

RECLAMATION

Managing Water in the West

2017 Annual Operations Plan

**Klamath Project, Oregon-California
Mid-Pacific Region**



Mission Statements

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian Tribes and our commitments to island communities.

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

Introduction

The Klamath Project (Project) delivers water for irrigation purposes to over 200,000 acres in southern Oregon and northern California. This 2017 Operations Plan (Plan) describes Project operations that are anticipated to occur during the 2017 spring-summer irrigation season (March 1 to November 15), based upon current and projected hydrologic conditions. The Plan is consistent with Reclamation's proposed action analyzed in the biological opinions (BiOp) issued jointly by National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) on May 31, 2013.

This Plan is divided into three sections. The first section describes the estimated water supplies available for Project purposes during the 2017 spring-summer irrigation season. The second section discusses the voluntary water conservation measures that Reclamation and Project water users will employ to manage and conserve limited water resources. The third section address additional operational considerations.

2017 Project Water Supplies

Reclamation uses several water sources to meet irrigation demands within the Project, including: live flow into and stored water from Upper Klamath Lake (UKL), the Klamath River, Clear Lake Reservoir, Gerber Reservoir, and the Lost River. The estimated water supply available from each of these sources during the 2017 spring-summer irrigation season is discussed in turn below.

Upper Klamath Lake & Klamath River

Consistent with the proposed action analyzed in the BiOp, Reclamation uses the monthly 50 percent exceedance inflow forecasts from the Natural Resources Conservation Service (NRCS) as the basis for Project operations with respect to UKL and the Klamath River during the spring-summer irrigation season. To estimate the water supply available from UKL and the Klamath River, Reclamation relies upon actual inflows to UKL and NRCS inflow forecasts for UKL to determine three key operational values: (1) the volume of water to be reserved in UKL to maintain lake elevations analyzed in the BiOp (UKL Reserve); (2) the volume of water designated for the Klamath River, referred to as the Environmental Water Account (EWA); and (3) the volume of water available for delivery for irrigation purposes to the Klamath Project (Project Supply).

Reclamation makes a preliminary calculation of these three values on March 1; however, those estimates are subject to change based on actual UKL inflows after

March 1 and subsequent NRCS inflow forecasts. Reclamation recalculates these values on April 1, based on actual UKL inflows observed in March and NRCS' UKL inflow forecast for April 1 to September 30. This April 1 calculation establishes the initial Project Supply available from UKL and the Klamath River during the spring-summer irrigation season.

Based on the April 1, 2017, NRCS inflow forecast, Reclamation calculates 1) the UKL Reserve to be 142,208 acre-feet (AF); 2) the EWA volume to be 801,617 AF; and 3) the Project Supply to be 390,000 AF. (See chapter 4 of the BiOp for further details regarding the calculation of UKL Reserve, EWA, and Project Supply)

In addition, this Plan is also consistent with the March 24, 2017 Court Order (Case 3:16-cv-04294-WHO) which requires Reclamation to reserve up to 50,000 acre-feet of water between April 1 and June 15, 2017, to be used, if necessary, to address salmonid disease issues in the Klamath River downstream of Iron Gate Dam (Reserve Water). Reserve Water will be released if the following disease threshold criteria are met or exceeded: (1) Spore concentrations exceed 5 spores per liter (non-specified genotype) based on quantitative polymerase chain reaction (qPCR) from samples at any sampling station; or (whichever occurs first) (2) The prevalence of infection of captured juvenile Chinook salmon (both wild and hatchery) exceeds 20% in aggregate for the preceding week at the Kinsman Rotary Screw Trap. Use of the Reserve Water is limited to the time period between April 1 through July 15 and will cease if an estimated 80 percent of the wild juvenile Chinook salmon have outmigrated past the Kinsman Rotary Screw Trap (as determined by the USFWS Arcata Field Office). As such, the initial adjusted available Project Supply is calculated to be 340,000 acre-feet. If a portion of the 50,000 acre-feet of Reserve Water is not used, then that water may be made available for delivery to the Project.

Given the adjusted available Project Supply, based on the April 1 NRCS inflow forecast and anticipated Project usage, including implementation of reasonable conservation measures (as further discussed below), at this time, Reclamation does not anticipate any shortages in Project water supplies available from UKL and the Klamath River for Project contractors during the 2017 irrigation season. If potential shortages in the available supply are identified, Reclamation will coordinate with Project contractors and may issue a drought plan, if necessary.

The actual amount of water available for delivery to the Project from UKL and the Klamath River may be less than the calculated Project Supply under certain hydrologic conditions. Reclamation may be required to reduce the amount or rate of Project deliveries based on criteria established in the BiOp, due to tribal trust obligations, and/or to meet the requirements of the aforementioned Court Order. Reclamation will coordinate with Project stakeholders in advance of any decision to adjust the amount and rate of Project deliveries.

Clear Lake Reservoir

The estimated Project water supply available from Clear Lake Reservoir is based on several factors, including current hydrologic conditions, projected inflows for April through September, the end of September minimum elevations analyzed under the BiOp, as well as Reclamation's estimates on the rate of irrigation releases and non-beneficial losses (i.e., evaporation and seepage). The estimated available water supply is tracked daily, with updates to Project water users occurring approximately every two weeks during the irrigation season or as needed.

As of April 1, 2017, the water surface elevation in Clear Lake Reservoir was at 4,532.10 feet above sea level (USBR datum), representing a total volume of 251,810 AF of stored water. The end of September minimum elevation in Clear Lake Reservoir analyzed under the BiOp is 4,520.60 feet above sea level (USBR datum). With the anticipated inflows and estimated evaporation and seepage rates, Reclamation estimates there will be a full supply of Project water available from Clear Lake Reservoir during the 2017 spring/summer irrigation season. The average historic Project demand from Clear Lake Reservoir is approximately 35,000 AF.

Gerber Reservoir

Similar to Clear Lake Reservoir, the estimated Project water supply available from Gerber Reservoir is based on several factors, including current hydrologic conditions, projected inflows for April through September, the end of September minimum elevations analyzed under the BiOp, as well as Reclamation's estimates on the rate of irrigation releases and non-beneficial losses (i.e., evaporation and seepage). The estimated available water supply is tracked daily, with updates to Project water users occurring approximately every two weeks during the irrigation season or as needed.

The water surface elevation of Gerber Reservoir, as of April 1, 2017, was at 4,832.44 feet above sea level (USBR datum), representing a total volume of 83,174 AF of stored water. The end of September minimum elevation in Gerber Reservoir analyzed under the BiOp is 4,798.10 feet above sea level (USBR datum). With the anticipated rates of evaporation and seepage, Reclamation estimates there will be a full supply of Project water available from Gerber Reservoir during the 2017 spring/summer irrigation season. The average historic demand from Gerber Reservoir is approximately 35,000 AF.

Lost River

Natural runoff and return flows in the Lost River may also be available at certain times for irrigation use within the Project. Diversions from the Lost River during

the spring-summer irrigation season are not included in the calculation of the Project Supply available from UKL and the Klamath River analyzed under the BiOp during the corresponding period. As such, the Project water supply from the Lost River is primarily constrained by the physical availability of water, primarily from return flows, as opposed to operational constraints within the analysis in the BiOp. Accordingly, Reclamation does not formally estimate the available supply from the Lost River during the spring-summer irrigation season, but rather allows Project water users to divert the supply as it becomes available, consistent with the terms of their respective contracts.

Voluntary Water Conservation Measures

In an effort to continue responsible resource stewardship and eliminate or minimize the extent of Project water shortages during drought conditions, Reclamation and Project water users will continue to employ strategies to conserve water. These strategies are briefly discussed below.

Active Conservation

There are a number of active conservation efforts that Reclamation and Project water users can employ to conserve water and to extend available Project water supplies during water shortage situations. Such strategies range from Project-wide actions, to district initiatives, to individual efforts at the farm or field level.

An example of a common historic Project-wide conservation practice is to delay the start of the irrigation season in order to prolong the availability of water later into the growing season when water shortages may exist. To accomplish this, Reclamation coordinates the timing of the start of the irrigation season with the districts that operate the Project's principal diversion points.

Reclamation also works with districts and individuals to encourage independent initiatives aimed at conserving Project water supplies. District-level conservation initiatives may include rotating water use among irrigators that receive water from a particular canal or lateral, de-watering certain irrigation laterals when not in use, and limiting tailwater flows at the ends of canals and laterals.

Individual, on-field efforts may include planting less water intensive crops, using high-efficiency irrigation systems such as sprinklers or gated pipes, and employing so-called "deficit" irrigation techniques, where water is applied at less than the full consumptive use demand of a particular crop type. Reclamation encourages Project water users to employ all available tools to conserve water and keep demands at a minimum, especially when water shortages exist.

To assist in on-field conservation efforts, Reclamation operates AgriMet stations in the Klamath Basin, which use site-specific weather data to estimate evapotranspiration (ET, or crop water use) for various crop types typically grown within the Project. This information can be used to identify the required amount of water to apply to a crop based on current weather conditions and growth stage. AgriMet crop water use charts for the Klamath Basin are updated each morning at approximately 4:30 AM Pacific Standard Time, and can be found online at <http://www.usbr.gov/pn/agrimet/agrimetmap/agrimap.html>.

Other Operational Considerations

There are a number of other operational considerations that Reclamation and Project water users should take into account when operating the Project including voluntary water transfers, state water rights administration, and refuge water deliveries. Each of these considerations are discussed in turn below.

Voluntary Project Water Transfers

Reclamation supports voluntary transfers of Project water as a means of promoting flexibility in managing limited water supplies and maximizing Project benefits. Accordingly, subject to its approval as described below, Reclamation will allow transfers of Project water, within the limits of applicable federal and state law.

With respect to state law, Reclamation may require that parties to a proposed transfer first demonstrate compliance with applicable state law. Reclamation will coordinate with Oregon Water Resources Department (OWRD) to facilitate any transfers approved by OWRD.

Federal law also imposes certain limitations on transfers of Project water. Federal law, for instance, requires a contract with Reclamation for the use of Project water. Accordingly, Reclamation can only approve transfers of Project water among lands eligible to receive Project water under an existing contract with Reclamation, or for refuge purposes within Lower Klamath National Wildlife Refuge (LKNWR) or Tule Lake National Wildlife Refuge (TLNWR).

Reclamation's prior written approval is required to transfer Project water between Project contractors. However, to the extent districts elect to allocate or distribute water within their respective service areas, for lands irrigated under existing contracts with Reclamation, Reclamation's prior approval is not required. Individual landowners who are interested in transferring Project water are advised to work with their respective districts, to obtain Reclamation's approval of Project

water transfers. Transfers of Project water to LKNWR or TLNWR will also require the approval of USFWS and the districts that serve refuge lands. Compliance with other applicable federal laws may also be necessary.

Consistent with Oregon water law, Reclamation will approve partial duty water transfers, whereby a portion of the supply available to a given tract of land is transferred for use on other lands. Such transfers will be contingent, in part, upon the ability to accurately measure corresponding water use, on both the transferring and receiving lands, in order to ensure that the amount of water used does not exceed the associated total available duty.

State Water Rights Administration

The State of Oregon is in the process of adjudicating certain water rights for UKL, the Klamath River, and their tributaries. OWRD completed the administrative phase of the Klamath Basin Adjudication, with its issuance of the Final Findings of Fact and Order of Determination (FOD) on March 7, 2013, which is currently subject to judicial review before Klamath County Circuit Court.

Although still subject to judicial review, the water rights for the Project, as recognized in the FOD, are enforceable under Oregon law, absent a judicial order to stay enforcement of the FOD. OWRD's district watermaster is responsible for investigating and enforcing any "call" for water rights regulation pursuant to Oregon law. Reclamation will coordinate with Project water users regarding any decision to make a call on behalf of Project water rights.

The purpose of making a call for state water rights administration is to offset a shortage in Project water supplies. The Project Supply determination for UKL and the Klamath River, as described above, does not include any additional Project water supply resulting from state water rights administration. Reclamation will coordinate with Project water users and affected stakeholders, including the Klamath Basin tribes, regarding the management of additional inflow to UKL resulting from water rights administration. No decision regarding such management has been made at this time.

National Wildlife Refuge Deliveries

LKNWR and TLNWR also use Project water for refuge-related purposes, including irrigation. LKNWR encompasses 51,713 acres, which were reserved by Executive Order "as a preserve and breeding ground for native birds." TLNWR consists of 39,990 acres, also reserved by Executive Order "as a refuge and breeding ground for birds." USFWS manages both LKNWR and TLNWR to provide a variety of habitat types for native birds, including wetland, open water, and agricultural habitats.

The United States holds water rights for lands in LKNWR and TLNWR. Under the current FOD, irrigation for agricultural purposes within the refuges, through leases and cooperative agreements with individual farmers, occurs under the water rights connected to the Project, with a priority date of May 19, 1905. Also, under the FOD, water rights for other refuge purposes carry later priority dates.

With respect to water for irrigation purposes, as described above, certain refuge lands are within the boundary of Tulelake Irrigation District (TID) and the Klamath Drainage District (KDD). As specified in various contracts with the United States, refuge lands within TID and KDD receive Project water for irrigation purposes in accordance with the priority of each district's respective contract.

For other irrigated refuge lands outside TID and KDD, specifically LKNWR lands within the State of California, the BiOp specifies that these lands can receive a portion of the unused Project Supply from UKL and the Klamath River, as well as receive additional deliveries from UKL and the Klamath River under wetter hydrologic conditions. Accordingly, the amount of water that will be available for LKNWR lands in California from UKL and the Klamath River during the 2017 spring-summer irrigation season is undetermined at this time. Reclamation will continue to coordinate with USFWS and other stakeholders regarding the availability of Project water to meet the water demands of LKNWR lands in California. Water can also be made available for the refuges through water transfers, as noted above.

Depending on the elevation of the Tule Lake sumps, water from the sumps may become available for conveyance to the California portion of LKNWR, through the D Pumping Plant and associated P Canal system. Typically, such water is pumped from the sumps during the fall-winter period, in accordance with flood control operations, but water may also become available during the spring-summer period, depending on hydrologic conditions.

Given the dry hydrologic conditions experienced in recent years, limited water supplies that have been made available for refuge purposes, and the associated challenges created for refuge operations, TID and USFWS will be given the discretion to operate the Tule Lake Sumps (1A and 1B) to manage for irrigation deliveries and optimal refuge conditions, consistent with the rules and regulations Reclamation has promulgated for operation of the Sumps. For example, in 2014, water was retained in Tule Lake Sump 1B during the spring-summer period in order to provide for molting habitat for migrating waterfowl.

For more information, please visit <http://www.usbr.gov/mp/kbao/> and or contact Laura Williams at 541-883-6935 or ljwilliams@usbr.gov.