

Industrial Water Systems in the Headwaters: A Preliminary Surface Survey



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Introduction

This is the first in a series of studies that examine the use of water-powered industrial technologies in the Headwaters Region of New York State. Throughout much of the nineteenth century, industrial activity in the region, as well as throughout the northeastern United States, was driven primarily (though not exclusively) by water power. This technology was well-suited to the mountainous interior of the region, and it is not surprising that the earliest industrial activity in the country occurred in New England and upstate New York.

Much of the early industrial activity was oriented toward local consumption, and nearly every community—even tiny farming hamlets—contained a blacksmith shop, a saw mill, and a grist mill. Early in the region's history, however, commodity-driven industrial activity aimed at export developed along fast-running streams suitable for water-powered technologies. The first textile mill in the United States was built in Pawtucket, Rhode Island, in 1790. In 1808, the first textile mill in New York State was built by a migrant from Rhode Island in New York Mills, a village on the east bank of Sauquoit Creek near present-day Utica. Within 50 years, Sauquoit Creek, with its 1,000-plus foot drop in just 17 miles, became among the most heavily industrial corridors in the world, with dozens of millponds, races, and factories lining both sides of the creek.

The current study reports on an initial survey of water-industry sites conducted by research fellows during the spring of 2012.



Method

The current and historical demography of the region was discussed in *Historical Demography of the Headwaters* (Thomas 2012). The current survey examined several water power systems in the Mohawk River system, specifically Canajoharie, Clayville, Little Falls, and Van Hornesville. Of these, two lie along the Mohawk River itself (Canajoharie and Little Falls) and two on tributary streams (Clayville on the Sauquoit and Van Hornesville on Otsquago Creek). It is significant that the most populous industrial centers are on the Mohawk, although Clayville also exhibits a considerable level of industrialization, particularly during the nineteenth century (see below).

Based on the surface surveys, a five-point rating system was developed for assessing a water system's state of repair:

4	Fully Functioning
3	By and Large Intact, non-functioning
2	Intact with significant disrepair
1	Extreme Disrepair
0	Nearly completely destroyed

Class 4



A class 4 mill is one that is still functioning and using water power. To our knowledge, there are only two in the Headwaters Region: the Fly Creek Cider Mill near Cooperstown (<http://www.flycreekcidermill.com/>)

and the Hanford Mills Museum in East Meredith (<http://www.hanfordmills.org/>).

Class 3

A class 3 mill system is one that is by and large intact, but no longer functions and likely has a component or two that is longer present. The mill system in Van Hornesville is a good example of a class 3 system.



Well-preserved remains of a class 3 mill system in Van Hornesville (see also below). Notice that the waterwheel remains on site (left), and the dam upstream is well-preserved as well. The race itself, however, is absent.

Class 2

A class 2 system includes features that are substantially intact, but considerable disrepair is evident in other components. The systems in Canajoharie are class 2.



Canajoharie Creek was home to multiple mills and water power systems, but although some dams remain much of the system is no longer intact.

Class 1

A class 1 system is in an advanced state of disrepair, but one or more elements remain in existence. Below is the remains of the North Street pond and millrace in Hartwick.



(left) Just downstream of the Hartwick milldam, Otego Creek is to the left with the millrace at right.



Downstream side of North Street Bridge, Hartwick.
Notice tunnel at right of bridge for race.

Class 0

A class 0 system is one that has been completely obliterated. The systems beneath the Sauquoit Valley Expressway in Washington Mills and New Hartford are class 0.

At right, the Sauquoit Valley Expressway passes through New Hartford on the route of the historic millrace system. Sauquoit Creek runs to the right of the expressway, with Utica across the creek.

The remainder of this study was utilized to test the veracity of the rating scale and provide initial photo documentation of representative sites in the region. The survey is based on a purposive sample and, as such, is not generalizable to sites across the region as a whole. It does, however, suggest avenues for additional research.



The Sites

The four systems will be discussed in order of complexity, from simple to complex. Historically, this corresponds to communities that are less-to-more urbanized and industrial systems that are less-to-more complex. The most rural of the sites, and possibly the one best preserved from its nineteenth century roots, is that found in Van Hornesville. The industrial water systems in Clayville are also reasonably well-preserved as the village, which was extremely industrialized by nineteenth century standards and remains contiguously urban along the Sauquoit Valley into Utica, suffered as water technologies were replaced by coal and electrical systems in the twentieth century. Canajoharie, in the central Mohawk Valley, had extensive water systems in the nineteenth century that were replaced (and left to decay) in the twentieth century. The highly complex water system in Little Falls are in various states of decay but, overall, still visible.



A working feed mill in Van Hornesville

Mill Street, Canajoharie. Notice the apartment buildings for workers in the distance.



Van Hornesville

Van Hornesville is a hamlet nestled in a ravine carved by Otsquago Creek on its fifteen mile run from over 1,400 feet in elevation when it leaves the Appalachian plateau to its outlet into the Mohawk River at 300 feet of elevation in Fort Plain.

Located near the top of the creek, the village green is located at about 1,150 feet in elevation, but the creek descends about 100 feet in the mile or so the hamlet stretches along its banks. Along the green are three mills built during the nineteenth century that formerly utilized power generated from a millpond located about 25 feet higher in elevation upstream.

According to the 1868 atlas of Herkimer County, Van Hornesville contained at that time a cider mill, saw mill, and cheesebox factory. In addition, a “furnace” for smelting iron was located in the village; this should not be confused with a blacksmith shop, which was more “all-purpose” than a foundry.



Image © 2012 TerraMetrics
Image USDA Farm Service Agency

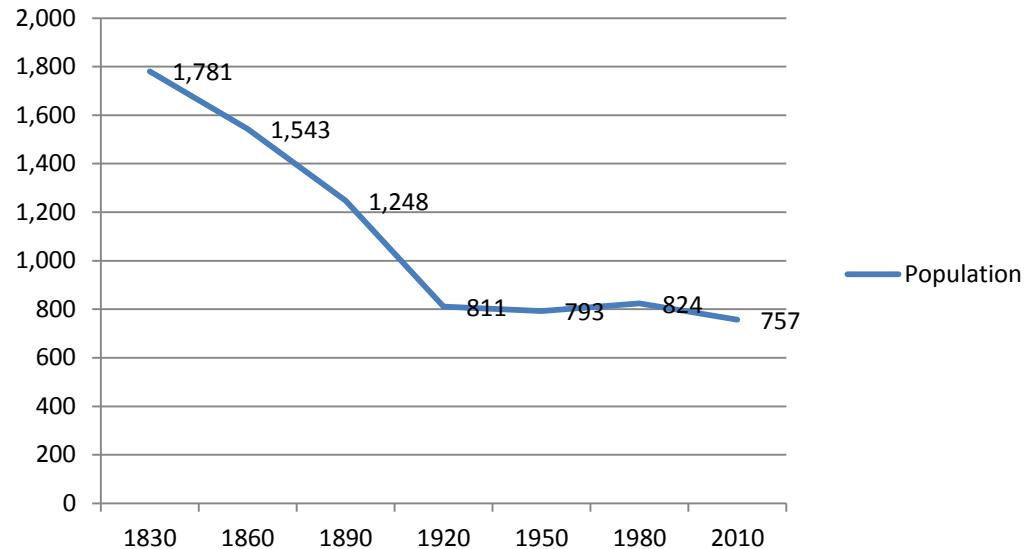
42°53'38.53"N 74°49'41.15"W elev 1150 ft

Google earth

Eye alt 1788 ft

Town of Stark

The population of Van Hornesville itself likely never numbered more than a few hundred. The town of Stark, of which the hamlet is a part, has since its first European settlement been nearly exclusively an agricultural region, and Van Hornesville is one of only two substantial hamlets in the town. Like many other agricultural townships located within 30 miles of the Erie Canal, the population peaked early before declining through the nineteenth and early twentieth centuries. The last fifty years has been marked by population stability.



The falls behind the Van Hornesville village green



Millpond



Milldam at Van Hornesville. The water level and flow could be controlled using this mechanism.

The mill complexes in Van Hornesville are, as evidence from the photos, in remarkably good condition. The sole power system is rated as class 3.



Look downstream at the creek in Van Hornesville. Notice the mill stretching over the creek.



A look at the millhouse in Van Hornesville from the downstream side. Notice the old waterwheel.

Canajoharie

Canajoharie is located at the juncture of the Mohawk River and Canajoharie Creek, and has been an important site since before the American Revolution. Various historical documents refer to the Mohawks of Canajoharie during this time period, and in time the area was settled by Palatine Germans and later immigrants. Canajoharie Creek also falls over 1,400 feet from the plateau, 80 feet from one end of the village to the other. Due to its location on the river, access to several routes that inland to Otsego Lake and the Susquehanna, and excellent potential for water power, the village became an important manufacturing and transportation center in the nineteenth century, growing to 2,761 residents in 1950 before finally losing population over time.

Canajoharie gorge as it works its way toward the Mohawk River in Canajoharie

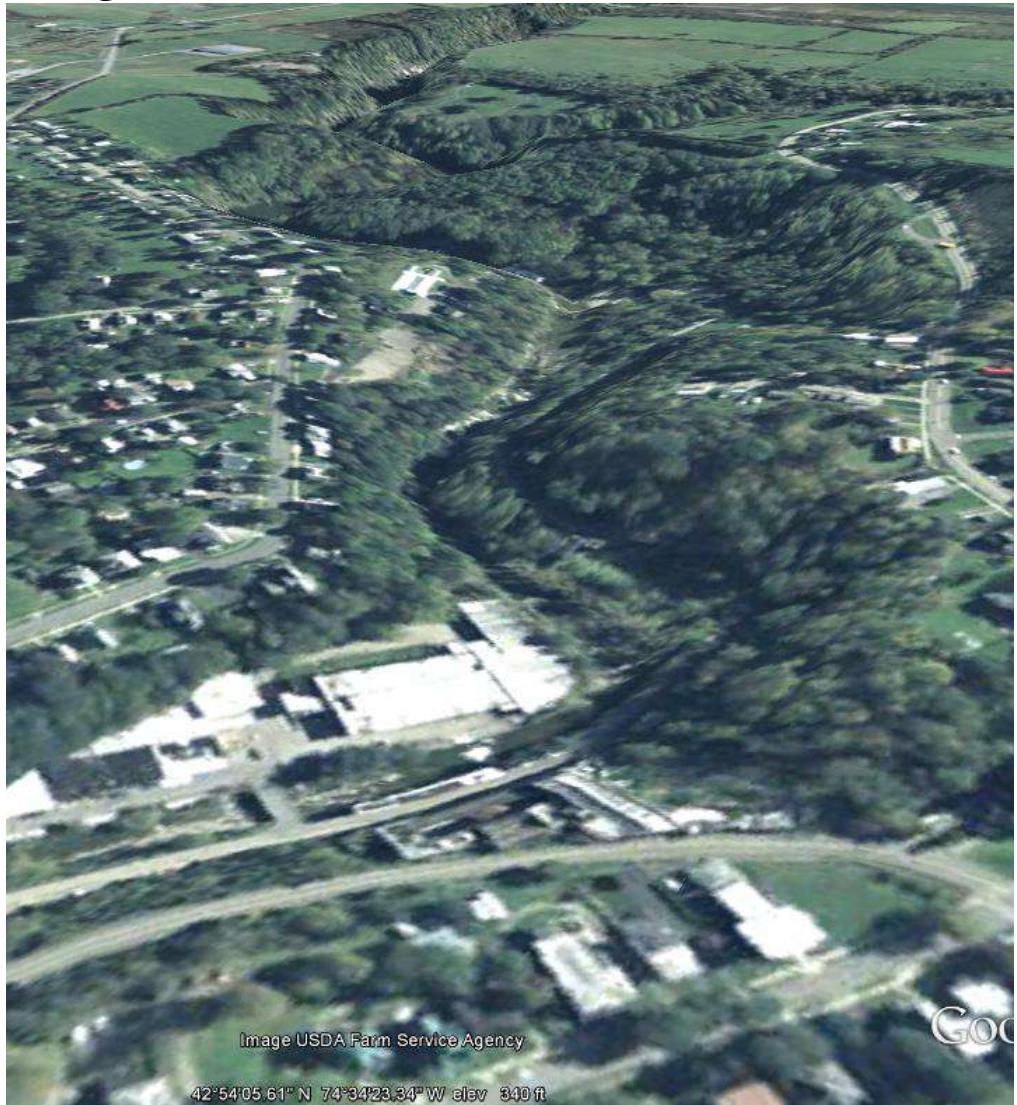


Image USDA Farm Service Agency

42°54'05.61" N 74°34'23.34" W elev 340 ft

Goo



Above: Rapids in Canajoharie Creek. A milldam was located upstream.

(R) Bridge abutment and pedestrian street in Canajoharie. Notice the stairs half way up the hill. Prior to the advent of the automobile, older communities featured streets accessible by foot only. The village was settled in the 1750s.



In 1868, the village was home to 11 factories, powered primarily to at least two race systems utilizes two separate dams on Canajoharie Creek.



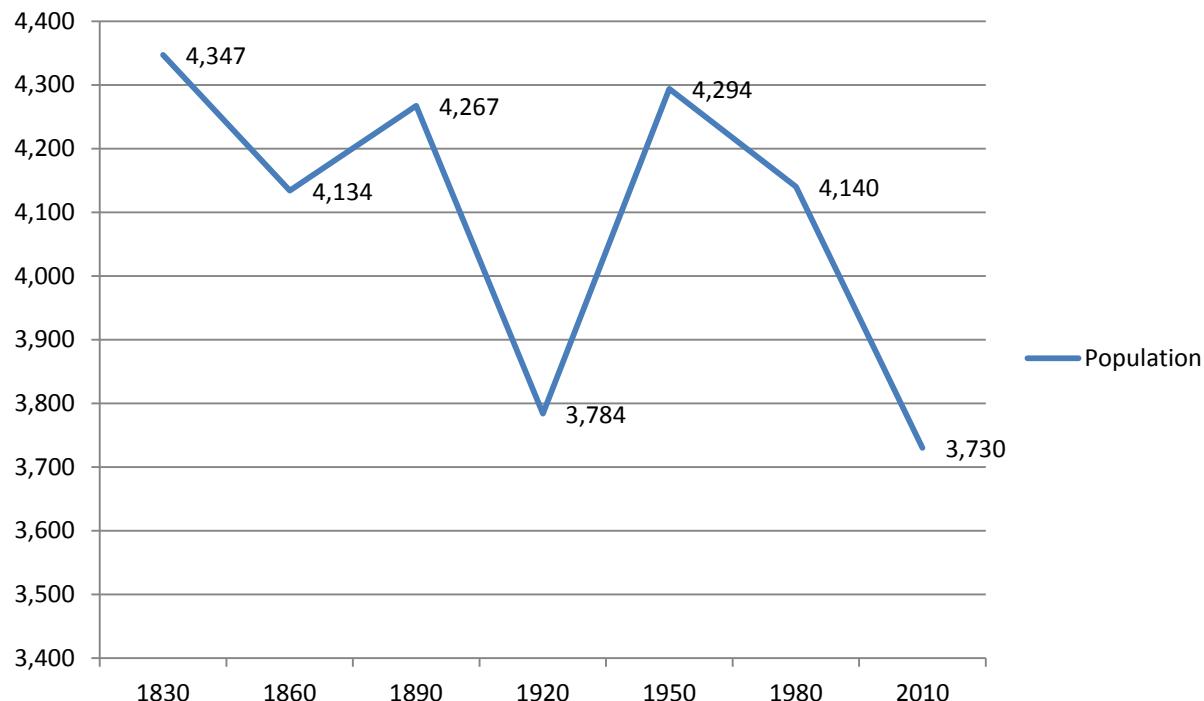
Mill Street, Canajoharie. Notice the apartment buildings for workers in the distance.



Mill complex on Canajoharie.

Town of Canajoharie

The town of Canajoharie, which includes the village, remained stable throughout the late nineteenth century when rural townships were losing population. This reflects a rural-to-urban migration: when the township population sagged during the early twentieth century, the village population continued to climb. Population loss in the town since 1980, however, reflects the loss in the village as many residents bought homes in the countryside.



Much of the water power infrastructure is in considerable disrepair, although some features, such as a large dam upstream, remain in generally good condition. The remaining dam no longer has access to its race and is in need of further restorative work, and thus is class 2.

Clayville



Imagery Date: 10/8/2011

42°58'43.52"N 75°15'00.75"W elev 973 ft

Clayville, NY, USA

Eye alt 1397 ft

View of Clayville from the south. At bottom left is a former millpond site, and at upper center is an existing millpond that remains in good condition.

In the two miles of Clayville, Sauquoit Creek drops about 100 feet in elevation, part of its over 1,000 foot drop in 17 miles from the plateau to the Mohawk River. Clayville is one of several industrial villages that line the creek, the southernmost community in a string of contiguous urbanization that stretches ten miles into downtown Utica.



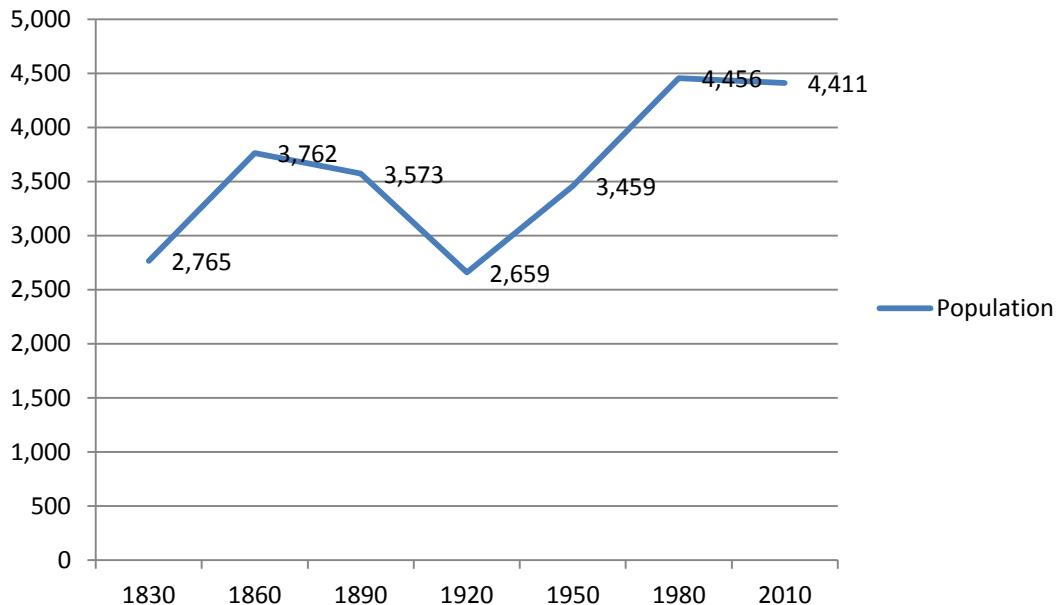
Milldam in Clayville on the Sauquoit Creek. The Sauquoit Valley is one of the earliest industrial landscapes in the United States. The creek's shore is lined with industrial villages for nearly twenty miles.

In 1874, Clayville contained at least five major millponds that powered 5 large factory complexes. The race systems associated with these complexes were quite extensive, and several of the ponds came to dominate the village.



A former mill in Clayville. Notice the dam at left and the opening for the millrace between the whitewater of the dam and the mill building.

Town of Paris



The village of Clayville itself peaked with a population of 999 in 1920, falling to less than 500 today. As much of the building stock dates to the mid-nineteenth century, the village has also grown rather poor as well. The town of Paris, of which Clayville is part, has experienced growth as it is an outer suburb of Utica.



At least two of the ponds in Clayville are class 3, but several others appear to be in greater disrepair.

Little Falls

Little Falls is the only city discussed in the current sample, and its site along the Mohawk River has provided both challenges to transportation and opportunity for water power since before the American Revolution. The water power systems of Little Falls were quite extensive, and they are in a relatively good state of repair. In contrast, similar systems in Utica's inner suburbs have by and large been paved over; those in New Hartford and Washington Mills are currently beneath the Sauquoit Valley Expressway (route 8). As such, we see the system in Little Falls as a good site for further study.



Little Falls, from south shore of Erie Canal. This is the new route of the canal (also called the Barge Canal) built during the 1910s.



Little Falls contained at least 15 factories, two breweries, and a foundry in 1868; most utilized water power system that were at that time decades old, but a number of facilities had converted to steam engines powered by coal transported via the Erie Canal. Several of the mills, particularly the Mohawk Woolen Mills, the Little Falls Cotton Mills, and a large particularly large flour mill were quite extensive and obviously producing for export.



Lock from the original route of the Erie Canal.

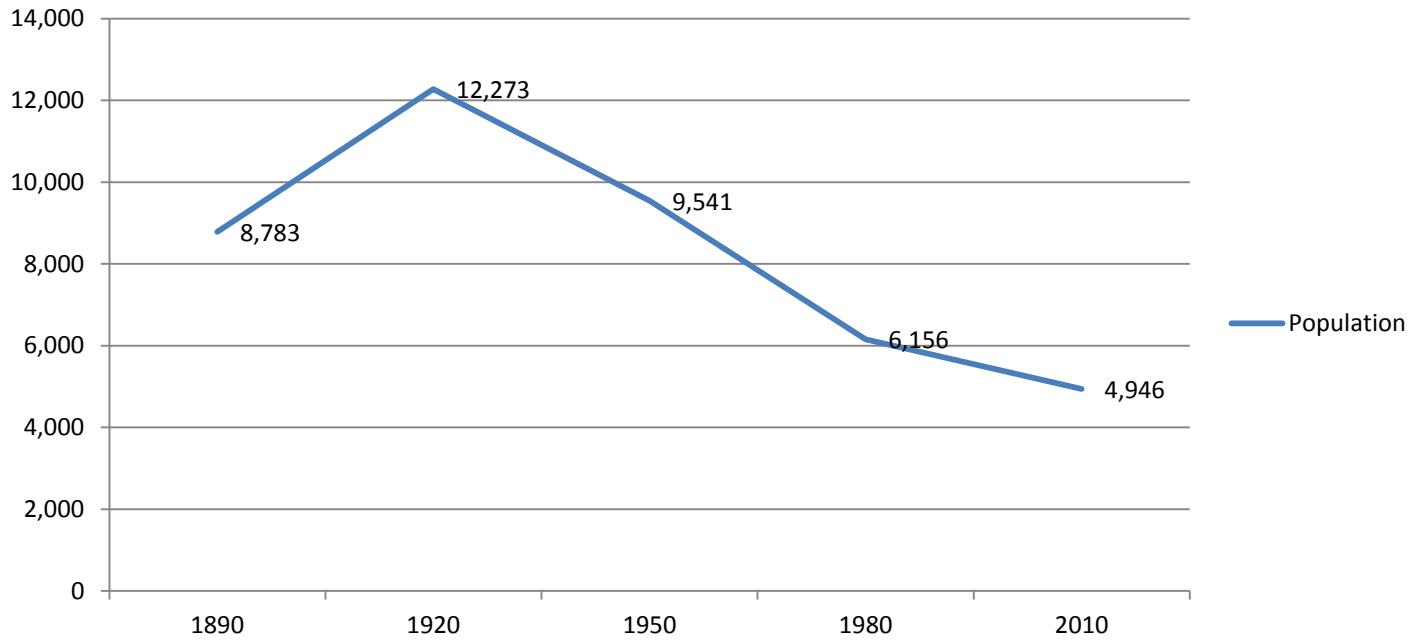


Mohawk River, Little Falls. Water was diverted using the dam in background of picture, turned turbines in the mills at left, and then exited back into the river.



Former textile mills in Little Falls. Notice the arch for water return between the two mills.

City of Little Falls



*1890 population for village of Little Falls

The city of Little Falls peaked in population in 1920 with over 12 thousand residents, but has fallen to less than five thousand today. While this decline is quite pronounced, even by the standards of cities in the industrial heartland of the United States, it is not directly comparable to population trends in the other communities discussed here. As a city, the unit of analysis does not include the surrounding countryside, whereas the town-level data presented for the other three communities do include the hinterland.

Little Falls has continued to utilize the Mohawk River for a number of purposes, including a hydroelectric plant and an antique center built in its historic mill complex. This level of preservation and continued engagement with the waterfront make it an excellent site for future study.



The Mohawk River drops about 40 feet from the top of the picture to the hydroelectric plant in foreground. The Mohawk River is at right, the Erie Canal is at left.

Conclusion

All the above examples fit into a pattern of decentralized rural development that eventually gave rise to the growth of large cities. The actual situation of the Headwaters Region cannot be seen in isolation from regional developments, which moved resources and population first to local population centers and then, increasingly, to the big cities and the large urban agglomerations outside the region. This trend can be seen globally as well.

The focus of the present study is to analyze patterns of urbanization locally and move towards the development of suitable strategies and appropriate instruments to strengthen this resource-rich region. With a special focus on water, the goal is to revive some of the existing structures for energy generation and incorporate such energy generation into a larger concept of revitalization of rural centers. The goal is to reconstruct a form of civil society that is neither government driven nor centralized, but instead allows people to rebuild community by looking to the history of the headwaters region.





Power Generation allowed for a network of population centers in the past, bringing a web of developed areas together by infrastructure that did not depend on centralized authority. Although urban centers exist in the headwaters region, the above analyzed mills would allow to build on a still existing deconcentrated settlement structure. The value of such structure is engrained in the New York legal traditions in front of an emphasis on "Home Rule." Typical for Headwaters Region is its highly deconcentrated settlement structure: in the past, the population in the rural areas was linked by work, transportation, living accommodations, communication, education, etc.. Mills and other water resources bound the region together, and could do so again if water could be used for local power generation that would make the region's small towns financially more attractive. If former mill sites generate power for local consumption, the lower cost of locally produced power could help revitalize the region. Local power generation could also be a potential source of alternate income for local populations that cannot subsist on farming alone.



This approach to regional revitalization should focus on fostering “bottom up” approaches that empower local communities: technical, legal and communication help could be provided. As an alternative to the development of overcrowded megacities, the Headwaters would offer its own network of reasonably-sized cities and small towns. The Headwaters could serve as a vision for development in other regions, nations and continents.

It seems that we will find the future of the Headwaters by looking to its past.

References:

Aerial Imagery: Google Earth. Download at www.google.com.

Population Data: U. S. Census Bureau. 2012. *American Factfinder*. Accessed 1 October 2012.

Websites:

Fly Creek Cider Mill (<http://www.flycreekcidermill.com/>)

Hanford Mills Museum in East Meredith (<http://www.hanfordmills.org/>).

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