

RECLAMATION

Managing Water in the West

2015 Annual Operations Plan

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



U.S. Department of the Interior
Bureau of Reclamation

April 2015

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 2015 Operations Plan (Plan) describes Project operations that are anticipated to occur during the 2015 spring-summer irrigation season (March 1 to November 15, 2015), based upon current and projected hydrologic conditions. The Plan is consistent with the Reclamation's proposed action analyzed in the biological opinions issued jointly by National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) (collectively the Services) on May 31, 2013 Biological Opinion (BiOp). During formal consultation with Services under section 7 of the *Endangered Species Act*, Reclamation proposed various actions, as further described in the Operation Plan, to mitigate impacts to federally listed species as a result of operation of the Klamath Project. Reclamation must operate as provided in the BiOp in order to remain in compliance with the *Endangered Species Act*.

This Plan is divided into two sections. The first section describes the estimated water supplies available for Project purposes during the 2015 spring-summer irrigation season. The second section discusses the voluntary drought mitigation measures that the Bureau of Reclamation and Project water users will employ to minimize and manage potential Project water supply shortages.

2015 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 2015 spring-summer irrigation season is discussed in turn below.

Upper Klamath Lake and 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 during the spring-summer irrigation season. For 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 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). (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 Project Supply available from UKL and the Klamath River during the spring-summer irrigation.

Based on the April 1, 2015, NRCS inflow forecast, Reclamation calculates 1) the UKL Reserve to be 120,845 acre-feet (AF), with a corresponding end of September elevation for UKL of 4,138.10 feet above sea level (USBR datum); 2) the EWA volume to be 320,000 AF; and 3) the Project Supply to be 254,500 AF.

This figure for Project Supply has been adjusted to account for the enhanced minimum flows required under the BiOp for the Klamath River during the April through June period.

A full Project Supply from UKL and the Klamath River for March 1 through November 15 is 390,000 AF. Accordingly, Reclamation anticipates a shortage in Project water supplies available from UKL and the Klamath River for the 2015 irrigation season. (See Chapter 4 of the BiOp for further details regarding the calculation of UKL Reserve, EWA, and Project Supply.)

The Project Supply, as calculated consistent with the BiOp, is subject to change. Reclamation will recalculate the Project Supply following the May 1, and June 1, NRCS inflow forecasts. If the May 1 and June 1 forecasts indicate that actual inflows exceed NRCS' forecasts and/or NRCS' inflow forecasts increase, the estimated Project Supply may be increased.

Although the calculated Project Supply can increase following the May 1 and June 1 NRCS inflow forecasts, as described above, 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. For consistency with the BiOp, Reclamation will be required to reduce Project deliveries if observed inflows to UKL are lower than the forecasted volume to the extent that Project deliveries would cause the surface level of UKL at any time to fall below the minimum elevation required under the BiOp (4,137.72 feet above sea level, USBR datum).

Reclamation may also need to adjust the rate and timing of Project deliveries based on BiOp requirements for UKL and the Klamath River, which may ultimately affect the total amount of water delivered to the Project. The USFWS identified monthly minimum threshold elevations for UKL, based on observed hydrologic conditions, which need to be maintained to remain within the effects analyzed in the BiOp. NMFS also specifies in the BiOp that increased flow releases using a portion of the EWA can occur if necessary to mitigate fish disease conditions in the Klamath River.

Under the current drought conditions, there is an elevated concern that a significant outbreak of fish disease may occur in the Klamath River in 2015. As such, increased flows may be needed in the Klamath River particularly during the period of April through June. It is anticipated that any volume of water needed to meet these increased flows will be released from the EWA. However, since Reclamation must manage Project deliveries in order to ensure that any such increased flows can be implemented without causing UKL water levels to fall below the BiOp required threshold elevations, this may result in constraints regarding the timing of the delivery of the Project Supply, particularly during the months of April and May.

Reclamation may need to adjust the rate and timing of Project deliveries, either to meet monthly UKL threshold elevations or to allow for increased flows in the Klamath River, or potentially both. Reclamation will coordinate with Project water users in advance of any decision to adjust the rate and timing of Project deliveries. In addition, should the EWA be insufficient to adequately mitigate fish disease conditions, Reclamation may need to utilize a portion of Project Supply in an attempt to avoid unauthorized take of federally listed coho salmon in the Klamath River, based on criteria established in the BiOp.

Clear Lake Reservoir

The estimated Project water supply available from Clear Lake Reservoir is based on several factors, including current hydrologic conditions, NRCS' monthly inflow forecasts 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 remaining water supply is tracked daily, with updates to Project water users occurring every two weeks during the irrigation season or as needed, generally corresponding to NRCS' inflow forecasts.

As of April 1, 2015, the water surface elevation in Clear Lake Reservoir was at 4,521.07 feet above sea level (USBR datum), representing a total volume of 46,270 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). The NRCS' 50 percent exceedance April 1, inflow forecast for Clear Lake estimates that approximately 16,000 AF of additional inflow will occur from April 1, to September 30. Between the limited volume of water stored in Clear Lake Reservoir, the low inflow forecast, and estimated evaporation and seepage rates, Reclamation cannot make discretionary releases from Clear Lake Reservoir during 2015 to remain consistent with the BiOp. As such, Project water is currently unavailable from Clear Lake Reservoir for irrigation purposes. The average historic Project demand from Clear Lake Reservoir is approximately 34,000 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, NRCS' monthly inflow forecasts 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 remaining water supply is tracked daily, with updates to Project water users occurring every two weeks during the irrigation season or as needed, generally corresponding to NRCS' inflow forecasts.

The water surface elevation of Gerber Reservoir, as of April 1, 2015, was at 4,809.46 feet above sea level (USBR datum), representing a total volume of 16,130 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). The NRCS' 50 percent exceedance April 1 inflow forecast for Gerber Reservoir estimates that approximately 4,600 AF of additional inflow will occur from April 1 to September 30. With the anticipated rates of evaporation and seepage, Reclamation estimates there will be approximately 16,000 AF of Project water available from Gerber Reservoir during the 2014 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 Drought Mitigation Measures

Given the limited availability of surface water supplies to meet the full irrigation demands of lands served under the Project, Reclamation and Project water users will employ four general strategies to eliminate or minimize the extent of Project water shortages. These four strategies include: (1) active conservation; (2) the

Water User Mitigation Program (WUMP); (3) voluntary transfers among Project water users; and (4) state water rights administration. Deliveries to national wildlife refuges served by the Project are also a consideration in managing limited Project water supplies. These strategies are briefly discussed in turn below.

Active Conservation

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

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. 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 will also work with districts and individuals to encourage independent initiatives aimed at conserving limited 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 keep demands at a minimum.

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/kfloda.html>.

Water Users Mitigation Program

The Water Users Mitigation Plan (WUMP) is a study funded by Reclamation under a cooperative agreement with the Klamath Water and Power Agency (KWAPA), pursuant to the *Klamath Basin Water Supply Enhancement*

Act of 2000 (Pub. L. No. 106-498, 114 Stat. 2221). KWAPA administers the funding and manages the WUMP. The WUMP is designed to assess the feasibility of a non-federal program to assist in balancing water supply and demand through market-based approaches.

Due to the anticipated shortage in Project water supplies for the 2015 spring-summer irrigation season, KWAPA is in the process of entering into contracts with Project water users to forego the use of Project water (i.e., land idling). Participating water users will not be able to use surface water supplies available from the Project. KWAPA is also considering contracting with groundwater well owners to produce supplemental groundwater to augment surface water supplies available to the Project.

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 among Project lands, in accordance with existing contracts. Districts will also have the discretion, if they so choose, to approve transfer of Project water from their respective district lands, independent of Reclamation's approval process. 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 is not enlarged.

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. 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 are 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 use on LKNWR and TLNWR lands. 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. Lands farmed under lease and cooperative agreement within TLNWR will receive Project water in accordance with the contractual priority of TID.

For other irrigated refuge lands outside TID and KDD, specifically LKNWR lands within the State of California, the BiOp specifies that these lands will only receive Project water from UKL and the Klamath River when the supply is adequate to first satisfy the demands of Project contractors. Accordingly, given the insufficient Project Supply currently available from UKL and the Klamath River, Reclamation does not currently anticipate being able to make any discretionary deliveries to LKNWR lands in California during the 2015 irrigation season. Reclamation will continue to coordinate with USFWS and other stakeholders about the availability of Project water to meet the agricultural water demands of LKNWR lands in California. Water may, however, be available for the refuges through voluntary 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 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 such water may also become available during the spring-summer period, depending on hydrologic conditions.

Given the dry hydrologic conditions 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 Jason Cameron at 541-883-6935 or via e-mail at jcameron@usbr.gov.