



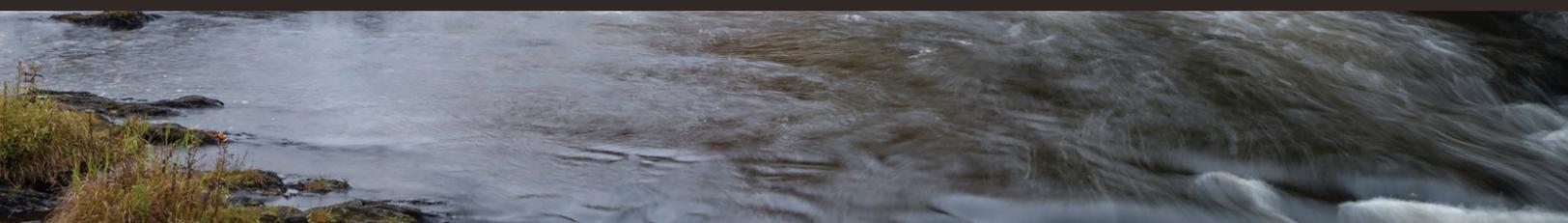
# Let Them Flow

# *Wild and Free*

**V**ermont has more than 800 known dams, and we estimate that hundreds of them may serve no useful purpose. Instead, they continue to degrade water quality and aquatic habitat, restrict the movement of fish and other wildlife, drive up costs in maintenance and liability, and pose significant risks to public safety.

Since 1996, upwards of 30 unused dams have been removed from Vermont's rivers and streams to improve public safety and benefit the environment. Many of these dams were privately owned.

On the following pages, read more about the benefits of dam removal and the downsides of maintaining unwanted dams. Plus, find out how you can receive assistance to have a dam on your property removed.





Photos by Ron Rhodes



Ompompanoosuc River in West Fairlee, VT before (left) and after the removal of Geer Dam

### Benefits Of Dam Removal



- Lowers water levels during floods and other high-flow events



- Reconnects the stream or river so fish can move freely up and downstream, improving habitat for fish and wildlife



- Eliminates the cost of periodic inspections, maintenance, and repairs to keep the dam safe



- Erases liability associated with the dam – damage downstream if the dam fails, or injury of someone at the dam – which lowers homeowner insurance premiums



- Removes a possible impediment to the sale of a property, as potential buyers may shy away from the liability associated with dam ownership

### Why Do Dams Need To Go?



- They restrict the upstream and downstream movement of fish and other aquatic life, and degrade aquatic habitat



- They disrupt the natural movement of sediment downstream



- They reduce dissolved oxygen



- They alter natural streamflow cycles



- They increase the likelihood of flooding, especially with older dams that are not regularly inspected or properly maintained



- They result in exorbitant flood recovery costs and higher liability insurance premiums for owners



Photos by BT Fitzgerald



Cox Brook in Northfield, VT before (left) and after the removal of Cox Brook Dam

# FAQs

## How many dams are there in Vermont, and who owns them?

The Vermont Dam Inventory, maintained by the Vermont Department of Environmental Conservation, lists 820 dams, and there are indications that many more are not accounted for in this inventory. Most dams are privately owned, by entities like electric companies, ski resorts, other organizations, and individuals. Other dams are owned by the State of Vermont or municipalities, and a few are owned by the federal government.



Ron Rhodes

*East Burke Dam on the Passumpsic River in East Burke, VT, before removal*

groups and state and federal natural resource agencies, Vermont Natural Resources Council raises funds, hires engineers and construction contractors, obtains permits, and manages dam removal projects from start to finish. Projects can usually be completed without any cost to the owner.

## Why should dam owners consider removing their dams?

Aside from the costs of maintaining a dam in a safe condition, dam owners can be held responsible for any loss of life or property damage resulting from dam failure or improper operation. Removing dams relieves an owner of this legal and financial liability while providing long-lasting environmental and societal benefits.

## Will dam removal cost me, the owner or municipality, anything?

In collaboration with other non-profit conservation

## What would my involvement be like in the removal process?

Dam owners ultimately decide whether a project should proceed, and are involved throughout to ensure the project meets their expectations. But in most cases, they are not responsible for planning, process, or costs.

## Why were dams built originally, and what makes them “unwanted” now?

Many dams were originally built to supply mechanical power for sawmills and gristmills. Others were built to provide water supplies for communities and industries, or for recreational purposes. Currently, the most common uses for dams are for hydroelectric power, water supply, and recreation.



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*Passumpsic River in East Burke, VT, after the removal of East Burke Dam*

As the water-driven mill industries and original water supply systems were abandoned long ago, many older dams no longer serve a useful purpose. Instead, they sit idle in rivers or streams, creating public safety and environmental hazards without providing any public benefits such as electricity or flood control.

### **Shouldn't we upgrade unused dams to generate renewable hydroelectric power instead of removing them?**

Contrary to popular perception, there are very few opportunities for economically viable hydroelectric projects at existing dams. All but a few of the good, remaining sites were redeveloped in the 1980s or 1990s. The economics of developing a new hydroelectric project at other sites, without harming the river, are very challenging.

### **Don't these dams help control flooding during storms like Tropical Storm Irene?**

Not in most cases. About a dozen dams in Vermont were built for flood control; to store water during floods and release the water over time, after the flood peak had passed. Most other dams are essentially "full" all the time and have very limited ability to store extra water during a flood, and may actually increase flooding upstream.

### **Are these old dams really a safety hazard?**

Yes, they often are. A 2014 report by the Vermont Section of the American Society of Civil Engineers noted that 35 percent of the dams inspected by the State of Vermont in 2013 were in poor condition.

About 200 of the state's dams are classified as having high or significant hazard potential, meaning that if they were to fail, economic losses and loss of life could be expected. Most smaller dams are not regularly inspected so their condition, and the likelihood that they could fail, is unknown. It's not difficult to envision that if these smaller



dams fail, the large quantities of water released could wash out culverts, roads, and driveways downstream.

### **Have there ever been dam failures in Vermont?**

Yes. Here's one example: in 1947, a dam failure on East Creek in Chittenden caused extensive damage all the way downstream to Rutland. About 300 homes and businesses were damaged and roads and rail lines were closed for several days. The U.S. Army was called in to help with the recovery.

There have been about 16 dam failures in Vermont since 1984. Fortunately, most were small and did not result in loss of life or extensive downstream damage. But as dams age without proper maintenance, their structural stability only declines.

### **How are dams actually removed?**

A dam removal plan takes several things into account: the effect of the removal on stream stability, the amount of sediment impounded behind the dam, how machinery will get access to the site, the steps to be taken during the actual removal, and the historical value of the structure. While the dam is being removed, special care is taken not to interrupt downstream flow or release excessive sediment. Just like any project in a river or stream, a dam removal can require several state or federal permits. Usually, the site is monitored for several years following removal to identify and correct any unanticipated consequences.

### **How much does it cost to remove a dam?**

It varies, depending on the size and location of the dam and the amount of impounded sediment. For most small dam removals, the total project cost is in the range of \$150,000 to \$350,000. For a dam that is in poor condition, removal is usually less costly than reconstructing or replacing the dam to modern dam safety standards.

## **Want More Information?**

If you'd like to learn more about the dam removal process and how it works, visit [freevtrivers.org](http://freevtrivers.org). To discuss a potential removal on your property, contact the Vermont Natural Resources Council at [dams@vnrc.org](mailto:dams@vnrc.org), or call Jon Groveman, Policy and Water Program Director, at 802-223-2328, x111. We are looking forward to speaking with you!



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