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## **The Costs of Keeping the Lower Snake River Dams**

In their *2020 Columbia River System Operations Environmental Impact Statement*, the U.S. Army Corps of Engineers, Bonneville Power Administration and the Bureau of Reclamation claim that breaching the four lower Snake River dams would add significant financial costs to regional freight transportation, Pacific Northwest electricity bills, and water for agricultural irrigation. Supporters of the four dams portray financial disaster sweeping across southeastern Washington, northeastern Oregon and north central Idaho if the dams are breached.

Many of the costs claimed in the EIS are readily refutable. The Army Corps of Engineers in particular finds no difficulty placing its thumb on the scale to bolster its defense of the dams. Much less attention is given to the *costs of keeping the dams in place*, particularly costs that do not readily find expression on a financial spreadsheet. Consider these examples:

### **1. Extinction of Snake River Threatened and Endangered Salmon and Steelhead**

Four species of Snake River salmon and steelhead are listed as threatened or endangered under the Endangered Species Act. Some Snake River anadromous fish species have already become extinct.

The viability of a fish run is determined by the smolt-to-adult return (SAR). For a species to survive, SAR levels must reach 2% to 6%, with an average over time of 4%. For more than twenty years, the SAR for wild Snake River spring/summer Chinook has averaged .84%. The long-term SAR for threatened Snake River steelhead is 1.7%. Endangered Snake River sockeye that reach their spawning grounds have typically numbered in the dozens or even single digits. Fish scientists from across the Pacific Northwest with hundreds of years of combined professional experience have concluded that breaching the lower Snake River dams is essential to avoiding the extinction of these fish and as a means of restoring the lower Snake River. Is the extinction of four Pacific Northwest iconic fish species too high a price to pay for maintaining the status quo on the lower Snake River?

### **2. Extinction of Southern Resident Killer Whales**

Southern Resident Killer Whales are among nine species the U.S. government (NOAA Fisheries) has identified as “most at risk of extinction in the near future” due principally to a lack of chinook salmon, the orcas’ principal food source. The Snake River and its extensive tributaries were once a major source of chinook salmon. Whale scientists echo the fish scientists: breaching the lower Snake River dams is essential to saving Southern Resident Killer Whales, which today number just 74 members. Is the extinction of these mammals too high a price for keeping the lower Snake River dams?

### **3. Native American Treaty Rights and Dishonoring the U.S. Constitution**

Salmon are a significant part of the cultural heritage of many people in the Pacific Northwest. These fish are woven into Native Americans’ very existence as a people—their sustenance, economic well-being and spirituality. During the second half of the

19th century the U.S. government signed treaties with Pacific Northwest tribes guaranteeing the right “to fish, hunt and gather in their usual and accustomed places,” a right that presumes the continued presence of various plants, fish and other wildlife in those places. The U.S. Constitution declares U.S. treaties the law of the land. Is failure to uphold United States’ treaties and keep our nation’s promises too high a price to pay for keeping in place the lower Snake River dams?

#### **4. Fourteen Thousand Acres of Land**

The surface area of the reservoirs behind the four lower Snake River dams totals just under 34,000 acres, with 14,000 of those acres identified as land now flooded by the dams. Prior to the dams, the river valley’s climate, rich soil and available irrigation was especially well suited to raising fruit crops, with some farms exceeding 500 acres.

These lands also contain hundreds of former Native American village, burial and sacred sites. The negative impact of these losses to the cultural and religious practices of Native peoples, particularly the Palus and Nimiipuu, is immeasurable.

An old adage advises, “Buy land. They’re not making it anymore.” How often does the opportunity arise to reclaim 14,000 lost acres of land containing a multitude of values now buried by up to 100 feet of stagnant water?

#### **5. Lost Riparian Zones**

In a natural river system, the interaction between water and land creates a unique and critically important habitat with many functions, including soil stabilization, flood control, water purification and wildlife diversity. In 1987 the Washington Department of Fish and Game estimated the game bird population (pheasants, quail, partridge and chukars) in the river valley between Pasco and Lewiston had declined from 151,000 birds to 2,000; fur-bearing animals from 13,000 to 500; wintering songbirds from 95,000 to 3,000. The Corps promised the public it would purchase 24,000 acres as mitigation for the losses of the riparian zones in the lower Snake River canyon, a fool’s errand because one cannot replace riparia thousands of years in the making with basalt cliffs and steep, hardscrabble steppe.

What is the value of 149,000 self-perpetuating game birds? 92,000 songbirds? Over 12,000 fur bearers? The loss of thousands of additional plants and animals in 280 miles of obliterated riparian zones?

#### **6. Pollution of the Lower Snake River**

The reservoirs behind the lower Snake River dams are sources of pollution that negatively impact people, fish, and the atmosphere. For example, the lower Snake provides the perfect ingredients for creating toxic algal blooms: stagnant, warm water fed by agricultural runoff. The bacteria in these blooms are highly toxic to humans, pets, livestock, wildlife and can accumulate in fish. In 2023, such a bloom covered more than 30 miles of lower Snake River reservoirs, in some places shore-to-shore, prompting warnings from the Whitman County Public Health Department for people to keep themselves and their pets out of the water and not to eat any fish caught nearby.

A second source of pollution: all reservoirs produce methane, a gas that can be up to 80% more powerful than CO<sub>2</sub> in trapping heat in the earth’s atmosphere. As new research from Washington State University confirms, a previously unaccounted for

source of methane gas results from degassing as water from a reservoir passes over or through a dam. Dams, especially hydroelectric dams, have emerged as significant contributors to climate change. Algal blooms, which feed new organic material into reservoirs, can lead to increased methane production.

The Environmental Protection Agency has identified heat, expressed in water temperature, as the pollutant in the lower Snake River with the greatest negative environmental impact. Those 34,000 acres of reservoir surface absorb radiant solar heat. Salmon and steelhead require water no warmer than 68 degrees Fahrenheit. Higher water temperatures can halt adult fish migration, cause disease and even death. The lower Snake River regularly exceeds 68 degrees during summer months, often for 50 to 60+ days straight. In 2015, hot water killed an estimated 250,000 Columbia River adult sockeye salmon, along with almost the entire run of endangered Snake River sockeye. According to the EPA, global warming will make the temperature problem worse. The EPA's Total Maximum Daily Load (TMDL) for temperature on the lower Snake indicates the only way this stretch of river can meet required standards of the Clean Water Act, and thus support the recovery of threatened and endangered Snake River salmon and steelhead, is to eliminate the reservoirs. There is only one way to accomplish that task.

Does the Clean Water Act apply to the lower Snake River or not? At what cost do we ignore such a bedrock law for the lower Snake as well as other U. S. rivers?

## **7. Water Loss Through Evaporation**

In an ever-drier American West, the loss of water from reservoirs through evaporation is becoming a major issue for water managers and climate scientists. A few recently-established facts: evaporative water losses are greater from reservoirs than from natural lakes; hot, dry, windy locations produce greater amounts of evaporation; the volume of water loss is much greater than initially believed; climate change will increase these losses.

Much of the lower Snake River basin is located in a semi-arid desert. Summer temperatures can top 100 degrees F, and the river canyon is known for its afternoon winds. Evaporative water loss from the reservoirs behind the four lower Snake River dams constitutes yet another cost of keeping the lower Snake River dams in place.

A recent study by the Stockholm Environment Institute estimated the annual water evaporation from the four reservoirs behind the lower Snake River dams totals 30,400 acre feet (9.9 billion gallons). This is net evaporative loss, i.e. loss beyond that which would occur from a naturally flowing river. This volume of water would supply the household water needs of around 240,000 people. The same amount could also irrigate 8,000 acres of orchard.

The loss of 30,400 acre feet of water also results in the loss of an undetermined amount of electricity that would otherwise be generated at each of the lower four Columbia River dams.

## 8. Ecosystem Nutrient Losses

The Snake River and its tributaries form vast ecosystems, including major wilderness areas such as the Selway-Bitterroot and the Frank Church-River of No Return. Historically, millions of salmon annually delivered to the Snake River basin hundreds of tons of nutrients from the sea. These nutrients nourished at least 31 animal and bird species, from eagles to grizzly bears. Those animals further shared nutrients with the plant life in local habitats. The book title *Salmon In The Trees* captures this concept. The ever greater loss of these nutrients exacts yet another cost of retaining the lower Snake River dams.

How many costs of keeping the four lower Snake River dams in place are too great to bear? Should we measure those costs by the number of U.S. treaties broken? lost acres of land? missing song birds or game birds? disappearing acre-feet of water? tons of toxic algae? The number of flooded ancestral burial grounds?

And the science is clear—threatened and endangered Snake River salmon and steelhead are on a path to extinction, as are Southern Resident Killer Whales. Either loss would be a tragedy.

The time to breach the Lower Snake River dams is now.

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