/1987	892	562	348	214	0	0

Calculations for Shoshone Site Flow
1987
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
5/30/1987	899	552	342	210	0	0
5/31/1987	894	548	340	208	0	0
6/1/1987	892	544	0	0	0	0
6/2/1987	882	535	0	0	0	0
6/3/1987	884	533	0	0	0	0
6/4/1987	894	533	0	0	0	0
6/5/1987	959	567	0	0	0	0
6/6/1987	975	563	0	0	0	0
6/7/1987	988	571	0	0	0	0
6/8/1987	1003	589	0	0	0	0
6/9/1987	1008	597	0	0	0	0
6/10/1987	1014	601	0	0	0	0
6/11/1987	943	567	0	0	0	0
6/12/1987	892	552	0	0	0	0
6/13/1987	887	542	0	0	0	0
6/14/1987	865	529	0	0	0	0
6/15/1987	844	501	0	0	0	0
6/16/1987	839	506	0	0	0	0
6/17/1987	910	510	0	0	0	0
6/18/1987	928	516	0	0	0	0
6/19/1987	962	527	0	0	0	0
6/20/1987	980	533	0	0	0	0
6/21/1987	1008	544	0	0	0	0
6/22/1987	1016	546	0	0	0	0
6/23/1987	1024	548	0	0	0	0
6/24/1987	1030	548	0	0	0	0
6/25/1987	1074	571	0	0	0	0
6/26/1987	1077	573	0	0	0	0
6/27/1987	1074	573	0	0	0	0
6/28/1987	1080	575	0	0	0	0
6/29/1987	1094	579	0	0	0	0
6/30/1987	1100	585	0	0	0	0
7/1/1987	1114	589	0	0	0	0
7/2/1987	1116	591	0	0	0	0
7/3/1987	1105	587	0	0	0	0
7/4/1987	1102	587	0	0	0	0
7/5/1987	1086	583	0	0	0	0
7/6/1987	1091	585	0	0	0	0
7/7/1987	1080	585	0	0	0	0
7/8/1987	1083	587	0	0	0	0
7/9/1987	1066	585	0	0	0	0
7/10/1987	1069	571	0	0	0	0
7/11/1987	1072	567	0	0	0	0
7/12/1987	1086	575	0	0	0	0
7/13/1987	1083	565	0	0	0	0
7/14/1987	1077	558	0	0	0	0
7/15/1987	1044	548	0	0	0	0
7/16/1987	1038	548	0	0	0	0
7/17/1987	1066	575	0	0	0	0
7/18/1987	1111	607	0	0	0	0
7/19/1987	1130	622	0	0	0	0
7/20/1987	1128	622	0	0	0	0
7/21/1987	1055	595	0	0	0	0
7/22/1987	1055	587	0	0	0	0
7/23/1987	1044	573	0	0	0	0
7/24/1987	920	531	0	0	0	0
7/25/1987	899	520	0	0	0	0
7/26/1987	892	516	0	0	0	0
7/27/1987	882	510	0	0	0	0

Calculations for Shoshone Site Flow
1987
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
7/28/1987	872	512	0	0	0	0
7/29/1987	887	531	0	0	0	0
7/30/1987	943	535	0	0	0	0
7/31/1987	943	552	0	0	0	0
8/1/1987	941.	554	0	0	0	0
8/2/1987	954	556	0	0	0	0
8/3/1987	964	569	0	0	0	0
8/4/1987	959	567	0	0	0	0
8/5/1987	980	569	0	0	0	0
8/6/1987	995	581	0	0	0	0
8/7/1987	1001	587	0	0	0	0
8/8/1987	1006	585	0	0	0	0
8/9/1987	1021	589	0	0	0	0
8/10/1987	1003	593	0	0	0	0
8/11/1987	1021	583	0	0	0	0
8/12/1987	972	565	0	0	0	0
8/13/1987	969	562	0	0	0	0
8/14/1987	980	567	0	0	0	0
8/15/1987	972	560	0	0	0	0
8/16/1987	975	552	0	0	0	0
8/17/1987	975	552	0	0	0	0
8/18/1987	990	562	0	0	0	0
8/19/1987	990	565	0	0	0	0
8/20/1987	990	560	0	0	0	0
8/21/1987	982	554	0	0	0	0
8/22/1987	982	558	0	0	0	0
8/23/1987	985	556	0	0	0	0
8/24/1987	982	554	0	0	0	0
8/25/1987	988	558	0	0	0	0
8/26/1987	990	558	0	0	0	0
8/27/1987	995	556	0	0	0	0
8/28/1987	1001	558	0	0	0	0
8/29/1987	1006	556	0	0	0	0
8/30/1987	1003	556	0	0	0	0
8/31/1987	1006	550	0	0	0	0
9/1/1987	1001	542	0	0	0	0
9/2/1987	1006	539	0	0	0	0
9/3/1987	1011	533	0	0	0	0
9/4/1987	1014	535	0	0	0	0
9/5/1987	1021	539	0	0	0	0
9/6/1987	1035	541	0	0	0	0
9/7/1987	1030	544	0	0	0	0
9/8/1987	993	542	0	0	0	0
9/9/1987	988	539	0	0	0	0
9/10/1987	998	544	0	0	0	0
9/11/1987	1001	544	0	0	0	0
9/12/1987	998	542	0	0	0	0
9/13/1987	1006	541	0	0	0	0
9/14/1987	1001	541	0	0	0	0
9/15/1987	988	548	0	0	0	0
9/16/1987	923	542	0	0	0	0
9/17/1987	920	512	0	0	0	0
9/18/1987	920	508	0	0	0	0
9/19/1987	925	508	0	0	0	0
9/20/1987	925	510	0	0	0	0
9/21/1987	856	512	0	0	0	0
9/22/1987	798	510	0	0	0	0
9/23/1987	781	459	0	0	0	0
9/24/1987	784	452	0	0	0	0

Calculations for Shoshone Site Flow
1987
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
9/25/1987	784	455	0	0	0	0
9/26/1987	774	452	0	0	0	0
9/27/1987	781	448	0	0	0	0
9/28/1987	796	455	0	0	0	0
9/29/1987	798	459	0	0	0	0
9/30/1987	800	461	0	0	0	0
10/1/1987	798	503	0	0	0	0
10/2/1987	798	504	0	0	0	0
10/3/1987	798	514	0	0	0	0
10/4/1987	0	0	0	0	0	0
10/5/1987	786	461	0	461	0	0
10/6/1987	793	459	0	459	0	0
10/7/1987	793	459	0	459	0	0
10/8/1987	805	465	0	465	0	0
10/9/1987	798	466	0	466	0	0
10/10/1987	0	0	0	0	0	0
10/11/1987	0	0	0	0	0	0
10/12/1987	0	0	0	0	0	0
10/13/1987	0	0	0	0	0	0
10/14/1987	0	0	0	0	0	0
10/15/1987	0	0	0	0	0	0
10/16/1987	0	0	0	0	0	0
10/17/1987	0	0	0	0	0	0
10/18/1987	0	0	0	0	0	0
10/19/1987	0	0	0	0	0	0
10/20/1987	0	0	0	0	0	0
10/21/1987	0	0	0	0	0	0
10/22/1987	0	0	0	0	0	0
10/23/1987	0	0	0	0	0	0
10/24/1987	0	0	0	0	0	0
10/25/1987	0	0	0	0	0	0
10/26/1987	0	0	0	0	0	0
10/27/1987	0	0	0	0	0	0
10/28/1987	0	0	0	0	0	0
10/29/1987	0	0	0	0	0	0
10/30/1987	0	0	0	0	0	0
10/31/1987	0	0	0	0	0	0
11/1/1987	0	0	0	0	0	0
11/2/1987	0	0	0	0	0	0
11/3/1987	0	0	0	0	0	0
11/4/1987	0	0	0	0	0	0
11/5/1987	0	0	0	0	0	0
11/6/1987	0	0	0	0	0	0
					0	0
					Maximum	Total

Calculations for Shoshone Site Flow
1988
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
4/1/1988	0	0	0	0	0	0
4/2/1988	0	0	0	0	0	0
4/3/1988	0	0	0	0	0	0
4/4/1988	0	0	0	0	0	0
4/5/1988	0	0	0	0	0	0
4/6/1988	0	0	0	0	0	0
4/7/1988	0	0	0	0	0	0
4/8/1988	0	0	0	0	0	0
4/9/1988	0	0	0	0	0	0
4/10/1988	0	0	0	0	0	0
4/11/1988	0	0	0	0	0	0
4/12/1988	0	0	0	0	0	0
4/13/1988	370	0	0	0	0	0
4/14/1988	378	0	0	0	0	0
4/15/1988	405	0	0	0	0	0
4/16/1988	512	0	0	0	0	0
4/17/1988	520	0	0	0	0	0
4/18/1988	515	260	161	99	0	0
4/19/1988	511	260	161	99	0	0
4/20/1988	512	265	164	101	0	0
4/21/1988	525	268	166	102	0	0
4/22/1988	507	268	166	102	0	0
4/23/1988	503	262	162	100	0	0
4/24/1988	500	257	159	98	0	0
4/25/1988	503	259	161	98	0	0
4/26/1988	503	248	154	94	0	0
4/27/1988	494	248	154	94	0	0
4/28/1988	536	265	164	101	0	0
4/29/1988	547	272	169	103	0	0
4/30/1988	628	281	174	107	0	0
5/1/1988	668	352	218	134	0	0
5/2/1988	670	362	224	138	0	0
5/3/1988	765	432	268	164	0	0
5/4/1988	818	435	270	165	0	0
5/5/1988	815	448	278	170	0	0
5/6/1988	815	440	273	167	0	0
5/7/1988	813	445	276	169	0	0
5/8/1988	822	445	276	169	0	0
5/9/1988	798	430	267	163	0	0
5/10/1988	770	433	268	165	0	0
5/11/1988	755	432	268	164	0	0
5/12/1988	801	437	271	166	0	0
5/13/1988	806	447	277	170	0	0
5/14/1988	806	438	272	166	0	0
5/15/1988	850	445	276	169	0	0
5/16/1988	853	465	288	177	0	0
5/17/1988	832	450	279	171	0	0
5/18/1988	832	450	279	171	0	0
5/19/1988	837	452	280	172	0	0
5/20/1988	840	454	281	173	0	0
5/21/1988	876	470	291	179	0	0
5/22/1988	884	476	295	181	0	0
5/23/1988	879	480	298	182	0	0
5/24/1988	866	457	283	174	0	0
5/25/1988	900	493	306	187	0	0
5/26/1988	941	495	307	188	0	0

Calculations for Shoshone Site Flow
1988
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
5/27/1988	944	501	311	190	0	0
5/28/1988	973	508	315	193	0	0
5/29/1988	1001	510	316	194	0	0
5/30/1988	1049	567	352	215	0	0
5/31/1988	1089	607	376	231	0	0
6/1/1988	1107	597	370	227	0	0
6/2/1988	1104	595	369	226	0	0
6/3/1988	1080	581	371	210	0	0
6/4/1988	1063	567	472	95	0	0
6/5/1988	1035	552	342	210	0	0
6/6/1988	1007	544	488	56	0	0
6/7/1988	984	542	0	0	0	0
6/8/1988	996	569	0	0	0	0
6/9/1988	1014	565	0	0	0	0
6/10/1988	1010	569	0	0	0	0
6/11/1988	1004	571	0	0	0	0
6/12/1988	982	558	0	0	0	0
6/13/1988	984	556	0	0	0	0
6/14/1988	973	554	0	0	0	0
6/15/1988	973	550	0	0	0	0
6/16/1988	962	552	0	0	0	0
6/17/1988	979	560	0	0	0	0
6/18/1988	996	563	0	0	0	0
6/19/1988	979	560	0	0	0	0
6/20/1988	973	562	0	0	0	0
6/21/1988	965	558	0	0	0	0
6/22/1988	962	548	0	0	0	0
6/23/1988	976	548	0	0	0	0
6/24/1988	990	558	0	0	0	0
6/25/1988	987	558	0	0	0	0
6/26/1988	993	560	0	0	0	0
6/27/1988	996	552	0	0	0	0
6/28/1988	1001	542	0	0	0	0
6/29/1988	1010	541	0	0	0	0
6/30/1988	1060	558	0	0	0	0
7/1/1988	1060	544	0	0	0	0
7/2/1988	1063	54	0	0	0	0
7/3/1988	1074	556	0	0	0	0
7/4/1988	1077	544	0	0	0	0
7/5/1988	1071	546	0	0	0	0
7/6/1988	1054	567	0	0	0	0
7/7/1988	1086	577	0	0	0	0
7/8/1988	1104	589	0	0	0	0
7/9/1988	1107	589	0	0	0	0
7/10/1988	1095	593	0	0	0	0
7/11/1988	1098	595	0	0	0	0
7/12/1988	1092	593	0	0	0	0
7/13/1988	1104	589	0	0	0	0
7/14/1988	1080	583	0	0	0	0
7/15/1988	1071	567	0	0	0	0
7/16/1988	1049	552	0	0	0	0
7/17/1988	1040	552	0	0	0	0
7/18/1988	1049	560	0	0	0	0
7/19/1988	1060	563	0	0	0	0
7/20/1988	1068	571	0	0	0	0
7/21/1988	1074	573	0	0	0	0

Calculations for Shoshone Site Flow
1988
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
7/22/1988	1068	579	0	0	0	0
7/23/1988	1074	585	0	0	0	0
7/24/1988	1077	587	0	0	0	0
7/25/1988	1089	587	0	0	0	0
7/26/1988	1083	587	0	0	0	0
7/27/1988	1089	585	0	0	0	0
7/28/1988	1083	587	0	0	0	0
7/29/1988	1095	603	0	0	0	0
7/30/1988	1110	618	0	0	0	0
7/31/1988	1119	631	0	0	0	0
8/1/1988	1122	620	0	0	0	0
8/2/1988	1110	607	0	0	0	0
8/3/1988	1083	595	0	0	0	0
8/4/1988	1089	583	0	0	0	0
8/5/1988	1071	603	0	0	0	0
8/6/1988	1110	603	0	0	0	0
8/7/1988	1116	603	0	0	0	0
8/8/1988	1116	599	0	0	0	0
8/9/1988	1092	591	0	0	0	0
8/10/1988	1074	573	0	0	0	0
8/11/1988	1068	575	0	0	0	0
8/12/1988	1068	573	0	0	0	0
8/13/1988	1074	581	0	0	0	0
8/14/1988	1074	585	0	0	0	0
8/15/1988	1074	583	0	0	0	0
8/16/1988	1086	587	0	0	0	0
8/17/1988	1074	591	0	0	0	0
8/18/1988	1057	583	0	0	0	0
8/19/1988	1046	575	0	0	0	0
8/20/1988	1043	583	0	0	0	0
8/21/1988	1046	585	0	0	0	0
8/22/1988	1063	593	0	0	0	0
8/23/1988	1052	593	0	0	0	0
8/24/1988	1018	571	0	0	0	0
8/25/1988	1015	567	0	0	0	0
8/26/1988	1007	571	0	0	0	0
8/27/1988	1015	585	0	0	0	0
8/28/1988	1026	593	0	0	0	0
8/29/1988	1029	595	0	0	0	0
8/30/1988	1024	595	0	0	0	0
8/31/1988	1018	595	0	0	0	0
9/1/1988	1007	595	0	0	0	0
9/2/1988	1015	597	0	0	0	0
9/3/1988	1026	603	0	0	0	0
9/4/1988	1035	609	0	0	0	0
9/5/1988	1046	609	0	0	0	0
9/6/1988	1043	567	0	0	0	0
9/7/1988	1043	567	0	0	0	0
9/8/1988	998	550	0	0	0	0
9/9/1988	946	520	0	0	0	0
9/10/1988	928	510	0	0	0	0
9/11/1988	952	514	0	0	0	0
9/12/1988	959	525	0	0	0	0
9/13/1988	957	529	0	0	0	0
9/14/1988	959	531	0	0	0	0
9/15/1988	866	484	0	0	0	0

Calculations for Shoshone Site Flow
1988
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
9/16/1988	853	476	0	0	0	0
9/17/1988	772	465	0	0	0	0
9/18/1988	762	466	0	0	0	0
9/19/1988	770	437	0	0	0	0
9/20/1988	784	421	0	0	0	0
9/21/1988	784	421	0	0	0	0
9/22/1988	784	420	0	0	0	0
9/23/1988	796	421	0	0	0	0
9/24/1988	798	425	0	0	0	0
9/25/1988	798	420	0	0	0	0
9/26/1988	692	360	0	0	0	0
9/27/1988	644	337	0	0	0	0
9/28/1988	652	349	0	0	0	0
9/29/1988	655	355	0	0	0	0
9/30/1988	661	379	0	0	0	0
10/1/1988	0	0	0	0	0	0
10/2/1988	0	0	0	0	0	0
10/3/1988	672	428	0	0	0	0
10/4/1988	677	432	0	0	0	0
10/5/1988	677	432	0	0	0	0
10/6/1988	679	432	0	0	0	0
10/7/1988	677	432	0	0	0	0
10/8/1988	0	0	0	0	0	0
10/9/1988	0	0	0	0	0	0
10/10/1988	0	0	0	0	0	0
10/11/1988	0	0	0	0	0	0
10/12/1988	0	0	0	0	0	0
10/13/1988	0	0	0	0	0	0
10/14/1988	0	0	0	0	0	0
10/15/1988	0	0	0	0	0	0
10/16/1988	0	0	0	0	0	0
10/17/1988	0	0	0	0	0	0
10/18/1988	0	0	0	0	0	0
10/19/1988	0	0	0	0	0	0
10/20/1988	0	0	0	0	0	0
10/21/1988	0	0	0	0	0	0
10/22/1988	0	0	0	0	0	0
10/23/1988	0	0	0	0	0	0
10/24/1988	0	0	0	0	0	0
10/25/1988	0	0	0	0	0	0
10/26/1988	0	0	0	0	0	0
10/27/1988	0	0	0	0	0	0
10/28/1988	0	0	0	0	0	0
10/29/1988	0	0	0	0	0	0
10/30/1988	0	0	0	0	0	0
10/31/1988	0	0	0	0	0	0
					0	0
					Maximum	Total

Calculations for Shoshone Site Flow
1989
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
4/1/1989	0	0	0	0	0	0
4/2/1989	0	0	0	0	0	0
4/3/1989	0	0	0	0	0	0
4/4/1989	0	0	0	0	0	0
4/5/1989	0	0	0	0	0	0
4/6/1989	0	0	0	0	0	0
4/7/1989	0	0	0	0	0	0
4/8/1989	0	0	0	0	0	0
4/9/1989	0	0	0	0	0	0
4/10/1989	0	0	0	0	0	0
4/11/1989	0	0	0	0	0	0
4/12/1989	0	0	0	0	0	0
4/13/1989	0	0	0	0	0	0
4/14/1989	0	0	0	0	0	0
4/15/1989	0	0	0	0	0	0
4/16/1989	0	0	0	0	0	0
4/17/1989	0	0	0	0	0	0
4/18/1989	0	0	0	0	0	0
4/19/1989	104	0	100	0	0	0
4/20/1989	142	175	126	49	33	65
4/21/1989	251	256	184	72	5	10
4/22/1989	389	389	279	110	0	0
4/23/1989	385	394	283	111	9	18
4/24/1989	385	394	279	115	9	18
4/25/1989	435	392	270	122	0	0
4/26/1989	500	443	319	124	0	0
4/27/1989	572	396	290	106	0	0
4/28/1989	554	304	219	85	0	0
4/29/1989	542	199	143	56	0	0
4/30/1989	772	316	228	88	0	0
5/1/1989	754	326	202	124	0	0
5/2/1989	706	296	184	112	0	0
5/3/1989	679	348	216	132	0	0
5/4/1989	673	360	223	137	0	0
5/5/1989	769	463	287	176	0	0
5/6/1989	807	452	280	172	0	0
5/7/1989	751	446	277	169	0	0
5/8/1989	782	437	271	166	0	0
5/9/1989	874	463	287	176	0	0
5/10/1989	945	466	289	177	0	0
5/11/1989	1002	491	304	187	0	0
5/12/1989	1010	508	315	193	0	0
5/13/1989	1051	531	329	202	0	0
5/14/1989	987	550	341	209	0	0
5/15/1989	1087	558	346	212	0	0
5/16/1989	1103	565	350	215	0	0
5/17/1989	1042	554	343	211	0	0
5/18/1989	1060	565	350	215	0	0
5/19/1989	1064	573	355	218	0	0
5/20/1989	1082	563	349	214	0	0
5/21/1989	984	578	358	220	0	0
5/22/1989	1060	548	340	208	0	0
5/23/1989	965	575	357	219	0	0
5/24/1989	913	550	341	209	0	0
5/25/1989	945	618	383	235	0	0

Calculations for Shoshone Site Flow
1989
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
5/26/1989	1028	48	30	18	0	0
5/27/1989	1046	620	384	236	0	0
5/28/1989	967	285	177	108	0	0
5/29/1989	1046	626	388	238	0	0
5/30/1989	1056	624	387	237	0	0
5/31/1989	1042	624	387	237	0	0
6/1/1989	953	578	0	0	0	0
6/2/1989	953	574	0	0	0	0
6/3/1989	917	562	0	0	0	0
6/4/1989	923	566	0	0	0	0
6/5/1989	930	570	0	0	0	0
6/6/1989	927	562	0	0	0	0
6/7/1989	920	562	0	0	0	0
6/8/1989	907	538	0	0	0	0
6/9/1989	904	538	0	0	0	0
6/10/1989	897	564	0	0	0	0
6/11/1989	920	526	0	0	0	0
6/12/1989	974	546	0	0	0	0
6/13/1989	1022	572	0	0	0	0
6/14/1989	1035	584	0	0	0	0
6/15/1989	1015	572	0	0	0	0
6/16/1989	1011	576	0	0	0	0
6/17/1989	1022	590	0	0	0	0
6/18/1989	1039	596	0	0	0	0
6/19/1989	1150	613	0	0	0	0
6/20/1989	1132	576	0	0	0	0
6/21/1989	1132	576	0	0	0	0
6/22/1989	1045	588	0	0	0	0
6/23/1989	1060	576	0	0	0	0
6/24/1989	1071	582	0	0	0	0
6/25/1989	1071	586	0	0	0	0
6/26/1989	1057	580	0	0	0	0
6/27/1989	1049	572	0	0	0	0
6/28/1989	1049	568	0	0	0	0
6/29/1989	1057	570	0	0	0	0
6/30/1989	1049	560	0	0	0	0
7/1/1989	1022	568	0	0	0	0
7/2/1989	1057	584	0	0	0	0
7/3/1989	1060	584	0	0	0	0
7/4/1989	1064	586	0	0	0	0
7/5/1989	1039	586	0	0	0	0
7/6/1989	1057	588	0	0	0	0
7/7/1989	1074	584	0	0	0	0
7/8/1989	1057	574	0	0	0	0
7/9/1989	1067	580	0	0	0	0
7/10/1989	1089	590	0	0	0	0
7/11/1989	1099	598	0	0	0	0
7/12/1989	1110	602	0	0	0	0
7/13/1989	1107	613	0	0	0	0
7/14/1989	1114	613	0	0	0	0
7/15/1989	1121	611	0	0	0	0
7/16/1989	1096	596	0	0	0	0
7/17/1989	1125	598	0	0	0	0
7/18/1989	1125	598	0	0	0	0
7/19/1989	1136	598	0	0	0	0

Calculations for Shoshone Site Flow
1989
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
7/20/1989	1117	594	0	0	0	0
7/21/1989	1125	586	0	0	0	0
7/22/1989	1117	586	0	0	0	0
7/23/1989	1139	594	0	0	0	0
7/24/1989	1158	602	0	0	0	0
7/25/1989	1161	602	0	0	0	0
7/26/1989	1154	602	0	0	0	0
7/27/1989	1180	615	0	0	0	0
7/28/1989	1187	611	0	0	0	0
7/29/1989	1187	611	0	0	0	0
7/30/1989	1199	615	0	0	0	0
7/31/1989	1206	621	0	0	0	0
8/1/1989	1121	598	0	0	0	0
8/2/1989	1136	590	0	0	0	0
8/3/1989	1139	592	0	0	0	0
8/4/1989	1139	594	0	0	0	0
8/5/1989	1132	590	0	0	0	0
8/6/1989	1139	598	0	0	0	0
8/7/1989	1143	600	0	0	0	0
8/8/1989	1139	600	0	0	0	0
8/9/1989	1099	594	0	0	0	0
8/10/1989	1089	588	0	0	0	0
8/11/1989	1089	594	0	0	0	0
8/12/1989	1089	594	0	0	0	0
8/13/1989	1081	592	0	0	0	0
8/14/1989	1074	590	0	0	0	0
8/15/1989	1084	590	0	0	0	0
8/16/1989	1084	590	0	0	0	0
8/17/1989	1074	598	0	0	0	0
8/18/1989	1074	586	0	0	0	0
8/19/1989	1081	590	0	0	0	0
8/20/1989	1103	592	0	0	0	0
8/21/1989	1110	590	0	0	0	0
8/22/1989	1117	570	0	0	0	0
8/23/1989	1132	580	0	0	0	0
8/24/1989	1081	570	0	0	0	0
8/25/1989	1089	580	0	0	0	0
8/26/1989	1081	578	0	0	0	0
8/27/1989	1096	578	0	0	0	0
8/28/1989	1074	552	0	0	0	0
8/29/1989	1046	558	0	0	0	0
8/30/1989	967	524	0	0	0	0
8/31/1989	937	500	0	0	0	0
9/1/1989	940	562	0	0	0	0
9/2/1989	953	563	0	0	0	0
9/3/1989	953	519	0	0	0	0
9/4/1989	965	593	0	0	0	0
9/5/1989	961	595	0	0	0	0
9/6/1989	957	593	0	0	0	0
9/7/1989	965	593	0	0	0	0
9/8/1989	985	624	0	0	0	0
9/9/1989	989	629	0	0	0	0
9/10/1989	997	560	0	0	0	0
9/11/1989	1046	653	0	0	0	0
9/12/1989	1056	613	0	0	0	0

Calculations for Shoshone Site Flow
1989
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
9/13/1989	969	593	0	0	0	0
9/14/1989	965	611	0	0	0	0
9/15/1989	965	615	0	0	0	0
9/16/1989	949	615	0	0	0	0
9/17/1989	910	548	0	0	0	0
9/18/1989	885	591	0	0	0	0
9/19/1989	849	583	0	0	0	0
9/20/1989	842	581	0	0	0	0
9/21/1989	814	548	0	0	0	0
9/22/1989	769	548	0	0	0	0
9/23/1989	779	546	0	0	0	0
9/24/1989	787	463	0	0	0	0
9/25/1989	763	510	0	0	0	0
9/26/1989	757	512	0	0	0	0
9/27/1989	760	518	0	0	0	0
9/28/1989	763	520	0	0	0	0
9/29/1989	769	518	0	0	0	0
9/30/1989	787	461	0	0	0	0
10/1/1989	0	0	0	0	0	0
10/2/1989	0	0	0	0	0	0
10/3/1989	0	0	0	0	0	0
10/4/1989	0	0	0	0	0	0
10/5/1989	0	0	0	0	0	0
10/6/1989	0	0	0	0	0	0
10/7/1989	0	0	0	0	0	0
10/8/1989	0	0	0	0	0	0
10/9/1989	0	0	0	0	0	0
10/10/1989	0	0	0	0	0	0
10/11/1989	0	0	0	0	0	0
10/12/1989	0	0	0	0	0	0
10/13/1989	0	0	0	0	0	0
10/14/1989	0	0	0	0	0	0
10/15/1989	0	0	0	0	0	0
10/16/1989	0	0	0	0	0	0
10/17/1989	0	0	0	0	0	0
10/18/1989	0	0	0	0	0	0
10/19/1989	0	0	0	0	0	0
10/20/1989	0	0	0	0	0	0
10/21/1989	0	0	0	0	0	0
10/22/1989	0	0	0	0	0	0
10/23/1989	0	0	0	0	0	0
10/24/1989	0	0	0	0	0	0
10/25/1989	0	0	0	0	0	0
10/26/1989	0	0	0	0	0	0
10/27/1989	0	0	0	0	0	0
10/28/1989	0	0	0	0	0	0
10/29/1989	0	0	0	0	0	0
10/30/1989	0	0	0	0	0	0
10/31/1989	0	0	0	0	0	0
11/1/1989	0	0	0	0	0	0
11/2/1989	0	0	0	0	0	0
11/3/1989	0	0	0	0	0	0
11/4/1989	0	0	0	0	0	0
11/5/1989	0	0	0	0	0	0
11/6/1989	0	0	0	0	0	0

Calculations for Shoshone Site Flow
1989
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
11/7/1989	0	0	0	0	0	0
11/8/1989	0	0	0	0	0	0
11/9/1989	0	0	0	0	0	0
11/10/1989	0	0	0	0	0	0
11/11/1989	0	0	0	0	0	0
11/12/1989	0	0	0	0	0	0
11/13/1989	0	0	0	0	0	0
11/14/1989	0	0	0	0	0	0
11/15/1989	0	0	0	0	0	0
11/16/1989	0	0	0	0	0	0
					33	111
					Maximum	Total

Calculations for Shoshone Site Flow
1990
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
4/1/1990	0	0	0	0	0	0
4/2/1990	0	0	0	0	0	0
4/3/1990	0	0	0	0	0	0
4/4/1990	0	0	0	0	0	0
4/5/1990	185	170	0	170	0	0
4/6/1990	190	156	0	156	0	0
4/7/1990	193	162	0	162	0	0
4/8/1990	194	165	0	165	0	0
4/9/1990	197	170	0	170	0	0
4/10/1990	312	175	0	175	0	0
4/11/1990	399	225	0	225	0	0
4/12/1990	393	251	0	251	0	0
4/13/1990	393	250	0	250	0	0
4/14/1990	368	247	0	247	0	0
4/15/1990	368	275	0	275	0	0
4/16/1990	368	305	0	305	0	0
4/17/1990	368	294	0	294	0	0
4/18/1990	368	306	0	306	0	0
4/19/1990	368	326	0	326	0	0
4/20/1990	670	398	0	398	0	0
4/21/1990	716	376	0	376	0	0
4/22/1990	787	376	0	376	0	0
4/23/1990	824	425	0	425	0	0
4/24/1990	830	427	0	427	0	0
4/25/1990	849	434	0	434	0	0
4/26/1990	843	445	0	445	0	0
4/27/1990	878	461	0	461	0	0
4/28/1990	900	472	0	472	0	0
4/29/1990	930	487	0	487	0	0
4/30/1990	933	488	0	488	0	0
5/1/1990	891	472	0	472	0	0
5/2/1990	884	472	0	472	0	0
5/3/1990	965	459	0	459	0	0
5/4/1990	953	498	0	498	0	0
5/5/1990	957	513	0	513	0	0
5/6/1990	950	509	0	509	0	0
5/7/1990	977	513	0	513	0	0
5/8/1990	957	540	0	540	0	0
5/9/1990	957	566	0	566	0	0
5/10/1990	940	519	0	519	0	0
5/11/1990	923	517	0	517	0	0
5/12/1990	917	526	0	526	0	0
5/13/1990	904	554	0	554	0	0
5/14/1990	910	542	0	542	0	0
5/15/1990	904	542	0	542	0	0
5/16/1990	914	552	0	552	0	0
5/17/1990	970	574	0	574	0	0
5/18/1990	794	582	0	582	0	0
5/19/1990	888	570	0	570	0	0
5/20/1990	888	544	0	544	0	0
5/21/1990	894	538	0	538	0	0
5/22/1990	891	546	0	546	0	0
5/23/1990	888	540	0	540	0	0
5/24/1990	868	530	0	530	0	0
5/25/1990	888	542	0	542	0	0

Calculations for Shoshone Site Flow
1990
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
5/26/1990	884	540	0	540	0	0
5/27/1990	878	536	0	536	0	0
5/28/1990	878	532	0	532	0	0
5/29/1990	862	538	0	538	0	0
5/30/1990	852	519	0	519	0	0
5/31/1990	904	546	0	546	0	0
6/1/1990	849	562	0	0	0	0
6/2/1990	868	574	0	0	0	0
6/3/1990	862	578	0	0	0	0
6/4/1990	859	574	0	0	0	0
6/5/1990	855	564	0	0	0	0
6/6/1990	859	550	0	0	0	0
6/7/1990	837	552	0	0	0	0
6/8/1990	830	536	0	0	0	0
6/9/1990	751	511	0	0	0	0
6/10/1990	730	526	0	0	0	0
6/11/1990	736	526	0	0	0	0
6/12/1990	722	505	0	0	0	0
6/13/1990	725	503	0	0	0	0
6/14/1990	739	503	0	0	0	0
6/15/1990	736	503	0	0	0	0
6/16/1990	733	509	0	0	0	0
6/17/1990	739	511	0	0	0	0
6/18/1990	745	509	0	0	0	0
6/19/1990	696	492	0	0	0	0
6/20/1990	676	459	0	0	0	0
6/21/1990	751	481	0	0	0	0
6/22/1990	751	474	0	0	0	0
6/23/1990	812	483	0	0	0	0
6/24/1990	837	481	0	0	0	0
6/25/1990	884	526	0	0	0	0
6/26/1990	914	550	0	0	0	0
6/27/1990	953	550	0	0	0	0
6/28/1990	963	578	0	0	0	0
6/29/1990	963	584	0	0	0	0
6/30/1990	957	582	0	0	0	0
7/1/1990	974	570	0	0	0	0
7/2/1990	967	556	0	0	0	0
7/3/1990	967	548	0	0	0	0
7/4/1990	980	558	0	0	0	0
7/5/1990	1001	558	0	0	0	0
7/6/1990	967	546	0	0	0	0
7/7/1990	953	538	0	0	0	0
7/8/1990	967	524	0	0	0	0
7/9/1990	994	524	0	0	0	0
7/10/1990	1008	534	0	0	0	0
7/11/1990	994	528	0	0	0	0
7/12/1990	997	550	0	0	0	0
7/13/1990	991	544	0	0	0	0
7/14/1990	987	560	0	0	0	0
7/15/1990	987	554	0	0	0	0
7/16/1990	1008	556	0	0	0	0
7/17/1990	1022	564	0	0	0	0
7/18/1990	1018	558	0	0	0	0
7/19/1990	1015	554	0	0	0	0

Calculations for Shoshone Site Flow
1990
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
7/20/1990	1025	564	0	0	0	0
7/21/1990	1039	580	0	0	0	0
7/22/1990	1053	584	0	0	0	0
7/23/1990	1060	580	0	0	0	0
7/24/1990	1067	580	0	0	0	0
7/25/1990	1060	586	0	0	0	0
7/26/1990	1067	600	0	0	0	0
7/27/1990	1085	576	0	0	0	0
7/28/1990	1096	576	0	0	0	0
7/29/1990	1060	554	0	0	0	0
7/30/1990	1039	544	0	0	0	0
7/31/1990	1035	552	0	0	0	0
8/1/1990	1032	566	0	0	0	0
8/2/1990	1025	550	0	0	0	0
8/3/1990	1032	570	0	0	0	0
8/4/1990	1035	574	0	0	0	0
8/5/1990	1039	578	0	0	0	0
8/6/1990	1060	582	0	0	0	0
8/7/1990	1060	582	0	0	0	0
8/8/1990	1049	576	0	0	0	0
8/9/1990	1049	578	0	0	0	0
8/10/1990	1039	574	0	0	0	0
8/11/1990	1039	570	0	0	0	0
8/12/1990	1057	574	0	0	0	0
8/13/1990	1085	588	0	0	0	0
8/14/1990	1078	570	0	0	0	0
8/15/1990	1074	562	0	0	0	0
8/16/1990	1074	562	0	0	0	0
8/17/1990	1081	588	0	0	0	0
8/18/1990	1096	594	0	0	0	0
8/19/1990	1117	604	0	0	0	0
8/20/1990	1139	602	0	0	0	0
8/21/1990	1306	598	0	0	0	0
8/22/1990	1346	590	0	0	0	0
8/23/1990	1074	602	0	0	0	0
8/24/1990	1081	582	0	0	0	0
8/25/1990	1096	580	0	0	0	0
8/26/1990	1114	588	0	0	0	0
8/27/1990	1139	586	0	0	0	0
8/28/1990	1155	570	0	0	0	0
8/29/1990	1081	546	0	0	0	0
8/30/1990	980	560	0	0	0	0
8/31/1990	970	574	0	0	0	0
9/1/1990	984	584	0	0	0	0
9/2/1990	987	588	0	0	0	0
9/3/1990	987	564	0	0	0	0
9/4/1990	987	554	0	0	0	0
9/5/1990	984	550	0	0	0	0
9/6/1990	977	542	0	0	0	0
9/7/1990	920	544	0	0	0	0
9/8/1990	914	548	0	0	0	0
9/9/1990	910	548	0	0	0	0
9/10/1990	923	552	0	0	0	0
9/11/1990	940	554	0	0	0	0
9/12/1990	963	554	0	0	0	0

Calculations for Shoshone Site Flow
1990
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
9/13/1990	904	538	0	0	0	0
9/14/1990	907	542	0	0	0	0
9/15/1990	920	530	0	0	0	0
9/16/1990	914	528	0	0	0	0
9/17/1990	917	532	0	0	0	0
9/18/1990	917	530	0	0	0	0
9/19/1990	849	502	0	0	0	0
9/20/1990	815	500	0	0	0	0
9/21/1990	818	515	0	0	0	0
9/22/1990	815	511	0	0	0	0
9/23/1990	815	511	0	0	0	0
9/24/1990	769	488	0	0	0	0
9/25/1990	748	477	0	0	0	0
9/26/1990	745	474	0	0	0	0
9/27/1990	640	437	0	0	0	0
9/28/1990	640	437	0	0	0	0
9/29/1990	640	437	0	0	0	0
9/30/1990	634	437	0	0	0	0
10/1/1990	0	0	0	0	0	0
10/2/1990	0	0	0	0	0	0
10/3/1990	0	0	0	0	0	0
10/4/1990	0	0	0	0	0	0
10/5/1990	0	0	0	0	0	0
10/6/1990	0	0	0	0	0	0
10/7/1990	0	0	0	0	0	0
10/8/1990	0	0	0	0	0	0
10/9/1990	0	0	0	0	0	0
10/10/1990	0	0	0	0	0	0
10/11/1990	0	0	0	0	0	0
10/12/1990	0	0	0	0	0	0
10/13/1990	0	0	0	0	0	0
10/14/1990	0	0	0	0	0	0
10/15/1990	0	0	0	0	0	0
10/16/1990	0	0	0	0	0	0
10/17/1990	0	0	0	0	0	0
10/18/1990	0	0	0	0	0	0
10/19/1990	0	0	0	0	0	0
10/20/1990	0	0	0	0	0	0
10/21/1990	0	0	0	0	0	0
10/22/1990	0	0	0	0	0	0
10/23/1990	0	0	0	0	0	0
10/24/1990	0	0	0	0	0	0
10/25/1990	0	0	0	0	0	0
10/26/1990	0	0	0	0	0	0
10/27/1990	0	0	0	0	0	0
10/28/1990	0	0	0	0	0	0
10/29/1990	0	0	0	0	0	0
10/30/1990	0	0	0	0	0	0
10/31/1990	0	0	0	0	0	0
					0	0
					Maximum	Total

Calculations for Shoshone Site Flow
1991
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
4/1/1991	0	0	0	0	0	0
4/2/1991	0	0	0	0	0	0
4/3/1991	0	0	0	0	0	0
4/4/1991	0	0	0	0	0	0
4/5/1991	0	0	0	0	0	0
4/6/1991	0	0	0	0	0	0
4/7/1991	0	0	0	0	0	0
4/8/1991	0	0	0	0	0	0
4/9/1991	0	0	0	0	0	0
4/10/1991	0	0	0	0	0	0
4/11/1991	0	0	0	0	0	0
4/12/1991	0	0	0	0	0	0
4/13/1991	0	0	0	0	0	0
4/14/1991	0	0	0	0	0	0
4/15/1991	264	207	104	104	0	0
4/16/1991	234	187	94	94	0	0
4/17/1991	224	184	92	92	0	0
4/18/1991	335	250	125	125	0	0
4/19/1991	408	273	137	137	0	0
4/20/1991	435	243	122	122	0	0
4/21/1991	435	245	123	123	0	0
4/22/1991	432	267	134	134	0	0
4/23/1991	415	239	120	120	0	0
4/24/1991	412	256	128	128	0	0
4/25/1991	455	273	137	137	0	0
4/26/1991	589	351	176	176	0	0
4/27/1991	589	355	178	178	0	0
4/28/1991	583	351	176	176	0	0
4/29/1991	594	356	178	178	0	0
4/30/1991	586	358	179	179	0	0
5/1/1991	583	363	5	358	0	0
5/2/1991	667	384	192	192	0	0
5/3/1991	687	366	183	183	0	0
5/4/1991	690	359	180	180	0	0
5/5/1991	687	366	183	183	0	0
5/6/1991	687	364	0	0	0	0
5/7/1991	736	387	0	0	0	0
5/8/1991	733	391	0	0	0	0
5/9/1991	748	396	0	0	0	0
5/10/1991	745	394	0	0	0	0
5/11/1991	751	401	0	0	0	0
5/12/1991	766	415	0	0	0	0
5/13/1991	775	416	0	0	0	0
5/14/1991	775	415	0	0	0	0
5/15/1991	754	406	0	0	0	0
5/16/1991	748	403	0	0	0	0
5/17/1991	745	398	0	0	0	0
5/18/1991	742	399	0	0	0	0
5/19/1991	739	399	0	0	0	0
5/20/1991	681	376	0	0	0	0
5/21/1991	670	374	0	0	0	0
5/22/1991	665	364	0	0	0	0
5/23/1991	648	381	0	0	0	0
5/24/1991	725	411	0	0	0	0
5/25/1991	757	423	0	0	0	0

Calculations for Shoshone Site Flow
1991
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
5/26/1991	745	416	0	0	0	0
5/27/1991	748	422	0	0	0	0
5/28/1991	739	420	0	0	0	0
5/29/1991	796	443	0	0	0	0
5/30/1991	859	452	5	0	0	0
5/31/1991	855	452	4	0	0	0
6/1/1991	865	446	0	0	0	0
6/2/1991	927	450	0	0	0	0
6/3/1991	933	474	0	0	0	0
6/4/1991	920	468	0	0	0	0
6/5/1991	937	464	0	0	0	0
6/6/1991	1042	517	0	0	0	0
6/7/1991	1057	558	0	0	0	0
6/8/1991	1085	560	0	0	0	0
6/9/1991	1053	562	0	0	0	0
6/10/1991	1039	558	0	0	0	0
6/11/1991	1022	546	0	0	0	0
6/12/1991	1022	542	0	0	0	0
6/13/1991	1085	556	0	0	0	0
6/14/1991	1060	564	0	0	0	0
6/15/1991	1092	582	0	0	0	0
6/16/1991	1117	590	0	0	0	0
6/17/1991	1114	586	0	0	0	0
6/18/1991	1096	582	0	0	0	0
6/19/1991	1089	576	0	0	0	0
6/20/1991	1096	576	0	0	0	0
6/21/1991	1096	580	0	0	0	0
6/22/1991	1114	586	0	0	0	0
6/23/1991	1114	590	0	0	0	0
6/24/1991	1117	586	0	0	0	0
6/25/1991	1103	582	0	0	0	0
6/26/1991	1136	604	0	0	0	0
6/27/1991	1165	615	0	0	0	0
6/28/1991	1187	623	0	0	0	0
6/29/1991	1191	625	0	0	0	0
6/30/1991	1202	627	0	0	0	0
7/1/1991	1191	627	0	0	0	0
7/2/1991	1176	621	0	0	0	0
7/3/1991	1165	619	0	0	0	0
7/4/1991	1136	606	0	0	0	0
7/5/1991	1161	613	0	0	0	0
7/6/1991	1176	615	0	0	0	0
7/7/1991	1184	617	0	0	0	0
7/8/1991	1191	613	0	0	0	0
7/9/1991	1169	576	0	0	0	0
7/10/1991	1172	586	0	0	0	0
7/11/1991	1165	582	0	0	0	0
7/12/1991	1167	592	0	0	0	0
7/13/1991	1199	594	0	0	0	0
7/14/1991	1214	544	0	0	0	0
7/15/1991	987	572	0	0	0	0
7/16/1991	1001	606	0	0	0	0
7/17/1991	1008	615	0	0	0	0
7/18/1991	1015	619	0	0	0	0
7/19/1991	1035	636	0	0	0	0

Calculations for Shoshone Site Flow
1991
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
7/20/1991	1057	638	0	0	0	0
7/21/1991	1078	640	0	0	0	0
7/22/1991	1081	611	0	0	0	0
7/23/1991	1085	602	0	0	0	0
7/24/1991	1099	615	0	0	0	0
7/25/1991	1107	617	0	0	0	0
7/26/1991	1117	615	0	0	0	0
7/27/1991	1117	615	0	0	0	0
7/28/1991	1121	627	0	0	0	0
7/29/1991	1125	625	0	0	0	0
7/30/1991	1114	631	0	0	0	0
7/31/1991	1103	636	0	0	0	0
8/1/1991	1110	636	0	0	0	0
8/2/1991	1107	636	0	0	0	0
8/3/1991	1139	648	0	0	0	0
8/4/1991	1015	560	0	0	0	0
8/5/1991	1078	600	0	0	0	0
8/6/1991	1128	625	0	0	0	0
8/7/1991	1143	615	0	0	0	0
8/8/1991	1132	611	0	0	0	0
8/9/1991	1139	617	0	0	0	0
8/10/1991	1132	613	0	0	0	0
8/11/1991	1132	611	0	0	0	0
8/12/1991	1143	615	0	0	0	0
8/13/1991	1128	609	0	0	0	0
8/14/1991	1125	606	0	0	0	0
8/15/1991	1128	611	0	0	0	0
8/16/1991	1128	606	0	0	0	0
8/17/1991	1150	615	0	0	0	0
8/18/1991	1143	602	0	0	0	0
8/19/1991	1143	598	0	0	0	0
8/20/1991	1099	613	0	0	0	0
8/21/1991	1092	602	0	0	0	0
8/22/1991	1085	600	0	0	0	0
8/23/1991	1092	602	0	0	0	0
8/24/1991	1085	598	0	0	0	0
8/25/1991	1099	606	0	0	0	0
8/26/1991	1107	604	0	0	0	0
8/27/1991	1103	609	0	0	0	0
8/28/1991	1074	598	0	0	0	0
8/29/1991	1057	590	0	0	0	0
8/30/1991	1057	602	0	0	0	0
8/31/1991	1042	596	0	0	0	0
9/1/1991	1042	598	0	0	0	0
9/2/1991	1057	602	0	0	0	0
9/3/1991	1060	606	0	0	0	0
9/4/1991	1078	604	0	0	0	0
9/5/1991	967	580	0	0	0	0
9/6/1991	940	578	0	0	0	0
9/7/1991	897	532	0	0	0	0
9/8/1991	933	550	0	0	0	0
9/9/1991	953	560	0	0	0	0
9/10/1991	1032	566	0	0	0	0
9/11/1991	1008	554	0	0	0	0
9/12/1991	907	515	0	0	0	0

Calculations for Shoshone Site Flow
1991
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
9/13/1991	888	540	0	0	0	0
9/14/1991	897	534	0	0	0	0
9/15/1991	875	534	0	0	0	0
9/16/1991	891	534	0	0	0	0
9/17/1991	815	511	0	0	0	0
9/18/1991	772	479	0	0	0	0
9/19/1991	769	477	0	0	0	0
9/20/1991	763	475	0	0	0	0
9/21/1991	772	472	0	0	0	0
9/22/1991	775	479	0	0	0	0
9/23/1991	787	485	0	0	0	0
9/24/1991	693	446	0	0	0	0
9/25/1991	676	446	0	0	0	0
9/26/1991	665	479	0	0	0	0
9/27/1991	656	450	0	0	0	0
9/28/1991	651	429	0	0	0	0
9/29/1991	733	429	0	0	0	0
9/30/1991	645	455	0	0	0	0
10/1/1991	642	425	0	0	0	0
10/2/1991	645	432	0	0	0	0
10/3/1991	642	429	0	0	0	0
10/4/1991	651	434	0	0	0	0
10/5/1991	0	0	0	0	0	0
10/6/1991	0	0	0	0	0	0
10/7/1991	656	437	0	0	0	0
10/8/1991	665	445	0	0	0	0
10/9/1991	667	446	0	0	0	0
10/10/1991	681	452	0	0	0	0
10/11/1991	713	466	0	0	0	0
10/12/1991	0	0	0	0	0	0
10/13/1991	0	0	0	0	0	0
10/14/1991	0	0	0	0	0	0
10/15/1991	0	0	0	0	0	0
10/16/1991	0	0	0	0	0	0
10/17/1991	0	0	0	0	0	0
10/18/1991	0	0	0	0	0	0
10/19/1991	0	0	0	0	0	0
10/20/1991	0	0	0	0	0	0
10/21/1991	0	0	0	0	0	0
10/22/1991	0	0	0	0	0	0
10/23/1991	0	0	0	0	0	0
10/24/1991	0	0	0	0	0	0
10/25/1991	0	0	0	0	0	0
10/26/1991	0	0	0	0	0	0
10/27/1991	0	0	0	0	0	0
10/28/1991	0	0	0	0	0	0
10/29/1991	0	0	0	0	0	0
10/30/1991	0	0	0	0	0	0
10/31/1991	0	0	0	0	0	0
11/1/1991	159	0	0	0	0	0
11/2/1991	70	0	0	0	0	0
11/3/1991	0	0	0	0	0	0
11/4/1991	0	0	0	0	0	0
11/5/1991	126	0	0	0	0	0
11/6/1991	92	0	0	0	0	0

Calculations for Shoshone Site Flow
1991
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
11/7/1991	105	0	0	0	0	0
11/8/1991	112	71	0	71	0	0
11/9/1991	0	0	0	0	0	0
11/10/1991	0	0	0	0	0	0
11/11/1991	121	78	0	78	0	0
11/12/1991	121	98	0	98	0	0
11/13/1991	94	80	0	80	0	0
11/14/1991	70	63	0	63	0	0
11/15/1991	75	66	0	66	0	0
11/16/1991	0	0	0	0	0	0
11/17/1991	0	0	0	0	0	0
11/18/1991	105	89	0	89	0	0
11/19/1991	94	87	0	87	0	0
11/20/1991	77	80	0	80	3	6
11/21/1991	88	80	0	80	0	0
11/22/1991	66	66	0	66	0	0
					3	6
					Maximum	Total

Calculations for Shoshone Site Flow
1992
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
4/1/1992	0	0	0	0	0	0
4/2/1992	0	0	0	0	0	0
4/3/1992	0	0	0	0	0	0
4/4/1992	0	0	0	0	0	0
4/5/1992	0	0	0	0	0	0
4/6/1992	83	89	0	89	6	12
4/7/1992	166	135	0	135	0	0
4/8/1992	252	177	0	177	0	0
4/9/1992	239	177	0	177	0	0
4/10/1992	229	189	0	189	0	0
4/11/1992	218	181	0	181	0	0
4/12/1992	216	182	0	182	0	0
4/13/1992	219	180	0	180	0	0
4/14/1992	304	235	0	235	0	0
4/15/1992	483	337	0	337	0	0
4/16/1992	563	377	0	377	0	0
4/17/1992	563	379	0	379	0	0
4/18/1992	568	382	0	382	0	0
4/19/1992	656	403	0	403	0	0
4/20/1992	704	478	0	478	0	0
4/21/1992	710	481	0	481	0	0
4/22/1992	701	472	0	472	0	0
4/23/1992	763	449	0	449	0	0
4/24/1992	713	463	0	463	0	0
4/25/1992	713	449	0	449	0	0
4/26/1992	747	456	0	456	0	0
4/27/1992	752	458	0	458	0	0
4/28/1992	726	467	0	467	0	0
4/29/1992	729	452	0	452	0	0
4/30/1992	731	454	0	454	0	0
5/1/1992	757	466	0	466	0	0
5/2/1992	772	466	0	466	0	0
5/3/1992	778	472	0	472	0	0
5/4/1992	784	474	0	474	0	0
5/5/1992	766	463	0	463	0	0
5/6/1992	766	483	0	483	0	0
5/7/1992	763	472	0	472	0	0
5/8/1992	802	496	0	496	0	0
5/9/1992	805	474	0	474	0	0
5/10/1992	811	478	0	478	0	0
5/11/1992	837	496	0	496	0	0
5/12/1992	833	494	0	494	0	0
5/13/1992	843	502	0	502	0	0
5/14/1992	843	500	0	500	0	0
5/15/1992	840	474	0	474	0	0
5/16/1992	840	463	0	463	0	0
5/17/1992	822	452	0	452	0	0
5/18/1992	840	457	0	457	0	0
5/19/1992	824	450	0	450	0	0
5/20/1992	824	441	0	441	0	0
5/21/1992	824	443	0	443	0	0
5/22/1992	805	439	0	439	0	0
5/23/1992	805	450	0	450	0	0
5/24/1992	803	449	0	449	0	0
5/25/1992	812	454	0	454	0	0

Calculations for Shoshone Site Flow
1992
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
5/26/1992	796	436	0	436	0	0
5/27/1992	778	429	0	429	0	0
5/28/1992	852	432	0	432	0	0
5/29/1992	862	439	0	439	0	0
5/30/1992	859	437	0	437	0	0
5/31/1992	860	431	0	431	0	0
6/1/1992	866	435	0	0	0	0
6/2/1992	869	435	0	0	0	0
6/3/1992	869	435	0	0	0	0
6/4/1992	871	435	0	0	0	0
6/5/1992	874	440	0	0	0	0
6/6/1992	871	440	0	0	0	0
6/7/1992	871	440	0	0	0	0
6/8/1992	880	472	0	0	0	0
6/9/1992	877	472	0	0	0	0
6/10/1992	871	442	0	0	0	0
6/11/1992	871	442	0	0	0	0
6/12/1992	857	440	0	0	0	0
6/13/1992	894	454	0	0	0	0
6/14/1992	852	449	0	0	0	0
6/15/1992	888	449	0	0	0	0
6/16/1992	891	449	0	0	0	0
6/17/1992	903	461	0	0	0	0
6/18/1992	886	451	0	0	0	0
6/19/1992	869	438	0	0	0	0
6/20/1992	863	437	0	0	0	0
6/21/1992	855	433	0	0	0	0
6/22/1992	855	435	0	0	0	0
6/23/1992	855	435	0	0	0	0
6/24/1992	844	430	0	0	0	0
6/25/1992	852	442	0	0	0	0
6/26/1992	937	487	0	0	0	0
6/27/1992	920	478	0	0	0	0
6/28/1992	906	472	0	0	0	0
6/29/1992	906	478	0	0	0	0
6/30/1992	932	485	0	0	0	0
7/1/1992	934	489	0	0	0	0
7/2/1992	955	500	0	0	0	0
7/3/1992	955	509	0	0	0	0
7/4/1992	891	469	0	0	0	0
7/5/1992	869	458	0	0	0	0
7/6/1992	863	458	0	0	0	0
7/7/1992	768	461	0	0	0	0
7/8/1992	778	470	0	0	0	0
7/9/1992	755	456	0	0	0	0
7/10/1992	742	444	0	0	0	0
7/11/1992	752	463	0	0	0	0
7/12/1992	765	463	0	0	0	0
7/13/1992	765	461	0	0	0	0
7/14/1992	771	467	0	0	0	0
7/15/1992	773	469	0	0	0	0
7/16/1992	768	465	0	0	0	0
7/17/1992	778	461	0	0	0	0
7/18/1992	811	467	0	0	0	0
7/19/1992	857	478	0	0	0	0

Calculations for Shoshone Site Flow
1992
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
7/20/1992	852	472	0	0	0	0
7/21/1992	874	481	0	0	0	0
7/22/1992	746	519	0	0	0	0
7/23/1992	737	513	0	0	0	0
7/24/1992	846	517	0	0	0	0
7/25/1992	841	513	0	0	0	0
7/26/1992	855	522	0	0	0	0
7/27/1992	855	522	0	0	0	0
7/28/1992	835	507	0	0	0	0
7/29/1992	827	521	0	0	0	0
7/30/1992	824	449	0	0	0	0
7/31/1992	844	456	0	0	0	0
8/1/1992	860	451	0	0	0	0
8/2/1992	860	451	0	0	0	0
8/3/1992	855	451	0	0	0	0
8/4/1992	860	454	0	0	0	0
8/5/1992	869	454	0	0	0	0
8/6/1992	869	454	0	0	0	0
8/7/1992	866	452	0	0	0	0
8/8/1992	874	454	0	0	0	0
8/9/1992	888	460	0	0	0	0
8/10/1992	877	458	0	0	0	0
8/11/1992	874	452	0	0	0	0
8/12/1992	923	460	0	0	0	0
8/13/1992	967	474	0	0	0	0
8/14/1992	979	528	0	0	0	0
8/15/1992	976	526	0	0	0	0
8/16/1992	973	528	0	0	0	0
8/17/1992	985	532	0	0	0	0
8/18/1992	985	532	0	0	0	0
8/19/1992	982	530	0	0	0	0
8/20/1992	979	526	0	0	0	0
8/21/1992	985	524	0	0	0	0
8/22/1992	985	526	0	0	0	0
8/23/1992	988	530	0	0	0	0
8/24/1992	997	532	0	0	0	0
8/25/1992	1009	540	0	0	0	0
8/26/1992	1021	534	0	0	0	0
8/27/1992	1033	546	0	0	0	0
8/28/1992	0	0	0	0	0	0
8/29/1992	0	0	0	0	0	0
8/30/1992	0	0	0	0	0	0
8/31/1992	0	0	0	0	0	0
9/1/1992	0	0	0	0	0	0
9/2/1992	0	0	0	0	0	0
9/3/1992	0	0	0	0	0	0
9/4/1992	0	0	0	0	0	0
9/5/1992	0	0	0	0	0	0
9/6/1992	0	0	0	0	0	0
9/7/1992	0	0	0	0	0	0
9/8/1992	0	0	0	0	0	0
9/9/1992	813	483	0	0	0	0
9/10/1992	846	476	0	0	0	0
9/11/1992	863	489	0	0	0	0
9/12/1992	852	479	0	0	0	0

Calculations for Shoshone Site Flow
1992
Brockway Engineering, PLLC
3-Aug-18

Date	No. 53 Flow (cfs)	No. 56 Flow (cfs)	No. 57 Flow (cfs)	Recharge (cfs)	BWR/LWR Flow (cfs)	Volume (acft)
9/13/1992	835	474	0	0	0	0
9/14/1992	819	470	0	0	0	0
9/15/1992	800	467	0	0	0	0
9/16/1992	784	463	0	0	0	0
9/17/1992	781	476	0	0	0	0
9/18/1992	765	483	0	0	0	0
9/19/1992	752	485	0	0	0	0
9/20/1992	0	0	0	0	0	0
9/21/1992	0	0	0	0	0	0
9/22/1992	0	0	0	0	0	0
9/23/1992	0	0	0	0	0	0
9/24/1992	0	0	0	0	0	0
9/25/1992	0	0	0	0	0	0
9/26/1992	0	0	0	0	0	0
9/27/1992	0	0	0	0	0	0
9/28/1992	0	0	0	0	0	0
9/29/1992	0	0	0	0	0	0
9/30/1992	0	0	0	0	0	0
10/1/1992	0	0	0	0	0	0
10/2/1992	0	0	0	0	0	0
10/3/1992	0	0	0	0	0	0
10/4/1992	0	0	0	0	0	0
10/5/1992	0	0	0	0	0	0
10/6/1992	0	0	0	0	0	0
10/7/1992	0	0	0	0	0	0
10/8/1992	0	0	0	0	0	0
10/9/1992	0	0	0	0	0	0
10/10/1992	0	0	0	0	0	0
10/11/1992	0	0	0	0	0	0
10/12/1992	0	0	0	0	0	0
10/13/1992	0	0	0	0	0	0
10/14/1992	0	0	0	0	0	0
10/15/1992	0	0	0	0	0	0
10/16/1992	0	0	0	0	0	0
10/17/1992	0	0	0	0	0	0
10/18/1992	0	0	0	0	0	0
10/19/1992	0	0	0	0	0	0
10/20/1992	0	0	0	0	0	0
10/21/1992	0	0	0	0	0	0
10/22/1992	0	0	0	0	0	0
10/23/1992	0	0	0	0	0	0
10/24/1992	0	0	0	0	0	0
10/25/1992	0	0	0	0	0	0
10/26/1992	0	0	0	0	0	0
10/27/1992	0	0	0	0	0	0
10/28/1992	0	0	0	0	0	0
10/29/1992	0	0	0	0	0	0
10/30/1992	0	0	0	0	0	0
10/31/1992	0	0	0	0	0	0
					6	12
					Maximum	Total

Appendix N

Spreadsheet Calculations of Richfield Canal Flows

Calculations for Richfield Canal Flow
1982
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
4/1/1982	65	0	0	0	0	65	129
4/2/1982	66	0	0	0	0	66	131
4/3/1982	68	0	0	0	0	68	135
4/4/1982	69	0	0	0	0	69	137
4/5/1982	70	0	0	0	0	70	139
4/6/1982	72	0	0	0	0	72	143
4/7/1982	74	0	0	0	0	74	147
4/8/1982	74	0	0	0	0	74	147
4/9/1982	71	0	0	0	0	71	141
4/10/1982	71	0	0	0	0	71	141
4/11/1982	71	0	0	0	0	71	141
4/12/1982	71	0	0	0	0	71	141
4/13/1982	83	0	0	0	0	83	165
4/14/1982	85	0	0	0	0	85	169
4/15/1982	85	0	0	0	0	85	169
4/16/1982	86	0	0	0	0	86	171
4/17/1982	86	0	0	0	0	86	171
4/18/1982	71	0	0	0	0	71	141
4/19/1982	71	0	0	0	0	71	141
4/20/1982	87	0	0	0	0	87	173
4/21/1982	70	0	0	0	0	70	139
4/22/1982	56	0	0	0	0	56	111
4/23/1982	66	0	0	0	0	66	131
4/24/1982	69	0	0	0	0	69	137
4/25/1982	70	0	0	0	0	70	139
4/26/1982	70	0	0	0	0	70	139
4/27/1982	92	0	0	0	0	92	182
4/28/1982	106	0	0	0	0	106	210
4/29/1982	110	0	0	0	0	110	218
4/30/1982	106	0	0	0	0	106	210
5/1/1982	101	0	0	0	0	0	0
5/2/1982	95	0	0	0	0	0	0
5/3/1982	139	0	0	0	0	0	0
5/4/1982	188	100	45	0	0	0	0
5/5/1982	177	107	50	29	22	0	0
5/6/1982	252	153	55	32	31	0	0
5/7/1982	231	146	53	32	40	0	0
5/8/1982	226	136	53	30	27	0	0
5/9/1982	223	123	51	26	22	0	0
5/10/1982	276	151	63	44	37	0	0
5/11/1982	300	112	67	22	31	0	0
5/12/1982	274	167	66	23	24	0	0
5/13/1982	300	165	66	22	22	0	0
5/14/1982	370	199	88	28	34	0	0
5/15/1982	368	195	85	32	37	0	0
5/16/1982	370	194	84	32	34	0	0
5/17/1982	370	194	84	31	34	0	0
5/18/1982	410	220	94	33	59	0	0
5/19/1982	448	220	94	36	60	0	0
5/20/1982	410	236	90	18	40	0	0
5/21/1982	462	242	94	64	87	0	0
5/22/1982	460	239	91	64	100	0	0
5/23/1982	466	237	90	62	100	0	0
5/24/1982	462	247	97	42	93	0	0

Calculations for Richfield Canal Flow
1982
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
5/25/1982	456	240	102	41	107	0	0
5/26/1982	511	264	112	62	141	0	0
5/27/1982	509	266	125	52	127	0	0
5/28/1982	511	269	125	53	134	0	0
5/29/1982	561	287	122	73	162	0	0
5/30/1982	606	279	119	147	165	0	0
5/31/1982	608	290	123	106	162	0	0
6/1/1982	646	300	140	128	155	0	0
6/2/1982	629	300	142	124	162	0	0
6/3/1982	648	303	142	116	200	0	0
6/4/1982	648	302	142	122	186	0	0
6/5/1982	601	305	144	76	134	0	0
6/6/1982	542	325	142	40	90	0	0
6/7/1982	542	298	142	36	83	0	0
6/8/1982	540	300	144	36	80	0	0
6/9/1982	542	295	144	38	67	0	0
6/10/1982	547	284	142	46	80	0	0
6/11/1982	542	287	142	47	74	0	0
6/12/1982	542	290	142	40	67	0	0
6/13/1982	545	292	142	41	80	0	0
6/14/1982	554	248	146	22	67	0	0
6/15/1982	554	290	145	40	80	0	0
6/16/1982	617	300	154	79	117	0	0
6/17/1982	518	298	155	74	124	0	0
6/18/1982	520	305	165	57	100	0	0
6/19/1982	520	305	171	50	97	0	0
6/20/1982	522	313	170	49	104	0	0
6/21/1982	525	305	167	52	100	0	0
6/22/1982	525	305	167	52	100	0	0
6/23/1982	527	303	168	46	93	0	0
6/24/1982	531	307	170	49	97	0	0
6/25/1982	531	303	167	59	100	0	0
6/26/1982	525	307	167	44	90	0	0
6/27/1982	540	312	165	40	77	0	0
6/28/1982	540	305	164	40	80	0	0
6/29/1982	542	307	162	42	80	0	0
6/30/1982	547	303	161	42	87	0	0
7/1/1982	549	308	163	41	100	0	0
7/2/1982	554	303	162	46	87	0	0
7/3/1982	558	305	161	41	107	0	0
7/4/1982	554	305	162	41	110	0	0
7/5/1982	565	284	151	57	121	0	0
7/6/1982	563	287	152	56	110	0	0
7/7/1982	579	313	167	63	127	0	0
7/8/1982	579	311	170	73	141	0	0
7/9/1982	574	304	170	76	134	0	0
7/10/1982	525	291	156	65	114	0	0
7/11/1982	547	290	161	66	107	0	0
7/12/1982	545	295	161	60	100	0	0
7/13/1982	527	294	161	54	97	0	0
7/14/1982	579	298	162	93	134	0	0
7/15/1982	577	292	160	91	127	0	0
7/16/1982	574	295	156	83	121	0	0
7/17/1982	644	318	167	108	141	0	0

Calculations for Richfield Canal Flow
1982
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
7/18/1982	653	0	0	108	148	0	0
7/19/1982	641	316	166	106	144	0	0
7/20/1982	644	316	165	108	138	0	0
7/21/1982	641	308	165	104	127	0	0
7/22/1982	683	321	172	124	141	0	0
7/23/1982	688	326	172	116	141	0	0
7/24/1982	683	326	173	116	141	0	0
7/25/1982	678	327	173	116	144	0	0
7/26/1982	702	326	174	120	148	0	0
7/27/1982	702	322	174	118	158	0	0
7/28/1982	707	327	173	116	176	0	0
7/29/1982	705	326	172	118	162	0	0
7/30/1982	683	324	174	150	179	0	0
7/31/1982	656	322	172	126	165	0	0
8/1/1982	651	320	167	126	168	0	0
8/2/1982	651	321	164	124	165	0	0
8/3/1982	653	321	166	124	155	0	0
8/4/1982	591	305	158	86	12	0	0
8/5/1982	615	309	158	88	107	0	0
8/6/1982	615	308	154	90	110	0	0
8/7/1982	617	305	156	90	110	0	0
8/8/1982	615	0	0	88	107	0	0
8/9/1982	615	309	151	88	110	0	0
8/10/1982	617	307	151	86	100	0	0
8/11/1982	617	316	158	74	87	0	0
8/12/1982	620	314	155	73	90	0	0
8/13/1982	620	313	160	73	93	0	0
8/14/1982	620	314	158	73	90	0	0
8/15/1982	608	0	0	74	90	0	0
8/16/1982	627	312	156	74	87	0	0
8/17/1982	627	313	155	73	87	0	0
8/18/1982	656	311	156	90	107	0	0
8/19/1982	653	309	158	93	117	0	0
8/20/1982	656	311	152	88	114	0	0
8/21/1982	620	303	150	93	124	0	0
8/22/1982	612	0	0	91	131	0	0
8/23/1982	622	305	150	90	131	0	0
8/24/1982	622	304	151	90	124	0	0
8/25/1982	627	302	148	90	124	0	0
8/26/1982	627	302	148	90	124	0	0
8/27/1982	627	303	149	90	117	0	0
8/28/1982	629	308	143	84	110	0	0
8/29/1982	606	0	0	81	121	0	0
8/30/1982	629	307	143	81	127	0	0
8/31/1982	598	311	144	49	93	0	0
9/1/1982	591	295	138	47	93	0	0
9/2/1982	593	302	137	47	97	0	0
9/3/1982	593	295	137	59	97	0	0
9/4/1982	549	281	133	40	60	0	0
9/5/1982	518	0	0	40	64	0	0
9/6/1982	518	284	136	40	59	0	0
9/7/1982	518	286	135	38	59	0	0
9/8/1982	470	269	128	17	27	0	0
9/9/1982	470	270	130	18	17	0	0

Calculations for Richfield Canal Flow
1982
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
9/10/1982	472	258	118	34	40	0	0
9/11/1982	470	253	118	35	50	0	0
9/12/1982	482	0	0	34	54	0	0
9/13/1982	472	253	118	35	60	0	0
9/14/1982	474	257	119	35	70	0	0
9/15/1982	472	252	118	35	74	0	0
9/16/1982	474	251	115	33	67	0	0
9/17/1982	474	251	121	34	64	0	0
9/18/1982	474	256	121	34	67	0	0
9/19/1982	490	0	0	34	70	0	0
9/20/1982	476	256	120	35	74	0	0
9/21/1982	476	258	121	34	70	0	0
9/22/1982	479	258	121	36	64	0	0
9/23/1982	446	239	118	26	47	0	0
9/24/1982	446	238	115	26	47	0	0
9/25/1982	446	240	116	25	50	0	0
9/26/1982	494	0	0	25	60	0	0
9/27/1982	446	238	114	25	59	0	0
9/28/1982	444	247	114	25	60	0	0
9/29/1982	446	240	118	32	64	0	0
9/30/1982	446	242	116	33	64	0	0
10/1/1982	0	0	0	0	0	0	0
10/2/1982	0	0	0	0	0	0	0
10/3/1982	0	0	0	0	0	0	0
10/4/1982	0	0	0	0	0	0	0
10/5/1982	0	0	0	0	0	0	0
10/6/1982	0	0	0	0	0	0	0
10/7/1982	0	0	0	0	0	0	0
10/8/1982	0	0	0	0	0	0	0
10/9/1982	0	0	0	0	0	0	0
10/10/1982	0	0	0	0	0	0	0
10/11/1982	0	0	0	0	0	0	0
10/12/1982	0	0	0	0	0	0	0
10/13/1982	0	0	0	0	0	0	0
10/14/1982	0	0	0	0	0	0	0
10/15/1982	0	0	0	0	0	0	0
10/16/1982	0	0	0	0	0	0	0
10/17/1982	0	0	0	0	0	0	0
10/18/1982	0	0	0	0	0	0	0
10/19/1982	0	0	0	0	0	0	0
10/20/1982	0	0	0	0	0	0	0
10/21/1982	0	0	0	0	0	0	0
10/22/1982	0	0	0	0	0	0	0
10/23/1982	0	0	0	0	0	0	0
10/24/1982	0	0	0	0	0	0	0
10/25/1982	0	0	0	0	0	0	0
10/26/1982	0	0	0	0	0	0	0
10/27/1982	0	0	0	0	0	0	0
10/28/1982	0	0	0	0	0	0	0
10/29/1982	0	0	0	0	0	0	0
10/30/1982	0	0	0	0	0	0	0
10/31/1982	0	0	0	0	0	0	0
						110 Maximum	4584 Total

Calculations for Richfield Canal Flow
1983
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
4/1/1983	68	0	0	0	0	68	135
4/2/1983	67	0	0	0	0	67	133
4/3/1983	67	0	0	0	0	67	133
4/4/1983	68	0	0	0	0	68	135
4/5/1983	68	0	0	0	0	68	135
4/6/1983	68	0	0	0	0	68	135
4/7/1983	68	0	0	0	0	68	135
4/8/1983	69	0	0	0	0	69	137
4/9/1983	69	0	0	0	0	69	137
4/10/1983	69	0	0	0	0	69	137
4/11/1983	69	0	0	0	0	69	137
4/12/1983	69	0	0	0	0	69	137
4/13/1983	69	0	0	0	0	69	137
4/14/1983	69	0	0	0	0	69	137
4/15/1983	69	0	0	0	0	69	137
4/16/1983	69	0	0	0	0	69	137
4/17/1983	69	0	0	0	0	69	137
4/18/1983	69	0	0	0	0	69	137
4/19/1983	69	0	0	0	0	69	137
4/20/1983	69	0	0	0	0	69	137
4/21/1983	83	0	0	0	0	83	165
4/22/1983	78	0	0	0	0	78	155
4/23/1983	80	0	0	0	0	80	159
4/24/1983	79	0	0	0	0	79	157
4/25/1983	79	0	0	0	0	79	157
4/26/1983	84	0	0	0	0	84	167
4/27/1983	78	0	0	0	0	78	155
4/28/1983	84	0	0	0	0	84	167
4/29/1983	78	0	0	0	0	78	155
4/30/1983	84	0	0	0	0	84	167
5/1/1983	67	0	0	0	0	0	0
5/2/1983	92	0	0	0	0	0	0
5/3/1983	183	0	48	0	0	0	0
5/4/1983	278	201	60	34	103	0	0
5/5/1983	212	110	55	26	89	0	0
5/6/1983	195	103	55	30	101	0	0
5/7/1983	190	95	53	28	89	0	0
5/8/1983	188	0	0	29	86	0	0
5/9/1983	185	103	60	18	63	0	0
5/10/1983	190	103	60	19	60	0	0
5/11/1983	185	103	61	17	54	0	0
5/12/1983	210	117	72	15	57	0	0
5/13/1983	210	117	73	16	57	0	0
5/14/1983	210	127	72	11	57	0	0
5/15/1983	210	0	0	11	57	0	0
5/16/1983	212	125	73	12	57	0	0
5/17/1983	210	141	74	8	48	0	0
5/18/1983	212	146	79	8	43	0	0
5/19/1983	212	146	78	8	35	0	0
5/20/1983	324	170	90	22	65	0	0
5/21/1983	380	196	103	30	89	0	0
5/22/1983	382	0	0	28	92	0	0
5/23/1983	376	206	104	23	83	0	0
5/24/1983	378	218	108	10	54	0	0
5/25/1983	476	255	142	24	116	0	0

Calculations for Richfield Canal Flow
1983
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
5/26/1983	531	262	135	74	134	0	0
5/27/1983	529	283	142	45	125	0	0
5/28/1983	624	299	166	101	167	0	0
5/29/1983	622	305	167	79	150	0	0
5/30/1983	620	305	170	74	150	0	0
5/31/1983	632	309	170	73	150	0	0
6/1/1983	639	325	186	57	114	0	0
6/2/1983	615	311	181	53	131	0	0
6/3/1983	612	312	178	53	138	0	0
6/4/1983	612	317	178	52	134	0	0
6/5/1983	61	312	178	54	122	0	0
6/6/1983	609	312	178	46	119	0	0
6/7/1983	610	314	179	44	107	0	0
6/8/1983	596	302	167	53	107	0	0
6/9/1983	577	303	165	44	107	0	0
6/10/1983	574	304	167	44	107	0	0
6/11/1983	574	312	171	34	104	0	0
6/12/1983	574	313	172	34	104	0	0
6/13/1983	574	312	171	33	98	0	0
6/14/1983	568	311	170	34	101	0	0
6/15/1983	577	305	170	47	110	0	0
6/16/1983	574	305	168	46	104	0	0
6/17/1983	563	299	165	44	101	0	0
6/18/1983	577	303	167	46	104	0	0
6/19/1983	577	307	171	41	101	0	0
6/20/1983	579	303	170	44	107	0	0
6/21/1983	579	299	168	44	104	0	0
6/22/1983	577	294	167	41	98	0	0
6/23/1983	504	292	168	42	110	0	0
6/24/1983	496	288	156	46	101	0	0
6/25/1983	504	292	163	44	101	0	0
6/26/1983	494	295	167	46	107	0	0
6/27/1983	494	292	165	45	116	0	0
6/28/1983	494	291	163	46	119	0	0
6/29/1983	492	294	163	44	104	0	0
6/30/1983	488	282	161	44	110	0	0
7/1/1983	472	0	0	44	95	0	0
7/2/1983	504	0	0	34	147	0	0
7/3/1983	507	0	0	54	150	0	0
7/4/1983	509	0	0	47	138	0	0
7/5/1983	500	0	0	50	138	0	0
7/6/1983	586	0	0	71	150	0	0
7/7/1983	586	0	0	76	163	0	0
7/8/1983	586	0	0	73	144	0	0
7/9/1983	588	0	0	73	144	0	0
7/10/1983	572	0	0	59	147	0	0
7/11/1983	570	0	0	62	144	0	0
7/12/1983	577	0	0	54	131	0	0
7/13/1983	561	0	0	53	144	0	0
7/14/1983	554	0	0	50	131	0	0
7/15/1983	610	0	0	97	170	0	0
7/16/1983	601	0	0	79	163	0	0
7/17/1983	601	0	0	84	150	0	0
7/18/1983	601	0	0	84	157	0	0
7/19/1983	596	0	0	81	141	0	0

Calculations for Richfield Canal Flow
1983
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
7/20/1983	624	0	0	74	134	0	0
7/21/1983	648	0	0	120	174	0	0
7/22/1983	651	0	0	126	187	0	0
7/23/1983	651	0	0	108	180	0	0
7/24/1983	648	0	0	108	174	0	0
7/25/1983	646	0	0	108	174	0	0
7/26/1983	646	0	0	104	160	0	0
7/27/1983	646	0	0	97	160	0	0
7/28/1983	646	0	0	101	154	0	0
7/29/1983	646	0	0	101	154	0	0
7/30/1983	639	0	0	101	150	0	0
7/31/1983	639	0	0	101	141	0	0
8/1/1983	636	0	0	83	147	0	0
8/2/1983	637	0	0	84	147	0	0
8/3/1983	634	0	0	84	144	0	0
8/4/1983	636	0	0	83	141	0	0
8/5/1983	636	0	0	86	141	0	0
8/6/1983	639	0	0	84	147	0	0
8/7/1983	636	0	0	84	144	0	0
8/8/1983	634	0	0	83	154	0	0
8/9/1983	634	0	0	83	154	0	0
8/10/1983	639	0	0	88	154	0	0
8/11/1983	636	0	0	93	154	0	0
8/12/1983	636	0	0	102	160	0	0
8/13/1983	634	0	0	97	207	0	0
8/14/1983	670	0	0	95	167	0	0
8/15/1983	653	0	0	93	167	0	0
8/16/1983	636	0	0	97	180	0	0
8/17/1983	634	0	0	112	201	0	0
8/18/1983	636	0	0	124	208	0	0
8/19/1983	644	0	0	124	194	0	0
8/20/1983	636	0	0	128	216	0	0
8/21/1983	641	0	0	128	223	0	0
8/22/1983	636	0	0	112	238	0	0
8/23/1983	596	0	0	156	254	0	0
8/24/1983	574	0	0	112	208	0	0
8/25/1983	577	0	0	112	208	0	0
8/26/1983	529	0	0	128	230	0	0
8/27/1983	496	0	0	93	187	0	0
8/28/1983	496	0	0	76	170	0	0
8/29/1983	500	0	0	68	167	0	0
8/30/1983	502	0	0	73	174	0	0
8/31/1983	502	0	0	76	163	0	0
9/1/1983	520	256	118	76	160	0	0
9/2/1983	522	261	121	73	150	0	0
9/3/1983	525	256	121	76	154	0	0
9/4/1983	498	0	0	76	154	0	0
9/5/1983	527	257	118	73	154	0	0
9/6/1983	527	261	118	74	154	0	0
9/7/1983	531	26	118	73	147	0	0
9/8/1983	533	262	118	73	147	0	0
9/9/1983	536	257	119	71	134	0	0
9/10/1983	538	261	118	71	131	0	0
9/11/1983	494	0	0	71	128	0	0
9/12/1983	545	266	121	60	110	0	0

Calculations for Richfield Canal Flow
1983
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
9/13/1983	547	264	120	59	110	0	0
9/14/1983	549	264	120	60	122	0	0
9/15/1983	549	269	120	53	128	0	0
9/16/1983	496	269	121	57	128	0	0
9/17/1983	500	265	118	54	122	0	0
9/18/1983	504	0	0	53	122	0	0
9/19/1983	500	264	118	50	110	0	0
9/20/1983	507	268	120	52	107	0	0
9/21/1983	470	266	120	19	104	0	0
9/22/1983	472	256	110	42	110	0	0
9/23/1983	472	255	111	40	104	0	0
9/24/1983	472	266	109	35	98	0	0
9/25/1983	474	0	0	28	98	0	0
9/26/1983	476	265	112	28	110	0	0
9/27/1983	476	269	110	30	116	0	0
9/28/1983	474	255	111	30	110	0	0
9/29/1983	476	255	111	29	110	0	0
9/30/1983	476	270	112	31	110	0	0
10/1/1983	0	0	0	0	0	0	0
10/2/1983	0	0	0	0	0	0	0
10/3/1983	0	0	0	0	0	0	0
10/4/1983	0	0	0	0	0	0	0
10/5/1983	0	0	0	0	0	0	0
10/6/1983	0	0	0	0	0	0	0
10/7/1983	0	0	0	0	0	0	0
10/8/1983	0	0	0	0	0	0	0
10/9/1983	0	0	0	0	0	0	0
10/10/1983	0	0	0	0	0	0	0
10/11/1983	0	0	0	0	0	0	0
10/12/1983	0	0	0	0	0	0	0
10/13/1983	0	0	0	0	0	0	0
10/14/1983	0	0	0	0	0	0	0
10/15/1983	0	0	0	0	0	0	0
10/16/1983	0	0	0	0	0	0	0
10/17/1983	0	0	0	0	0	0	0
10/18/1983	0	0	0	0	0	0	0
10/19/1983	0	0	0	0	0	0	0
10/20/1983	0	0	0	0	0	0	0
10/21/1983	0	0	0	0	0	0	0
10/22/1983	0	0	0	0	0	0	0
10/23/1983	0	0	0	0	0	0	0
10/24/1983	0	0	0	0	0	0	0
10/25/1983	0	0	0	0	0	0	0
10/26/1983	0	0	0	0	0	0	0
10/27/1983	0	0	0	0	0	0	0
10/28/1983	0	0	0	0	0	0	0
10/29/1983	0	0	0	0	0	0	0
10/30/1983	0	0	0	0	0	0	0
10/31/1983	0	0	0	0	0	0	0
						84	4320
						Maximum	Total

Calculations for Richfield Canal Flow
1984
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
4/1/1984	0	0	0	0	0	0	0
4/2/1984	0	0	0	0	0	0	0
4/3/1984	0	0	0	0	0	0	0
4/4/1984	0	0	0	0	0	0	0
4/5/1984	0	0	0	0	0	0	0
4/6/1984	0	0	0	0	0	0	0
4/7/1984	0	0	0	0	0	0	0
4/8/1984	0	0	0	0	0	0	0
4/9/1984	0	0	0	0	0	0	0
4/10/1984	0	0	0	0	0	0	0
4/11/1984	0	0	0	0	0	0	0
4/12/1984	0	0	0	0	0	0	0
4/13/1984	0	0	0	0	0	0	0
4/14/1984	0	0	0	0	0	0	0
4/15/1984	0	0	0	0	0	0	0
4/16/1984	0	0	0	0	0	0	0
4/17/1984	38	0	0	0	0	38	75
4/18/1984	38	0	0	0	0	38	75
4/19/1984	40	0	0	0	0	40	79
4/20/1984	40	0	0	0	0	40	79
4/21/1984	44	0	0	0	0	44	87
4/22/1984	49	0	0	0	0	49	97
4/23/1984	61	0	0	0	0	61	121
4/24/1984	54	0	0	0	0	54	107
4/25/1984	55	0	0	0	0	55	109
4/26/1984	48	0	0	0	0	48	95
4/27/1984	46	0	0	0	0	46	91
4/28/1984	63	0	0	0	0	63	125
4/29/1984	62	0	0	0	0	62	123
4/30/1984	59	0	0	0	0	59	117
5/1/1984	58	0	0	0	107	0	0
5/2/1984	133	0	0	0	107	0	0
5/3/1984	226	153	62	12	107	0	0
5/4/1984	244	172	64	15	107	0	0
5/5/1984	240	151	62	24	117	0	0
5/6/1984	244	0	0	24	115	0	0
5/7/1984	244	153	62	24	107	0	0
5/8/1984	239	153	62	22	107	0	0
5/9/1984	238	160	69	24	107	0	0
5/10/1984	250	158	69	22	107	0	0
5/11/1984	274	170	72	18	107	0	0
5/12/1984	301	190	81	26	107	0	0
5/13/1984	314	0	0	36	123	0	0
5/14/1984	327	194	95	44	123	0	0
5/15/1984	363	213	105	52	128	0	0
5/16/1984	474	247	110	56	132	0	0
5/17/1984	372	237	108	49	134	0	0
5/18/1984	372	235	107	49	128	0	0
5/19/1984	376	244	113	40	123	0	0
5/20/1984	376	0	0	32	121	0	0
5/21/1984	379	249	124	26	105	0	0
5/22/1984	372	247	122	28	94	0	0
5/23/1984	370	262	129	16	96	0	0
5/24/1984	401	264	129	17	140	0	0
5/25/1984	421	270	129	49	134	0	0
5/26/1984	419	270	129	49	108	0	0

Calculations for Richfield Canal Flow
1984
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
5/27/1984	421	0	0	34	123	0	0
5/28/1984	462	286	130	33	149	0	0
5/29/1984	462	288	138	60	143	0	0
5/30/1984	478	307	143	47	140	0	0
5/31/1984	489	312	160	56	140	0	0
6/1/1984	482	304	152	60	146	0	0
6/2/1984	482	313	160	52	143	0	0
6/3/1984	482	313	160	52	146	0	0
6/4/1984	482	313	159	54	166	0	0
6/5/1984	494	312	164	57	173	0	0
6/6/1984	496	318	166	57	180	0	0
6/7/1984	496	311	161	71	177	0	0
6/8/1984	485	302	158	78	167	0	0
6/9/1984	487	295	158	71	173	0	0
6/10/1984	489	0	0	71	189	0	0
6/11/1984	485	305	160	73	189	0	0
6/12/1984	484	299	158	71	180	0	0
6/13/1984	478	288	155	76	183	0	0
6/14/1984	480	287	153	74	180	0	0
6/15/1984	478	287	151	74	173	0	0
6/16/1984	102	287	151	73	167	0	0
6/17/1984	522	0	0	71	164	0	0
6/18/1984	520	295	155	70	158	0	0
6/19/1984	522	283	149	76	158	0	0
6/20/1984	522	286	153	73	161	0	0
6/21/1984	516	286	152	78	158	0	0
6/22/1984	524	268	153	79	152	0	0
6/23/1984	546	312	166	57	152	0	0
6/24/1984	538	0	0	54	146	0	0
6/25/1984	542	311	165	52	140	0	0
6/26/1984	578	312	167	57	173	0	0
6/27/1984	592	309	166	99	167	0	0
6/28/1984	594	330	165	104	158	0	0
6/29/1984	594	307	170	101	149	0	0
6/30/1984	594	311	168	93	149	0	0
7/1/1984	596	0	0	90	149	0	0
7/2/1984	598	0	0	88	149	0	0
7/3/1984	606	0	0	86	149	0	0
7/4/1984	608	0	0	57	132	0	0
7/5/1984	625	0	0	66	128	0	0
7/6/1984	647	0	0	101	155	0	0
7/7/1984	649	0	0	104	161	0	0
7/8/1984	658	0	0	106	161	0	0
7/9/1984	642	0	0	108	177	0	0
7/10/1984	644	0	0	88	155	0	0
7/11/1984	600	0	0	81	140	0	0
7/12/1984	560	0	0	101	155	0	0
7/13/1984	558	0	0	70	134	0	0
7/14/1984	620	0	0	101	149	0	0
7/15/1984	631	0	0	112	167	0	0
7/16/1984	633	0	0	124	186	0	0
7/17/1984	633	0	0	122	173	0	0
7/18/1984	633	0	0	112	167	0	0
7/19/1984	629	0	0	102	155	0	0
7/20/1984	629	0	0	95	149	0	0
7/21/1984	631	0	0	134	167	0	0

Calculations for Richfield Canal Flow
1984
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
7/22/1984	636	0	0	128	170	0	0
7/23/1984	636	0	0	118	173	0	0
7/24/1984	640	0	0	104	164	0	0
7/25/1984	647	0	0	104	167	0	0
7/26/1984	651	0	0	97	155	0	0
7/27/1984	653	0	0	97	161	0	0
7/28/1984	653	0	0	95	193	0	0
7/29/1984	653	0	0	95	170	0	0
7/30/1984	622	0	0	93	180	0	0
7/31/1984	666	0	0	93	180	0	0
8/1/1984	644	324	161	95	180	0	0
8/2/1984	631	317	158	102	180	0	0
8/3/1984	612	308	151	84	167	0	0
8/4/1984	608	307	152	84	158	0	0
8/5/1984	610	0	0	84	158	0	0
8/6/1984	594	0	0	86	161	0	0
8/7/1984	556	311	153	57	155	0	0
8/8/1984	540	303	149	52	128	0	0
8/9/1984	542	303	151	53	123	0	0
8/10/1984	542	311	147	53	117	0	0
8/11/1984	546	308	149	53	117	0	0
8/12/1984	542	0	0	40	117	0	0
8/13/1984	544	313	150	41	102	0	0
8/14/1984	565	311	150	76	107	0	0
8/15/1984	586	313	151	73	137	0	0
8/16/1984	596	303	153	79	143	0	0
8/17/1984	596	308	150	79	152	0	0
8/18/1984	596	305	148	76	152	0	0
8/19/1984	596	0	0	65	155	0	0
8/20/1984	598	313	151	68	146	0	0
8/21/1984	582	312	151	68	146	0	0
8/22/1984	588	311	149	70	146	0	0
8/23/1984	580	311	151	68	149	0	0
8/24/1984	582	312	149	68	140	0	0
8/25/1984	586	313	151	68	140	0	0
8/26/1984	588	0	0	71	146	0	0
8/27/1984	590	307	147	70	146	0	0
8/28/1984	590	304	144	70	146	0	0
8/29/1984	588	304	145	70	143	0	0
8/30/1984	590	303	145	70	149	0	0
8/31/1984	582	303	147	70	167	0	0
9/1/1984	578	308	141	52	152	0	0
9/2/1984	580	0	0	57	152	0	0
9/3/1984	580	300	128	62	152	0	0
9/4/1984	582	296	128	59	149	0	0
9/5/1984	578	290	128	70	128	0	0
9/6/1984	558	283	126	32	113	0	0
9/7/1984	562	284	130	32	115	0	0
9/8/1984	558	273	120	40	123	0	0
9/9/1984	558	0	0	44	128	0	0
9/10/1984	560	264	119	47	134	0	0
9/11/1984	562	264	118	47	134	0	0
9/12/1984	566	51	113	60	137	0	0
9/13/1984	566	251	112	60	140	0	0
9/14/1984	566	253	111	57	137	0	0
9/15/1984	566	253	115	57	140	0	0

Calculations for Richfield Canal Flow
1984
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
9/16/1984	566	0	0	57	140	0	0
9/17/1984	566	255	113	62	134	0	0
9/18/1984	566	258	117	54	128	0	0
9/19/1984	562	273	117	40	121	0	0
9/20/1984	564	279	126	28	113	0	0
9/21/1984	564	278	128	31	117	0	0
9/22/1984	566	277	124	34	126	0	0
9/23/1984	564	0	0	33	128	0	0
9/24/1984	564	277	126	33	134	0	0
9/25/1984	562	278	128	33	137	0	0
9/26/1984	562	262	115	54	158	0	0
9/27/1984	562	265	115	51	152	0	0
9/28/1984	532	256	116	34	128	0	0
9/29/1984	534	0	0	34	128	0	0
9/30/1984	532	0	0	34	128	0	0
10/1/1984	510	253	115	34	128	0	0
10/2/1984	506	253	116	34	128	0	0
10/3/1984	508	246	115	34	128	0	0
10/4/1984	504	244	115	34	128	0	0
10/5/1984	504	273	115	34	128	0	0
10/6/1984	0	0	0	0	0	0	0
10/7/1984	0	0	0	0	0	0	0
10/8/1984	0	0	0	0	0	0	0
10/9/1984	0	0	0	0	0	0	0
10/10/1984	0	0	0	0	0	0	0
10/11/1984	0	0	0	0	0	0	0
10/12/1984	0	0	0	0	0	0	0
10/13/1984	0	0	0	0	0	0	0
10/14/1984	0	0	0	0	0	0	0
10/15/1984	0	0	0	0	0	0	0
10/16/1984	0	0	0	0	0	0	0
10/17/1984	0	0	0	0	0	0	0
10/18/1984	0	0	0	0	0	0	0
10/19/1984	0	0	0	0	0	0	0
10/20/1984	0	0	0	0	0	0	0
10/21/1984	0	0	0	0	0	0	0
10/22/1984	0	0	0	0	0	0	0
10/23/1984	0	0	0	0	0	0	0
10/24/1984	0	0	0	0	0	0	0
10/25/1984	0	0	0	0	0	0	0
10/26/1984	0	0	0	0	0	0	0
10/27/1984	0	0	0	0	0	0	0
10/28/1984	0	0	0	0	0	0	0
10/29/1984	0	0	0	0	0	0	0
10/30/1984	0	0	0	0	0	0	0
10/31/1984	0	0	0	0	0	0	0
						63	1382

Calculations for Richfield Canal Flow
1985
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
4/1/1985	0	0	0	0	0	0	0
4/2/1985	0	0	0	0	0	0	0
4/3/1985	0	0	0	0	0	0	0
4/4/1985	0	0	0	0	0	0	0
4/5/1985	0	0	0	0	0	0	0
4/6/1985	0	0	0	0	0	0	0
4/7/1985	0	0	0	0	0	0	0
4/8/1985	0	0	0	0	0	0	0
4/9/1985	0	0	0	0	0	0	0
4/10/1985	0	0	0	0	0	0	0
4/11/1985	58	0	0	0	0	58	115
4/12/1985	58	0	0	0	0	58	115
4/13/1985	58	0	0	0	0	58	115
4/14/1985	58	0	0	0	0	58	115
4/15/1985	58	0	0	0	0	58	115
4/16/1985	58	0	0	0	0	58	115
4/17/1985	56	0	0	0	0	56	111
4/18/1985	43	0	0	0	0	43	85
4/19/1985	71	0	0	0	0	71	141
4/20/1985	71	0	0	0	0	71	141
4/21/1985	34	0	0	0	0	34	67
4/22/1985	39	0	0	0	0	39	77
4/23/1985	51	0	0	0	0	51	101
4/24/1985	51	0	0	0	0	51	101
4/25/1985	44	0	0	0	0	44	87
4/26/1985	49	0	0	0	0	49	97
4/27/1985	49	0	0	0	0	49	97
4/28/1985	49	0	0	0	0	49	97
4/29/1985	49	0	0	0	0	49	97
4/30/1985	42	0	0	0	0	42	83
5/1/1985	137	0	0	7	0	0	0
5/2/1985	182	0	0	7	0	0	0
5/3/1985	163	0	0	12	0	0	0
5/4/1985	307	0	0	74	0	0	0
5/5/1985	310	0	0	74	0	0	0
5/6/1985	307	0	0	74	127	0	0
5/7/1985	333	0	0	46	113	0	0
5/8/1985	382	0	0	84	143	0	0
5/9/1985	476	0	0	91	154	0	0
5/10/1985	504	0	0	132	165	0	0
5/11/1985	502	0	0	141	165	0	0
5/12/1985	504	0	0	139	204	0	0
5/13/1985	504	0	0	136	209	0	0
5/14/1985	504	0	0	136	211	0	0
5/15/1985	506	0	0	136	228	0	0
5/16/1985	507	0	0	136	221	0	0
5/17/1985	506	0	0	124	207	0	0
5/18/1985	506	0	0	124	207	0	0
5/19/1985	506	0	0	126	202	0	0
5/20/1985	506	0	0	128	237	0	0
5/21/1985	506	0	0	128	204	0	0
5/22/1985	506	0	0	114	195	0	0
5/23/1985	502	0	0	114	189	0	0
5/24/1985	504	0	0	93	165	0	0
5/25/1985	504	0	0	93	157	0	0

Calculations for Richfield Canal Flow
1985
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	RJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
5/26/1985	502	0	0	78	151	0	0
5/27/1985	504	0	0	81	143	0	0
5/28/1985	511	0	0	84	138	0	0
5/29/1985	533	0	0	74	136	0	0
5/30/1985	529	0	0	108	157	0	0
5/31/1985	556	0	0	86	159	0	0
6/1/1985	578	0	0	132	199	0	0
6/2/1985	578	0	0	139	204	0	0
6/3/1985	576	0	0	145	211	0	0
6/4/1985	576	0	0	145	209	0	0
6/5/1985	576	0	0	143	207	0	0
6/6/1985	578	0	0	130	193	0	0
6/7/1985	576	0	0	130	193	0	0
6/8/1985	578	0	0	130	186	0	0
6/9/1985	578	0	0	130	193	0	0
6/10/1985	578	0	0	130	186	0	0
6/11/1985	588	0	0	130	176	0	0
6/12/1985	588	0	0	120	170	0	0
6/13/1985	588	0	0	120	166	0	0
6/14/1985	588	0	0	120	168	0	0
6/15/1985	590	0	0	112	163	0	0
6/16/1985	588	0	0	112	165	0	0
6/17/1985	592	0	0	106	161	0	0
6/18/1985	593	0	0	99	151	0	0
6/19/1985	592	0	0	99	150	0	0
6/20/1985	599	0	0	99	153	0	0
6/21/1985	599	0	0	99	151	0	0
6/22/1985	599	0	0	99	150	0	0
6/23/1985	599	0	0	99	149	0	0
6/24/1985	606	0	0	99	151	0	0
6/25/1985	637	0	0	130	184	0	0
6/26/1985	635	0	0	130	189	0	0
6/27/1985	637	0	0	130	189	0	0
6/28/1985	639	0	0	130	193	0	0
6/29/1985	639	0	0	130	180	0	0
6/30/1985	639	0	0	128	168	0	0
7/1/1985	641	0	0	124	182	0	0
7/2/1985	642	0	0	122	176	0	0
7/3/1985	641	0	0	128	165	0	0
7/4/1985	644	0	0	101	154	0	0
7/5/1985	644	0	0	101	154	0	0
7/6/1985	646	0	0	101	151	0	0
7/7/1985	648	0	0	101	151	0	0
7/8/1985	648	0	0	101	147	0	0
7/9/1985	637	0	0	101	146	0	0
7/10/1985	642	0	0	101	141	0	0
7/11/1985	628	0	0	116	157	0	0
7/12/1985	628	0	0	120	157	0	0
7/13/1985	628	0	0	120	157	0	0
7/14/1985	630	0	0	120	157	0	0
7/15/1985	592	0	0	120	154	0	0
7/16/1985	594	0	0	120	151	0	0
7/17/1985	596	0	0	120	154	0	0
7/18/1985	597	0	0	120	156	0	0
7/19/1985	599	0	0	116	154	0	0

Calculations for Richfield Canal Flow
1985
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
7/20/1985	601	0	0	110	153	0	0
7/21/1985	603	0	0	110	157	0	0
7/22/1985	605	0	0	110	163	0	0
7/23/1985	606	0	0	110	165	0	0
7/24/1985	579	0	0	110	157	0	0
7/25/1985	567	0	0	79	138	0	0
7/26/1985	569	0	0	76	131	0	0
7/27/1985	549	0	0	74	129	0	0
7/28/1985	552	0	0	74	131	0	0
7/29/1985	556	0	0	73	131	0	0
7/30/1985	563	0	0	73	141	0	0
7/31/1985	540	0	0	71	141	0	0
8/1/1985	525	0	0	30	117	0	0
8/2/1985	529	0	0	30	111	0	0
8/3/1985	536	0	0	30	110	0	0
8/4/1985	542	0	0	29	108	0	0
8/5/1985	547	0	0	28	106	0	0
8/6/1985	552	0	0	44	111	0	0
8/7/1985	574	0	0	44	110	0	0
8/8/1985	579	0	0	57	117	0	0
8/9/1985	585	0	0	56	115	0	0
8/10/1985	589	0	0	53	114	0	0
8/11/1985	590	0	0	54	116	0	0
8/12/1985	603	0	0	54	116	0	0
8/13/1985	596	0	0	56	119	0	0
8/14/1985	581	0	0	93	131	0	0
8/15/1985	592	0	0	66	143	0	0
8/16/1985	603	0	0	91	142	0	0
8/17/1985	606	0	0	91	142	0	0
8/18/1985	608	0	0	91	143	0	0
8/19/1985	608	0	0	88	143	0	0
8/20/1985	608	0	0	88	143	0	0
8/21/1985	606	0	0	86	142	0	0
8/22/1985	596	0	0	86	142	0	0
8/23/1985	599	0	0	84	143	0	0
8/24/1985	599	0	0	84	144	0	0
8/25/1985	599	0	0	84	143	0	0
8/26/1985	599	0	0	83	141	0	0
8/27/1985	596	0	0	93	143	0	0
8/28/1985	596	0	0	91	143	0	0
8/29/1985	597	0	0	86	142	0	0
8/30/1985	596	0	0	76	139	0	0
8/31/1985	597	0	0	76	137	0	0
9/1/1985	592	0	0	76	138	0	0
9/2/1985	590	0	0	74	144	0	0
9/3/1985	588	0	0	74	143	0	0
9/4/1985	588	0	0	74	143	0	0
9/5/1985	587	0	0	74	146	0	0
9/6/1985	585	0	0	73	151	0	0
9/7/1985	585	0	0	73	146	0	0
9/8/1985	587	0	0	76	165	0	0
9/9/1985	570	0	0	78	191	0	0
9/10/1985	516	0	0	60	154	0	0
9/11/1985	487	0	0	53	138	0	0
9/12/1985	487	0	0	50	136	0	0

Calculations for Richfield Canal Flow
1985
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
9/13/1985	0	0	0	0	100	0	0
9/14/1985	0	0	0	0	50	0	0
9/15/1985	0	0	0	0	0	0	0
9/16/1985	0	0	0	0	0	0	0
9/17/1985	0	0	0	0	0	0	0
9/18/1985	0	0	0	0	0	0	0
9/19/1985	0	0	0	0	0	0	0
9/20/1985	0	0	0	0	0	0	0
9/21/1985	0	0	0	0	0	0	0
9/22/1985	0	0	0	0	0	0	0
9/23/1985	0	0	0	0	0	0	0
9/24/1985	155	0	0	0	106	0	0
9/25/1985	227	0	0	4	100	0	0
9/26/1985	272	0	0	28	96	0	0
9/27/1985	146	0	0	0	113	0	0
9/28/1985	328	0	0	36	114	0	0
9/29/1985	323	0	0	34	0	0	0
9/30/1985	323	0	0	34	0	0	0
10/1/1985	310	167	74	0	0	0	0
10/2/1985	309	161	74	0	0	0	0
10/3/1985	277	171	75	0	0	0	0
10/4/1985	272	173	75	0	0	0	0
10/5/1985	0	0	0	0	0	0	0
10/6/1985	0	0	0	0	0	0	0
10/7/1985	0	0	0	0	0	0	0
10/8/1985	0	0	0	0	0	0	0
10/9/1985	0	0	0	0	0	0	0
10/10/1985	0	0	0	0	0	0	0
10/11/1985	0	0	0	0	0	0	0
10/12/1985	0	0	0	0	0	0	0
10/13/1985	0	0	0	0	0	0	0
10/14/1985	0	0	0	0	0	0	0
10/15/1985	0	0	0	0	0	0	0
10/16/1985	0	0	0	0	0	0	0
10/17/1985	0	0	0	0	0	0	0
10/18/1985	0	0	0	0	0	0	0
10/19/1985	0	0	0	0	0	0	0
10/20/1985	0	0	0	0	0	0	0
10/21/1985	0	0	0	0	0	0	0
10/22/1985	0	0	0	0	0	0	0
10/23/1985	0	0	0	0	0	0	0
10/24/1985	0	0	0	0	0	0	0
10/25/1985	0	0	0	0	0	0	0
10/26/1985	0	0	0	0	0	0	0
10/27/1985	0	0	0	0	0	0	0
10/28/1985	0	0	0	0	0	0	0
10/29/1985	0	0	0	0	0	0	0
10/30/1985	0	0	0	0	0	0	0
10/31/1985	0	0	0	0	0	0	0
						71	2075
						Maximum	Total

Calculations for Richfield Canal Flow
1986
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
4/1/1986	108	0	0	0	77	108	214
4/2/1986	104	0	0	0	77	104	206
4/3/1986	95	0	0	0	84	95	188
4/4/1986	95	0	0	0	59	95	188
4/5/1986	91	0	0	0	53	91	180
4/6/1986	83	0	0	0	47	83	165
4/7/1986	84	0	0	0	47	84	167
4/8/1986	86	0	0	0	50	86	171
4/9/1986	87	0	0	0	53	87	173
4/10/1986	88	0	0	0	54	88	175
4/11/1986	91	0	0	0	56	91	180
4/12/1986	93	0	0	0	60	93	184
4/13/1986	95	0	0	0	64	95	188
4/14/1986	93	0	0	0	64	93	184
4/15/1986	91	0	0	0	59	91	180
4/16/1986	93	0	0	0	54	93	184
4/17/1986	87	0	0	0	44	87	173
4/18/1986	135	0	0	0	40	135	268
4/19/1986	184	0	0	0	96	184	365
4/20/1986	184	0	0	0	142	184	365
4/21/1986	183	0	0	0	117	183	363
4/22/1986	306	81	48	62	73	0	0
4/23/1986	360	117	55	205	217	0	0
4/24/1986	360	116	55	205	200	0	0
4/25/1986	378	125	76	180	168	0	0
4/26/1986	404	142	78	177	183	0	0
4/27/1986	404	0	0	170	168	234	464
4/28/1986	401	167	80	114	158	0	0
4/29/1986	399	167	80	114	157	0	0
4/30/1986	401	187	80	110	144	0	0
5/1/1986	389	0	0	104	141	0	0
5/2/1986	411	0	0	120	160	0	0
5/3/1986	459	0	0	134	155	0	0
5/4/1986	456	0	0	134	158	0	0
5/5/1986	459	0	0	134	150	0	0
5/6/1986	459	0	0	120	157	0	0
5/7/1986	459	0	0	124	158	0	0
5/8/1986	459	0	0	136	162	0	0
5/9/1986	459	0	0	145	162	0	0
5/10/1986	456	0	0	143	165	0	0
5/11/1986	456	0	0	143	165	0	0
5/12/1986	456	0	0	143	160	0	0
5/13/1986	456	0	0	130	158	0	0
5/14/1986	456	0	0	130	152	0	0
5/15/1986	456	0	0	130	147	0	0
5/16/1986	456	0	0	124	139	0	0
5/17/1986	456	0	0	104	126	0	0
5/18/1986	456	0	0	104	113	0	0
5/19/1986	558	0	0	104	100	0	0
5/20/1986	536	0	0	112	109	0	0
5/21/1986	542	0	0	114	139	0	0
5/22/1986	542	0	0	114	138	0	0
5/23/1986	542	0	0	81	123	0	0
5/24/1986	542	0	0	102	119	0	0
5/25/1986	542	0	0	59	108	0	0

Calculations for Richfield Canal Flow
1986
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
5/26/1986	542	0	0	41	104	0	0
5/27/1986	524	0	0	41	82	0	0
5/28/1986	580	0	0	78	105	0	0
5/29/1986	593	0	0	118	133	0	0
5/30/1986	593	0	0	122	142	0	0
5/31/1986	593	0	0	124	131	0	0
6/1/1986	555	0	0	114	119	0	0
6/2/1986	555	0	0	104	106	0	0
6/3/1986	555	0	0	86	112	0	0
6/4/1986	555	0	0	86	98	0	0
6/5/1986	555	0	0	86	104	0	0
6/6/1986	555	0	0	86	101	0	0
6/7/1986	558	0	0	86	109	0	0
6/8/1986	577	0	0	95	126	0	0
6/9/1986	577	0	0	95	119	0	0
6/10/1986	558	0	0	86	123	0	0
6/11/1986	555	0	0	88	117	0	0
6/12/1986	561	0	0	86	123	0	0
6/13/1986	587	0	0	108	136	0	0
6/14/1986	587	0	0	133	149	0	0
6/15/1986	587	0	0	118	152	0	0
6/16/1986	593	0	0	114	158	0	0
6/17/1986	593	0	0	118	157	0	0
6/18/1986	593	0	0	116	149	0	0
6/19/1986	596	0	0	114	146	0	0
6/20/1986	600	0	0	114	152	0	0
6/21/1986	587	0	0	110	146	0	0
6/22/1986	603	0	0	104	136	0	0
6/23/1986	632	0	0	99	136	0	0
6/24/1986	658	0	0	124	146	0	0
6/25/1986	689	0	0	120	141	0	0
6/26/1986	726	0	0	147	162	0	0
6/27/1986	733	0	0	152	174	0	0
6/28/1986	747	0	0	152	172	0	0
6/29/1986	754	0	0	150	167	0	0
6/30/1986	672	0	0	147	168	0	0
7/1/1986	645	0	0	136	160	0	0
7/2/1986	672	0	0	132	152	0	0
7/3/1986	692	0	0	150	167	0	0
7/4/1986	686	0	0	147	170	0	0
7/5/1986	672	0	0	147	181	0	0
7/6/1986	682	0	0	147	172	0	0
7/7/1986	699	0	0	147	172	0	0
7/8/1986	699	0	0	159	179	0	0
7/9/1986	699	0	0	159	183	0	0
7/10/1986	699	0	0	159	181	0	0
7/11/1986	699	0	0	156	179	0	0
7/12/1986	703	0	0	154	175	0	0
7/13/1986	703	0	0	154	181	0	0
7/14/1986	706	0	0	154	183	0	0
7/15/1986	706	0	0	154	179	0	0
7/16/1986	703	0	0	150	170	0	0
7/17/1986	706	0	0	141	168	0	0
7/18/1986	703	0	0	145	172	0	0
7/19/1986	709	0	0	145	168	0	0

Calculations for Richfield Canal Flow
1986
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
7/20/1986	625	0	0	143	172	0	0
7/21/1986	628	0	0	143	168	0	0
7/22/1986	628	0	0	134	155	0	0
7/23/1986	635	0	0	136	154	0	0
7/24/1986	638	0	0	136	155	0	0
7/25/1986	645	0	0	136	155	0	0
7/26/1986	648	0	0	136	150	0	0
7/27/1986	651	0	0	134	154	0	0
7/28/1986	655	0	0	134	168	0	0
7/29/1986	638	0	0	134	168	0	0
7/30/1986	603	0	0	134	151	0	0
7/31/1986	606	0	0	139	162	0	0
8/1/1986	612	0	0	143	162	0	0
8/2/1986	612	0	0	143	162	0	0
8/3/1986	612	0	0	43	163	0	0
8/4/1986	616	0	0	143	165	0	0
8/5/1986	619	0	0	143	167	0	0
8/6/1986	619	0	0	141	168	0	0
8/7/1986	619	0	0	141	162	0	0
8/8/1986	622	0	0	141	165	0	0
8/9/1986	625	0	0	141	165	0	0
8/10/1986	625	0	0	141	168	0	0
8/11/1986	622	0	0	141	172	0	0
8/12/1986	564	0	0	143	179	0	0
8/13/1986	564	0	0	143	174	0	0
8/14/1986	564	0	0	141	168	0	0
8/15/1986	574	0	0	141	175	0	0
8/16/1986	568	0	0	139	177	0	0
8/17/1986	568	0	0	139	172	0	0
8/18/1986	571	0	0	139	168	0	0
8/19/1986	571	0	0	134	168	0	0
8/20/1986	574	0	0	134	165	0	0
8/21/1986	571	0	0	132	160	0	0
8/22/1986	574	0	0	132	158	0	0
8/23/1986	545	0	0	130	152	0	0
8/24/1986	548	0	0	130	154	0	0
8/25/1986	548	0	0	130	155	0	0
8/26/1986	552	0	0	130	150	0	0
8/27/1986	552	0	0	128	149	0	0
8/28/1986	555	0	0	122	146	0	0
8/29/1986	558	0	0	114	144	0	0
8/30/1986	558	0	0	114	149	0	0
8/31/1986	561	0	0	114	152	0	0
9/1/1986	530	0	0	114	141	0	0
9/2/1986	518	0	0	114	141	0	0
9/3/1986	515	0	0	95	122	0	0
9/4/1986	512	0	0	95	119	0	0
9/5/1986	515	0	0	95	122	0	0
9/6/1986	490	0	0	93	122	0	0
9/7/1986	462	0	0	79	108	0	0
9/8/1986	462	0	0	79	108	0	0
9/9/1986	433	0	0	81	110	0	0
9/10/1986	413	0	0	60	100	0	0
9/11/1986	413	0	0	60	98	0	0
9/12/1986	413	0	0	60	98	0	0

Calculations for Richfield Canal Flow
1986
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
9/13/1986	413	0	0	60	98	0	0
9/14/1986	413	0	0	62	103	0	0
9/15/1986	373	0	0	62	100	0	0
9/16/1986	360	0	0	40	93	0	0
9/17/1986	360	0	0	40	89	0	0
9/18/1986	360	0	0	40	90	0	0
9/19/1986	362	0	0	38	95	0	0
9/20/1986	362	0	0	38	95	0	0
9/21/1986	360	0	0	36	93	0	0
9/22/1986	329	0	0	36	96	0	0
9/23/1986	316	0	0	2	76	0	0
9/24/1986	314	0	0	21	76	0	0
9/25/1986	314	0	0	21	76	0	0
9/26/1986	312	0	0	21	72	0	0
9/27/1986	312	0	0	20	69	0	0
9/28/1986	310	0	0	21	76	0	0
9/29/1986	310	0	0	21	77	0	0
9/30/1986	308	0	0	21	77	0	0
10/1/1986	0	0	0	0	0	0	0
10/2/1986	0	0	0	0	0	0	0
10/3/1986	0	0	0	0	0	0	0
10/4/1986	0	0	0	0	0	0	0
10/5/1986	0	0	0	0	0	0	0
10/6/1986	0	0	0	0	0	0	0
10/7/1986	0	0	0	0	0	0	0
10/8/1986	0	0	0	0	0	0	0
10/9/1986	0	0	0	0	0	0	0
10/10/1986	0	0	0	0	0	0	0
10/11/1986	0	0	0	0	0	0	0
10/12/1986	0	0	0	0	0	0	0
10/13/1986	0	0	0	0	0	0	0
10/14/1986	0	0	0	0	0	0	0
10/15/1986	0	0	0	0	0	0	0
10/16/1986	0	0	0	0	0	0	0
10/17/1986	0	0	0	0	0	0	0
10/18/1986	0	0	0	0	0	0	0
10/19/1986	0	0	0	0	0	0	0
10/20/1986	0	0	0	0	0	0	0
10/21/1986	0	0	0	0	0	0	0
10/22/1986	0	0	0	0	0	0	0
10/23/1986	0	0	0	0	0	0	0
10/24/1986	0	0	0	0	0	0	0
10/25/1986	0	0	0	0	0	0	0
10/26/1986	0	0	0	0	0	0	0
10/27/1986	0	0	0	0	0	0	0
10/28/1986	0	0	0	0	0	0	0
10/29/1986	0	0	0	0	0	0	0
10/30/1986	0	0	0	0	0	0	0
10/31/1986	0	0	0	0	0	0	0
11/1/1986	0	0	0	0	0	0	0
11/2/1986	0	0	0	0	0	0	0
11/3/1986	0	0	0	0	0	0	0
11/4/1986	0	0	0	0	0	0	0
11/5/1986	300	153	57	0	0	0	0
11/6/1986	0	0	0	0	0	0	0

Calculations for Richfield Canal Flow
1986
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
11/7/1986	200	254	62	0	0	0	0
						234	464
						Maximum	Total

Calculations for Richfield Canal Flow
1987
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
4/1/1987	0	0	0	0	0	0	0
4/2/1987	0	0	0	0	0	0	0
4/3/1987	0	0	0	0	0	0	0
4/4/1987	0	0	0	0	0	0	0
4/5/1987	0	0	0	0	0	0	0
4/6/1987	0	0	0	0	0	0	0
4/7/1987	0	0	0	0	0	0	0
4/8/1987	0	0	0	0	0	0	0
4/9/1987	0	0	0	0	0	0	0
4/10/1987	0	0	0	0	0	0	0
4/11/1987	0	0	0	0	0	0	0
4/12/1987	0	0	0	0	0	0	0
4/13/1987	0	0	0	0	0	0	0
4/14/1987	0	0	0	0	0	0	0
4/15/1987	0	0	0	0	0	0	0
4/16/1987	0	0	0	0	0	0	0
4/17/1987	0	0	0	0	0	0	0
4/18/1987	0	0	0	0	0	0	0
4/19/1987	0	0	0	0	0	0	0
4/20/1987	0	0	0	0	0	0	0
4/21/1987	122	0	0	0	0	122	242
4/22/1987	168	0	0	172	0	0	0
4/23/1987	170	0	0	182	163	0	0
4/24/1987	172	0	0	86	157	86	171
4/25/1987	186	0	0	93	84	93	184
4/26/1987	206	0	0	101	131	105	208
4/27/1987	318	0	0	132	131	186	369
4/28/1987	327	0	0	136	147	191	379
4/29/1987	382	0	0	141	147	241	478
4/30/1987	443	0	0	152	170	291	577
5/1/1987	481	0	0	170	196	0	0
5/2/1987	499	0	0	175	196	0	0
5/3/1987	497	0	0	180	196	0	0
5/4/1987	503	0	0	180	200	0	0
5/5/1987	501	0	0	180	198	0	0
5/6/1987	497	0	0	163	181	0	0
5/7/1987	497	0	0	161	177	0	0
5/8/1987	497	0	0	150	163	0	0
5/9/1987	513	0	0	150	157	0	0
5/10/1987	515	0	0	156	168	0	0
5/11/1987	495	0	0	156	167	0	0
5/12/1987	521	0	0	152	162	0	0
5/13/1987	515	0	0	163	186	0	0
5/14/1987	503	0	0	150	179	0	0
5/15/1987	527	0	0	150	185	0	0
5/16/1987	507	0	0	145	165	0	0
5/17/1987	517	0	0	154	236	0	0
5/18/1987	527	0	0	161	209	0	0
5/19/1987	513	0	0	161	202	0	0
5/20/1987	509	0	0	154	207	0	0
5/21/1987	473	0	0	154	204	0	0
5/22/1987	469	0	0	152	192	0	0
5/23/1987	473	0	0	152	185	0	0
5/24/1987	467	0	0	152	192	0	0
5/25/1987	469	0	0	147	188	0	0
5/26/1987	463	0	0	145	204	0	0
5/27/1987	443	0	0	93	141	0	0
5/28/1987	445	0	0	93	144	0	0
5/29/1987	378	0	0	33	83	0	0

Calculations for Richfield Canal Flow
1987
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
5/30/1987	378	0	0	33	81	0	0
5/31/1987	384	0	0	33	80	0	0
6/1/1987	382	0	0	33	82	0	0
6/2/1987	382	0	0	33	76	0	0
6/3/1987	382	0	0	33	76	0	0
6/4/1987	407	0	0	33	67	0	0
6/5/1987	445	0	0	59	93	0	0
6/6/1987	453	0	0	91	122	0	0
6/7/1987	455	0	0	91	122	0	0
6/8/1987	455	0	0	91	138	0	0
6/9/1987	453	0	0	91	128	0	0
6/10/1987	436	0	0	91	134	0	0
6/11/1987	426	0	0	71	110	0	0
6/12/1987	428	0	0	71	108	0	0
6/13/1987	428	0	0	71	110	0	0
6/14/1987	430	0	0	71	113	0	0
6/15/1987	451	0	0	71	110	0	0
6/16/1987	491	0	0	102	133	0	0
6/17/1987	501	0	0	136	165	0	0
6/18/1987	505	0	0	134	167	0	0
6/19/1987	507	0	0	134	163	0	0
6/20/1987	511	0	0	134	155	0	0
6/21/1987	511	0	0	134	160	0	0
6/22/1987	513	0	0	132	162	0	0
6/23/1987	511	0	0	132	157	0	0
6/24/1987	556	0	0	150	175	0	0
6/25/1987	561	0	0	150	175	0	0
6/26/1987	565	0	0	152	172	0	0
6/27/1987	561	0	0	152	174	0	0
6/28/1987	567	0	0	152	172	0	0
6/29/1987	561	0	0	152	170	0	0
6/30/1987	577	0	0	152	165	0	0
7/1/1987	525	0	0	159	179	0	0
7/2/1987	540	0	0	159	175	0	0
7/3/1987	554	0	0	159	175	0	0
7/4/1987	567	0	0	159	167	0	0
7/5/1987	549	0	0	168	169	0	0
7/6/1987	554	0	0	161	172	0	0
7/7/1987	558	0	0	161	168	0	0
7/8/1987	567	0	0	159	174	0	0
7/9/1987	547	0	0	156	167	0	0
7/10/1987	549	0	0	154	172	0	0
7/11/1987	563	0	0	161	179	0	0
7/12/1987	567	0	0	159	177	0	0
7/13/1987	574	0	0	159	167	0	0
7/14/1987	570	0	0	156	167	0	0
7/15/1987	600	0	0	152	170	0	0
7/16/1987	609	0	0	161	183	0	0
7/17/1987	606	0	0	184	209	0	0
7/18/1987	590	0	0	197	228	0	0
7/19/1987	584	0	0	182	228	0	0
7/20/1987	588	0	0	182	221	0	0
7/21/1987	565	0	0	182	224	0	0
7/22/1987	534	0	0	156	209	0	0
7/23/1987	525	0	0	130	192	0	0
7/24/1987	525	0	0	128	165	0	0
7/25/1987	534	0	0	128	160	0	0
7/26/1987	527	0	0	128	165	0	0
7/27/1987	570	0	0	128	162	0	0

Calculations for Richfield Canal Flow
1987
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
7/28/1987	593	0	0	156	179	0	0
7/29/1987	593	0	0	156	190	0	0
7/30/1987	595	0	0	156	183	0	0
7/31/1987	588	0	0	154	183	0	0
8/1/1987	511	0	0	136	181	0	0
8/2/1987	509	0	0	147	175	0	0
8/3/1987	509	0	0	152	177	0	0
8/4/1987	523	0	0	147	172	0	0
8/5/1987	547	0	0	166	183	0	0
8/6/1987	551	0	0	168	192	0	0
8/7/1987	554	0	0	168	188	0	0
8/8/1987	556	0	0	168	185	0	0
8/9/1987	556	0	0	168	179	0	0
8/10/1987	558	0	0	163	175	0	0
8/11/1987	558	0	0	163	170	0	0
8/12/1987	561	0	0	161	172	0	0
8/13/1987	536	0	0	163	172	0	0
8/14/1987	515	0	0	143	172	0	0
8/15/1987	507	0	0	143	150	0	0
8/16/1987	544	0	0	143	149	0	0
8/17/1987	563	0	0	156	168	0	0
8/18/1987	563	0	0	154	162	0	0
8/19/1987	563	0	0	150	162	0	0
8/20/1987	565	0	0	141	162	0	0
8/21/1987	563	0	0	143	160	0	0
8/22/1987	565	0	0	145	160	0	0
8/23/1987	563	0	0	143	163	0	0
8/24/1987	563	0	0	143	158	0	0
8/25/1987	563	0	0	145	167	0	0
8/26/1987	558	0	0	147	165	0	0
8/27/1987	554	0	0	143	167	0	0
8/28/1987	527	0	0	126	174	0	0
8/29/1987	0	0	0	0	12	0	0
8/30/1987	0	0	0	0	0	0	0
8/31/1987	0	0	0	0	0	0	0
9/1/1987	0	0	0	0	0	0	0
9/2/1987	0	0	0	0	0	0	0
9/3/1987	0	0	0	0	0	0	0
9/4/1987	0	0	0	0	0	0	0
9/5/1987	0	0	0	0	0	0	0
9/6/1987	0	0	0	0	0	0	0
9/7/1987	0	0	0	0	0	0	0
9/8/1987	0	0	0	0	0	0	0
9/9/1987	0	0	0	0	0	0	0
9/10/1987	0	0	0	0	0	0	0
9/11/1987	0	0	0	0	0	0	0
9/12/1987	0	0	0	0	0	0	0
9/13/1987	0	0	0	0	0	0	0
9/14/1987	0	0	0	0	0	0	0
9/15/1987	0	0	0	0	0	0	0
9/16/1987	0	0	0	0	0	0	0
9/17/1987	0	0	0	0	0	0	0
9/18/1987	0	0	0	0	0	0	0
9/19/1987	0	0	0	0	0	0	0
9/20/1987	0	0	0	0	0	0	0
9/21/1987	0	0	0	0	0	0	0
9/22/1987	0	0	0	0	0	0	0
9/23/1987	0	0	0	0	0	0	0
9/24/1987	0	0	0	0	0	0	0

Calculations for Richfield Canal Flow
1987
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
9/25/1987	0	0	0	0	0	0	0
9/26/1987	0	0	0	0	0	0	0
9/27/1987	0	0	0	0	0	0	0
9/28/1987	0	0	0	0	0	0	0
9/29/1987	0	0	0	0	0	0	0
9/30/1987	0	0	0	0	0	0	0
10/1/1987	0	0	0	0	0	0	0
10/2/1987	0	0	0	0	0	0	0
10/3/1987	0	0	0	0	0	0	0
10/4/1987	0	0	0	0	0	0	0
10/5/1987	0	0	0	0	0	0	0
10/6/1987	0	0	0	0	0	0	0
10/7/1987	0	0	0	0	0	0	0
10/8/1987	0	0	0	0	0	0	0
10/9/1987	0	0	0	0	0	0	0
10/10/1987	0	0	0	0	0	0	0
10/11/1987	0	0	0	0	0	0	0
10/12/1987	0	0	0	0	0	0	0
10/13/1987	0	0	0	0	0	0	0
10/14/1987	0	0	0	0	0	0	0
10/15/1987	0	0	0	0	0	0	0
10/16/1987	0	0	0	0	0	0	0
10/17/1987	0	0	0	0	0	0	0
10/18/1987	0	0	0	0	0	0	0
10/19/1987	0	0	0	0	0	0	0
10/20/1987	0	0	0	0	0	0	0
10/21/1987	0	0	0	0	0	0	0
10/22/1987	0	0	0	0	0	0	0
10/23/1987	0	0	0	0	0	0	0
10/24/1987	0	0	0	0	0	0	0
10/25/1987	0	0	0	0	0	0	0
10/26/1987	0	0	0	0	0	0	0
10/27/1987	0	0	0	0	0	0	0
10/28/1987	0	0	0	0	0	0	0
10/29/1987	0	0	0	0	0	0	0
10/30/1987	0	0	0	0	0	0	0
10/31/1987	0	0	0	0	0	0	0
11/1/1987	300	0	0	0	0	300	595
11/2/1987	316	231	73	90	0	0	0
11/3/1987	320	194	72	120	0	0	0
11/4/1987	306	167	71	132	0	0	0
11/5/1987	277	0	0	0	0	277	549
11/6/1987	248	0	0	0	0	248	492
						300	4245
						Maximum	Total

Calculations for Richfield Canal Flow
1988
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
4/1/1988	0	0	0	0	0	0	0
4/2/1988	0	0	0	0	0	0	0
4/3/1988	0	0	0	0	0	0	0
4/4/1988	0	0	0	0	0	0	0
4/5/1988	0	0	0	0	0	0	0
4/6/1988	0	0	0	0	0	0	0
4/7/1988	0	0	0	0	0	0	0
4/8/1988	0	0	0	0	0	0	0
4/9/1988	0	0	0	0	0	0	0
4/10/1988	0	0	0	0	0	0	0
4/11/1988	0	0	0	0	0	0	0
4/12/1988	0	0	0	0	0	0	0
4/13/1988	0	0	0	0	0	0	0
4/14/1988	0	0	0	0	0	0	0
4/15/1988	0	0	0	0	0	0	0
4/16/1988	0	0	0	0	0	0	0
4/17/1988	0	0	0	0	0	0	0
4/18/1988	0	0	0	0	0	0	0
4/19/1988	0	0	0	0	0	0	0
4/20/1988	0	0	0	0	0	0	0
4/21/1988	0	0	0	0	0	0	0
4/22/1988	0	0	0	0	0	0	0
4/23/1988	0	0	0	0	0	0	0
4/24/1988	0	0	0	0	0	0	0
4/25/1988	0	0	0	0	0	0	0
4/26/1988	0	0	0	0	0	0	0
4/27/1988	0	0	0	0	0	0	0
4/28/1988	0	0	0	0	0	0	0
4/29/1988	0	0	0	0	0	0	0
4/30/1988	0	0	0	0	0	0	0
5/1/1988	0	0	0	0	160	0	0
5/2/1988	233	4	12	143	163	0	0
5/3/1988	327	10	22	136	194	0	0
5/4/1988	399	112	44	136	202	0	0
5/5/1988	474	155	62	134	190	0	0
5/6/1988	478	207	75	134	194	0	0
5/7/1988	478	200	82	134	194	0	0
5/8/1988	478	212	83	124	184	0	0
5/9/1988	481	212	83	122	184	0	0
5/10/1988	481	212	83	122	174	0	0
5/11/1988	481	222	83	112	174	0	0
5/12/1988	485	214	100	112	163	0	0
5/13/1988	490	218	115	104	158	0	0
5/14/1988	488	218	129	93	149	0	0
5/15/1988	488	218	129	93	142	0	0
5/16/1988	488	218	129	93	140	0	0
5/17/1988	492	217	127	93	142	0	0
5/18/1988	492	217	127	93	145	0	0
5/19/1988	490	218	128	93	149	0	0
5/20/1988	504	218	128	93	145	0	0
5/21/1988	518	217	127	106	163	0	0
5/22/1988	520	218	128	112	165	0	0
5/23/1988	518	217	127	112	167	0	0
5/24/1988	520	220	128	112	167	0	0
5/25/1988	520	222	129	114	163	0	0
5/26/1988	523	222	129	114	163	0	0

Calculations for Richfield Canal Flow
1988
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
5/27/1988	526	221	128	112	163	0	0
5/28/1988	523	220	127	110	167	0	0
5/29/1988	523	220	127	110	165	0	0
5/30/1988	523	220	127	110	178	0	0
5/31/1988	540	220	129	112	182	0	0
6/1/1988	0	0	0	0	55	0	0
6/2/1988	0	0	0	0	0	0	0
6/3/1988	0	0	0	0	0	0	0
6/4/1988	0	0	0	0	0	0	0
6/5/1988	0	0	0	0	0	0	0
6/6/1988	0	0	0	0	0	0	0
6/7/1988	492	0	0	124	172	0	0
6/8/1988	474	0	0	120	182	0	0
6/9/1988	476	0	0	108	171	0	0
6/10/1988	476	0	0	118	210	0	0
6/11/1988	472	0	0	97	163	0	0
6/12/1988	469	0	0	95	158	0	0
6/13/1988	474	0	0	95	153	0	0
6/14/1988	483	0	0	93	153	0	0
6/15/1988	490	0	0	97	156	0	0
6/16/1988	495	0	0	95	153	0	0
6/17/1988	495	0	0	95	153	0	0
6/18/1988	495	0	0	93	153	0	0
6/19/1988	497	0	0	95	147	0	0
6/20/1988	511	0	0	93	153	0	0
6/21/1988	502	0	0	93	147	0	0
6/22/1988	523	0	0	93	144	0	0
6/23/1988	538	0	0	97	147	0	0
6/24/1988	536	0	0	95	144	0	0
6/25/1988	538	0	0	90	127	0	0
6/26/1988	538	0	0	86	129	0	0
6/27/1988	548	0	0	86	127	0	0
6/28/1988	553	0	0	93	130	0	0
6/29/1988	543	0	0	76	121	0	0
6/30/1988	553	0	0	76	114	0	0
7/1/1988	528	0	0	78	121	0	0
7/2/1988	40	0	0	0	98	0	0
7/3/1988	0	0	0	0	0	0	0
7/4/1988	0	0	0	0	0	0	0
7/5/1988	0	0	0	0	0	0	0
7/6/1988	0	0	0	0	0	0	0
7/7/1988	0	0	0	0	0	0	0
7/8/1988	0	0	0	0	0	0	0
7/9/1988	0	0	0	0	0	0	0
7/10/1988	0	0	0	0	0	0	0
7/11/1988	0	0	0	0	0	0	0
7/12/1988	0	0	0	0	0	0	0
7/13/1988	0	0	0	0	0	0	0
7/14/1988	0	0	0	0	0	0	0
7/15/1988	0	0	0	0	0	0	0
7/16/1988	0	0	0	0	0	0	0
7/17/1988	0	0	0	0	0	0	0
7/18/1988	0	0	0	0	0	0	0
7/19/1988	0	0	0	0	0	0	0
7/20/1988	0	0	0	0	0	0	0
7/21/1988	0	0	0	0	0	0	0

Calculations for Richfield Canal Flow
1988
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
7/22/1988	0	0	0	0	0	0	0
7/23/1988	0	0	0	0	0	0	0
7/24/1988	0	0	0	0	0	0	0
7/25/1988	0	0	0	0	0	0	0
7/26/1988	0	0	0	0	0	0	0
7/27/1988	0	0	0	0	0	0	0
7/28/1988	276	0	0	0	0	0	0
7/29/1988	351	0	0	0	0	0	0
7/30/1988	335	0	0	0	158	0	0
7/31/1988	129	0	0	0	188	0	0
8/1/1988	224	110	55	56	118	0	0
8/2/1988	51	15	0	15	26	0	0
8/3/1988	0	0	0	0	0	0	0
8/4/1988	0	0	0	0	0	0	0
8/5/1988	0	0	0	0	0	0	0
8/6/1988	0	0	0	0	0	0	0
8/7/1988	0	0	0	0	0	0	0
8/8/1988	0	0	0	0	0	0	0
8/9/1988	0	0	0	0	0	0	0
8/10/1988	0	0	0	0	0	0	0
8/11/1988	0	0	0	0	0	0	0
8/12/1988	0	0	0	0	0	0	0
8/13/1988	0	0	0	0	0	0	0
8/14/1988	0	0	0	0	0	0	0
8/15/1988	0	0	0	0	0	0	0
8/16/1988	0	0	0	0	0	0	0
8/17/1988	0	0	0	0	0	0	0
8/18/1988	0	0	0	0	0	0	0
8/19/1988	0	0	0	0	0	0	0
8/20/1988	0	0	0	0	0	0	0
8/21/1988	0	0	0	0	0	0	0
8/22/1988	0	0	0	0	0	0	0
8/23/1988	0	0	0	0	0	0	0
8/24/1988	0	0	0	0	0	0	0
8/25/1988	0	0	0	0	0	0	0
8/26/1988	0	0	0	0	0	0	0
8/27/1988	0	0	0	0	0	0	0
8/28/1988	0	0	0	0	0	0	0
8/29/1988	0	0	0	0	0	0	0
8/30/1988	0	0	0	0	0	0	0
8/31/1988	0	0	0	0	0	0	0
9/1/1988	0	0	0	0	0	0	0
9/2/1988	0	0	0	0	0	0	0
9/3/1988	0	0	0	0	0	0	0
9/4/1988	0	0	0	0	0	0	0
9/5/1988	0	0	0	0	0	0	0
9/6/1988	0	0	0	0	0	0	0
9/7/1988	0	0	0	0	0	0	0
9/8/1988	0	0	0	0	0	0	0
9/9/1988	0	0	0	0	0	0	0
9/10/1988	0	0	0	0	0	0	0
9/11/1988	0	0	0	0	0	0	0
9/12/1988	0	0	0	0	0	0	0
9/13/1988	0	0	0	0	0	0	0
9/14/1988	0	0	0	0	0	0	0
9/15/1988	0	0	0	0	0	0	0

Calculations for Richfield Canal Flow
1988
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
9/16/1988	0	0	0	0	0	0	0
9/17/1988	0	0	0	0	0	0	0
9/18/1988	0	0	0	0	0	0	0
9/19/1988	0	0	0	0	0	0	0
9/20/1988	0	0	0	0	0	0	0
9/21/1988	0	0	0	0	0	0	0
9/22/1988	0	0	0	0	0	0	0
9/23/1988	0	0	0	0	0	0	0
9/24/1988	0	0	0	0	0	0	0
9/25/1988	0	0	0	0	0	0	0
9/26/1988	0	0	0	0	0	0	0
9/27/1988	0	0	0	0	0	0	0
9/28/1988	0	0	0	0	0	0	0
9/29/1988	0	0	0	0	0	0	0
9/30/1988	0	0	0	0	0	0	0
10/1/1988	0	0	0	0	0	0	0
10/2/1988	0	0	0	0	0	0	0
10/3/1988	0	0	0	0	0	0	0
10/4/1988	0	0	0	0	0	0	0
10/5/1988	0	0	0	0	0	0	0
10/6/1988	0	0	0	0	0	0	0
10/7/1988	0	0	0	0	0	0	0
10/8/1988	0	0	0	0	0	0	0
10/9/1988	0	0	0	0	0	0	0
10/10/1988	0	0	0	0	0	0	0
10/11/1988	0	0	0	0	0	0	0
10/12/1988	0	0	0	0	0	0	0
10/13/1988	0	0	0	0	0	0	0
10/14/1988	0	0	0	0	0	0	0
10/15/1988	0	0	0	0	0	0	0
10/16/1988	0	0	0	0	0	0	0
10/17/1988	0	0	0	0	0	0	0
10/18/1988	0	0	0	0	0	0	0
10/19/1988	0	0	0	0	0	0	0
10/20/1988	0	0	0	0	0	0	0
10/21/1988	0	0	0	0	0	0	0
10/22/1988	0	0	0	0	0	0	0
10/23/1988	0	0	0	0	0	0	0
10/24/1988	0	0	0	0	0	0	0
10/25/1988	0	0	0	0	0	0	0
10/26/1988	0	0	0	0	0	0	0
10/27/1988	0	0	0	0	0	0	0
10/28/1988	0	0	0	0	0	0	0
10/29/1988	0	0	0	0	0	0	0
10/30/1988	0	0	0	0	0	0	0
10/31/1988	0	0	0	0	0	0	0
						0	0
						Maximum	Total

Calculations for Richfield Canal Flow
1989
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
4/1/1989	0	0	0	0	0	0	0
4/2/1989	0	0	0	0	0	0	0
4/3/1989	0	0	0	0	0	0	0
4/4/1989	0	0	0	0	0	0	0
4/5/1989	0	0	0	0	0	0	0
4/6/1989	0	0	0	0	0	0	0
4/7/1989	0	0	0	0	0	0	0
4/8/1989	0	0	0	0	0	0	0
4/9/1989	0	0	0	0	0	0	0
4/10/1989	0	0	0	0	0	0	0
4/11/1989	0	0	0	0	0	0	0
4/12/1989	0	0	0	0	0	0	0
4/13/1989	0	0	0	0	0	0	0
4/14/1989	0	0	0	0	0	0	0
4/15/1989	0	0	0	0	0	0	0
4/16/1989	0	0	0	0	0	0	0
4/17/1989	0	0	0	0	0	0	0
4/18/1989	0	0	0	0	0	0	0
4/19/1989	0	0	0	0	0	0	0
4/20/1989	0	0	0	0	0	0	0
4/21/1989	0	0	0	0	0	0	0
4/22/1989	0	0	0	0	0	0	0
4/23/1989	0	0	0	0	0	0	0
4/24/1989	0	0	0	0	0	0	0
4/25/1989	0	0	0	0	0	0	0
4/26/1989	0	0	0	0	0	0	0
4/27/1989	0	0	0	0	0	0	0
4/28/1989	0	0	0	0	0	0	0
4/29/1989	0	0	0	0	0	0	0
4/30/1989	0	0	0	0	0	0	0
5/1/1989	232	0	0	0	22	0	0
5/2/1989	341	0	0	93	121	0	0
5/3/1989	395	0	0	132	192	0	0
5/4/1989	444	0	0	130	212	0	0
5/5/1989	483	0	0	150	230	0	0
5/6/1989	492	0	0	130	208	0	0
5/7/1989	506	0	0	161	198	0	0
5/8/1989	506	0	0	150	230	0	0
5/9/1989	507	0	0	124	200	0	0
5/10/1989	498	0	0	114	184	0	0
5/11/1989	501	0	0	114	184	0	0
5/12/1989	502	0	0	114	180	0	0
5/13/1989	500	0	0	116	200	0	0
5/14/1989	498	0	0	114	181	0	0
5/15/1989	500	0	0	114	192	0	0
5/16/1989	498	0	0	114	196	0	0
5/17/1989	501	0	0	114	196	0	0
5/18/1989	500	0	0	114	200	0	0
5/19/1989	501	0	0	114	188	0	0
5/20/1989	504	0	0	114	188	0	0
5/21/1989	503	0	0	114	187	0	0
5/22/1989	503	0	0	116	188	0	0
5/23/1989	500	0	0	118	188	0	0
5/24/1989	501	0	0	114	186	0	0
5/25/1989	504	0	0	112	186	0	0

Calculations for Richfield Canal Flow
1989
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
5/26/1989	509	0	0	112	198	0	0
5/27/1989	508	0	0	116	198	0	0
5/28/1989	508	0	0	116	205	0	0
5/29/1989	508	0	0	120	206	0	0
5/30/1989	508	0	0	122	198	0	0
5/31/1989	508	0	0	122	194	0	0
6/1/1989	537	240	131	122	174	0	0
6/2/1989	537	236	130	116	144	0	0
6/3/1989	539	240	135	104	127	0	0
6/4/1989	541	252	139	104	158	0	0
6/5/1989	544	251	139	104	158	0	0
6/6/1989	544	251	139	104	157	0	0
6/7/1989	552	251	139	104	159	0	0
6/8/1989	550	248	148	97	143	0	0
6/9/1989	555	248	148	97	140	0	0
6/10/1989	590	248	148	126	161	0	0
6/11/1989	590	248	148	126	161	0	0
6/12/1989	592	249	149	126	161	0	0
6/13/1989	594	249	149	126	165	0	0
6/14/1989	596	244	147	122	165	0	0
6/15/1989	638	258	146	132	158	0	0
6/16/1989	659	266	148	147	184	0	0
6/17/1989	663	264	148	145	194	0	0
6/18/1989	668	264	148	145	194	0	0
6/19/1989	668	264	147	145	192	0	0
6/20/1989	680	266	149	147	196	0	0
6/21/1989	669	261	147	143	192	0	0
6/22/1989	680	261	147	143	192	0	0
6/23/1989	671	258	143	139	189	0	0
6/24/1989	671	256	138	136	192	0	0
6/25/1989	685	256	138	136	187	0	0
6/26/1989	678	253	137	134	186	0	0
6/27/1989	685	255	138	136	186	0	0
6/28/1989	687	255	138	136	186	0	0
6/29/1989	690	251	137	132	186	0	0
6/30/1989	629	261	139	143	179	0	0
7/1/1989	605	262	140	143	186	0	0
7/2/1989	607	261	140	143	186	0	0
7/3/1989	610	260	140	141	187	0	0
7/4/1989	623	266	139	143	189	0	0
7/5/1989	632	268	139	143	189	0	0
7/6/1989	643	266	139	143	194	0	0
7/7/1989	663	275	143	143	181	0	0
7/8/1989	675	275	143	141	184	0	0
7/9/1989	686	273	142	139	182	0	0
7/10/1989	688	272	141	136	184	0	0
7/11/1989	716	277	143	139	196	0	0
7/12/1989	716	286	144	122	192	0	0
7/13/1989	659	279	143	172	213	0	0
7/14/1989	659	269	145	177	219	0	0
7/15/1989	656	282	140	168	210	0	0
7/16/1989	625	273	139	143	194	0	0
7/17/1989	625	270	138	141	187	0	0
7/18/1989	652	272	139	141	189	0	0
7/19/1989	645	268	138	136	186	0	0

Calculations for Richfield Canal Flow
1989
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
7/20/1989	643	262	136	132	182	0	0
7/21/1989	647	265	137	134	181	0	0
7/22/1989	656	258	137	130	174	0	0
7/23/1989	670	265	139	134	177	0	0
7/24/1989	652	265	125	126	174	0	0
7/25/1989	672	268	136	130	177	0	0
7/26/1989	684	272	139	134	177	0	0
7/27/1989	682	268	139	126	174	0	0
7/28/1989	668	266	135	118	168	0	0
7/29/1989	700	269	138	120	174	0	0
7/30/1989	684	261	131	118	171	0	0
7/31/1989	688	260	132	110	169	0	0
8/1/1989	695	246	134	112	160	0	0
8/2/1989	618	246	135	112	154	0	0
8/3/1989	629	243	135	112	146	0	0
8/4/1989	625	240	134	120	155	0	0
8/5/1989	614	244	129	120	160	0	0
8/6/1989	629	239	131	114	160	0	0
8/7/1989	636	243	135	114	161	0	0
8/8/1989	554	232	133	168	166	0	0
8/9/1989	535	221	129	161	173	0	0
8/10/1989	529	237	131	132	177	0	0
8/11/1989	533	240	137	114	171	0	0
8/12/1989	531	242	137	114	171	0	0
8/13/1989	531	244	135	114	166	0	0
8/14/1989	533	238	136	116	168	0	0
8/15/1989	537	238	136	116	168	0	0
8/16/1989	524	236	135	114	169	0	0
8/17/1989	524	236	136	114	165	0	0
8/18/1989	520	236	136	112	163	0	0
8/19/1989	512	232	135	108	158	0	0
8/20/1989	533	247	141	108	158	0	0
8/21/1989	531	248	135	114	179	0	0
8/22/1989	537	247	133	110	179	0	0
8/23/1989	516	243	131	106	171	0	0
8/24/1989	568	249	132	106	174	0	0
8/25/1989	566	249	132	106	177	0	0
8/26/1989	562	249	132	106	176	0	0
8/27/1989	544	253	133	108	181	0	0
8/28/1989	562	253	133	108	184	0	0
8/29/1989	555	249	132	106	186	0	0
8/30/1989	548	247	132	104	186	0	0
8/31/1989	537	239	131	102	181	0	0
9/1/1989	528	0	0	102	176	0	0
9/2/1989	508	0	0	86	154	0	0
9/3/1989	508	0	0	0	152	0	0
9/4/1989	0	0	0	0	42	0	0
9/5/1989	0	0	0	0	0	0	0
9/6/1989	0	0	0	0	0	0	0
9/7/1989	0	0	0	0	0	0	0
9/8/1989	462	0	0	0	0	0	0
9/9/1989	474	0	0	124	0	0	0
9/10/1989	474	0	0	74	0	0	0
9/11/1989	474	0	0	76	0	0	0
9/12/1989	479	0	0	73	0	0	0

Calculations for Richfield Canal Flow
1989
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
9/13/1989	489	0	0	86	0	0	0
9/14/1989	489	0	0	86	168	0	0
9/15/1989	478	0	0	84	169	0	0
9/16/1989	472	0	0	74	154	0	0
9/17/1989	470	0	0	68	155	0	0
9/18/1989	469	0	0	71	160	0	0
9/19/1989	460	0	0	66	152	0	0
9/20/1989	457	0	0	59	140	0	0
9/21/1989	456	0	0	62	137	0	0
9/22/1989	0	0	0	57	140	0	0
9/23/1989	0	0	0	0	48	0	0
9/24/1989	0	0	0	0	0	0	0
9/25/1989	0	0	0	0	0	0	0
9/26/1989	0	0	0	0	0	0	0
9/27/1989	0	0	0	0	0	0	0
9/28/1989	0	0	0	0	0	0	0
9/29/1989	0	0	0	0	0	0	0
9/30/1989	0	0	0	0	0	0	0
10/1/1989	0	0	0	0	0	0	0
10/2/1989	0	0	0	0	0	0	0
10/3/1989	0	0	0	0	0	0	0
10/4/1989	0	0	0	0	0	0	0
10/5/1989	0	0	0	0	0	0	0
10/6/1989	0	0	0	0	0	0	0
10/7/1989	0	0	0	0	0	0	0
10/8/1989	0	0	0	0	0	0	0
10/9/1989	0	0	0	0	0	0	0
10/10/1989	0	0	0	0	0	0	0
10/11/1989	0	0	0	0	0	0	0
10/12/1989	0	0	0	0	0	0	0
10/13/1989	0	0	0	0	0	0	0
10/14/1989	0	0	0	0	0	0	0
10/15/1989	0	0	0	0	0	0	0
10/16/1989	0	0	0	0	0	0	0
10/17/1989	0	0	0	0	0	0	0
10/18/1989	0	0	0	0	0	0	0
10/19/1989	0	0	0	0	0	0	0
10/20/1989	0	0	0	0	0	0	0
10/21/1989	0	0	0	0	0	0	0
10/22/1989	0	0	0	0	0	0	0
10/23/1989	0	0	0	0	0	0	0
10/24/1989	0	0	0	0	0	0	0
10/25/1989	0	0	0	0	0	0	0
10/26/1989	0	0	0	0	0	0	0
10/27/1989	0	0	0	0	0	0	0
10/28/1989	0	0	0	0	0	0	0
10/29/1989	0	0	0	0	0	0	0
10/30/1989	0	0	0	0	0	0	0
10/31/1989	0	0	0	0	0	0	0
11/1/1989	0	0	0	0	0	0	0
11/2/1989	0	0	0	0	0	0	0
11/3/1989	0	0	0	0	0	0	0
11/4/1989	0	0	0	0	0	0	0
11/5/1989	0	0	0	0	0	0	0
11/6/1989	0	0	0	0	0	0	0

Calculations for Richfield Canal Flow
1989
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
11/7/1989	200	163	59	46	0	0	0
11/8/1989	267	40	50	30	0	0	0
11/9/1989	40	74	54	9	0	0	0
11/10/1989	140	0	0	0	0	140	278
11/11/1989	0	0	0	0	0	0	0
11/12/1989	0	0	0	0	0	0	0
11/13/1989	0	0	0	0	0	0	0
11/14/1989	0	0	0	0	0	0	0
11/15/1989	0	0	0	0	0	0	0
11/16/1989	0	0	0	0	0	0	0
						140	278
						Maximum	Total

Calculations for Richfield Canal Flow
1990
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
4/1/1990	0	0	0	0	0	0	0
4/2/1990	0	0	0	0	0	0	0
4/3/1990	0	0	0	0	0	0	0
4/4/1990	0	0	0	0	0	0	0
4/5/1990	0	0	0	0	0	0	0
4/6/1990	0	0	0	0	0	0	0
4/7/1990	0	0	0	0	0	0	0
4/8/1990	0	0	0	0	0	0	0
4/9/1990	0	0	0	0	0	0	0
4/10/1990	0	0	0	0	0	0	0
4/11/1990	0	0	0	0	0	0	0
4/12/1990	0	0	0	0	0	0	0
4/13/1990	0	0	0	0	0	0	0
4/14/1990	0	0	0	0	0	0	0
4/15/1990	0	0	0	0	0	0	0
4/16/1990	0	0	0	0	0	0	0
4/17/1990	0	0	0	0	0	0	0
4/18/1990	0	0	0	0	0	0	0
4/19/1990	0	0	0	0	0	0	0
4/20/1990	0	0	0	0	0	0	0
4/21/1990	0	0	0	0	0	0	0
4/22/1990	0	0	0	0	0	0	0
4/23/1990	0	0	0	0	0	0	0
4/24/1990	0	0	0	0	0	0	0
4/25/1990	0	0	0	0	0	0	0
4/26/1990	0	0	0	0	0	0	0
4/27/1990	0	0	0	0	0	0	0
4/28/1990	0	0	0	0	0	0	0
4/29/1990	0	0	0	0	0	0	0
4/30/1990	0	0	0	0	0	0	0
5/1/1990	0	0	0	0	0	0	0
5/2/1990	0	0	0	0	0	0	0
5/3/1990	0	0	0	0	0	0	0
5/4/1990	0	0	0	0	0	0	0
5/5/1990	298	0	0	0	0	0	0
5/6/1990	346	0	0	0	0	0	0
5/7/1990	234	66	34	171	169	0	0
5/8/1990	302	197	94	200	243	0	0
5/9/1990	359	177	99	170	224	0	0
5/10/1990	261	204	105	139	173	0	0
5/11/1990	250	215	105	128	210	0	0
5/12/1990	250	233	120	116	189	0	0
5/13/1990	244	244	125	130	173	0	0
5/14/1990	272	230	120	116	177	0	0
5/15/1990	272	238	125	122	177	0	0
5/16/1990	264	248	129	130	182	0	0
5/17/1990	275	244	129	120	174	0	0
5/18/1990	275	244	129	120	173	0	0
5/19/1990	264	238	125	112	171	0	0
5/20/1990	272	242	126	118	176	0	0
5/21/1990	268	241	125	114	165	0	0
5/22/1990	268	238	124	112	169	0	0
5/23/1990	283	238	124	110	147	0	0
5/24/1990	283	241	125	117	155	0	0
5/25/1990	283	246	125	112	163	0	0

Calculations for Richfield Canal Flow
1990
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
5/26/1990	286	234	122	81	130	0	0
5/27/1990	290	236	123	81	102	0	0
5/28/1990	286	236	123	78	50	0	0
5/29/1990	286	220	117	68	96	0	0
5/30/1990	290	233	120	76	130	0	0
5/31/1990	290	237	122	78	154	0	0
6/1/1990	0	0	0	0	0	0	0
6/2/1990	0	0	0	0	0	0	0
6/3/1990	0	0	0	0	0	0	0
6/4/1990	0	0	0	0	0	0	0
6/5/1990	0	0	0	0	0	0	0
6/6/1990	0	0	0	0	0	0	0
6/7/1990	0	0	0	0	0	0	0
6/8/1990	541	202	113	132	140	0	0
6/9/1990	503	174	96	93	158	0	0
6/10/1990	510	213	105	124	158	0	0
6/11/1990	480	190	99	112	147	0	0
6/12/1990	472	198	101	93	151	0	0
6/13/1990	476	216	103	78	151	0	0
6/14/1990	476	213	106	78	139	0	0
6/15/1990	493	220	108	84	140	0	0
6/16/1990	493	220	108	84	141	0	0
6/17/1990	430	210	108	91	143	0	0
6/18/1990	487	204	108	88	147	0	0
6/19/1990	428	204	108	88	160	0	0
6/20/1990	414	201	106	84	139	0	0
6/21/1990	416	194	105	79	128	0	0
6/22/1990	434	207	106	79	133	0	0
6/23/1990	442	212	108	81	140	0	0
6/24/1990	482	224	111	106	157	0	0
6/25/1990	476	215	109	108	163	0	0
6/26/1990	484	228	108	108	163	0	0
6/27/1990	514	229	109	122	176	0	0
6/28/1990	524	232	110	124	182	0	0
6/29/1990	557	244	117	139	189	0	0
6/30/1990	555	244	117	136	186	0	0
7/1/1990	561	245	117	136	189	0	0
7/2/1990	563	244	117	136	189	0	0
7/3/1990	561	241	116	134	189	0	0
7/4/1990	548	223	117	128	186	0	0
7/5/1990	574	244	126	130	184	0	0
7/6/1990	570	242	125	130	179	0	0
7/7/1990	570	240	125	128	179	0	0
7/8/1990	570	244	126	130	179	0	0
7/9/1990	574	242	126	130	176	0	0
7/10/1990	583	244	127	130	176	0	0
7/11/1990	588	244	127	130	176	0	0
7/12/1990	583	238	127	128	169	0	0
7/13/1990	594	241	128	128	177	0	0
7/14/1990	601	248	130	130	176	0	0
7/15/1990	601	244	129	126	100	0	0
7/16/1990	599	244	129	126	171	0	0
7/17/1990	607	249	127	130	176	0	0
7/18/1990	607	244	129	128	0	0	0
7/19/1990	605	244	130	128	0	0	0

Calculations for Richfield Canal Flow
1990
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
7/20/1990	0	0	0	81	0	0	0
7/21/1990	0	0	0	0	0	0	0
7/22/1990	0	0	0	0	0	0	0
7/23/1990	0	0	0	0	0	0	0
7/24/1990	0	0	0	0	0	0	0
7/25/1990	0	0	0	0	0	0	0
7/26/1990	0	0	0	0	0	0	0
7/27/1990	0	0	0	0	0	0	0
7/28/1990	0	0	0	0	0	0	0
7/29/1990	0	0	0	0	0	0	0
7/30/1990	0	0	0	0	0	0	0
7/31/1990	0	0	0	0	0	0	0
8/1/1990	0	0	0	0	0	0	0
8/2/1990	0	0	0	0	0	0	0
8/3/1990	0	0	0	0	0	0	0
8/4/1990	0	0	0	0	0	0	0
8/5/1990	0	0	0	0	0	0	0
8/6/1990	0	0	0	0	0	0	0
8/7/1990	0	0	0	0	0	0	0
8/8/1990	0	0	0	0	0	0	0
8/9/1990	0	0	0	0	0	0	0
8/10/1990	0	0	0	0	0	0	0
8/11/1990	0	0	0	0	0	0	0
8/12/1990	0	0	0	0	0	0	0
8/13/1990	0	0	0	0	0	0	0
8/14/1990	0	0	0	0	0	0	0
8/15/1990	0	0	0	0	0	0	0
8/16/1990	0	0	0	0	0	0	0
8/17/1990	0	0	0	0	0	0	0
8/18/1990	0	109	60	0	0	0	0
8/19/1990	0	0	0	0	0	0	0
8/20/1990	282	0	0	126	0	0	0
8/21/1990	242	117	53	106	30	0	0
8/22/1990	282	63	52	116	176	0	0
8/23/1990	293	152	60	86	116	0	0
8/24/1990	238	132	57	60	95	0	0
8/25/1990	0	0	0	0	81	0	0
8/26/1990	0	0	0	0	0	0	0
8/27/1990	0	0	0	0	0	0	0
8/28/1990	0	0	0	0	0	0	0
8/29/1990	0	0	0	0	0	0	0
8/30/1990	0	0	0	0	0	0	0
8/31/1990	0	0	0	0	0	0	0
9/1/1990	0	0	0	0	0	0	0
9/2/1990	0	0	0	0	0	0	0
9/3/1990	0	0	0	0	0	0	0
9/4/1990	0	0	0	0	0	0	0
9/5/1990	0	0	0	0	0	0	0
9/6/1990	0	0	0	0	0	0	0
9/7/1990	0	0	0	0	0	0	0
9/8/1990	0	0	0	0	0	0	0
9/9/1990	0	0	0	0	0	0	0
9/10/1990	0	0	0	0	0	0	0
9/11/1990	0	0	0	0	0	0	0
9/12/1990	0	0	0	0	0	0	0

Calculations for Richfield Canal Flow
1990
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
9/13/1990	0	0	0	0	0	0	0
9/14/1990	0	0	0	0	0	0	0
9/15/1990	0	0	0	0	0	0	0
9/16/1990	0	0	0	0	0	0	0
9/17/1990	0	0	0	0	0	0	0
9/18/1990	0	0	0	0	0	0	0
9/19/1990	0	0	0	0	0	0	0
9/20/1990	0	0	0	0	0	0	0
9/21/1990	0	0	0	0	0	0	0
9/22/1990	0	0	0	0	0	0	0
9/23/1990	0	0	0	0	0	0	0
9/24/1990	0	100	60	0	0	0	0
9/25/1990	200	0	0	0	0	0	0
9/26/1990	260	104	69	20	0	0	0
9/27/1990	189	160	68	20	0	0	0
9/28/1990	232	197	71	26	0	0	0
9/29/1990	235	178	69	12	0	0	0
9/30/1990	0	0	0	0	0	0	0
10/1/1990	0	0	0	0	0	0	0
10/2/1990	0	0	0	0	0	0	0
10/3/1990	0	0	0	0	0	0	0
10/4/1990	0	0	0	0	0	0	0
10/5/1990	0	0	0	0	0	0	0
10/6/1990	0	0	0	0	0	0	0
10/7/1990	0	0	0	0	0	0	0
10/8/1990	0	0	0	0	0	0	0
10/9/1990	0	0	0	0	0	0	0
10/10/1990	0	0	0	0	0	0	0
10/11/1990	0	0	0	0	0	0	0
10/12/1990	0	0	0	0	0	0	0
10/13/1990	0	0	0	0	0	0	0
10/14/1990	0	0	0	0	0	0	0
10/15/1990	0	0	0	0	0	0	0
10/16/1990	0	0	0	0	0	0	0
10/17/1990	0	0	0	0	0	0	0
10/18/1990	0	0	0	0	0	0	0
10/19/1990	0	0	0	0	0	0	0
10/20/1990	0	0	0	0	0	0	0
10/21/1990	0	0	0	0	0	0	0
10/22/1990	0	0	0	0	0	0	0
10/23/1990	0	0	0	0	0	0	0
10/24/1990	0	0	0	0	0	0	0
10/25/1990	0	0	0	0	0	0	0
10/26/1990	0	0	0	0	0	0	0
10/27/1990	0	0	0	0	0	0	0
10/28/1990	0	0	0	0	0	0	0
10/29/1990	0	0	0	0	0	0	0
10/30/1990	0	0	0	0	0	0	0
10/31/1990	0	0	0	0	0	0	0
						0	0
						Maximum	Total

IWRB00003580

Calculations for Richfield Canal Flow
1991
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
4/1/1991	0	0	0	0	0	0	0
4/2/1991	0	0	0	0	0	0	0
4/3/1991	0	0	0	0	0	0	0
4/4/1991	0	0	0	0	0	0	0
4/5/1991	0	0	0	0	0	0	0
4/6/1991	0	0	0	0	0	0	0
4/7/1991	0	0	0	0	0	0	0
4/8/1991	0	0	0	0	0	0	0
4/9/1991	0	0	0	0	0	0	0
4/10/1991	0	0	0	0	0	0	0
4/11/1991	0	0	0	0	0	0	0
4/12/1991	0	0	0	0	0	0	0
4/13/1991	0	0	0	0	0	0	0
4/14/1991	0	0	0	0	0	0	0
4/15/1991	0	0	0	0	0	0	0
4/16/1991	0	0	0	0	0	0	0
4/17/1991	0	0	0	0	0	0	0
4/18/1991	0	0	0	0	0	0	0
4/19/1991	0	0	0	0	0	0	0
4/20/1991	0	0	0	0	0	0	0
4/21/1991	0	0	0	0	0	0	0
4/22/1991	0	0	0	0	0	0	0
4/23/1991	0	0	0	0	0	0	0
4/24/1991	0	0	0	0	0	0	0
4/25/1991	0	0	0	0	0	0	0
4/26/1991	0	0	0	0	0	0	0
4/27/1991	0	0	0	0	0	0	0
4/28/1991	0	0	0	0	0	0	0
4/29/1991	0	0	0	0	0	0	0
4/30/1991	0	0	0	0	0	0	0
5/1/1991	0	0	0	0	0	0	0
5/2/1991	0	0	0	0	0	0	0
5/3/1991	0	0	0	0	0	0	0
5/4/1991	0	0	0	0	0	0	0
5/5/1991	0	0	0	0	0	0	0
5/6/1991	0	0	0	0	0	0	0
5/7/1991	0	0	0	0	0	0	0
5/8/1991	0	0	0	0	0	0	0
5/9/1991	0	0	0	0	0	0	0
5/10/1991	0	0	0	0	0	0	0
5/11/1991	0	0	0	0	0	0	0
5/12/1991	0	0	0	0	0	0	0
5/13/1991	0	0	0	0	0	0	0
5/14/1991	0	0	0	0	0	0	0
5/15/1991	0	0	0	0	0	0	0
5/16/1991	0	0	0	0	0	0	0
5/17/1991	0	0	0	0	0	0	0
5/18/1991	0	0	0	0	0	0	0
5/19/1991	0	0	0	0	0	0	0
5/20/1991	0	0	0	0	0	0	0
5/21/1991	0	0	0	0	0	0	0
5/22/1991	298	0	0	116	0	0	0
5/23/1991	349	0	0	159	215	0	0
5/24/1991	410	0	0	114	158	0	0
5/25/1991	430	0	0	106	152	0	0

Calculations for Richfield Canal Flow
1991
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
5/26/1991	434	0	0	93	166	0	0
5/27/1991	487	0	0	83	109	0	0
5/28/1991	491	0	0	108	155	0	0
5/29/1991	499	0	0	112	152	0	0
5/30/1991	512	0	0	114	155	0	0
5/31/1991	497	0	0	108	149	0	0
6/1/1991	493	199	105	106	139	0	0
6/2/1991	506	207	106	110	139	0	0
6/3/1991	510	204	106	108	139	0	0
6/4/1991	506	204	106	108	141	0	0
6/5/1991	585	225	117	120	169	0	0
6/6/1991	574	215	114	141	176	0	0
6/7/1991	577	216	114	141	176	0	0
6/8/1991	567	212	112	136	113	0	0
6/9/1991	567	212	112	130	113	0	0
6/10/1991	559	212	112	130	157	0	0
6/11/1991	555	211	112	128	157	0	0
6/12/1991	546	211	112	128	157	0	0
6/13/1991	550	207	111	124	149	0	0
6/14/1991	577	212	112	147	166	0	0
6/15/1991	584	212	112	147	171	0	0
6/16/1991	583	212	112	147	169	0	0
6/17/1991	579	212	112	147	173	0	0
6/18/1991	577	212	112	147	173	0	0
6/19/1991	581	212	114	150	176	0	0
6/20/1991	579	210	114	150	176	0	0
6/21/1991	581	215	115	154	173	0	0
6/22/1991	568	206	112	145	176	0	0
6/23/1991	581	207	113	147	174	0	0
6/24/1991	572	204	112	145	173	0	0
6/25/1991	572	202	112	141	171	0	0
6/26/1991	592	208	114	150	166	0	0
6/27/1991	583	212	115	152	182	0	0
6/28/1991	535	213	115	152	186	0	0
6/29/1991	524	210	114	150	186	0	0
6/30/1991	535	215	115	152	186	0	0
7/1/1991	524	207	114	147	186	0	0
7/2/1991	529	210	114	150	184	0	0
7/3/1991	544	215	115	152	182	0	0
7/4/1991	544	211	115	150	181	0	0
7/5/1991	550	216	116	154	173	0	0
7/6/1991	552	216	116	154	174	0	0
7/7/1991	552	211	115	152	174	0	0
7/8/1991	546	212	117	152	176	0	0
7/9/1991	533	206	115	150	176	0	0
7/10/1991	535	210	115	152	174	0	0
7/11/1991	0	0	0	0	0	0	0
7/12/1991	0	0	0	0	0	0	0
7/13/1991	0	0	0	0	0	0	0
7/14/1991	0	0	0	0	0	0	0
7/15/1991	0	0	0	0	0	0	0
7/16/1991	0	0	0	0	0	0	0
7/17/1991	0	0	0	0	0	0	0
7/18/1991	0	0	0	0	0	0	0
7/19/1991	0	0	0	0	0	0	0

Calculations for Richfield Canal Flow
1991
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
7/20/1991	0	0	0	0	0	0	0
7/21/1991	0	0	0	0	0	0	0
7/22/1991	0	0	0	0	0	0	0
7/23/1991	0	0	0	0	0	0	0
7/24/1991	0	0	0	0	0	0	0
7/25/1991	0	0	0	0	0	0	0
7/26/1991	0	0	0	0	0	0	0
7/27/1991	0	0	0	0	0	0	0
7/28/1991	0	0	0	0	0	0	0
7/29/1991	0	0	0	0	0	0	0
7/30/1991	0	0	0	0	0	0	0
7/31/1991	0	0	0	0	0	0	0
8/1/1991	0	0	0	0	0	0	0
8/2/1991	0	0	0	0	0	0	0
8/3/1991	0	0	0	0	0	0	0
8/4/1991	0	0	0	0	0	0	0
8/5/1991	0	0	0	0	0	0	0
8/6/1991	0	0	0	0	0	0	0
8/7/1991	0	0	0	0	0	0	0
8/8/1991	0	0	0	0	0	0	0
8/9/1991	0	0	0	0	0	0	0
8/10/1991	0	0	0	0	0	0	0
8/11/1991	0	0	0	0	0	0	0
8/12/1991	0	0	0	0	0	0	0
8/13/1991	0	0	0	0	105	0	0
8/14/1991	0	0	0	0	179	0	0
8/15/1991	0	0	0	0	125	0	0
8/16/1991	0	0	0	0	141	0	0
8/17/1991	0	0	0	0	0	0	0
8/18/1991	0	0	0	0	0	0	0
8/19/1991	0	0	0	0	0	0	0
8/20/1991	0	0	0	0	0	0	0
8/21/1991	0	0	0	0	0	0	0
8/22/1991	0	0	0	0	0	0	0
8/23/1991	0	0	0	0	0	0	0
8/24/1991	0	0	0	0	0	0	0
8/25/1991	0	0	0	0	0	0	0
8/26/1991	0	0	0	0	0	0	0
8/27/1991	0	0	0	0	0	0	0
8/28/1991	0	0	0	0	0	0	0
8/29/1991	0	0	0	0	0	0	0
8/30/1991	0	0	0	0	0	0	0
8/31/1991	0	0	0	0	0	0	0
9/1/1991	0	0	0	0	0	0	0
9/2/1991	0	0	0	0	0	0	0
9/3/1991	0	0	0	0	0	0	0
9/4/1991	0	0	0	0	0	0	0
9/5/1991	0	0	0	0	0	0	0
9/6/1991	0	0	0	0	0	0	0
9/7/1991	0	0	0	0	0	0	0
9/8/1991	0	0	0	0	0	0	0
9/9/1991	0	0	0	0	0	0	0
9/10/1991	0	0	0	0	0	0	0
9/11/1991	0	0	0	0	0	0	0
9/12/1991	0	0	0	0	0	0	0

Calculations for Richfield Canal Flow
1991
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
9/13/1991	0	0	0	0	0	0	0
9/14/1991	0	0	0	0	0	0	0
9/15/1991	0	0	0	0	0	0	0
9/16/1991	0	0	0	0	0	0	0
9/17/1991	0	0	0	0	0	0	0
9/18/1991	0	0	0	0	0	0	0
9/19/1991	0	0	0	0	0	0	0
9/20/1991	0	0	0	0	0	0	0
9/21/1991	0	0	0	0	0	0	0
9/22/1991	0	0	0	0	0	0	0
9/23/1991	0	0	0	0	0	0	0
9/24/1991	0	0	0	0	0	0	0
9/25/1991	0	0	0	0	0	0	0
9/26/1991	0	0	0	0	0	0	0
9/27/1991	0	0	0	0	0	0	0
9/28/1991	0	0	0	0	0	0	0
9/29/1991	0	0	0	0	0	0	0
9/30/1991	0	0	0	0	0	0	0
10/1/1991	0	0	0	0	0	0	0
10/2/1991	0	0	0	0	0	0	0
10/3/1991	0	0	0	0	0	0	0
10/4/1991	0	0	0	0	0	0	0
10/5/1991	0	0	0	0	0	0	0
10/6/1991	0	0	0	0	0	0	0
10/7/1991	0	0	0	0	0	0	0
10/8/1991	0	0	0	0	0	0	0
10/9/1991	0	0	0	0	0	0	0
10/10/1991	0	0	0	0	0	0	0
10/11/1991	0	0	0	0	0	0	0
10/12/1991	0	0	0	0	0	0	0
10/13/1991	0	0	0	0	0	0	0
10/14/1991	0	0	0	0	0	0	0
10/15/1991	0	0	0	0	0	0	0
10/16/1991	0	0	0	0	0	0	0
10/17/1991	0	0	0	0	0	0	0
10/18/1991	0	0	0	0	0	0	0
10/19/1991	0	0	0	0	0	0	0
10/20/1991	0	0	0	0	0	0	0
10/21/1991	0	0	0	0	0	0	0
10/22/1991	0	0	0	0	0	0	0
10/23/1991	0	0	0	0	0	0	0
10/24/1991	0	0	0	0	0	0	0
10/25/1991	0	0	0	0	0	0	0
10/26/1991	0	0	0	0	0	0	0
10/27/1991	0	0	0	0	0	0	0
10/28/1991	0	0	0	0	0	0	0
10/29/1991	0	0	0	0	0	0	0
10/30/1991	0	0	0	0	0	0	0
10/31/1991	0	0	0	0	0	0	0
11/1/1991	0	0	0	0	0	0	0
11/2/1991	0	0	0	0	0	0	0
11/3/1991	0	0	0	0	0	0	0
11/4/1991	0	0	0	0	0	0	0
11/5/1991	0	0	0	0	0	0	0
11/6/1991	0	0	0	0	0	0	0

Calculations for Richfield Canal Flow
1991
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
11/7/1991	0	0	0	0	0	0	0
11/8/1991	0	0	0	0	0	0	0
11/9/1991	0	0	0	0	0	0	0
11/10/1991	0	0	0	0	0	0	0
11/11/1991	0	0	0	0	0	0	0
11/12/1991	0	0	0	0	0	0	0
11/13/1991	0	0	0	0	0	0	0
11/14/1991	0	0	0	0	0	0	0
11/15/1991	0	0	0	0	0	0	0
11/16/1991	0	0	0	0	0	0	0
11/17/1991	0	0	0	0	0	0	0
11/18/1991	0	0	0	0	0	0	0
11/19/1991	0	0	0	0	0	0	0
11/20/1991	0	0	0	0	0	0	0
11/21/1991	0	0	0	0	0	0	0
11/22/1991	0	0	0	0	0	0	0
						0	0
						Maximum	Total

Calculations for Richfield Canal Flow
1992
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
4/1/1992	0	0	0	0	0	0	0
4/2/1992	0	0	0	0	0	0	0
4/3/1992	0	0	0	0	0	0	0
4/4/1992	0	0	0	0	0	0	0
4/5/1992	0	0	0	0	0	0	0
4/6/1992	0	0	0	0	0	0	0
4/7/1992	0	0	0	0	0	0	0
4/8/1992	0	0	0	0	0	0	0
4/9/1992	0	0	0	0	0	0	0
4/10/1992	0	0	0	0	0	0	0
4/11/1992	0	0	0	0	0	0	0
4/12/1992	0	0	0	0	0	0	0
4/13/1992	0	0	0	0	0	0	0
4/14/1992	0	0	0	0	0	0	0
4/15/1992	0	0	0	0	0	0	0
4/16/1992	0	0	0	0	0	0	0
4/17/1992	0	0	0	0	0	0	0
4/18/1992	0	0	0	0	0	0	0
4/19/1992	0	0	0	0	0	0	0
4/20/1992	0	0	0	0	0	0	0
4/21/1992	0	0	0	0	0	0	0
4/22/1992	0	0	0	0	0	0	0
4/23/1992	0	0	0	0	0	0	0
4/24/1992	0	0	0	0	0	0	0
4/25/1992	0	0	0	0	0	0	0
4/26/1992	0	0	0	0	0	0	0
4/27/1992	0	0	0	0	0	0	0
4/28/1992	0	0	0	0	0	0	0
4/29/1992	0	0	0	0	0	0	0
4/30/1992	0	0	0	132	0	0	0
5/1/1992	315	0	0	170	181	0	0
5/2/1992	360	0	0	190	212	0	0
5/3/1992	406	0	0	163	181	0	0
5/4/1992	524	0	0	172	201	0	0
5/5/1992	526	0	0	152	171	0	0
5/6/1992	529	0	0	132	173	0	0
5/7/1992	537	0	0	141	173	0	0
5/8/1992	583	0	0	156	181	0	0
5/9/1992	588	0	0	184	208	0	0
5/10/1992	592	0	0	184	215	0	0
5/11/1992	579	0	0	182	215	0	0
5/12/1992	590	0	0	182	246	0	0
5/13/1992	590	0	0	184	250	0	0
5/14/1992	592	0	0	184	241	0	0
5/15/1992	594	0	0	180	238	0	0
5/16/1992	592	0	0	170	239	0	0
5/17/1992	583	0	0	161	224	0	0
5/18/1992	574	0	0	154	224	0	0
5/19/1992	557	0	0	150	224	0	0
5/20/1992	541	0	0	141	203	0	0
5/21/1992	343	0	0	110	192	0	0
5/22/1992	0	0	0	0	0	0	0
5/23/1992	0	0	0	0	0	0	0
5/24/1992	0	0	0	0	0	0	0
5/25/1992	0	0	0	0	0	0	0

Calculations for Richfield Canal Flow
1992
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
5/26/1992	0	0	0	0	0	0	0
5/27/1992	0	0	0	0	0	0	0
5/28/1992	0	0	0	0	0	0	0
5/29/1992	0	0	0	0	0	0	0
5/30/1992	0	0	0	0	0	0	0
5/31/1992	0	0	0	0	0	0	0
6/1/1992	0	0	0	0	0	0	0
6/2/1992	0	0	0	0	0	0	0
6/3/1992	0	0	0	0	0	0	0
6/4/1992	0	0	0	0	0	0	0
6/5/1992	0	0	0	0	0	0	0
6/6/1992	0	0	0	0	0	0	0
6/7/1992	0	0	0	0	0	0	0
6/8/1992	0	0	0	0	0	0	0
6/9/1992	0	0	0	0	0	0	0
6/10/1992	0	0	0	0	0	0	0
6/11/1992	0	0	0	0	0	0	0
6/12/1992	0	0	0	0	0	0	0
6/13/1992	0	0	0	0	0	0	0
6/14/1992	0	0	0	0	0	0	0
6/15/1992	0	0	0	0	0	0	0
6/16/1992	0	0	0	0	0	0	0
6/17/1992	0	0	0	0	0	0	0
6/18/1992	0	0	0	0	0	0	0
6/19/1992	0	0	0	0	0	0	0
6/20/1992	0	0	0	0	0	0	0
6/21/1992	0	0	0	0	0	0	0
6/22/1992	0	0	0	0	0	0	0
6/23/1992	0	0	0	0	0	0	0
6/24/1992	0	0	0	0	0	0	0
6/25/1992	0	0	0	0	0	0	0
6/26/1992	0	0	0	0	0	0	0
6/27/1992	347	161	81	118	0	0	0
6/28/1992	426	0	0	118	0	0	0
6/29/1992	456	212	103	154	221	0	0
6/30/1992	444	207	102	147	217	0	0
7/1/1992	408	0	0	0	194	0	0
7/2/1992	0	0	0	0	0	0	0
7/3/1992	0	0	0	0	0	0	0
7/4/1992	0	0	0	0	0	0	0
7/5/1992	0	0	0	0	0	0	0
7/6/1992	0	0	0	0	0	0	0
7/7/1992	0	0	0	0	0	0	0
7/8/1992	0	0	0	0	0	0	0
7/9/1992	0	0	0	0	0	0	0
7/10/1992	0	0	0	0	0	0	0
7/11/1992	0	0	0	0	0	0	0
7/12/1992	0	0	0	0	0	0	0
7/13/1992	0	0	0	0	0	0	0
7/14/1992	0	0	0	0	0	0	0
7/15/1992	0	0	0	0	0	0	0
7/16/1992	0	0	0	0	0	0	0
7/17/1992	0	0	0	0	0	0	0
7/18/1992	0	0	0	0	0	0	0
7/19/1992	0	0	0	0	0	0	0

Calculations for Richfield Canal Flow
1992
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
7/20/1992	0	0	0	0	0	0	0
7/21/1992	0	0	0	0	0	0	0
7/22/1992	0	0	0	0	0	0	0
7/23/1992	0	0	0	0	0	0	0
7/24/1992	0	0	0	0	0	0	0
7/25/1992	0	0	0	0	0	0	0
7/26/1992	0	0	0	0	0	0	0
7/27/1992	0	0	0	0	0	0	0
7/28/1992	0	0	0	0	0	0	0
7/29/1992	0	0	0	0	0	0	0
7/30/1992	0	0	0	0	0	0	0
7/31/1992	0	0	0	0	0	0	0
8/1/1992	0	0	0	0	0	0	0
8/2/1992	0	0	0	0	0	0	0
8/3/1992	0	0	0	0	0	0	0
8/4/1992	0	0	0	0	0	0	0
8/5/1992	0	0	0	0	0	0	0
8/6/1992	0	0	0	0	0	0	0
8/7/1992	0	0	0	0	0	0	0
8/8/1992	0	0	0	0	0	0	0
8/9/1992	0	0	0	0	0	0	0
8/10/1992	0	0	0	0	0	0	0
8/11/1992	0	0	0	0	0	0	0
8/12/1992	0	0	0	0	0	0	0
8/13/1992	0	0	0	0	0	0	0
8/14/1992	0	0	0	0	0	0	0
8/15/1992	0	0	0	0	0	0	0
8/16/1992	0	0	0	0	0	0	0
8/17/1992	0	0	0	0	0	0	0
8/18/1992	0	0	0	0	0	0	0
8/19/1992	0	0	0	0	0	0	0
8/20/1992	0	0	0	0	0	0	0
8/21/1992	0	0	0	0	0	0	0
8/22/1992	0	0	0	0	0	0	0
8/23/1992	0	0	0	0	0	0	0
8/24/1992	295	0	0	0	0	0	0
8/25/1992	416	84	63	218	0	0	0
8/26/1992	414	145	84	150	0	0	0
8/27/1992	362	168	82	79	0	0	0
8/28/1992	0	0	0	0	0	0	0
8/29/1992	0	0	0	0	0	0	0
8/30/1992	0	0	0	0	0	0	0
8/31/1992	0	0	0	0	0	0	0
9/1/1992	0	0	0	0	0	0	0
9/2/1992	0	0	0	0	0	0	0
9/3/1992	0	0	0	0	0	0	0
9/4/1992	0	0	0	0	0	0	0
9/5/1992	0	0	0	0	0	0	0
9/6/1992	0	0	0	0	0	0	0
9/7/1992	0	0	0	0	0	0	0
9/8/1992	0	0	0	0	0	0	0
9/9/1992	0	0	0	0	0	0	0
9/10/1992	0	0	0	0	0	0	0
9/11/1992	0	0	0	0	0	0	0
9/12/1992	0	0	0	0	0	0	0

Calculations for Richfield Canal Flow
1992
Brockway Engineering, PLLC
3-Aug-18

Date	No. 4 Flow (cfs)	East Canal Flow (cfs)	West Canal Flow (cfs)	HJB Flow (cfs)	MJB Flow (cfs)	Recharge (cfs)	Recharge (acft)
9/13/1992	0	0	0	0	0	0	0
9/14/1992	0	0	0	0	0	0	0
9/15/1992	0	0	0	0	0	0	0
9/16/1992	0	0	0	0	0	0	0
9/17/1992	0	0	0	0	0	0	0
9/18/1992	0	0	0	0	0	0	0
9/19/1992	0	0	0	0	0	0	0
9/20/1992	0	0	0	0	0	0	0
9/21/1992	0	0	0	0	0	0	0
9/22/1992	0	0	0	0	0	0	0
9/23/1992	0	0	0	0	0	0	0
9/24/1992	0	0	0	0	0	0	0
9/25/1992	0	0	0	0	0	0	0
9/26/1992	0	0	0	0	206	0	0
9/27/1992	0	0	0	0	132	0	0
9/28/1992	0	0	0	0	0	0	0
9/29/1992	0	0	0	0	0	0	0
9/30/1992	0	0	0	0	0	0	0
10/1/1992	0	0	0	0	0	0	0
10/2/1992	0	0	0	0	0	0	0
10/3/1992	0	0	0	0	0	0	0
10/4/1992	0	0	0	0	0	0	0
10/5/1992	0	0	0	0	0	0	0
10/6/1992	0	0	0	0	0	0	0
10/7/1992	0	0	0	0	0	0	0
10/8/1992	0	0	0	0	0	0	0
10/9/1992	0	0	0	0	0	0	0
10/10/1992	0	0	0	0	0	0	0
10/11/1992	0	0	0	0	0	0	0
10/12/1992	0	0	0	0	0	0	0
10/13/1992	0	0	0	0	0	0	0
10/14/1992	0	0	0	0	0	0	0
10/15/1992	0	0	0	0	0	0	0
10/16/1992	0	0	0	0	0	0	0
10/17/1992	0	0	0	0	0	0	0
10/18/1992	0	0	0	0	0	0	0
10/19/1992	0	0	0	0	0	0	0
10/20/1992	0	0	0	0	0	0	0
10/21/1992	0	0	0	0	0	0	0
10/22/1992	0	0	0	0	0	0	0
10/23/1992	0	0	0	0	0	0	0
10/24/1992	0	0	0	0	0	0	0
10/25/1992	0	0	0	0	0	0	0
10/26/1992	0	0	0	0	0	0	0
10/27/1992	0	0	0	0	0	0	0
10/28/1992	0	0	0	0	0	0	0
10/29/1992	0	0	0	0	0	0	0
10/30/1992	0	0	0	0	0	0	0
10/31/1992	0	0	0	0	0	0	0
						0	0
						Maximum	Total

Appendix O

Summary of Diverted Volume of Recharge During Development Period

Calculated Recharge Volume Diverted under Water Right Permit No. 37-7842 During the Development Period

Brockway Engineering, PLLC
GEP – August 1, 2018

The recharge volume diverted to the Dietrich site was calculated based on the estimated flow diverted into the Dietrich Canal. Spreadsheet calculations are shown in Appendix L. The largest volume of recharge at the Dietrich site occurred in 1984 with 12,942 acft diverted. The total recharge volume delivered through the Dietrich Canal by year are shown in Table A.

The Shoshone site had the maximum volume diverted for recharge during the development period in 1984, with 2,126 acft. Although the 1982 data has a higher volume, the permit was approved on June 2, 1982, which means portions of the spring runoff were not part of the development period and therefore 1982 volumes are ignored. Spreadsheet calculations are shown in Appendix M. Annual recharge volumes delivered to the Shoshone site from the Big Wood or Little Wood Rivers are shown in Table A.

The maximum recharge volume diverted into the Richfield Canal system during the non-irrigation system occurred in 1987 with 4,245 acft recharged. The volume calculated for the 1982 recharge is not considered based on the discussion above. Spreadsheet calculations are shown in Appendix N. Annual recharge volumes diverted from the Big Wood River into the Richfield Canal system are shown in Table A.

Total Volume diverted under a single year occurred in 1984 with 16,450 acft of water diverted for groundwater recharge. The concern about the volume limit is illustrated with this data. The total volume of recharge in 1982 was greater than 1984 with 17,046 acft calculated recharge, but this volume would not have been allowed, with the volume restrictions to 1984.

Table A. Volume diverted for recharge based on daily watermaster flow rate information and the methodology for calculating the flow rates as described above. The 1982 and 1992 volume data has an asterisk by them because the development period started on June 2, 1982 and ended on June 1, 1992. The year 1984 had the highest annual recharge volume of 16,450 acft and is highlighted.

Year	Dietrich Volume (afa)	Shoshone Volume (afa)	Richfield Canal Volume (afa)	Total (afa)
1982	10,259*	2,204*	4,584*	17,046*
1983	1,699	1,839	4,320	7,857
1984	12,942	2,126	1,382	16,450
1985	4,786	1,371	2,075	8,231
1986	3,363	327	464	4,154
1987	4,431	0	4,245	8,676
1988	4,765	0	0	4,765
1989	4,753	111	278	5,141
1990	3,416	0	0	3,416
1991	1,779	6	0	1,785
1992	4,062*	12*	0*	4,074*

IWRB EXHIBIT 109

LARGE ILLUSTRATIVE MAP

BEFORE THE DIRECTOR OF THE DEPARTMENT OF WATER RESOURCES

OF THE

STATE OF IDAHO

IN THE MATTER OF PERMIT NO. 37-7842 IN THE NAME OF LOWER SNAKE AQUIFER RECHARGE DISTRICT	ORDER

WHEREAS, on June 30, 1980, Earl Hardy, Thorleif Rangen, John LeMoyne and John W. Jones, Jr. applied to the Department of Water Resources for a permit to appropriate 800.0 cubic feet per second of water from the Little Wood River and the Big Wood River within the SW¼SE¼, Section 24, Twp. 4S, Rge. 19E, B.M., Lincoln County to be used for groundwater recharge purposes; and,

WHEREAS, on January 18, 1982 the Department received an assignment for said Application for Permit whereby the applicants assigned all their right, title and interest in said Application for Permit to the Lower Snake Aquifer Recharge District; and,

WHEREAS, on June 2, 1982 the Department approved said Application for Permit with one of the conditions of approval being that the permit holder shall commence the excavation or construction of diverting works within one year of the date the permit was issued and shall proceed diligently until the project is complete; and,

WHEREAS, pursuant to the changes made by the 1982 Idaho Legislature to Section 42-204, Idaho Code, whereby commencement of excavation and construction must be made within one year of the date the permit is issued, Applications for Permit with a flow of 25.0 cubic feet per second or greater are not subject to the requirement;

IT IS, THEREFORE ORDERED that the condition of approval of this permit related to the commencement of excavation or construction within one year from the date the permit was issued be removed.

Dated this 3rd day of February, 1983.

L. Glen Saxton

L. GLEN SAXTON
Chief, Operations Bureau

EXHIBIT 110

STATE OF IDAHO
OFFICE OF THE ATTORNEY GENERAL
LAWRENCE G. WASDEN

April 14, 2017

Mr. Shelley Keen
Idaho Department of Water Resources
PO Box 83720
Boise, ID 83720-0098

Re: Licensing of Water Right Permit 37-07842

Dear Mr. Keen,

Please find attached a Memorandum of Intent ("MOI") between the Idaho Water Resource Board ("IWRB") and the United States Bureau of Land Management ("BLM"). The purpose of the MOI is to demonstrate, for purposes of licensing water right permit 37-07842, that the IWRB is seeking permission from BLM for right(s)-of-way for portions of the proposed licensed place of use that cross BLM land. The BLM has agreed that water right permit 37-07842 may proceed to licensing under the terms of the MOI. The IWRB requests that this Memorandums of Intent be placed in the backfile for water right 37-07842 and that the water right proceed to licensing. Originals will be held in the IWRB and BLM files.

Sincerely,

ANN VONDE
Deputy Attorney General

AV/mb
Attachment
cc: Fred Price

Natural Resources Division
P.O. Box 83720, Boise, Idaho 83720-0010
Telephone: (208) 334-2400, FAX: (208) 854-8072
Located at 700 W. State Street
Joe R. Williams Building, 2nd Floor

MEMORANDUM OF INTENT REGARDING ISSUANCE OF LICENSE 37-07842

Idaho Water Resource Board ("IWRB") holds permit no. 37-07842 for recharge from the Big Wood River. The Idaho Department of Water Resources ("Department") is ready to issue a license for permit no. 37-07842. The licensing place of use includes some portions of United States Bureau of Land Management ("BLM") federal lands. The BLM was not a protestant to permit no. 37-07842 and there is no administrative proceeding currently pending regarding the licensing of this permit.

The IWRB recognizes that a portion of the place of use proposed for licensing is on BLM land. The IWRB further recognizes that no right(s)-of-way for recharge or recharge conveyance exist for federal lands listed in the licensed place of use. The IWRB agrees to file with BLM application(s) for right(s)-of-way across federal lands for recharge and recharge conveyance that include, at a minimum, the federal lands described in the licensed place of use. The BLM agrees that water right permit no. 37-07842 may proceed to licensing while the application(s) for right(s)-of-way are pending; provided that no water under the license may be used on federal lands until authorized in writing by the BLM Authorized Officer. No representation is made hereby as to the legal necessity for right(s)-of-way across federal land for recharge and recharge conveyance under the license; nor is there any guarantee or promise implied or inferred that right(s)-of-way will ultimately be granted.

The IWRB and BLM further agree that the following conditions may be placed on the

license:

A. This right does not grant any right-of-way or easement across the land of another.

B. Prior to diversion and use of water under this approval, the right holder shall obtain Bureau of Land Management authorization necessary to access the point of diversion or place of use or to convey water across federal land.

C. Places of use for groundwater recharge describing federal public lands within the canals and discharges outside of the canals onto federal public land are not authorized, unless specifically authorized in writing by the United States.

The IWRB and BLM agree the Department may proceed with licensing permit no. 37-07842 according with this agreement.

For the UNITED STATES BUREAU OF LAND MANAGEMENT

Date: 04-05-2017

FREDRIC W. PRICE
1387 S. Vinnell Way
Boise ID 83709

For the IDAHO WATER RESOURCE BOARD

Roger Chase

Roger Chase, Chairman IWRB

Date: 4/14/17

April 11, 2006

Karl Dreher, Director
Idaho Department of Water Resources
322 E Front Street
P.O. Box 83720
Boise, ID 83720-0098

Re: Water Right Permit Nos. 01-7054, 37-7842, and Water Right Licenses enumerated in the Swan Falls Water Right Agreement, dated October 25, 1984 and ratified by Idaho Code § 42-203B(5)

Dear Director Dreher:

The State of Idaho and Idaho Power Company have entered into the attached Stipulation dated April 11, 2006, which recognizes that the hydropower water rights listed in the Swan Falls Agreement are subordinate to Water Right Permit Nos. 01-7054 and 37-7842. We request that this Stipulation be filed in each of the relevant water right files and that you take such action as is necessary to reflect the Stipulation in each of the enumerated water rights.

Sincerely,

LAWRENCE G. WASDEN,
Attorney General
State of Idaho

JAMES C. TUCKER
Attorney for Idaho Power Company

Attachment

STIPULATION

The Idaho Power Company and the State of Idaho ("State") hereby stipulate and agree, by and through their respective undersigned counsel, as follows:

1) Stipulation Regarding Water Right Permit Nos. 01-7054 and 37-7842: Recognizing that Water Right Permit Nos. 01-7054 and 37-7842 are subject to the Swan Falls Settlement –

   a) The Company agrees that its water rights are subordinated to water rights nos. 01-7054 and 37-7842 pursuant to the terms of the Swan Falls Agreement and will neither contest nor otherwise oppose the exercise of those water rights on the basis of priority, the Swan Falls Agreement, or I.C. §§ 42-234, 42-4201 and 42-4201A. The Company further agrees that those water rights may be exercised in a manner consistent with state law.

   b) The parties agree that all provisions of the Swan Falls Agreement and the implementing legislation shall continue to apply to Water Right Permit Nos. 01-7054 and 37-7842, including I.C. §§ 61-539 and 61-540 for the benefit of Idaho Power Company.

   c) The parties further agree that in the event that the Idaho Water Resource Board (IWRB) seeks to have said permits licensed or decreed, that the Company will not file a protest or objection in such proceedings, but that the State, in recognition of its obligations under the Swan Falls Agreement and state law, through the Idaho Department of Water Resources (IDWR), will appropriately investigate such permits to ensure that they meet applicable requirements and that the licensed or decreed water rights fully comply with state law.

2) Further Proceedings Relating to the Swan Falls Agreement. The parties agree that in the event that there are disagreements or disputes between the parties as to the interpretation or application of the Swan Falls Agreement that they will endeavor to resolve those disagreements through informal discussions and negotiation. In the event that the parties are unable to resolve

any such disagreements to their mutual satisfaction, either party, after notice to the other, may file a petition for declaratory relief with a court of appropriate jurisdiction to have the disagreement resolved and the Swan Falls Agreement interpreted and neither this Stipulation nor I.C. §§ 42-234, 42-4201, or 42-4201A shall act as a bar to the filing of such action.

3) Request for Recognition of the Stipulation. The parties agree to submit this Stipulation in all administrative and judicial proceedings involving the recognition of Water Right Permit Nos. 01-7054 and 37-7842 and to jointly present affidavits and such other evidence as may be required for the recognition of the Stipulation.

4) Defense of Stipulation. The parties agree to jointly support and defend the terms of the Stipulation against any and all objections or other challenges that may arise against the terms of the Stipulation in any administrative or judicial proceeding.

5) Stipulation Does Not Affect Statutory or Regulatory Authority. The parties agree that nothing in this Stipulation shall be construed or interpreted to affect the authority of the State as provided by constitution, statute or regulation. Nor shall this Stipulation be construed or interpreted to affect the rights of any person not a party to the Stipulation.

6) Stipulation Not to be Used Against Parties. Except as provided herein, neither party by entry into this Stipulation waives any legal position or arguments it may have regarding any legal disputes that may exist between the parties. Nothing in this Stipulation shall be construed as an admission against interest or tendered or used as evidence to support or oppose any party's claims or objections in any administrative or judicial proceeding, other than those seeking approval of the Stipulation, for interpretation, enforcement or administration of this Stipulation or for a purpose contemplated by Idaho Rule of Evidence 408.

7) Stipulation is Binding. The terms of this Stipulation shall bind and inure to the benefit of the respective successors of the parties.

8) Mutual Covenants of Authority. The parties represent and acknowledge that each of the undersigned is authorized to execute this Stipulation on behalf of the party they represent.

9) Non-Severability. The provisions of this Stipulation are not severable.

10) Triplicate Originals. This Stipulation is executed in triplicate. Each of the three Stipulations with an original signature of each party shall be an original.

The parties have executed this Stipulation on the date following their respective signatures.

FOR THE STATE OF IDAHO, including THE IDAHO WATER RESOURCE BOARD:

Date: 4/11/06

LAWRENCE G. WASDEN,
Attorney General
Office of the Attorney General
State of Idaho
P.O. Box 44449
Boise, ID 83711-4449
(208) 334-4126

FOR IDAHO POWER COMPANY:

Date: 4/11/06

JAMES C. TUCKER
Idaho Power Company
P.O. Box 70
Boise, ID 83707
(208) 388-2112

MEMORANDUM

Date: July 13, 2017

To: Water Right File 37-7842

From: Michele Edl

Re: subordination condition

Permit 37-7842 contains the following condition subordinating it to "all prior rights" including privately owned hydropower generation rights on the Snake River:

> This water right shall be secondary to all prior water rights including rights held by any privately owned electrical generating company to appropriate waters in the reaches of the Snake River downstream from the Milner diversion for purposes of hydroelectric power generation.

On April 11, 2006, Idaho Power Company, owner of privately held power generation facilities on the Snake River, and the State of Idaho, owner of the permit, signed a stipulation which clarifies the subordination of Permit 37-7842. The stipulation specifically lists Water Right Permit 37-7842 (and sibling Permit 01-7054) as being subject to the Swan Falls Agreement and recognizes that Idaho Power Company's Snake River water rights are subordinated to these two water rights.

Therefore, the permit condition cited in the paragraph above will not be included on the water right license.

As with all licenses, the following "subject to all prior rights" language is included above the signature block:

> This license is issued pursuant to the provisions of Section 42-219, Idaho Code. The water right confirmed by this license is subject to all prior water rights and shall be used in accordance with Idaho law and applicable rules of the Department of Water Resources.

State of Idaho
DEPARTMENT OF WATER RESOURCES
STATE OFFICE, 450 W. State Street, Boise, Idaho

JOHN V. EVANS
Governor

A. KENNETH DUNN
Director

Mailing address:
Statehouse
Boise, Idaho 83720
(208) 334-4440

May 20, 1982

John LeMoyne, Chairman
Board of Directors
Lower Snake Aquifer Recharge Distict
Route #1, Box 148
Hagerman, Idaho 83332

RE: Assignment of Application for Water Right Permit
Numbers 37-7842 and 01-7054

Dear Chairman LaMoyne:

On January 18, 1982, the Department of Water Resources received executed assignment forms assigning to the Lower Snake Aquifer Recharge District all right to Applications for Permit No. 37-7842 and No. 01-7054 from Earl Hardy, individually, and pursuant to power of attorney, all other named applicants, including Thorlief Rangen, John W. Jones, Jr., and John LaMoyne.

The Department acknowledges the assignment of the referenced applications for permit and is prepared to take action upon the applications pursuant to I.C. § 42-203. Before action is taken upon the applications the Department considers it necessary that the Lower Snake Aquifer Recharge District take formal action to accept or reject the assignment to the District of all right, title and interest in Applications for Permit No. 37-7842 and No. 01-7054. The Department should be notified in writing as to the action taken by the District.

Sincerely,

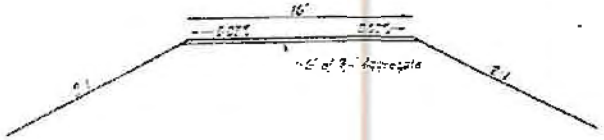
A. Kenneth Dunn
Director

AKD:jh
cc: D. Brent Martens, Esq.
Terry E. Coffin, Esq.
Earl Hardy

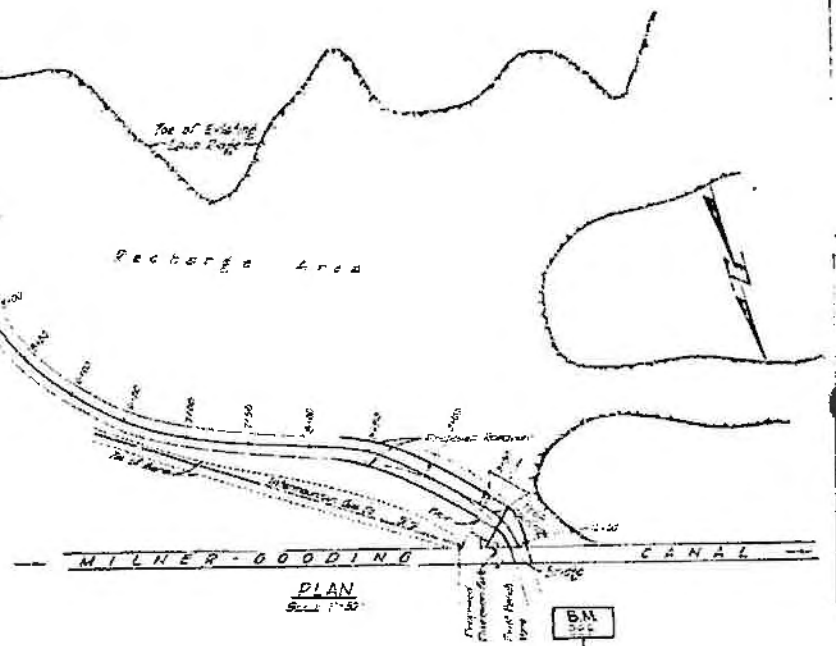
EXHIBIT
tabbies
114

The foregoing is a true and certified copy of the document on file at the Department of Water Resources.
Signed this 31st day of October, 2018.
Shelley W. Keen

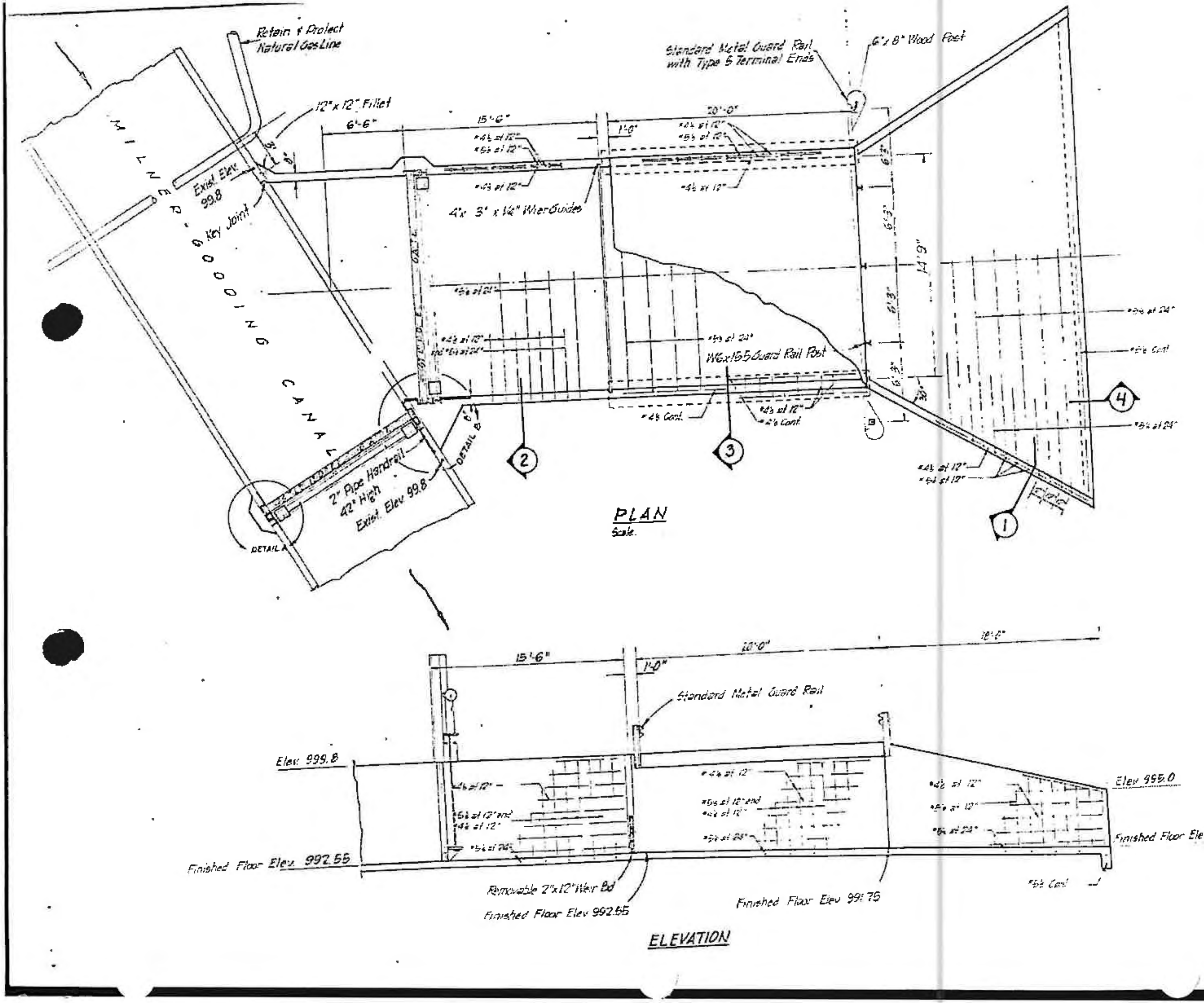
VICINITY SKETCH



TYPICAL ROADWAY SECTION



ROADWAY PROFILE

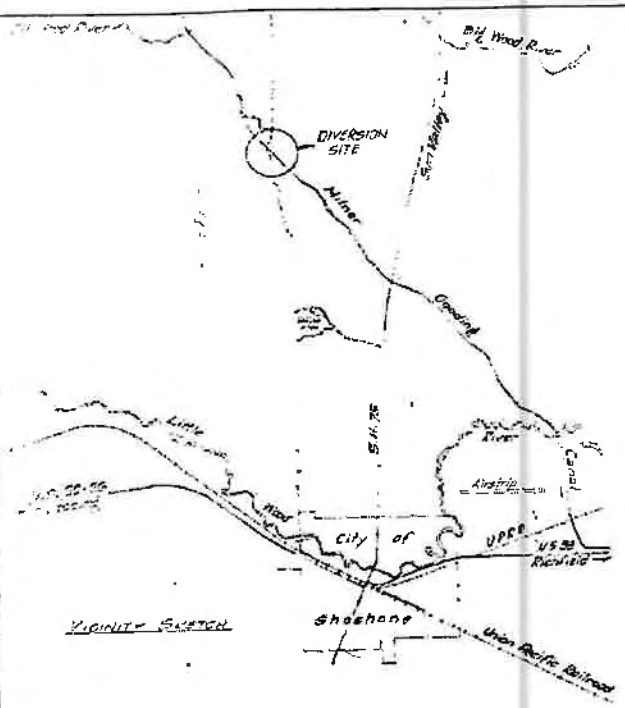


GE
Materi
with
Highw
Corru
All
of B
Sla
is
form
Ec
hor
Other

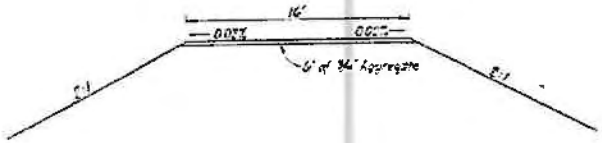
IWRB000051

HY
Q m

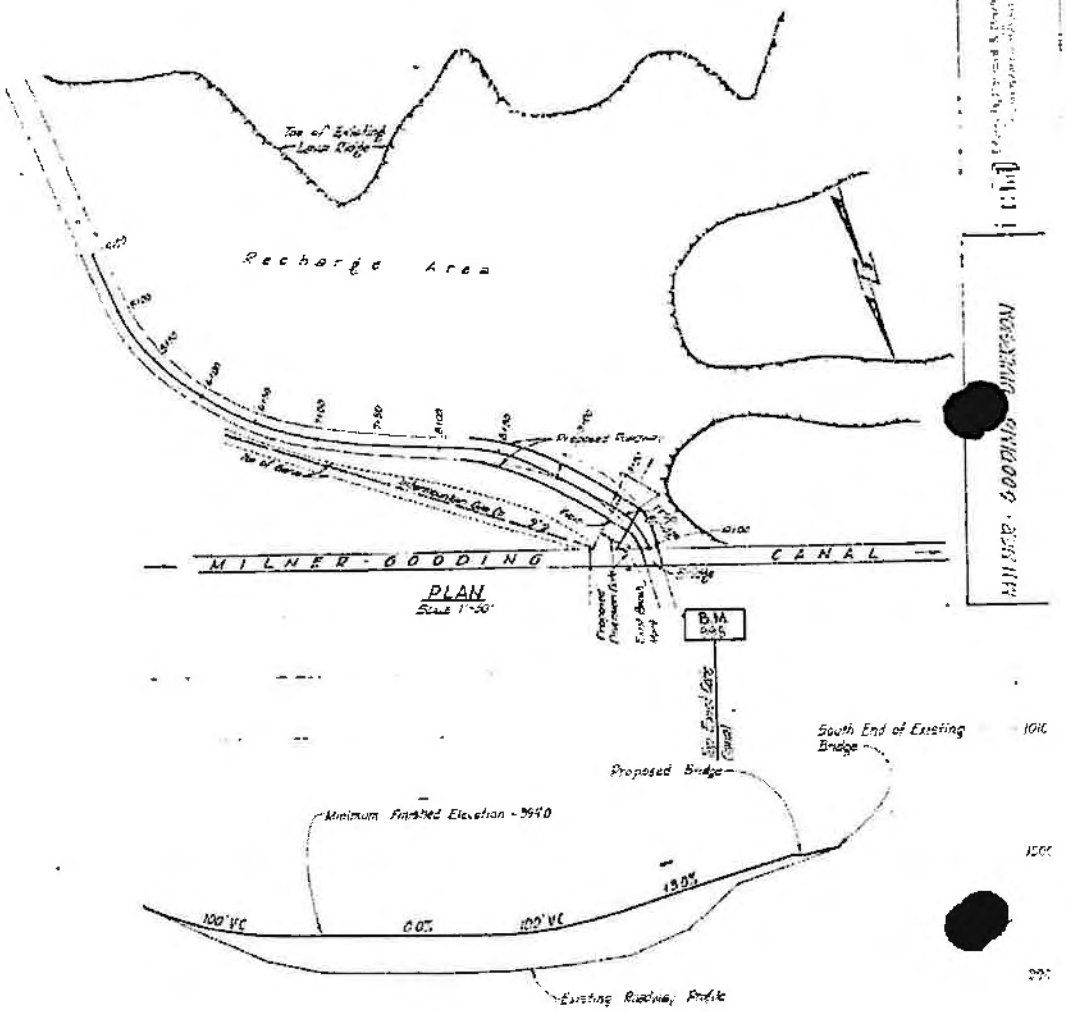
DE
Stru
T.O
Conc
Meta
Fres
Max
Actu



VICINITY SKETCH



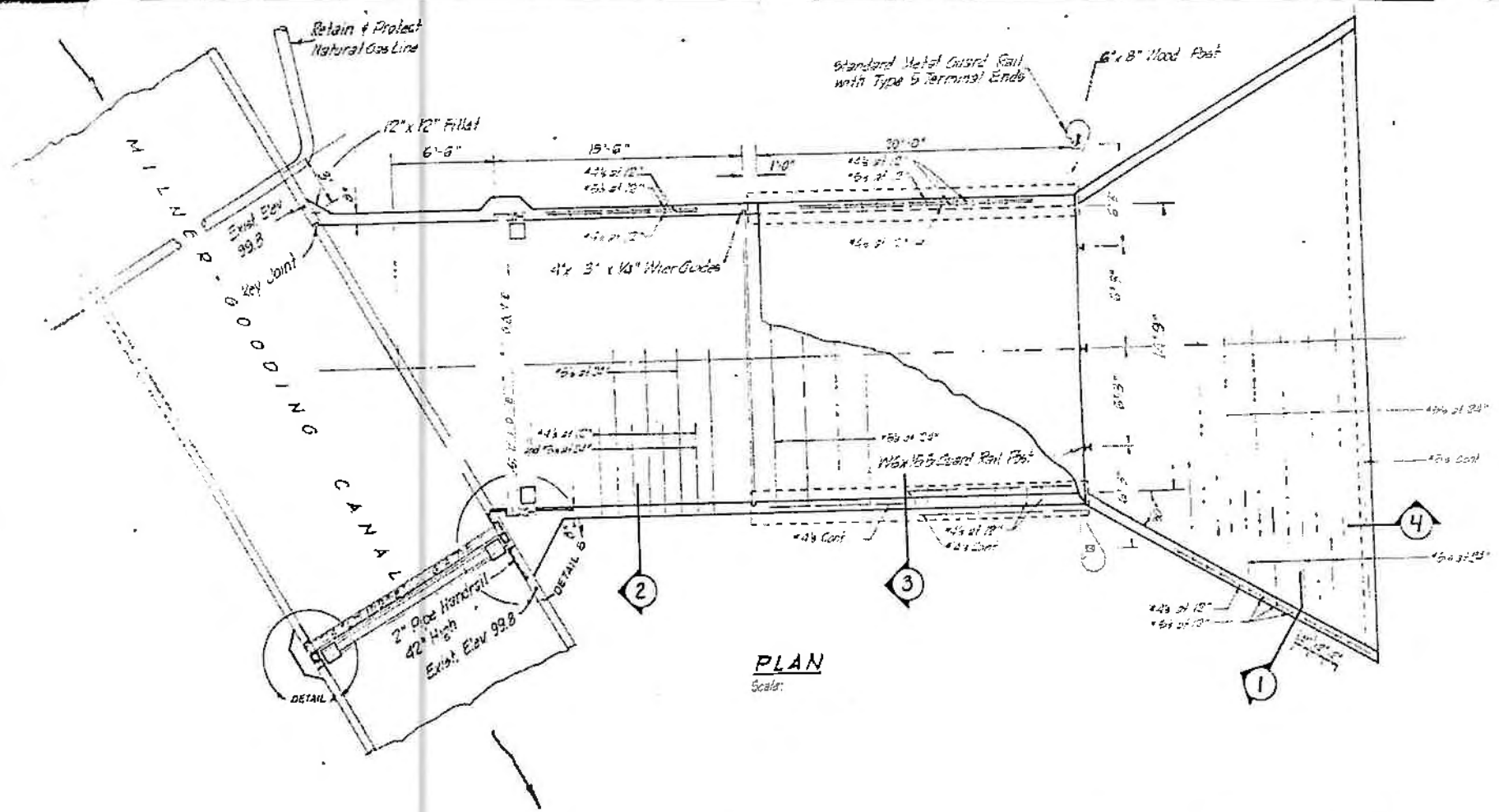
TYPICAL ROADWAY SECTION
NTS.

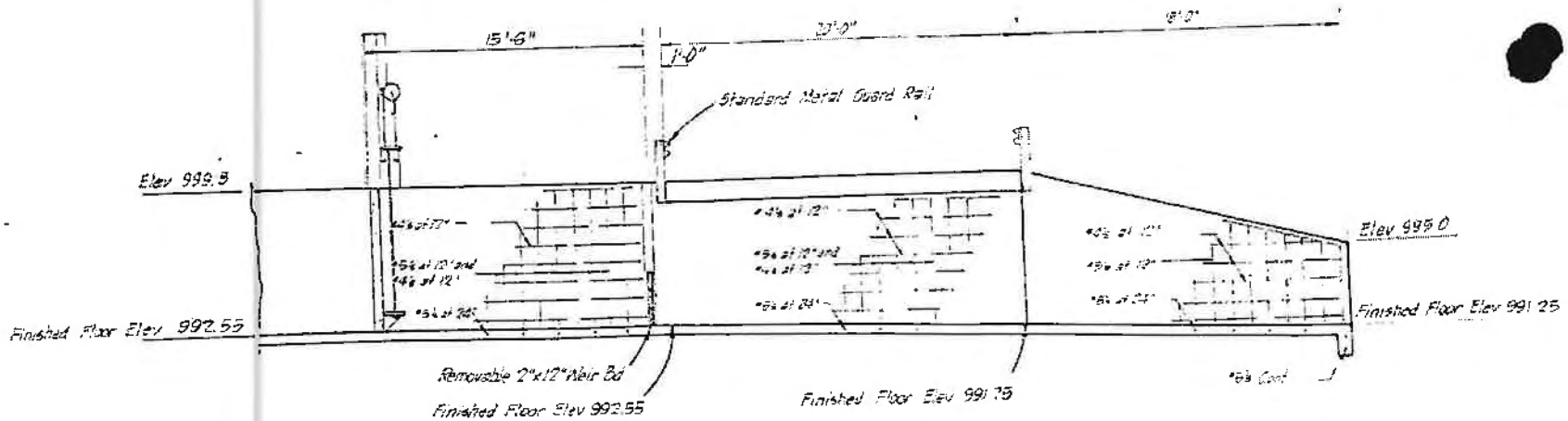


PLAN
Scale 1"=50'

ROADWAY PROFILE

IWRB00000316





IWRB00000317

BEFORE THE DIRECTOR OF THE DEPARTMENT OF WATER RESOURCES

OF THE

STATE OF IDAHO

PROPOSED

IN THE MATTER OF CREATING THE LOWER SNAKE AQUIFER RECHARGE DISTRICT	MEMORANDUM DECISION AND ORDER

Chapter 42, Title 42, Idaho Code provides a mechanism for creating an aquifer recharge district for the purposes of:

a) Sustaining and increasing the flow of springs in the general vicinity of the Hagerman Valley; and,
b) Increasing the water available for withdrawal from ground water basins located in Jerome, Gooding and Lincoln counties; and,
c) Supplementing the supply of water available for irrigation downstream from the Hagerman Valley; and,
d) Providing additional aquatic habitats for migratory fowl and wildlife; and,
e) Increasing and sustaining the flow of the Snake River during the summer months and in times of drought when additional flow is needed for the generation of hydroelectric power and the maintenance of water recreation facilities.

The Director has received the required documentation for formation of a recharge district including a map of the proposed boundaries, a preliminary engineering plan, and a petition signed by more than fifty (50) percent of the water users located within the boundaries of the proposed district. He caused a hearing to be held in Gooding, Idaho on August 27, 1981, to examine the petition and supporting documents. The issues raised at the hearing were:

1. Will creation of a recharge district serve to achieve the purposes for which it is intended?
2. Will all the lands within the proposed boundaries benefit from recharge at the proposed sites?
3. Will the quality of the recharge water be monitored adequately to protect water quality within the aquifer?

After considering the issues raised, the information contained in the record, and the official files of the Department, and based upon his understanding of the law, the Director makes the following Findings of Fact, Conclusions of Law, and Order.

FINDINGS OF FACT

1. If surplus river flows are discharged into the proposed spreading basins, benefits will be realized in each of the five areas identified above.

2. Section 42-4203, Idaho Code, authorizes the Director to establish the boundaries of the recharge district. The determination of these boundaries must be based on identification of areas that will receive increased water supplies as a result of recharge.

3. The direction of flow within the Lower Snake Aquifer in the vicinity of the proposed spreading basins is west-southwest. The best available data indicates that water discharged into the most southerly proposed spreading basin would intercept the Snake River just downstream from the Highway 93 bridge north of Twin Falls. Water discharged into the most northerly spreading basin would intercept the Snake River near the mouth of the Malad River.

4. Based on the analysis in Finding of Fact No. 3, lands upstream from the Highway 93 bridge north of Twin Falls would not receive recharge water and thus would not incur benefits for which the proposed recharge district is intended.

5. The water within the Lower Snake Aquifer has been found to be of high quality. This quality is essential to the aesthetic and fish propagation uses within the proposed district. A deterioration of water quality within the aquifer could result in significant economic losses to the fish propagation industry, and aesthetic losses to the residents and visitors within the proposed district.

6. The water proposed to be used for recharge purposes will be mostly snowmelt runoff from the Snake River, Big Wood River and Little Wood River. This water is usually of high quality. However, there is a posibility that the flows will contain contaminants that would be harmful to the Lower Snake Aquifer.

CONCLUSIONS OF LAW

1. Creation of the proposed recharge district will provide for the purposes set forth on Page 1, and will serve the interests of the water users proposed to be benefited.

2. The Director is authorized to modify the proposed boundaries of the proposed recharge district by excluding the land located between the northern rim of the Snake River canyon wall and the Snake River upstream from the Highway 93 bridge located north of Twin Falls.

3. The quality of recharge water must be monitored to protect the present high quality of waters within the Lower Snake Aquifer.

ORDER

IT IS, THEREFORE, HEREBY ORDERED that the Lower Snake Aquifer Recharge District is hereby established and that the boundaries are as follows:

> Bounded on the north by Hwy. 20 from Bliss to the Northeast corner of Sec. 9, T. 6 S., R. 14 E., then south to the Southwest corner of Sec. 35, T. 8 S., R. 14 E., then east to the Northeast corner of Sec. 6, T. 9 S., R. 16 E., then south to the northern rim of the Snake River Canyon located at the Northwest corner of Sec. 17, T. 9 S., R. 16 E., then southeasterly along the upper rim of the canyon to the point where the rim intersects the Highway 93 Bridge within Sec. 34, T. 9 S., R. 17 E., then directly south to the Snake River, then downstream following the Snake River until the river intersects the section line between Sec. 17 and 18, T. 6 S., R. 13 E., then north along the section line to the point of beginning;

IT IS FURTHER HEREBY ORDERED that before any water is diverted by the District, the Board of Directors of the District must establish and implement a procedure for monitoring water quality that is acceptable to the Director of the Idaho Department of Water Resources.

Dated this 9th day of November, 1981.

Norman C Young

NORMAN C. YOUNG
Hearing Officer

BEFORE THE DEPARTMENT OF WATER RESOURCES

OF THE

STATE OF IDAHO

IN THE MATTER OF CREATION)
OF THE LOWER SNAKE AQUIFER)
RECHARGE DISTRICT)

CERTIFICATE OF MAILING

I HEREBY CERTIFY That on this 12th day of November, 1981, a true and correct copy of the foregoing ORDER was mailed postage prepaid to:

Richard Onieda
417 So. Alta
Shoshone, Idaho 83352

Reid J. Newby
Drawer T
Shoshone, Idaho 83352

Aldrich Bowler
Star Route Box 15
Bliss, Idaho 83633

Elmer G. McDaniels
406 11th
Rupert, Idaho 83350

Ted Dicht, Mgr.
North Side Canal Co.
No. Lincoln
Jerome, Idaho 83338

J. R. Merrigan
800 N. 475 W. Norland
Rupert, Idaho 83350

Joe Flood
550 N. 030 E. Norland
Rupert, Idaho 83350

Bob Burks
% North Side Canal Co.
No. Lincoln
Rupert, Idaho 83350

Bill Rude
% Twin Falls Canal Co.
163 2nd Ave. West
Twin Falls, Idaho 83301

Ken Shufeldt
950 No. 500 E. Minidoka
Rupert, Idaho 83350

Leon Grieve
% Big Wood Canal Co.
112 Apple
Shoshone, Idaho 83352

Dick Cook
Hagerman, Idaho 83332

Cleave C. Lloyd
Hagerman, Idaho 83332

Mike Fennen
Route #3
Buhl, Idaho 83316

S. G. Carleton
Route #1
Hagerman, Idaho 83332

Bob & Barnee Erkins
Box 108
Bliss, Idaho 83314

J. Roshalt
P. O. Box 1906
Twin Falls, Idaho 83301

Leo Hobdey
Bliss, Idaho 83314

Lynn Babington
Route #1
Hagerman, Idaho 83332

Thorleif Rangen
P. O. Box 706
Buhl, Idaho 83316

Lew Pence
Box 157 Route #2
Gooding, Idaho 83330

Mr. Vern Ravenscroft
P. O. Box 893
Boise, Idaho 83701

Dan Olmstead
Box 88
Gooding, Idaho 83330

Bryan Ravenscroft
I-84 Exit 147
Tuttle, Idaho 83314

Allan Ravenscroft
Tuttle Route
Bliss, Idaho 83314

Jim Kirtland
Box 88
Gooding, Idaho 83330

George W. Lemmon
Box 218
Hagerman, Idaho 83332

Gary Lemmon
Route #1
Wendell, Idaho 83355

John R. LeMoyne
Route #1, Box 148
Hagerman, Idaho 83332

Jackie Gibbons
Idaho Department of Water Resources

Edwards, Howard & Martens, Inc.

ENGINEERS / PLANNERS / SURVEYORS

1139 Falls Ave. E., Suite 8
Twin Falls, Idaho 83301
Phone 734-4888

IN THE FIELDS OF:

PLANNING
SURVEYING
HIGHWAYS
WATER
SEWAGE
STRUCTURAL
SUBDIVISIONS
AIRPORTS
BRIDGES

November 23, 1983

Department of Health & Welfare
963 Blue Lakes
P. O. Box 1626
Twin Falls, Idaho 83301

Attention: Russ Rank

Dear Mr. Rank:

Subsequent to our recent meetings concerning the proposed Snake River Aquifer Recharge District, I have developed a plan to evaluate the ground water impacts of the proposed recharge efforts. This plan was developed with consultation with Mr. Charles Brockway. The plan steps are as follows:

1. Field inventory all wells in the area. Data to be accumulated where available includes well logs, static water table, location, usage, and potential for localized contamination. Well depths will be determined by soundings where logs are not available. All inventoried wells will be sampled and tested for presence of bacteria.

2. The data accumulated will be utilized through a geologic and hydrologic analysis to establish a model subsurface profile and gradients.

3. Permeability and transmissibility values will be assigned to each of the strata layers comprising the model.

4. The model and assigned values will be utilized to determine the dimensions and characteristics of the resulting subsurface mound.

5. The existing wells and their location in relationship to the mound will be evaluated to determine if they will be suitable for monitoring the effects of the recharge effort.

6. If no existing wells are properly situated for monitoring, a site will be selected for potential monitoring well site.

7. Strategically located wells will be selected for conducting ongoing water quality testing. This sampling and testing would be initiated prior to beginning any recharge activity to establish a base.

8. The recharge district will monitor the identified wells indefinitely to determine if any detrimental effect occurs. The mitigation of any substantiated water quality deterioration will be resolved on an individual basis by the Lower Snake River Aquifer Recharge District (LSRARD) board.

The above specified plan will be implemented immediately and completed as quickly as possible or as directed by the LSRARD board. It is anticipated that some modification will be required as the study developes and additional data becomes available.

It has been my approach in the establishment of this plan that the proposed activity be viewed as a beneficial use of surplus surface waters to supplement the regional aquifer rather than a project to dispose of wastewater. The intended beneficiary is all users of the aquifer waters rather than an individual entity as would be the case in a typical disposal project.

It should also be noted that the LSRARD has directed construction of the discharge facilities subject to approval by the owners and operators of the Milner-Gooding Canal with the specific goal of beginning recharge activities during 1984.

Please feel free to contact me if there are any questions.

Respectfully yours,

EDWARDS * HOWARD * MARTENS, INC.

Gerald L. Martens, P.E.

GLM/bn
cc: file

December 1, 1983

John R. LeMoyne, Chairman
Lower Snake River Aquifer Recharge District
P. O. Box 487
Hagerman, ID 83332

Re: Lower Snake Aquifer Recharge District

Dear Mr. LeMoyne:

As you are aware, a primary concern of the public with respect to the recharge of the Lower Snake aquifer is water quality. The purpose of this letter is to clarify the roles of this agency and the IDHW regarding the water quality aspect of recharge systems proposed by your Board.

The water quality requirements for the recharge district are included in the order creating the recharge district and in the condition of approval placed on the water appropriation permits Nos. 37-7842 and 01-7054. As shown on page 4 of each of the approved permits this condition is as follows:

> "Water may not be diverted under this permit until **the Board of Directors establish and implement a** procedure acceptable to the Director for assuring that the water quality of the Lower Snake Aquifer will not be impaired."

Based on discussions with Mr. Russell Renk of the IDHW relative to this condition of approval, this agency will act as the primary review agency for water quality study information. We plan to participate in a joint review format with IDHW.

The water quality review to be conducted will be based on the Idaho Water Quality Standards and Wastewater Treatment Requirements as identified in Mr. McMaster's letter dated November 17, 1983. As indicated, the information needed includes the quality and quantity water to be recharged, the area of impact, depth to groundwater, re

of infiltration, geological information, structure of the impact area and other details. Pursuant to telephone conversations between Mr. Dave Tuthill of this office and your engineer Mr. Gerald Martens, it is my understanding that Mr. Chuck Brockway is currently working on development of a water quality monitoring plan. Mr. Martens indicated that an initial water quality monitoring plan has been prepared and a copy will be sent to this office.

Mr. Martens has provided this office with a blueprint of the proposed Milner-Gooding diversion works. He has indicated that construction of the works is anticipated to begin soon, with first water delivery planned to begin as soon as April 1984. Please be advised that this department will require that the water quality monitoring plan must be approved prior to the diversion of water for recharge purposes. This office will make every effort to expedite the review; however, we encourge your submittal of the required information at the earliest possible opportunity because some monitoring modifications may be required prior to initial diversion.

You should be aware that the Lower Snake River Aquifer Recharge District has been named as a defendant in the Idaho Power Company's "7500 lawsuit" and should adequately consider the potential implications of the suit as you proceed with your proposed project.

Sincerely,

L. GLEN SAXTON
Chief, Operations Bureau

LGS:rf

cc: Russell Renk
Gerald Martens
Bill Graham

J Beal

Edwards, Howard & Martens, Inc.

ENGINEERS / PLANNERS / SURVEYORS

1139 Falls Ave. E., Suite B
Twin Falls, Idaho 83301
Phone 734-4888

IN THE FIELDS OF:
PLANNING
SURVEYING
HIGHWAYS
WATER
SEWAGE
STRUCTURAL
SUBDIVISIONS
AIRPORTS
BRIDGES

March 9, 1984

Department of Water Resources
Statehouse
Boise, Idaho 83720

Attention: Bill Graham

Dear Sir:

Attached is a draft of the Lower Snake River Aquifer Recharge Project Impact and Monitoring Program. With your concurrence, this document will be included in the cooperative agreement to be prepared by the Bureau of Land Management.

Also, currently in preparation is an agreement with the Geological Survey to conduct the necessary monitoring.

Please call me if there are any questions.

Respectfully yours,
EDWARDS * HOWARD * MARTENS, INC.

Gerald L. Martens, P.E.

GLM/bn
cc: file

encl.

The foregoing is a true and certified copy of the document on file at the Department of Water Resources.
Signed this 31st day of October, 2018.
Shelley W. Keen

EXHIBIT
121

IMPACT EVALUATION AND MONITORING PROGRAM

LOWER SNAKE PLAIN AQUIFER RECHARGE PROJECT

BY

C. E. BROCKWAY, P.E.

March 1984

IMPACT EVALUATION AND MONITORING PROGRAM
LOWER SNAKE PLAIN AQUIFER RECHARGE PROJECT

General

The location of the proposed recharge site is in Sec. 22, Township 5S, Range 17E, Boise Meridian. The area is on U.S. Government land adjacent to the Milner-Gooding canal operated by the Big Wood Canal Company. Ground slopes are generally to the southwest; however, the majority of the area consists of recent exposed basalt flows with shallow soils in the low areas.

Water Supply and Diversion

The source of water for the recharge at this site is the Snake River with the diversion from the Milner Pool. Water is conveyed through the Milner-Gooding canal to the diversion site. A diversion structure to be constructed in early 1984 will be a concrete gated structure with a continuously monitored measuring device.

Water permits and contracts with the Big Wood Canal Company will currently allow diversion of up to 600 cfs during periods of surplus flow in the Snake River at Milner. The capacity of the canal at the diversion point is 600 cfs which is approximately the irrigation requirement for lands downstream of the diversion site. The lack of excess capacity, therefore, limits the diversion for recharge to periods prior to or subsequent to maximum irrigation demand. Current plans are for diversion of approximately 72,000 acre feet during the thirty day period, May 15 through June 15, and an additional 72,000 after the irrigation season. The maximum diversion rate would be 600 cfs.

Water Quality

Water quality of the recharge water will be approximately equal to that of the water in Milner pool. Table 1 shows typical water quality data for the Snake River above Milner pool for 1982 and 1983 from Idaho Department of Health and Welfare Division of Environment records.

Table 1 shows maximum values of suspended solids of 53 mg/l and maximum fecal coliform of 330. These values are low, and recharge of waters of this quality should pose no hazard. Total dissolved solids of the regional groundwater in this area will likely exceed that of the Snake River water.

Geologic Analysis

An analysis of available well driller's logs for the area shows a general profile consisting of multiple layers of basalt flows with interlayer materials varying from clays and fine grained materials to highly

Table 1. Wate. quality in the Snake River.

Date	Sus. sol.	J.T.U.	Tot/col	Fec/col	Fec/strep
11/17/81	17.4	1.7	130	7	30
11/17/81	10.3	1.5	110	2	20
12/14/81	2.3	3.1	Samples over time limit--arrived at lab late		
1/25/82	4.9	2.0	7	<1	23
2/23/82	6.0	3.7	15	4	47
2/23/82	10.2	4.3			
3/22/82	9.65	6.5	20	<1	20
4/19/82	29	18	20	<1	43
5/3/82	24	10	100	5	70
5/3/82	28	11			
6/7/82	3.8	3.8	4	1	17
6/7/82			6	2	32
7/26/82	7.0	1.0	40	25	42
8/2/82	5.1	3.3	70	68	100
9/8/82	4.0	5.3	30	40	24
9/8/82	3.0	5.5	200	330	230
10/17/82	9	8.9	12	11	10
11/15/82	9	9.9	14	3	10
11/15/82	11	9.9	13	3	9
12/7/82	3.3	6.8	6	<1	8
1/10/83	4.7	4.5	2	<1	15
2/7/83	< .2	5.2	3	1	26
2/7/83	.07	4.9	5	1	32
3/15/83	6.2	5.7	4	<1	2
1/4/83	52.9	21	130	50	240
5/23/83	7	6.6	4	1	2
5/23/83	7	6.9	7	1	9
6/21/83	9	4.2	59	7	33
7/19/83	42	11	130	25	80
8/23/83	<2	2.4	290	8	13
8/23/83	2	2.5	4	4	12
9/19/83	13.2	5.7	260	120	320

permeable fractured basalt. There is only one discernible continuous low permeability strata in all well logs. This strata is a layer of clay or broken rock and clay at a depth of approximately 200 feet. Thickness of the clay varies from 6 to 10 feet.

There are no well logs in the immediate vicinity of the recharge site. However, it is a reasonable assumption that the clay layer is present under the site and adjacent areas. The gradient of the clay layer is approximately 0.3 percent toward the southwest.

The regional water table, as indicated by driller's logs and recent studies by the U.S. Geological Survey for the Regional Aquifer Systems Analysis, lies at or below the clay layer.

Vertical hydraulic conductivity of the formations above the clay will be relatively high on a macro scale although there are lenses and interlayer materials with fine texture which will exhibit low permeabilities. It is expected that the vertical hydraulic conductivity of the clay will be on the order of 0.1 ft/day and the horizontal hydraulic conductivity of the formation above the clay should have conductivities exceeding 10,000 ft/day.

Flow Model during Recharge

The operational infiltration rate of the surface materials at the recharge site is estimated at 6 cubic feet per square foot per day (cfd). This estimate assumes areas of thin soils and exposed basalt with ponded areas between basalt areas. For a maximum inflow of 600 cfs, the expected maximum inundated area is 200 acres. It is entirely possible that the inundated area will be considerably smaller that this estimate especially during the initial period prior to any clogging by suspended materials. It is expected that, with 600 cfs inflow and high vertical permeabilities in the strata above the clay, a mound will form above the clay. The height of the mound will depend on the horizontal hydraulic conductivity of the material above the clay, the vertical hydraulic conductivity of the clay, and on the duration of recharge. The assumptions in the flow model are:

1. Hydraulic conductivity of the material above the clay is sufficient to impede horizontal spreading the recharge water in the first 200 feet.

2. A mound will form above the impeding clay layer.

3. The clay layer is continuous beneath the recharge site and adjacent area and is approximately 6 feet thick.

4. The gradient of the clay layer is 0.3 percent and is uniform in the southwest direction.

5. The regional water table is below the clay layer and has a gradient toward the southwest.

6. The vertical hydraulic conductivity of the clay is approximately 0.1 ft/day.

7. Horizontal hydraulic conductivity of the strata just above the clay layer exceeds 10,000 ft/day.

It is not possible without the aid of a three dimensional ground-water flow model to predict the transient response of the system and the buildup and decay of the mound. However, if it is assumed that the mound approximates a cone above the clay layer, a steady state would be achieved with continuous discharge when the saturated area above the clay is equal to about 3000 acres. Since the gradient of the top of the clay layer is toward the southwest, the plume or saturated zone would not be circular but would be skewed toward the southwest. A reasonable estimate of the shape of the saturated area would be that approximately one third of the area would lie upgradient of the recharge site and two thirds downgradient.

With a thirty day recharge period, a steady state flow system will not likely be achieved and the area of saturated material above the clay will be considerably smaller than a steady state solution. With a short duration recharge period, small perched mounds on discontinuous lenses above the clay will dissipate and build up of the mound will be buffered by the short term storage. It is estimated that a 30-day recharge duration with 600 cfs would result in a saturated area of about 600 acres beneath and down gradient from the recharge site.

Monitoring Program

The surface water monitoring plan includes weekly sampling of the recharge water from the Milner-Gooding canal for water quality and continuous measurement of the recharge rate from the diversion site. Discharge will be determined by the difference between canal flows at a current measuring site upstream of the recharge diversion and a measuring device below the recharge diversion. The downstream device will be constructed by the recharge district and daily measurements at both sites will be made by the canal company. The Milner-Gooding canal is concrete lined between the discharge measuring sites so seepage losses will be negligible. Provisions for a stilling well and continuous stage recorder at the diversion will be made for possible future installation of a well. Grab samples will be obtained for water quality analysis, and water quality analysis will include chloride, total suspended solids, electrical conductivity, pH, and fecal coliform. Initial samples of the discharge will be analyzed for pesticides.

5. Lower Snake Plain Aquifer Recharge Project

The objective of the groundwater quality monitoring program will be to determine the presence of and quality of the water reaching the top of the clay layer. If the quality of this water is adequate, it can be assumed that the water reaching the regional water table by percolation through the clay layer will not have adverse water quality. The first observation well will be designed to monitor water levels above the clay layer and to obtain water quality samples using portable pumping systems. Water level measurements will be made with steel tape, electrical sounders, or continuous water level recorder. It is possible that cascading water will be present in unused observation wells if significant horizontal flow occurs in the strata above the clay layer.

Monitoring Well Construction

One monitoring well is planned for construction in the spring of 1984. This well will be located south of the recharge area in the direction of the city of Shoshone. The location will be determined by the limits of the expected recharge area as shown on Figure 1. Drilling will be by air-rotary methods. The well will be 6 in. in diameter drilled open hole to approximately 160 feet. Geophysical logging, including caliper, SP, neutron or gamma techniques will be performed prior to installing and cementing casing to the 160 foot depth. Open hole will be drilled from 160 feet to approximately 200 feet or just into the clay formation.

A second well planned for 1984 will be drilled adjacent to the recharge site to obtain additional geologic information and to monitor possible cascading water from strata above the clay layer. Location and construction of the second well will be conditioned by formations encountered in well No. 1 and on monitoring during the 1984 season.

Pre-Project Water Quality Evaluations

Prior
~~Project~~ to the 1984 recharge diversions, water quality samples from 5 or 6 wells adjacent to the project will be obtained. These will include primarily wells in and near the city of Shoshone and downgradient from the recharge site. Complete chemical and bacterial will be performed on all samples.

State of Idaho
DEPARTMENT OF WATER RESOURCES
STATE OFFICE, 450 W. State Street, Boise, Idaho

JOHN V. EVANS
Governor

A. KENNETH DUNN
Director

Mailing address:
Statehouse
Boise, Idaho 83720
(208) 334-4440

March 16, 1984

Mr. Gerald L. Martens
Edwards, Howard & Martens, Inc.
1139 Falls Ave. E., Suite B
Twin Falls, ID 83301

Dear Mr. Martens:

After consulting with my staff, I have concluded that Mr. Brockway's Impact Evaluation and Monitoring Program for the Lower Snake Plain Aquifer Recharge Project would be acceptable with the following modifications:

1. A "Figure 1," as described in the text, must be included in the final plan. This figure must illustrate the location of the proposed monitoring well, in addition to the predicted limits of the recharge area. The Department will need to confirm the location of the proposed well prior to drilling.

2. The first two sample sets of canal water and background samples from the existing production wells selected for monitoring must be analyzed by an approved laboratory for the following parameters:

Dissolved Sodium
Dissolved Potassium
Dissolved Calcium
Dissolved Magnesium
Dissolved Carbonate (CO_3)
Dissolved Bicarbonate (HCO_3)
Dissolved Chloride
Dissolved Sulfate
Dissolved Fluoride
Dissolved Orthophosphate
Dissolved Nitrate, as Nitrogen
Total Kjeldahl Nitrogen
Dissolved Cadmium
Dissolved Copper
Total Nonfilterable Residue (Suspended Solids)
Turbidity
ph
Total Coliform Bacteria
Fecal Coliform Bacteria

In addition, the first two sample sets of canal water must be analyzed for organochloride and organophosphate insecticides, and chlorophenoxy herbicides by an approved laboratory.

The two sample sets of canal water should be collected no less than two days apart, and the results of analysis must be reviewed prior to inception of the recharge event.

Subsequent samples of recharge water and samples from the selected existing wells and the newly-constructed monitoring well(s), when and if water is present, shall be collected on a weekly basis and analyzed for turbidity, specific conductance, total coliform bacteria and fecal coliform bacteria. Additional analyses may be required on a basis of previous results.

3. The project monitoring well must be logged by a geologist or other qualified person during the drilling operation. Additional construction features will be based on the results of geologic and geophysical logs of the open hole. At this time, it appears the hole should be cased into the first basalt layer rather than to 160 ft. as proposed. Construction must be completed prior to inception of the first recharge event.

4. Weekly observation of the recharge facility must be conducted to determine a relative level of waterfowl use of the pond.

5. The final plan must include a figure detailing the specific locations of the existing wells selected for monitoring. Basic construction and operational features of the selected wells should also be included in the plan. The monitoring network should comprise at least three wells down-gradient and two wells up-gradient of the recharge area, and three wells situated between the recharge area and the City of Shoshone.

6. The plan or some additional document must make a commitment to the construction of an additional monitoring well located down-gradient from the recharge site prior to the inception of the spring recharge event in 1985.

   Likewise, the Department must have a commitment from the district limiting the 1984 spring and fall recharge events to 30-days duration.

The above conditions primarily refine the existing elements of the proposed evaluation and monitoring program. As you know, based upon monitoring data and future operations, the Department will be requiring additional monitoring wells in the next few years. If you or Mr. Brockway have any questions concerning these modifications, please contact John Beal or Bill Graham at your earliest convenience.

Sincerely,

Norman C. Young
Administrator

NCY:WGG:cjk

cc: Russ Renk, IDHW-DOE

State of Idaho
DEPARTMENT OF WATER RESOURCES
STATE OFFICE, 450 W. State Street, Boise, Idaho

JOHN V. EVANS
Governor

A. KENNETH DUNN
Director

Mailing address:
Statehouse
Boise, Idaho 83720
(208) 334-4440

April 12, 1984

John R. LeMoyne, Chairman
Lower Snake River Aquifer
Recharge District
P.O. Box 487
Hagerman, ID 83332

Dear Mr. LeMoyne:

Thank you for your letter of April 11, 1984. As you know, members of our staff met with Mr. Martens your engineer on April 5 to confirm the location of the first observation well for the project. At that time, Mr. Martens indicated that the recharge district could accept the conditions of our March 16, 1984 letter. Also, he indicated your letter of confirmation would be sent.

Once the observation well is completed and all of the preliminary samples collected, you are authorized to begin recharge for up to thirty days.

Please call John Beal or Bill Graham of this office as soon as recharge begins or if your well driller has any questions about the well construction.

Thank you for your continued cooperation.

Very truly yours,

Norman C. Young

NORMAN C. YOUNG, Administrator
Resources Administration Division

NCY:JEB:ldt(5-1.45)

EXHIBIT
123

The foregoing is a true and certified copy of the document on file at the Department of Water Resources.
Signed this 31ST day of October, 2018.
Shelley W. Keen

April 11, 1984

Mr. Bill Graham
Department of Water Resources
Statehouse
Boise, Idaho 83720

RE: Milner-Gooding Canal Diversion
Recharge Project

Dear Mr. Graham:

Please be advised that the Lower Snake River Aquifer Recharge District will conform to all initial testing requirements as specified in your letter. Mr. Charles Brockway has been directed to include the requirements in the monitoring plan that will become part of the cooperative agreement.

Respectfully yours,

John R. LeMoyne

John LeMoyne, Chairman
Lower Snake River Aquifer
Recharge District

JL/bn

Edwards, Howard & Martens, Inc.

ENGINEERS / PLANNERS / SURVEYORS

1139 Falls Ave. E., Suite B
Twin Falls, Idaho 83301
Phone 734-4888

IN THE FIELDS OF:
PLANNING
SURVEYING
HIGHWAYS
WATER
SEWAGE
STRUCTURAL
SUBDIVISIONS
AIRPORTS
BRIDGES

June 6, 1984

Lower Snake River Aquifer Recharge District
P. O. Box 487
Hagerman, Idaho 83332

Attention: John LeMoyne

Dear Sir:

The following is our summary of the aquifer recharge effort for the 1983 spring season. Also summarized is the monitoring and testing work accomplished.

Prior to April 18, 1984 - Completion of diversion structure and monitoring well. Minor test diversion at random times.

April 18, 1984 - Began discharge of water at estimated rate of 250 cfs.

April 19, 1984 - Terminated discharge to raise elevation of roadway to increase size of recharge area.

April 23, 1984 - Resumed discharge at varied rates (150 cfs - 350 cfs)

May 8, 1984 - Sampled canal water for insecticides, coliform, complete inorganic chemical contamination. Four private wells were sampled as background wells and tested for coliform analysis, chloride, PH, specific conductance and turbidity (see attached map for locations).

May 8, 1984 - First date cascading water was observed in monitor well. Water level at 181 feet below top of casing.

May 11, 1984 - Cascading water in monitoring well. Water level 176.5 feet below top of casing. Monitor sampled for coliform, chlorine, PH, specific conductivity and turbidity.

May 15, 1984 - Cascading water in monitor well. Water level at 176.5 feet from top. Sampled for coliform.

May 15, 1984 - Terminated all discharge into recharge area.

May 22, 1984 - Cascading water in monitor well. Water level at 182 feet below top. Sampled for coliform.

June 5, 1984 - Cascading water in monitor well. Water level at 186 feet below top. Sampled for coliform.

The sample of water taken for insecticides on May 8, 1984, was destroyed in shipment. No follow-up sample was taken.

No further sampling or testing is planned unless I am otherwise directed by the board.

Based on average flows, the total discharge during the spring discharge was approximately 7000 acre feet.

There is one small ridge, approximately 10 feet wide and 80 feet long, that is restricting the size of the recharge area and keeping the surface level higher than necessary. If approximately two feet of this ridge, less than 100 yards of material, was removed the recharge area would quickly double and theoretically double the recharge capacity. The diversion structure would accommodate the increase with no problems. Following some initial problems with inadequate generator capability, the structure worked well and satisfies Mr. Oneida of the canal company. I think they have found the structure to be a very convenient management tool.

Respectfully yours,

EDWARDS * HOWARD * MARTENS, INC.

Gerald L. Martens, P.E.

GLM/bn
cc: file

PETITIONER'S
EXHIBIT 201

Form 217

RECEIVED
JUL 27 1992
Department of Water Resources

OFFICE USE ONLY
Amt. of Fee $ N/A
Date
Receipt No.
Receipt by

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

PROOF OF BENEFICIAL USE

The Idaho Department of Water Resources considers this form a statement that the permit holder(s) has/have completed all development that will occur under this permit and that water has been applied according to the provisions of the permit for the beneficial use(s) described below. This form must be accompanied by a license examination fee, when necessary, or a completed field examination report prepared by a certified water right examiner who has been appointed by the department.

1. Permit No. and 01-07054A 37-07842A Telephone No. 837-4887

2. Name(s) of Permit Holder(s): Lower Snake River Recharge District

3. Mailing Address: Box 487 Hagerman, Idaho

4. Source of Water: Snake River

   If GROUNDWATER, Well Driller's Name: N/A. Date Drilled:

   OPTIONAL:
   Pump horsepower: N/A Pressure (psi): Dynamic pumping level (ft.):

5. Extent of Use (as authorized by the permit):

   Domestic (No. of households) Stockwater (No. and type of stock)

   Irrigation (No. of acres) Other Groundwater Recharge

6. Total rate and/or volume for which proof is submitted 300 cfs OR acre/feet

7. Refer to the approval conditions on your permit and respond accordingly:

   Measuring device: Required? ✓ Yes No Installed? ✓ Yes No

   OR

   Flow Measurement Port: Required? N/A Yes No Installed? N/A Yes No

8. Fee Enclosed: $ (See License Fee Schedule on back of Instruction Sheet)

9. Person to contact to accompany the Department representative during field examination of the water system.

   Gerald Martin 208-734-4333
   Name Telephone No.

   1139 Falls Ave. East, Twin Falls Idaho
   Address

   APR 18 1994

10. The above information is my true statement of the extent to which the above numbered permit has been developed and I relinquish any undeveloped portion of the permit to the state of Idaho.

   RECEIVED
   JUL 29 1992

   6/12/92 Gerald Martin project engineer CWRE # 001
   Date Signature (and title, if on behalf of a company or organization)

Form 219
6/86

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

BENEFICIAL USE FIELD REPORT

A. GENERAL INFORMATION

Permit No. 37-07842

1. Owner: Lower Snake River Recharge District Phone No. 837-4887
   Current Address: Box 43 / Hagerman Idaho
2. Accompanied by: Gerald Martens EXAM. DATE:
   Address: 1139 Falls Ave E Twin Falls ID Phone No. 734-4838
   Relationship to Permit Holder: None
3. Source: Snake River tributary to

B. OVERLAP REVIEW

1. Other water rights with same place of use: None
   ☐ Copies Attached
2. Other water rights with same point of diversion: None
   ☐ Copies Attached ☐ Copies of Field Exam's Attached

C. SYSTEM DESCRIPTION

1. **Diversion System Diagram:** Indicate all major components and distances between components. Indicate weir size/ditch size/pipe i.d. as applicable. ☐ Alternative diagram attached

SEE ATTACHED PLAN

Scale: 1" = _____.

2. ☐ Copy of U.S.G.S. Quadrangle Attached Showing location(s) of point(s) of diversion and place(s) of use (required).
   ☐ Aerial Photo Attached (required for irrigation of 10 acres or more).
   ☐ Photo of Diversion and System Attached (required for all but single household domestic groundwater, and stockwater.

System Description (continued)

3. **Narrative:** Description (As operating at time of measurement. Indicate pressure, number of sprinklers, etc.)

Measurement flow records for April 1986, as prepared by Big Wood Canal Company. Attached are flow records. Flow exceeded 300 CFS for 12 consecutive days.

☐ See Remarks on page 4 for continuation

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
NA					

**Code to correspond with No. on map and aerial photo*

5. **Point(s) of Diversion:**

Ident. No.	Gov't. Lot	¼	¼	¼	Sec.	Twp.	Rge.	County	Method of Determination/Remarks
"		SE	NE		22	5S	17E	Lincoln	7.5 Minute Quadrange

6. **Place(s) of Use:** Indicate Method of Determination

Twp.	Rge.	Sec.	NE¼				NW¼				SW¼				SE¼				Totals
			NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	NE¼	NW¼	SW¼	SE¼	
5S	17E	22			X	X			X	X	X	X		X		X	X		

Do not use this space

Do not use this space

D. FLOW MEASUREMENTS

☐ Additional Data Sheets Attached

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Milner Gooding Canal Measuring Stations 56 and 57						

2. **Measurements:**

Water measured in concrete flume above and below diversion. Diversion quantity is mathematical difference. Upstream flow measured at Milner Gooding Canal Diversion Structure 56. Downstream measurement at Milner Gooding Canal Structure No 57. Rating curves have been established for both stations. See attached letter.

E. FLOW CALCULATIONS

☐ Additional Computation Sheets Attached

1. Measured Method:

See Section G-3

2. Alternate Method for Checking Purposes:

F. PUMP EFFICIENCY DATA (Optional) NA

Discharge Pressure: _____ psi x 2.31 = _____ ft (1); Dynamic pumping level: _____ ft (2)
Total Head: (1) + (2) = _____ (3) : Flow rate: _____ cfs (4)

Water HP: (3) x (4) ÷ 8.8 = _____ (5)
Meter Input KW: 3.6 x _____ KH x _____ CTR or _____ MULT x _____ PTR x _____ N/ _____ T = _____ (6)
Meter Input HP: (6) x 1.34 = _____ (7)
Panel Input KW: _____ Ave PF x _____ Ave Volts x _____ Ave Ampsx .001732 = _____ (6)
Panel Input HP: (6) x 1.34 = _____ (7) Efficiency: (5)/(7) x 100 = _____ %

G. VOLUME CALCULATIONS NA

1. Volume Calculations for Irrigation:

V_{IR} = (Acres Irrigated) x (Irrigation Requirement) = _____

V_{DR} = [Diversion Rate (cfs)] x (Days in Irrigation Season) x 1.9835 = _____

V = Smaller of V_{IR} and V_{DR} = _____

2. Volume Calculations for Other Uses:

H. REMARKS AND OVERLAP REVIEW ANALYSIS

Division agreement between Lower Snake River Recharge District and Bureau of Land Management attached for your information.

I. RECOMMENDATIONS

1. **Recommended Amounts**

Beneficial Use	Period of Use From	Period of Use To	Rate of Diversion Q (cfs)	Annual Volume V (afa)
Groundwater Recharge	1-1	12-31	300 CFS	
		Totals:	300 CFS	

2. **Recommended Amendments**

☐ Change P.D. as reflected above ☐ Add P.D. as reflected above ☐ None

☐ Change P.U. as reflected above ☐ Add P.U. as reflected above ☐ Other

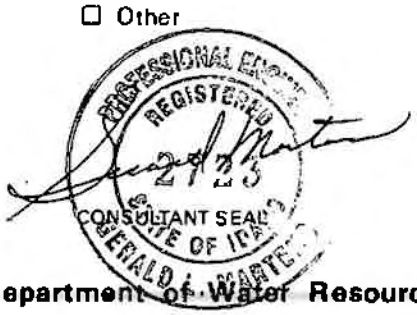
J. AUTHENTICATION

Field Examiner's Name: George Morrow

Signature: [signature]

Certification Date: 7/6/92

Field Report Preparation Date: 7/6/92



K. Licensing recommendation shall be prepared by an Idaho Department of Water Resources employee on a computer printout attached hereto.

COOPERATIVE AGREEMENT

I-05-82

BETWEEN

DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
SHOSHONE DISTRICT OFFICE
P.O. BOX 2B
SHOSHONE, ID 83352

AND

LOWER SNAKE RIVER AQUIFER
RECHARGE DISTRICT

RTE 1, BOX 148

HAGERMAN, ID 83332

TABLE OF CONTENTS

COOPERATIVE AGREEMENT

I-05-82

I. PURPOSE

The purpose of this agreement is to establish guidelines and provide procedures and authorization so the cooperator can enter public lands administered by the Bureau of Land Management (BLM) for Lower Snake River aquifer recharge purposes. The public lands will be used when there is ample excess water to divert to the desert lands for aquifer recharge.

II. AUTHORITY:

A. Bureau of Land Management:

Section 307, Federal Land Policy and Management Act of 1976, P.L. 94-579, 43 U.S.C. 1737.

B. Cooperators:

State Law - Drainage-Water Rights and Reclamation, Section 42-4212.

III. AGREEMENT AREA

This cooperative agreement will involve only public lands located within the Shoshone BLM District, and described as follows:

T. 5 S., R. 17 East, Boise Meridian, Lincoln County, Idaho
Section 22: All 640 acres.

The public land in the agreement area is a desert environment and is not within any livestock grazing allotment.

IV. DEFINITIONS

A. Bureau of Land Management (BLM):

The agency in the Department of Interior that has management responsibilities on those lands covered by this agreement.

B. Cooperators:

The governmental body of the Lower Snake River Aquifer Recharge District, chaired by John R. LeMoyne, Rte 1, Box 148, Hagerman, ID 83332.

C. District Manager:

The authorized officer in the Bureau of Land Management who has been delegated the responsibility, by the Secretary of the Interior, for the management of public lands within the Shoshone District.

D. Contractor:

All companies, groups, individuals, or agents to include Federal and State agencies who are retained by the cooperators in their aquifer recharge program for the operation of this agreement.

E. Degradation:

The changing, altering, or lowering in character and quality of the lands as a result of the cooperator use through vegetative and soil disturbance, creating a negative or undesirable effect on the environment. This may be the effects from, but not limited to the hydraulic action of recharge waters or the disturbance by vehicles or heavy equipment.

V. OPERATION AND RESPONSIBILITIES

The Bureau of Land Management, acting through the District Manager, and the Cooperator, acting through the Lower Snake River Aquifer Recharge District Chairman, agree as follows:

A. The Bureau of Land Management shall:

1. Provide only the land used in the operation of this agreement.

2. Continue to allow existing uses on the subject lands and any additional uses which are compatible with this agreement. Existing uses on the subject land may include, but are not limited to recreation, minerals, water conveyance, livestock grazing, wildlife habitat, and public access.

B. The Cooperator shall:

1. Provide all labor, material, equipment, and money needed in the maintenance programs, rehabilitation, or studies authorized by the cooperator for the operation of this agreement.

2. Exercise every reasonable precaution to prevent the degradation of all resources and shall rehabilitate the area, both inside and outside of the agreement area, which has been subject to degradation by the cooperator or their contractor's use.

3. Restrict operations to the existing roads or trails if vehicular equipment is used within the agreement area and no new roads will be constructed.

4. Indemnify and hold harmless the Bureau of Land Management, its officers, agents, and employees from any and all damages and claims for damages of every description or kind whatsoever which may result from the exercise of privileges granted by this agreement or which may result from the exercise of any of the rights reserved herein.

5. Be subject to the provisions of Executive Order 11246 of September 24, 1965 as amended, which sets forth the Equal Opportunity clauses. A copy of this order may be obtained from the district manager.

6. Be responsibile for the prevention and suppression of all range fires resulting from their own or their contractor's actions. This includes responsibility for suppression costs incurred by any party in controlling such fires that are determined to be the cooperator's responsibility.

7. Allow authorized representatives of the Bureau of Land Management and the general public the right of unrestricted ingress and egress within the agreement area.

8. Remove from the public lands all trash, litter, garbage, and other items originating from the cooperator and contractor's use.

9. Notify the district manager immediately if damage has occurred to public lands within or outside the agreement area as a result of the operation of this agreement.

10. If additional development is needed to prevent recharge waters from overflowing the use area to external lands, the cooperator shall provide the district manager with detailed plans for such development for review and concurrence, 30 days prior to development initiation.

11. Restrict development to the approved structures, diversion, and other related facilities allowed under the approved Plan of Development identified as LSRARD Plan 82-1, dated June 1, 1982.

12. Raise or build up the present access road to the cement canal and drops recreation area to prevent flooding during times of aquifer recharge.

13. Fill in the area between the lava rock outcrop, cement canal, present access road, and proposed diversion structure to allow vehicular access to mining claims to the west.

C. Other Items Mutually Agreed by the Bureau of Land Management and Cooperator:

1. This agreement in no way abrogates BLM responsibility and authority as set by the Federal Land Policy and Management Act (Public Law 94-579, 90 Statute 2743), for management of the subject lands.

2. None of the items covered in this cooperative agreement are to be construed as obligating either party to the expenditure of funds in excess of authorized appropriations.

3. This agreement shall remain in full force and effect until modified or terminated by mutual agreement of BLM and the cooperator. This shall be accomplished by a 30 day written notice by either party on the other. Any proposals to change, modify, or otherwise alter any part of this agreement must have total concurrence by the cooperator and BLM.

4. This agreement or any interest therein shall not be transferred or assigned without prior approval, in writing of the district manager and the cooperator.

5. All tools, equipment, and other property taken upon or placed upon the public land by the cooperator or contractor during maintenance or rehabilitation efforts, shall remain the property of the cooperator or contractor and shall be removed by the cooperator or contractor within a

reasonable time, but no later than 30 days after completion of their work. If they are not removed as directed by the district manager, within a reasonable time then trespass actions can be taken towards the cooperator or contractor under the provisions of 43 CFR 9230.

6. No rental or use fees will be charged for the use of the public lands involved with this agreement. However, all damage and rehabilitation of the lands shall be the responsibility of the cooperator or contractor. If mineral materials such as gravel, fill dirt, etc. are needed for any phase of maintaining or rehabilitating the subject land, the cooperators shall notify BLM. These materials shall be applied for under the provisions of 43 CFR 3610 and 3620, whichever is applicable.

D. Effective Date

This cooperative agreement will be in full force and effect as of the last date signed.

LOWER SNAKE RIVER AQUIFER RECHARGE DISTRICT

John R. LeMoyne

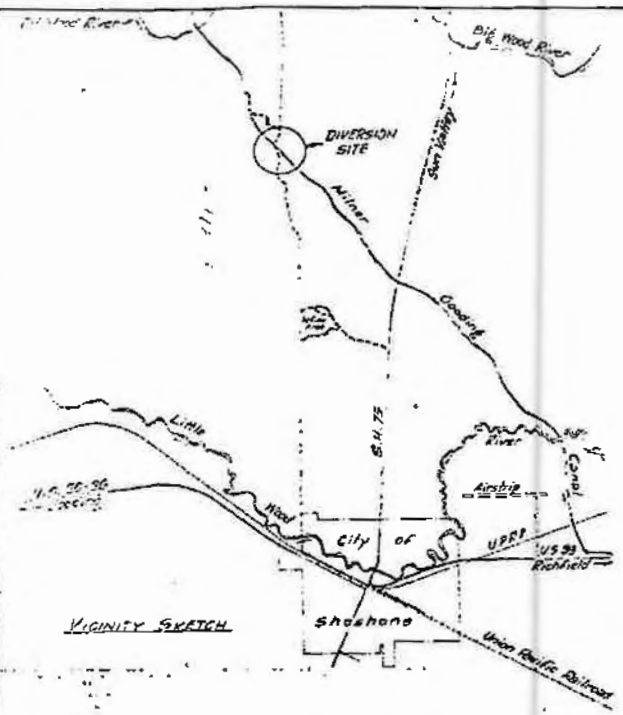
John R. LeMoyne, Chairman
Rte 1, Box 148
Hagerman, Idaho 83332

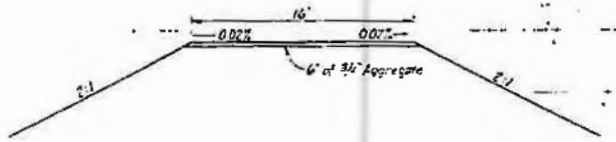
4-18-84
Date

DEPARTMENT OF THE INTERIOR,
BUREAU OF LAND MANAGEMENT

Charles J. Haszier
Shoshone District Manager
Shoshone, Idaho 83352

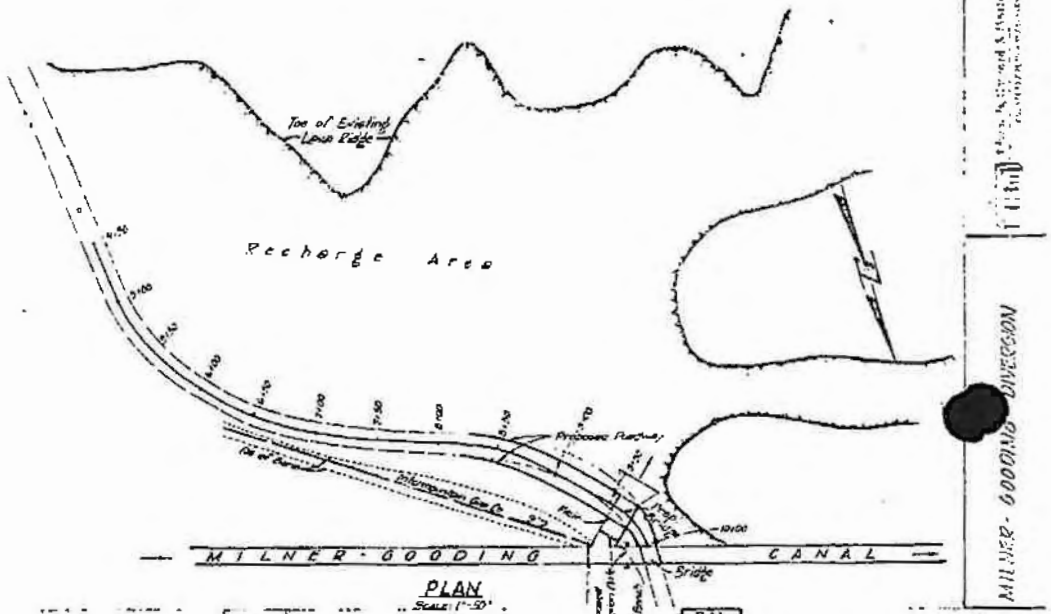
4/18/84
Date





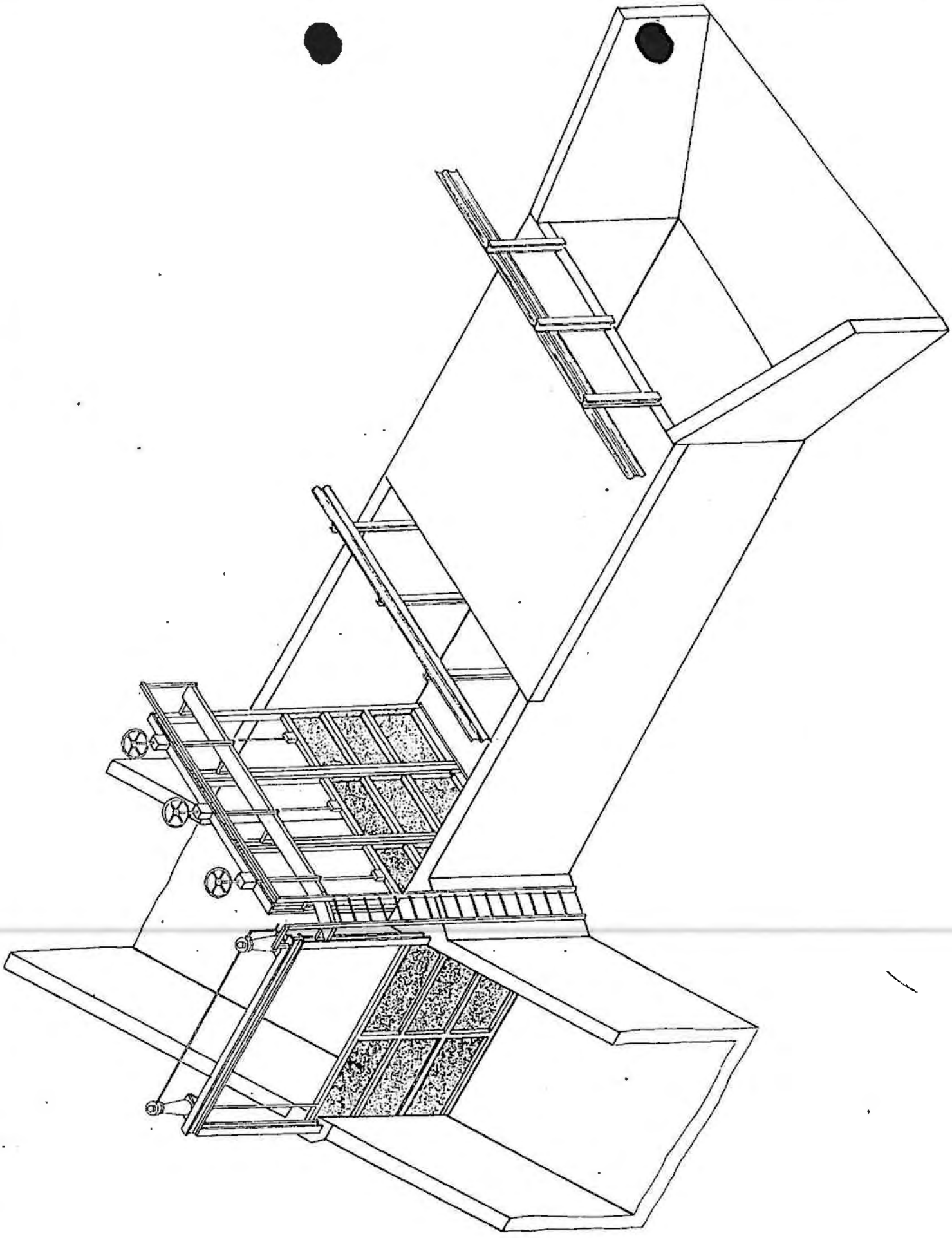
TYPICAL ROADWAY SECTION

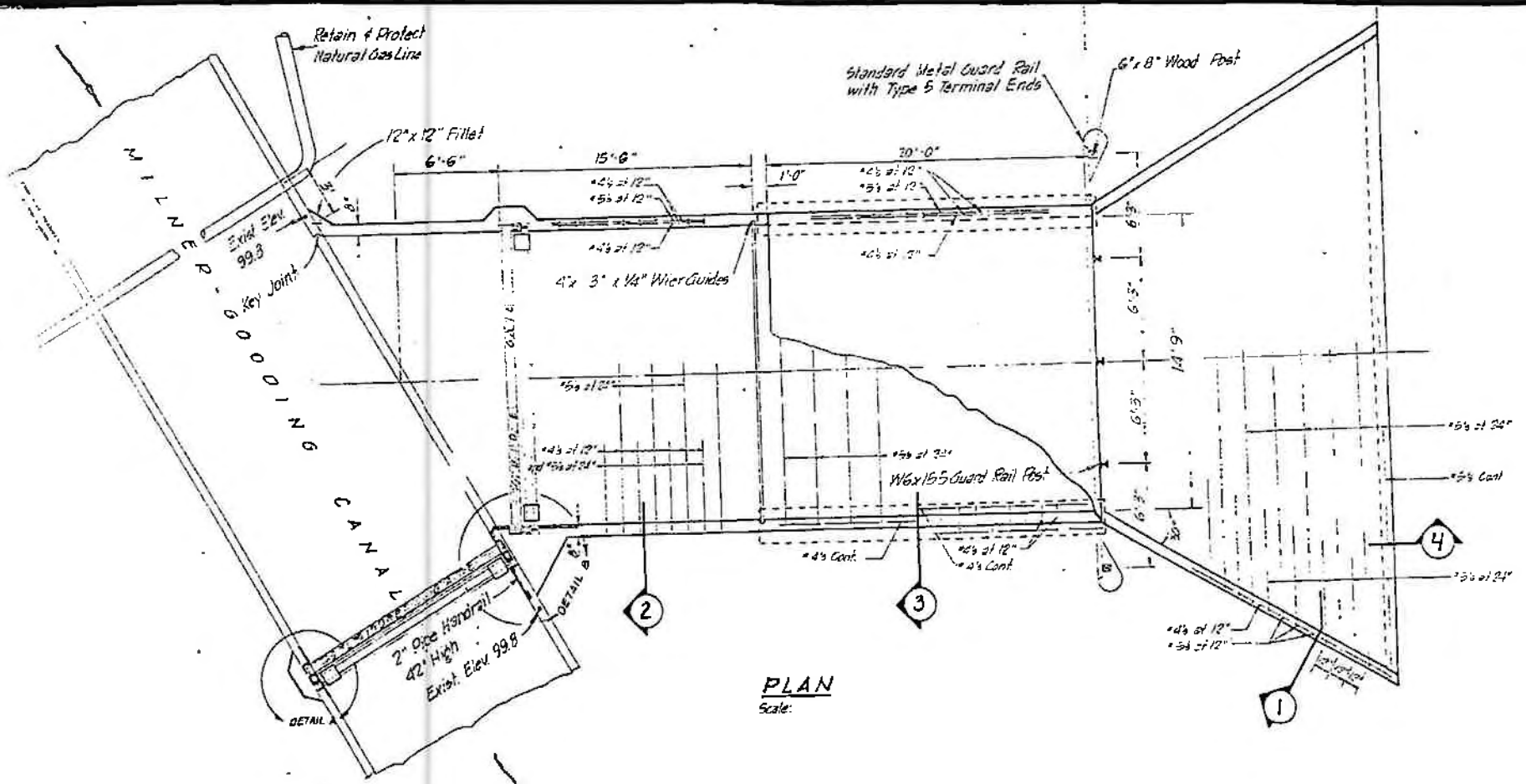
N.T.S.



ROADWAY PROFILE

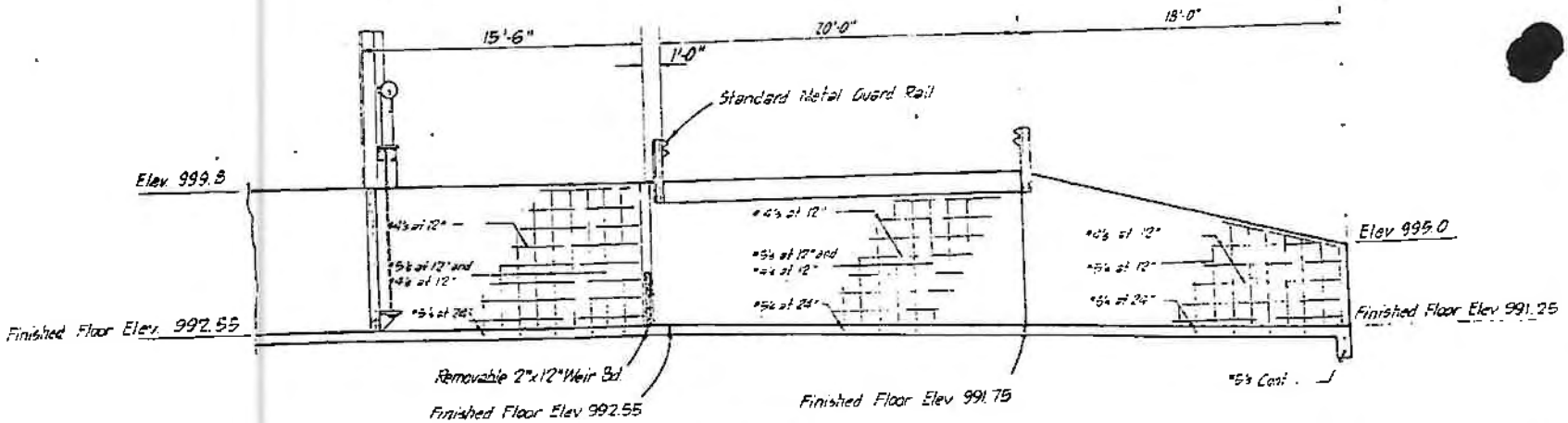
4+00 5+00 6+00 7+00 8+00 9+00 10+00





PLAN

Scale:



ELEVATION

Form 219
6/92

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

BENEFICIAL USE FIELD REPORT

RECEIVED
NOV 2 9 1993
Department of Water Resources

A. GENERAL INFORMATION

Permit No. 01-07054 37-07842

1. Owner: Lower Snake River Recharge District Phone No. 837-4887

Current Address: Box 48, Hagerman, Idaho

2. Accompanied by: Gerald Martens EXAM DATE :

Address: 1139 Falls Ave. E, Twin Falls, Idaho Phone No. 734-4888

Relationship to Permit Holder: None

3. Source: Snake River/Big Wood River tributary to See Narrative

B. OVERLAP REVIEW

1. Other water rights with the same place of use: None

2. Other water rights with the same point of diversion: None

C. DIVERSION AND DELIVERY SYSTEM

1. **Point(s) of Diversion:**

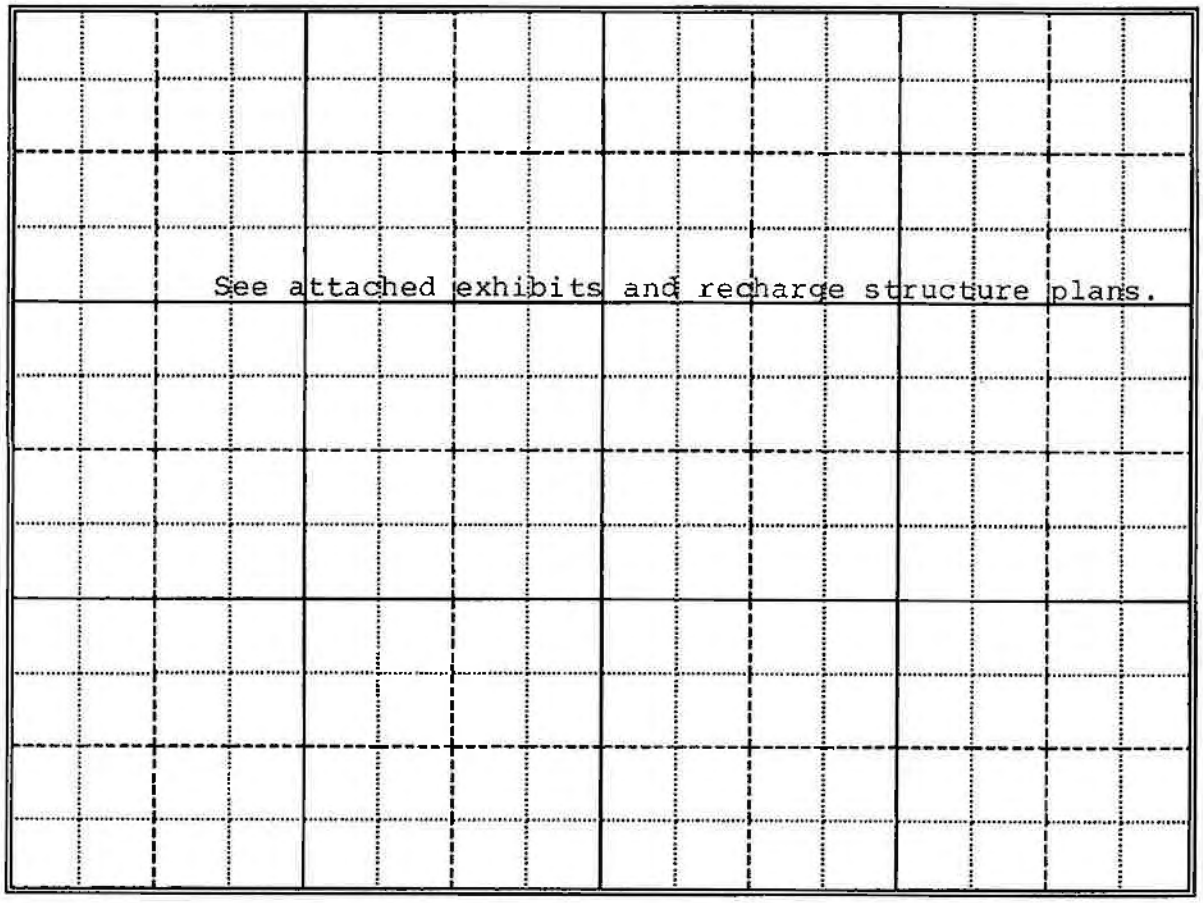
Ident No.	Gov't Lot	¼	¼	¼	Sec.	Twp.	Rge.	County	Method of Determination/Remarks
		SE	NE		22	5S	17E	Lincoln	7.5 minute quadrange

2. **Place(s) of Use:** Indicate Method of Determination

TWP	RGE	SEC	NE				NW				SW				SE				Totals
			NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	NE	NW	SW	SE	
5S	17E	22			X	X			X	X	X	X		X		X	X		

PETITIONER'S
EXHIBIT 202

3. **Delivery System Diagram**: Indicate all major components and distances between components. Indicate weir size/ditch size/pipe i.d. as applicable.



Scale: 1" = _____.

____ Copy of USGS Quadrange Attached Showing location(s) of point(s) of diversion and place(s) of use (required).

____ Aerial Photo Attached (required for irrigation of 10+ acres)

____ Photo of Diversion and System Attached

4.

Well or Diversion Identification No.*	Motor Make	Hp	Motor Serial No.	Pump Make	Pump Serial No. or Discharge Size
N/A					

Code to correspond with No. on map and aerial photo

D. FLOW MEASUREMENTS

1.

Measurement Equipment	Type	Make	Model No.	Serial No.	Size	Calib. Date
Milner Gooding Canal Measuring Stations 56 and 57						

2. **Measurements:** Water measured in concrete flume above and below diversion. Diversion quantity is mathematical difference. Upstream flow measured at Milner Gooding Canal Diversion Structure 56. Downstream measurement at Milner Gooding Canal Structure No. 57. Rating curves have been established for both locations. See attached letter.

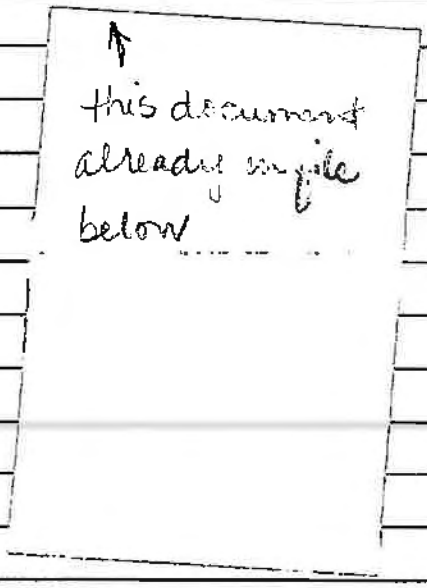
E. NARRATIVE/REMARKS/COMMENTS

Measurement flow records for April 1986, as prepared by Big Wood Canal Company. Attached are flow records.

The Big Wood Canal Co-mingles water from Snake River and Bigwood River upstream of diversion. District routinely replaces water from one source with water from other sources. At time of proof of Beneficial Use Report the Bigwood water was supplementing Snake River flows to facilitate flows measured at diversion.

Division agreement between Lower Snake River Recharge District and Bureau of Land Management attached for your information.

Attached is a flow summary sheet that tabulates the recharge rate of flow and the maximum potential contribution to total recharge from each potential source.



Have conditions of permit approval been met? X yes ___ no

F. FLOW CALCULATIONS _____ Additional Computation Sheets Attached

Measured Method:

See Section E.

G. VOLUME CALCULATIONS N/A

1. Volume Calculations for Irrigation:

$V_{I.R.}$ = (Acres Irrigated) x (Irrigation Requirement) = _____

$V_{D.R.}$ = [Diversion Rate (cfs)] x (Days in Irrigation Season) x 1.9835 = _____

V = Smaller of $V_{I.R.}$ and $V_{D.R.}$ = _____

2. Volume Calculations for Other Uses:

H. RECOMMENDATIONS

1. Recommended Amounts

Beneficial Use	Period of Use From	Period of Use To	Rate of Diversion Q (cfs)	Annual Volume V (afa)
Groundwater Recharge	1-1	12-31	300 CFS	
		Totals:	300 CFS	

2. Recommended Amendments

___ Change P.D. as reflected above ___ Add P.D. as reflected above ___ None

___ Change P.U. as reflected above ___ Add P.U. as reflected above ___ Other

I. AUTHENTICATION

Field Examiner's Name GERALD MARTENS Date 11/24/93

Reviewer _____ Date _____

PROFESSIONAL ENGINEER REGISTERED 2123 SEALS STATE OF IDAHO GERALD L. MARTENS

EHM Engineers Inc.
1139 Falls Ave. E
Twin Falls, Idaho 83301

Re: Water permit # 37-07842

Dear Mr. Martins:

Enclosed find copy of the record for water diverted into the recharge area from the Milner-Gooding canal North of Shoshone, Idaho.
The method used for caculating this discharge is as follows.
Measuring Station # 56 above the concrete flume on the Milner-Gooding canal was measured, Measuring station # 57 below the recharge diversion was also measured, the difference is the caculated amount of water diverted into the recharge area.
Rating curves were established for both of the measuring stations on the Milner-Gooding canal.
I sincerely hope this will satifisy the requirments for permit # 37-07842.

Sincerely

Reid J Newby
P.O. Box N
Shoshone, Idaho 83352

6/26/92

This is A Copy of Big Wood Canal Co. Record for April 1986 Water into Recharge.

Values are in C.F.S Each Day.

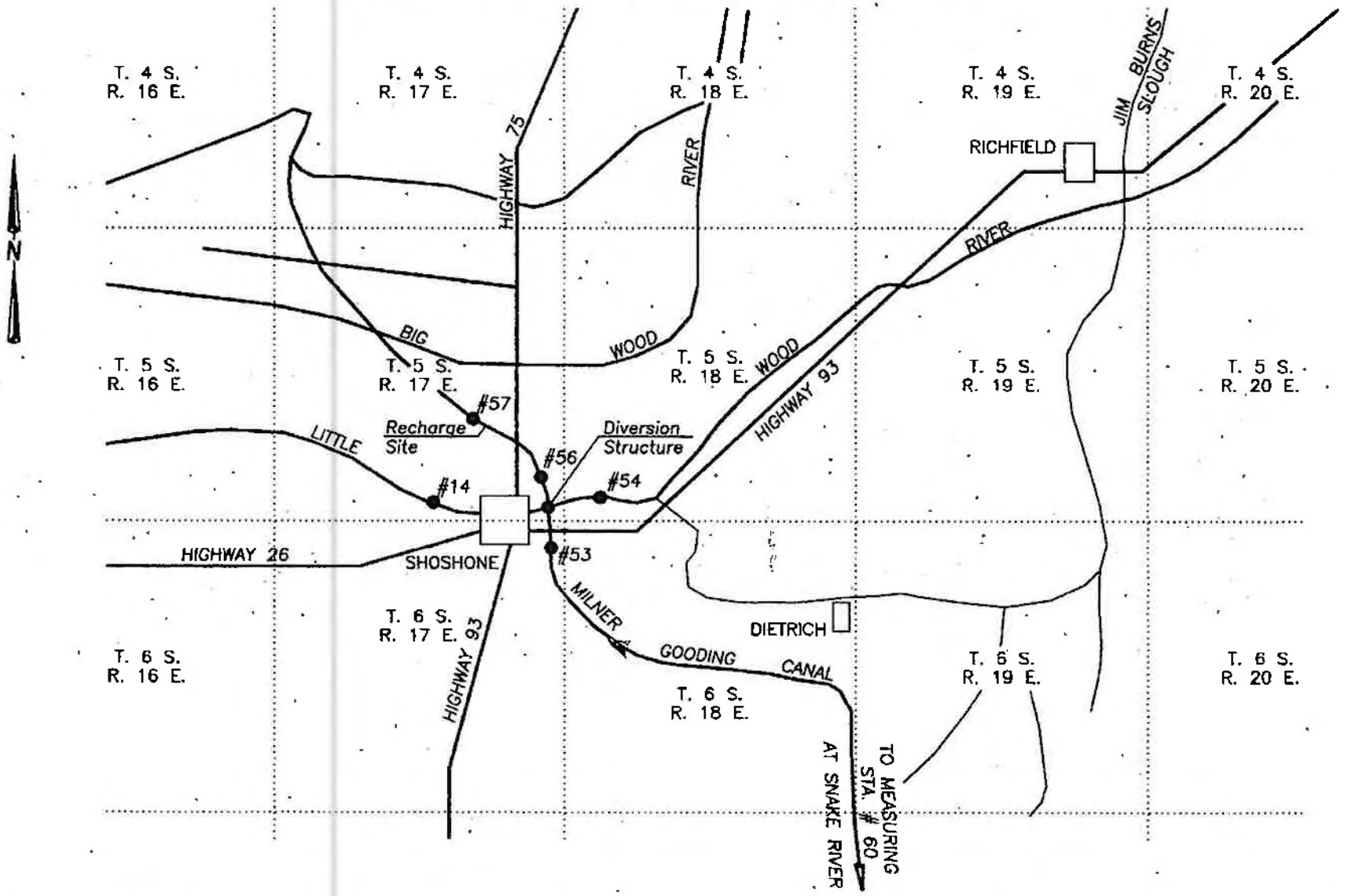
Ted Hemsley

For Permit # 87-07842

	No X	No Y	No Z	+ or Rocky	No 21	No 42		
							93	to 100
								252
								260
								260
								265
							2.61	265
							2.50	261
								270
								275
							2.46	252
							2.54	279
		2.05	95	47	79	+171	273	7.31	2.04	19	2.40	223
		1.76	2.10			+132	332		2190	18	3.31	310
		1.21	2.20	111	51	21	+144	240	7.19	1.17	1.98	17	3.54	242
1542		1.16	2.40	94	.57	36	+101	276	7.04	1780	2.10	20	3.34	342
1478	.20	178	2.54	111	.64	42	+40	254	6.98	1922	2.09	19	3.41	350
1410	1.24	188	2.54	111	.74	51	+41	220	6.76	1724	2.07	19	3.48	360
1026	1.12	160	2.60	119	.72	49	+71	190	6.84	1337	2.07	19	3.75	396
1042	1.40	226	2.60	119	.76	53	+41	186	6.44	1476	2.07	19	3.74	394
467	1.40	226	2.60	119	.76	53	+69	250	6.53	1541	2.07	19	3.32	340
527	1.70	312	2.60	119	.77	54			6.58	1579	2.22	22		
507	1.70	312	2.60	119	.77	54	+154	192	6.58	1579	2.22	22	4.50	466
562	1.41	276	2.65	126	.80	57	+108	159	6.01	1189	2.21	21	4.48	465
597	1.50	250	2.70	132	.83	61	+72	157	5.94	1147	2.20	21	4.44	459

1986

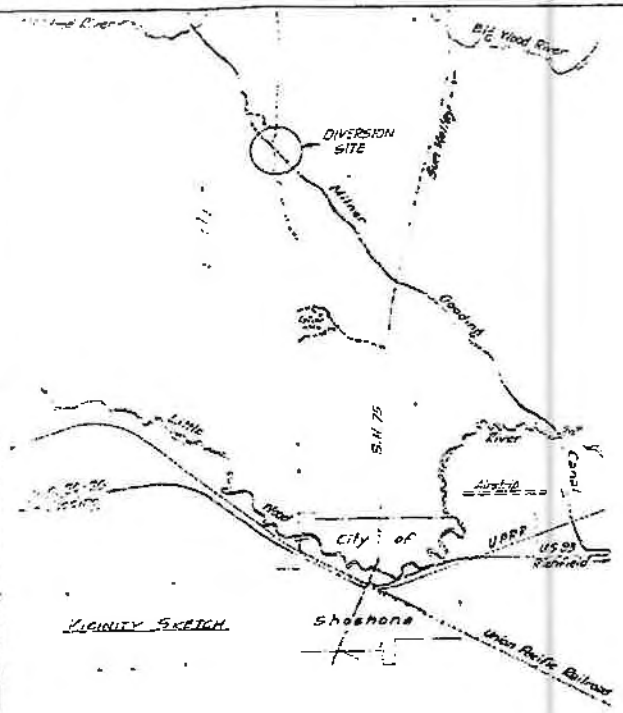
Exhibit For
Lower Snake River Aquifer Recharge
Permit No's. 01-07054 & 37-07842

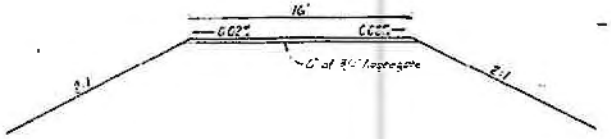


Summary of Recharge
Records for
Lower Snake River Recharge
Permit No. 01-07054 & 37-07842

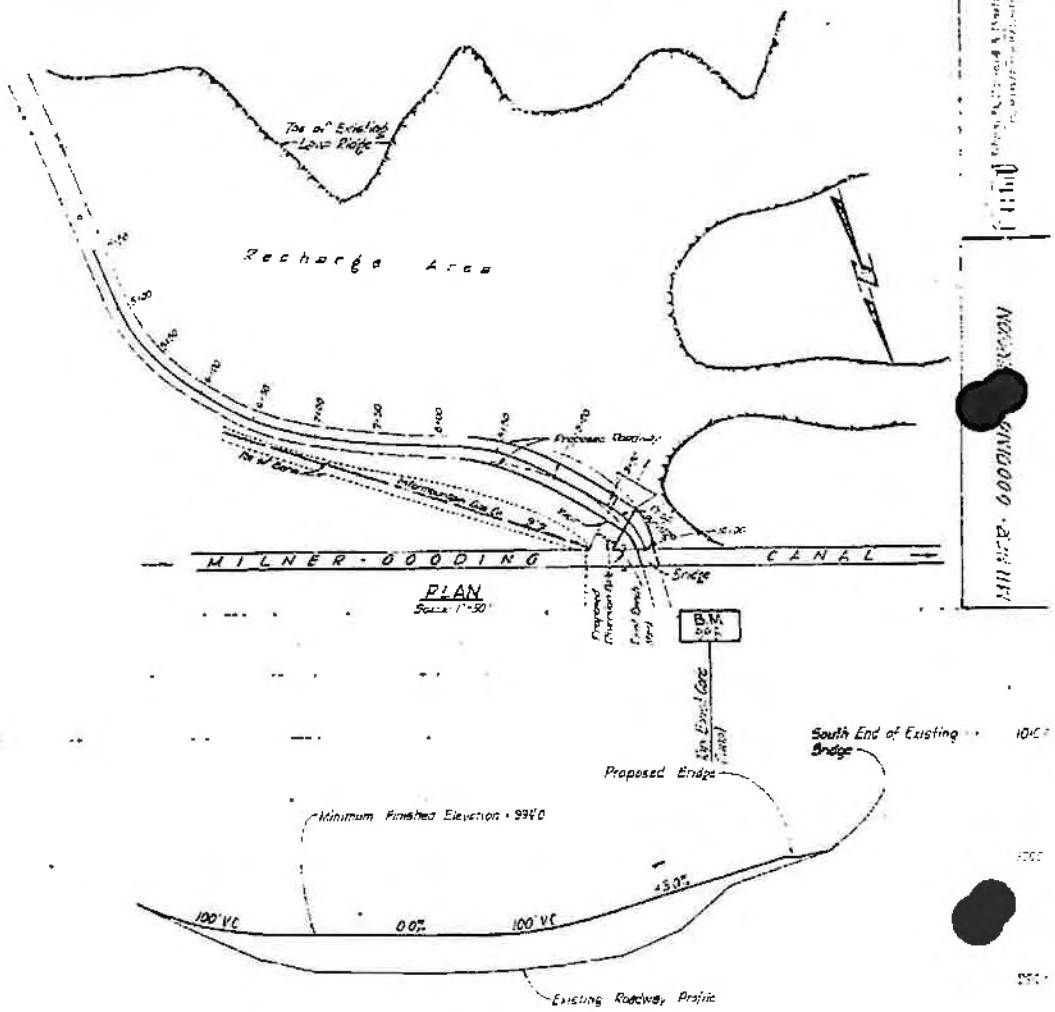
	MEASURING STAT ON								
DATE	JBS	14	53	54	56	57	RECHARGE	MAX POSSIBLE RECHARGE FROM BIG WOOD	MAX POSSIBLE RECHARGE FROM SNAKE RIVE
04-07-86			220		252	252	0		
04-08-86						260	260	260	
04-09-86		646	425		432	260	172	172	
04-10-86			401		448	265	183	183	
04-11-86	97	692	472		460	265	195	195	97
04-12-86	57		472			261	261	261	57
04-13-86	62					270	270	270	62
04-14-86	66	717	486	787	486	275	211	211	66
04-15-86	52	681	485	721	482	252	230	230	52
04-16-86	57	659	479	689	470	239	231	231	57
04-17-86	43	636	405	674	496	223	273	273	43
04-18-86	40	604	614	628	632	310	322	322	40
04-19-86	73	556	596	564	618	342	276	276	73
04-20-86	142		596	563			---	---	142
04-21-86	141	615	596	651	618	342	276	276	141
04-22-86	50	526	585	544	604	350	254	254	50
04-23-86	221	454	566	544	580	360	220	220	220
04-24-86	213	596	572	636	586	396	190	190	190
04-25-86	168	560	563	585	580	394	186	186	168
04-26-86	181	500	644	524	654	340	314	314	181
04-27-86	172		644	530				---	172
04-28-86	165	615	696	537	648	466	182	182	165
04-29-86	158	580	670	503	626	465	161	161	158
04-30-86	142	506	661	420	616	459	157	157	142

JBS - Jimmy Byrnes Slough
All flows in CFS as recorded by Bigwood Canal Co.
Recharge = 56-57
Max Recharge (from Snake River): Total discharge but not to exceed flow at M.S. 53. M.S.
Max Recharge (from Big Wood River): Total discharge from JBS but not to exceed total dishcarge.
Measuring stations 14+56 should approximately total measuring stations 53+54

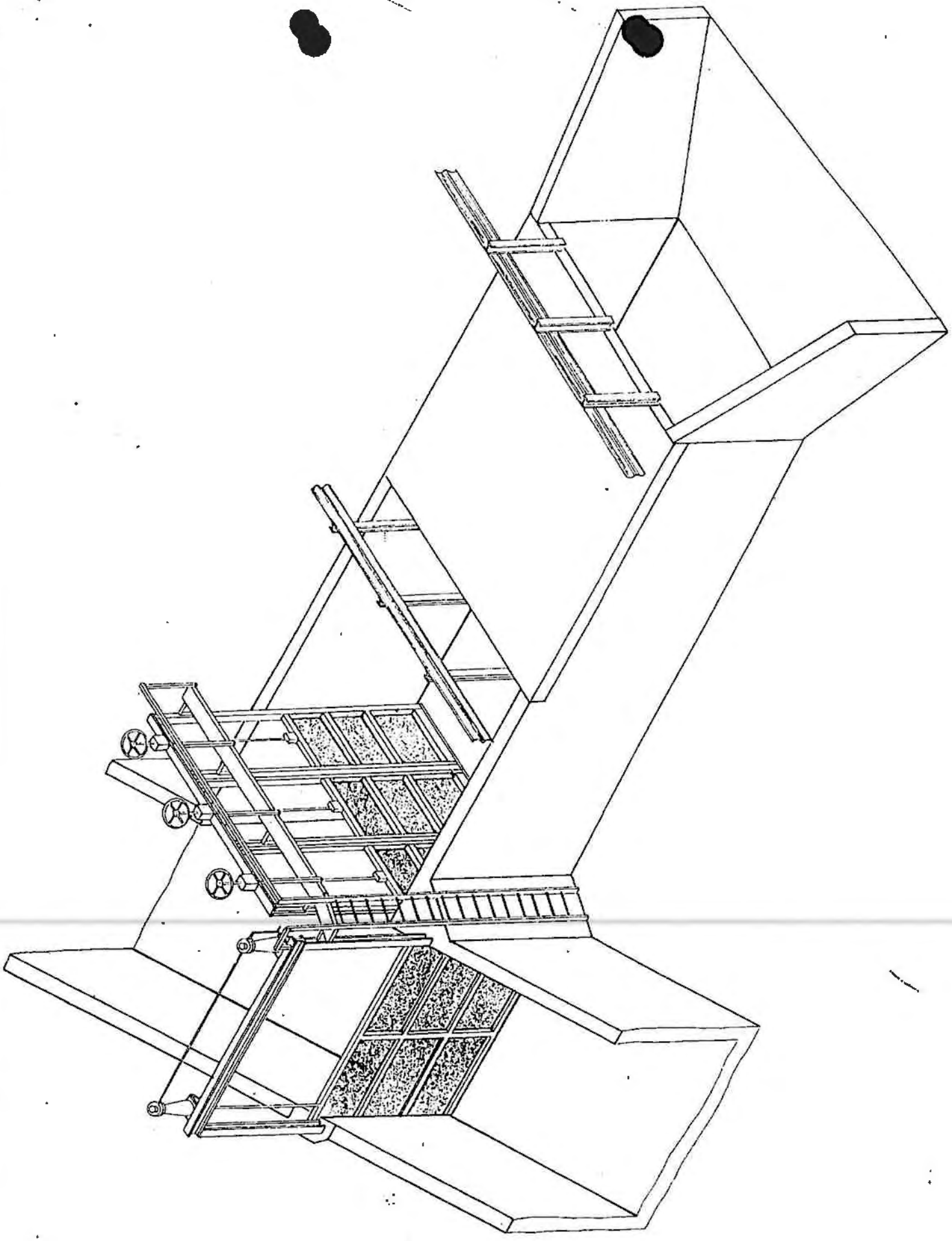


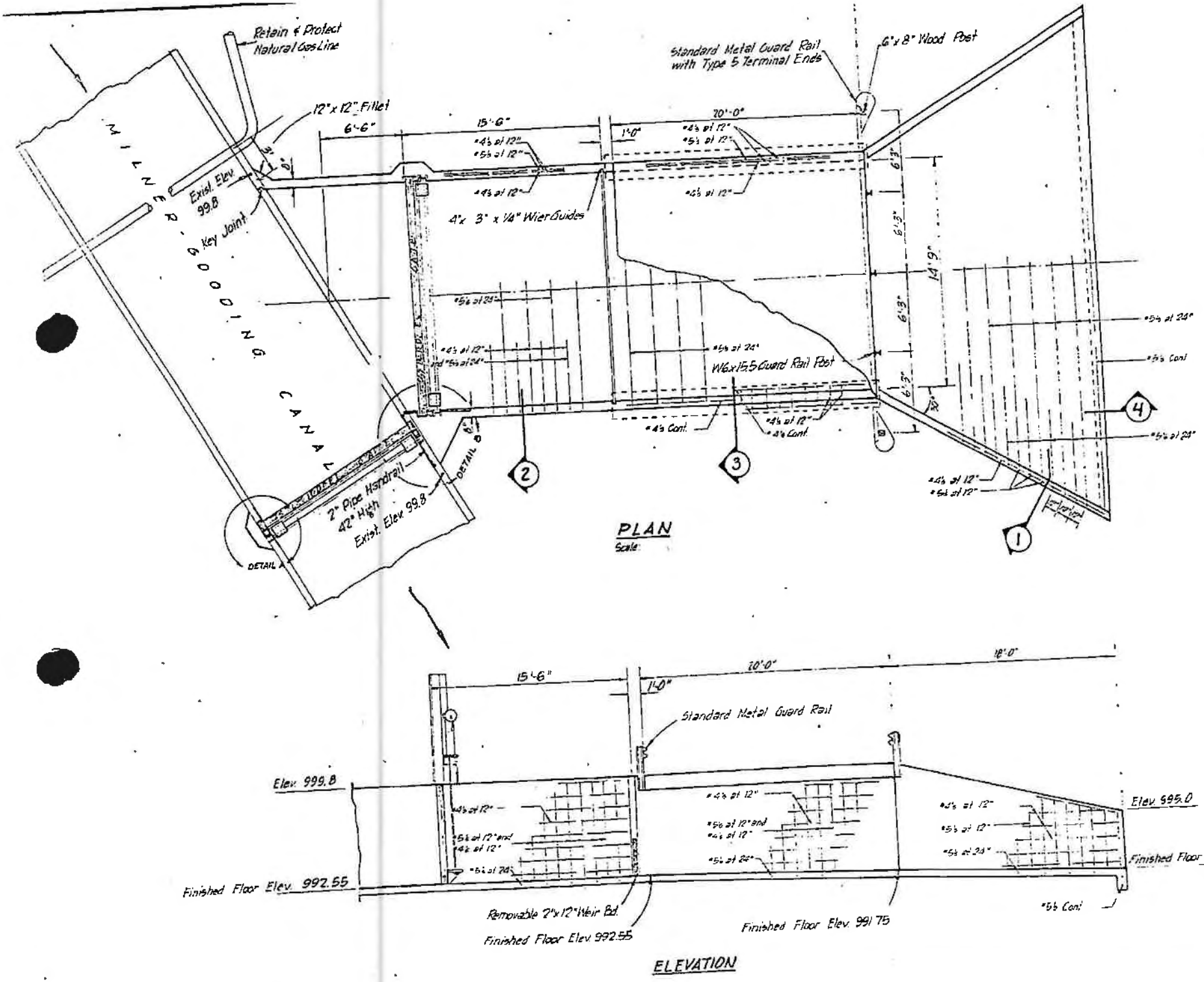


TYPICAL ROADWAY SECTION
N 75



ROADWAY PROFILE





GEN

Materi
with
Highw
Current
All Me
of Ban
Slab f
is Pla
formly
Edges
not c
Other

HY

Q ma

DE

Stru
T.O
Conc
Meta
Pres
Mgm
Act

BEFORE THE DEPARTMENT OF WATER RESOURCES

OF THE

STATE OF IDAHO

IN THE MATTER OF PERMIT NOS. 01-07054 AND 37-07842 BOTH IN THE NAME OF LOWER SNAKE AQUIFER RECHARGE DISTRICT

REINSTATEMENT ORDER

This matter having come before the Idaho Department of Water Resources (department), as a result of the filing of proof of beneficial use of water and a beneficial use field report with the department, the department makes the following Findings of Fact, Conclusions of Law and Order:

FINDINGS OF FACT

1. On June 2, 1982, the department issued Permit No. 01-07054 to the Lower Snake Aquifer Recharge District (permit holder) authorizing the diversion of 1,200 cubic feet per second (cfs) of water from the Snake River for ground water recharge purposes. Proof of construction of works and application of water to beneficial use (proof) was originally due on June 1, 1987 but was extended by the department to June 1, 1992.

2. On June 2, 1982, the department also issued Permit No. 37-07842 to the permit holder authorizing the diversion of 800 cfs of water from the Little Wood and the Big Wood Rivers for ground water recharge purposes. Proof of beneficial use was originally due on June 1, 1987, but was extended by the department to June 1, 1992.

3. On March 31, 1992, the department sent a proof due notice for each permit to the permit holder. On June 5, 1992, the department sent a lapse notice for each permit to the permit holder, since the permit holder had not responded and both permits had lapsed.

4. On July 27, 1992, the permit holder filed proof of beneficial use together with a field report completed by Gerald Martens, a certified water right examiner. The proof was identified as being for Permit No. 37-07842 with authorized sources of the Little Wood and Big Wood Rivers.

5. On August 12, 1993, the permit holder advised the department that the proof which was filed on July 27, 1992 was intended for both Permit Nos. 01-07054 and 37-07842.

6. The department's review of the completed field examination and

PETITIONER'S EXHIBIT 203

supporting data shows that the permit holder diverted water from both the Snake River and the Big and Little Wood Rivers even though the proof was identified as being only for Permit No. 37-07842.

CONCLUSIONS OF LAW

1. Section 42-218a.1., Idaho Code, provides in part as follows:

> That within sixty (60) days after such notice of lapsing the department, may upon a showing of reasonable cause, reinstate the permit with the priority date advanced a time equal to the number of days that said showing is subsequent to the date set for proof;

2. The Director should reinstate both Permit Nos. 01-07054 and 37-07842 pursuant to Section 42-218a.1., Idaho Code, and should advance the priority of each permit to August 25, 1980.

ORDER

IT IS THEREFORE, HEREBY ORDERED that Permit Nos. 01-07054 and 37-07842 are reinstated and the priority is advanced to August 25, 1980.

Dated this 1st day of December, 1993.

L. GLEN SAXTON, Chief
Water Allocation Bureau

MEMORANDUM

To: File 37-07842

FROM: Sharla

DATE: October 7, 1999

RE: Recharge Project(s)

As I initially reviewed these two files and the examiner's field report, I was confused as to the groundwater recharge taking place under 37-07842 from either of the permitted sources, the Little Wood River or the Big Wood River. The recharge under 01-07054 from the Snake River through the Milner-Gooding Canal could be confirmed and a license for that right has been prepared for signature.

When I spoke with Lee Peterson (watermaster of Water District 37 and 37-M) regarding the capacity of the Dietrich Canal, he told me where he believed recharge had occurred from that canal. I then spoke with Dan McFaddan of the Lower Snake River Aquifer Recharge District (see his letter to Clarence Parr dated 12/30/98) and he told me that what Lee had described was actually "flood control" that occurred several years ago. He went on to say that no groundwater recharge has ever taken place via the Dietrich Canal.

I have spoken with Paul Castelin of the Technical Services Bureau. He also knows of no recharge from the Little Wood or Big Wood Rivers to date. Recharge projects that are in the planning/development stages are as listed in Paul's and Hal Anderson's memos contained in file 01-07054.

Based on the information above, this permit (in whole, there is no reason to split into parts A & B because there has been no beneficial use to date) should be routed for Glen Saxton for extension/reinstatement processing.

PETITIONER'S
EXHIBIT 204

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

10/31/2018

WATER RIGHT NO. 37-13115

Owner Type	Name and Address
Current Owner	BIG WOOD CANAL CO C/O LYNN HARMON MANAGER 409 N APPLE ST SHOSHONE, ID 83352 2088862331
Attorney	CECIL D HOBDEY
Attorney	CRAIG D HOBDEY PO BOX 176 GOODING, ID 83330 2089344429

Priority Date: 05/10/1909
Basis: Decreed
Status: Active

Source	Tributary
BIG WOOD RIVER	MALAD RIVER

Beneficial Use	From	To	Diversion Rate	Volume
STOCKWATER	11/01	03/31	20 CFS	
Total Diversion			20 CFS	

PETITIONER'S
EXHIBIT 205

Location of Point(s) of Diversion:

BIG WOOD RIVER	SWSENE	Sec. 30	Township 02S	Range 18E	BLAINE County
BIG WOOD RIVER	SENESE	Sec. 09	Township 03S	Range 18E	LINCOLN County
BIG WOOD RIVER	SWNWSE	Sec. 15	Township 04S	Range 18E	LINCOLN County
BIG WOOD RIVER Injection	SENWSE	Sec. 25	Township 04S	Range 19E	LINCOLN County
BIG WOOD RIVER Rediversion	NESWSE	Sec. 25	Township 04S	Range 19E	LINCOLN County
BIG WOOD RIVER	NWNESE	Sec. 33	Township 05S	Range 14E	GOODING County
BIG WOOD RIVER Rediversion	NESENE	Sec. 35	Township 05S	Range 14E	GOODING County
BIG WOOD RIVER	NESESW	Sec. 12	Township 05S	Range 15E	LINCOLN County
BIG WOOD RIVER Rediversion	SWSESW	Sec. 29	Township 05S	Range 16E	LINCOLN County
BIG WOOD RIVER Rediversion	SWNWSE	Sec. 05	Township 05S	Range 19E	LINCOLN County
BIG WOOD RIVER Rediversion	SENESW	Sec. 30	Township 06S	Range 14E	GOODING County
BIG WOOD RIVER Rediversion	NESESW	Sec. 30	Township 06S	Range 14E	GOODING County

Place(s) of use: No POUs found for this right

Conditions of Approval:

1.	C18	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. Section 42-1412(6), Idaho Code.
2.		Stockwater use for shareholders of the Big Wood Canal Company during the non-irrigation season.
3.		Place of use does not include federal public lands unless authorized in writing by the managing federal agency.
4.		Place of Use is within the area served by the Big Wood Canal Company as recorded in irrigation water rights 37-867, 37-870, 37-894B, 37-895, 37-13116 and 37-20733.

Dates:
Licensed Date:
Decreed Date: 11/29/2012
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Close

IDAHO DEPARTMENT OF WATER RESOURCES
Water Right Report

11/2/2018

WATER RIGHT NO. 37-10343

Owner Type	Name and Address
Current Owner	CARRIE R ARKOOSH
Current Owner	JOHN W ARKOOSH
	2368 E 1775 S
	GOODING, ID 83330
Original Owner	KENNETH OHLINGER
Original Owner	WANDA OHLINGER
	1951 E 1775 S
	GOODING, ID 83330
	2089345763
Security Interest	DAY BURNETT FAMILY REVOCABLE TRUST
	1235 CASA PALERMO CIR
	HENDERSON, NV 89011

Priority Date: 05/27/1899
Basis: Decreed
Status: Active

Source	Tributary
BIG WOOD RIVER	MALAD RIVER

Beneficial Use	From	To	Diversion Rate	Volume
IRRIGATION	03/15	11/15	10.67 CFS	
Total Diversion			10.67 CFS	

Location of Point(s) of Diversion:

BIG WOOD RIVER	SENE	Sec. 30	Township 02S	Range 18E	LINCOLN County
BIG WOOD RIVER Injection	NENE	Sec. 19	Township 03S	Range 19E	BLAINE County
BIG WOOD RIVER Injection	NWSE	Sec. 25	Township 04S	Range 19E	LINCOLN County
BIG WOOD RIVER Rediversion	SENE	Sec. 25	Township 05S	Range 16E	LINCOLN County

206

BIG WOOD RIVER Rediversion SENE Sec. 25 Township 05S Range 16E LINCOLN County

Place(s) of use:

Place of Use Legal Description: IRRIGATION LINCOLN County

Township	Range	Section	Lot	Tract	Acres	Lot	Tract	Acres	Lot	Tract	Acres	Lot	Tract	Acres
05S	16E	24		NESW	6.9		SWSW	3.5		SESW	23			
				NWSE	3.6		SWSE	16						
		25		NENE	37		NWNE	24		SWNE	22		SENE	12
				NENW	31		NWNW	17		SENW	2.3			
				NWSE	0.8									

Total Acres: 199.1

Conditions of Approval:

1.		Point of injection into the Jim Byrns Slough that flows into the Little Wood River. Points of rediversion from the Little Wood River.
2.		This right is subject to a 27% conveyance loss; 7.79 cfs may be rediverted from the Little Wood River.
3.	C18	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. Section 42-1412(6), Idaho Code.
4.	C03	Right includes accomplished change in point of diversion pursuant to Section 42-1425, Idaho Code.
5.	C05	Right includes accomplished change in place of use pursuant to Section 42-1425, Idaho Code.
6.	S05	Use of this right is combined with water from Big Wood Canal Co.
7.	U42	Place of use does not include federal public lands
8.	E55	Right Nos. 37-460, 37-461 and 37-10343 are limited to the irrigation of a combined total of 199.1 acres in a single irrigation season.
9.	F02	Two points of rediversion located in T05S, R16E, S25, SENE.
10.	F01	Water is delivered through the Richfield Canal and the Mc Fall Headgates, Numbers 76 and 77.

Dates:
Licensed Date:
Decreed Date: 12/11/2007
Enlargement Use Priority Date:
Enlargement Statute Priority Date:
Water Supply Bank Enrollment Date Accepted:
Water Supply Bank Enrollment Date Removed:
Application Received Date:
Protest Deadline Date:
Number of Protests: 0

Other Information:
State or Federal: S
Owner Name Connector: And

Water District Number:
Generic Max Rate per Acre:
Generic Max Volume per Acre:
Civil Case Number:
Old Case Number:
Decree Plantiff:
Decree Defendant:
Swan Falls Trust or Nontrust:
Swan Falls Dismissed:
DLE Act Number:
Cary Act Number:
Mitigation Plan: False

Close