

TOP 6 CALIFORNIA

DAMS OUT

CALIFORNIA TROUT



FISH · WATER · PEOPLE

2023 UPDATE



FOREWORD

California has more than 1,400 large dams and tens of thousands of smaller impoundments on its rivers and streams. These dams have created barriers to fish movement, altered natural seasonal flow patterns in rivers, and are a primary cause of native fish population declines in the state. While dams will continue to play an essential role in managing water in California, many aging dams have outlived their functional lifespan. These include dams with sediment-filled reservoirs, those with non-functional hydropower facilities, and those at risk of failure, threatening downstream communities and ecosystems. The removal of such dams has the potential to bring substantial environmental benefits, while also supporting the economic and recreational activities associated with free-flowing rivers.

However, the removal of dams is time consuming, expensive, and can be politically charged. That is why a science-based approach for prioritizing dams for removal is critical. In this report, CalTrout has identified 6 dams that are ripe for removal. The selection of these dams was informed by the review of past scientific studies, understanding of their impact on salmon and steelhead, awareness of their regulatory context, and sustained engagement with the communities in which of the dams are located. By strategically pursuing opportunities for dam removal where economic, social, and environmental interests strongly align, CalTrout offers a model for restoring the health of the state's rivers for the benefit of fish and people.



Foreword by Ted Grantham,
Professor of Cooperative
Extension, UC Berkeley and
former CalTrout/PPIC Fellow.

INTRODUCTION

The 1930s to the 1960s was an era of large-scale hydroelectric dam building across the United States. The construction of these dams was important for electricity production and flood control, but today, many have outlived their useful lifespans. We have now entered a new era in which we must reevaluate the utility of aging infrastructure—and take down those dams that are no longer useful or safe.

Dam removal is far from unprecedented. Between 1912 and 2020, 1797 dams were removed in the United States. In 1999, the dam removal movement began with the removal of Edwards Dam in Maine. In 2011, the giant Elwha River dams in Washington state came down. In 2015, the 106-foot tall San Clemente Dam on the Carmel River was removed. The removal of these dams, and others that have outlived their useful lifespans, can have tremendous benefits for fish populations, watershed health, and people.

Water supply and storage in California are crucial today in the face of extreme drought and widespread wildfires. However, maintaining a large number of dams and their subsequent reservoirs is not always the best option.

In some California watersheds, when large dams were built following the construction of smaller dams, this created a redundancy: more storage space than water exists in these watersheds. In this situation, more water is lost to evaporation from the reservoir surfaces than would be lost if the water storage were concentrated to fewer reservoirs. This means that, for some watersheds, the most effective way to supply and store water is to decommission some of those dams.

Instead of focusing solely on dams, there are many other options for water storage. Recycling water, including treated sewage, graywater, or stormwater can help meet non-potable needs such as irrigation and fire protection. Groundwater recharge is another water supply solution.

Many dams in California do provide benefits to Californians including flood control, water supply, and hydroelectric power. However, the dams included in this report have been carefully selected as dams that have outlived their functional lifespans. The cost of leaving these dams in place far outweighs the ecosystem and economic benefits of removal.

California Trout’s 2022 **Top 6 California Dams Out Report** highlights six dams that are ripe for removal and that must, for the health of the ecosystem and communities around them, come out. The six dams were selected by analyzing information found in several studies to assess the overall benefits that removing the dam would present to native fish, water, and people.

Dams were selected based on the following criteria:

- The dam blocks access to habitat for salmon and steelhead species listed as critical or high concern in the State of Salmonids II Report (written by UC Davis and California Trout scientists).
- The dam no longer serves its original purpose, whether generating hydroelectric power, increasing water supply, or managing flood control, and may now pose a public safety threat.
- A dam removal opportunity is present.
- The primary purpose of the dam is not flood control or water supply for people.



Dams that are part of the State Water Project or federal Central Valley Project were not considered for inclusion in this report due to their vital role in California’s water supply system. Similarly, dams designed to protect people and property from catastrophic floods also were not considered.

The report highlights removal opportunities, such as dam license renewal or new funding opportunities to support the removal process, and status of work being conducted to that end. It also identifies partners involved in removal efforts and provides opportunities for the public to take action on behalf of each dam listed.



Top: Eagle Canyon Dam. Photo: Damon Goodman. Above: Scott Dam. Photo: Darren Mierau

“By strategically pursuing opportunities for dam removal where economic, social, and environmental interests strongly align, CalTrout offers a model for restoring the health of the state’s rivers for the benefit of fish and people.”

– Ted Grantham, Professor of Cooperative Extension, UC Berkeley and former CalTrout/PPIC Fellow



CalTrout begins work on Eagle Canyon barrier removal. Photos: Pusher

Sources for Introduction: 1. https://watershed.ucdavis.edu/files/biblio/Null%20et%20al_JEMA_Optimizing%20the%20dammed.pdf 2. <https://www.kcet.org/redefine/5-reasons-dam-removal-still-makes-sense-despite-the-drought> 3. <https://www.americanrivers.org/threats-solutions/restoring-damaged-rivers/dams-wont-solve-water-needs/>

KLAMATH DAMS

OWNER: Klamath River Renewal Corporation

COMPLETED: 1922 (Copco #1), 1925 (Copco #2), and 1964 (Iron Gate)

LOCATION: Klamath River in California and Oregon

FISH SPECIES AFFECTED: 7 species including: Upper Klamath-Trinity Rivers spring-run Chinook salmon, SOS II status: CRITICAL; Southern Oregon/ Northern California Coast coho salmon, SOS II status: CRITICAL; Klamath Mountains Province summer steelhead, SOS II status: CRITICAL

SIZE: Iron Gate H 173 ft./L 740 ft., Copco #1 H 126 ft./L 415 ft., Copco #2 H 33 ft./L 278 ft.

CAPACITY: Iron Gate 58,000 acre ft., Copco #1 46,900 acre ft., Copco #2 73 acre ft. (diversion dam)

STAKEHOLDERS: Yurok Tribe, Karuk Tribe, Klamath Tribes, Trout Unlimited, American Rivers, Pacific Coast Federation of Fisherman’s Association, Northern California Federation of Fly Fishers, Salmon River Restoration Council, Sustainable Northwest, state and federal agencies, and more. See the full list of over 40 stakeholders at caltrout.org/DamsOut

LAND ACKNOWLEDGEMENT: The Klamath dams are on the ancestral lands of the Yurok, Karuk, and Klamath tribes. The Yurok reservation is located at the mouth of the Klamath River and is today one of the largest tribal reservations in California. The Karuk tribe lives in its ancestral homelands along the middle section of the Klamath River. The Klamath tribes are located in southern Oregon in the Klamath basin, above the dams.

Removal of four aging hydroelectric dams on the mainstem Klamath River, which flows through parts of Southern Oregon and Northern California has been the subject of national attention for nearly two decades. Central to the dam removal effort are over 40 organizations, irrigation districts, Tribal leadership, and Tribes support taking the dams out. The Yurok, Karuk and Klamath River Tribes have led the effort to restore part of their cultural heritage and subsistence fishing for salmon and lamprey. Removal of the four Klamath River dams will be the largest dam removal project in the history of the United States and the largest salmon restoration project ever.

THE PROBLEM

The Klamath dams block salmon and steelhead from reaching more than 300 miles of spawning and rearing habitat in the upper basin. Historically, the Upper Klamath-Trinity Rivers spring-run Chinook salmon were the most abundant run on the river. Today less than 3% remain, in large part because they cannot access historical habitat in the Upper Klamath Basin. Declining fish populations have caused immense suffering for the Tribes whose lands the Klamath flows through.

While there is broad support for the removal of these defunct dams, there is some local opposition to the project, including from landowners around the current reservoirs and some local ranchers and farmers.



Top: Copco #1. Above: Copco Lake. Photos: Mike Wier

CURRENT SITUATION

A non-profit organization, the Klamath River Renewal Corporation (KRRC), was formed in 2016 to take ownership of four PacifiCorp-owned dams (Copco #1, Copco #2, Iron Gate and JC Boyle), and to oversee the dam removal process. That work will include restoring formerly inundated lands and implementing required mitigation measures in compliance with all applicable federal, state, and local regulations. In 2022, FERC approved a license transfer to KRRC, transferring responsibility from the previous project owner, PacifiCorp.

KRRC worked to secure permits, develop deconstruction plans, secure bids for the work of removing dams and restoring the lands under the reservoirs, and contract with a design-build firm to run the majority of the deconstruction project.

In March 2023, KRRC officially broke ground on removal activities for the Klamath River dams. Crews began constructing access roads to allow access for heavy equipment required for further construction activities. Existing bridges will need to be reinforced, and new bridges will need to be constructed to enable construction equipment access. This is the beginning of a series of enabling construction projects that will take up the remainder of 2023 as crews prepare for drawdown of the reservoirs in January 2024 and the subsequent removal of the dams during the summer and fall of 2024.

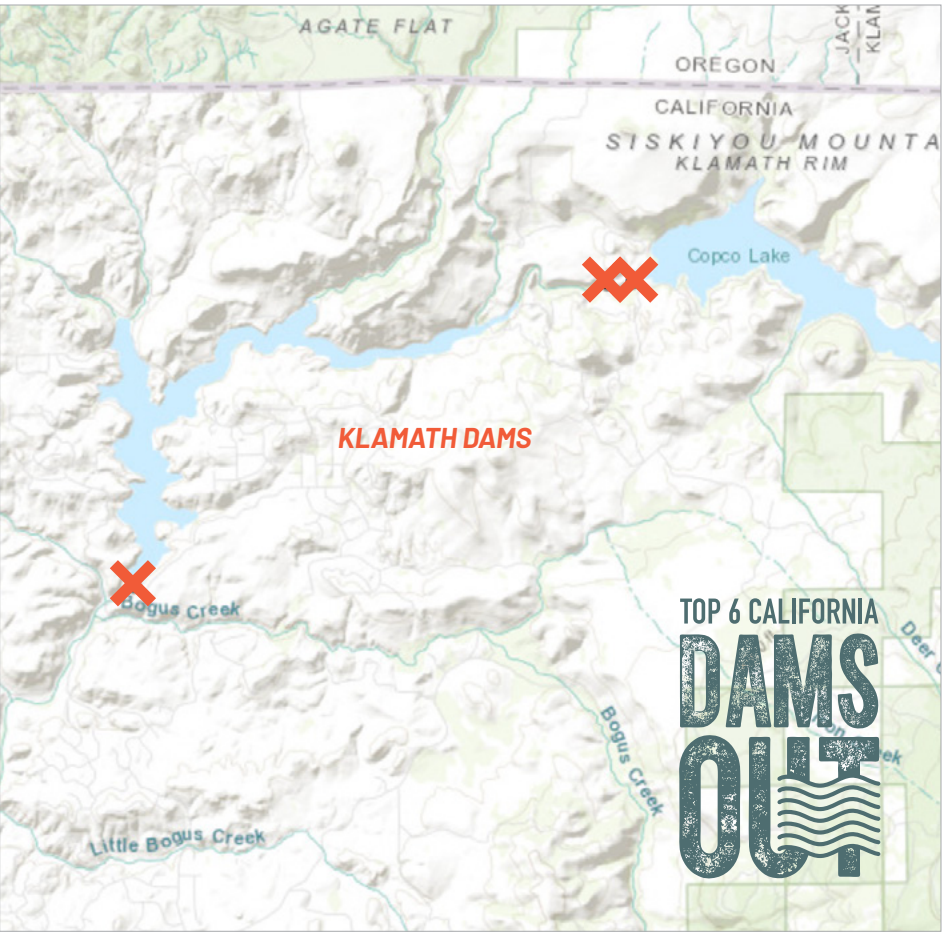
Resource Environmental Solutions (RES) is leading restoration activities to help jumpstart the recovery of the landscape. Since 2019, RES has been on the ground with Tribal partners preparing for restoration. To date, they have collected 17 billion native seeds sourced from the Klamath Basin or from plants grown in the Klamath Basin. As they continue to collect seed, they are preparing tributaries and habitat upstream of the dams for the impending influx of fish.

Between June and September 2023, the first and smallest dam, Copco #2, will come out. In January 2024, drawdown of the reservoirs will initiate. By the end of 2024, all four dams will be removed, and restoration work will begin and continue well beyond 2024.

POTENTIAL FOR REMOVAL

Removal processes have begun, and all four dams are slated to be removed by the end of 2024. As dam removal proceeds, CalTrout will continue our active involvement in the project. In addition to holding a board seat on the Klamath River Renewal Corporation, our teams also conduct baseline data studies in the basin with UC Davis and implement restoration projects on the Scott and Shasta rivers, the two largest tributaries to the Klamath River. Following dam removal, CalTrout Regional Director Damon Goodman will lead a study to answer the fundamental question, “how many fish repopulate the Klamath after dam removal?” by using sonar fish tracking technology.

Removing the Klamath dams will be the largest dam removal project in the United States, restoring river health and fish abundance by opening around 400 miles of habitat for fish that has been inaccessible for over 100 years. Dam removal will also provide social justice to tribal people who have relied on salmon for subsistence and who have lived along the river since time immemorial.



Iron Gate Dam. Photo: Mike Wier

TAKE ACTION

- Subscribe to the Klamath River Renewal Corporation newsletter on their website klamathrenewal.org
- Follow KRRC on Facebook for the latest updates facebook.com/klamathrenewal

EEL RIVER DAMS

OWNER: Pacific Gas & Electric

COMPLETED: 1921

LOCATION: Upper Mainstem Eel River, 20 miles northeast of Ukiah, CA

FISH SPECIES AFFECTED: California Coast Chinook salmon, SOS II status: HIGH; Southern Oregon/Northern California Coast coho salmon, SOS II status: CRITICAL; Northern California summer steelhead, SOS II status: CRITICAL; Northern California winter steelhead, SOS II status: MODERATE

SIZE: Cape Horn Height: 63 ft., Length: 515ft. Scott Height: 138 ft., Length: 850 ft.

CAPACITY: Total designed capacity: 80,600 acre ft.

STAKEHOLDERS: PG&E, Sonoma Water, Mendocino County Inland Water and Power Commission, Round Valley Indian Tribes, Humboldt County, Wiyot Tribe, CalTrout, Friends of the Eel River, Trout Unlimited, The Nature Conservancy, Russian Riverkeepers, California Hydropower Reform Coalition

LAND ACKNOWLEDGEMENT: Round Valley Indian Tribes and the Wiyot Tribe



Cape Horn Dam. Photo: Rob Badger

Located on the Eel River 20 miles northeast of Ukiah, Scott Dam and Cape Horn Dam are more than 100 years old. These two dams are part of PG&E’s Potter Valley Project. In addition to the dams, the Potter Valley Project includes a diversion tunnel that moves water out of the Eel River watershed and into the East Branch of the Russian River, and a powerhouse. The Project’s owner, Pacific Gas and Electric Company (PG&E), has allowed its license for the operation to expire and is currently working with federal regulators to develop a decommissioning plan for the facilities.

THE PROBLEM

Fish populations in the Eel River are severely depressed. Although the Eel River once boasted some of the largest salmon runs in California, the river’s salmon and steelhead populations are all listed as threatened under the Federal Endangered Species Act. Water quality throughout the Eel River is listed as impaired under the Clean Water Act for excessive sedimentation and high temperatures. This poor water quality indicates negative impacts on the region’s Tribes and other water users.

The Tribes in the region have also suffered drastically reduced access to their fishery as well as destruction of many cultural practices from the damage caused by the Potter Valley Project to the Eel River ecosystem. The river’s mainstem and estuary are also negatively affected by floodplain connectivity and habitat loss from agricultural land conversions, the introduction of non-native pikeminnow, and poor water quality.

The 63-ft. tall Cape Horn Dam has a poorly functioning fish ladder, and 12 miles upstream from Cape Horn Dam, the 130-ft Scott Dam, which creates Lake Pillsbury, has no fish passage and thus blocks 288 miles of potential salmon and steelhead rearing habitat. Scott Dam is the largest barrier to native salmon habitat on the north coast of California, and it blocks access to high elevation, climate change resilient habitat in Mendocino National Forest and Snow Mountain Wilderness.

CURRENT SITUATION

The Eel represents perhaps the greatest opportunity in California to restore an entire watershed and abundant populations of wild salmon and steelhead. PG&E has allowed its license for the operation to expire and is currently working with federal regulators to develop a decommissioning plan for the facilities.

CalTrout recognizes a unique opportunity to steer the future of the Eel River toward robust fisheries and a healthy watershed by removing both Eel River dams. We also recognize the opportunity to reverse the long-lasting impacts to Native American Tribes from a century and a half of habitat degradation and other impacts. Over the past three years CalTrout, water users including Sonoma Water and Mendocino County Inland Water and Power Commission, Round Valley Indian Tribes, and Humboldt County have worked within the FERC relicensing process to find a proactive, science-driven approach to resolving the fate of this outdated water infrastructure.

The Two-Basin Solution Partners worked toward a project developed, in part, by Congressman Jared Huffman’s Ad Hoc Committee – one that would maintain a winter diversion of Eel River water to the Russian River while restoring migratory access to habitat above the dams. However, the Partners were unable to raise the substantial funds needed to begin work on the project and PG&E was unsupportive. It is clear now that the

only path forward for a two-basin solution is via the license surrender and decommissioning process where FERC will order PG&E to submit a plan to decommission the project. PG&E will remain liable for the project and all associated costs until FERC says decommissioning is complete.

In 2023, PG&E announced that the dams are seismically unsound and that they will permanently reduce the amount of water stored behind Scott Dam. This development makes it clear that maintaining the status quo for the Potter Valley Project is no longer an option and this could accelerate dam removal. CalTrout along with Eel River conservation, tribal, and other NGO partners will continue to work together to ensure that a free flowing Eel River is the ultimate outcome of the decommissioning process and that dam removal happens expeditiously.

POTENTIAL FOR REMOVAL

CalTrout believes that our recently completed Feasibility Study and Phase 2 studies (www.pottervalleyproject.org) demonstrate that dam removal coupled with a run-of-the-river winter diversion can meet the needs of water users and conservation interests, while enhancing the ecological resilience of the Eel River. From analyzing water supply needs to evaluating multiple fish passage technologies, these Studies have provided foundational information for a negotiated settlement among all the interested parties and PG&E. A recent economic study also shows that dam removal will benefit the local economy.

Resolving the fate of PG&E’s Potter Valley Project in a timely manner will benefit the environment, local economies, and also improve the long-term water security for Russian River water interests.



Scott Dam. Photo: Kyle Schwartz

TAKE ACTION

- Visit pottervalleyproject.org for more information
- Subscribe to CalTrout’s newsletter to receive updates on the project

MATILIJA DAM

OWNER: Ventura County Watershed Protection District

COMPLETED: 1947

LOCATION: Ventura River, north of Ojai, CA

FISH SPECIES AFFECTED: Fish species affected: Southern California steelhead, SOS II status: CRITICAL, federally listed endangered species

SIZE: 168 ft., Length: 620 ft.

CAPACITY: Designed: 7,018 acre-ft. Current capacity: less than 500 acre ft. Projected capacity by 2020: 0 acre ft.

STAKEHOLDERS & PARTNERS: Ventura County Watershed Protection District, California Department of Fish and Wildlife, Matilija Coalition, Patagonia, CalTrout, State Coastal Conservancy, Surfrider Foundation, National Marine Fisheries Service, Wildlife Conservation Board, Pew Charitable Trust, Resource Legacy Fund, Ojai Valley Land Trust

LAND ACKNOWLEDGEMENT: Matilija Dam is on the ancestral lands of the Chumash Tribe including the Barbareño Band of the Chumash Tribe and the Barbareño/Ventureño Band of Mission Indians.



Matilija Dam. Photo: Mike Wier

Matilija Dam, located in the Ventura River watershed on Matilija Creek north of Ojai, is a concrete arch dam built in 1947. Infamous for the scissors painted on the dam by graffiti artists in 2011 that have become an iconic symbol for dam removal, it was originally designed for water storage and flood control. Removing Matilija Dam will restore a free-flowing river from the headwaters to the ocean, re-establish access for steelhead trout to required habitat, revitalize a healthy, native ecosystem, and expand opportunities for outdoor recreation.

THE PROBLEM

The reservoir behind Matilija Dam is nearly completely clogged with sediment, significantly reducing storage capacity to the point that the dam is rendered non-functional. With no fish ladder or bypass structure present, it is a complete barrier to the migration of endangered Southern California steelhead. The dam also causes degraded water quality, an altered flow system, and a disorder to the sediment flows towards the lower watershed, estuary, and beaches, which need sediment to replenish themselves. Matilija Dam has impounded approximately eight million cubic yards of sediment, and the physical condition of the 70+ year old dam continues to deteriorate.

Historically inhabiting the Ventura River watershed, Southern California steelhead are an incredibly important species because they evolved in seasonally disconnected river systems and are an adaptable species, able to survive in warmer waters than other steelhead populations. With only an estimated 500 individuals remaining, this unique life history trait makes them a particularly valuable population to protect in the face of climate change and shifting weather patterns.

Removal of Matilija Dam will reconnect access for steelhead to 17 miles of spawning, rearing, and foraging habitat above the dam. Reconnecting this habitat will help bolster species-wide recovery for Southern steelhead across Southern California.

CURRENT SITUATION

Spanning 20 years of effort, a broad coalition of community groups and resource agencies have been working together to develop a comprehensive strategy to restore the Ventura River and remove Matilija Dam.

The Matilija Dam Ecosystem Restoration Project costs millions of dollars and to date, there’s been a lack of dedicated funding. Other factors, such as determining the appropriate release strategy for sediment build-up behind the dam, modifying downstream infrastructure, etc. have all added to the challenges of dam removal. Ventura County is preparing a Matilija Dam removal plan with anticipated completion by the end of 2024. The project was awarded \$1.73 million from California Department of Fish and Wildlife (CDFW) to support the immediate kick-off the final design and planning effort. In 2022, the first major component of this project was fully constructed with the Santa Ana Bridge replacement downstream of the dam. During a recent flood event, the new expanded bridge size improved the ability of the Ventura River to let sediment flow and handle increased flood waters. The new bridge also allows for fish migration opportunities for Southern steelhead.

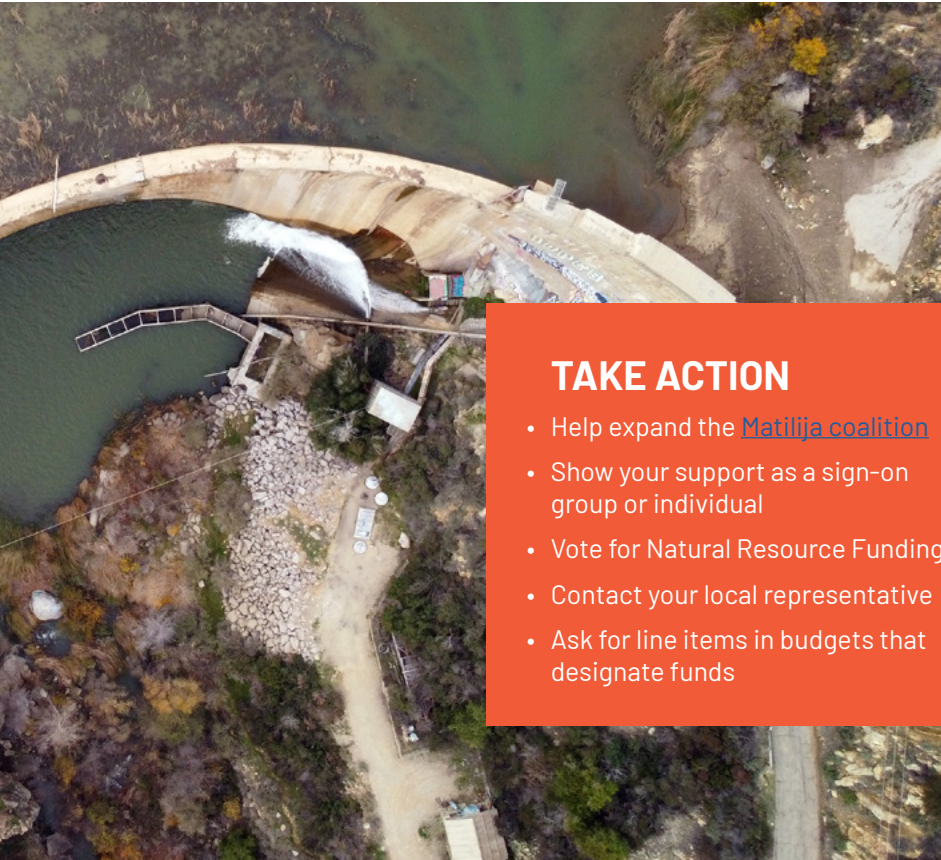
Ventura County also secured \$8.5 million from the Wildlife Conservation Board (WCB) to secure plans for updating downstream flood protection infrastructure.

Additionally, the county received \$2.1 million from the Coastal Conservancy and WCB to fund Camino Cielo Bridge final designs and planning. This part of the project will replace an undersized box culvert with a full span bridge, achieving similar ecologic and community benefits as the Santa Ana Bridge replacement. The planning for this component is moving forward with hopes for construction in 2025. The Bureau of Reclamation also received an appropriation of \$1.5 million to provide technical assistance with the re-designs of the Roble Bypass Diversion Facility. This will be modernized to aid sediment transport in the new river system support.

We anticipate comment periods for the Public Draft of the Matilija Dam Removal Environmental Impact Report in late 2023 and will need public support then. We also will need state agencies, elected officials, public stakeholders, local city and county government to clearly speak up for the public, state-wide, in support of this project and must continue to prioritize all components to move into implementation.

POTENTIAL FOR REMOVAL

With no uncertainty, Matilija Dam is set to come down; with each of the construction projects downstream, we are creating the pathway to achieve total dam removal. Ventura County officially made the decision in 1998 to officially remove the dam. In March 2016, the group overseeing design alternatives voted in favor of a removal plan. Two holes at the base of the dam will be bored through to remove and transport impounded sediment. This concept represents a “natural transport” plan that concentrates the natural downstream movement of the built-up sediment. This will minimize ecological impact downstream. Current projections estimate that once the bore holes are opened, complete dam removal and a free-flowing river will be achieved in two to five years.



Matilija Dam from above. Photo: Bernard Yin

TAKE ACTION

- Help expand the [Matilija coalition](#)
- Show your support as a sign-on group or individual
- Vote for Natural Resource Funding
- Contact your local representative
- Ask for line items in budgets that designate funds

RINDGE DAM

OWNER: California Department of Parks and Recreation (State Parks)

COMPLETED: 1924

DECOMMISSIONED: 1967

LOCATION: Malibu Creek in Malibu, CA

SIZE: Height: 100 ft.

CAPACITY: 600-acre ft. completely filled with sediment

FISH SPECIES AFFECTED: Southern California steelhead, SOS II status: CRITICAL, federally listed endangered species

STAKEHOLDERS: CA Dept of Parks and Rec, Santa Monica Mountains National Recreation Area, Santa Monica Mountains RCD, City of Malibu, Mountains Restoration Trust, California Trout, Surfrider, Army Corps of Engineers, National Marine Fisheries Service, CA Department of Fish and Wildlife, Las Virgenes Municipal Water District

LAND ACKNOWLEDGEMENT: Rindge Dam is located on the traditional lands of the Pipimaram (Fernandeño Tataviam), mitsqanaq'n (Ventureño Chumash) and Tongva (Gabrielino) people.

The 100-foot-tall Rindge Dam on Malibu Creek is located in Malibu Creek State Park in the Santa Monica Mountains, about three miles upstream from Southern California's Malibu coastline. Construction of the concrete dam and spillway structure was completed in 1926 on the Rindge family property and provided water for irrigation and household use in Malibu. The reservoir filled entirely with sediment by the 1940s, and the dam was decommissioned in 1967. It was purchased shortly thereafter by State Parks and is now part of Malibu Creek State Park.

THE PROBLEM

Since it was originally constructed in 1926, Rindge Dam has altered the geomorphic, riparian, and aesthetic character of Malibu Creek.

The dam has trapped approximately 780,000 cubic yards of sediment naturally destined for the coast, where it would have supported beach and nearshore habitats. The reservoir behind Rindge Dam filled with sediment less than 30 years after its construction, and it was subsequently decommissioned in 1967.

Below Rindge Dam, the lower three miles of Malibu Creek are designated critical habitat for the federally endangered steelhead. The dam blocks steelhead access to approximately 18 miles of high-quality spawning and rearing habitat in the creek and its tributaries.



Malibu Creek. Photo: Bernard Yin

CURRENT SITUATION

The removal of Rindge Dam represents a unique opportunity for systemic and sustainable ecological restoration in Southern California, a highly urbanized area. Due to its lack of function as a water storage facility, Rindge Dam is deemed obsolete and has been the subject of removal planning for decades. While there is little disagreement about the need to remove Rindge Dam, progress has been incremental given science and engineering complexities. The dam removal process was formalized in 1992 when the U.S. House of Representatives commissioned the Malibu Creek Ecosystem Restoration Feasibility Study, which requested a solution to improve the Malibu Creek watershed and Malibu shoreline. The U.S. Army Corps of Engineers and California Department of Parks and Recreation (State Parks) co-led this study to evaluate opportunities for ecosystem restoration that would improve aquatic and riparian habitat connectivity and restore the transportation of natural sediment back to the coast.

The removal of Rindge Dam's concrete arch and spillway, plus the removal and/or modification of eight smaller upstream fish passage barriers, and the removal of approximately 780,000 cubic yards of impounded sediment has been selected as the Locally Preferred Plan (LPP) by State Parks and involved stakeholders.

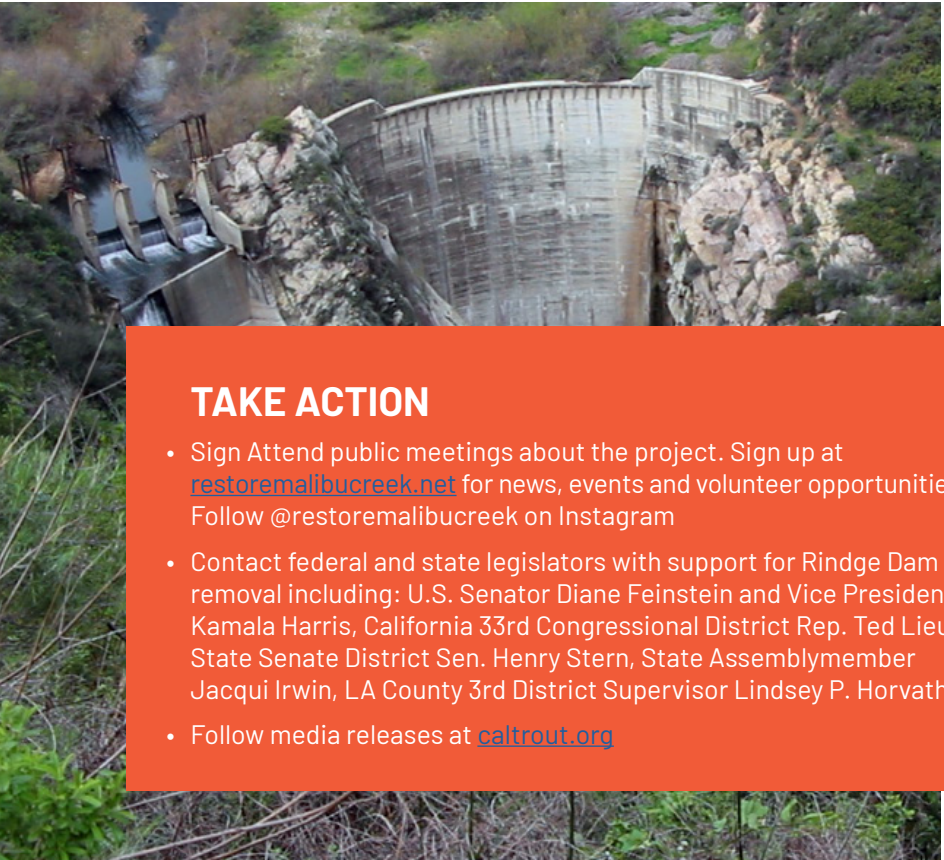
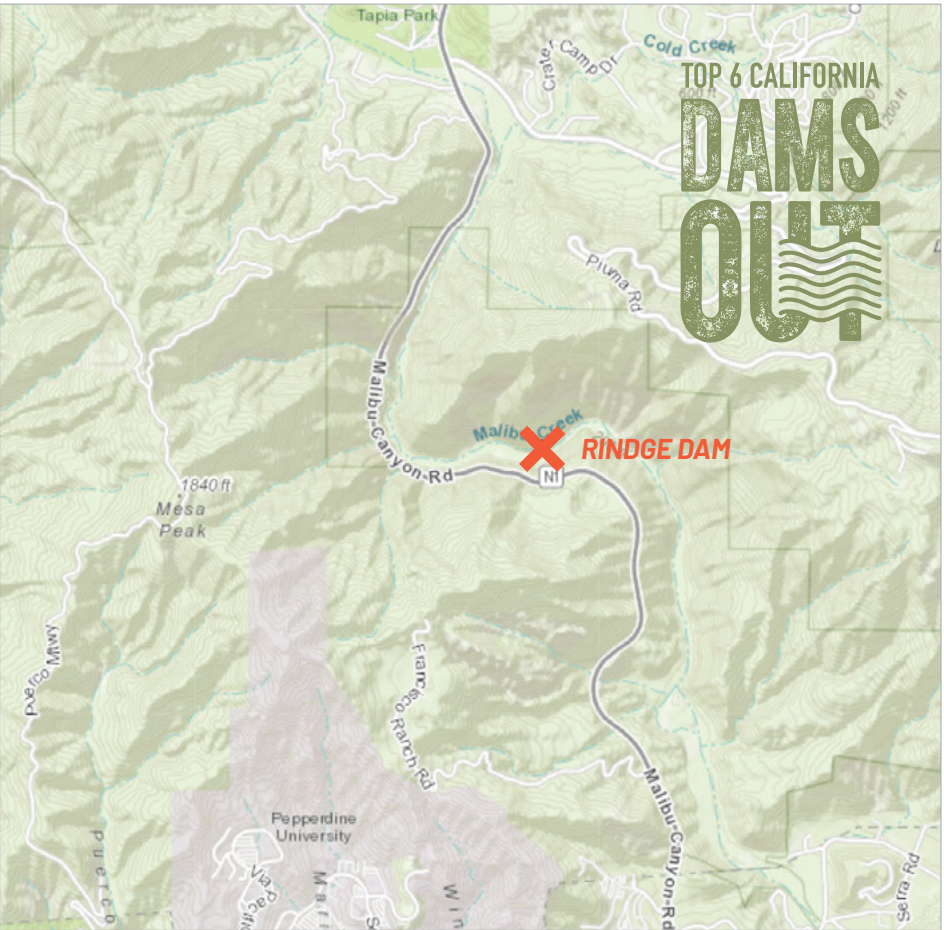
POTENTIAL FOR REMOVAL

[The Malibu Creek Ecosystem Restoration Study Final Integrated Feasibility Report](#), which was completed in November 2020 and signed by Commanding General Scott Spellmon in December 2020, called for the design phase of the project to begin in 2023.

The 2021-2022 California State Budget allocated \$12.5 million for California Department of Parks and Recreation (State Parks) to lead the design phase of this project over the next four years, which includes completing technical studies, dam removal designs, environmental permitting, and communication and public outreach. CalTrout is partnering with State Parks to lead communication and public outreach.

The transportation of sediment trapped behind Rindge Dam is a particularly complex element of the project. The Local Preferred Plan (LPP) has approximately one-third of the impounded sediment to be trucked to Ventura Harbor, placed on barges, and deposited along the Malibu shoreline and/or nearshore areas that have been starved of sediment since Rindge Dam was built. The remaining sediment will be deposited at a local landfill.

Based on the current schedule, Rindge dam is expected to be completely removed by 2035. Its removal will bolster endangered steelhead populations and healthy beaches, supporting both fish and people.



Rindge Dam. Photo: Mike Wier

TAKE ACTION

- Sign Attend public meetings about the project. Sign up at restoremalibucreek.net for news, events and volunteer opportunities. Follow @restoremalibucreek on Instagram
- Contact federal and state legislators with support for Rindge Dam removal including: U.S. Senator Diane Feinstein and Vice President Kamala Harris, California 33rd Congressional District Rep. Ted Lieu, State Senate District Sen. Henry Stern, State Assemblymember Jacqui Irwin, LA County 3rd District Supervisor Lindsey P. Horvath
- Follow media releases at caltrout.org

BATTLE CREEK DAMS

OWNER: Originally built by Keswick Power Company and now owned by Pacific Gas & Electric (PG&E)

COMPLETED: Hydroelectric development began in the early 1900’s with the first power produced in late 1901. PG&E acquired the facility in 1919 and the fifth and final powerhouse was added in 1980.

LOCATION: Battle Creek, tributary to the Sacramento River near Red Bluff, CA

FISH SPECIES AFFECTED:

- Anadromous:**
- Chinook Salmon—four recognized ecotypes including the federally listed Sacramento River winter-run (endangered) and Central Valley spring-run (threatened)
 - Rainbow Trout - including the federally listed Central Valley steelhead (threatened)
 - Pacific Lamprey

Native resident: California Roach, Hardhead, Kern Brook Lamprey, Sacramento Pikeminnow, Sacramento Sucker, Speckled Dace, Riffle Sculpin, Three-spine Stickleback, Tule Perch

SIZE: 12 to 56 ft. in height

CAPACITY: 3,827 acre-ft total (range by reservoir 15 to 1,827)

STAKEHOLDERS: Battle Creek Watershed Conservancy, U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, NOAA Fisheries, California Department of Fish and Wildlife, PG&E, California Bay-Delta Authority, California State Water Resources Control Board, The Nature Conservancy, California Wildlife Conservation Board, and community members

LAND ACKNOWLEDGEMENT: The Battle Creek Dams are located on the ancestral lands of the Yana and Nomlaki peoples.

The Battle Creek Hydroelectric Project, encompassing the Battle Creek Dams, was originally developed to support the power demand of mineral extraction in Shasta County including Iron Mountain Mine near Redding. The drainage was seen as an ideal drainage for hydropower generation due, in part, to its spring-fed water supply. The project included eight low-head dams within anadromous fish reaches, an additional four dams outside of the anadromous habitat, and a complex network of 20 diversion canals and pipelines.

THE PROBLEM

Historically, Battle Creek was home to a diverse assemblage of anadromous and resident fishes adapted to its specific hydrology and habitats. North Fork Battle Creek is spring-fed with water originating from the flanks of Mt. Lassen and provided ideal spawning, holding and rearing habitats for winter-run Chinook Salmon. This run, or ecotype, is unique to California and is one of the most endangered salmon.

South Fork Battle Creek is storm driven and has deep holding pools that provide habitats for spring-run Chinook Salmon which are listed as threatened on both the state and federal level Federally threatened anadromous Central Valley steelhead trout, Pacific Lamprey and a host of native resident fish species also reside in the drainage. The construction of the Battle Creek Project virtually eliminated access to 42 miles of anadromous habitat as well as connectivity for resident fish populations.



Coleman Dam. Photo: Damon Goodman

CURRENT SITUATION

There is new hope on the horizon to provide volitional passage to all historical fish habitats in Battle Creek and to restore its natural hydrograph. Over two decades of planning and restoration efforts are underway to balance the needs of native fishes with hydropower generation.

PG&E was in the process of renewing a federal hydropower license before its expiration on July 31st, 2026. However, in 2020, PG&E filed notice of its intent to not file an application for a new license and no other party filed a notice of intent to assume responsibility of the project. This will likely lead to project decommissioning meaning restoration efforts have now pivoted to preparing for project decommissioning and maximizing the benefit for native fishes.

CalTrout is a member of a team that is leading the way to restore Battle Creek. In 2021, CalTrout and others completed a project on North Fork Battle Creek to restore access to eight miles of winter-run Chinook Salmon habitat. This project created a foundation for future progress in Battle Creek and other rivers in California. See the full project description [here](#).

The USFWS Coleman National Fish Hatchery is the largest federal Chinook Salmon production facility in the lower 48 states. The hatchery’s fish production compensates for the loss of production in the Sacramento River caused by extensive hydropower and water delivery infrastructure.

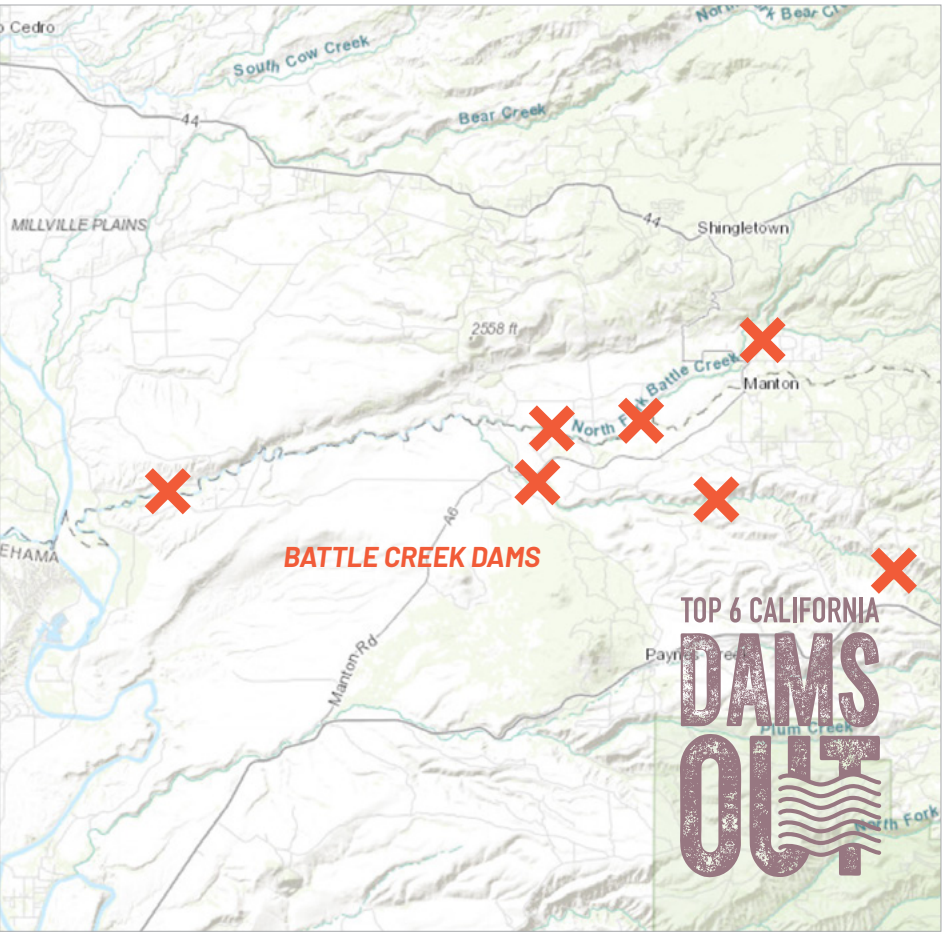
The hatchery is currently reliant on water delivery from the Battle Creek Hydroelectric Project. CalTrout, is working together with U.S. Fish and Wildlife Service, U.S. Bureau of Reclamation and others to find ways to secure the water supply needs of Coleman Hatchery independently from the project, paving the way for improved fisheries in Battle Creek.



North Fork feeder dam. Photo: Damon Goodman

POTENTIAL FOR REMOVAL

There is a high likelihood of completely restoring anadromous fish access to Battle Creek, and this will include multiple dam removals. Removal of several dams is already underway through the Battle Creek Salmon and Steelhead Restoration Project. The first dam removal occurred in 2010 with the removal in of Wildcat Dam on the North Fork which opened miles of anadromous fish habitat. Efforts are now in progress to initiate the removal of all dams in the South Fork as well as provide passage beyond the remaining North Fork Dams. With PG&E’s announcement to surrender their hydroelectric license, the potential for complete dam removal on the North Fork is promising.



North Fork feeder dam. Photo: Damon Goodman

TAKE ACTION

- Subscribe to CalTrout’s newsletter for project updates

SEARSVILLE DAM

OWNER: Stanford University

COMPLETED: 1892

LOCATION: Corte Madera Creek, San Francisquito Creek watershed in Portola Valley, CA

SIZE: 65 ft., Length: 275 ft.

CAPACITY: Total designed capacity: 1,840 acre ft., forming Searsville Reservoir, 90% filled with sediment

FISH SPECIES AFFECTED: Central California Coast steelhead, SOS II status: HIGH

STAKEHOLDERS: Beyond Searsville Dam Coalition, Friends of the River, American Rivers, California Department of Fish and Wildlife, CalTrout, National Marine Fisheries Service, Stanford University, San Francisquito Creek Joint Powers Authority, Grassroots Ecology, local landowners, downstream neighbors, and others.

LAND ACKNOWLEDGEMENT: Searsville Dam and the surrounding Stanford University grounds are on the ancestral land of the Muwekma Ohlone Tribe. Stanford and the Muwekma Ohlone Tribe acknowledge their history and ongoing relationship.



Searsville Dam. Photo: Mike Wier

Searsville Dam was built in 1892 and is located on San Francisquito Creek. The watershed supports a run of steelhead in several upstream tributaries and may have historically supported coho salmon as well. The dam does not provide potable water or hydropower. Its primary use is to provide irrigation water to the Stanford University campus and some flood control benefits to the downstream cities of Palo Alto, Menlo Park, and East Palo Alto.

THE PROBLEM

Searsville Dam has lost over 90% of its original water storage capacity with roughly 1.5 million cubic yards of sediment filling the reservoir. Without intervention, sediment is poised to completely fill it, burying any flood control benefits. The dam also poses an impassable barrier to federally-threatened steelhead attempting to migrate to mostly upstream historical spawning grounds in the San Francisquito Creek watershed that exists above the dam. Offspring of resident fish residing upstream of the dam are additionally unable to swim downstream to the Pacific Ocean. The dam is responsible for reducing water quality, and inhibiting natural ecological function, blocking the creek's ability to create important habitat, and blocking sediment that, if able to move downstream, could slow sea level rise and maintain the resilience of tidal marshes along the San Francisco Bay shoreline.

The biggest obstacles with dam removal are the sediment trapped behind the dam and the costs associated with ongoing management of the dam. Simply removing the dam, letting all the sediment move downstream, would compromise existing flood control features in this heavily urbanized and modified watershed, but equally unnerving is leaving the dam in place due to increased flood risk and greatly impairing the natural watershed. It is crucial to discover a carefully-studied solution that both reduces the risk of catastrophic flooding for communities downstream of Stanford's campus and allows the creek to flow naturally again.

CURRENT SITUATION

Removing Searsville Dam is an important opportunity to significantly increase spawning and rearing habitat for federally-threatened Central California Coast steelhead. San Francisquito Creek is a key watershed that is necessary for species recovery.

Partners and community members have been working for over a decade to identify feasible opportunities to allow fish passage at the dam.

Most recently in February 2023, Stanford University included the Searsville Watershed Restoration Project in a formal Notice of Preparation to work with the California Department of Water Resources and U.S. Army Corps of Engineers in developing a joint draft Environmental Impact Report (EIR) for the project which is expected to be released in late 2023 which is an important first step in the dam removal process.

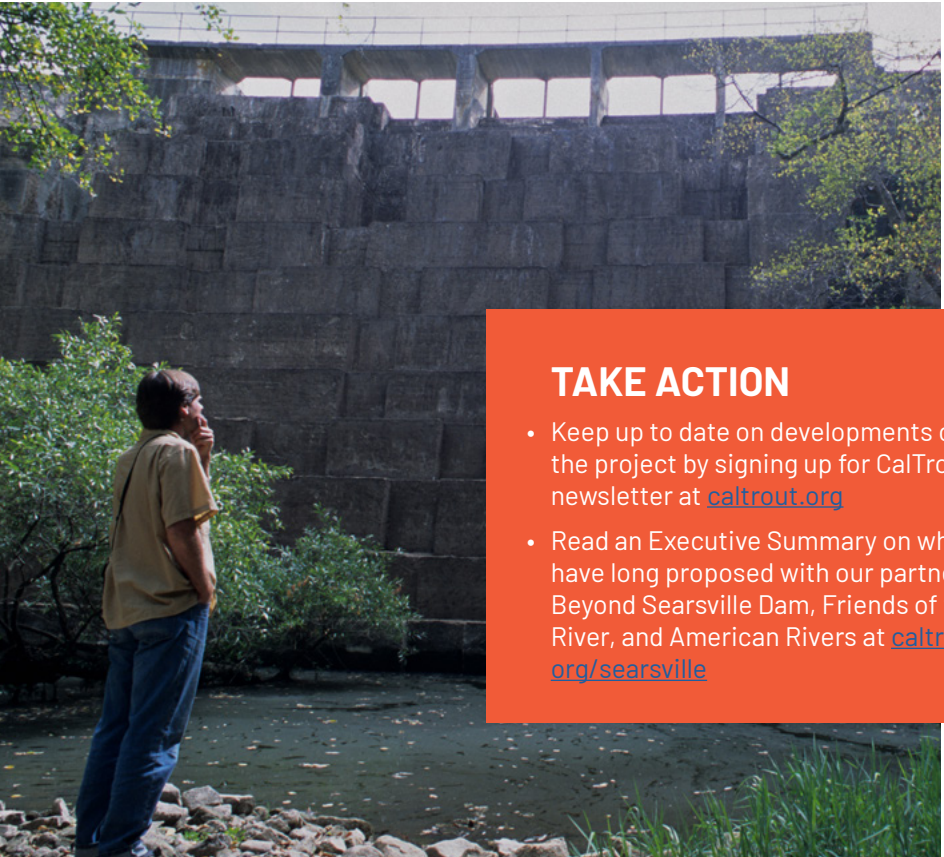
The situation becomes complicated due to a significantly altered watershed existing downstream of Searsville Dam, where the San Francisquito Creek channel no longer safely flows without flooding neighboring cities. Significant investments have been made, but more infrastructural improvements are needed to allow sediment and water to move out to San Francisco Bay without backing up.

In 2023, Stanford University identified four priority objectives for addressing the challenges associated with Searsville Dam. First, the university recognizes that in order to meet requirements under the federal Endangered Species Act and join the ranks of the other Bay Area water districts that own and operate dams, it must finally enable fish passage above the dam, restoring access to historical habitat. Second, sediment piled behind the dam needs to be regulated and moved downstream safely. Third, flood risk must not increase for downstream communities along San Francisquito Creek and the Bay as a result of the project. Fourth, Stanford wants to use the pending solution for the dam to support environmental research at the Jasper Ridge Biological Reserve on which Searsville Dam and reservoir are located.

POTENTIAL FOR REMOVAL

Searsville Dam and the reservoir have been a contentious subject for decades for Stanford University and stakeholders in steelhead and salmon issues in the Bay Area. The challenge of balancing flood risk and fish passage, the very low abundance of steelhead on the Peninsula, and the extremely high cost of any potential solution makes finding a path forward difficult.

However, the environmental review process for Searsville Dam is moving in earnest with the EIR expected for release in late 2023. Despite years of inaction, movement towards addressing the sediment removal-and removal of the dam-is beginning a more formal process that incorporates multiple opportunities for public comment. CalTrout remains committed to finding a solution for the full removal of Searsville Dam to create long-term sustainability and sustain ecological function at the benefit of San Francisquito Creek's watershed, its fish and people.



TAKE ACTION

- Keep up to date on developments on the project by signing up for CalTrout's newsletter at caltrout.org
- Read an Executive Summary on what we have long proposed with our partners at Beyond Searsville Dam, Friends of the River, and American Rivers at caltrout.org/searsville

Searsville Dam. Photo: Mike Wier

TOP 6 CALIFORNIA
**DAMS
OUT**

THE RECONNECT HABITAT INITIATIVE

Reconnecting Habitat is one of California Trout's five key initiatives in its effort to return native fish to resilience. The initiative focuses on giving salmon and steelhead access to diverse habitat by removing barriers and getting obsolete DAMS OUT. Dams and barriers block migration upstream to high quality habitat and restrict migration of juvenile fish to the ocean.

We are working to remove barriers and get obsolete dams out to give native salmon and steelhead access to the clean, cold water of their native spawning and rearing habitats once again.

With over 15 projects in four regions across California, CalTrout values our Reconnect Habitat work and we hope you will aid us in this work by supporting the initiative today. Together, we can get DAMS OUT.

To learn more visit caltrout.org.

ABOUT CALIFORNIA TROUT

Founded in 1971, California Trout is a non-profit conservation and advocacy organization that is dedicated to solving California's complex resource issues while balancing the needs of wild fish and people.

The organization focuses on science-based, scalable solutions to California's most complex water management challenges. CalTrout has six regional offices throughout the state with headquarters in San Francisco.

Donate today to reconnect California rivers and get DAMS OUT. Scan the QR code below.



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