



Frequently Asked Questions

Frequently Asked Questions on Decommissioning Dams and Klamath River Water Quality (Lower Klamath Project License Surrender)

Newest Additions in Blue Text Below

What is the Project?

The [Lower Klamath Project License Surrender \(Project\)](#) is a **river restoration project** that removes four dams on the Klamath River (J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate) to benefit salmon populations and improve water quality. While there are short-term impacts associated with the release of sediment stored behind the dams, removal of the four dams will result in long-term benefits to water quality, reduce fish disease, and open over 360 river miles of habitat to anadromous fish.

What is the current status of the Project?

Reservoir drawdown and subsequent dam removal of the four dams began in January 2024. As anticipated, large volumes of sediment stored behind the dams have entered the Klamath River. With the increase in sediment-filled water (also referred to as turbidity) the public has raised concerns related to water quality and drinking water supplies downstream of the dams. The Klamath River Renewal Corporation (KRRC, entity responsible for implementing the Project) is collecting water quality samples as required by its permit. Other entities are also collecting water quality samples. When evaluating water quality, it is important to analyze sampling against the correct standard and ensure that samples are collected, processed, and analyzed consistent with recognized uniform procedures.

How have the dams impacted water quality in the Klamath River? How will their removal improve water quality?

The four dams worsened water quality in the Klamath River over decades by creating reservoirs with seasonal toxic algae blooms, modifying downstream river temperatures that harmed salmon, increasing disease in salmon, and causing other water quality issues. The dams also blocked salmon from migrating to historically available upstream habitat where fish lay their eggs and grow before migrating to the ocean.

Removal of the dams will reduce the likelihood of algae blooms and increased water temperatures, while opening up more than 360 miles of Klamath River and tributaries for salmon habitat. Before these benefits can occur, the existing dams and sediment



that has accumulated behind the dams has to be removed. This will occur through the flushing of this sediment through the river system, causing turbidity, or muddy water. This is a significant, but short-term, impact to water quality identified in the board's environmental analysis that was anticipated during the initial period following dam removal. The reservoir sediments contain organic and inorganic (such as metals) chemicals that have accumulated behind the dams over the 50+ years since they were constructed. This temporary impact to the river is outweighed by the substantial long-term benefits for water quality, fish, and other aquatic resources that the removal of the dams will bring.

What actions are being taken to protect drinking water?

People get their drinking water from surface waters, such as rivers and streams, and groundwater. Statewide, no one should be drinking surface water without treatment. Surface water that is used for drinking should be tested and treated in accordance with state and federal requirements for drinking water systems. Public water systems are overseen by the State Water Resources Control Board's [Division of Drinking Water](#).

As part of its [environmental analysis](#) for the Project, the State Water Board evaluated potential impacts to water supply. That analysis indicated that water downstream of the dams could be unsafe for drinking in the short term, and the board required KRRC to mitigate for drinking water supply impacts to any public water system below the dams that requested it. Only two public drinking water systems were identified downstream of the dams: the Cal-Trans Collier Rest Area along Interstate 5 and the Klamath Community Service District in Del Norte County. KRRC is currently providing replacement water for the Cal-Trans Collier Rest Area. Additionally, according to the KRRC, the Klamath Community Service District is not using the Klamath River for its drinking water supply. Given this mitigation and lack of use, public drinking water systems are not being affected by the temporary water quality issues in the Klamath River. Additionally, as discussed further below, the sediment release is not anticipated to compromise downstream groundwater wells.

Some water users have requested that the KRRC evaluate their non-drinking water supplies for potential water quality/supply issues associated with reservoir drawdown. That evaluation is underway.

What are the human health effects of dam removal-related sediment on recreational uses of the Klamath River?

River recreation generally involves limited physical (skin) contact with, and may result in limited ingestion of, river water. Based on current conditions and available water quality data (collected by Siskiyou County in January 2024 and by the Klamath River Renewal Corporation (KRRC) under its water quality permit), it is unlikely that recreational activities in the Klamath River will lead to adverse health effects from dam removal-related sediment in the water. Nonetheless, as a general rule, ingestion of untreated river water should always be avoided and water safety should be observed.

Environmental compliance documents for the dam removal project indicated that reservoir drawdown and dam removal activities would release sediment that has



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accumulated over time behind the dams, with the largest sediment release expected to occur immediately following reservoir drawdown in early to mid-2024. The board will continue to review available water quality data as sample results are made available.

What actions are being taken to evaluate and protect broader Klamath River water quality?

Short-term impacts to water quality were expected, even with mitigation measures in place. These issues are anticipated to diminish over time, while the Project brings about long-term water quality improvements for the Klamath River.

The State Water Board's water quality certification for the dam removal requires water quality monitoring during reservoir drawdown, including: (1) continuous water quality monitoring for five parameters at nine locations from below Keno Reservoir to the Klamath Estuary; (2) monthly (and bi-monthly for suspended sediment concentrations) water column grab samples for 16 parameters, generally at nine locations between below Keno Reservoir and the Klamath Estuary; and (3) sediment grab samples that will be analyzed for 17 parameters, collected at 11 locations between Copco Reservoir and the Klamath Estuary following completion of reservoir drawdown.

Water quality data are available on the board's [Project webpage](#) and can be viewed by the public at any time. The KRRC's water quality monitoring plan and other plans that are being implemented to protect resources are available under "KRRC Permit Management Plans" on the [KRRC's website](#).

Could sediment from the dam removal leach metals and other substances into a groundwater well located downstream of the dams, along the Klamath River?

No. Metals in mobilized reservoir sediment are not expected to leach into groundwater wells. Sediments with higher concentrations of metals will be either mobilized into the ocean or stabilized in place, minimizing groundwater well exposure to sediment.

To address community concerns, the KRRC reached out to domestic well users near Project reservoirs in advance of reservoir drawdown and offered to test domestic wells to establish baseline data. The KRRC sent homeowners notices in August 2018, December 2018, and April 2022.

As a general rule, domestic well users should regularly test their wells for water quality due to the fact that there are many naturally-occurring constituents within the native soils that can be found in domestic wells. If you have questions or concerns about the water quality in your domestic well, we encourage you to visit the State Water Board, Division of Water Quality's Groundwater Ambient Monitoring and Assessment Program [well owner webpage](#) for additional resources.

Will additional flows be required to flush sediment downstream?

Following removal of the dams and stabilization of remaining reservoir sediments, natural sediment transport processes will occur during regular high flow events. There are no plans to generate additional flows to flush sediment associated with the dam removals.

While curtailment regulations exist for the Scott River and Shasta River watersheds to support minimum flows for salmon and steelhead in those watersheds, no curtailments are planned to support flushing sediment out of the Klamath River system as part of this Project.

The United States Bureau of Reclamation (Bureau) controls Klamath River flow releases from the Klamath Irrigation Project, which is located upstream of the dams being removed. Tributaries along the Klamath River also provide limited inputs to the Klamath River. The Bureau sets its flows in the Klamath River to protect salmonids, maintain lake levels in Upper Klamath Lake for sucker fish species, and provide water for irrigation in the upper Klamath Basin.

Are there environmental concerns associated with dam removal?

Decades were spent studying potential environmental impacts associated with removal of the four dams on the Klamath River. This work was completed by a wide range of parties including the KRRC (entity responsible for dam removal), state and federal resource agencies, and Native American Tribes. The information and findings from this effort are detailed in numerous reports, including the State Water Board's Environmental Impact Report (EIR) (available on the board's [Project webpage](#)) and the Federal Energy Regulatory Commission's Environmental Impact Statement (EIS).

Short-term impacts to water quality and fish were anticipated and analyzed in the Project's EIR, EIS, and other reports. However, the analysis concluded that the long-term benefits of the dam removals to Klamath River water quality, salmon populations, and overall river system health far outweigh the short-term impacts.

The primary short-term water quality impacts are being caused by the release of sediment that accumulated behind the dams. The drawdown of reservoirs and removal of the dams are flushing sediment downstream and out to the Pacific Ocean. Approximately 15.5 million cubic yards of sediment accumulated behind the four dams over the last half century. Large amounts of this sediment were expected to enter the Klamath River during and immediately following the drawdown and removal of the dams. The Project was designed to occur during the wet season when natural processes would typically transport sediment downstream during high flow events. This sediment is largely comprised of fine sediment and dead algae that remains suspended in water and will be carried out of the Klamath River system into the ocean. Remaining sediment in the reservoir footprints is being stabilized through restoration actions, such as revegetation.

The KRRC is actively sampling the Klamath River's water quality and implementing measures to protect Klamath River drinking water and surface water uses, as needed. The KRRC is required to collect and analyze Klamath Riverbed sediment samples for 1-2 years following the completion of reservoir drawdowns to assess the sediment remaining for toxins.

Following dam removal and stabilization of remaining reservoir sediments, natural sediment transport processes will continue to occur during high flow events. The KRRC has already begun bank stabilization work, including replanting sections of riverbanks, and is planning bank reinforcement work this summer.

What are the effects of the added sediment on aquatic life, particularly coho and Chinook salmon?

Short-term impacts associated with the release of sediment were anticipated as part of this restoration effort, especially during the flushing of sediment downstream during the drawdown of the reservoirs and removal of the dams. There are a number of mitigation measures to help reduce the short-term impacts (although some level of impacts are unavoidable). The effect of increased amounts of sediment on salmon populations is expected to be temporary. Recognizing the Project's long-term benefits to salmon populations, several federal and state agencies permitted the Project despite these short-term impacts.

The board modeled the effects of increased sediment loads on migrating salmon to assess how salmon would respond to the levels and duration of suspended sediment associated with removal of the four dams. Modeling indicated that, even in the worst-case scenario, temporarily increased sediment levels would result in less than 10 percent fish mortality. Based on the preliminary water quality monitoring report provided by the KRRC on March 15, 2024, turbidity levels peaked below Iron Gate Dam on February 24, 2024 with a measurement of 912 FNU (FNU: formazin nephelometric units, which is a methodology for measuring turbidity). Turbidity measurements have since dropped to 189 FNU (February 29, 2024) below Iron Gate Dam. These readings are trending as the analyses in the environmental documents predicted.

Additional factors and measures that help reduce the impacts associated with increased sediment on salmon include:

- Reservoir drawdown and associated sediment excavation were timed to minimize impacts to coho and Chinook salmon populations in the Klamath River as a whole.
- High winter flows help flush sediment out of the Klamath River.
- Higher wintertime flows from tributaries also help dilute sediment levels in the mainstem Klamath River.
- Tributaries provide direct refuges for salmon.
- Mitigation measures ensure tributary connectivity with the mainstem Klamath River immediately below Iron Gate Dam.
- Fish rescue and relocation actions implemented by the KRRC in sections of the Klamath River prior to the start of reservoir drawdown.

Additional information on sediment impacts to fish and mitigation measures and factors considered can be found in the Aquatic Resources Section of the [state's environmental document](#) for the Project.

How was information related to impacts of the Project shared with the public for input before dam removal?

There were numerous opportunities for public input as part of the State Water Board's water quality permitting (referred to as a water quality certification or certification) and environmental analysis (EIR) process. Such opportunities included:

- A Notice of Preparation (NOP) issued in December 2016 for an Environmental Impact Report (EIR); three public meetings on the report were held in Arcata, Sacramento, and Yreka. Over 1,400 comments were received.
- A draft water quality permit (water quality certification) was released for public review and comment in June 2018. Over 40 comment letters were received.
- A draft EIR was released for public comment in December 2018, followed by four public meetings held in Yreka, Arcata, Orleans, and Sacramento. Over 2,500 comments were received.
- Portions of the draft EIR were recirculated for additional public review and comment in December 2019. Over 440 public comments were received.
- A final EIR and water quality permit were issued in April 2020, with a certification amendment issued in November 2022.

Additionally, the Federal Energy Regulatory Commission (FERC) conducted a federal environmental review process for the Project to comply with its National Environmental Policy Act (NEPA) responsibilities. The most recent environmental review and decision followed an additional public environmental review process by FERC in 2007 and by United States Bureau of Reclamation and the California Department of Fish and Wildlife in 2012. The most recent public process benefited and built upon the public input and analysis gained from these prior efforts.

Comments and information gained through these efforts were considered and informed the Project's water quality requirements. Board staff also presented at Siskiyou County Board of Supervisors' meetings, met with tribes in formal and informal tribal consultations, and communicated with interested parties through emails and phone calls.

Additionally, the board shared information through its email distribution list for the Project and posting public comments, frequently asked questions and other public materials on its [Project webpage](#).

What is the State Water Board's role in this Project? What is the Regional Water Board's role?

The State Water Board is a California state agency responsible for protecting water quality and allocating surface water rights. For this Project, the State Water Board is responsible for issuing a water quality permit that is referred to as a water quality certification or certification as well as serving as the California Environmental Quality Act (CEQA) lead agency. Certifications include requirements for the protection of water quality and beneficial uses of water by ensuring the Project complies with water quality standards and other requirements of state law.

The North Coast Regional Water Board is responsible for establishing water quality standards for its region in a water quality control plan (often referred to as a basin plan). The basin plan includes a restoration policy that allows for certification of restoration projects "that result in significant and sometimes unavoidable impacts (including temporary exceedances of water quality objectives) if it is shown that the project will result in long-term protection of beneficial uses and water quality."



Frequently Asked Questions

More information on the board's website at:

https://www.waterboards.ca.gov/waterrights/water_issues/programs/water_quality_cert/ower_klamath_ferc14803.html

(This fact sheet was last updated March 26, 2024.)