MEMO

State of Idaho
Department of Water Resources
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Date: August 31, 2015

To: Gary Spackman, P. E., Director

From: Tim Luke, Water Compliance Bureau

Subject: Staff Memorandum regarding Big Wood and Little Wood Water Users Association Delivery Calls from the Big Wood and Little Wood Rivers – Response to Director's Request for Memoranda Dated June 12, 2015

On June 12, 2015, the Director of the Idaho Department of Water Resources ("IDWR" or "Department") issued a *Request for Staff Memoranda In The Matter of Distribution of Water to Water Rights Held by Members of the Big Wood & Little Wood Water Users Association Diverting Water from the Big Wood River (Docket No. CM-DC-2015-001) and the Little Wood River (Docket No. CM-DC-2015-002)* (referred to hereafter as "Memo Request").

The Memo Request directed staff to investigate the surface water delivery systems for the water rights identified in the Big Wood & Little Wood Water Users Association ("BWLWWUA") delivery calls. Specifically, four items were identified for investigation as follows:

1. Describe all sources of water supply for beneficial use on lands identified as the place of use for water rights that a calling party alleges are being injured by junior ground water diversions. The description should identify water rights authorizing use of water to the lands, as well as any water right information that references the use of Snake River water on lands that are identified as a place of use by senior surface water rights that are the basis for the delivery call.

2. Describe the overall delivery systems for water diverted from the Big and Little Wood Rivers and delivered to the holders of the senior water rights listed in the delivery calls, including information such as canal headings, points of injection and re-diversion, commingling of water from various sources, and how the watermaster accounts for water delivered to both the larger delivery system and to the senior surface water rights holders.

3. Information about each calling party's physical delivery and water application works including diversion works, measuring devices, water conveyance systems, method of water application, wasteways, and any other relevant information.

4. Describe available water delivery records within the Big Wood River and Little Wood River basins.

I. Calling Parties' Water Rights and Water Sources

Attachment 1 of this Memorandum lists the water rights' identification numbers and water rights' owners of record for each water right in the BWLWWUA's delivery call where the source of water is from the Big Wood River or the Malad River.

Attachment 2 of this Memorandum lists the water rights' identification numbers and water rights' owners of record for each water right in the BWLWWUA's delivery call where the source of water is from the Little Wood River.

Attachments 1 and 2 also include the following information:

- Water right list record or row number;
- IDWR water right identification number;
- Current water right owner of record;
- Water right priority date;
- Water right authorized rate of diversion;
- Diversion name;
- Water right purpose of use;
- Water right total authorized irrigated acres;
- Water right acre limit;
- Identification of other surface water rights combined with each water right;
- Identification of any supplemental ground water rights;
- Conditions or remarks that the authorized water use is combined with water from the Big Wood Canal Company ("BWCC") and/or the American Falls Reservoir District No. 2 ("AFRD2");
- Conditions that delivery of the water right is subject to the water exchange provisions in certain contracts between the United States or the United States Bureau of Reclamation, AFRD2 and the BWCC; and
- Diversion location above or below the Milner Gooding Canal, which conveys water from the Snake River for irrigation of lands within the service areas of both the BWCC and AFRD2.

There are a total of ninety-one (91) water rights in the two BWLWWUA delivery calls. Partial decrees from the Snake River Basin Adjudication ("SRBA") are recorded for each of the 91 water rights. Forty (40) water rights identify the Big Wood River or the Malad River as a source of water and are included in the list of *"Petitioners Diverting from the Big Wood"* attached to BWLWWUA's *Second Amended Petition for Administration of Water Rights – CM-DC-2015-001, May 8, 2015*. There are 24 separate current water right owners of record for the 40 Big Wood/Malad River rights.

Fifty-one (51) water rights identify the Little Wood River as a source of water and are included in the list of *"Petitioners Diverting from the Little Wood"* attached to BWLWWUA's *Second Amended Petition for Administration of Water Rights – CM-DC-2015-002, May 8, 2015*. There are 25 separate current water right owners of record for the 51 Little Wood River rights.

Table 1 (page 3) outlines the BWLWWUA water rights. Figures 1 and 2 (page 4) depict the range of BWLWWUA water right priority dates by river source.

Table 1. BWLWWUA Water Rights Summary

BWLWWUA Summary Item or Category	Big Wood/ Malad River	L. Wood River	Total	Comments
BWLWWUA Right in 2nd Amended Petition	40	51	**91**	
Number of water right owners	24	25	**49**	4 owners have rights from Big & Little Wood Rivers; total net number of owners = 45
Water Rights by Use				
- Irrigation	40	44	**84**	
- Winter Stockwater		1	**1**	
- Ground Water Recharge		6	**6**	
Number of authorized water right diversions	12	57	**69**	Little Wood: 15 PDs above MGC & 32 below; Big Wood: 2 PDs above MGC & 10 below
Number of actual diversions per IDWR inventory	8	38	**46**	Little Wood: 12 PDs above MGC & 26 below; Big Wood: 2 PDs above MGC & 6 below
Rights with BWCC combined use condition only	10	24	**34**	
Rights with AFRD2 combined use condition only	10	7	**17**	
Rights with both BWCC & AFRD2 combined use conditions	11	2	**13**	
Rights with no AFRD2 and/or BWCC combined use condition	9	18	**27**	
Rights with AFRD2 Exchange Condition	21	23	**44**	
Rights with supplemental ground water rights	1	5	**6**	All 6 rights have BWCC and/or AFRD2 combined use conditions
Rights w/POD & POU above Milner Gooding	7	10	**17**	
Rights w/POD & POU below Milner Gooding	17	35	**52**	
Rights w/POD & POU both above & below Milner Gooding		7	**7**	All 7 rights owned by BWCC, including 1 winter stock right
Rights w/POD above Milner Gooding & POU below Milner Gooding	16		**16**	
Water rights irrigated acreage (private rights only; BWCC L. Wood R. rights not included)	2509	2731	**5240**	
Water rights diversion rate	74.1	98.6	172.7	Includes irrig. season rights only, not BWCC winter stock right (75 cfs)

Figure 1. BWLWWUA Big Wood/Malad River Rights Priority Dates

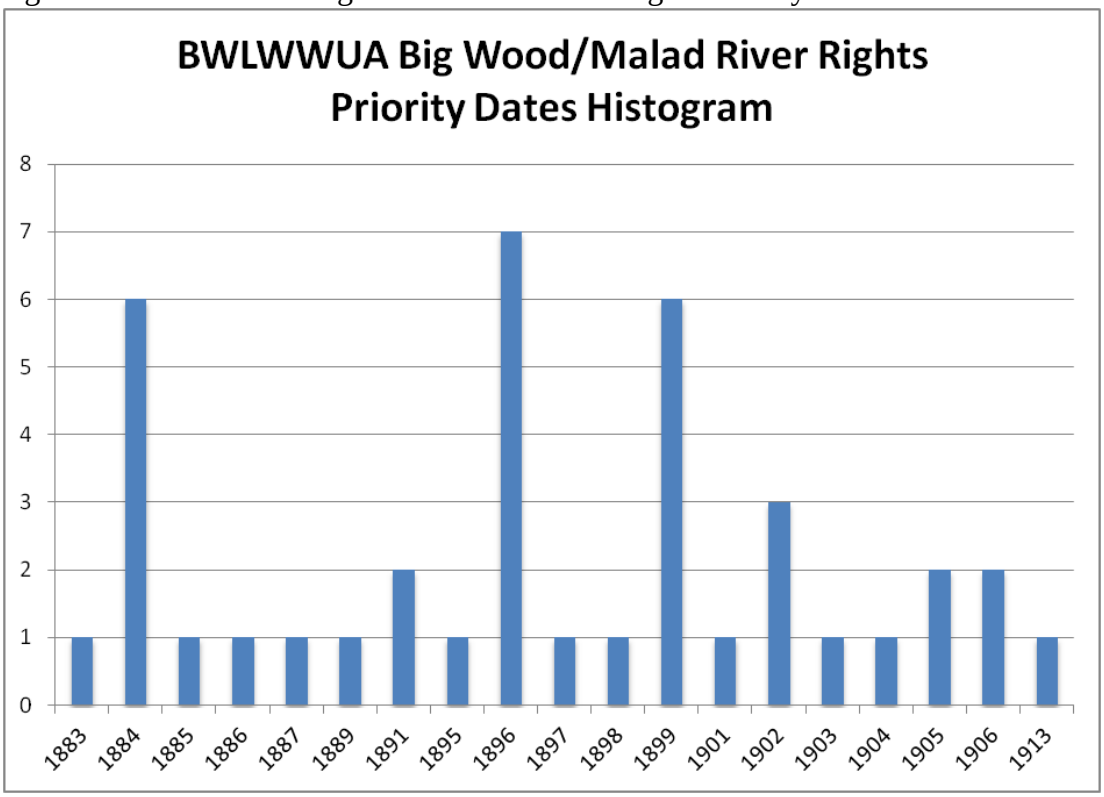
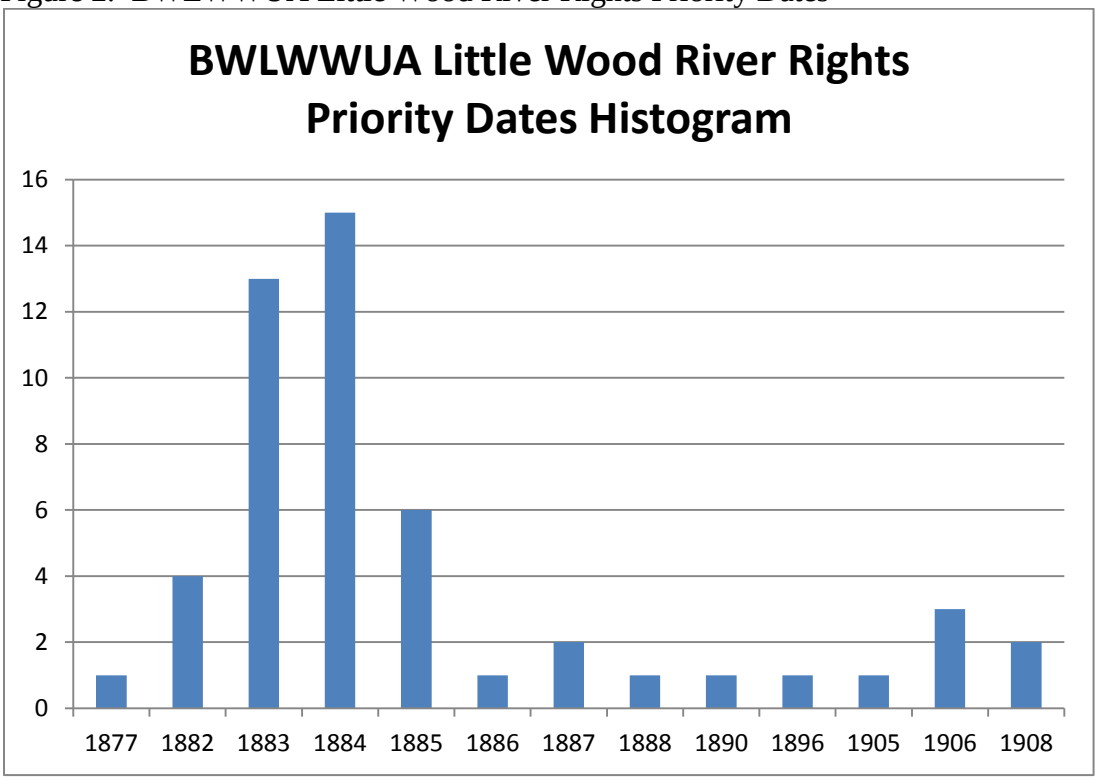


Figure 2. BWLWWUA Little Wood River Rights Priority Dates



On August 17 and 24, 2015, the Department received various information and data from the BWLWWUA in response to the Director's *Request for Additional Information, Big Wood River Delivery Call and Little Wood River Delivery Call, May 20, 2015.* The BWLWWUA submitted some level of information for all but three of the 91 water rights identified in the BWLWWUA Second Amended Petition. The three rights for which additional information was not submitted include 37-21650 (Brad Astle and Joyce Pierce), 37-194B (Church of the Nazarene), and 37-20847 (Roman Garza). All three rights have small rates of diversion (0.24 cfs or less) and share the same point of diversion from the Little Wood River (Slough Ditch No. 93). The BWLWWUA also submitted information for two water rights not included in the Second Amended Petition, including 37-22384 owned by Tom and Jane Woodland for 0.12 cfs from the Big Wood River, and 37-560B owned by the City of Shoshone for 0.14 cfs from the Little Wood River.

The BWLWWUA water rights' places of use are generally located along the Little Wood and Big Wood/Malad Rivers. The BWLWWUA water rights authorize a total of about 5,240 acres of irrigation. All of the BWLWWUA water rights points of diversion and places of use are located within the BWCC and AFRD2 decreed water rights place of use boundaries shown on the maps in Attachments 3 and 4. The BWCC and AFRD2 water rights place of use boundaries or project areas are identical except for a small non-irrigated area of land located along the Little Wood River just south of Richfield and about 200 acres located 4 miles southwest of Richfield along the Little Wood River. The latter 200 acres are within the BWCC water rights place of use boundary only and include approximately 103 acres of irrigated land using BWLWWUA rights 37-471 and 37-1125 (Joe Matheney).

The North Side Canal Company ("NSCC") water rights place of use boundary overlaps a portion of the BWCC-AFRD2 boundary area mostly in the far southwest part of the project south and southwest of Gooding. Some additional overlap may be found in a portion of the Hunt Tract located in the very south part of the BWCC-AFRD2 project north of Wilson Lake and the Snake River. Some irrigated parcels within both the BWCC-AFRD2 and NSCC boundary areas may receive a mix of water from both NSCC and BWCC-AFRD2.[1]

Many BWLWWUA water rights include conditions stating that use of the rights is combined with water from BWCC and/or AFRD2. Additionally, some water rights include the following condition, referred herein as the "AFRD2 Exchange Condition" or "Exchange Condition":

> Delivery of this right is subject to the water exchange provisions contained in Bureau of Reclamation contract no. 14-06-W-73, executed October 14, 1954, between the United States of America and American Falls Reservoir District No. 2, as supplemented by Bureau of Reclamation contract no. 14-06-100-6031, executed June 1, 1962, between and among the United States of America, American Falls Reservoir District No. 2, and the Big Wood Canal Company.

The BWCC is a canal company that owns and operates Magic Reservoir and several large canals from the Big Wood River below Magic Reservoir. The BWCC delivers water from these main canals to a network of ditches and laterals as generally shown in Attachment 4. The BWCC delivers Magic Reservoir storage water from the Big Wood River to the Little Wood River via the Richfield Canal and re-diverts storage water to a number of canals and ditches off the Little Wood River including the Dietrich Main Canal near Richfield. BWCC also conveys storage

[1] Harmon, Lynn, Manager, BWCC-AFRD2. Personal communication. 20 Aug. 2015.

water from the Big Wood River via the North Shoshone and Lincoln Bypass Canals to numerous ditches and lands located north of the Big Wood River. The BWCC owns six water rights from the Little Wood River that are included in the BWLWWUA's Little Wood River delivery call (see Attachment 2). The six BWCC rights divert from the natural flow supply of the Little Wood River. Five of the six rights are for irrigation purposes and one is for winter stock water use. The place of use for all six BWCC Little Wood River rights is the BWCC-AFRD2 place of use boundary shown in Attachment 3.

AFRD2 is an irrigation district that maintains the Milner-Gooding Canal to convey water from Milner Dam on the Snake River to irrigate lands within the AFRD2 and BWCC project areas. The district was created in 1925 for the purpose of delivering an additional supply of water from the American Falls Reservoir on the Snake River to the BWCC due to water shortages in the BWCC and Wood River drainages.[2] The irrigation district was also formed to develop additional irrigated lands or "new lands" within the present day BWCC-AFRD2 project areas. The Milner Gooding Canal crosses both the Little Wood and Big Wood Rivers in approximately the center of the BWCC-AFRD2 service areas near Shoshone as shown in Attachment 3. Water delivered via the Milner Gooding Canal can be injected to the Little Wood River and re-diverted from the river downstream. Water from the Milner Gooding Canal is also commingled with water diverted from the Lincoln Bypass and North Shoshone canals on the Big Wood River below Magic Reservoir.

Table 2 (page 7) identifies the BWCC and AFRD2 irrigation and irrigation storage water rights used within the BWCC-AFRD2 place of use boundaries. These water rights and sources are combined with those BWLWWUA rights having BWCC and/or AFRD2 combined use conditions. Table 2 does not include the BWCC rights from the Little Wood River that are included in the BWLWWUA Little Wood River Delivery call found in Attachment 2. BWCC right 37-867 is the primary storage right for Magic Reservoir. This right has a 1905 priority date and authorizes the storage of 172,000 acre-feet of water from the Big Wood River. BWCC holds a second storage right with a 1916 priority date for an additional 19,500 acre-feet. The two storage rights equate to a total reservoir capacity of 191,500 acre-feet. Magic Reservoir captures runoff from the Upper Big Wood River drainage and the Camas Creek drainage. Camas Creek is tributary to the Big Wood River in the backwater area of the reservoir near Hot Springs Landing, about 0.75 miles south of Highway 20.

[2] United States Department of Interior Bureau of Reclamation. *Memorandum from Floyd Dominy, Commissioner of Reclamation to Secretary of Interior Re. Operating Agreement with American Falls Reservoir District No. 2 and Big Wood Canal Company, Gooding District, Minidoka Project, Idaho.* March 30, 1962.

Table 2. Water Rights and Sources for BWCC and AFRD2 (not including BWCC rights included in BWLWWUA Little Wood River delivery call)

Current Owner	Water Right No.	Source	Priority Date	Diversion Rate (cfs)	Water Use List	Total Acres	Acre Limit	Volume (ac-feet)
BIG WOOD CANAL CO	37-13116	BIG WOOD RIVER	5/15/1897	65.88	IRRIGATION		74,000	
BIG WOOD CANAL CO	37-867	BIG WOOD RIVER	11/16/1905	3,000.00	IRRIGATION FROM STORAGE, IRRIGATION STORAGE, IRRIGATION		74,000	172,000
BIG WOOD CANAL CO	37-870	BIG WOOD RIVER	5/11/1908	3,000.00	IRRIGATION		74,000	
BIG WOOD CANAL CO	37-20733	BIG WOOD RIVER	4/1/1916		IRRIGATION FROM STORAGE, IRRIGATION STORAGE		74,000	19,500
BIG WOOD CANAL CO	37-895	BIG WOOD RIVER	9/1/1920	18.00	DIVERSION TO STORAGE, IRRIGATION FROM STORAGE, IRRIGATION STORAGE		74,000	5,391
BIG WOOD CANAL CO	37-13113	LITTLE WOOD RIVER	5/27/1899	150.00	IRRIGATION		39,683	
BIG WOOD CANAL CO	37-13114	LITTLE WOOD RIVER	11/6/1905	87.02	IRRIGATION		39,683	
BIG WOOD CANAL CO	37-13043	LITTLE WOOD RIVER	11/13/1907	303.60	IRRIGATION		39,683	
BIG WOOD CANAL CO	37-13112	LITTLE WOOD RIVER	6/1/1920	69.30	IRRIGATION		39,683	
UNITED STATES BUREAU OF RECLAMATION; AMERICAN FALLS RESERVOIR DISTRICT NO. 2	01-6	SNAKE RIVER	3/20/1921	1,700.00	IRRIGATION		62,361	

In addition to the water rights described in Table 2, AFRD2 holds a contract with the United States Bureau of Reclamation for 393,550 acre-feet of storage space in American Falls Reservoir on the Snake River.[3] Water District 01 records confirm that AFRD2 currently holds this same amount of storage space in American Falls Reservoir.[4] Water stored pursuant to this contract is used within the BWCC-AFRD2 place of use boundary shown in Attachment 3.

The total combined authorized irrigated acres for all BWCC water rights from both the Big Wood and Little Wood Rivers is limited to 74,000 acres. The total combined irrigated acres for BWCC's Little Wood River rights are limited to 39,683 acres.

The total irrigated acres in the BWCC-AFRD2 project area is about 98,667 acres. The *Amendatory Contract between the United States of America and the American Falls Reservoir District No. 2, October 14, 1954* ("Amendatory Contract") and the *Company-District Contract Among the United States of America, American Falls Reservoir District No.2 and Big Wood Canal Company, June 1, 1962* ("Company-District Contract"), which are both referenced in the AFRD2 Exchange Condition, describe the irrigable area for AFRD2 and BWCC as 98,667 acres,

[3] *IDWR Second Amended Final Order Regarding Methodology for Determining Material Injury to Reasonable In-Season Demand and Reasonable Carryover* at 25. 23 June 2010.

[4] Olenichak, Tony, Program Manager, Water District 01. Personal communication. 17 Aug. 2015.

AFRD2 Exchange Condition, describe the irrigable area for AFRD2 and BWCC as 98,667 acres, consisting of 73,904.1 acres of "old lands", 4,263 acres of "river-right lands", and 20,500 acres of "new lands."[5] According to the BWCC-AFRD2 website, "the Milner Gooding Canal and its connecting laterals furnish a full water supply to 20,000 acres and a supplemental supply to 78,667 acres."

The contracts referenced above allow BWCC-AFRD2 to use BWCC's water rights from Magic Reservoir, the Big Wood River, and the Little Wood River on lands above the Milner Gooding Canal in exchange for use of AFRD2 Snake River water on lands below the Milner Gooding Canal. Article 28 of the Amendatory Contract states in pertinent part:

a. It is one of the objects of this contract to provide each irrigable acre of the old lands within the [American Falls Reservoir] District, whether located above or below the main canal, with substantially the same benefits from American Falls storage and other sources available to the District, either directly or indirectly.

b. To carry out this object, it is agreed that:
    1. The owners of old lands below the main canal who are entitled to water from the Big Wood or the Little Wood River or Magic Reservoir are deemed to agree that the water from those sources may be used on old lands above the main canal, and to accept in lieu of water from those sources, an equal amount of water from American Falls storage and other sources available to the District, all to the extent necessary to permit the old lands above the main canal to benefit equally, as far as possible, with the old lands below the canal in the water supply made available under this contract.

In accordance with both the Amendatory Contract and the Company-District Contract, BWCC-AFRD2 delivers water from Magic Reservoir, the Big Wood River, and the Little Wood River to 36,000 irrigable acres above the Milner Gooding Canal known as the "Magic side" of the BWCC-AFRD2 project area. Lands in the project area below the Milner Gooding Canal that are entitled to BWCC-AFRD2 water supplies are irrigated with water from the Snake River through the Milner Gooding Canal.[6]

Some BWLWWUA members with river right points of diversion and places of use below Milner Gooding Canal have no BWCC-AFRD2 shares that entitle them to use Snake River water from Milner Gooding Canal. Some of these same users, however, may have BWCC-AFRD2 shares that are dependent on Magic Reservoir storage only. In these cases, the owner's BWCC-AFRD2 shares are curtailed when Magic Reservoir is off or out of water.

Some BWLWWUA members' river rights points of diversion and places of use below Milner Gooding Canal have supplemental water supplies or shares from BWCC-AFRD2 that are

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[5] *Amendatory Contract Between the United States of America and American Falls Reservoir District No. 2, October 14, 1954,* p. 35; and *Company-District Contract Among the United States of America, American Falls Reservoir District No.2 and Big Wood Canal Company* at 35. 1 June 1962.
Note: Both Contracts define "old lands" as "78,167.1 acres of irrigable lands within the District, including those 4,263 acres of land designated as 'river-right' lands." (see p. 3 of each Contract)

[6] "Big Wood History: History of Big Wood Canal Company's Water and the Establishment of the Company" *Big Wood Canal Company – American Falls Reservoir District No. 2* Web. 17 Aug. 2015; and
Harmon, Lynn, Manger, BWCC-AFRD2. Personal communication. 17 Aug. 2015.

delivered by injection of Snake River water from the Milner Gooding Canal to either the Little Wood River near Shoshone or the Big Wood River via injection to Thorn Creek. The BWCC-AFRD2 shares are then re-diverted at the BWLWWUA member's water right point of diversion from either the Little Wood or Big Wood River or via laterals directly from the Milner Gooding Canal.

Depending on the type of BWCC-AFRD2 shares owned, some shareholders only receive delivery of the shares when their decreed river rights are curtailed by Water District 37 in accordance with the watermaster's water right priority cut determinations on either the Little Wood or Big Wood River. These same users or share holders may continue to use their shares even if Magic Reservoir is off. Other users may receive delivery of BWCC-AFRD2 shares to river right places of use below Milner Gooding Canal without any consideration to curtailment of the decreed river rights or Magic Reservoir. The normal delivery of BWCC-AFRD2 shares to all land classifications in the BWCC-AFRD2 project is five-eighths (5/8) of an inch per acre.[7]

II. Overall Delivery Systems and Accounting of Delivery

A. General Delivery Systems – Big Wood River

Storage water from Magic Reservoir and natural flow water rights from the Big Wood River below Magic Reservoir, including BWCC Big Wood River rights, are diverted from the river at the Richfield and Lincoln Bypass Canals shown in Attachment 4. Water diverted to the Richfield Canal is conveyed to Richfield and Dietrich Tracts of the BWCC-AFRD2 project area. The Lincoln Bypass Canal diverts water from the Big Wood River approximately 10 miles around a dry or losing reach of the river to the head of the North Shoshone Canal. The North Shoshone Canal flows southwesterly to irrigate lands above the Milner Gooding Canal and north of the Big Wood River, known as the North Shoshone Tract. Water conveyed through the North Shoshone Canal also connects to and commingles with water from the Milner Gooding Canal to irrigate lands below or west of the Milner Gooding Canal and north of the Big Wood River known as the North Gooding Tract.

1. Richfield and Dietrich Tracts

BWCC storage water from Magic Reservoir and any BWCC Big Wood River natural flow rights may be diverted from the river to the head of the Richfield Canal about 2.3 miles below Magic Reservoir. A dam across the river at the Richfield Canal heading diverts water to the canal. Water diverted to the canal can be spilled back to the Big Wood River through canal spill gates located about 365 yards downstream of the canal heading. Any flows from the canal that are released or passed to the river are measured at a river gage station known as Station 5. Water passing this gage flows down the river about 4.4 miles to the Lincoln Bypass Canal.

Water that remains in the Richfield Canal is conveyed through the canal a distance of about 12 miles southeast where the canal splits into three main channels including the Jim Byrns Slough, the East Main Canal, and the West Main Canal. The East and West Main Canals deliver BWCC water to that part of the BWCC-AFRD2 project known as the Richfield Tract. The Jim Byrns Slough conveys water about 16 miles around the east side of the Richfield Tract and the BWCC-AFRD2 project boundary before connecting to the Little Wood River near the head of the

[7] Harmon, Lynn, Manger, BWCC-AFRD2. Personal communication. 20 Aug. 2015.

Dietrich Main Canal located just south of Richfield. Laterals and head gates along the Jim Byrns Slough above the Little Wood River provide irrigation water to some lands within the Richfield Tract. The total irrigated area within the Richfield Tract is roughly 19,000 acres.[8]

BWCC water from Magic Reservoir and the Big Wood River that is conveyed through the Jim Byrns Slough to the Little Wood River may be diverted to the Dietrich Main Canal or bypassed further down the Little Wood River. Water diverted to the Dietrich Main Canal irrigates about 8,200 acres of BWCC-AFRD2 lands in the Dietrich Tract, located around the town of Dietrich.[9] BWCC Little Wood River irrigation rights and the BWCC winter stock water right included in the BWLWWUA delivery calls may be diverted at the Dietrich Main Canal for irrigation and stock water use within the Dietrich Tract. The other BWLWWUA Little Wood River rights are all located on the Little Wood downstream of the Dietrich Main Canal. A more detailed description of the Richfield Canal diversion and system, with photos, may be found in Appendix 1.

a. 'Cottonwood Decree' Rights

A group of privately owned Big Wood River natural flow decreed rights known as the "Cottonwood Decree" rights are diverted from the river to the Richfield Canal and injected to the head of the Jim Byrns Slough. These rights are then delivered through the entire length of the Jim Byrns Slough and injected to the Little Wood River past the heading of the Dietrich Main Canal, a distance of about 16 miles. The rights are then re-diverted from the Little Wood River at various water right points of re-diversion between Richfield and Gooding.

The Cottonwood Decree rights share a common priority date of 5/27/1899. This priority date and a 'Cottonwood Decree' remark is often referenced in the water right "Priority Cuts Table" found in the Water District 37 annual reports titled *"Water Distribution and Hydrometric Works"*, also known as the "Black Books." The rights have historically been subject to a different and later priority cut date than other water rights with similar priority dates. According to the Water District 37 watermaster, the date of priority cut for the Cottonwood Decree rights is triggered when the Big Wood River is dammed completely off at the Baseline Bypass/Glendale diversion above Magic Reservoir near Glendale Road, south of Bellevue. The watermaster explained that this trigger for cutting the Cottonwood Decree rights is a historical practice "although no official court case or decree can be found to justify such a method."[10]

IDWR staff has found that the origin for this group of 5/27/1899 priority rights is based on a right from the Frost Decree[11] owned by the Big Cottonwood Canal Company. Staff has not found provisions in the Frost Decree or other records on file at the Department regarding the 'Cottonwood Decree' priority cut methodology. The SRBA partial decrees issued for these rights also have no conditions or provisions describing administration based on damming the Big Wood River above Magic Reservoir near Glendale Road.

Five of the so-called 'Cottonwood Decree' rights are included in the BWLWWUA Big Wood River delivery call. Four of these BWLWWUA rights are re-diverted from the river below the

[8] Harmon, Lynn, Manager, BWCC-AFRD2. Personal communication. 20 Aug. 2015.

[9] Harmon, Lynn, Manager, BWCC-AFRD2. Personal communication. 20 Aug. 2015.

[10] Lakey, Kevin, Watermaster, Water District 37. Personal correspondence to Tim Luke, IDWR. 16 June 2015: 4.

[11] Frost, S.C., et. al., vs. Alturas Water Company, et. al., Idaho Fourth District Court, Lincoln County. 13 Dec.1909.

Milner Gooding Canal between Shoshone and Gooding, and one is re-diverted above Milner Gooding Canal between the canal and Richfield. Each of these rights, and other 'Cottonwood Decree' rights, are subject to a 27 percent conveyance loss for delivery through the Richfield Canal and Jim Byrns Slough.

IDWR staff has found that the BWLWWUA did not include a number of the 5/27/1899 priority 'Cottonwood Decree' rights in the BWLWWUA Big Wood River delivery call. Staff has identified 'Cottonwood' rights that may be owned by other BWLWWUA members in the individual BWLWWUA water right diversion summaries found in Appendix 2. In all cases, the 'Cottonwood' rights are combined with more senior priority Little Wood River rights and are appurtenant to the same lands as the senior rights.

2. North Shoshone Tract

A number of the BWLWWUA Big Wood River rights are decreed natural flow river rights that are diverted from the river at the Lincoln Bypass and North Shoshone Canals. The Lincoln Bypass Canal, located about 4.5 miles downstream of the Richfield Canal and 6.8 miles below Magic Reservoir, diverts water around a losing reach of the Big Wood River to the head of the North Shoshone Canal. The North Shoshone Canal then conveys water to the southwest to irrigate lands within the BWCC-AFRD2 area both east and west of the Milner Gooding Canal. The area east of the Milner Gooding Canal and north of the Big Wood River served by the North Shoshone Canal is known as the North Shoshone Tract. The BWCC-AFRD2 delivers water to about 8,800 irrigable acres in the North Shoshone Tract.[12] The Big Wood River below the Lincoln Bypass Canal and North Shoshone Canal is typically dry during much of the irrigation season other than periods of high flow due to increased spring runoff and/or above normal precipitation. A more detailed description of the Lincoln Bypass diversion, with photos, may be found in Appendix 1.

The BWLWWUA Big Wood River delivery call includes six (6) water rights within the North Shoshone Tract. Three rights are owned by Paul and Ruby Bancroft and three are owned by Roth Investments, LLC. All six water rights include conditions indicating that use of the rights is combined with water from BWCC. The BWLWWUA information response shows no BWCC shares associated with the places of use described by these rights. However, IDWR staff found that BWCC shares are appurtenant to a portion of both the Roth water rights' place of use (up to 197.5 shares) and the Bancroft water rights' place of use (at least 57.5 shares). A more detailed summary of the Bancroft and Roth water rights' place of use and lateral re-diversion systems may be found in Appendix 1.

In the North Shoshone Tract, BWCC-AFRD2 delivers the river rights and any BWCC-AFRD2 shares to the BWLWWUA members' lateral head gates. Head gate deliveries are reported to the Water District 37 watermaster. The watermaster publishes these head gate deliveries in the Water District 37 annual water distribution report or Black Book.

3. North Gooding Tract

The North Gooding Tract is that part of the BWCC-AFRD2 project area located below or west of the Milner Gooding Canal and north of the Big Wood River. The BWCC-AFRD2 delivers water

[12] Harmon, Lynn, Manager, BWCC-AFRD2. Personal communication. 20 Aug. 2015.

to about 12,600 acres in the North Gooding Tract.[13] The main North Shoshone Canal traverses a distance of about 13 miles southwest where it enters the Milner Gooding Canal. From this junction, the Milner Gooding Canal goes about one-half mile north and turns west across the northern edge of the BWCC-AFRD2 boundary for about 3.5 miles before turning southwest towards Gooding. The Milner Gooding Canal ends about 10.5 miles northeast of Gooding where it splits to the North Gooding Canal and Thorn Creek. Water from the Milner Gooding Canal injected to Thorn Creek returns to the Big Wood River upstream of the Robertson and Union Ditches. The Big Wood River above Thorn Creek generally has little to no flow during much of the irrigation season. All or most of the river flow below Thorn Creek is dependent on the Milner Gooding Canal. All water deliveries to the North Gooding Tract from the main North Shoshone Canal-Milner Gooding Canal system and its laterals are handled by BWCC-ARFD2. Delivery of Big Wood River rights with authorized points of diversion from the river below Thorn Creek are made by the Water District 37 watermaster.

A number of laterals and turnouts along the Milner Gooding Canal below the junction of the main North Shoshone Canal serve irrigated lands in the North Gooding Tract, including BWLWWUA member lands and water rights' places of use. Thirty of the 41 BWLWWUA Big Wood River delivery call rights are located in the North Gooding Tract. A majority of these 30 rights list the Lincoln Bypass and/or North Shoshone Canals as the authorized point(s) of diversion. Many of these rights do not list or describe any points of injection or points of re-diversion presumably because the rights are conveyed entirely through BWCC-AFRD2 canals and laterals and measured by BWCC-AFRD2 ditch riders. Head gate deliveries benefitting from river rights diverted at the Lincoln Bypass/North Shoshone Canals are reported to the Water District 37 watermaster and published in the water district's annual Black Book. Water District 37 often refers to these and other BWCC-AFRD2 reported deliveries as "Canal Company rides." These reported head gate deliveries include use or delivery of both Big Wood River rights and BWCC-AFRD2 water sources.

Some BWLWWUA water rights with Lincoln Bypass Canal and/or North Shoshone Canal as the authorized points of diversion have places of use within the North Gooding Tract that can only be irrigated by laterals off the Milner Gooding Canal above the North Shoshone-Milner Gooding Canal confluence. The river right deliveries in these cases are likely not direct deliveries via the North Shoshone Canal unless the rights are conveyed through laterals, injected to the Milner Gooding Canal and then re-diverted to laterals from the Milner Gooding Canal. The river rights are more likely used in the North Shoshone Tract or injected to the Milner Gooding Canal in exchange for diversion of American Falls (Snake River) water from the Milner Gooding above the confluence with the North Shoshone Canal.

Other BWLWWUA Big Wood River rights with places of use in the North Gooding Tract have authorized points of diversion directly from the river near Gooding. These rights are delivered by the Water District 37 watermaster at each point of diversion. Several of the diversions are larger ditches such as the Robertson Ditch No. 26 and the Union Ditch No. 27 located about 8.5 to 9.5 miles northeast of Gooding. Six BWLWWUA rights are diverted at the Union Ditch and one is diverted at the Robertson Ditch. BWCC-AFRD2 water is also delivered to these ditches. The BWCC-AFRD2 ditch riders deliver both river rights and BWCC-AFRD2 water down the canals to the appropriate owner head gates. Ditch riders measure flows at each individual head gate. Head gate deliveries that include river right re-diversions are reported to the Water District 37 watermaster. The watermaster publishes those deliveries in the annual Black Book. The

[13] Sabala, Jane, Office Manager, BWCC-AFRD2. Personal email communication. 25 Aug. 2015.

reported head gate measurements include river rights and BWCC-AFRD2 water deliveries, as well as any waste water delivery.

The Robertson Ditch includes just one BWLWWUA right (Sabala Farms Inc.). Other Big Wood River natural flow decreed rights and BWCC-AFRD2 water is diverted at the Robertson Ditch. According to the Water District 37 watermaster, deliveries down the ditch are made by the Robertson Ditch Company but not reported to the watermaster. All of the Robertson Ditch river rights are 1905 or 1906 priority dates, including the one BWLWWUA right owned by Sabala Farms Inc. IDWR staff suspects ditch re-diversions are not reported to the water district since the rights are junior in priority and curtailed relatively early in the irrigation season.

Other BWLWWUA Big Wood River rights near Gooding divert from the river using mostly pump diversions owned by individual users. BWCC-AFRD2 water may be diverted at these pump stations if the right holders own BWCC-AFRD2 shares for the same lands. These other private, individually owned BWLWWUA diversions from the Big Wood River are scattered from about 1.2 miles northeast of Gooding to about 4 miles northwest of Gooding. Another private BWLWWUA pump station (Upper Frost 38-P1 and P2) is located on the Malad River about 5.3 miles southwest of Gooding.

See Appendix 1 for a detailed summary of the BWLWWUA Big Wood River water rights and diversions/lateral re-diversions located within the North Gooding Tract.

4. Big Wood River Water Right Priority Determinations

Historically, the Water District 37 watermaster makes separate priority cuts on the Big Wood River above and below Magic Reservoir depending on river conditions. An explanation of priority cut determinations on the Big Wood River both above and below Magic Reservoir is given by the watermaster via correspondence to IDWR dated June 16, 2015 (see Attachment 5).

The watermaster determines priority cuts below Magic Reservoir as follows[14]:

1. Total all inflows to the reservoir, where inflows equal the sum of measured flows at the Camas Creek gage near Blaine, the Big Wood River gage at Stanton Crossing, the Willow Creek gage (Willow Creek tributary to Big Wood River below Stanton Crossing), and an assumed value of 5 cfs for inflow from Rock Creek, tributary to the Big Wood River below the Stanton Crossing gage;
2. Subtract 60.6 cfs from the inflows, where 60.6 cfs represents the amount of loss in the Big Wood River as determined by a former court decree (*Arkoosh et.al. vs. Big Wood Canal Company*); and
3. Use the resulting difference as deliverable flow and calculate priority cuts based on that value (compare the value against the cumulative sum of all priority right diversion rates below the reservoir starting with the most senior priority right).

IDWR staff understands the method described above applies to all Big Wood River natural flow priority rights below the reservoir, whether the rights are diverted from the river at the Lincoln Bypass/North Shoshone Canals, or from the lower end of the river below the Milner Gooding Canal near Gooding. Priority date calculations on the lower end of the river are not adjusted based on return flows from the North Gooding Tract or changes in river reach gains.

[14] Lakey, Kevin, Watermaster, Water District 37. Personal Correspondence to IDWR. 16 June 2015; and Personal communication. 6 July 2015.

B. General Delivery Systems – Little Wood River

The BWLWWUA Little Wood River water rights' diversions and places of use are located along the river between Richfield and Gooding. The Little Wood River above Richfield is a natural flow river dependent largely on flows in Silver Creek and tributary springs near Picabo. The Silver Creek-Little Wood River confluence is about 15.5 miles upstream and northeast of Richfield. The Upper Little Wood River drainage upstream of Silver Creek may contribute to river flows below Silver Creek during spring runoff or other periods of high flow.

Surface water rights and diversions in the Little Wood River drainage area above Silver Creek are administered by Water District 37N (Upper Little Wood River) and two separate tributary water districts, Water District 37O (Muldoon Creek) and Water District 37U (Fish Creek). Administration of water in these districts is separate from Water District 37. Water District 37N includes the Little Wood Reservoir located north of Carey which is owned and operated by the Little Wood River Irrigation District ("LWRID"). Storage from the reservoir and natural flow entering the reservoir is re-diverted below the reservoir by the LWRID just north of Carey. Historically, the Little Wood River between Carey and Silver Creek is dry during most of the irrigation and non-irrigation seasons except during periods of high runoff. Additionally, little to no irrigation waste water or return flow enters the river below the LWRID or Carey. The LWRID injects 6 - 8 cfs of storage water from the Little Wood Reservoir to Silver Creek about 4 miles above the Silver Creek-Little Wood River confluence. This LWRID water is re-diverted from Silver Creek about 2 miles upstream of the Silver Creek-Little Wood confluence.[15]

The Water District 37 watermaster administers water rights and diversions from Silver Creek and tributary sources in the Picabo area down to the confluence of the Little Wood River. There are no irrigation rights or diversions, or other types of water use diversions, from the Little Wood River between Silver Creek and Richfield. The Water District 37 watermaster maintains a flow measuring gage on the Little Wood River about 1.3 miles southeast of Richfield and about 0.5 miles above the Dietrich Main Canal and the Little Wood River-Jim Byrns Slough confluence. This gage station is called Station 10 and used to monitor river flows above the confluence of the Jim Byrns Slough and return flow channels coming off the Richfield Tract that enter the slough and river around Richfield.

The water district also maintains a gage station on the Little Wood River east of Shoshone about 0.5 miles upstream of the Milner Gooding Canal. This gage station is used by the watermaster to determine water right priority cuts on all Little Wood River reaches, both above and below the Milner Gooding Canal.

1. BWCC-AFRD2 Richfield, Dietrich, and South Gooding Tracts

Irrigable lands receiving water from the BWCC-AFRD2 along the Little Wood River between Richfield and the Milner Gooding Canal are considered part of either the Richfield Tract or the Dietrich Tract depending on proximity either to Richfield or Shoshone. Any lands receiving water from BWCC-AFRD2 in this reach get water through BWCC's rights from the Big Wood River, Magic Reservoir, or the Little Wood River. Some of the BWLWWUA Little Wood River rights in this reach also receive water from BWCC-AFRD2.

[15] Simpson, Bob, Watermaster, Water District 37N. Personal communication. 25 Aug. 2015.

Irrigable lands along the Little Wood River between the Milner Gooding Canal and Gooding area which receive water from BWCC-AFRD2 are within either the Dietrich Tract or the South Gooding Tract depending on proximity to Shoshone or Gooding. The South Gooding Tract is that area of the BWCC-AFRD2 that is below the Milner Gooding Canal and south of the Big Wood River. A majority of the lands in the South Gooding Tract are south of Gooding and the Little Wood River. There are about 15,500 irrigable acres within the BWCC-AFRD2 South Gooding Tract.

The Milner Gooding Canal intersects the Little Wood River about 1.5 miles northeast of Shoshone. The intersection is known locally as the bifurcation. A control and head gate structure in the canal located along the south bank of the river diverts water to both the Little Wood River and a siphon flume that crosses the river. The siphon daylights past the north bank of the Little Wood River where the Milner Gooding Canal continues northwest towards the Big Wood River. The canal is flumed across the Big Wood River and continues further north and west where it merges with the North Shoshone Canal. Gage stations are located on the Milner Gooding Canal and the Little Wood River both above and below the bifurcation (four gage stations total),

2. BWLWWUA Little Wood River Rights - Richfield to Milner Gooding Canal

There are about 15 diversions from the Little Wood River between Richfield/Dietrich Main Canal and the Milner Gooding Canal that are measured and reported by Water District 37. Eleven of those diversions are authorized water right points of diversion for water rights in the BWLWWUA Little Wood River delivery call. The privately owned BWLWWUA water rights in this reach are relatively senior priority rights, ranging in priority from 1883 to 1888, plus two 1908 priority rights. Some BWLWWUA members in this reach did not include their junior priority rights in the delivery calls. Appendix 2 summarizes the BWLWWUA Little Wood River diversions, including information about combined water rights and BWCC-AFRD2 supplemental water sources.

The BWLWWUA Little Wood River delivery call includes five BWCC irrigation rights with priority dates ranging from 1881 to 1896. Also included in the delivery call is a BWCC winter stock water right with a 1906 priority. The BWCC Little Wood River irrigation rights list seven authorized points of diversion. Three diversions are located above the Milner Gooding Canal, including the Dietrich Main Canal. Two other diversions in the reach, Lezamiz 59 and Kissler 60, are small pump diversions. There are no other water rights associated with the Lezamiz 59 and Kissler 60 diversions; they apparently rely on the BWCC Little Wood River rights and/or other BWCC sources. Four BWCC Little Wood River rights diversions are located below the Milner Gooding Canal, including the South Gooding Main Canal, Slough Ditch 93, Carpenter Ditch 98, and the Little Wood Clover Creek confluence (confluence with NSCC main canal in Gooding). These rights also list several points of re-diversion from the Big Wood River and Malad River including the Justus and Thorpe Ditches on the Malad River near Hagerman. The Water District 37 watermaster delivers the BWCC rights almost exclusively to the BWCC authorized water right diversions above the Milner Gooding Canal, mostly to the Dietrich Main Canal. The watermaster only delivers these rights to BWCC diversions below the Milner Gooding during high flow periods when essentially all river priority rights are deliverable.[16]

[16] Lakey, Kevin, Watermaster, Water District 37. Personal communication. 26 May 2015.

3. BWLWWUA Little Wood River Rights - Milner Gooding Canal to Malad River

There are about 40 diversions from the Little Wood River between the Milner Gooding Canal and the Malad River that are measured and reported by Water District 37 (not including on-stream hydropower dams). Approximately 28 of those diversions are included in the BWLWWUA Little Wood River delivery call. The privately owned BWLWWUA water rights in this reach are mostly senior priority rights, ranging in priority from 1877 to 1886, plus three 1905-1906 priority rights. A number of the BWLWWUA members in this reach did not identify their junior priority rights from either the Little Wood River or Big Wood River that are combined with their senior priority rights. The junior priority rights not included generally bear dates of about 1899 or junior. Appendix 2 summarizes the BWLWWUA Little Wood River diversions, plus information about combined water rights and BWCC-AFRD2 supplemental water sources.

4. Little Wood River Water Right Priority Determinations

An explanation of Little Wood River and Silver Creek water right priority cut determination is provided by Water District 37 Watermaster Kevin Lakey in his correspondence to IDWR dated June 16, 2015 (see Attachment 5). In short, the watermaster determines the priority cut for all reaches of the Little Wood River and Silver Creek based on the measured flows at gage Station 54, located about 0.5 miles above the Milner Gooding Canal. The watermaster takes the measured flow at Station 54 and compares that value against the cumulative sum of all Little Wood River and Silver Creek priority right diversion rates starting with the most senior priority right. The watermaster explained that flows at Station 54 "account for return flows into the Little Wood River from the Richfield-Magic Reservoir system. This flow volume credits the return flow out of Richfield and allows more junior water rights to stay on longer.[17]" See Attachment 6 for a map of river gage station locations.

The watermaster does not consider use of any river gage below the Milner Gooding Canal to determine or adjust priority cuts because the river reach below the Milner Gooding Canal is a losing reach. BWCC-AFRD2 water in the river reach below the Milner Gooding absorbs river channel losses.[18]

The watermaster and BWCC-AFRD2 rely on several measurements at or near the confluence of the Little Wood River and Jim Byrns Slough to help manage the distribution of Little Wood River natural flow and BWCC water from Magic Reservoir/Richfield Canal. The different measurements include:

- Little Wood River above the confluence with Jim Byrns Slough as measured by gage Station 10 (located about 0.5 miles upstream of the confluence);
- Mouth of Jim Byrns Slough above the confluence with the Little Wood River as measured by a BWCC gage station/rated section (located about 0.5 miles above the confluence);
- Waste water return flows to Jim Byrns Slough between mouth of Jim Byrns Slough and confluence with Little Wood River (A, B, C and D Waste);
- Dietrich Main Canal 11, BWCC's ditch diversion located at the confluence on the east side of the river (measured by rated section and gage station); and

[17] Lakey, Kevin, Watermaster, Water District 37. Correspondence to IDWR. 16 June 2015: 2.

[18] Lakey, Kevin, Watermaster, Water District 37. Personal communication. 26 Aug. 2015.

- Little Wood River below confluence with Jim Bryns Slough, as measured through control structure using an installed staff gage and rectangular weir equation. This measurement is for reference purposes according to the watermaster; it can be compared to the other flow measurements and managed to pass natural flow based on the sum of Station 10 and return flows, less any natural flow delivered to BWCC at the Dietrich Main Canal under BWCC's Little Wood River rights.

The priority cut determination based on Station 54 flows does not include or account for any natural flow river right diversions made between Station 54 and the Jim Byrns Slough-Little Wood River confluence

III. Delivery and Water Application Works for BWLWWUA Right Holders

Appendices 1 and 2 of this memo describe the diversion, delivery, and application works for the individual BWLWWUA water right holders in the Big Wood River (Appendix 1) and Little Wood River (Appendix 2) delivery calls.

IDWR staff offers some comments regarding BWLWWUA system works.

1. Diversion Works

Most diversions are either a) pump stations diverting directly from the Big or Little Wood Rivers or from a small pond connected to the river; b) river diversion dams and small ditches from the river with head gate control boxes; or c) a combination of both a and b.

Many of the river pump stations consist of an intake pipe in the river connected to a wet well or vault from which an electrical or diesel powered motor operates a pump to lift or discharge water to pressurized closed conduit irrigation sprinkler systems such as center pivots, wheel lines, and hand lines. Several pumps may discharge water to open ditches and flood irrigation systems such as gated pipe and furrow fields. Some pump diversions receive water through open ditches, river bank cuts, or head gates that connect to a small pond or secondary head gate with an intake pipe and pump that re-diverts water to a pressurized irrigation system. At least one system includes an open ditch diversion from the river to a buried gravity flow pipeline with sufficient head or pressure to operate one or more center pivots. A few other systems use open ditches to pipelines connected to booster pumps and irrigation sprinkler systems. The remaining diversion systems are open ditch diversion systems in which a river diversion or check dam diverts water to a ditch and flood irrigation system. A majority of the diversion systems involve pump stations and pressurized irrigation sprinkler systems for field application.

Open ditch diversion systems are controlled by head gate structures at or near the ditch heading. Most head gates are orifice control boxes that allow for both measurement and control of water. The structures are typically 4 ft by 4 ft concrete boxes installed across the ditch. A steel plate or wooden board(s) installed across the front of the box with a rectangular submerged opening or orifice is used to measure flow through the box. A wooden or steel slide gate connected to a hand wheel installed on the back or exit side of the box provides manual control.

Several other ditch diversions used for delivery of some BWLWWUA rights, including those owned or operated by the BWCC-AFRD2, are large ditches used to convey a number of other decreed river rights and BWCC-AFRD2 water supplies. The diversion works for these larger

ditches consist of diversion dams and large concrete head works with steel slide or radial gates for control, some of which are automated.

Overall, IDWR staff finds that the BWLWWUA diversion works are typical of diversions found throughout the state.

2. Measuring Devices

Most open channel ditch diversions employ orifice control boxes for measurement and control of water. The boxes rely on submerged orifices for measurement. Submerged orifices are standard devices used for measurement of water in open channels that meet IDWR measuring device standards.[19] The rectangular orifice openings used in the BWLWWUA diversions vary in size from under 1 square foot to about 2 square feet. IDWR staff inspected BWLWWUA orifice control boxes on diversion site visits during the 2015 irrigation season. All orifices inspected were submerged at the time of the site visits. Water District 37 assistant watermasters accompanying staff on site visits confirmed the size of the orifice gate openings. Many orifice openings could not be seen or felt under submerged conditions depending on the size of the ditch and depth at which the orifices were set. Staff found that most orifice openings cut in wooden gates lacked sharp edges or installation of a sharp metal edge around the opening as specified in published guidelines. Some minor loss of accuracy may result from lack of sharp edges around the orifice opening. Aside from this observed deficiency, installed orifices appeared to meet basic published installation criteria.

Measurement of most BWLWWUA river pump diversions is accomplished using McCrometer mechanical propeller flow meters. Meter installation is on the irrigation mainline below the pump. The main pipe lines or meter sizes are generally 8 or 10 inches. McCrometer propeller meters are commonly used for irrigation pipe measurement but they are not currently included on IDWR's *List of Approved Closed Conduit Flow Meters* referenced in IDWR's *Minimum Acceptable Standards for Open Channel and Closed Conduit Measuring Devices*. IDWR's current list of approved flow meters is limited to magnetic and ultrasonic type flow meters. IDWR generally enforces use of approved flow meters where measuring device orders are issued, often for diversions in water districts. IDWR will generally approve a flow meter variance for a McCrometer or other propeller type meter if it is installed before the issuance of an order and if the meter is operable. The meter should also be installed in accordance with meter manufacturer recommendations. IDWR has not issued any water measuring device orders for surface water diversions in Water District 37. Nearly all of the McCrometer meters inspected in the field were operable and appeared to be in good condition. Meter flow rates, when observed with pumps running, generally seemed accurate based on observed system discharge points or irrigation systems in use. The Water District 37 assistant watermasters stated that owners periodically have the meters sent to McCrometer for repair and calibration.

The diversion summaries found in Appendices 1 and 2 include information on site specific flow meter installations. IDWR staff found that some installed meters lack sufficient straight pipe length requirements upstream and downstream of the meter. McCrometer requires a straight run of full pipe the length of ten pipe diameters upstream and two pipe diameters downstream.[20]

[19] "Minimum Acceptable Standards for Open Channel and Closed Conduit Measuring Devices." Idaho Department of Water Resources, 7 Feb. 2013. Web. 25 Aug. 2015.

[20] "Mc Propeller Model M0300 Configuration Sheet – Bolt-on Saddle Flowmeter." McCrometer, 2007. Lit#24517-00 Rev 1./02-07

Shorter straight pipe lengths are acceptable if straightening vanes are installed in the pipe. IDWR staff learned of at least one meter with straightening vanes. Other meter installations may have straightening vanes. Installation concerns for individual pump diversions, if any, are noted in Appendices 1 and 2. Staff found several pump diversions using magnetic flow meters from IDWR's approved flow meter list. Those meter installations are documented in the diversion summaries in Appendices 1 and 2.

Larger ditch diversions used for delivery of BWLWWUA water rights are also documented in Appendices 1 and 2. The large or main river ditch diversions owned and operated by BWCC-AFRD2 use rated canal sections for measurement. Rated sections are typically located a short distance below the canal control gates and are equipped with stilling wells and continuous water level recorders, similar to river gage stations. The BWCC-AFRD2 makes frequent discharge measurements at rated sections to determine rating shifts and to maintain rating tables or rating curves. The BWCC-AFRD2 uses Acoustic Doppler Current Profile ("ADCP") meters to measure discharge at large canal rated sections. ADCP meters are commonly used by the United States Geological Survey, IDWR, and other water agencies for measurement of rivers and large canals. BWCC-AFRD2 report daily canal flows to the Water District 37 watermaster.

Other ditches used for diversion of BWLWWUA rights are medium-sized ditches that serve multiple water users having river rights and BWCC-AFRD2 supplies. These ditches use standard open channel measuring devices such as rectangular contracted weirs. Measuring devices for these ditches are documented in Appendices 1 and 2.

BWLWWUA members having rights diverted in medium- to larger-size canals with other sources or supplies of water have re-diversion head gates down the canals that are measured and reported by BWCC-AFRD2. These head gates were also inspected by IDWR staff and documented in Appendices 1 and 2. Most re-diversion head gates are measured using submerged orifices installed in orifice-head gate boxes or standard rectangular or cippoletti weirs installed in lateral ditches below head gate turnouts.

3. Conveyance and Irrigation Systems

A brief description of conveyance and irrigation application systems associated with each BWLWWUA member diversion is given in Appendices 1 and 2. In general, most systems involve the use of pressurized irrigation sprinkler systems whereby water is pumped directly from the river or a point of re-diversion off a ditch or canal. Sprinkler systems include center pivots, wheel lines, and hand lines. Conveyance systems are gravity flow channels or conduits consisting of open ditches, closed pipes, gated pipes, or a combination thereof. Most open ditches are earthen although some concrete-lined conveyance ditches were observed. Flood irrigation of fields is accomplished using check dams and/or tarps in ditches to control direction of flood water across open fields with raised borders or in a few cases using siphon tubes or hoses from ditches to fields with furrows and borders. A number of systems use gated pipe to both convey and apply water to open and furrow fields with borders. The BWLWWUA conveyance and irrigation application systems are typical of systems found throughout the state.

IV. Water Delivery Records

Water District 37 annually publishes all water delivery or diversion data and measured river flows in a report titled *Water Distribution and Hydrometric Works*. The report includes a one

page summary of daily diversions for each diversion and flow gage station in the district. Over 400 diversion and measurement summaries are included in a hard bound, black covered book often referred to as the "Black Book." Annual Black Book reports are available at the Water District office and IDWR state office in Boise for each year dating back to 1920. Copies of the books may also be found at the IDWR regional office in Twin Falls and the BWCC-AFRD2 office in Shoshone.

Water District 37 has water delivery records for all diversions in the district in electronic format from 2003 through 2014. Specifically, the district has a separate spreadsheet file (Microsoft Excel file format) for each diversion, each year. The district organizes the records by year, areas, or by areas assigned to assistant watermasters. Included in these records are canal or ditch re-diversions of decreed river rights as measured and reported by BWCC-AFRD2. The water district does not have electronic data records prior to 2003.

IDWR acquired all of the 2003-2014 electronic data records from the water district. The 2003-2014 water district delivery records for BWLWWUA member diversions have been uploaded to an IDWR database that can be publically accessed from IDWR's website at: https://www.idwr.idaho.gov/apps/wm/DiversionDataApplication/Login.aspx. Annual diversion reports and hydrographs can be viewed or downloaded using this web application. IDWR has only uploaded records for BWLWWUA river diversions, plus water district river gages on the Big Wood River below Magic Reservoir and the Little Wood River from Richfield to Gooding. Delivery records for canal or ditch re-diversions have not been uploaded to the IDWR database.

IDWR staff makes the following observations concerning the 2003-2014 water delivery records and electronic spreadsheet files:

- Some individual diversions, including BWLWWUA diversions, have multiple spreadsheets per year. Multiple spreadsheets represent different types or categories of delivery to the same diversion including, but not necessarily limited to, delivery of decreed river rights, Carey Act Water or "CAW" (refers to water from BWCC Magic Reservoir), Snake River rental water, and temporary water right transfers. Daily diversions from the multiple spreadsheets must be summed to get total delivery unless the district provided a spreadsheet of total deliveries;
- In cases where one owner uses several diversions authorized by one or more water rights, Water District 37 measures the diversions separately but combines them under one annual report or spreadsheet; and
- All of the measured diversions are numbered in order from upstream to downstream. The diversion numbers are generally consistent over time but diversion names are often subject to change based on changes in ownership of water rights and diversions.

In cases where there are multiple annual spreadsheets for the same BWLWWUA member diversion or combined diversions, IDWR summed the multiple spreadsheets for total diversion or delivery. This was done for consistency purposes, so all the diversion records represent the total amount of water diverted. Data from individual spreadsheets representing the different types of water sources can be reviewed, combined, and analyzed separately. IDWR will likely need to make all of the Water District 37 electronic files available through its website or FTP site.

Attachment 1

Big Wood and Little Wood Water Users Association Water Rights

Diverting from the Big Wood River

Row	Water Right No.	Owner	Priority Date	Div. Rate (cfs)	Diversion Name	Use	Acres	Acre Limit	BWCC-AFRD2 Combined Use Conditon	AFRD2 Exchange Condition	Diversion Below MGC	Combined Rights	Supplemental Ground Water Rights
1	37-611	4 BROS DAIRY INC	4/30/1891	2.8	North Shoshone Canal	IRRIGATION, STOCKWATER	134		No	No	Div abv; rediv & POU blw	37-612	
2	37-612	4 BROS DAIRY INC	6/2/1903	1.6	North Shoshone Canal	IRRIGATION	134		No	No	Div abv; rediv & POU blw	37-611	
3	37-11114B	4 BROS DAIRY INC	4/27/1896	5.3	Union Ditch No. 27	IRRIGATION	279		S03-AFRD2; S05-BWCC	Yes	Yes	37-7575	37-7575; 100% coverage
4	37-21393	4 BROS DAIRY INC	5/1/1896	0.908	North Shoshone Canal	IRRIGATION	30.6		No	No	Div abv; rediv & POU blw		
5	37-10343	ARKOOSH, JOHN W	5/27/1899	10.67	Richfield Canal	IRRIGATION	199.1		S05-BWCC	No	Div abv; rediv & POU blw	37-460, 37-461, 37-10343	
6	37-21485	ARKOOSH, JOHN W	5/27/1899	0.128	Richfield Canal	IRRIGATION	157.3		S03-AFRD2	No	Div abv; rediv & POU blw	37-326, 37-328, 37-328, 37-1127, 37-21485	
7	37-59M	ARKOOSH, WILLIAM	5/27/1899	2.304	Richfield Canal	IRRIGATION	245		S03-AFRD2	No	Div abv; rediv & POU blw	37-327, 37-329	
8	37-245	BANCROFT, PAUL	6/1/1898	1.6	North Shoshone, Lincoln Bypass Canal	IRRIGATION	182.1		S05-BWCC	No	No	37-246, 37-247	
9	37-246	BANCROFT, PAUL	6/1/1901	0.8	North Shoshone, Lincoln Bypass Canal	IRRIGATION	182.1		S05-BWCC	No	No	37-245, 37-247	
10	37-247	BANCROFT, PAUL	6/1/1902	0.8	North Shoshone, Lincoln Bypass Canal	IRRIGATION	182.1		S05-BWCC	No	No	37-245, 37-246	
11	37-22658	BLISS POINT CATTLE INC	6/1/1884	0.77	Dietrich Pump No 33-PA	IRRIGATION	50		S03-AFRD2;S05-BWCC	Yes	Yes		
12	37-287A	DESERT ROSE RANCH INC	6/1/1884	0.33	Dietrich Pump No 33-PB	IRRIGATION	21		S03-AFRD2;S05-BWCC	Yes	Yes		
13	37-616	NORTHVIEW FARMS LP (formerly Double V LLC)	5/10/1897	2.7	North Shoshone, Lincoln Bypass	IRRIGATION	131		S03-AFRD2;S05-BWCC	Yes	Div abv; POU blw		
14	37-22534	FAULKNER, TOM	6/1/1884	1.41	Dietrich Pump No 33-PA	IRRIGATION	91.4		S03-AFRD2;S05-BWCC	Yes	Yes		
15	37-22795	HULTS, DAVID	5/1/1905	1.2	Jones Pump No 35 P-4	IRRIGATION	96		S03-AFRD2;S05-BWCC	Yes	Yes		
16	37-619A	IEST, TINA	5/1/1884	2.4	North Shoshone, Lincoln Bypass	IRRIGATION	129.7		S03-AFRD2;S05-BWCC	Yes	Div abv; POU blw		
17	37-620	IEST, TINA	5/1/1891	1.3	North Shoshone, Lincoln Bypass	IRRIGATION	66.8		S03-AFRD2;S05-BWCC	Yes	Div abv; POU blw		
18	37-607B	KOYLE, RANLEY A	8/15/1886	0.14	Silk-Gooding 32**; Severe Pump	IRRIGATION	11		No	Yes	Yes	37-608B	
19	37-608B	KOYLE, RANLEY A	4/15/1887	0.098	Silk-Gooding 32**; Severe Pump	IRRIGATION	11		No	Yes	Yes	37-607B	
20	37-21658	LABBEE, BRANDON	8/6/1902	0.07	North Shoshone, Lincoln Bypass	IRRIGATION	5		S03-AFRD2	Yes	Div abv; rediv & POU blw		
21	37-178	LEGUINECHE, JOE	5/1/1896	2.5	Union Ditch No 27	IRRIGATION	207.6	160	S03-AFRD2;S05-BWCC	Yes	Yes		
22	37-72B	M & M FARMS	4/1/1885	2.2	Union Ditch No 27, Walters Ditch No 33^^	IRRIGATION, STOCKWATER	245	110	S03-AFRD2	Yes	Yes	37-21279	
23	37-21279	M & M FARMS	11/1/1913	6.4	Union Ditch No 27, Walters Ditch No 33^^	IRRIGATION, STOCKWATER	245		S03-AFRD2	Yes	Yes	37-72B	
24	37-20546	MEYERS, ROBERT J	5/15/1899	0.95	Poorman Ditch No 29^	IRRIGATION	72	72	S05-BWCC	No	Yes	37-20548	
25	37-20548	MEYERS, ROBERT J	2/10/1906	0.64	Poorman Ditch No 29^	IRRIGATION	72	72	S05-BWCC	No	Yes	37-20546	
26	37-10210B	MOHR, STEVEN	5/1/1896	0.4	North Shoshone Canal	IRRIGATION	20		No	No	Div abv; POU blw		
27	37-20347	MOHR, STEVEN	5/1/1896	0.38	North Shoshone Canal	IRRIGATION	12		No	No	Div abv; POU blw		
28	37-10210A	MOHR, WENDY A	5/1/1896	0.4	North Shoshone Canal	IRRIGATION	20		No	No	Div abv; POU blw		
29	37-59G	NEWELL, CHARLES E	5/27/1899	1.37	Richfield Canal	IRRIGATION	77.2		No	No	Div abv; rediv& POU blw	37-432, 37-21135	
30	37-238A*	OPPIO LAND & LIVESTOCK LLC	4/15/1883	2	Upper Frost 38-P1 & P2	IRRIGATION	127.5		S03-AFRD2	Yes	Yes	37-239A, 37-240A, 37-4407	
31	37-239A*	OPPIO LAND & LIVESTOCK LLC	8/29/1884	1.72	Upper Frost 38-P1 & P2	IRRIGATION	127.5		S03-AFRD2	Yes	Yes	37-238A, 37-240A, 37-4407	

Attachment 1
Big Wood and Little Wood Water Users Association Water Rights
Diverting from the Big Wood River

Row	Water Right No.	Owner	Priority Date	Div. Rate (cfs)	Diversion Name	Use	Acres	Acre Limit	BWCC-AFRD2 Combined Use Conditon	AFRD2 Exchange Condition	Diversion Below MGC	Combined Rights	Supplemental Ground Water Rights
32	37-240A*	OPPIO LAND & LIVESTOCK LLC	6/1/1895	2.28	Upper Frost 38-P1 & P2	IRRIGATION	127.5		S03-AFRD2	Yes	Yes	37-239A, 37-239A, 37-4407	
33	37-586	ROTH INVESTMENTS LLC	4/3/1889	2.64	North Shoshone, Lincoln Bypass Canal	IRRIGATION	266.9		S05-BWCC	No	No		
34	37-587	ROTH INVESTMENTS LLC	4/2/1905	0.8	North Shoshone, Lincoln Bypass Canal	IRRIGATION	266.9		S05-BWCC	No	No		
35	37-589	ROTH INVESTMENTS LLC	5/1/1904	3	North Shoshone, Lincoln Bypass Canal	IRRIGATION	266.9		S05-BWCC	No	No		
36	37-581	SABALA FARMS INC	4/2/1906	3.2	Robertson Ditch	IRRIGATION	145		S03-AFRD2;S05-BWCC	Yes	Yes	37-859A	
37	37-21836	T5 RANCH LLC	5/27/1899	2.24	Richfield Canal	IRRIGATION	99.8		S05-BWCC	No	No	37-21838	
38	37-619B	WESTENDORF, JERRY	5/1/1884	0.8	North Shoshone, Lincoln Bypass Canal	IRRIGATION	153	40	S03-AFRD2	Yes	Div abv; POU blw	37-1191	
39	37-1191	WESTENDORF, JERRY	9/2/1902	2.4	North Shoshone, Lincoln Bypass Canal	IRRIGATION	153		S03-AFRD2	Yes	Div abv; POU blw	37-619B	
40	37-600B	BROWN, PHILIP & ANN	4/27/1896	0.5	Union Ditch No 27	IRRIGATION	36.7		S03-AFRD2;S05-BWCC	Yes	Yes	37-4404A	

* Water Source and point of diversion is from Malad River

** Per watermaster, Silk Gooding 32 Ditch is location of Severe Pump 32-P (aka Silk 32-P).

^ Per watermaster, actual diversion from river is Union Ditch No. 27, Poorman Ditch heading from river no longer used.

^^ Per watermaster, Walters Ditch No. 33 is no longer used.

Attachment 2

Big and Little Wood Water Users Association Water Rights

Diverting from the Little Wood River

Row	Water Right No.	Owner	Priority Date	Div. Rate (cfs)	Diversion Name	Use	Acres	Acre Limit	BWCC-AFRD2 Combined Use Condition	AFRD2 Exchange Condition	Diversion Below MGC	Combined Rights	Supplemental Ground Water Rights
1	37-321	7 MILE RANCH LLC	4/30/1884	3	Hughes 63P -64P	IRRIGATION	173		No	No	No	37-59A	
2	37-326	ARKOOSH, JOHN W	11/1/1882	0.4	Winters Pump 80-P	IRRIGATION	157.3		S03-AFRD2	Yes	Yes	37-328, 37-1127. 37-21845	
3	37-328	ARKOOSH, JOHN W	4/1/1885	0.6	Winters Pump 80-P	IRRIGATION	157.3		S03-AFRD2	Yes	Yes	37-326, 37-1127. 37-21845	
4	37-460	ARKOOSH, JOHN W	6/3/1884	4	McFall 76S-77N (comb)	IRRIGATION	199.1		S05-BWCC	Yes	Yes	37-461, 37-10343	
5	37-461	ARKOOSH, JOHN W	7/17/1884	1.4	McFall 76S-77N (comb)	IRRIGATION	199.1		S05-BWCC	Yes	Yes	37-460, 37-10343	
6	37-1127	ARKOOSH, JOHN W	4/1/1905	1.6	Winters Pump 80-P	IRRIGATION	157.3		S03-AFRD2	Yes	Yes	37-326, 37-328. 37-21845	
7	37-176	ARKOOSH, WILLIAM	4/1/1890	2	Devaney 86P1-86P2 (comb)	IRRIGATION	153.5		S03-AFRD2	Yes	Yes	37-1131	37-7570; 90% coverage
8	37-327	ARKOOSH, WILLIAM	5/15/1884	2.2	Hunter 78N-79S & 79P (comb)	IRRIGATION	245		S03-AFRD2	Yes	Yes	37-59M, 37-329	
9	37-329	ARKOOSH, WILLIAM	5/15/1886	2	Hunter 78N-79S & 79P(comb)	IRRIGATION	245		S03-AFRD2	Yes	Yes	37-59M, 37-327	
10	37-1131	ARKOOSH, WILLIAM	8/1/1906	2.4	Devaney 86P1-86P2 (comb)	IRRIGATION	153.5		S03-AFRD2	Yes	Yes	37-176	37-7570; 90% coverage
11	37-21650	ASTLE, BRADLEY J; PIERCE, JOYCE A	4/1/1883	0.04	Slough Ditch 93	IRRIGATION	1.4		No	Yes	Yes		
12	37-344A	BARBARA FARMS LLC	4/6/1883	4	Meyers 73, 74, & 75 (comb); Meyers 75P	IRRIGATION	301.9		S05-BWCC	No	Yes	37-59D, 37-973	
13	37-973	BARBARA FARMS LLC	4/1/1884	2	Meyers 73, 74, & 75 (comb); Meyers 75P	IRRIGATION	301.9	82	S05-BWCC	No	Yes	37-59D, 37-344A	
14	37-22178	BARNETT, DELBERT	4/1/1884	0.05	Slough Ditch 93	IRRIGATION	2.1		S05-BWCC	Yes	Yes		
15	37-13111	BIG WOOD CANAL CO	12/24/1906	75	Dietrich Canal 11, Kissler 60-P, South Gooding Main 15, Slough Ditch 93, Carpenter Ditch 98 BWCC	STOCKWATER			No	No	Both (winter stock)		
16	37-21401	BIG WOOD CANAL CO	5/15/1885	5.3	Dietrich Canal 11, Lezamiz 59, Kissler 60-P, South Gooding Main 15, Slough Ditch 93, L Wood/Clover Ck conf., Carpenter Ditch 98 BWCC	IRRIGATION	74,000	39,683	X35-BWCC	No	Both		
17	37-21402	BIG WOOD CANAL CO	4/6/1883	3.55	Dietrich Canal 11, Lezamiz 59, Kissler 60-P, South Gooding Main 15, Slough Ditch 93, L Wood/Clover Ck conf., Carpenter Ditch 98 BWCC	IRRIGATION	74,000	39,683	X35-BWCC	No	Both		
18	37-21403	BIG WOOD CANAL CO	4/1/1887	5.2	Dietrich Canal 11, Lezamiz 59, Kissler 60-P, South Gooding Main 15, Slough Ditch 93, L Wood/Clover Ck conf., Carpenter Ditch 98 BWCC	IRRIGATION	74,000	39,683	X35-BWCC	No	Both		
19	37-21404	BIG WOOD CANAL CO	7/1/1896	15.3	Dietrich Canal 11, Lezamiz 59, Kissler 60-P, South Gooding Main 15, Slough Ditch 93, L Wood/Clover Ck conf., Carpenter Ditch 98 BWCC	IRRIGATION	74,000	39,683	X35-BWCC	No	Both		

Attachment 2

Big and Little Wood Water Users Association Water Rights

Diverting from the Little Wood River

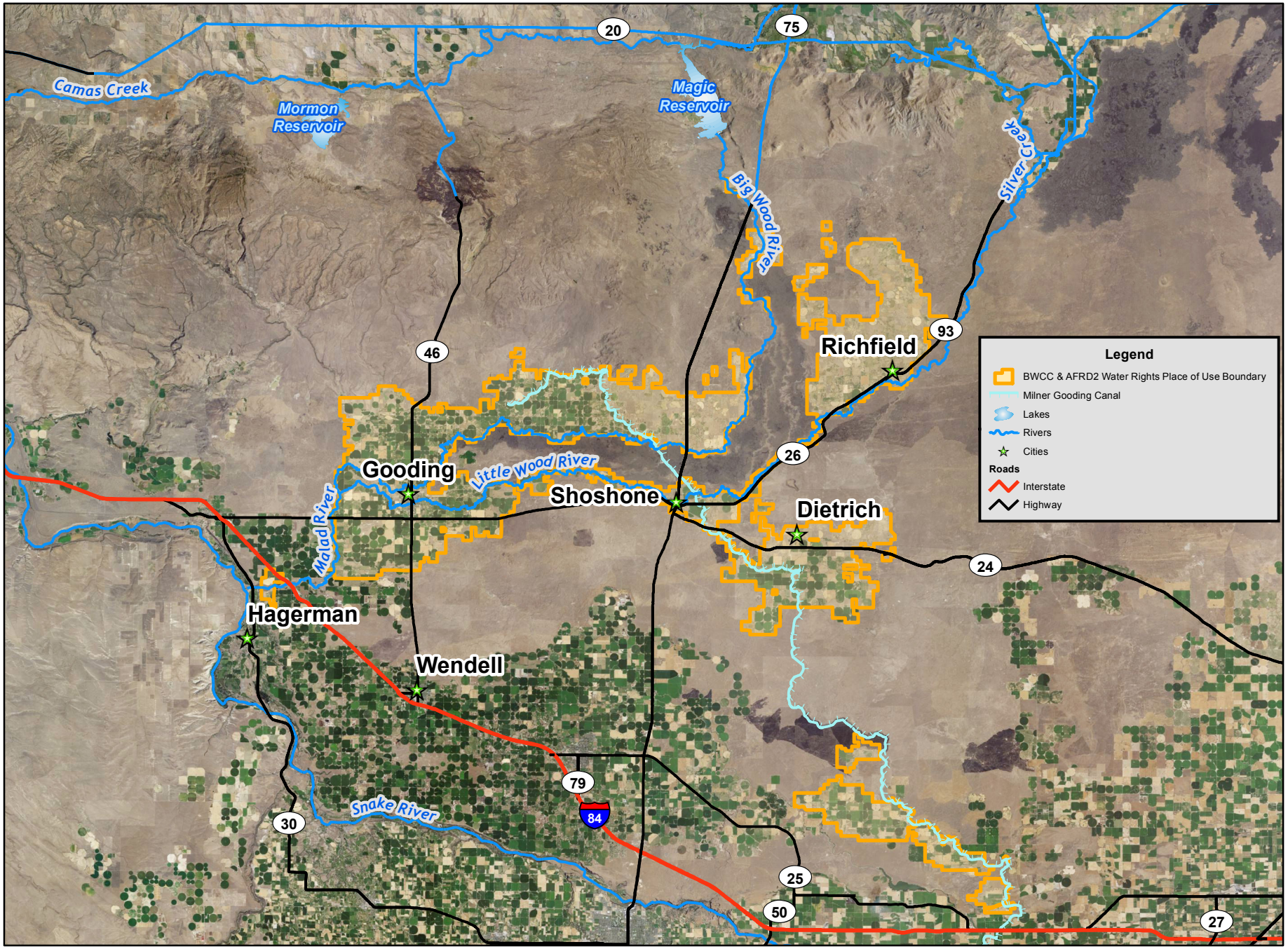
Row	Water Right No.	Owner	Priority Date	Div. Rate (cfs)	Diversion Name	Use	Acres	Acre Limit	BWCC-AFRD2 Combined Use Condition	AFRD2 Exchange Condition	Diversion Below MGC	Combined Rights	Supplemental Ground Water Rights
20	37-21405	BIG WOOD CANAL CO	4/1/1884	2.61	Dietrich Canal 11, Lezamiz 59, Kissler 60-P, South Gooding Main 15, Slough Ditch 93, L Wood/Clover Ck conf., Carpenter Ditch 98 BWCC	IRRIGATION	74,000	39,683	X35-BWCC	No	Both		
21	37-1126	BROWN, JOCK S	4/8/1908	0.8	Turner 61	IRRIGATION	40		S05-BWCC; S03-AFRD2	No	No		
22	37-194B	CHURCH OF THE NAZARENE	4/1/1884	0.24	Slough Ditch 93	IRRIGATION	20		No	Yes	Yes		
23	37-262A	CITY OF GOODING	2/22/1883	3.16	Gooding Recharge Div (formerly 95-P1 & Slough 93)	GROUND WATER RECHARGE			No	Yes	Yes	37-271A, 37-282	
24	37-271A	CITY OF GOODING	6/30/1882	0.32	Gooding Recharge Div (formerly 95-P1 & Slough 93)	GROUND WATER RECHARGE			No	Yes	Yes	37-262A, 37-282	
25	37-282	CITY OF GOODING	4/1/1877	1	Gooding Recharge Div (formerly 95-P1 & Slough 93)	GROUND WATER RECHARGE			No	Yes	Yes	37-262A, 37-271A	
26	37-662	CITY OF GOODING	6/15/1885	1.42	Gooding Recharge Div (formerly 95-P1 & Slough 93)	GROUND WATER RECHARGE			No	Yes	Yes		
27	37-709A	CITY OF GOODING	2/22/1883	0.74	Gooding Recharge Div (formerly 95-P1 & Slough 93)	GROUND WATER RECHARGE			No	Yes	Yes		
28	37-960A	CITY OF GOODING	4/1/1883	0.57	Gooding Recharge Div (formerly 95-P1 & Slough 93)	GROUND WATER RECHARGE			No	Yes	Yes		
29	37-20847	GARZA, ROMAN	4/1/1883	0.04	Slough Ditch 93 (xfer to prvt river pump)	IRRIGATION	3.8		No	Yes	Yes		
30	37-472	HUBSMITH, RODNEY FRED	4/1/1884	1.2	McNulty 58	IRRIGATION	48.9		S05-BWCC	No	No		
31	37-485	KOOSH INC	4/1/1883	1.1	Stock 71, 71A & 72 (comb)	IRRIGATION	55		S05-BWCC	No	Yes		
32	37-193A	KUNTZ, CALVIN D	4/1/1883	1	Kuntz 98-P2W	IRRIGATION	38		S05-BWCC	Yes	Yes		
33	37-471	MATHENEY, JOE	4/30/1884	2	Appell 60	IRRIGATION	121		No	No	No	37-1125	
34	37-1125	MATHENEY, JOE	5/20/1908	3.2	Appell 60	IRRIGATION	121		No	No	No	37-471	
35	37-432	NEWELL, CHARLES E	4/15/1885	2.6	Mabutt 70 & 70P (comb)	IRRIGATION	77.2	54	No	No	Yes	37-59G, 37-21135	
36	37-49	RITTER, JAMES B	4/1/1883	4.2	Ritter 65-66P (comb)	IRRIGATION	215.7		No	No	No		
37	37-691B	ROSE, KENNETH 0	4/1/1885	0.24	Rose 69-P7	IRRIGATION	7.1		No	No	Yes		
38	37-21838	T5 RANCH LLC	6/15/1888	1.56	Brown 62	IRRIGATION, STOCKWATER	99.8		S05-BWCC	No	No	37-21836	
39	37-423	TABER, DONALD E	4/1/1883	0.3	Taber 66-P, Taber 66-P1	IRRIGATION	327.2	295	S05-BWCC	No	No	37-59B, 37-424, 37-425	37-8401; 75% covered
40	37-424	TABER, DONALD E	4/1/1884	2.2	Taber 66-P, Taber 66-P1	IRRIGATION	327.2	295	S05-BWCC	No	No	37-59B, 37-423, 37-425	37-8401; 75% covered
41	37-425	TABER, DONALD E	4/1/1887	2.2	Taber 66-P, Taber 66-P1	IRRIGATION	327.2	120	S05-BWCC	No	No	37-59B, 37-423 & 37-424	37-8401; 75% covered
42	37-560A	CITY OF SHOSHONE	11/28/1882	0.4	City Pump 69-P2	IRRIGATION	41		S05-BWCC	No	Yes	37-606C, 37-691G	
43	37-606C	CITY OF SHOSHONE	11/28/1882	1	City Pump 69-P2	IRRIGATION	41		S05-BWCC	No	Yes	37-560A, 37-691G	
44	37-691G	CITY OF SHOSHONE	4/1/1885	1.136	City Pump 69-P2	IRRIGATION	41		S05-BWCC	No	Yes	37-560A, 37-606C	

Attachment 2

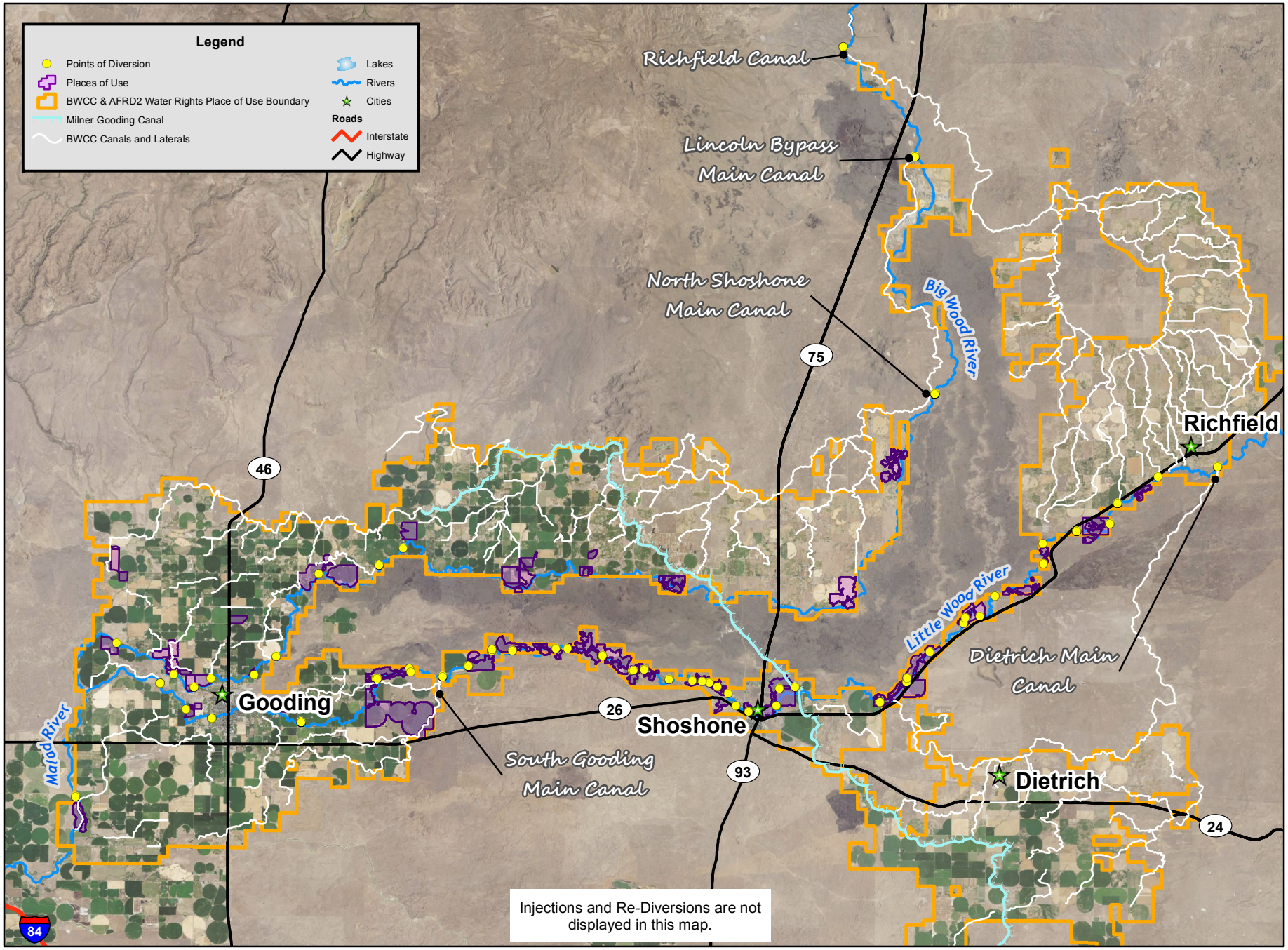
Big and Little Wood Water Users Association Water Rights

Diverting from the Little Wood River

Row	Water Right No.	Owner	Priority Date	Div. Rate (cfs)	Diversion Name	Use	Acres	Acre Limit	BWCC-AFRD2 Combined Use Condition	AFRD2 Exchange Condition	Diversion Below MGC	Combined Rights	Supplemental Ground Water Rights
45	37-177M	GLANBIA FOODS INC	4/1/1883	0.14	South Gooding Main	IRRIGATION	983.7		S05-BWCC	Yes	Yes	37-374A, 37-2043C	
46	37-374A	GLANBIA FOODS INC	5/15/1884	0.56	South Gooding Main	IRRIGATION	983.7		S05-BWCC	Yes	Yes	37-177M, 37-2043C	
47	37-2043C	GLANBIA FOODS INC	5/10/1906	0.88	South Gooding Main	IRRIGATION	983.7	25	S05-BWCC	No	Yes	37-177M, 37-374A	
48	37-609B	MC DADE, ERNEST J; MC DADE, JOYCE A	4/1/1884	0.2	Slough Ditch 93	IRRIGATION	10		S05-BWCC	Yes	Yes	37-59J	
49	37-10561A	STENNETT, W CLINTON	5/5/1884	4	White 68-P; White 68-P1 & P2	IRRIGATION	311.6	208	No	No	Yes	37-59K, 37-10651B	
50	37-10561B	STENNETT, W CLINTON	5/5/1884	2.2	White 68-P; White 68-P1 & P2	IRRIGATION	311.6		No	No	Yes	37-59K, 37-10561A	
51	37-177J	UHRIG, JOHN T; UHRIG, LENNIE L	4/1/1883	0.3	Uhrig-Harris 69-P9B	IRRIGATION	40.6		S05-BWCC; S03-AFRD2	No	Yes		



Attachment 3: Big Wood & Little Wood River Delivery Calls Area



Attachment 4: BWLWWUA Water Right Diversions and Places of Use

Attachment 5

Kevin Lakey, Watermaster, Water District 37

Personal Correspondence to IDWR

16 June 2015

STATE OF IDAHO
DEPARTMENT OF WATER RESOURCES

WATER DISTRICT 37
107 WEST 1ST
SHOSHONE, IDAHO 83352
(208) 886-2451

Kevin Lakey
Watermaster

Tim Luke
Water Compliance Bureau Chief
Idaho Department of Water Resources
322 East Front Street
P.O. Box 83720
Boise, Idaho 83720-0098

June 16, 2015

Tim:

In reply to your June 16, 2015 email in which you ask questions concerning water delivery in Water District 37, I have enclosed Watermaster instructions that I believe were written in the 1950's and 60's to give some historical perspective. Using these instructions as a starting point, I will then describe how priority cuts are made today as well as describe the relationships between decreed water rights and canal company storage water. Your questions will be highlighted in red with my answers in black immediately following.

1.) How does the Watermaster determine the priority cut date for the Big Wood River above Magic Reservoir?

In the historical Watermaster instructions, determination of priority cut dates was made differently depending on whether the gravel dam was in the Big Wood River near Glendale Road. If the gravel dam was not in, the river was managed as one whole system, and the same priority cut was made throughout the whole system. After the gravel dam was put in place, the river became "separated" and was administered as two separate systems. In my tenure as Watermaster, I have seldom if ever seen a time when the first system described (administering the system as a whole) actually worked in practice.

The reason being is that there is much more senior water above Magic Reservoir than there is below. For instance, the amount of water with priority dates of 1888 and senior above Magic Reservoir is around 640 cfs. The total amount of water with the same priorities below Magic Reservoir is around 76

cfs including decrees owned by the Big Wood Canal Company. When inflows into Magic become low enough to start cutting decrees, decrees with more senior priority have already been shut off above Magic. For this reason, I have administered the Big Wood River as two systems; one above Magic reservoir and one below. There are two exceptions to this rule. One is Willow Creek tributary to the Big Wood River (not Willow Creek tributary to Camas Creek). It has a very small amount of water that is junior to decrees below Magic Reservoir and is cut by priority in times of scarcity to deliver water to the inflows of Magic Reservoir. The other exception is the Uhrig 63 diversion, which is cut with the same priorities of the Below Magic decrees.

Since I do not manage the Big Wood as one system, I deliver water above Magic Reservoir solely by senior priority of the water above Magic Reservoir.

2.) How does the Watermaster determine the priority cut date for the Big Wood River below Magic Reservoir?

All inflows are totaled, and then 60.6 cfs are subtracted from that total to provide for a decreed river loss. The total remaining water is considered deliverable, and priority cut dates are calculated using the remaining volume to find the priorities deliverable.

3.) How does the Watermaster determine the priority cut date for Silver Creek & Little Wood River?

The old Watermaster instructions determined the priority cut date using the flow at Station # 10 on the Little Wood River at Richfield. I believe this was a faulty method because it did not account for return flows into the Little Wood River from the Richfield/Magic Reservoir system. Therefore I base my priority cut date on flows at station #54 at Shoshone. This flow volume credits the return flows out of Richfield and allows more junior water rights to stay on longer. There are times when the Big Wood Canal Company (BWCC) inadvertently spills excess water into the river that is meant for the Dietrich #11 canal. This causes the flows at station #54 to be artificially high. In this case, the priority cut dates are determined by the flows at station #10 until the BWCC can clean up their excess water at the Dietrich #11 diversion.

4.) During times when all water in the Big Wood River at Glendale is diverted into the Baseline Bypass Canal and surface water rights are being regulated to a priority cut date, is there any surface return flow from the Baseline Bypass Canal and the Baseline Extension Bypass Canal to the Big Wood River?

If water is being regulated to a priority cut date, water can re-enter the Big Wood channel from the end of the Baseline Bypass Canal, but is re-diverted either at the Graff 62 diversion or the Black 61 diversion with no water spilling past the Black 61 diversion. If the Graff priorities are off, then all water should be in the Extension Bypass Canal and no water should spill past the Black 61 diversion and re-enter the river from the end of the Extension Bypass Canal.

5.) Many of the SRBA decreed water rights from the Big Wood and Little Wood Rivers that were included in the delivery call petition filed by the Big Wood and Little Wood Water Users

Association (Association) include the following water right condition, known as Condition No. 161:

> Delivery of this right is subject to the water exchange provisions contained in Bureau of Reclamation contract no. 14-06-W-73, executed October 14, 1954, between the United States of America and American Falls Reservoir District No. 2, as supplemented by Bureau of Reclamation contract no. 14-06-100-6031, executed June 1, 1962, between and among the United States of America, American Falls Reservoir District No. 2, and the Big Wood Canal Company.

All of the water rights in the delivery call petition with this condition have either a point of diversion or point of re-diversion and place of use below the AFRD2 Milner Gooding Canal.

Please summarize how you deliver water to water rights with the exchange provisions referenced in water right condition no. 161 as shown above.

I was only recently made aware of "Condition No. 161". I have never delivered water from either the Big Wood or Little Wood Rivers in relation to this condition.

6.) Many of the decreed water rights included in the Association's delivery call petition also have conditions noting that use of each right is combined with water from BWCC and/or AFRD2. How does the Watermaster deliver water rights that are combined with water from BWCC and ARFD2?

The only combination of delivery I administer is if a natural flow right has American Falls Supplemental water attached to it. In that case, if a natural flow right is cut by priority and has "Supplemental" water attached to it, then I deliver the "Supplemental" water in place of the cut natural flow right. Only after the natural flow right is cut can the "Supplemental" water be delivered. All other American Falls or Carey Act water delivered from canal company storage is delivered on a separate basis from any natural flow rights and/or their priority.

7.) The summary of water right priority cuts for Silver Creek & Little Wood River found in the annual Water District 37 water distribution reports show that the 'Cottonwood Decree' rights with a May 27, 1899 priority date are cut or curtailed after other more senior priority rights are curtailed. For example, in 2013 the Watermaster on June 11 cut rights having a priority of June 15, 1887 and junior. However, the record shows that the May 27, 1899 'Cottonwood Decree' rights were not cut until June 25, 2013. Also, it is our understanding that the source of water for the 'Cottonwood Decree' rights is the Big Wood River, yet you are showing the priority cut

for these rights in the Silver Creek and Little Wood River priority cut summary. It is our further understanding that the "Cottonwood Decree' rights are diverted from the Big Wood River at the Richfield Canal, injected to the Jim Byrns Slough, injected into the Little Wood River, and re-diverted at various points or head gates on the Little Wood River.

Please explain how the May 27, 1899 'Cottonwood Decree' rights are delivered and what triggers the priority cut for this group of rights. Please also explain why the priority cuts for these rights are summarized in the Silver Creek & Little Wood River priority cut table rather than the Big Wood River below Magic Reservoir priority cut table.

The "Cottonwood Decrees" originated from Big Wood water when the Big Wood River would break out of its banks during high water and travel across the desert to where it eventually injected into the Little Wood River/Silver Creek where it was put to use. This is why the priority cuts are listed in the Little Wood/Silver Creek table instead of the Big Wood table. Curtailment of the "Cottonwood Decrees" has occurred in the past when the Big Wood River is dammed completely off at the Baseline Bypass/Glendale diversion, although no official court case or decree can be found to justify such a method. It may be reasonable to curtail the Cottonwood Decrees at the same time the corresponding date (5/27/1899) in the Big Wood River Above Magic Reservoir Decrees are curtailed. The curtailment dates would likely be within a week of the current method.

8.) Please provide a copy of the 2014 Priority Cuts summary similar to the summaries included in the "black books" for previous years (Water Distribution and Hydrometric Works, Water District No. 37 & 37M).

Priority cut summary for 2014 is attached.

If further explanation in answers is needed, I will be happy to do my best to assist.

Respectfully,

Kevin Lakey
Water District 37

Water District 37 2014 Priority Cuts

BIG WOOD RIVER ABOVE MAGIC RESERVOIR

Date Priority Cut Made	Date of Priority Cut to and including:	Remarks
July 3, 2014	April 1, 1921	
July 7, 2014	June 2, 1890	
July 9, 2014	May 10, 1887	
July 10, 2014	October 15, 1884	
July 15, 2014	July 10, 1884	
July 17, 2014	June 1, 1884	
July 21, 2014	May 1, 1883	
July 29, 2014	March 24, 1883	Cut 50%
August 8, 2014	March 24, 1883	Reinstate
September 17, 2014	March 24, 1883	
October 1, 2014	March 24, 1883	Reinstate 50%

BIG WOOD RIVER BELOW MAGIC RESERVOIR

Date Priority Cut Made	Date of Priority Cut to and including:	Remarks
June 23, 2014	May 1, 1900	
July 1, 2014	June 15, 1890	
July 7, 2014	April 3, 1882	
August 6, 2014	August 11, 1884	Reinstate
August 11, 2014	April 27, 1896	Reinstate
August 18, 2014	April 3, 1882	

SILVER CREEK & LITTLE WOOD RIVER

Date Priority Cut Made	Date of Priority Cut to and including:	Remarks
May 20, 2014	April 1, 1887	
May 27, 2014	April 1, 1885	
June 26, 2014	April 3, 1884	
June 27, 2014	April 1, 1884	
July 2, 2014	May 27, 1899	Cottonwood Decree
July 8, 2014	September 1, 1883	Cut 50%
July 17, 2014	April 6, 1883	
August 7, 2014	April 6, 1883	Reinstate
August 11, 2014	September 1, 1883	Reinstate

HOW TO MAKE PRIORITY CUTS 37
WATER DISTRICT 7-AB

Before River Separates

1. Get amount of water at Station No 1 and Station No. 2, add this amount to unmeasured inflow of 20 c f s plus estimate amount of 5.0 cfs for Rock Creek. This is total inflow.

The courts decreed a 60 cfs loss from Magic to Station No. 9. This is subtracted from total inflow. The amount left is what can be delivered below Magic Dam. By looking in Decree book below Magic Reservoir section under total second feet column you get amount of water needed to deliver various decree. You find what decree is good for amount of water you have.

By checking how much water is being delivered above Magic Reservoir (in c.f.s.) you can then see how much will be delivered after priority cut by subtracting the one from other and adding the difference to amount you have to deliver below tells you how much you can deliver below and above with your priority cut to and including date indicated.

After River Separates

1. Tinker cuts water above Magic so he can deliver oldest decrees possible. This is for priority cuts above Magic.

For priority cuts below Magic after river separates; the amount of water at Station No 1 plus amount at Station No 2 plus Rock Creek and unmeasured inflow minus 60 cfs loss. The remainder indicates how much can deliver below Magic Dam.

See following example

7-AB Above Magic

No. 1 Camas Creek	5.0	cfs
No. 2 Big Wood River	145.5	"
Rock Creek	5.0	"
unmeasured	20.0	"
Total	175.5	"
Loss from Magic to No. 9	- 60.0	"
Total to deliver below Magic	115.5	"

Below Magic book indicates that the 6-1-1891 can be delivered so the 5-1-1893 should be cut off.

5-15-1895

Now since the ~~5-20-1896~~ were cut off earlier look at the book above Magic at column TOTAL. It takes ~~[illegible]~~ c.f.s.. to ~~be~~ deliver the 5-15-1896 above Magic and ~~[illegible]~~ c.f.s. to deliver the 7-1-1892 decree above Magic. By subtracting ~~[illegible]~~ from ~~[illegible]~~ you get 6.0 c.f.s. This is added to the to the amount measured at No. 1 and No. 2 or:

No. 1	5.0
No. 2	145.5
Rock	5.0
Unmeasured	20.0
	177.5
Minus	60/0
	117.5
Plus	6.0
	123.5

123.5 is the amount that can be delivered below Magic, and means cut off all rights above and below Magic as indicated in Book are about the 5/1/1893 priorities.

57-M

PRIORITY CUTS WATER DISTRICT 11-AB

Take the amount of water at Station #10 less 5% loss. Take this amount and alook into the Decree Book cut to the date indicated this amount of water.

See Example below:

Aug 3, 1967	Station 10	110.0 cfs
	Less 5%	5.5 cfs
		104.5 cfs

This is to deliver below Station #10. This indicated according to the decree book under the cut total that all the decrees to and including 11/1/1892 can be delivered. Priority cuts then to be made are to and including 4/1/1893.

This means that there is an accumulative total of 245.8 c.f.s being delivered in water District 11-AB, of which 148.5 cfs is delivered above Station #10 and 103.3 cfs being delivered below Station 10.

SAMPLE OF HOW TO FIGURE INFLOW OF WATER TO MAKE PRIORITY CUT.

July 29, 19--- Measured No. 2 Station = 703 C.F.S.
" No. 1 Station = 46 C.F.S.
Unmeasured inflow 20 C.F.S.
Est. Rock Creek 5 C.F.S.

Total Inflow = 774 C.F.S.
Less Loss to No. 9 Station 60

Total water Availavle 714 C.F.S.

This means that all priorities can be delivered below Magic to and including 189.05 C.F.S. of the 11-17-1905's. This is 5.7 % of the 11-17-1905's. This means priorities can be delivered above Magis to and including 5-1-1921.

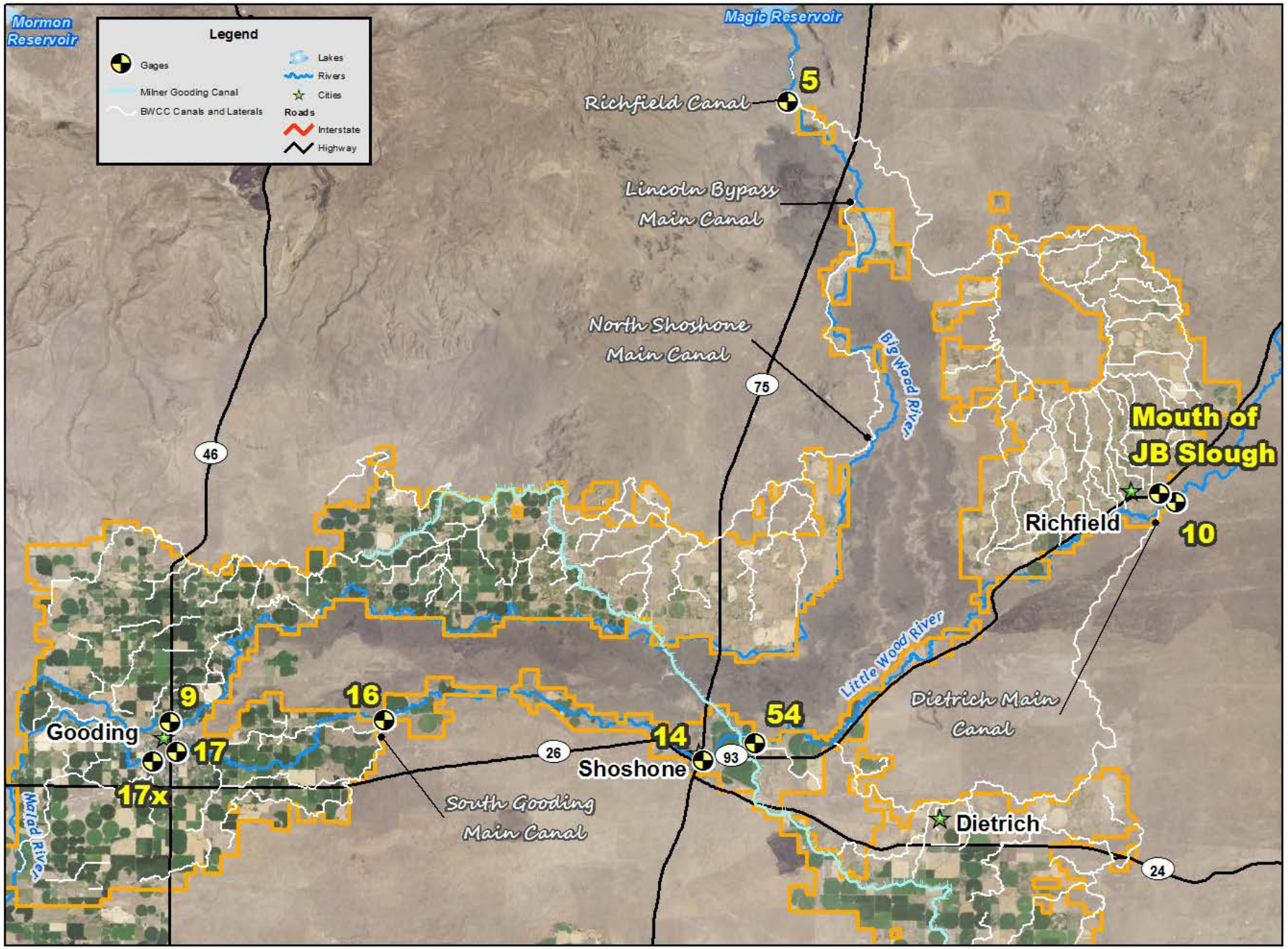
On August 2, 19__ Measured No. 1 Station 36.00 C.F.S.
" No. 2 " 624.00 C.F.S.
Unmeasured 20.00 C.F.S.
Rock Creek 5.00 C.F.S.
Total inflow into Magic 685.00 C.F.S.
Less Loss 60.00C.F.S.
Total Water Available 625.00 C.F.S.

This mea ns all priorities are good to and including 100.05 C.F.S. of the 11-17-1905 below Magic and all of the 5-1-1921 above. By cutting all priorities both above and below to 11-17-19(it means the inflow is increased into Magic by 33.35 C.F.S.. Inflow into Magic is 625.00
+ 33.35
658.35

This then tell us that all decrees older than 11-17-1905 both above and below Magic can be delivered.

On August 6, 19__ Measured No. 1 28.0 C.F.S.
" No 2 375.0
Unmeasured inflow = 20.0
Rock Creek 5.0
Total inflow into Magic 428.0
Less Loss 60.0
Total Available to deliver 368.0

This means priorities older than 5-1-1900 are good below Magic.
By cutting the 5-1-1900 decrees it gives a difference of (before cut total = 992.25)
After cut of 5-1-1900 Total
850.25. The difference of 141.40 C.F.S.
368.00 +141.40 = 509.40 C.F.S. available to deliver below Magic. This makes all priorities older than 5-31-1900 good. Both above and below Magis
##########
The water being delivered above Magic Dam is 850.25 C.F.S. and the amount being delivered below Magic Dam is 509.40 C.F.S.
This means that no priority younger than 1889 is being delivered any place either above Magic Dam or Below Magic Dam.



Attachment 6: Gage Locations