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The *Layperson's Guide to the Klamath River* is prepared and distributed by the Water Education Foundation as a public information tool. It is part of a series of Layperson's Guides that explore pertinent water issues in an objective, easy-to-understand manner.

The mission of the Water Education Foundation, an impartial, nonprofit organization, is to create a better understanding of water resources and foster public understanding and resolution of water resource issues through facilitation, education and outreach. For more information contact:



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### **On the Cover:**

The Klamath River Basin's water disputes have been notoriously intractable. For years, the parties were divided, entrenched and litigious. Attempts to settle the disputes were largely fruitless. In 2010 two agreements were signed that promise to yield lasting peace on the river and to bring about a major salmon restoration effort.

# Introduction

The Klamath River Basin's water disputes have been notoriously intractable. The needs of each of the Basin's many water interests – from farmers to tribes to commercial salmon fishermen to wildlife refuges – have often conflicted with one another. For years, the parties were divided, entrenched and litigious. Attempts to settle the disputes were largely fruitless.

In the last several years, there has been a major multi-lateral effort to reach a compromise on the river and end the fighting in this remote region located on the California-Oregon border. This effort has yielded two linked agreements, the Klamath Basin Restoration Agreement (KBRA) and the Klamath Hydroelectric Settlement Agreement (KHSA). These agreements promise to yield lasting peace on the river and to bring about a major salmon restoration effort.

*The Klamath River.*



The prospect of a settlement arose from the crises of 2001 and 2002 in which farmers saw their irrigation water drastically reduced, and tribes, environmentalists and fishermen witnessed a major salmon die-off, respectively. In the years that followed, irrigation and fisheries interests began to acknowledge that continued fighting was unsustainable and collaboration might be mutually beneficial. At the same time, the federal operating license for the four hydroelectric dams owned by PacifiCorp on the mainstem of the Klamath River was nearing expiration. With relicensing requiring major expenditures on fish passage and other environmental improvements, dam removal became a viable alternative. This prospect was a further incentive for groups that sought dam removal – including tribes and conservation and fishery groups – to negotiate.

In early 2010, after years of difficult negotiations, the final package of agreements was signed. The deals were endorsed by many farmers and ranchers, three tribes, commercial and sport fishing groups, river conservation groups, Klamath and Humboldt counties, the governments of California and Oregon, PacifiCorp and the federal government.

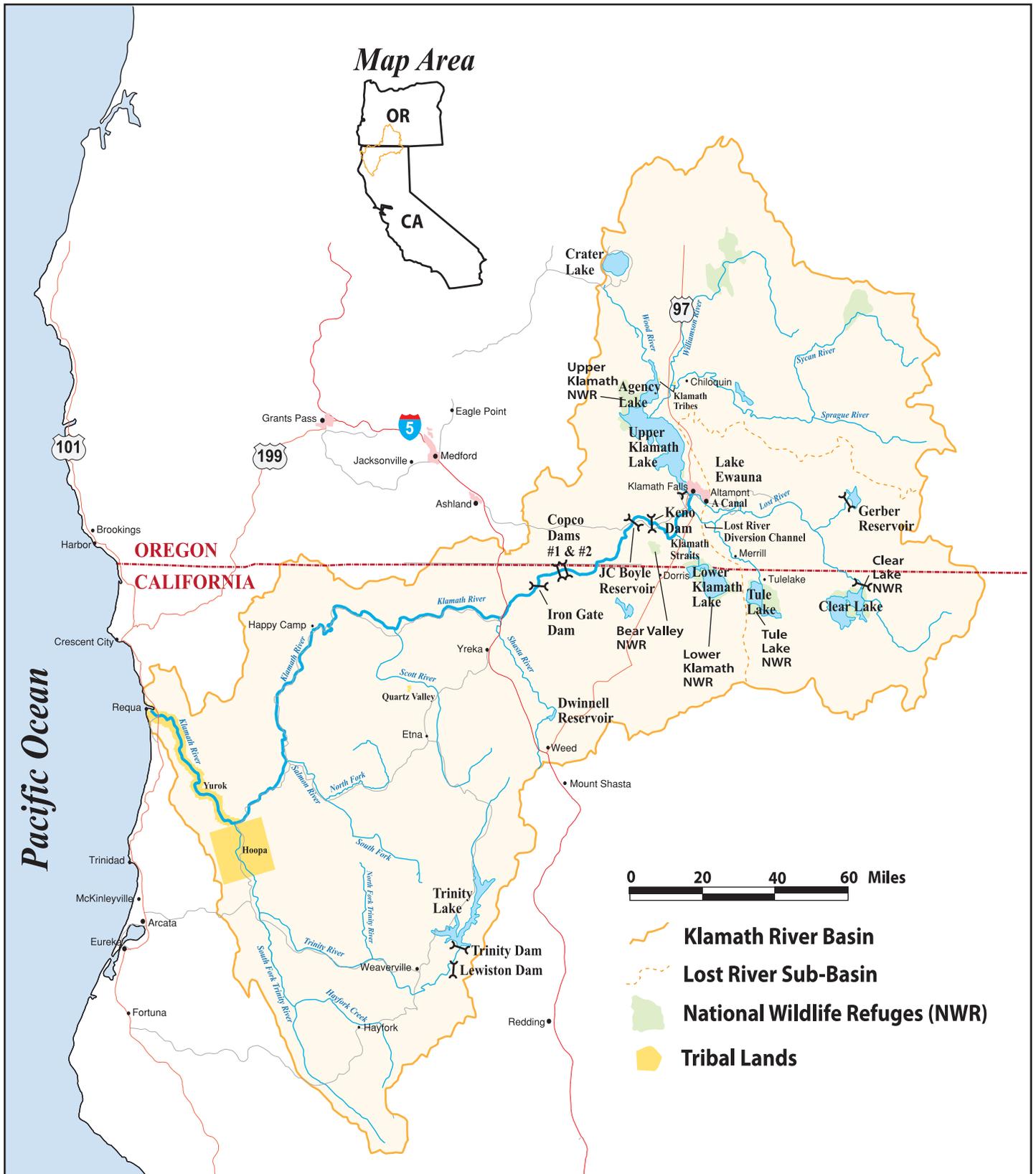
Three plans make up the heart of the agreements:

- The four hydroelectric dams will be removed as early as 2020 if the secretary of the Interior determines that this step is in the overall public interest and beneficial to fish.
- Water in the Upper Klamath Basin will be divided among farmers, wildlife refuges and environmental uses in a way that is acceptable to the parties that signed the agreements.
- The federal government will fund a 10-year habitat restoration effort focused on salmon recovery.

There is a long path to implementing the agreements. Congress must approve the agreements and appropriate a 10-year budget of \$1 billion. The state of California must provide \$250 million for dam removal. Dam removal must survive state and federal environmental reviews and win approval from the Secretary of the Interior in a decision due in 2012.

In addition, several parties in the Klamath Basin do not support the agreements and are attempting to block them. Some oppose dam removal; others say the deals do not provide enough water for fish and wildlife refuges.

This Layperson's Guide, part of a continuing series published by the Water Education Foundation, outlines the water issues in the Klamath Basin that have made it an area of such conflict, details the recent agreements and summarizes what to expect in the coming years.



# Background

## The Klamath River and the Klamath Project

The Klamath River flows 253 miles from Southern Oregon to the California coast, draining a basin of more than 15,000 square miles. The watershed is divided geographically into two basins, upper and lower, divided by Iron Gate Dam, the lower most dam on the river. The Upper Basin is dry, with annual precipitation of about 13 inches at the river's origin near Klamath Falls, Ore. Downstream, the climate grows wetter. At Klamath, Calif., near the river's mouth, rainfall is nearly 80 inches a year.

The Basin is predominantly rural with a total population of roughly 120,000. The four counties through which the Klamath River passes have among the lowest per-capita income levels in California and Oregon.

Native Americans have a significant presence in the Klamath Basin. Four major tribes have been influential in water negotiations: the Klamath Tribes, the Karuk Tribe, the Hoopa Valley Tribe and the Yurok Tribe. Members of these tribes, along with the members of the much smaller Quartz Valley Tribe and Resighini Rancheria, number more than 16,000. However, the majority of tribal members do not live on reservation land (or, in the case of the Karuk Tribe, which does not have a reservation, in the tribal service area).

The Klamath River originates in the rivers and creeks that drain into Upper Klamath Lake. Of these, the largest are the Sprague, Williamson and Wood rivers. The Sprague River receives most of its flow from snowmelt while the

Williamson and Wood rivers are fed primarily by springs in their upper reaches. The rivers and their fisheries were a subject of negotiation between tribes and the United States as early as the 1860s. Irrigation water has been drawn from these rivers since the late 19th century, and agricultural development drained vast areas of wetlands on the periphery of Upper Klamath Lake and in upstream watersheds. Some of this drained acreage has been restored and is now managed primarily for wetland benefits.

Upper Klamath Lake is a broad, shallow natural lake with adjacent wetlands. When full, the lake surface area is about 80,000 acres. Originally, water flowed out of Upper Klamath Lake into the Link River over a stone reef – in effect, a natural dam – and lake surface elevations fluctuated between approximately 4,143 feet (full) and 4,140 feet.

With completion of Link River Dam in 1921 and the destruction of the natural stone reef, water managers gained the ability to control releases from Upper Klamath Lake and drain it lower than was previously possible. These modifications made it possible to operate the lake as a storage reservoir, filling it up with winter and spring flows and draining it during the dry season to provide water to Klamath Project irrigators and maintain steady flows in the Klamath River. Today, the lake's effective storage capacity is 401,000 acre-feet. An acre-foot of water is the amount needed to cover one acre of land one foot deep, or roughly 326,000 gallons. One acre-foot of water provides the annual indoor and outdoor needs of two average households.

Annual flows into Upper Klamath Lake vary greatly with hydrologic conditions. In the very dry 1992 water year (Oct. 1, 1991 through Sept. 30, 1992) estimated inflows totaled just 596,000 acre-feet. In wet years such as 1999 and 2006, inflows have exceeded 1.7 million acre-feet.

The Klamath River officially begins 1.2 miles below Link River Dam, where the Link River flows into Keno Reservoir (also known as Lake Ewuana), the 20-mile-long water impoundment created by Keno Dam. Downstream of Keno Dam, the Klamath River passes through four hydroelectric dams – J.C. Boyle, Copco 1, Copco 2 and Iron Gate – which were completed between 1918 and 1962. Below Iron Gate Dam, the river is enlarged by flows from many tributaries, the most significant being the Shasta, Scott, Salmon and Trinity rivers.

In 1905, the precursor to the federal Bureau of Reclamation (Reclamation) began construction on the Klamath

*The Klamath River flows 253 miles from Southern Oregon to the California coast, draining a basin of more than 15,000 square miles. Below, the river's mouth.*



Project. It was one of the first developments authorized under the 1902 Reclamation Act, which aimed to develop irrigation across the Western United States.

The Klamath Project linked the Lost River Basin with the Klamath River Basin and converted much of the Tule Lake and Lower Klamath Lake wetland complexes into farmland. Most of the major features of the Project were complete by the early 1940s.

The Lost River was originally a dead-end system. Water flowed from Clear Lake into the horseshoe-shaped Lost River, which drained into Tule Lake, a lake and wetland complex that expanded in winter and shrank in summer. The Klamath Project drained water from the Lost River Basin into the Klamath River, drying out much of the Tule Lake marshes and allowing the land to be farmed.

The Lower Klamath Lake wetlands complex was originally fed by overflows from the Klamath River. A railroad embankment between the river and the lake blocked these flows in 1917. Regular flows to the wetlands were restored following the completion in 1941 of a water tunnel linking the Tule Lake and Lower Klamath Lake areas.

About 85 percent of the Klamath Project's roughly 210,000 acres of farmland is irrigated with water from the Klamath River system via canals from Upper Klamath Lake and Keno Reservoir.

Water for farms on the eastern end of the Klamath Project area – about 29,000 acres – is drawn from Clear Lake and Gerber Reservoir. The Klamath Project also supplies water to the Lower Klamath Lake and Tule Lake national wildlife refuges.

Since 1992, water management in the Klamath Basin has been influenced by federal mandates to restore populations of fish protected by the Endangered Species Act (ESA). These mandates have led, in some years, to reductions in water deliveries to Klamath Project irrigators. In Upper Klamath Lake, the water surface must be kept above certain levels to maintain habitat for the endangered shortnose sucker and Lost River sucker. In the Klamath River below Iron Gate Dam, flows must be regulated for the benefit of threatened coho salmon. The coho flow requirements also impact the management of water levels in the Upper Klamath Lake because the lake is the headwaters of the river.

*For the Klamath Tribes, suckers were an important source of food, and the fishes' spawning runs continue to be a ceremonial event. Below, the endangered Lost River sucker.*

## Endangered Fish of the Upper Klamath Basin

The endangered Lost River sucker and shortnose sucker are native to the Lost River and Upper Klamath Lake basins. For the Klamath Tribes, suckers were an important source of food, and the fishes' February to May spawning runs continue to be a ceremonial event. Settlers in the Basin also caught the fish and the Lost River fishery once supported a cannery and fish oil factory. By 1987, however, populations of the Lost River sucker and shortnose sucker had declined to the point that all fishing was closed. In 1988, they were placed on the federal endangered species list, triggering governmental recovery efforts.

The endangered suckers spend most of their lives in lakes. They spawn in spring, either swimming upstream into rivers or creeks or seeking out shallow, protected areas along the edge of a lake. The fish mature slowly and begin to spawn at 7 to 10 years of age. Adults can reach the age of 40, spawning many times.

The largest populations of the endangered suckers are in Upper Klamath Lake. Gerber Reservoir and Clear Lake and their tributaries both host what appear to be relatively stable, though small, populations of one or both of the endangered fish, and a few endangered suckers are still found in Tule Lake as well. Tule Lake once hosted a large population of suckers that migrated up



the Lost River to spawn, but dams built on the river for the Klamath Project blocked access to nearly all their spawning habitat.

Several indicators suggest that sucker populations are declining. According to U.S. Fish and Wildlife Service (USFWS) biologists, there has been a 50 to 60 percent

decline in endangered sucker spawning numbers in Upper Klamath Lake since 2000 and there has not been a significant recruitment of juveniles into the adult population since the late 1990s.

Researchers are still working to understand the reasons for the decline of the endangered sucker populations in Upper Klamath Lake. Low water levels in the lake, loss of spawning and rearing habitat, poor water quality and predation by non-native fish are all thought to impair the

species' recovery, but it's not yet clear how these variables influence sucker viability.

Major steps have been taken to restore sucker habitat. In 2008, Reclamation removed Chiloquin Dam on the lower Sprague River. This dam, built by the Bureau of Indian Affairs in 1914, had impeded access to roughly 80 miles of potential spawning habitat. The recent restoration of 7,000 acres of wetlands in the Williamson River delta should also benefit the suckers.

## Chinook and Coho Salmon

Downstream of Iron Gate Dam, three-quarters of the 19 native fish species spend part of their life cycle in the ocean. This guide focuses on two species, Chinook salmon and coho salmon, because of their relevance to water management, habitat restoration and fishing. Steelhead are also important, particularly for sport fishing, but the Klamath River population is not listed for protection under the ESA and is not fished commercially.

Salmon populations are distinguished by the season in which the fish return to the river to spawn. Today, the fall Chinook run is the largest in the Klamath River, and it is the only salmon run open to fishing. From 1978 to 2009, the number of fall-run Chinook returning to the river to spawn has averaged 120,000 fish, with yearly returns ranging from 28,000 to 239,000. In the past, the number of potential spawners was likely "considerably higher," according to the National Research Council. For instance,

from 1916 to 1927, the annual catch of fall-run Chinook was likely 125,000 to 250,000 fish, and those figures would have represented only a portion of the total run.

Historically, the spring run of Chinook salmon may have been nearly as abundant as the fall-run. The spring-run's upstream migration coincided with snowmelt-fed flows in the Klamath River and its tributaries. This timing allowed the fish to swim to upper reaches of the Basin that fall-run Chinook typically could not access, according to federal fisheries biologists. For this reason, the spring run of Chinook may have been the dominant run in the tributaries to Upper Klamath Lake.

Spring-run Chinook populations declined sharply in the 19th century because of hydraulic mining, fishing, water diversions and the construction of dams on the Klamath River's tributaries. The spring-run continued to decline with the construction of the Klamath Hydroelectric Project dams, which blocked access to the Upper Basin, as well as the expansion of logging in the mid-20th century, which covered spawning gravel with silt. In the Klamath Basin today, wild spring-run Chinook spawn primarily in the Salmon River sub-basin, with the spawning population generally numbering in the hundreds. In addition, several thousand spring-run Chinook return to the Trinity River each year, but these are primarily hatchery-origin fish.

Coho salmon, which spawn in the fall, were once abundant in the Klamath Basin, although the historic size of the population is not well established. Coho likely did not migrate as far upstream as Upper Klamath Lake. The Southern Oregon/Northern California (SONC) coho populations have declined sharply since the mid-20th century for a litany of reasons, including the effects of logging, mining, dams, wetland loss, water withdrawals, poor water quality and over-fishing. Compared with Chinook salmon, coho spend significantly more time in freshwater before migrating to the ocean. This trait makes coho populations more susceptible to habitat degradation in rivers and streams.

*Chinook salmon at the mouth of Clear Creek.*



The Klamath River coho fisheries were closed in 1994, and in 1997 the region's coho were listed as threatened under the federal ESA. This listing linked the coho to the operation of the Klamath Project. Upper Basin water diversions influence flows in the Klamath River below Iron Gate Dam, and federal fisheries biologists have identified those flows as one of a number of factors impacting coho habitat.

Fish hatcheries have operated in the Klamath Basin since before the erection of the first Copco hydroelectric dam in 1918. Some critics of restoration efforts suggest that the hatcheries should simply produce more fish to compensate for the declining wild salmon populations. But heavy production in hatcheries tends to yield an unsustainable population of fish that is dependent on hatchery operations, lacks genetic diversity and crowds out the remaining wild fish. Hatchery managers take these and other factors into account when setting production goals.

### Salmon Fishing

For many centuries, salmon have been an important source of food for tribes in the Lower Klamath Basin. In the past, the fish were caught by the tribes of the Upper Basin as well. Today the salmon harvest provides significant revenue to the Yurok Tribe, and the fish continue to play an important cultural and nutritional role for the Yurok, Hoopa Valley and Karuk tribes.

Commercial salmon fishing operations on the Lower Klamath River began in the late 19th century. Several canneries were established, and they operated on the river until the early 1930s. In the early 20th century, the Lower Klamath River became one of the nation's premier sport fishing destinations. In 1933, declining salmon runs and political pressure from anglers persuaded California officials to ban commercial salmon fishing and canning on the river. At the same time, officials banned tribal fishermen's use of gillnets. By this time, commercial ocean salmon fishing had emerged as a significant industry in the region, in response to declining salmon runs in the river and improvements in fishing-boat technology.

Tribal fishing rights on the Klamath River – including the use of gillnets – were reaffirmed by the U.S. Supreme Court in 1973. After several years of controversy over harvest limits, the tribal fishery reopened in 1987. In 1993, the federal government set the current harvest allocation standards: Tribes get half the total available harvest, while the other half is allocated to a mixture of ocean commercial, ocean recreational and river recreational fisheries. Of the tribal harvest, the Yurok Tribe is generally allocated 80 percent and the Hoopa Valley Tribe 20 percent. The Karuk Tribe does not have a federally adjudicated harvest right, but members are permitted by the state of California to fish with traditional dip nets at Ishi Pishi Falls, near Somes Bar.



Since 1976, in accordance with the Magnuson-Stevens Fishery Conservation and Management Act, recommendations from the Pacific Fisheries Management Council have guided the management of the federal salmon fishery off the Pacific coast. The Council suggests regulations, including catch limits, to the Secretary of Commerce with the goal of sustaining healthy fish populations. For the Klamath River, fishery regulations are intended to ensure that a minimum of 35,000 adult fall-run Chinook salmon return to spawn in natural areas (that is, not in hatcheries).

If it is projected that this threshold will not be met, the Council may recommend restricting ocean salmon fisheries in areas where Klamath River fall Chinook are predominantly caught. In the ocean, salmon originating from different rivers mingle and cannot be distinguished from one another. As a result, a weak run of Klamath River salmon can restrict ocean fishing from Central California to Northern Oregon, with the greatest restrictions near the mouth of the river, including the ports of Eureka, Crescent City and Brookings. Weak runs of Klamath River fall Chinook salmon have led to fishing restrictions in many years, with particularly severe restrictions in 2006.

The decline of the Klamath River salmon runs represents a significant economic loss. For instance, the fishery closures of 2006 prompted Congress to appropriate \$60.4 million to assist affected fishermen and tribes in Oregon and California. The commercial and recreational fishing industries have a broad economic impact in coastal and river communities, supporting jobs in a variety of sectors – from fish processing businesses, bait and tackle shops and outfitters to restaurants and hotels.

*The decline of the Klamath River salmon runs represents a significant economic loss for fishermen and tribes in Oregon and California.*

## Farming and Ranching in the Klamath Basin



*Agriculture is an important economic driver in the middle and upper portions of the Klamath Basin. In addition to the Klamath Project, there are three other significant agricultural areas: upstream of Upper Klamath Lake, the Shasta Valley and the Scott Valley.*

Agriculture is an important economic driver in the middle and upper portions of the Klamath Basin. In addition to the Klamath Project, there are three other significant areas where irrigated agriculture influences flows in the Klamath River and its tributaries: the area upstream of Upper Klamath Lake, the Shasta Valley and the Scott Valley. In addition, water is diverted out of the Basin to irrigate crops in Oregon's Rogue River Basin and, via the Trinity River, California's Central Valley.

On the Klamath Project's 1,200 farms and ranches, the leading crops are alfalfa and hay. Grains – primarily wheat, oats and barley – make up the next-biggest chunk of the area's harvest, followed by potatoes and onions. Farms served by the Klamath Project also grow relatively small acreages of specialty crops, including mint, strawberries and horseradish. From 1998 through 2007 (excluding the 2001 crisis year), harvests on Klamath Project land were valued at an average of \$108.2 million annually.

A substantial amount of irrigated land in the Upper Klamath Basin is not associated with the Klamath Project. Farmers and ranchers in these areas generally maintain their own water diversion systems and are known as "off-Project" irrigators. Most of this off-Project irrigated land is on the periphery of Upper Klamath Lake and in the Sprague, Williamson and Wood river watersheds. In the off-Project areas, irrigation water is used mainly to maintain pastureland or grow forage crops for cattle.

The Shasta and Scott valleys are important agricultural areas in the middle Klamath Basin, accounting for about 60 percent of Siskiyou County's 138,000 acres of irrigated land. Farmers and ranchers in these areas produce cattle, livestock forage and grain.

The overall economic impact of farming and ranching in the Klamath Basin is greater than the value of crop and livestock sales because agriculture supports businesses and jobs in affiliated sectors. According to an analysis by an Oregon State University Extension economist, for instance, the overall value of Klamath County agriculture to the local economy is nearly twice the value of reported farm and ranch revenues.

The Klamath Project is different from other irrigation developments in the Basin in that it is operated by a federal agency – Reclamation – rather than privately. This distinction is important under the ESA. Under the act, water withdrawals by federal projects like the Klamath Project are subject to periodic review by USFWS and the National Marine Fisheries Service (NMFS). These agencies can require that water diversions be reduced to protect threatened and endangered species.

Private irrigators are not subject to the same federal review process. However, under the ESA, their water withdrawals may still be reduced if it is shown (often in court) that the withdrawals are harming protected species. To date the ESA has not been used to restrict private irrigation diversions in the Klamath Basin.



## The Crises of 2001 and 2002

In early April 2001, USFWS and NMFS issued biological opinions concerning the Klamath Project to protect endangered suckers and coho salmon. These biological opinions raised the minimum level of water required in Upper Klamath Lake and mandated certain minimum flows in the Klamath River. It was a very dry year, and providing the mandated water for fish meant major cuts to Klamath Project water deliveries. On April 6, Reclamation informed irrigators that water from Upper Klamath Lake would be unavailable until further notice.

The water cutoff affected about 85 percent of Klamath Project acreage. It was extremely alarming to farmers and local businesses and communities, despite efforts by state and federal governments to blunt the impact of the water reduction, including paying for well drilling and ground-water pumping and authorizing water releases later in the irrigation season. Ultimately, just under half of Klamath Project acreage received enough water to irrigate a crop, and state and federal emergency payments to the region totaled at least \$35 million, according to a 2003 Oregon State University Extension report on the crisis. The water reduction drew anti-government and anti-environmental activists from around the country and kept the area in the media spotlight for months.

In March 2002, a National Academy of Sciences committee concluded that there was insufficient scientific support for the fish-driven restrictions on irrigation deliveries imposed in 2001. That is, it was not clear that providing more water for suckers and coho salmon, as was required under the 2001 biological opinions, would help the species recover. But at the same time, the committee also found no scientific basis for providing less water for fish habitat purposes than had been provided prior to 2001.

In 2002, federal fisheries agencies and Reclamation reduced the minimum flows required in the Klamath River. While 2002 was another dry year (though not as dry as 2001) irrigation deliveries for the season, at 399,000 acre-feet, were much greater than in 2001. In September, at the start of the fall Chinook run, flows near the mouth of the Klamath River were among the lowest on record, and about 20 percent lower than at the same time in 2001.

That month, an unprecedented disease outbreak in the lower reaches of the Klamath River killed tens of thousands of migrating salmon. Tribes, fishermen and environmentalists were enraged. They argued that the die-off was linked to low flows in the river – and, by extension, to the irrigation diversions for the Klamath Project.

Initial estimates put the number of dead fish at 34,000, but a final 2004 report by the California Department of Fish and Game said that more than twice that many fish may have died. Roughly 95 percent of the dead fish were Chinook salmon, the remainder largely coho salmon and steelhead.

The 2004 report concluded that the die-off was likely the result of a confluence of factors: Low flows in the river combined with an unfavorable channel configuration in the lower river and a large run of fall Chinook salmon – about 160,000 fish – to create very crowded conditions. These conditions appear to have facilitated the spread of deadly pathogens. The report noted that flow is the only one of these factors that could have been modified through a management decision.

After the die-off, the Pacific Coast Federation of Fishermen's Associations sued Reclamation, alleging that irrigation deliveries to the Klamath Project had violated the ESA. The fishermen eventually prevailed and a federal court ordered an increase to minimum flows in the lower river.



*The impetus of the Klamath Agreements arose from the 2001 crisis in which farmers saw their irrigation water drastically reduced, and the 2002 crisis in which tribes, environmentalists and fishermen witnessed a major salmon die-off.*

## Wildlife Refuges

The Upper Klamath Basin National Wildlife Refuge (NWR) Complex, made up of six refuges, is a critical stopover point for three-quarters of the migratory waterfowl on the Pacific Flyway. According to federal wildlife biologists, 1 to 2 million birds use the refuges each spring and fall, and no wetlands in the western United States provide more feeding, nesting and resting habitat for migratory waterfowl than the marshes in the Klamath refuges. The Lower Klamath Lake and Tule Lake areas contain the most heavily used migratory bird habitat in the refuge complex.

A key purpose of the refuges is to maintain wetland habitat. Prior to development of the Klamath Project, the seasonal marshes and lakes of Tule Lake and Lower Klamath Lake covered about 185,000 acres. Today, the wetland and open water areas of the two refuges cover about 44,000 acres. Wetland acreage has been reduced elsewhere in the Upper Klamath Basin as well.

The refuges have federal reserved water rights that are being determined through the Oregon state adjudication process (see page 13). Although these rights are not currently being enforced, in practice the refuges usually receive at least some water as a result of the operations of the Klamath Project.

The uncertainty of the volume and timing of water deliveries has made it difficult to maintain the Lower Klamath National Wildlife Refuge's 30,000 acres of wetlands. The key water demand for the refuge is from September through November, when water is currently scarcest. It generally takes 2.5 to 3.5 acre-feet of water to maintain an acre of wetland for a year in the Lower Klamath refuge, according to refuge managers.

Tule Lake National Wildlife Refuge, because of its position at the bottom of a major portion of the Klamath Project's plumbing system, experiences a too-constant supply of water. About three-quarters of the refuge's open water and wetland area is covered by standing water throughout the year, preventing the development of productive, diverse habitat for birds. Refuge managers are exploring ways to drain and refill the lake periodically, but pumping is costly and coordinating drainage and refilling with the Klamath Project's agricultural operations is difficult.

Tule Lake and Lower Klamath refuges are the only national wildlife refuges in the United States where "lease-land" farming is conducted. Under lease-land agreements, farmers rent land from the federal government and engage in commercial farming of grain, hay and row crops such as onions and potatoes (row crops are limited to 25 percent of the planted acreage). This farming is authorized under the federal Kuchel Act. Passed in 1964, the act resolved the issue of whether the lease-land areas would continue to be farmed under leases, as was the practice at the time, or be homesteaded, as advocated by local interests and Reclamation. The only practical restriction in the leases is that farming practices can't be actively harmful to wildlife. About 23,000 acres of land on the two refuges is now farmed under lease-land agreements.

Some environmental groups, notably Oregon Wild and Water Watch of Oregon, oppose lease-land farming as being incompatible with refuge purposes and a poor use of scarce water and potential wetland habitat.

Hunting – for ducks, geese and pheasants – is allowed on the refuges, as is common on federal refuges elsewhere.

The Klamath Basin National Wildlife Refuge Complex includes two other large wetlands – Klamath Marsh and Upper Klamath refuges. The Williamson River flows through Klamath Marsh refuge, providing water to its wetlands. Upper Klamath refuge is connected to Upper Klamath Lake and water levels rise and fall with the lake level.

*The Upper Klamath Basin National Wildlife Refuge Complex, made up of six refuges, is a critical stopover point for three-quarters of the migratory waterfowl. Below, Tule Lake Wildlife Refuge.*



## The Klamath Hydroelectric Project

The main features of the Klamath Hydroelectric Project are four hydroelectric dams on the mainstem of the Klamath River as well as one non-hydroelectric dam, Keno Dam, which impounds water for the operation of Reclamation's Klamath Project.

The Klamath River dams were privately built and have remained privately held, although ownership has changed several times through mergers and acquisitions. The dams were developed by California Oregon Power Co. (hence "Copco"). That company merged with Pacific Power & Light Co., the precursor to PacifiCorp, which is the current owner of the dams. Since 2006, PacifiCorp has been a subsidiary of MidAmerican Energy Holdings Co. Berkshire Hathaway Inc., headed by famed billionaire Warren Buffett, owns a majority stake in MidAmerican.

The primary purpose of the four hydroelectric dams is the production of electricity. The dams do not provide water storage for irrigation or municipal water supply.

Collectively, the four dams' turbines deliver average power production of roughly 82 megawatts, or about 717 million kilowatt-hours of electrical energy annually. This is enough energy to meet the annual demands of about 70,000 households, assuming average usage of 850 kilowatt-hours per month.

The dams feed electricity into the power grid, the vast transmission and distribution network that links power plants, hydroelectric dams and other electricity generation facilities with electricity users. Electric utility customers in the Klamath Basin get their power via the grid, as do utility customers elsewhere. Removing the dams would have no impact on the reliability of electricity service in the Klamath Basin.

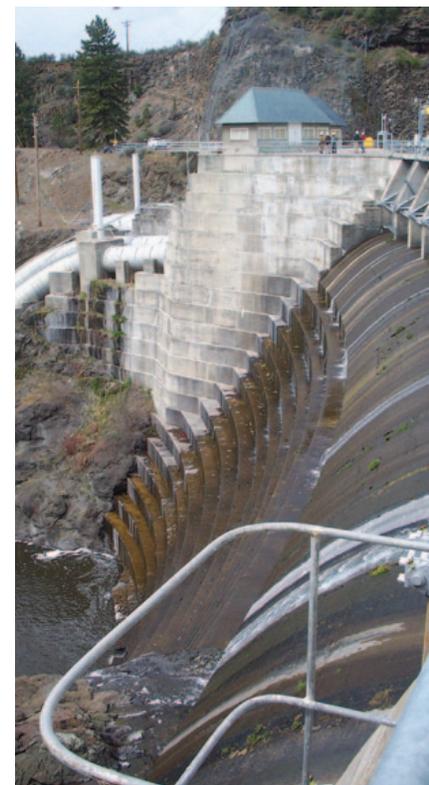
In the context of power generation in the Western United States, the dams' production is small, amounting to, for

instance, about one-quarter of 1 percent of the electricity consumed in California in 2009. On the other hand, power demands continue to grow and if the dams are removed their power will have to be made up for by new generation. Further, all of the dams except J.C. Boyle produce power that is considered "renewable" under the California Renewable Portfolio Standard. Such generation capacity is valuable under the state's ambitious renewable energy mandates.

Because the Klamath Hydroelectric Project is operated for power production and not water storage, water levels in the reservoirs are maintained at stable elevations, varying by only about 5 feet during the course of the year under normal operations. The active water storage in these reservoirs is less than 12,000 acre-feet – about 2.5 percent of the active storage in Upper Klamath Lake. The reservoirs do not store enough water in the spring to significantly augment low summer flows in the lower river. For similar reasons, the dams provide only a small amount of flood protection for downstream communities.

Of the four hydroelectric dams, only J.C. Boyle (the uppermost) was originally built to allow fish to pass upstream. The issue of fish passage was raised at the time of construction of Copco 1, and some documents show California Oregon Power Co. promised construction of a fish ladder. Ultimately, however, an agreement was reached between the company and California officials to construct a hatchery on Fall Creek in lieu of a fish ladder at the dam.

Like all private, municipal or state hydroelectric projects, the Klamath River dams operate under a license issued by the Federal Energy Regulatory Commission (FERC). The relicensing process involves extensive environmental review, and under current standards new licenses are, in most cases, granted only if the dam owner commits to



*Copco 1 Dam – one of four hydroelectric dams on the Klamath River.*

### Hydroelectric Dams on the Klamath River

Dam Name	Location (river mile)	Year Operational	Power Generation Capacity (megawatts)	Reservoir Capacity (acre-feet)	Active Storage (acre-feet)	Dam Height (feet)
J.C. Boyle	224.7	1958	98	3,495	1,724	68
Copco No. 1	198.6	1918	20	46,867	6,235	126
Copco No. 2	198.3	1925	27	73	N/A	33
Iron Gate	190.1	1962	18	58,794	3,790	194

*\*river mile is measured from the mouth of the Klamath River at the Pacific Ocean*

provide passage for migratory fish – such as salmon – often at great cost. Federal fisheries agencies insisted on fish passage as a condition of the relicensing process for the Klamath River dams, which began in 2000. PacifiCorp estimates the cost of providing the required fish passage and other environmental improvements at roughly \$460 million over 40 years.

In connection with the operation of the Klamath Hydroelectric Project, Reclamation and many irrigation districts and farmers in the Upper Klamath Basin received power from 1918 to 2006 under long-term, fixed-rate contracts, with power prices set at 1918 levels. The basis for these low power rates was a mutually beneficial agreement: The owner of the Klamath Hydroelectric Project gained the right to operate Reclamation's Link River Dam, completed in 1921, to regulate flows for hydropower production; and Reclamation and farmers in the region got low-cost electricity. Off-Project irrigators in Klamath County, Ore. were also eligible for the low-cost power, though they were under separate contracts with the dam owner. The same discount was not provided to residential or indus-

trial electricity customers in the region, or to off-Project irrigators in California.

Power costs for Klamath Project farmers are a significant operational expense because of the pumping involved in moving irrigation and drainage water around the Project. Most of these costs are borne by irrigation districts, which pass on the costs to farmers.

Until 2006, power costs were 0.6 cents per kilowatt-hour for Klamath Project irrigators, and 0.72 cents per kilowatt-hour for off-Project irrigators – lower than what most farmers elsewhere in California or Oregon paid. When the Klamath Hydroelectric Project's federal license expired in 2006, the on-Project irrigators' contract was not renewed. The California and Oregon Public Utilities Commissions ordered a transition from the low rates – which are effectively subsidized by other ratepayers – to a market price, a more than tenfold increase in power costs. A group of Oregon off-Project irrigators has sued to block the increase, contending that their 1956 contract guaranteed the 0.72-cent price in perpetuity, but state judges have twice ruled against them.

## Water Quality



Because of its phosphorus-rich geology, the Upper Klamath Basin's aquatic ecosystems are naturally very productive. Phosphorus acts as fertilizer for algae and aquatic plants, providing the foundation for food chains that can support large populations of fish.

However, this high productivity makes the Basin's lakes vulnerable to water quality problems. Even before the region was settled, Upper Klamath Lake likely experienced periodic algal blooms. Changes in land use that accompanied settlement have substantially increased the loads of nutrients flowing into Upper Klamath Lake, increasing the frequency

Nutrient loads in the Upper Klamath Basin are a primary driver of water quality problems along the length of the Klamath River, including algal blooms in the Klamath Hydroelectric Project reservoirs. Municipal and industrial discharges of wastewater in the Klamath Falls area add to the nutrient load.

A high concentration of algae in water reduces the amount of oxygen available to fish. Though algae generate oxygen through photosynthesis during the day, this effect is balanced by their consumption of oxygen at night. When large quantities of algae die – as when an algal bloom crashes – their decomposition consumes large amounts of oxygen, which can have a harmful effect on fish.

In addition, certain species of algae contain toxins that, if ingested, can be harmful to humans, fish and wildlife. Such species are now regularly detected in the Klamath Hydroelectric Project reservoirs and in eddies in the Lower Klamath River. Several studies are underway to evaluate the impact of algal toxins on fish and other aquatic organisms in the reservoirs and the Lower Klamath River. Results should be available by mid-2011.

The elevated nutrient load from the Upper Klamath Basin is also believed to contribute to the growth in the Lower Klamath River of "attached" species of algae, which appear as long green strands attached to vegetation and rocks.

*Upper Klamath Lake and other water bodies in the Basin are prone to algae blooms.*

and severity of these blooms. The most significant land use changes include livestock grazing, irrigated agriculture, logging, road construction and the loss of natural wetlands.

This algal growth reduces oxygen concentrations in the water much as floating algae do in lakes and reservoirs.

Elevated temperature is another water quality problem in the Lower Klamath Basin thought to be increasing stress on salmon populations. Alterations to natural river flows – chiefly through dam construction and water diversions – have altered seasonal temperature patterns in the Klamath River and its tributaries, resulting in harmful elevated temperatures during the fall spawning season. In addition, physical changes to the river and its tributaries – such as sedimentation and vegetation changes – have reduced the availability of thermal refugia (local areas of cold water).

In 2010, Oregon and California released water quality improvement plans to bring the Klamath River Basin into compliance with the federal Clean Water Act. These plans are the result of a long regulatory process triggered by evidence that certain water quality parameters (such as nutrients, water temperature and dissolved oxygen)

did not meet standards. Poor water quality has been identified as one likely cause of the decline of endangered suckers in Upper Klamath Lake and coho salmon in the Lower Klamath River, leading to federal and state mandates to protect these species.

The states' water quality improvement plans are aggressive, calling for a roughly 80 percent reduction in above-background nutrient loading to the river. Strategies for achieving that goal are still being evaluated; they may include the restoration and construction of wetlands in the Upper Basin, as well as treatment of agricultural drain water. Measures to address temperature problems include reductions in sediment loads to the river (sediment can, for instance, fill in pools that provide cool-water refuges for salmon) as well as increased shading of streams and rivers by trees and vegetation. Because water heats up in reservoirs, removing the Klamath Hydroelectric Project dams would have a beneficial effect on temperatures in the Lower Klamath River, according to modeling studies.

## Water Rights and the Adjudication Process

In the Oregon portion of the Klamath Basin, claims to water exceed the amount available in most years. This situation has led to conflict.

In 1975, the state of Oregon launched an "adjudication" process to sort out the water claims in the Basin. It has been stalled several times by litigation and is still in progress. Private irrigators, the Klamath Tribes, the federal government and others filed a total of 730 water claims, as well as 5,500 legal challenges to those claims.

Oregon state judges have been evaluating the evidence to support the claims and challenges and are expected to issue a proposed order by spring 2012. This order will then be reviewed and potentially modified by the Oregon Water Resources Department's designated adjudicator, who will prepare a final determination as early as the end of 2012. This final determination will rank all valid claims to water by their seniority date, with older claims given priority. The adjudicator's determination will be enforceable by state water officials, though it may be appealed in court and modified.

Pending the final determination, state water officials are not enforcing competing water claims in the Oregon portion of the Basin. As a result, all irrigators upstream of Upper Klamath Lake are allowed to divert up to the full amount of their claims every year.

Notably, the final determination will specify the amount of water allotted for the Klamath Tribes' instream claims.

In the landmark *United States v. Adair* decision in 1983, a federal court found that the Tribes have a right to enough water to support hunting and fishing on former reservation territory, with an unbeatable seniority date of "time immemorial." However, the court did not say how much water is needed to support hunting and fishing, leaving that matter to be resolved through the adjudication.

The Tribes' instream claims are substantial, and they are unique in that they have not previously been respected. That is, the Tribes' claims have not had any impact on the amount of water available to other users in the Basin. If these claims are approved through the adjudication process, some irrigators – starting with those with the most junior rights – will be forced to reduce or stop their diversions in many years.

By its nature, the adjudication will create sharp divisions between "winners" and "losers." The parties to the Klamath Basin Restoration Agreement sought to lower the stakes in the adjudication by brokering compromises such that no party comes out an absolute winner or an absolute loser.

The outcome of the Oregon adjudication likely will result in either no change or an increase in Klamath River flows into California. That's because the adjudication is unlikely to authorize any new water diversion beyond what is already taking place, while it could prohibit some existing diversions.

# Chronology



- 1849-1850** Gold discovered in the Lower Klamath Basin. Farms and ranches established in the Scott and Shasta valleys.
- 1855** Klamath River Reservation established on the Lower Klamath River.
- 1864** Hoopa Valley Tribe and Klamath Tribes cede most of their lands for settlement but retain large reservations.
- 1868** Two farmers dig first irrigation ditch in the Upper Klamath Basin.
- 1888** California state court rules Klamath River Reservation abandoned, opening the lower river to non-Indian commercial fishing overseen by the state of California.
- 1891** Determination that the Yurok Tribe had abandoned its reservation is reversed and the old Klamath River Reservation is attached to the Hoopa Valley Reservation.
- 1905** Klamath Project authorized.
- 1907** First deliveries of water through Klamath Project "A" Canal.
- 1908** President Theodore Roosevelt creates nation's first wildlife refuge for waterfowl, the Klamath Lake Reservation – now called Lower Klamath National Wildlife Refuge.
- 1917** First opening to homesteaders of land in Klamath Project.
- 1918** The first dam in the Klamath Hydroelectric Project, Copco 1, becomes operational, ending salmon runs in the Upper Klamath Basin.
- 1921** Link River Dam completed, allowing control of water releases from Upper Klamath Lake.
- 1925** Copco 2 Dam becomes operational.
- 1927** Dwinell Dam constructed on the Shasta River, cutting off most spawning habitat to the largest Klamath Basin salmon run.
- 1928** Tule Lake Bird Refuge (now Tule Lake National Wildlife Refuge) created.
- 1933** Commercial salmon fishing on Klamath River is banned; tribal gillnet fishing is prohibited.
- 1954** Congress terminates the Klamath Tribes' federally recognized tribal status and liquidates its reservation lands.
- 1956** Klamath Project irrigators' electricity rate contract is renewed for 50 years at the 1918 rate of 0.6 cents per kilowatt-hour; Oregon "off-Project" irrigators sign a contract for power at 0.72 cents per kilowatt-hour.
- 1957** Klamath River Basin Compact is approved by California and Oregon legislatures and ratified by Congress.
- 1958** Big Bend Dam – later J.C. Boyle Dam – is completed
- 1962** Iron Gate Dam completed.
- 1963** Lewiston Dam on the Trinity River completed.
- 1964** Large flood on Klamath River and tributaries causes debris to block channels – a problem that persists today.
- 1964** Kuchel Act precludes future homesteading on refuge land; provides for continued leasing of refuge land for farming to the extent it is consistent with refuge purposes.
- 1966** Keno Dam constructed to replace Needle Dam on the Klamath River.
- 1971** Lost River and shortnose sucker identified as species of concern under California law.
- 1972** California designates Klamath River from Iron Gate to the ocean a Wild and Scenic River. Federal designation follows in 1981.
- 1973** U.S. Supreme Court rules that stretches of the Trinity and Klamath River flowing through the Hoopa and Yurok reservations are "Indian Country," effectively restoring tribal salmon fishing rights.
- 1976** Oregon Water Resources Department begins Klamath Basin water rights adjudication process.
- 1977-78** Tribal salmon fishing resumes on Lower Klamath River, but is quickly stopped by the federal government on conservation grounds.
- 1983** *United States v. Adair* upholds Klamath Tribes' right to enough instream water to support fishing and hunting on former reservation lands, but does not establish an amount.
- 1985** California state court confirms limited tribal fishing rights for Karuk Tribe at Ishi Pishi Falls.
- 1986** Congress passes Klamath River Basin Fishery Resources Restoration Act; the program is funded at \$1 million per year.

**1986** Klamath Tribes restored to federal recognition as an Indian tribal government, but former reservation lands are not returned. Karuk Tribe receives federal recognition.

**1986** Klamath Tribes close their sucker fishery on Upper Klamath Lake and its tributaries.

**1987** Indian salmon harvest on Klamath River reopened for five years.

**1988** Lost River and shortnose suckers listed as endangered under the Endangered Species Act.

**1988** Oregon Scenic Waterways Act designates the Klamath Scenic Waterway from J.C. Boyle Dam to the state line. Federal designation follows in 1994.

**1988** Hoopa-Yurok Settlement Act establishes the Yurok tribal government as independent from the Hoopa tribal government; the Yurok Reservation is split from the Hoopa Valley Reservation.

**1990-1992** Severe decline in Klamath River salmon runs nearly closes commercial ocean salmon fishery.

**1993** Federal government sets Klamath River tribal salmon fishing limit at half the total available harvest.

**1996-1998** The Lost, Klamath, Salmon, Scott and Shasta rivers are listed as impaired under the federal Clean Water Act, launching regulatory steps to improve water quality.

**1997** Coho salmon in Southern Oregon and Northern California Coastal region listed as threatened under the Endangered Species Act.

**1998** First of several unsuccessful negotiations undertaken among some Klamath Basin water interests.

**2000** PacifiCorp begins federal relicensing process for the Klamath Hydroelectric Project dams.

**2001** Klamath Project irrigation water crisis.

**2002** At least 34,000 salmon die near the mouth of the Klamath River in September.

**2005** Multi-party negotiations that ultimately lead to the Klamath Basin Restoration Agreement and the Klamath Hydroelectric Settlement Agreement begin in earnest.

**2006** PacifiCorp's license for Klamath Hydroelectric Project expires. The relicensing process continues; the company faces major costs to meet environmental standards required by federal regulators.

**2006** Projected weak runs of Klamath River Chinook salmon force closure of the ocean salmon harvest from Monterey, Calif. to Southern Oregon.

**2008** In January, Draft Klamath Basin Restoration Agreement released; provides for settlement of key water conflicts and calls for a major salmon restoration effort; also calls for separate agreement concerning the removal of the Klamath Hydroelectric Project dams  
In November, the United States, California, Oregon and PacifiCorp announce an agreement regarding dam removal; it is the first time the dam owner commits publicly to such a scenario.

**2009** Draft Klamath Hydroelectric Settlement Agreement released.

**2010** Final Klamath Basin Restoration Agreement and Klamath Hydroelectric Settlement Agreement signed. Implementation contingent on authorizing legislation, funding and environmental review.

**March 2012** Secretary of the Interior scheduled to decide whether removal of the Klamath Hydroelectric Project dams will help restore fisheries and is in the public interest.

**End 2012** Final determination expected in Oregon's Klamath Basin water rights adjudication. The determination may be appealed in court, but enforcement of water claims can begin.

**2020** Earliest year in which dam removal would begin under the Klamath Hydroelectric Settlement Agreement.



*Veteran homestead lotteries were established after World War I to reward soldiers and sailors with newly reclaimed land in the Klamath Basin.*

# The Agreements

Since the 1990s, many attempts have been made to reach compromise in the Klamath Basin. None have gotten as far as the linked pair of deals signed in February 2010: the Klamath Basin Restoration Agreement and the Klamath Hydroelectric Settlement Agreement.

Negotiations leading to the agreements began in earnest in 2005. The talks grew out of the water-related farming and fisheries crises of 2001 and 2002 as well as the FERC relicensing process for PacifiCorp's Klamath Hydroelectric Project dams. The discussions grew to include the Klamath, Karuk, Hoopa Valley and Yurok tribes, Klamath Project irrigators, federal and state water, wildlife and fisheries agencies, conservation groups, representatives of the commercial fishing industry, some off-Project irrigators and county and state governments.

*Gerber Dam and Reservoir, on Miller Creek 14 miles east of Bonanza, Ore., provides water for farms on the eastern end of the Klamath Project area.*

The draft Klamath Basin Restoration Agreement (KBRA) that resulted was released in January 2008. It represented a water allocation and fish recovery deal struck between most of the combatants in the Basin's water wars, including the Klamath Project irrigators, the Klamath,



*In February 2010 Interior Secretary Ken Salazar and California Gov. Arnold Schwarzenegger signed the Klamath Agreements.*

Karuk and Yurok tribes, commercial fishing interests and some conservation groups. While the draft agreement contemplated that there would be a separate agreement regarding the removal of the Klamath Hydroelectric Project dams, PacifiCorp had not been part of these specific discussions – though parallel negotiations that included the company were underway.

Within a few months of the release of the draft KBRA, PacifiCorp – which was facing a long and costly battle to keep the dams operating – agreed to support the prospect of dam removal, in exchange for a cap on costs to its customers and protection from potential liabilities. The draft Klamath Hydroelectric Settlement Agreement (KHSAs) was released in September 2009. Final versions of the two agreements were signed Feb. 18, 2010.

While the two agreements are distinct, the KBRA is dependent in important ways on the dam removal envisioned in the KHSAs. For example, if the KHSAs does not result in the dams being removed, the tribal water settlements under the KBRA may fall apart (dam removal was a key reason the tribes supported the KBRA). And if the tribal water settlements fail, other parties have a right to withdraw from the KBRA.

Some parties that participated in part or all of the settlement negotiations decided not to sign the agreements, in several cases because of serious substantive opposition. The critics of the KBRA and KHSAs include the Hoopa Valley Tribe, the environmental groups Water Watch of



Oregon and Oregon Wild, some off-Project irrigators, the government of Siskiyou County and some farmers in Shasta Valley and Scott Valley.

A federal review pursuant to the KHSA is underway. This process will evaluate the cost and feasibility of dam removal and its impacts on local communities and economies, cultural resources, ecosystems and fish. This review will inform a decision by the Secretary of the Interior to be made by March 31, 2012. That decision, known as a "Secretarial Determination," will either allow the dam removal process to go forward or cancel the project. The decision will be based on a consideration of the overall public interest as well as potential benefits to fish. Even if the Secretarial Determination favors dam removal and funding for the project is secured, the dams would not be removed until 2020 at the earliest, pending further environmental review.



*With completion of Link River Dam in 1921, Reclamation water managers gained the ability to operate the lake as a storage reservoir.*

## Main Parties Signing or Endorsing the Agreements:

### Federal Government

- Bureau of Reclamation
- U.S. Fish and Wildlife Service
- National Marine Fisheries Service

### State of California

- California Department of Fish and Game
- California Natural Resources Agency

### State of Oregon

- Oregon Department of Environmental Quality
- Oregon Department of Fish and Wildlife
- Oregon Water Resources Department

### Dam owner

- PacifiCorp (not a party to KBRA)

### Tribes

- Karuk Tribe
- Klamath Tribes
- Yurok Tribe

### Counties

- Humboldt County, California
- Klamath County, Oregon

### Irrigators

- Klamath Water Users Association and individual Klamath Project contractors (such as irrigation districts) representing 94 percent of Klamath Project acreage served by the Klamath River
- Klamath Water and Power Authority
- Upper Klamath Water Users Association (represent some off-Project irrigators)

### Environmental, River and Fishing groups

- American Rivers
- California Trout
- Institute for Fisheries Resources
- Northern California Council, Federation of Fly Fishers
- Pacific Coast Federation of Fishermen's Associations
- Salmon River Restoration Council
- Trout Unlimited

### Parties that participated in the discussions, but opted not to sign:

#### Tribes

- Hoopa Valley Tribe

#### Counties

- Siskiyou County, California
- Del Norte County, California

#### Irrigators

- Poe Valley Improvement District and Pine Grove Irrigation District (together, these groups represent about 6 percent of Klamath Project land irrigated with Klamath River water)
- Resource Conservancy (represents some off-Project irrigators)

#### Environmental Groups

- National Center for Conservation Science and Policy (not opposed; did not sign based on a technicality)
- Northcoast Environmental Center
- Friends of the River
- Oregon Wild
- Water Watch of Oregon

# The KBRA

Broadly speaking, the KBRA aims to settle key disputes about water allocation in the Basin, provide enough water to sustain the Upper Klamath Basin's agricultural economy and help fish populations to recover by restoring habitat and providing adequate water in Upper Klamath Lake and the Klamath River.

In the KBRA, Klamath Project farmers will receive a specified supply of water from the Klamath River, while tribes have agreed not to assert their water and fishery rights to prevent farmers from receiving that agreed-upon water. To help provide water for fish, farmers and wildlife refuges, the agreement funds new water storage and upstream water usage reductions with the aim of increasing the amount of water available in Upper Klamath Lake each summer.

The proposed budget for the KBRA is \$970 million over 10 years. Just over half of the total would support ecological restoration efforts meant to help ensure that dam removal and increases in water flows will translate into a significant recovery of fish populations. Most of the rest, \$385 million, would support implementation of the water deal, including compensating farmers to idle land and providing low-rate power for water pumping. In addition, the KBRA would provide \$65 million for tribal economic development and environmental management, including \$21 million toward the purchase of a plot of private forest tract by the Klamath Tribes. The KBRA would subsume spending under some existing programs, meaning that "new" federal spending in the Basin would be less than the total figure budgeted for the KBRA.

The restoration activities under the KBRA could begin as soon as funding is available. Some aspects of the water agreements, however, will not take full effect until as late as 2021, with the interim period serving for transition and preparation.



*Tule Lake Lower Marsh.*

## The Water Plan

### Water for Klamath Project Irrigators

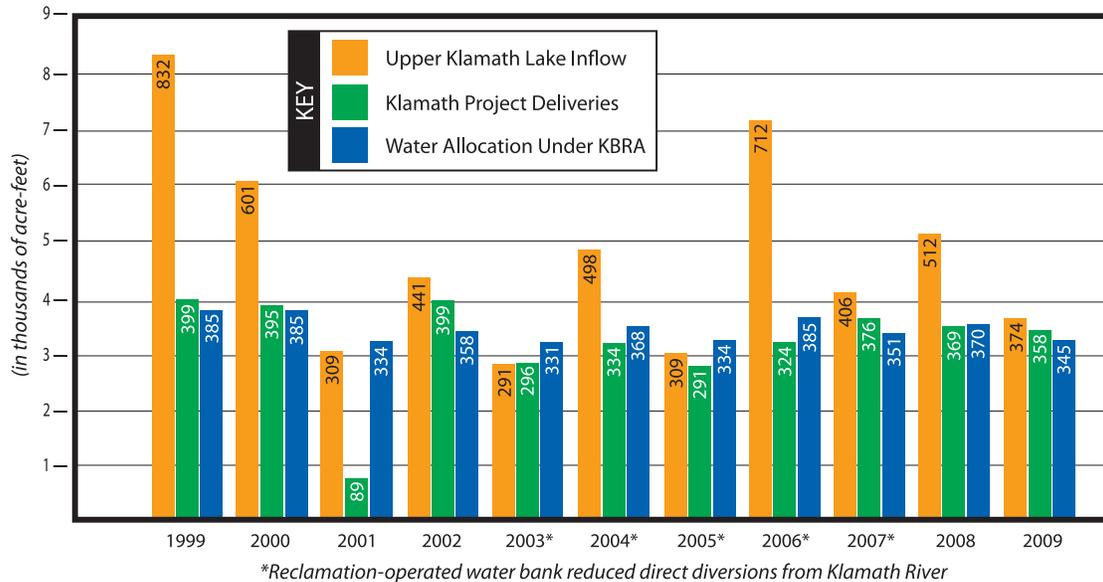
The KBRA creates a cap on Klamath Project irrigation diversions, with more water available in wetter years. The chart on page 19 shows how the cap compares with historic deliveries from 1986 through 2009:

As the chart shows, in below-average water years under the KBRA, irrigation deliveries would be reduced compared with most dry years in 2009 and earlier. The agreement also includes provisions to protect Klamath Project farmers from the sort of sharp water cut ordered in 2001. These protections include, among others, a commitment by KBRA signatories (other than regulatory agencies) to support the protection of the Klamath Project farmers' water supply under the ESA and other environmental laws. This is not a guarantee against future water cuts, but Klamath Project farmers see it as an improvement over the status quo.

Different rules, scheduled for adoption in late 2010, will apply in years of "extreme drought," defined as water conditions similar to the very dry years of 1992 and 1994. KBRA signatories began in 2010 to collaboratively develop a drought plan such that the burdens of water shortage are shared. The plan is scheduled for release in 2011.

The KBRA water allocation is designed to keep all existing Klamath Project farmland in production in wetter years. With increasing dryness, steps would be taken to reduce demand for Klamath water. The KBRA budgets \$92.5 million over 10 years to help Klamath Project irrigators prepare for dry years. A plan to spend these funds is now being designed by the Klamath Water and Power Agency, a group formed by Project-area irrigation and drainage districts. The \$92.5 million is likely to fund improvements in water conservation and groundwater management as well as contracts with farmers who would be paid to voluntarily forgo irrigation.

## Klamath Project Irrigation Allocations



### Tribal Water Claims

In signing the KBRA, the Klamath Tribes agreed to not assert their water rights in a way that would interfere with the agreed-upon deliveries to Klamath Project irrigators. The Klamath Project farmers, in turn, agreed not to contest the Klamath Tribes' claims in the Oregon adjudication. For this pact to become permanent the Klamath River hydroelectric dams must be removed and several water-related provisions of the KBRA must move forward.

The agreements between the Klamath Tribes and the Klamath Project farmers do not ensure that the Tribes' claims will be granted through the Oregon adjudication process, which is not superseded by the KBRA. Other parties – notably some off-Project irrigators – are continuing to contest the water claims of the Klamath Tribes and the Klamath Project irrigators.

The KBRA calls for a settlement to be negotiated by 2012 between the Klamath Tribes and off-Project irrigators. This settlement is intended to be analogous to the agreement between the Klamath Tribes and the Klamath Project irrigators in the KBRA. That is, it would provide in-stream flows satisfactory to the Tribes and irrigation supplies satisfactory to the off-Project irrigators. Off-Project irrigators who do not wish to seek a settlement may continue to contest the Klamath Tribes' claims.

### Wildlife Refuges

The KBRA calls for Lower Klamath Lake refuge to receive 48,000 to 60,000 acre-feet of water (depending on the availability of water in Upper Klamath Lake) from March

1 to October 31, and, in addition, at least 35,000 acre-feet for the rest of the year. In an "extreme drought," when irrigation diversions to the Klamath Project are cut, the refuge March-October allocation may be reduced to 24,000 acre-feet, or potentially less. These amounts compare with annual totals from 1961 through 2009 averaging 42,000 acre-feet and ranging from 6,000 acre-feet to 80,000 acre-feet annually.

*Swans at Tule Lake.*





*Northern Pintail.*

These increases to the refuge water supply do not go into effect until a number of conditions, including dam removal, have been met.

The refuge water specified in the KBRA stands to be a significant improvement for the refuges and should make it possible for managers to provide more and better habitat for birds, particularly during the fall migration when water needs are most acute.

Some environmental groups argue that assurances of refuge water supplies should be stronger, particularly in dry years. They are concerned that, too frequently, water scarcity in the Upper Basin will lead to cuts to refuge supplies, impairing wetland habitat.

Proponents of the agreements counter that the KBRA's refuge allocation is an improvement over the status quo, and note that the agreement calls for collaboration among signatories in dry years to share the burden of water cutbacks.

Water Watch of Oregon and Oregon Wild also oppose the KBRA because it did not reduce the extent of lease-land farming in the refuges. These groups feel that commercial farming detracts from the habitat value of the refuges, and ending lease-land farming on the refuges was a top priority for them. Continuing the practice was a priority for irrigators, who note that it is authorized by Congress. The other parties to the talks accepted the continuation of lease-land farming. When the negotiations that led to the KBRA reached an impasse over this issue, talks were shut down and then restarted with Oregon Wild and Water Watch excluded.

### **Augmenting Water Supply and Storage**

To increase Klamath Basin water managers' flexibility in meeting competing demands, the KBRA calls for changes in water use to increase inflows into Upper Klamath Lake by an average of 30,000 acre-feet annually, compared with average 1980-2000 flows. The program is to be implemented over 10 years, with a \$47 million budget to fund the acquisition or lease of water rights, water conservation, land management programs and other measures. Purchasing private land is explicitly not allowed and participation in the program by landowners would be voluntary.

The water use retirement plan would be overseen by a committee made up of representatives from the Klamath Tribes and the off-Project water users who support the KBRA. If idling irrigated land is the only strategy employed, at most 18,000 of the roughly 180,000 irrigated acres upstream of Upper Klamath Lake would need to be taken out of active irrigation to provide the additional 30,000 acre-feet of water.

To increase the capacity of Upper Klamath Lake to store winter and spring flows, the KBRA foresees connecting the lake to two areas on its north end – the Barnes Ranch annex and the Wood River wetland. Together with the ongoing Williamson River Delta restoration, these projects are expected to provide an additional 100,000 acre-feet of active storage in the lake compared with pre-2008 conditions.

Some off-Project irrigators who oppose the agreement maintain that the water use retirement plan will substantially shrink the local ranching economy by taking land



*The KBRA creates a cap on Klamath Project irrigation diversions, with more water available in wetter years.*

out of production. KBRA proponents note that, at most, the plan would reduce off-Project irrigated acreage by only about 10 percent and irrigators would be compensated for their water. Proponents also argue that there are many ways for a ranch to reduce water usage while staying in business.

### Environmental Water

With the specified irrigation diversions for the Klamath Project, increased inflows into Upper Klamath Lake and expansion of water storage, the KBRA intends to improve water managers' ability to deliver flows to the Klamath River that benefit salmon while maintaining appropriate water levels in Upper Klamath Lake to provide habitat for endangered suckers. The agreement does not specify what flows will be provided at what times. Rather, it is intended to give more flexibility to adjust flows as needed for fisheries purposes.

From 2012 through 2021, while the water-related components of the agreement are being implemented, the KBRA budgets \$100 million to acquire water on a year-to-year basis for environmental needs.

Some critics, including the Hoopa Valley Tribe and at least three environmental groups, are concerned that the KBRA

will hurt salmon populations by providing less water in the Klamath River compared with the status quo. They point out that in recent dry years ESA protections have resulted in deliveries to the Klamath Project that are less than what would be provided under the KBRA (that is, current management is more restrictive than the KBRA). These critics also doubt that the water supply augmentation and water storage plans in the KBRA will deliver as much additional water as intended. Further, they feel that the KBRA encourages weak enforcement of the ESA as it pertains to protecting flows for fish. Thus, they argue, the KBRA will leave less water for fish than is provided under current water management.

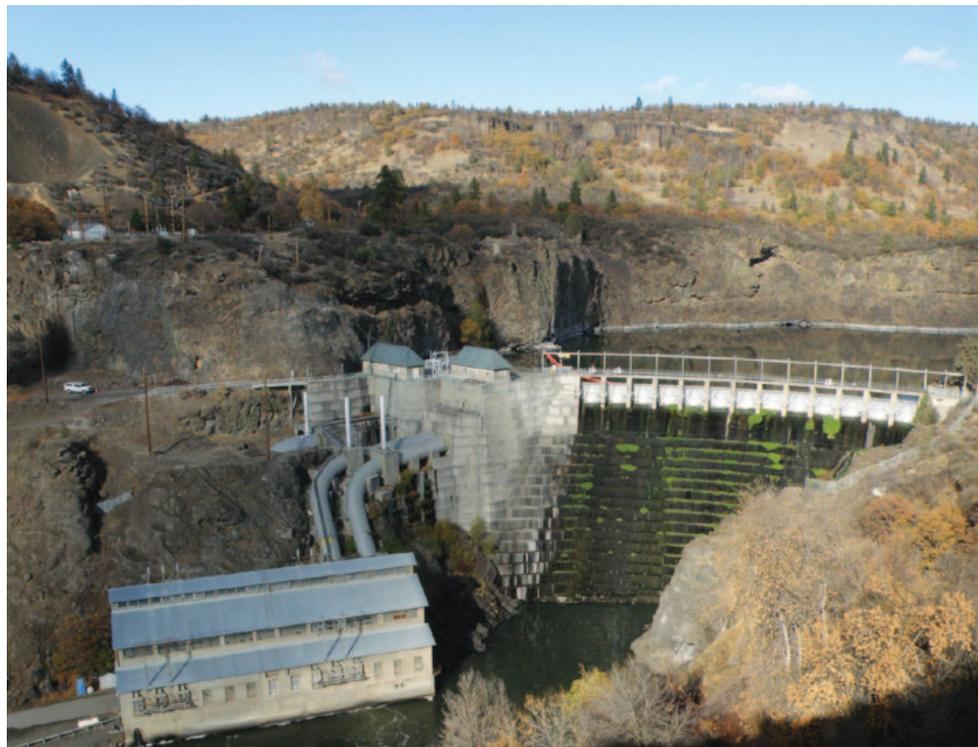
Proponents of the agreements argue that the KBRA will be an improvement over the status quo for salmon. First, they note, the flow of water in the river is only one of many variables influencing the viability of salmon populations. The KBRA's water plan is part of a package that includes dam removal and major habitat restoration, both of which stand to deliver a significant benefit to salmon. Without a comprehensive agreement like the KBRA, proponents note, it is unclear whether plans for dam removal and habitat restoration could have moved ahead. In addition, they argue, the agreements do not supersede the ESA.

*The KBRA calls for efforts to reduce electricity costs for Klamath Project and off-Project irrigators (within Klamath County), with an objective of delivering power at the same price or less than what is paid by farmers on Reclamation irrigation projects in this part of the nation. Below, Copco Dam 1.*

## Power for Irrigation

The KBRA calls for efforts to reduce electricity costs for Klamath Project and off-Project irrigators (within Klamath County), with an objective of delivering power at the same price or less than what is paid by farmers on Reclamation irrigation projects in this part of the nation. Reclamation will pursue an allocation of low-cost power from the Bonneville Power Administration for use by Klamath County irrigators. In addition, the agreement budgets \$41.5 million to fund renewable power development as well as energy efficiency measures. Management of this power program will be the responsibility of the irrigators who participate, and no particular electricity price is guaranteed. Off-Project irrigators in Klamath County who do not support the KBRA and KHSAs will not be eligible for the reduced-rate power.

Critics of this component of the agreement, including environmental groups as well as farmers in Shasta and Scott valleys (who are not eligible for the discounted power), contend that it is an unnecessary subsidy to certain farmers. Proponents of the KBRA note that electricity for agricultural uses is often subsidized, as are investments in renewable energy.



## Fish Habitat Restoration

*Upper Basin Klamath Tribes rallied to get the hydroelectric dams removed.*

The agreement envisions a 10-year, \$493-million fishery planning, restoration and reintroduction program. Fisheries managers – including federal, state and tribal fisheries agencies – will develop a plan that will guide

restoration projects for the coming 10 years. Measures likely will include vegetation restoration, water quality improvement, controls on sediment inputs and controls on nutrient loading in and above Keno Reservoir. The plan also would fund continued study of water flow and quality and fish habitat in Upper Klamath Lake and the length of the Klamath River in order to refine the use of environmental water for the benefit of fish.

One of the plan's main goals is to prepare the Klamath River upstream of Iron Gate Dam for the reintroduction of anadromous fish species throughout their historic range once the Klamath Hydroelectric Project dams are removed. Fisheries agencies will develop specific management strategies for the recolonization of the Upper Klamath River by coho and Chinook salmon, steelhead trout and Pacific lamprey. The agreement also foresees the active introduction of Chinook salmon into Upper Klamath Lake and its tributaries.

Aside from concerns about the sums of money involved, this component of the KBRA is generally not the target of vigorous opposition.



## Regulatory Assurance



All parties to the agreement agree to try to prevent new government limitations on land or water use that might come with the reintroduction of anadromous fish to the Upper Klamath Basin. This provision can't guarantee that the requirements of the ESA won't result in restrictions, but it attempts to go as far as the law allows in preventing impacts to water use and supporting measures that will protect landowners.

The \$47.5 million allocated for such measures in the agreement includes, for instance, \$25 million to preemptively install devices meant to keep newly introduced fish from being harmed by Klamath Project pumps or lost in irrigation canals.

*All parties to the agreement agree to try to prevent new government limitations on land or water use that might come with the reintroduction of anadromous fish to the Upper Klamath Basin.*

## Tribal Programs

The agreement budgets \$21 million to cover roughly two-thirds of the purchase price of the 92,000-acre Mazama Forest for the Klamath Tribes. This private forestland, located within the Tribes' historic reservation boundaries northwest of Klamath Marsh, is intended to be a long-term economic resource for the Tribe.

The Mazama portion of the KBRA has been a focus of opposition in Klamath County, with detractors calling it a taxpayer-funded giveaway, while frequently mischaracterizing the parcel as public land (it is privately held). The Tribes respond that the land return serves as partial reparation for the forced liquidation of their 800,000 acre reservation in 1954, which resulted in substantial long-term economic losses for the Tribes.

The KBRA also calls for the Klamath Tribes, the Yurok Tribe and the Karuk Tribe to receive \$14.5 million each over 10 years to support fisheries and environmental management programs, and \$250,000 each for economic development studies.

For the Klamath Tribes, the agreement further supports the establishment of an interim fishing access point for Chinook salmon just below Iron Gate Dam. Fishing would be open to the Tribes each year after egg goals are met at the Iron Gate Hatchery. This is a replacement fishery since the Tribes do not have access to salmon on their historic reservation lands.

## County Funds

Klamath County, which stands to lose property tax revenues because of a reduction in irrigated acreage, is budgeted to receive \$3.2 million to offset those losses. In exchange, the county agreed not to sue over loss of property taxes.

The KBRA and KHSAs call for, but do not fund, \$20 million in economic development support for Siskiyou County. The \$20 million figure was originally discussed as a long-term offset for the tax revenue the county may lose if the Klamath Hydroelectric Project dams are removed. Siskiyou County's state assemblyman later succeeded in adding \$20 million in Siskiyou County economic development funding to the California water bond legislation passed in 2009 and originally slated for voter approval in November 2010. The bond measure was pulled from the ballot in August 2010, with a plan to have it appear on the ballot in November 2012. The legislation calls for the county to receive the funding even if the dams are not removed.

## KBRA Projected Budget Summary

Program Coordination: \$3.3 million  
Fisheries programs (Restoration, reintroduction, monitoring): \$493 million  
Water resources (construction, water acquisition, monitoring, power program): \$338 million  
Regulatory assurance: \$47.5 million  
Counties: \$3.2 million (plus \$20 million for Siskiyou County to be funded by California bond measure)  
Tribes (Mazama Forest purchase, restoration and management programs): \$65.2 million

*Intended source of funding: U.S. Government*

*Fishing with the Yurok, who use traditional nets to catch salmon.*



# The KHSA

For years, tribal, environmental and fisheries interests in the Klamath Basin have pushed for removal of the four Klamath Hydroelectric Project dams on the grounds that they block hundreds of stream-miles of potential salmon habitat and degrade water quality. The removal of the Klamath Hydroelectric Project dams would be an event of major significance. Measured by the collective size of the dams involved, it would be the largest dam removal project in U.S. history.

The KHSA does four main things:

- To fund dam removal, it supports raising an initial \$200 million from PacifiCorp ratepayers and up to another \$250 million from California taxpayers.
- It sets in motion the comprehensive federal review

of the merits of dam removal, leading to a decision by the Secretary of the Interior (the "Secretarial Determination") as to whether dam removal is in the public interest and will benefit the fishery.

- If dam removal proceeds, it calls for the creation of a "dam removal entity," to oversee the removal of the dams as soon as 2020, take on liability for unforeseen damages and arrange for sufficient insurance to cover the costs of such damages.
- Pending dam removal, it requires PacifiCorp to implement a number of environmental improvements, including measures to benefit threatened coho salmon and improve water quality. The company is also required to fund improvements and continued operations at Iron Gate Hatchery.

## Removing the Dams

While a final engineering strategy for removing the dams won't be available until mid-2011, the largest three dams (Iron Gate, Copco 1 and J.C. Boyle) likely would be removed concurrently, so that the sediment from all three reservoirs could be washed down the river in a single large pulse. Copco 2 has trapped little sediment and could be removed before the other three dams. Keno Dam and Link River Dam will not be removed.

One of the key uncertainties of the proposed dam removal is the nature and fate of the roughly 13 million to

20 million cubic yards of sediment that has been deposited behind the dams – nearly all of it in Copco Reservoir and Iron Gate Reservoir. This is enough mud to cover one square mile 13 to 20 feet deep.

Flushing sediment down the river will temporarily create very poor conditions for fish spawning and survival. Modeling studies suggest this serious water quality impairment will likely last less than one year, with the duration dependent on rainfall and river flow conditions. As part of the environmental review of dam removal, this risk to fish populations will be weighed against the potential long-term benefits of dam removal and river restoration.

With sediment flushing, the costs of dam removal are fairly modest: A 2007 report prepared as part of the dam relicensing process cites four cost estimates, none higher than \$102 million. Studies are underway to update these estimates.

If high concentrations of toxins are found in the reservoir sediment, the sediment would have to be dredged and hauled away by truck rather than flushed down the river. In that case, the cost of dam removal would increase dramatically. Preliminary investigations have detected toxins of concern in the sediment, including dioxin and polychlorinated biphenyls (PCBs). But these chemicals appear to be present at concentrations low enough that the sediment could be flushed downstream without posing a significant hazard to fish or people. A full analysis of the sediment issue will be presented in 2011 as part of the review leading to the Secretarial Determination.

Draining the reservoirs would expose large non-vegetated areas. The KHSA calls for these areas to be planted

*Iron Gate Dam, the lowermost dam on the river, divides the Klamath River watershed into two basins, upper and lower.*



with native species in an effort to prevent colonization by weedy invasive plants.

Removing Iron Gate Dam may expose and damage the 24-inch diameter pipe that runs beneath Iron Gate Reservoir, carrying water from Fall Creek, a tributary to the reservoir, to the city of Yreka. If dam removal proceeds, the KHSA would fund all costs related to assessing and

addressing any potential damage to this pipe, which delivers all of Yreka's normal water supply.

Removing the dams will also eliminate the minimal flood control benefit they provide to downstream communities. Flood risks with and without the dams in place are being assessed as part of the review that will inform the Secretarial Determination.

## Fisheries and Water Quality Benefits

Removing the Klamath Hydroelectric Project dams would have two main benefits for fish: restoration of access to spawning habitat and improvements in water quality downstream of the dams.

By taking down the dams, salmon would gain access to historic habitat as far upstream (for Chinook salmon) as the tributaries of Upper Klamath Lake. This increase in potential habitat area stands to increase the number of wild-born juvenile fish that swim out of the river into the ocean each year.

According to modeling studies, removing the dams will make the water below the site of Iron Gate Dam cooler – and thus more favorable for salmon – particularly during key spawning periods in late summer and fall months. In addition, problems associated with toxic

blue-green algae in the Klamath Hydroelectric Project reservoirs will be alleviated by dam removal, because those species of algae generally do not thrive in moving water.

Opening access to historic habitat and improving water quality in the main stem of the Klamath River are not likely, on their own, to be sufficient to drive a substantial recovery of the Klamath Basin's salmon populations. As the National Research Council has pointed out, salmon currently cannot take advantage of many already-available habitat areas in the Lower Klamath River and its tributaries because of habitat degradation. For salmon recovery, the \$493 million in habitat restoration work called for in the KBRA is an important complement to the dam removals envisioned in the KHSA.

## Funding, Costs and Liability

The KHSA budgets up to \$450 million for dam removal and related restoration and mitigation programs.

### Ratepayers

The first \$200 million of the total would come from a surcharge added to the electricity bills of PacifiCorp's 550,000 Oregon customers and 45,000 California customers. In Oregon, the surcharge averages about 1.7 percent; in California, it would be 1.8 percent. The surcharges would be collected until 2020, when the dams are scheduled to be removed. Of the total amount collected, 92 percent is expected to come from Oregon, the remainder from California.

The loss of power production from dam removal will not impact electricity reliability in the Klamath Basin or unduly affect electricity rates as compared to other PacifiCorp customers elsewhere. Electricity prices are set by state public utilities commissions for all of a utility's customers, based on the average cost of providing electricity service

and regardless of the amount of power generated in a particular region. Over the long run, the utility will incur costs to generate or buy power to make up for the loss of the dams' generation capacity, and these costs will be shared among all of PacifiCorp's customers in its six-state territory. If the dams are not removed, customers will have to cover the expense of providing fish passage and other federally required environmental modifications, including improvements to water quality. In a September 2010 order, the Oregon Public Utilities Commission concluded that implementing the KHSA likely will be less costly to PacifiCorp's Oregon customers than retrofitting and relicensing the dams.

### California's Share

In signing the KHSA, the State of California committed to provide up to \$250 million towards the removal of the dams. Since the state stands to realize the majority of the fisheries and water quality improvements that dam removal promises, the agreement's signatories

*Problems associated with toxic blue-green algae in the Klamath Hydroelectric Project reservoirs will be alleviated by dam removal because those species of algae generally do not thrive in moving water.*

considered it reasonable to ask the state's taxpayers to pay a portion of the cost. When the agreement was signed, it was hoped that these funds would come from a state bond measure on the November 2010 ballot. That measure has been delayed, likely until November 2012, so the state must find an alternative. Bond funds for river restoration approved by California voters in earlier elections but not yet spent are one potential source.

### **What if it Costs More Than \$450 million?**

If the estimated costs of dam removal are greater than \$450 million, the Secretary of the Interior will not make a determination related to the dams until the KHSA signatories develop a plan to address the excess costs. Covering such excess costs would likely fall to the governments of California and Oregon, though both states would have the right to push for modifications to the dam removal plans to contain the project budget. The federal government is explicitly not liable for covering cost overruns (or other dam removal costs).

### **The "Dam Removal Entity"**

To shield PacifiCorp from liability for damages related to dam removal, the federal government will designate a "Dam Removal Entity," which will assume ownership of the dams just before they are taken down. This Entity may be the U.S. Department of the Interior or another government agency, or it may be legally separate from the government. In any case, the Entity will be the dams' legal owner for the purposes of any liability lawsuits related to dam removal, and it will carry insurance to cover damages.

After transferring the dams to the Dam Removal Entity, PacifiCorp's main ongoing responsibility will be to continue to fund hatchery production of salmon until roughly 2028 at Iron Gate Hatchery (if it is still functional after dam removal) or at an alternative facility or facilities.

Some critics say the KHSA's funding and liability provisions are too much in PacifiCorp's favor, arguing that the company managed to relieve itself of a major liability – a federal requirement to spend hundreds of millions of dollars to modify the dams – at virtually no cost to its shareholders. It is true that the waiver of liability benefits PacifiCorp. However, if the company had proceeded with relicensing, the expense of modifying the dams likely would be passed on to ratepayers – as is standard for a regulated public utility – while the company (and its shareholders) would have continued to earn profits off the dams.

### **County Opposition to Dam Removal**

Elected officials in Siskiyou and Del Norte counties oppose dam removal and did not sign the KBRA and KHSA.

Siskiyou County officials have been particularly outspoken, arguing that dam removal poses many risks for the county and its residents but provides few benefits. These stated risks include, among others, potential damage to roads and bridges downstream of the dams, effects on aquifers when the reservoirs are drained, the loss of the small amount of flood control provided by the dams and losses to property values on parcels near the reservoirs. The KHSA does not provide specific remedies for these potential losses. However, the need to mitigate for such potential losses will be assessed as part of the state and federal environmental review processes.

In November 2010, Siskiyou County voters approved by a 4-1 majority an advisory ballot measure opposing dam removal. In the same election, Klamath County voters narrowly defeated a ballot measure calling for the county to withdraw from participation in the KBRA.

Del Norte County is concerned that sediment flushed down the river during dam removal will end up in Crescent City's port, requiring dredging.



# Common Misconceptions

## General Klamath Basin Issues

- **Iron Gate Dam prevents floods downstream**
  - o Iron Gate Dam is not operated for flood control. Iron Gate Reservoir has an active storage capacity of 3,790 acre-feet, which is not enough to provide significant flood protection. Downstream flood risks with and without Iron Gate Dam and the other Klamath Hydroelectric Project dams will be assessed in the federal government's review of dam removal.
- **Klamath River salmon historically never made it to the Upper Basin**
  - o Historic runs of Chinook salmon as far upstream as the tributaries of Upper Klamath Lake are well documented. A 2005 article by federal fishery scientists in the journal *Fisheries* ([http://www.fisheries.org/afs/docs/fisheries/fisheries\\_3004.pdf](http://www.fisheries.org/afs/docs/fisheries/fisheries_3004.pdf)) summarizes the evidence. Coho salmon likely traveled as far upstream as Spencer Creek, upstream of J.C. Boyle Dam.
- **The Klamath River was once the third most productive salmon river on the West Coast of the United States**
  - o This statement is true, but it is also true that the Klamath River remains the third most productive salmon river on the West Coast, after the Columbia River and the Sacramento-San Joaquin river system.
- **If dams are removed, electricity rates will go up. If they are not removed, rates will stay the same.**
  - o Electricity prices for PacifiCorp's residential customers will rise whether or not the dams are removed. If the dams are not removed, prices will likely rise by more, according to the Oregon Public Utilities Commission. If the dams are not removed, customers will bear the cost of retrofitting and relicensing the dams.

## Major Klamath Basin Restoration Act Issues

- **KBRA will mean significant job losses to local communities**
  - o The KBRA is designed to provide for the long-term economic stability and sustainability of Upper Basin irrigation communities. Signatories agreed that the negotiated volumes of irrigation water are preferable to the prospect of steeper reductions that might be mandated by environmental regulators. For communities in the Lower Basin, dam removal and habitat restoration stand to drive economically meaningful recovery of salmon harvests. In addition, the spending on ecological restoration will support jobs throughout the basin.
- **KBRA "takes" water and rights away from people**
  - o The agreement explicitly does not take away water or land use rights from any party. Signatories have in, some cases, pledged not to assert their water rights as part of mutually beneficial agreements. The KBRA does call for reductions in annual irrigation water use upstream of Upper Klamath Lake by 30,000 acre-feet. Participation by irrigators in this program, which could involve the sale or transfer of water rights, would be entirely voluntary.
- **KBRA gives control of water over to tribes**
  - o Under the agreement, the Klamath Tribes promise not to assert their water rights in a way that will interfere with the delivery of the Klamath Project water supplies specified in the KBRA. The agreement calls for a similar, mutually beneficial arrangement to be negotiated between the Klamath Tribes and those off-Project irrigators that have signed the KBRA. In addition, the KBRA does not supersede the determination of water claims in Oregon's ongoing Klamath Basin water adjudication process.
- **KBRA "gives" public lands to the Klamath Tribes**
  - o The KBRA's proposed budget includes \$21 million to cover about one-third of the Klamath Tribes' purchase price of the Mazama Forest, a private, 92,000-acre parcel that the Tribes plan to manage for timber harvest. The land makes up a portion of the Klamath Tribes' former 800,000-acre reservation, which was liquidated against their will in the 1950s, resulting in substantial long-term economic losses.

# Next Steps

Several steps remain before the Klamath River agreements can be implemented.

First, Congressional action is required to validate the deals. Congress will also decide whether to fund the \$1 billion in federal funding called for under the KBRA.

Federal and state environmental reviews of the proposed dam removal were launched in 2010. This process will result in the production of a joint Environmental Impact Statement and Environmental Impact Report (as required under federal and state law, respectively). This document, scheduled for public release in summer 2011, will evaluate the environmental impacts (both benefits and drawbacks) of dam removal and identify impacts that will require mitigation. This document is open to public comment, and public meetings will be held after its release. A final draft is due in late 2011.

The environmental review will inform the decision by the Secretary of the Interior about whether to proceed with dam removal. This decision is scheduled for no later than March 2012.

A Secretarial Determination favoring dam removal will trigger further environmental review and permitting procedures, as well as more detailed planning, leading up to dam decommissioning in 2020 or later.

The implementation of the agreements will be guided by the Klamath Basin Coordinating Council, which is made up of 16 representatives from signatory parties, including state, federal and county governments, tribes, conservation groups, irrigators and the commercial fishing industry. The council will be the main forum for resolving disputes that may arise. Parties that did not sign the agreements are not represented as voting members of the council. The council's meetings are open to the public.

## For More Information

<http://klamathrestoration.gov>

*Upper Klamath Lake.*

