



# STEWARDS OF THE LAND

*A publication for owners of land conserved with the Vermont Land Trust*

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Vermont Land Trust | 8 Bailey Avenue | Montpelier, Vermont 05602 | (802) 223-5234

## Caring for our Rivers and Floodplains

By ROY SCHIFF

Vermont's rivers, streams, and tributaries are highly visible features of our landscape. Few of the nearly 1,700 properties conserved with the Vermont Land Trust are without a source of flowing water. VLT employs a variety of tools to enhance natural water-flow processes such as: protected streamside buffer zones, vegetative and forest management plans and practices, and limitations on soil disturbance and removal.

Conservation easements alone will not ensure that Vermont's waters will flow clean and safely for the benefit of future generations. Vermont landowners frequently make property management decisions that have the potential to impact water resources on their properties. The following article provides a primer about the flowing waters across our landscape. It also describes a

new program of community-based river management designed to be less destructive and more beneficial to our rivers, streams, and tributaries.

Please contact your Regional Stewardship Manager if you have any questions about the article or questions about water resource management on your conserved property.

Rivers are the lifeline of the landscape, transporting water, sediment, organic material, and nutrients from mountains to oceans. Floodplains are key components of the active river area that serve as storage reservoirs for these key elements of life. Without floodplains there would not be storage of nutrients to grow food, flood reduction, sediment storage, nor soil building. Throughout history people have used rivers as a source of transportation and food, and floodplains

have served the vital role of feeding civilization.

With the central role that rivers and floodplains have played, the level of abuse they have been subjected to may be surprising. Living along rivers and using the resources that rivers provide have led to widespread channelization where a river is fixed in place and is not allowed to flood into its floodplain. Berms, levees, flood walls, rock riprap, and dams are some of the many ways that humans have tried to control rivers.

The irony is that this mismanagement has tended to increase risks of flooding and erosion while reducing valuable ecosystem services such as nutrient retention and soil building.

The laws of physics govern the flow of water and sediment in rivers. For example, we know that the wider the flow-area the slower the speed of the water. This means that maintaining space for rivers to move in their valleys leads to slower moving water, less erosion, and more building of floodplain soil.

The more roughness present on the river channel, banks, and floodplain, the lower the speed of flowing water. Meandering channels with vegetation and large woody debris are rougher than straightened channels that have been cleared. Bare soil is smooth, crops are rougher, perennial vegetation is even rougher, and shrubs and trees tend to create the most hydraulic roughness.

A new era of river management is

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Aerial photo of a floodplain restoration site along Black Creek in Bakersfield. The photo shows a channel that was straightened in the past, and the historic meandering channel, which is covered in snow.



# Vermont Land Trust

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## Rivers and Floodplains

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underway; people understand that rivers and floodplains are formed by dynamic natural processes that must be maintained to reduce risks and retain ecosystem services. In other words, give the river some room to move and it will tend to be less destructive and more beneficial.

Vermont is playing a formative role in shaping the new style of community-based river management. Investments, such as buildings and roads, are being kept out of areas prone to flooding and erosion, while at the same time landowners are improving conditions around their property and rehabilitating natural processes that benefit all.

As part of the Black Creek and Lamoille River Floodplain Restoration Project, 10 farmers agreed to lower an obsolete rail embankment that crossed their farm fields and re-connect over 200 acres of floodplain. The project resulted in increased storage of river sediment and nutrients in farm fields, reduced flood and erosion risks along the river corridor, naturalized drainage on farm fields, and water quality improvements that benefit Lake Champlain.

The most appealing aspect of the project was that almost all of the conversations with landowners made it clear that the importance of rivers and floodplains had been passed down

through generations. The sentiment was that people are "tired of fighting the river" and desire the return of "poor-man's fertilizer" and are willing to play their part in reducing risks and improving water quality.

These testimonials of landowners who have spent their lives in valley bottoms align with the scientific foundations of river processes and best management practices. With these beliefs that are aligned with the physical nature of rivers and the emerging style of community-based river management to restore natural processes, the outlook is good for improving future conditions.

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### Additional Reading

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