

Priest Lake Outlet Dam - History

Presented to the Priest River Watershed Group

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Purpose

- Pre-Dam Conditions
- PL Outlet Dam #1
- PL Outlet Dam #2
- Dam Operations
- Impact of 2015
- Hydrology

Logging Operations & Mill at Outlet









Pre-Dam Sentiment

- Oct. 6, 1949 Field
 exam by State Engineer
- Oct. 17, 1949 –
 Statement by Locals &
 Recommendation by
 State Engineer
- Sept. 13, 1950 –
 Easement to maintain a dam across Priest River



"We feel a low dam placed below mill will benefit Diamond Match & everyone on lake and river" – Priest Lake Sportsmen and Resort Owners Association

Idaho Code - 1950

I.C. §70-501 – authorized outlet control structure in 1950, downstream Diamond Match Mill

□ I.C. §70-502 – approved construction

I.C. §70-503 – established fund to receive contributions

□ **I.C. §70-504 & 70-505** – money appropriated

□ I.C. §70-507 – authorized lake level of.1 ft to 3.0 ft

Priest Lake Outlet Dam – 1950s

- Construction completed in 1951 by Washington Water Power (WWP)
- Owned by the State,
 Operated by WWP pays varying \$/year
- Timber construction
- Stoplogs to regulate lake level
- 1958 State Engineer advises Governor against Hydropower



August 11, 1958 Letter to the Governor, "They [property owners] are opposed to the Northern Lights Inc. proposed power development..." State Reclamation Engineer

Dam Operations – 1960s

- Operations by WWP, agreement with Northern Lights & State
- Maintain lake between 0.1 and 3.0 feet
- Minimum of 60 cfs in Priest River 1st appearance
- Release water on or before Oct. 31 annually, but not before the Friday following Labor Day



Public Involvement – 1970s

- 1972 IF&G report suggestions:
 - Minimum flow of 230 cfs
 - Gradual Fall release
 - Aim for 0' by Nov. 1 annually
- 1972 Public Hearings
- 1975 State begins earlier drawdown
- 1976-77 dam in disrepair; needs to be replaced
- 1977-82 WWP Operates Dam



Concrete Dam

1979 – Dam Completed
Goebel Construction, Spokane
Concrete Dam, 11 radial gates
Key-differences from timber dam

Operational & Ownership Changes

- 2002 WWP replaced by Avista
- Avista continued to operate dam for IDWR until 2011
- 2012- IDWR began to contract with local operators
- 2018 legislation –
 IWRB ownership



Spring Gate Operations – Lake Level



Take-away: Timing and magnitude of peak lake level depends on timing and amount of runoff in the basin (determined by natural conditions)

Fall Release – Lake Level

[The lake level shall be held]" <mark>until</mark>
the time after the close of the main
recreational season, as determined by
<pre>said board", [prior to releasing it</pre>
below 3.0 feet.] I.C. §70-507

Take-aways:

- Many varying interpretations.
- A start date of October 1 in 2021 (for construction purposes) achieved a drawdown by November 1.
- The more gradual the release, the earlier the start date.

Flexibility in Gate Operations

Assuming the dam has some capacity for fish passage, agency feedback on the best gate configuration could be incorporated.



Priest Lake Outlet Dam – 2015

- Northern Idaho experienced one of the most severe droughts on record.
- Level held at 3.0 ft on Outlet Gage in compliance with IC through August 30, 2015
- USGS measurements determined discharge at dam was reduced to roughly 42.5 cfs on July 28, 2015 to maintain 3.0 ft lake level
- Board study and dam modifications
- Hydrology section involvement



Priest Lake Dam Improvements

Gates modified to store more water early in season to release in late Summer



- Improvements to all 11 gates
- Six-inch gate extension completed 2022

- Concrete Apron & Rock Armor

Rock armor

- Concrete work downstream is partially complete

Priest Lake Operational Guidance

- I.C. §70-507 Priest Lake (updated 2018)
 - May exceed 3.0 ft during spring runoff
 - Maintain between 3.0 and 3.5 ft through recreation season (interpreted to begin on Memorial Day weekend)
 - Other times of year, maintain between 0.1 and 3.0 ft
- □ Governor's Storage Water Right 97-2020
 - 800 KAF, Recreation Storage
 - Priority date: 1/24/1927
- Idaho Water Resource Board's Minimum
 Stream Flow Water Right 97-7380, 10/22/1997
- Guideline from prior operations agreements to maintain a minimum of 60 cfs discharge during summer months





Priest River Basin Plan Guidance

Updated in 2003

- Fall Release no more than a 1200 cfs flow change per 24 hours
- Fall release not prior to October 1 and, if possible, not until the second weekend in October
- Lake level to reach natural (unregulated) level by early November for kokanee spawning
- IDF&G to report date in November to achieve natural lake level; (later reported as November 1)



Priest River below Outlet Dam

Daily Operations



 New tool – hold more water in lake early to have more to release in late summer

Operations Communications

- IDWR informs IDF&G, Dept. of Lands, Lakes Commission, & Albeni Falls Dam in Fall and Spring of high-level operations
- Lakes Commission email distribution
- IDWR posts operation plans on web site

- C 🗄 https://idwr.idaho.gov/streams-dams-floods/lake-management/

IDAHO Official Government Website



IDAHO DEPARTMENT OF WATER RESOURCES

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Streams/Dams/Floods Overview

Stream Channel Protection Program •

Dam Safety Program -

Floodplain Management -

Flood Control Districts -

Lake Management

Priest Lake

The Priest Lake Outlet Dam, which was constructed in 1978, is owned by IDWR an operated by a contractor on behalf of IDWR.

Notices

May 15, 2023:

May's warm temperatures melted much of the snow in the Priest Lake basin. Priest Lake levels peaked once last week and could peak again as snow continues to melt.

As of today, the lake level is 4.21 feet (ft), with and flow through the dam is 5360 cubic feet per second (cfs). Department staff continue to watch two SNOTEL sites, Bunchgrass Meadow and Hidden Lake, both at an elevation of about 5000 ft. The general rule of thumb is peak flow into Priest Lake occurs when the Hidden Lake site has about 75% melt-out and when the Bunchgrass Meadow site has about 60% melt-out. These melt-out conditions (75% and 60%) are approaching with the warmer temperatures. Below are links to the SNOTEL charts for both the Bunchgrass Meadow and Hidden Lake sites.

Bunchgrass Meadow: AWS Plot (usda.gov) Hidden Lake: AWS Plot (usda.gov)

Once peak inflow and a corresponding peak lake level occur, the gates will be operated to maintain the lake level for summer recreation. The Department's hydrologists are predicting a dry year, and the Department will aim to stabilize the lake level at 3.2 to 3.3 ft through the summer

Priest Lake - Historical



Priest River System – Historical



Priest Lake Outlet Dam – History



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