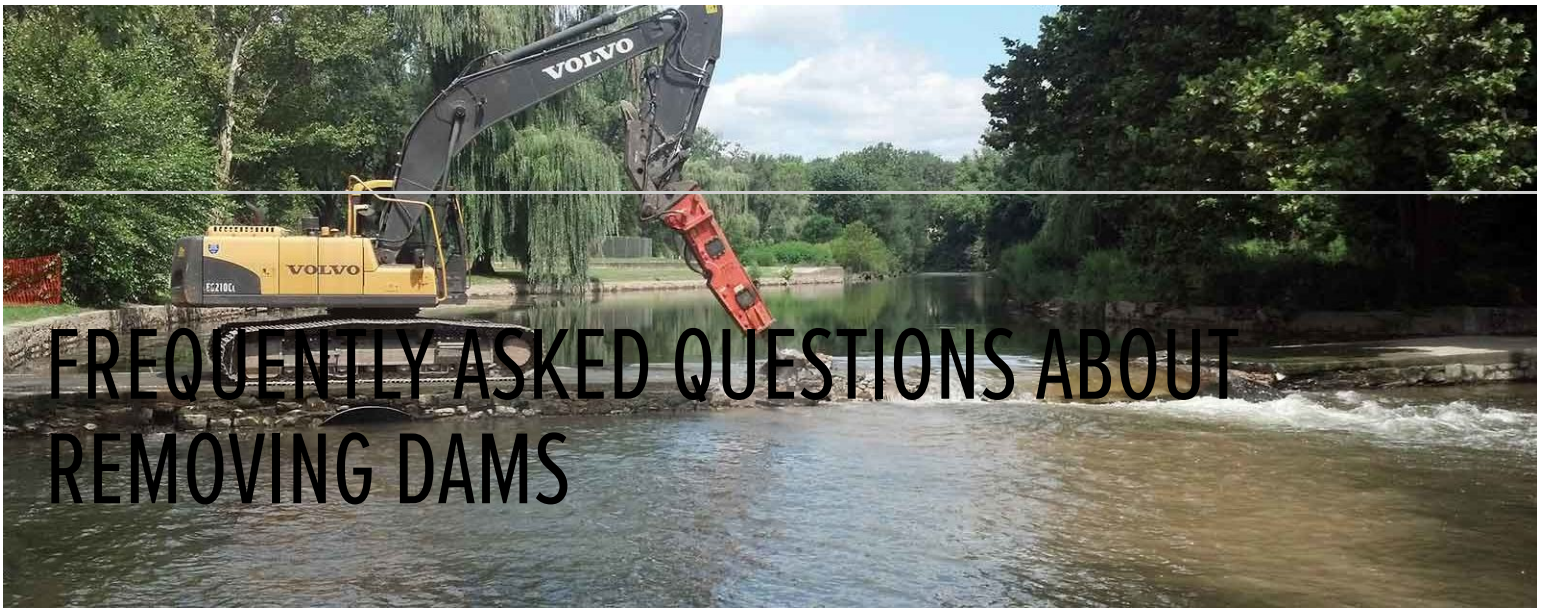

FREQUENTLY ASKED QUESTIONS ABOUT REMOVING DAMS

WHAT IS A DAM?

There are a number of technical and legal definitions of a dam but generally it is any structure that impounds or diverts water.

HOW MANY DAMS ARE THERE IN THE UNITED STATES?

The exact number of dams is not known. There are more than 79,000 dams in the US Army Corps of Engineers' (Corps) National Inventory of Dams (NID), which is the most comprehensive inventory of dams nationwide. However, this inventory only covers dams that meet minimum height and impoundment requirements, so an unknown number of small dams are not included in the inventory. Of the 79,000 dams in the database, approximately 66,000 are located on rivers (the remainder impound water off-river).

WHICH STATE HAS THE MOST DAMS?

According to theUS Army Corps of Engineers' (Corps) National Inventory of Dams (NID), Texas has the most dams of any state at 6,798.

WHO REGULATES DAM OPERATIONS?

A number of state and federal agencies are responsible for regulating dams. Dams owned by federal agencies are self-regulated. Non-federal dams that produce hydropower are regulated by the Federal Energy Regulatory Commission (FERC (http://www.ferc.gov/)). Non-federal dams that do not produce hydropower are regulated by the state in which they reside. Often this state regulation is focused on dam safety.

HOW MANY DAMS ACTUALLY PRODUCE POWER?

FERC regulates approximately 2,300 hydroelectric producing dams. In addition, there are approximately 240 federal dams that produce hydroelectric power. Thus, there are a total of approximately 2,540 hydropower dams.

WHAT IS THE LARGEST DAM IN THE COUNTRY?

The size of a dam can be measured in a number of different ways. According to the NID, Oroville Dam, on the Feather River in California, is the tallest dam in the United States, measuring in at 770 ft. The dam with the largest impoundment is Hoover Dam, on the Colorado River in Nevada, which stores approximately 30 million acre-feet of water. The dam that provides the most hydroelectric power in the United States is Grand Coulee Dam, on the Columbia River in Washington, which generates 6180 megawatts (MW) of power.

WHY ARE SOME DAMS BEING REMOVED?

There has been a growing movement to remove dams where the costs – including environmental, safety, and socio-cultural impacts – outweigh the benefits – including hydropower, flood control, irrigation, or recreation – or where the dam no longer serves any useful purpose. The goal of removal can be multi-faceted, including restoring flows for

fish and wildlife, reinstating the natural sediment and nutrient flow, eliminating safety risks, restoring opportunities for recreation, and saving taxpayer money.

HOW ARE DAMS REMOVED?

Because dams and rivers vary greatly, physical removal strategies and techniques may also vary on a case by case basis. Here is more in-depth information on how dams are removed (http://www.americanrivers.org/threats-solutions/restoring-damaged-rivers/).

HOW MANY DAMS HAVE BEEN REMOVED TO DATE?

Currently, American Rivers is aware of almost 1,150 dams that have been removed over the past 100 years in this country. We are still in the process of gathering this data, so that figure continues to increase as more information becomes available. You can view an interactive map of all known U.S. dam removals (http://americanrivers.org/threats-solutions/restoring-damaged-rivers/dam-removal-map/).

HOW MUCH DOES IT COST TO REMOVE A DAM?

Because the size and location of dams vary so greatly, the cost to remove an individual dam can range from tens of thousands of dollars to hundreds of millions of dollars.

WHO OWNS THE DAMS THAT ARE BEING REMOVED?

Private businesses, federal agencies, state agencies, local governments, or public utilities may own dams. Most of the dams removed to date have been owned privately, by local government, or by public utilities.

WHO PAYS FOR DAM REMOVAL?

Who pays for the removal of a dam is often a complex issue. In past cases, removal has been financed by the dam owner, local, state and federal governments, and in some cases agreements whereby multiple stakeholders contribute to cover the costs.

WHO DECIDES THAT DAMS SHOULD BE REMOVED?

The decision to remove a dam is made by varying entities, depending on the regulatory oversight of the dam. In most cases, the dam owner itself is the decision-maker, often deciding that the costs of continuing to operate and maintain the dam are more than removing the dam. State dam safety offices can often order a dam to be removed if there are major safety concerns. State fish and wildlife offices are also often involved in the decision-making, particularly when the goals of the project include restoration of habitat for migratory and resident aquatic species. It the dam in question is a hydropower facility, the Federal Energy Regulatory Commission can order a hydropower dam under their jurisdiction to be removed for both environmental and safety reasons.

CAN RIVERS BE RESTORED THROUGH DAM REMOVAL?

Although most rivers cannot be completely restored to historic conditions – simply because of the amount of development that has occurred on and along them – dam removal can often recreate conditions that move the river towards those historic conditions. For example, fish are returning to historic stretches of river that had been previously obstructed on Butte Creek in California, the Souadabscook River in Maine, and the Clearwater River in Idaho, as a result of dam removals.

WHAT BENEFITS DO DAMS PROVIDE?

Dams may provide a variety of benefits, including water supply, power generation, flood control, recreation, and irrigation.

HOW CAN THE BENEFITS OF A DAM BE REPLACED WHEN IT IS REMOVED?

While dams serve a number of human needs, society has developed ways to address many of these needs without dams. For instance, flood control can often be accomplished more effectively and for less money by restoring wetlands, maintaining riparian buffers, or moving people out of the floodplain. Updating antiquated irrigation systems and replacing inappropriate crops can dramatically reduce the need for dams and reservoirs in the arid West. Rather than plugging rivers with multiple hydropower dams, a cheaper and less environmentally harmful solution is to use existing energy efficiency technologies. For example, the 3MW of power lost in the removal of the Edwards Dam, on the Kennebec River in Maine, can be replaced simply by replacing 75,000 light bulbs with energy efficient bulbs. Many dams that have been removed no longer had any beneficial use or that use was very limited. [Learn about alternatives that exist by reading Beyond Dams: Options and Alternatives (http://www.americanrivers.org/newsroom/resources/beyond-dams-options-and-alternatives/).}

IS IT COST EFFECTIVE TO REMOVE A DAM?

Dam removal can be expensive in the short term, but in most cases where dams have been removed or are being considered for removal, money is actually saved over the long term. Removal eliminates the expenses associated with maintenance and safety repairs, as well as direct and indirect expenses associated with fish and wildlife protection (e.g. fish ladders and mitigation for fish mortality). In addition, removal often generates income from newly

available recreation opportunities – including fishing, kayaking, and rafting – which may actually result in a net economic benefit. In some areas, dam removal may allow resumption of commercial fishing activities.

WILL THE REMOVAL OF A DAM MATTER IF OTHER DAMS IN THE SYSTEM ARE NOT REMOVED?

Some rivers are so heavily developed and dammed that removal of one dam on that river will only return flows to a small portion of the river. Generally, dams that have been targeted for removal are strategically located – removal will open up a section of the river critical to fish and wildlife and/or recreation. In some cases, this additional section of river is enough to sustain crucial populations of endangered or threatened species of fish, mollusks, and other wildlife.

HOW DOES DAM REMOVAL AFFECT FISH?

Dam removal benefits fish in many ways, including: (1) removing obstructions to upstream and downstream migration; (2) restoring natural riverine habitat; (3) restoring natural seasonal flow variations; (4) eliminating siltation of spawning and feeding habitat above the dam; (5) allowing debris, small rocks and nutrients to pass below the dam, creating healthy habitat; (6) eliminating unnatural temperature variations below the dam; and (7) removing turbines that kill fish.

WHAT ARE THE POTENTIAL DOWNSIDES TO DAM REMOVAL?

Dam removal does result in fundamental changes to the local environment. The reservoir will be eliminated, and with it the flat-water habitat that had been created. Wetlands surrounding the reservoir may also be drained, although new wetlands are often created both in the newly restored river reach above the former dam site and in the river below. Sediment that collects behind a dam, sometimes over

hundreds of years, may contain toxics such as PCBs, dioxide, and heavy metals. Removal of these toxic materials is often extremely expensive, and the threat of re-suspending these toxic-laden sediments in the process of dam removal has the potential to damage downstream water quality and threaten the health of fish and wildlife and water users. These impacts, however, can be prevented through proper removal techniques. Short term impacts of the dam removal itself can include increased water turbidity and sediment buildup downstream from releasing large amounts of sediment from the reservoir, and water quality impacts from sudden releases of water and changes in temperature. It has been demonstrated that these short-term impacts and greatly outweighed by the quick recovery of the system and the long-term benefits that result.

HOW QUICKLY DO RIVERS RECOVER AFTER DAM REMOVAL?

Rivers are very dynamic and resilient systems. Experience has shown that natural river systems can be restored relatively rapidly after dam removal. For example, spawning fish returned to the Souadabscook River in Maine only months after a dam was removed, and the flushing of the sediment from the Milwaukee River in Wisconsin following the Woolen Mills Dam removal took only six months.

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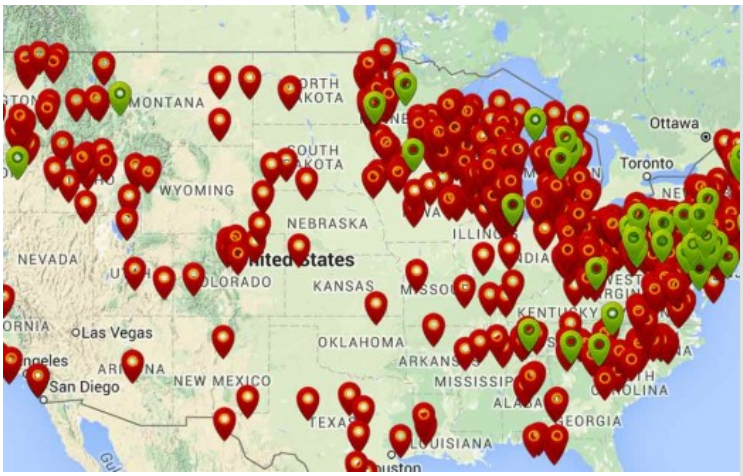

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Map of U.S. Dams Removed Since 1916 (https://www.americanrivers.org/threats-solutions/restoring-damaged-rivers/dam-removal-map/)

A running inventory of all dam removal projects we can find. It includes both...

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