



Oregon Lakes Association  
<https://www.oregonlakes.org>

Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street NE, Room 1A  
Washington, DC 20426

**RE: Docket Number P-15246-000, PacifiCorp's Proposed Winter Ridge Pumped Storage Project located in the Chewaucan Basin of Southcentral Oregon**

Dear Secretary Bose,

Please find our comments on the subject project below. We appreciate having the opportunity to comment. The Oregon Lakes Association (OLA) is a 501(c)(3) is a nonprofit organization whose purpose is to be "a voice for quiet waters." We represent a diverse membership ranging from university and agency scientists to the concerned public. We request that our comments be added to the administrative record for this project.

Although we support the need to develop renewable energy, we believe the proposed project will have cumulative adverse impacts to surface water supplies in the Chewaucan Basin that are already stressed. We argue that this proposed project is not in the public's best interest for the following reasons:

1. There has been a clear trend of decreasing water availability in the Chewaucan watershed due to climate change as well as past diversions. Extrapolating these trends into the future makes water availability in the project area uncertain;
2. Current Oregon Water Resources Department (OWRD) water availability estimates are inaccurate because they are based on an unusually wet period in the last 70 years (1958-1987). The estimates urgently need updating;
3. If the project went forward, the loss of water in the Chewaucan River would adversely impact both people and ecosystems that depend on that water and are already being impacted by water shortages, in particular Lake Abert and its unique ecosystem that is critical to migratory waterfowl;
4. The project area is well known to contain numerous archaeological sites and thus expensive surveys and impact-avoidance measures/mitigation will be required, and there will be push-back by Indian tribes. In fact, we have had conversations with the Klamath Tribes and they are extremely concerned about harm to cultural values and to the environment if this project was to move forward.
5. Expensive and difficult to maintain fish screens that meet State of Oregon regulations will be required because of native trout in the area, adding further expense and maintenance; and
6. We note that PacifiCorp is advancing two parallel applications for pumped hydroelectricity projects that are dependent on Chewaucan River water: Project No. 15246-000 (directly addressed here) and Project No. 15239-000 (Crooked Creek). Both of these are dependent on

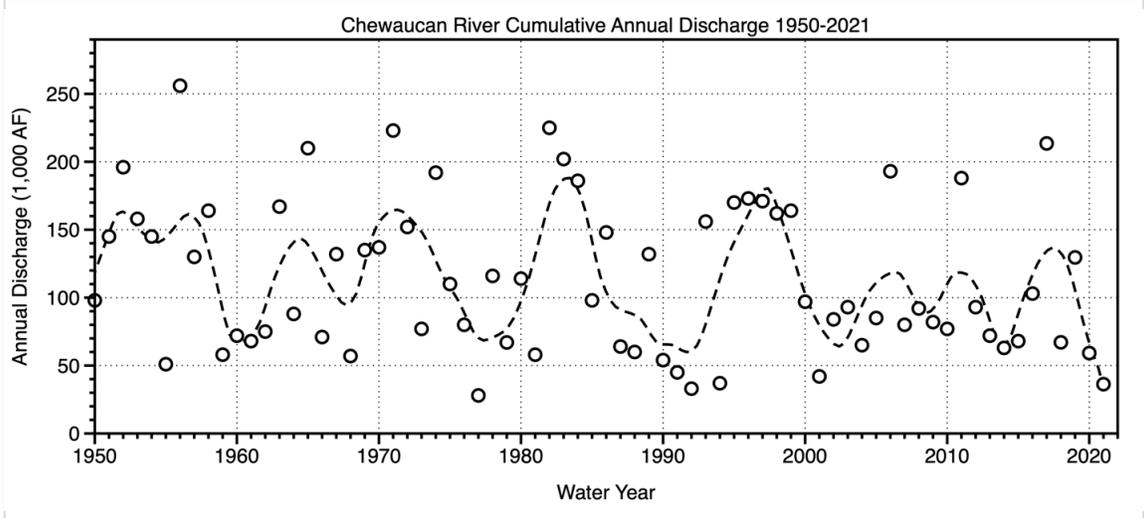
Chewaucan River water, and cannot therefore be considered in isolation; in terms of impact on water resources, the cumulative effects of both projects must be considered.

We explain some of our concerns in more detail below:

**1. *The proposed projects are in a dry watershed in which climate change and past diversions have diminished the region’s water supplies.***

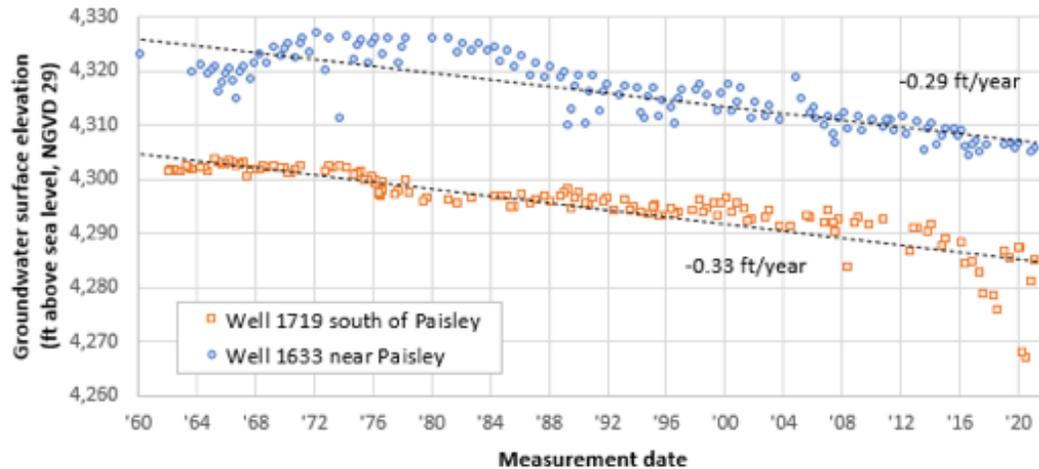
The impact and viability of the proposed projects must be assessed in the context of predicted conditions over the coming several decades. The fifth Oregon climate assessment report (Dalton and Fleishman 2021) concluded Oregon’s annual average temperature increased by about 2.2°F from 1895 to 1995. If greenhouse gas emissions continue to drive the even faster warming that has recently been observed, temperatures in Oregon are projected to increase on average by 5°F by the 2050s and 8.2°F by the 2080s, with the greatest seasonal increases in summer. Warming temperatures and changes in the amount and timing of precipitation, along with higher evaporation and evapotranspiration rates, will impact Oregon’s — and the Chewaucan region’s — water supplies. Summers are expected to be drier and extreme heat and precipitation events more frequent, and the record heat and drought that Oregon experienced in 2014 and 2015 and more severely in 2021, are predicted to be more frequent. Dalton and Fleishman (2021) point out that hydrologic drought as defined by extremely-low stream flows have already intensified (Kormos et al. 2016), and are expected to become even more severe (Siirila-Woodburn et al. 2021), which would result in severe water shortages and result in harm to society and ecosystems.

The mark of declining water resources is obvious in the Chewaucan watershed. First, cumulative annual Chewaucan River flow data show a dominance of low flows in recent decades and an overall downward trend (Figure 1).



**Figure 1.** Chewaucan River cumulative annual discharge measured at the Paisley gage (OWRD #1038400), 1950-2021. The dashed line is a LOESS curve-fitting to show trends in the data. Data from [https://apps.wrd.state.or.us/apps/sw/hydro\\_report/](https://apps.wrd.state.or.us/apps/sw/hydro_report/)

Second, groundwater reserves have been declining, as illustrated by falling well levels in the Chewaucan basin (Figure 2). Water allocations and insufficient recharging over the last 60 years have resulted in a drop in groundwater levels near Paisley, upstream of Lake Abert, of about 0.3 ft year.



**Figure 2.** Decrease in water levels in two wells near Paisley since 1960. Data from [https://apps.wrd.state.or.us/apps/gw/gw\\_info/gw\\_hydrograph/](https://apps.wrd.state.or.us/apps/gw/gw_info/gw_hydrograph/)

Third, the primary source of water in the basin is derived from snowmelt. Recent analyses show that the snowpack in the western United States, including Oregon, is declining dramatically (Mote et al 2018).

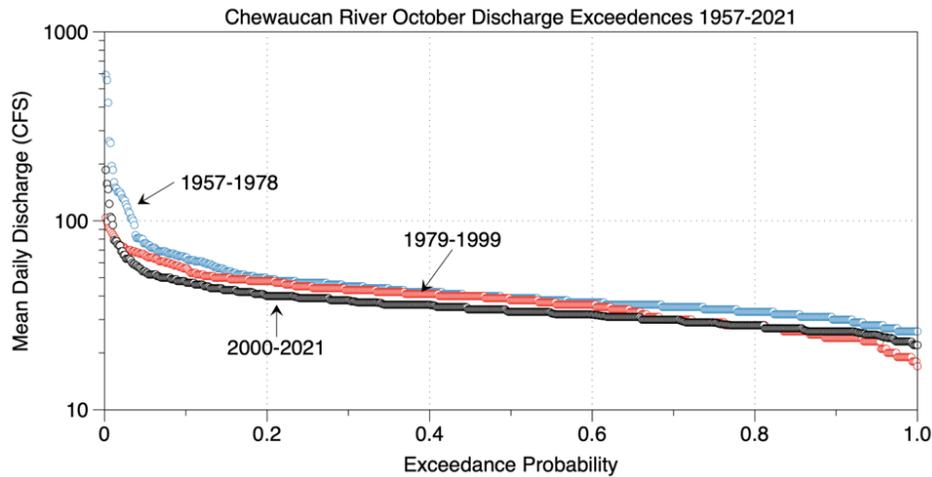
These data highlight the fact that the Chewaucan watershed, already situated in a dry high desert region, is experiencing persistently declining water availability.

**2. OWRD’s water availability assessment for the Chewaucan River is based on historical data that is invalid today; the project will require more water than is currently available**

The water-use analysis by OWRD is an estimate of the volume of water that is currently available, and is also a prediction of future water availability. In the document explaining how the water use assessment was developed, Cooper (2002) states that “The prediction is based on the assumption that future stream flow will be like past stream flow.” Such a statement can no longer be supported after one of the hottest and driest summers on record.

Furthermore, estimates of water use in OWRD’s assessments are based on different use categories, such as crops, industry, hydropower, domestic, and etc. Those estimates are from Broad and Collins (1996), who provided a general picture of water use in Oregon up to that date based on the best data available, but in many cases, data were lacking or the levels of uncertainty were unknown. While the results of the Broad and Collins assessment were adequate to provide a snapshot of water use in Oregon at that time, they were not meant to be used for regulatory decisions then or especially not three decades later when climate has changed substantially.

OWRD’s water-use analysis that is based on hydrology from the 1958-1987 water years to assess current and ongoing water availability is problematic for several reasons. First, at least in the Chewaucan Basin, that period was relatively wet, as can be seen in Figure 3 for mean-daily Chewaucan River flows measured at the Paisley gage. Table 1 provides further evidence that the early time period was relatively wet. Additionally, the table shows evidence of a declining trend in mean and median flows indicative of climate change. Over-estimating the amount of water available and allowing further diversions to be developed will not only harm other water users but will lead to lower instream flows, which is likely to adversely impact aquatic ecosystems.



**Figure 3.** Plots of the October mean-daily Chewaucan River flows and their exceedences measured above Paisley for the 1957-2021 period, divided into three 2-decade intervals.

**Table 1.** Comparison of October, mean and median daily Chewaucan River discharges, and 0.8 exceedance values over the 1957-2021 period measure at the Paisley gage.

Time Period	Mean Discharge (CFS)	Median Discharge (CFS)	0.8 Exceedance (CFS)
1957-1978	46.8	39	33
1979-1999	39.1	38	28
2000-2021	36.0	33	28

According to PacifiCorp’s water use estimates that appear in the Application for Preliminary Permit for a Water Use License submitted to OWRD, the joint projects will require:

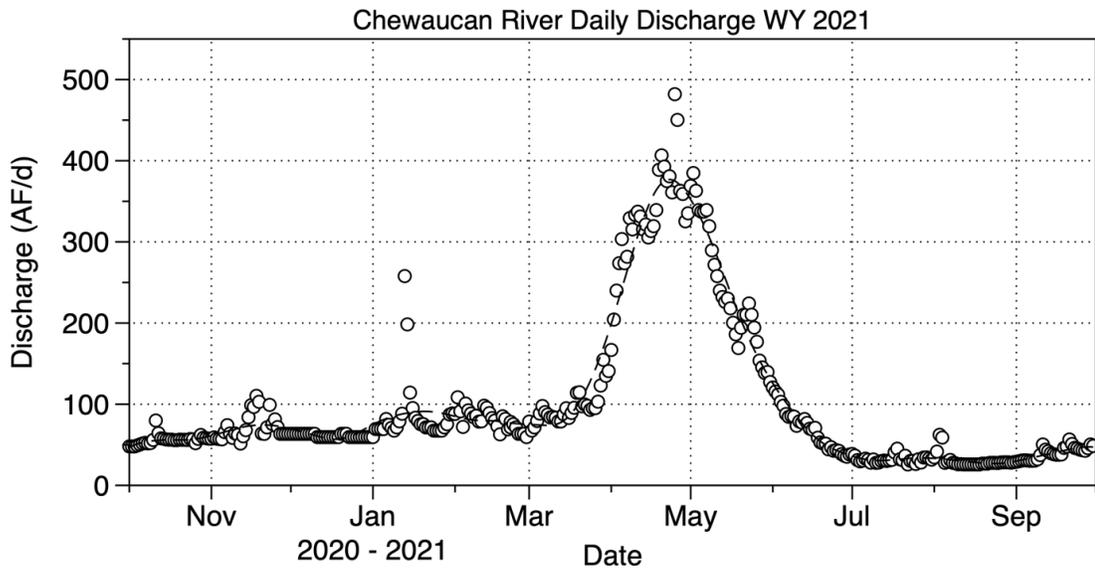
- 14,710 acre-ft (AF) during the first 4 years (8510 AF for Winter Ridge project only)
- 1,430 AF annually after year 4 (830 AF for Winter Ridge project only)
- 3,800 AF every 5 or as often as every 2 years (3200 AF for Winter Ridge project only)

Almost all of this water will be dependent on the Chewaucan River.

OWRD reported in 1989 that 45,000 acres were irrigated by surface water in the Chewaucan Basin and the “duties,” which is the amount that can be applied to land with water rights,

averages 4.6 AF per acre. Thus, if all the water rights in the basin were fully utilized, an annual consumption of over 200,000 AF would occur. As can be seen in Figure 1, there were few years since 1950 that sufficient water was available to meet existing water rights. Consequently, little if any water would be available to the Crooked Creek hydro-project because the water intake for the proposed hydro-project would be downstream of nearly all irrigation diversions. Furthermore, it can also be seen in Figure 1 that discharges during the past two decades have been relatively low, especially in 2021, which had exceptionally low flow in the 97-year period of record.

Just how much water would be available to the proposed hydro-project on a monthly basis is unknown; however, the total annual flow measured in the river upstream of most diversions in 2021 was only 36,000 AF. Based on the water usage data provided by PacifiCorp, the combined Winter Ridge/Crooked Creek project would need 14,710 AF during the first 4 years, or ~3,680 AF/year, and 5,230 AF as often as every other year after the construction phase. In water-year 2021, there were long periods when river flows were <50 AF/d at the Paisley gage (Figure 4). Under low-flow conditions like this, it is doubtful that upstream irrigation water demands were met and thus there would be little or no water remaining that could be used by the hydro-project. In fact, during 2021, the River's End Reservoir just upstream from Lake Abert dropped several feet in elevation, suggesting there were insufficient inflows from the river to offset evaporation and any diversions from the reservoir. Thus, if conditions like 2021 become the norm, and that seems to be the consensus among climatologists as explained above, there would be frequent periods when no water would be available to the hydro-project to keep the two reservoirs filled.



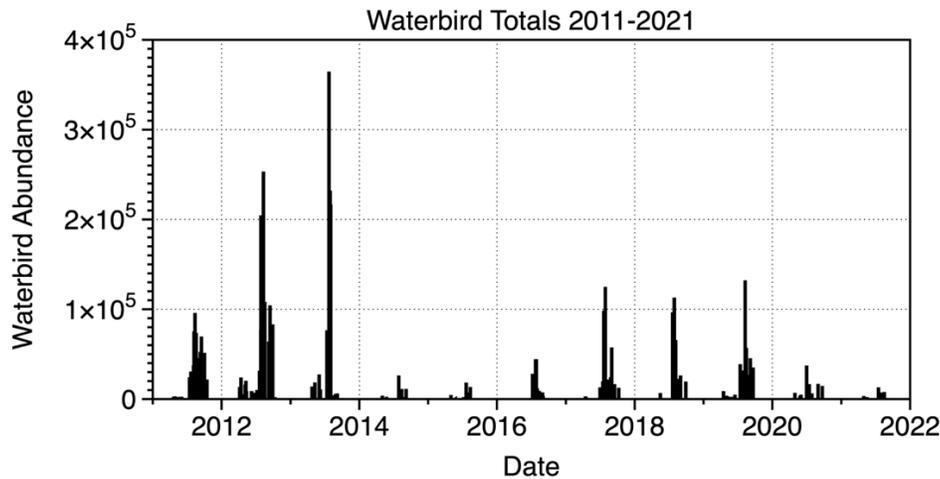
**Figure 4.** Chewaucan River daily discharge water-year 2021 measured at the Paisley gage.

As a general principle, it seems unwise to expose an already dry and overtaxed watershed to additional unproductive water loss in the form of surface evaporation, such as that from any new reservoir. Full consideration of the current and projected water situation in the Chewaucan valley should occur before additional water allocations are granted. *We request that studies and measurements that establish water budgets for the Chewaucan River,*

***Lake Abert and Summer Lake be conducted prior to a decision on this and the linked Crooked Creek application.***

**3. *Additional water withdrawals from the Chewaucan River will exacerbate desiccation of Lake Abert and adversely impact migratory waterbirds.***

Lake Abert is a terminal salt lake located at the terminus of the Chewaucan River. The lake is highly important to migratory waterbirds that come to the lake after breeding to feed and replenish fat reserves before migrating south for the winter (Larson et al., 2016). During 2014-2015, Lake Abert was almost totally desiccated (Larson et al., 2016, Moore 2016). Then in 2021, the lake was once again almost totally dry. The lake had not been that dry since the Dust Bowl Era of the 1920s and 1930s, nearly a century ago. As a likely result of the 2014-2015 and 2020 desiccation events, there was a marked decline in the numbers of birds using the lake, and in fact, the 2021 numbers were the lowest in a decade and even lower than during the 2014-2015 desiccation event (R. Larson, pers. comm., Figure 5).



**Figure 5.** Abundance of total numbers of waterbirds counted at Lake Abert by East Cascades Audubon Society volunteers. Source: R. Larson.

Migratory birds are protected by the Migratory Bird Treaty Act (MBTA) and any harm coming from this project is likely to be of concern to the US Fish and Wildlife Service that oversees the MBTA, and will raise fears by the public, especially environmental groups. The public’s attention on environmental issues affecting the lake have been raised, as evidenced by a January 17, 2022 article – *Lake Abert in Deep Trouble* – published in the Oregonian newspaper, which has the widest circulation of any paper in the state. Thus, there will be considerable agency and public focus on this project, and should it be built, the project could be shut down if it is determined that it is harming the environment.

**4. *Presence of numerous archaeological sites in the Chewaucan Basin could make getting permits difficult and add further expense to the project***

The Chewaucan Basin is well known as being an area with a rich archaeological legacy. Surveys in the Chewaucan Marshes has revealed diverse artifacts, including 600 pit-house

depressions; over 70 rock-ring structures that were houses; nearly 100 examples of rock art; a large number of wood, bone, and stone tools, such as obsidian projectile points; and even rarely-preserved woven basketry and sagebrush bark moccasins, all indicating a well-developed human occupation (Oetting, 1990, 1998; Aikens et al., 2011). In fact, the BLM (1995) stated that “There is virtually no portion of the immediate shoreline of the lake where some form of cultural resource cannot be found.” The shoreline “...is literally one continuous [archaeological] site.” In recognition of the abundance of cultural sites above the lake, a 300-acre area of federal and state land was designated as the “East Lake Abert Archaeological District,” and in 1978 it was listed on the National Register of Historic Places. The presence of archaeological sites in the project area must be respected, and will most certainly put regional Indian tribes in opposition to the project, and will make it difficult to get the necessary state and federal permits that will be required, and additionally could lead to project delays and expensive mitigation efforts. We refer reviewers to the detailed submissions concerning Native American cultural sites being submitted by the Klamath Tribes.

***In conclusion, Oregon Lakes Association is opposed to any additional water diversions in the Chewaucan Basin, including those associated with the proposed hydropower scheme. We have outlined abundant data indicating the aridity of this basin. We are disappointed that PacifiCorp would develop such a proposal. New hydroelectric schemes should not be proposed for any of the dryland areas of eastern Oregon. We urge PacifiCorp to focus on solar and wind power in these areas.***

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