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# From the Watershed:

## UNDERSTANDING RIVERS, SEDIMENT, AND COMMUNITY RESILIENCE

# FROM THE WATERSHED:

Understanding Rivers, Sediment, and Community Resilience

Collected Articles by Kristen Leahy

## Introduction

Over the spring of 2026, a series of "From the Watershed" articles explored the Jackson Dam study, sediment accumulation, river processes, and the broader questions communities often face when aging infrastructure and changing river conditions intersect.

The articles were written during an ongoing community conversation about Jackson Dam in Hardwick, Vermont. While the dam provided the starting point, the purpose of the series was not to advocate for a particular outcome. Instead, the goal was to provide context, explain technical concepts in plain language, and encourage informed public discussion.

Rivers are dynamic systems. They move water, sediment, wood, ice, and nutrients across landscapes that have been shaped over thousands of years. Communities often interact with rivers through bridges, culverts, dams, roads, floodwalls, and development, yet many of the processes that influence flooding and channel change occur gradually and largely out of sight.

The Jackson Dam study created an opportunity to explore some of those processes. Questions about sediment accumulation led to broader discussions about floodplains, river channels, watershed connections, and how rivers adjust over time. Questions about a single structure ultimately became questions about the larger river system.

Although these articles focus on Hardwick and the Lamoille River watershed, many of the concepts apply to communities throughout Vermont and beyond. Aging infrastructure, changing flood patterns, watershed planning, and flood recovery efforts are challenges shared by many towns.

Presented together, these articles trace a progression from site-specific observations to watershed-scale thinking. They begin with the findings of a local study and conclude with a broader examination of how rivers connect communities across a landscape.

The articles that follow are reproduced in the order they originally appeared in *The Hardwick Gazette*.

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# Jackson Dam Study Reveals River System Complexity

*(May 13, 2026)*

by Kristen Leahy

One detail in the Jackson Dam study stayed with me after I read it. When the SLR engineers began trying to measure how much sediment had accumulated behind the dam, they pushed a fourteen-foot probe rod straight down into the lakebed. In several locations they still did not reach the original river bottom.

In other words, the river has been quietly rebuilding its own valley behind the dam for decades.

That detail helps explain why the future of Jackson Dam has become an important conversation for Hardwick and the surrounding watershed.

The dam was originally constructed in the early 1900s to support hydroelectric power generation downstream. That purpose faded long ago, but the structure remained, creating the impoundment called Hardwick Lake.

The study itself grew out of ongoing concerns about the aging structure, sediment accumulation, and the role the dam may play during major flood events. The Caledonia County Natural Resources Conservation District commissioned the study with support from the Town of Hardwick to evaluate current conditions at the site, examine how the river system has changed over time, and explore what future management options might look like.

What the recent study makes clear is that the landscape around the dam has continued to change. Sediment carried down the Lamoille River and Alder Brook has steadily filled much of the reservoir area behind the structure. In some places the depth of accumulated material is still not fully known.

Dams do not operate in isolation from the rivers that feed them. Over decades, sediment, floods and channel movement gradually reshape the system around them. What was built for one set of conditions can function very differently under another.

The Jackson Dam study looks closely at how the river is behaving today and what that means for the future. One of the questions researchers examined was how the dam interacts with flood flows.

Many people assume dams reduce flooding. In some cases, they do. But the modeling in this study suggests the situation at Jackson Dam may be more complicated.

Because so much sediment has accumulated behind the structure, the impoundment now provides limited flood storage. During large storms, the dam can act less like a reservoir and more like a narrowing in the river.

Modeling indicates that restoring the river channel through this area could lower flood elevations upstream by several feet during major events.

Those findings highlight how much the system has evolved since the dam was first constructed, but leave open the question of what should happen next.

The study also looks at the practical realities of managing a site like this. Removing a structure like Jackson Dam would be more than a simple matter of demolition.

The sediment stored behind it represents decades of river movement. Any future decisions will need to consider that material; what is left or removed, how what remains is stabilized, how the channel adjusts, and how nearby land and infrastructure are protected during the transition.

The conversation is less about a single structure and more about how the river system itself is changing.

Hardwick has spent the past several years learning difficult lessons about how rivers behave during large storms.

Flood recovery, buyouts, stabilization projects and new planning efforts have all underscored the same point: the landscape continues to evolve whether we plan for it or not.

The Jackson Dam study is part of that effort to understand what our rivers are doing and what options may exist for the future.

The river will keep moving. The real question is how we choose to live with that movement.

# The Sediment Story Above and Below Jackson Dam

*(May 20, 2026)*

by Kristen Leahy

Last week's discussion looked at what the recent study found at Jackson Dam. This week, it's worth stepping back and looking more closely at how rivers move sediment and why that matters.

When people think about a dam, they usually think about water.

But an important part of the story behind Jackson Dam is the sediment.

Rivers carry more than water downhill. They also carry sand, gravel, silt, ice`````` and organic material eroded from hillsides and riverbanks across the watershed. Over time, that material moves downstream and settles out wherever the current slows.

Dams are one of the places where that slowing happens.

For more than a century, sediment from the Lamoille River and Alder Brook has been settling behind Jackson Dam. The recent study of the site found that large volumes of material have accumulated in the impoundment area, in some places far deeper than investigators initially expected.

That accumulation is not unusual. Around the world, reservoirs behind dams gradually fill with sediment. The process is slow enough that people often do not notice it happening.

But over decades, the landscape changes.

As sediment builds up behind a dam, the river channel upstream begins to behave differently. The river may become wider and split into multiple channels around forming islands. Flood flows can spread across newly formed deposits. What once looked like open water may slowly become mudflat, wetland or vegetated ground.

In other words, the river is gradually burying its old channel and rebuilding the valley floor at a higher elevation behind the dam.

That process has been underway for many years at Jackson Dam.

This matters because sediment affects how rivers behave during storms. A reservoir filled with sediment cannot store as much floodwater as it once could. Instead of acting like a deep basin, the area behind the dam becomes more like a broad, slow-moving reach of the river.

During large storms water moves through that reach differently than it did decades ago.

Sediment also shapes what happens downstream. Rivers depend on the movement of sand and gravel to maintain stable channels and healthy habitat. When that material is trapped behind a dam for long periods of time, downstream reaches can become more erosive as the river adjusts.

River scientists sometimes describe this as “hungry water.” The river below the dam carries a high amount of energy but less sediment than it would naturally, so it begins eroding the bed and banks in search of material to carry downstream.

A similar process can often be seen below undersized culverts acting like small dams, where scour holes or sharp drops form below the outlet.

For communities along the river, these changes are not always obvious from year to year. They become visible over longer stretches of time, especially when large storms reveal how the system now behaves differently.

SLR’s consultants spent considerable effort examining sediment when they conducted the Jackson Dam study because it plays such a central role in determining what options are possible in the future. Managing a structure like this is not simply about the dam, it involves understanding the material the river has left behind and concerns about dealing with it.

If future decisions involve changes to the dam, sediment will be one of the most important factors in how they are carried out. Stabilizing deposits, allowing vegetation to establish and managing how material moves downstream are all part of responsible river management.

Projects involving dams often take time because of that. Rivers operate on longer timelines than construction projects, and careful sequencing is often necessary to allow the landscape to adjust.

The story of Jackson Dam is therefore not just about a structure built in the early twentieth century. It is also about a river system that has continued to move sediment and reshape its valley for more than a hundred years.

Understanding that process is the first step toward deciding what should happen next.

# What Happens When a Dam Comes Down?

*(May 27, 2026)*

by Kristen Leahy

Over the past few weeks I've written about Jackson Dam, the sediment that has accumulated behind it, and the reality that rivers and infrastructure do not remain frozen in time. One of the questions that naturally follows is simple: what happens when a dam is removed or significantly altered?

Many people picture an empty basin or a sudden transformation. In reality, river systems tend to adjust more gradually.

Behind most older dams, decades of sediment have accumulated. Sand, gravel and finer material carried downstream during storms settle out where the water slows. Over time, that material builds up and reshapes the impoundment.

If a dam is eventually removed or lowered, the river does not suddenly disappear into a void. Instead, it begins to reestablish a channel through those accumulated sediments. The process is influenced by flow, slope and the shape of the valley, but the river generally finds a path like the one it occupied before the structure was built.

As that channel forms, the surrounding sediments begin to stabilize. Vegetation quickly takes root in exposed areas. Grasses, willows, and alders often establish themselves first, helping hold soil in place. Over time, the landscape can begin to resemble a natural river corridor rather than an open impoundment.

Floodplains also begin to function differently. Instead of water backing up behind a structure, flood flows can spread across low areas of the valley during larger events. That ability to spread out reduces pressure and energy within the channel while allowing sediment to move through the system more naturally.

The timeline for these adjustments varies from place to place. In many projects, the transition happens over several seasons or years as vegetation grows and the river settles into a new equilibrium. Engineers and river scientists often phase changes carefully so sediments stabilize and downstream areas are protected during the adjustment.

Wildlife often responds quickly to these new conditions. Flowing water, wetlands and vegetated floodplains support a wide range of birds, fish, amphibians and insects. In many restored river corridors, biodiversity increases as habitats diversify.

All of this is why projects involving dams tend to involve careful planning and sequencing. The goal is not to force the river into a new shape, but to allow natural processes to reestablish a more stable channel and floodplain.

In Hardwick, the Jackson Dam study is helping the community understand what those processes might look like in this particular reach of the Lamoille River.

The work so far has focused on gathering information: how much sediment has accumulated, how flood flows move through the reach today and what options might exist for the future.

Those questions will take time to answer fully. They also involve more than engineering. They involve how a community thinks about the landscape around it and how that landscape may continue to evolve.

Rivers have always reshaped their valleys. The question communities face is how thoughtfully they guide that change when aging infrastructure and changing river conditions meet.

# The Questions Communities Ask About Dams

(June 3, 2026)

by Kristen Leahy

HARDWICK – As conversations about Jackson Dam continue, a few questions tend to come up repeatedly. That is not surprising. When a piece of infrastructure has been part of a landscape for generations, people naturally think about what might change and what might be lost.

One of the most common questions involves Hardwick Lake itself.

For many residents, the impoundment behind Jackson Dam is simply part of what Hardwick looks like. People fish there, paddle there or pass it on their way through town. Even for those who rarely visit the water, it is a familiar piece of the landscape.

Whenever communities discuss changes to older dams, the future of the impoundment is often the first thing people think about. That question is not unique to Hardwick. It comes up in almost every town that begins examining aging dams and changing river systems.

Another question involves history. Jackson Dam was constructed more than a century ago. Structures like it are part of the industrial story of many Vermont communities. Mills, hydropower and small dams shaped the development of towns throughout the region.

Preserving that history is important to many people, whether through documentation, interpretation or other ways of recognizing how earlier generations lived and worked along the river.

Energy is another topic that sometimes enters the conversation. Although Jackson Dam was not itself a hydroelectric facility, the impoundment helped regulate water levels for hydroelectric generation farther downstream. As communities think about energy independence and local power sources today, it is natural to wonder whether older dams might play a role again.

Wildlife is also part of the picture. Bald eagles nest along this stretch of the Lamoille River, and many residents have become accustomed to seeing them each year. When landscapes change, people often wonder how those changes will affect the animals that live there.

These questions reflect something important: people care deeply about the places where they live.

Projects involving rivers and dams rarely move forward based on engineering alone. They involve conversations about history, recreation, wildlife, energy and community identity.

The Jackson Dam study is still helping Hardwick better understand how the river system around the dam has evolved over time. As that understanding grows, community members will continue asking these questions.

That process takes time. It also benefits from clear information and thoughtful discussion about the landscape people share.

Rivers have always shaped Vermont communities. The conversations happening now are simply another chapter in that long relationship between towns and the water that runs through them.

# Jackson Dam Is One Piece of a Much Larger Conversation

(June 10, 2026)

Over the past several weeks I've written about the Jackson Dam study, sediment accumulation, and some of the questions communities often ask when aging river infrastructure comes into focus.

But Jackson Dam is only one small part of a much larger system.

The Lamoille River does not begin or end in Hardwick. Water reaches this stretch of river after moving through hills, forests, fields, and towns across a broad watershed. Sediment travels with it. Floods build as tributaries join together. Decisions made upstream or downstream eventually influence conditions here.

In other words, the river that passes through Hardwick is part of a landscape-scale system that extends far beyond town boundaries.

That perspective matters because many of the challenges communities face today are connected to how rivers function across entire watersheds. Sediment moves from upland erosion into river channels. Tributaries deliver water during storms. Infrastructure built decades ago interacts with conditions that have gradually changed.

A culvert replaced upstream can alter how water moves during a storm. A stabilization project along one reach of the river may influence erosion patterns downstream. A dam built for an earlier generation may interact with flood flows very differently after a century of sediment accumulation.

All of these pieces are connected.

This is one reason conversations about rivers are happening in many Vermont communities at the same time. Flood recovery projects, river corridor planning, infrastructure upgrades, and watershed studies are all part of a broader effort to better understand how rivers behave across the landscape.

Jackson Dam is part of that larger picture.

The study of the site helps Hardwick understand how sediment, flood flows, and aging infrastructure interact in this reach of the Lamoille River. But it also reminds us that no single structure defines a river system.

Rivers shape valleys over decades and centuries. They move sediment, shift channels, and reconnect with floodplains as conditions change. Communities along those rivers have always adapted to those processes, and continue to do so today.

That work often involves looking beyond the lines on a map.

Watersheds do not follow county boundaries. They do not stop at town lines or planning regions. Water flows downhill, connecting places that may appear separate on paper but are closely linked in reality.

Understanding that connection is one of the most important steps in making informed decisions about the rivers that run through our communities.

Jackson Dam is one place where those questions are coming into focus. But the larger conversation is about how we understand and manage the rivers that run through all of our towns.

The river will keep shaping the landscape around us. The more we understand how that system works, the better prepared we will be to live with it.

# Author's Note

These articles were originally published in *The Hardwick Gazette* between May and June 2026 during ongoing community discussions regarding Jackson Dam and the Lamoille River watershed. They are presented together here because the questions raised by a single dam ultimately became a broader exploration of rivers, floodplains, sediment, and community resilience.

While the examples focus on Hardwick, the underlying concepts apply to river communities throughout Vermont and beyond.