This year, for the first time in at least 150 years, the Batten Kill will be a free-flowing river as it winds across the Vermont countryside. This change will be brought about by the removal of the Dufresne Pond Dam in Manchester, the last remaining dam in on the mainstem of the Batten Kill in Vermont.

This story of this dam and its removal illustrates how our understanding of rivers and how we value them has changed over the decades. It provides an example of vigorous efforts across the country to restore rivers and improve public safety at aging, unused dams.

When Vermont was being settled and developed in the 19th century, small dams were built to power sawmills and gristmills and other small industries. Villages often formed around these structures. This was a time when people valued rivers for the utilitarian benefits they provide, like mill power and transportation. The first dam at Dufresne Pond was built in 1868 to power a sawmill. By 1930 the sawmill was gone. Later, the dam was used to supply water to the Peterson wood products factory and a local stone-crushing operation. In 1956, the dam and adjacent land was acquired by the Vermont Fish & Wildlife Department. The state reconstructed the dam, developed a public access area and began stocking the pond with trout. Over the years, the state also invested a significant amount of money in dam repairs.

By the mid-1990s, the amount of water leaking through the dam began to concern state engineers. The state conducted a detailed assessment of the dam's condition and identified several options to address it's structural problems. Since the problems were deep in the dam's earthen embankment, there was no easy or inexpensive fix. Most involved reconstructing a major portion of the dam. The other option, which turned out to be the least expensive, was to remove it.

Based on the assessment, the state took a more detailed look at the benefits of removing the dam:

- eliminate the risk of failure and flooding caused by a dam with structural problems;
- lower cost to remove the dam than repair it, and avoid future operation and maintenance costs;
- remove a barrier that prevents fish and other aquatic life from freely moving upstream and downstream;
- restore the natural movement of sediment downstream (the dam creates a "sediment trap")
- eliminate a temperature increase caused by the shallow impoundment;
- reduce upstream water levels during floods (downstream flood levels would not change).

Another issue is that people in the local neighborhood value having access to the river and pond and have been concerned about losing this public open space. The state will continue to maintain the public access area and it will be available to local residents. However, there is no question the character of the area will change from a warm water pond to a free-flowing river. There was also concern about losing the opportunity for pond fishing in the local area. Fortunately, the Fish and Wildlife Department owns another property in Manchester, Bullhead Pond, which provides a similar experience, and annual trout stocking has been moved to Bullhead Pond.

Considering all of these factors, and public comments at several open meetings, the state developed a plan for removal and restoration of the river channel to its former location. That work has begun and is expected to take about six weeks. When the project is completed, the former impoundment will form a floodplain that will revegetate over the next few years and will eventually resemble other sections of the river in this area.

Removal of this dam is not an isolated event. In recent years, about a dozen dams have been removed in Vermont to address public safety and environmental concerns. This is a small fraction of the hundreds of dams that have been removed nationally in the last decade. The momentum to remove dams that no longer serve a useful purpose (such as hydropower, flood control or water supply) has increased as we

view rivers more for their aesthetic and recreational value and less for their former, utilitarian uses. In addition, we must adapt to the effects of climate change, such as more frequent and intense storms. A river that can flow unimpeded through a natural river corridor is more resilient to the effects of floods. Especially important on the Batten Kill, native brook trout benefit from an undammed river by having free access to a range of habitats throughout the year. Finally, dams constitute some of the aging infrastructure that will require increasing amounts of money to maintain in a safe condition; removing those that do not provide economic benefits eliminated that financial burden.