

CASE Study - US

Elwha River Dam Removals



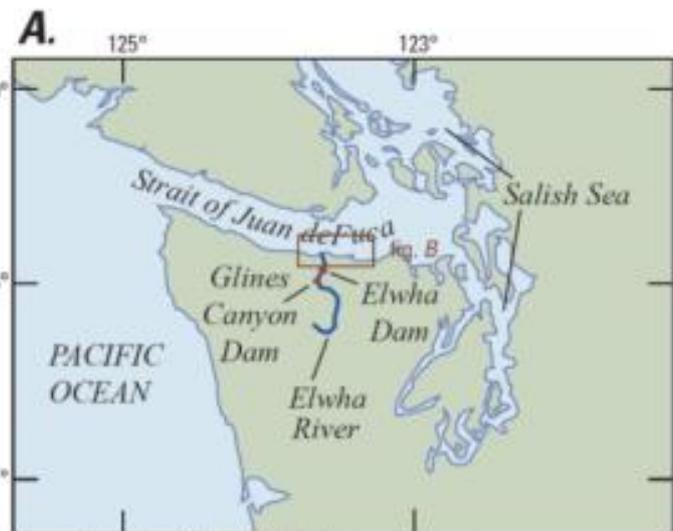
Elwha River dam removal: the largest dam removal in US history so far

The largest dam removal and ecosystem restoration project in America up to now was the removal of the Elwha dam (33m height) and the Glines Canyon dam (64m height) on the Elwha River in the Pacific North West / Washington in 2009-2014. The upper portion of the Elwha river basin is located within Olympic National Park, and the lower basin is in the Klallam Indian reservation, here the Elwha dam was located 8km upstream from the river's confluence to the Pacific Ocean (Gelfenbaum, et al. 2011).

For the Klallam tribe the Elwha River formed an integral part of their spiritual heritage and was also a fishing ground and source of revenue. The dams were constructed in 1913 and 1927 without fish ladders, although fish passages were required by law, but the project owner (Thomas Aldwell) circumvented the law by building an unsuccessful fish hatchery (Wunderlich and others. 1994).

Technical Data

Country	US/ Washington State
Name of River	Elwha River
Name of Dam:	Elwha Dam Glines Canyon Dam
Year of construction	1913 Elwha Dam 1927 Glines Dam
Year of removal	2009 - 2014
Cost of removal:	185 Mio. USD
Type of dam	hydropower
Power capacity	14,8MW Elwha Dam 13.3 MW Glines Dam
Height / Length	33mElwha 64mGlines
Volume	-
Freed river km	113 riverkm
Dam owner:	US Department of Interior



Base modified from U.S. Geological Survey 1:100,000-scale digital data

Location: Elwha Dam and Glines Canyon Dam (source: Gelfenbaum, et al. 2011)

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In 1978 Elwha dam failed to pass safety inspections and catastrophic flood risk would have been the consequence if the dam would not have been removed or renovated. Confronted by this risk the tribe has claimed their right to remove the dam, which was the first time in US history. Furthermore the efficiency of hydropower production was low and investment costs for upgrading the existing dams to current environmental legislation were higher than the removal of the dam. However to prove this with technical and economical studies a decades-long effort was necessary by the tribe and conservation groups.

In 1992, Congress passed the Elwha River Ecosystem and Fisheries Restoration Act, authorizing dam removal to restore the altered ecosystem. After two decades of planning, the largest dam removal in U.S. history began in September, 2009. The reservoirs were emptied gradually over a two-year time period and works were finished in 2014.

Endangered salmon, trout and other fish have now again access to more than 113 km of their historic migration and spawning habitat. Fish stock is recovering quickly and bears, cougars, bobcats, mink, otter, and other wildlife sustained by the renewed food source have increased in abundance. Native plants are reclaiming riverbanks and silt and sand are moving downstream to rebuild the beach at the river's mouth.

The Elwha River Restoration project provides a rare opportunity for scientists to learn what happens when a dam is removed and salmon return to a wild, protected river. These studies help informing future dam removal and restoration projects.

The film "[Return of the River](#)" by John Gussman & Jessica Plumb is putting on scene the group of people who were behind this success story of dam removal, who attempted the impossible to change the public opinion of a town and eventually of the US nation to bring a dam down. The dam removal movie [DAMNATION](#) also brings overwhelming pictures and background stories of this stunning victory of environmental and tribal forces.



Former shore line of artificial reservoir of Elwha river© Jason Jaacks



Gradual water release from artificial reservoir during removal works of Elwha river© Jason Jaacks

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REMOVE 
THE DAMS
FREE OUR RIVERS

Source of Information and links:

[Duda, J., S. Brenkman, C. Orgersen, J. Dunham, R. Hoffman, R. Peters, M. McHenry, and G. Press. 2008. Impending removal of Elwha Dam holds promise for salmon, researchers. People, Land and Water.](#)

[Lejon, A. G. C., B. Malm Renöfält, and C. Nilsson. 2009. Conflicts associated with dam removal in Sweden. Ecology and Society 14\(2\)](#)

[Official site of Olympic National Park: Elwha River Restoration](#)

[USGS Science to Support the Elwha River Restoration Project](#)

<https://www.americanrivers.org/river/elwha-river/>

[Lower Elwha Klallam Tribe](#)



Glines dam before removal Elwha River © John Gussman, Return of the River / Patagonia



Removal works at Glines dam, Elwha River © Jason Jaacks



Restored coastal line after dam removals © John Gussman, Return of the River / Patagonia

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