

# MEMO



Electronically Filed  
6/30/2021 9:53 AM  
Fifth Judicial District, Blaine County  
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**State of Idaho**

**Department of Water Resources**

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**Date:** May 17, 2021

**To:** Gary Spackman, Director

**From:** Tim Luke, Water Compliance Bureau Chief *TJK*

**Subject:** Responses to Request for Staff Memorandum – Basin 37 Administrative Hearing

This memorandum has been prepared in response to the *Request for Staff Memorandum In the Matter of Basin 37 Administrative Hearing* (“Request”) issued by the Director of the Idaho Department of Water Resources (“IDWR”) on May 11, 2021. This memorandum addresses items 3, 8, 9, 10 a. and 10.c of the Director’s Request. Sections of this memo are numbered in accordance with the items listed in the Request.

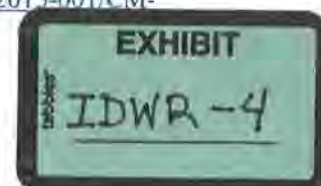
### **3. Description of Surface Water Deliveries in the Wood River Basin**

The Wood River basin, identified by IDWR as Administrative Basin 37, is divided into separate water districts for purposes of administration of water rights. Figure 1 shows water districts in Administrative Basin 37.

This memorandum focuses on surface water deliveries and certain surface water delivery systems in Water District 37 (“WD37”), specifically, the Big Wood River below Magic Reservoir and the Little Wood River and Silver Creek. A fairly detailed description of delivery systems in these river reaches of WD37 was given in a staff memorandum for a previous proceeding (Luke, 2015).<sup>1</sup>

WD37 includes the main Big Wood River and tributaries in the Wood River Valley to Magic Reservoir, the Big Wood River below Magic Reservoir to its confluence with the Malad River, the Little Wood River from its confluence with Silver Creek to the Malad River, including Silver Creek and its tributaries, and the Malad River from the confluence of the Big and Little Wood Rivers to approximately the Snake River canyon rim where Interstate 84 crosses the Malad River. WD37 also administers ground water rights in the Wood River Valley, including the Bellevue Triangle area, outside of the Eastern Snake Plain Aquifer Area of Common Ground Water Supply (“ESPA ACGWS”). WD37 administers all ground water rights in the

<sup>1</sup> Luke, T., 2015, *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*. Idaho Department of Water Resources, August 31, 2015. <https://idwr.idaho.gov/files/legal/CM-DC-2015-001/CM-DC-2015-001-20150831-Staff-Memo-Attachments-BWLWWUA-Calls.pdf>



aforementioned Wood River Valley area except groundwater rights used for domestic and stock water purposes as defined by Idaho §§ 42-111 and 42-1401A(11) and water rights used for in-stream watering of livestock as defined by Idaho Code § 42-113.

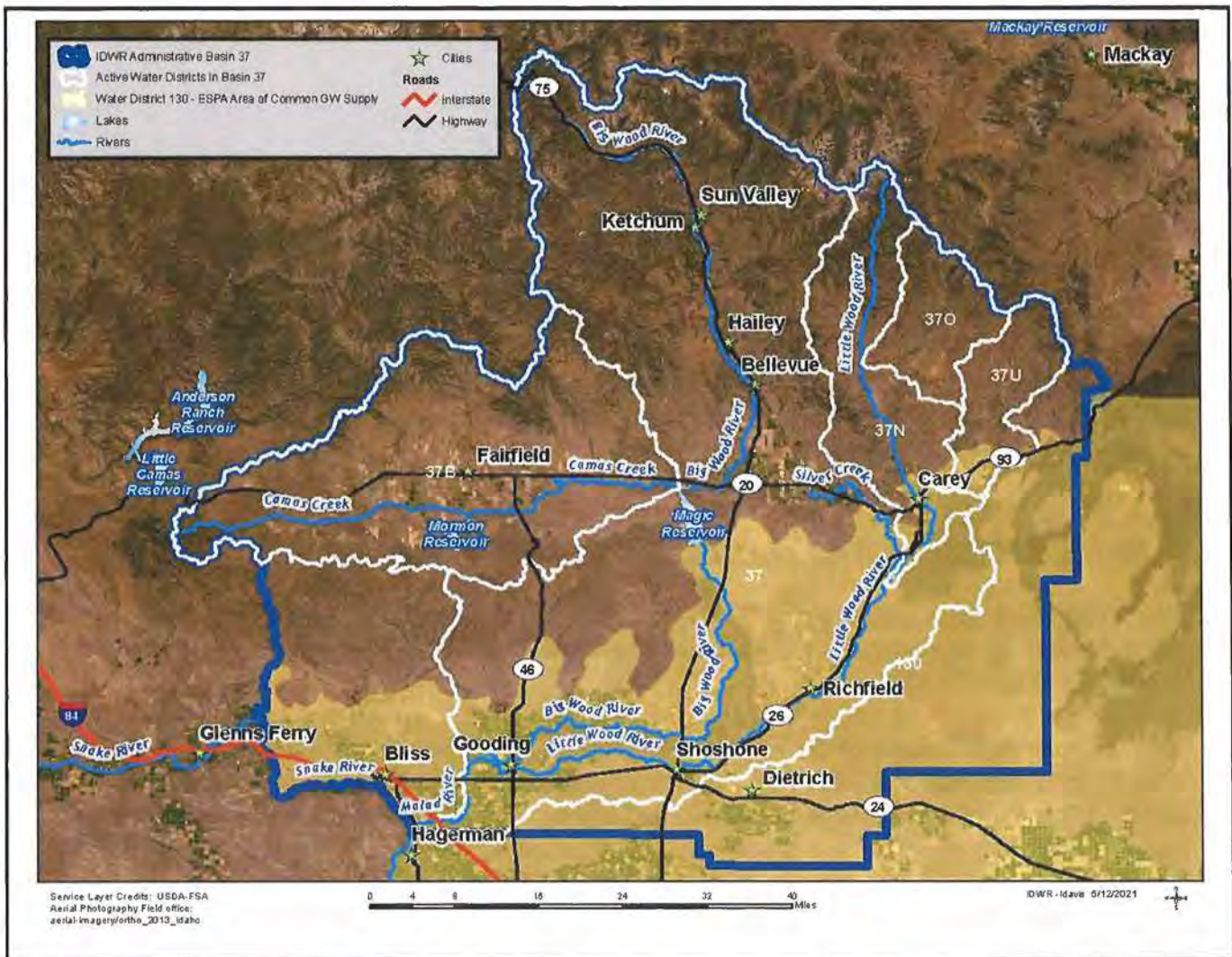


Figure 1. Administrative Basin 37 Water Districts

As reported in Sukow (2015),<sup>2</sup> the Little Wood River upstream of the confluence of Silver Creek is perched above the ESPA and generally dry except during periods of high surface runoff.

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 (“WD37N”), and two separate

<sup>2</sup> Sukow, J., 2015, *Hydrology, hydrogeology, and hydrologic data, Big Wood & Little Wood Water Users Association delivery calls, CM-DC-2015-001 and CM-DC-2015-002*. Idaho Department of Water Resources, August 28, 2015, 25 p., <https://idwr.idaho.gov/files/legal/CM-DC-2015-001/CM-DC-2015-001-20150828-WRCall-Hydro-Memo-w-Attach.pdf>.

tributary water districts, Water District 37O, Muldoon Creek, and Water District 37U, Fish Creek (Luke, 2015).

Water District 37N includes the Little Wood Reservoir located north of Carey which is owned and operated by the Little Wood River Irrigation District. East Canal and West Canal, below Little Wood River dam divert the entire flow of the Little Wood River during the irrigation season, and most non-irrigation season flow is stored in the reservoir. The entire flow of Fish Creek is similarly diverted and stored (Sukow, 2015).

Over two dozen water rights in WD37N are senior in priority to water rights on the Little Wood River below Silver Creek. These rights, totaling about 20 cfs and bearing priority dates from 1880 to 1882, are diverted at or near the East and West Canals north of Carey. Water rights in the upper Little Wood River with priority dates starting in 1882 are then mixed with water right priorities in the lower Little Wood River. The combination of river losses, reservoir storage and senior priority water rights in the upper Little Wood River supports a long practice of separate water districts and administration of water rights between the upper and lower Little Wood River systems.

#### *A. Surface Water Deliveries in Water District 37*

WD37 is divided into three systems for delivery of surface water rights including: (1) the Big Wood River above Magic Reservoir, (2) the Big Wood River and Malad River below Magic Reservoir, and (3) the Little Wood River and Silver Creek, including streams tributary to Silver Creek. The WD37 watermaster makes separate water right priority determinations on these three systems.

Surface water delivery systems, water deliveries and water right priority cut procedures for the Big Wood River below Magic Reservoir (including the Malad River) and the Little Wood River below Silver Creek are generally described in Luke (2015). Additional water delivery and system information is summarized below.

##### *1. Big Wood River Above Magic Reservoir*

WD37 regulates numerous diversions from the Big Wood River and tributaries above Magic Reservoir from north of Ketchum to Stanton Crossing at Highway 20 upstream of Magic Reservoir. Most of the diversions are small to medium size irrigation ditch diversions, ranging in capacity from 1 cfs or less to 50 cfs or more. The largest diversion in this system, the District 45 Canal, diverts up to 200 cfs and serves a large area of the Bellevue Triangle.

Most of the Big Wood River Valley above Magic Reservoir was under irrigation by 1900 (Bartolino and Adkins, 2012).<sup>3</sup> Surface water rights from the river above Magic Reservoir range

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<sup>3</sup> Bartolino, J.R., C.B. Adkins, 2012, *Hydrogeologic Framework of the Wood River Valley Aquifer System*, South-Central Idaho, U.S. Geological Survey Scientific Investigations Report 2012-5053, 36 p., 1 pl., <http://pubs.usgs.gov/sir/2012/5053/>.

in priority from 1880 to 2015. Most rights with priority dates after 1936 are used for non-irrigation purposes, and many are non-consumptive.

As reported by the WD37 watermaster, “in decades past, the standard for a good water year [on the Big Wood River above Magic Reservoir] was if the 1886 priorities remained deliverable. Since the mid to late 1980’s, droughts became more common and flows diminished. Today, the standard for a good water year is if the senior 1884 rights remain deliverable” (Water District 37 and 37M, 2010).<sup>4</sup>

The Dry Bed of the Big Wood River is a braided and losing river reach located south of Bellevue between approximately Glendale and Baseline Roads. Nearly all the flow of the Big Wood River is diverted each summer into the Baseline Bypass Canal just upstream of the Glendale Bridge. As described by Bartolino and Adkins (2012), the Bypass Canal was built in 1920 on the east side of the river to route water around the Dry Bed section of the Big Wood River to speed the passage of water through this section of the river and to reduce losses; flow can be routed south to the Baseline Bypass extension canal or west back to the braided channel of the Big Wood River in the lower part of the Dry Bed.

In dry years, the entire flow of Big Wood River near the Glendale Bridge may be diverted to the Baseline Bypass Canal early in the irrigation season. For example, on or about April 4, 2021, the river was dammed off above the Glendale Bridge and diverted down the Baseline Bypass and back to the river channel to reduce losses in the Dry Bed and increase inflows to Magic Reservoir.

The Water District 37 watermaster makes separate priority cuts on the Big Wood River above and below Magic Reservoir. An explanation of priority cut determinations on the Big Wood River both above and below Magic Reservoir is documented by Water District 37 Watermaster Kevin Lakey in his correspondence to IDWR dated June 16, 2015 in Luke (2015). In that correspondence, Lakey notes that “there is much more senior [priority] water above Magic Reservoir than there is below; when inflows into Magic become low enough to start cutting decrees, decrees with more senior priority have already been shut off above Magic.” The most senior priority rights below Magic Reservoir have 1883 priority dates. In contrast, there are about 60 rights above Magic Reservoir with priority dates senior to 1883, totaling about 84 cfs. Some of the most senior rights above Magic Reservoir (1880 priority) are located below or at the lower end of the Dry Bed and rely on use of the Baseline Bypass Canal for delivery.

## *2. Big Wood River Below Magic Reservoir*

Flows in the Big Wood River below Magic Reservoir are controlled by reservoir operations. Magic Reservoir, located on the Big Wood River about 22 miles north of Shoshone, is owned and operated by the Big Wood Canal Company (“BWCC”). The reservoir has a storage capacity of 191,500 acre-feet. Magic Reservoir inflow primarily comes from the Big Wood River and

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<sup>4</sup> Water District No. 37 & 37M, *Water Distribution and Hydrometric Works – 2010*, 379 p.

Camas Creek. On average, approximately one-third of the reservoir inflow comes from Camas Creek (IDWR, 2021).<sup>5</sup>

The BWCC holds several water rights from the Big Wood River for storage in Magic Reservoir, ranging in priority from 1905 to 1920. Additionally, BWCC holds two natural flow rights from the Big Wood River for irrigation, including an 1897 priority right authorizing a diversion rate of 66.9 cfs and a 1908 priority right authorizing diversion of 3,000 cfs.

As described in Luke (2015), BWCC storage water from Magic Reservoir and BWCC natural flow water rights from the Big Wood River are diverted from the river below the reservoir at the Richfield and Lincoln Bypass Canals (see Figure 2).

Water diverted to the Richfield Canal is conveyed 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 the Richfield Tract located north of Richfield and the Little Wood River, and east of the Big Wood River. The total irrigated area within the Richfield tract is roughly 19,000 acres (Luke, 2015).

The Jim Byrns Slough conveys water about 16 miles around the east side of the Richfield Tract before connecting to the Little Wood River near the head of the Dietrich Main Canal located just south of Richfield. The water injected to the Little Wood River from the Jim Byrns Slough is measured at a gage station on the slough a short distance above its confluence with the river. The injected water is then diverted to the Dietrich Main Canal and conveyed eight to ten miles southwest to the Dietrich tract. The total irrigated area within the Dietrich tract is about 8,200 acres (Luke, 2015).

The BWCC holds a number of water rights from the Little Wood River that can be diverted to the South Dietrich Main Canal for irrigation within the Dietrich tract. Water diverted under these rights may be commingled with BWCC water supplies diverted from the Big Wood River and injected to the Little Wood River near the head of the South Dietrich Main Canal. The BWCC Little Wood River rights range in priority from 1883 to 1920. BWCC's more senior priority rights, from 1883 to 1887, have a cumulative diversion rate of 16.65 cfs. The more junior priority rights have diversion rates that vary from 15.3 cfs (1896 priority) to 304 cfs (1907 priority).

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 southwest to irrigate lands above the Milner Gooding Canal and north of the Big Wood River, known as the North Shoshone tract. The BWCC delivers water to about 8,800 irrigable acres in the North Shoshone tract. Water conveyed through the North Shoshone Canal may commingle 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 (Luke, 2015).

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<sup>5</sup> Idaho Department of Water Resources, *Wood River Basin Hydrologic and Hydrogeologic Relationships, Prepared for the BWRGWMA Advisory Committee – IDWR Observations*, March 17, 2021, 11 p.