

Hoosic River Watershed Updated Water Quality And Aquatic Habitat Assessment December 2014

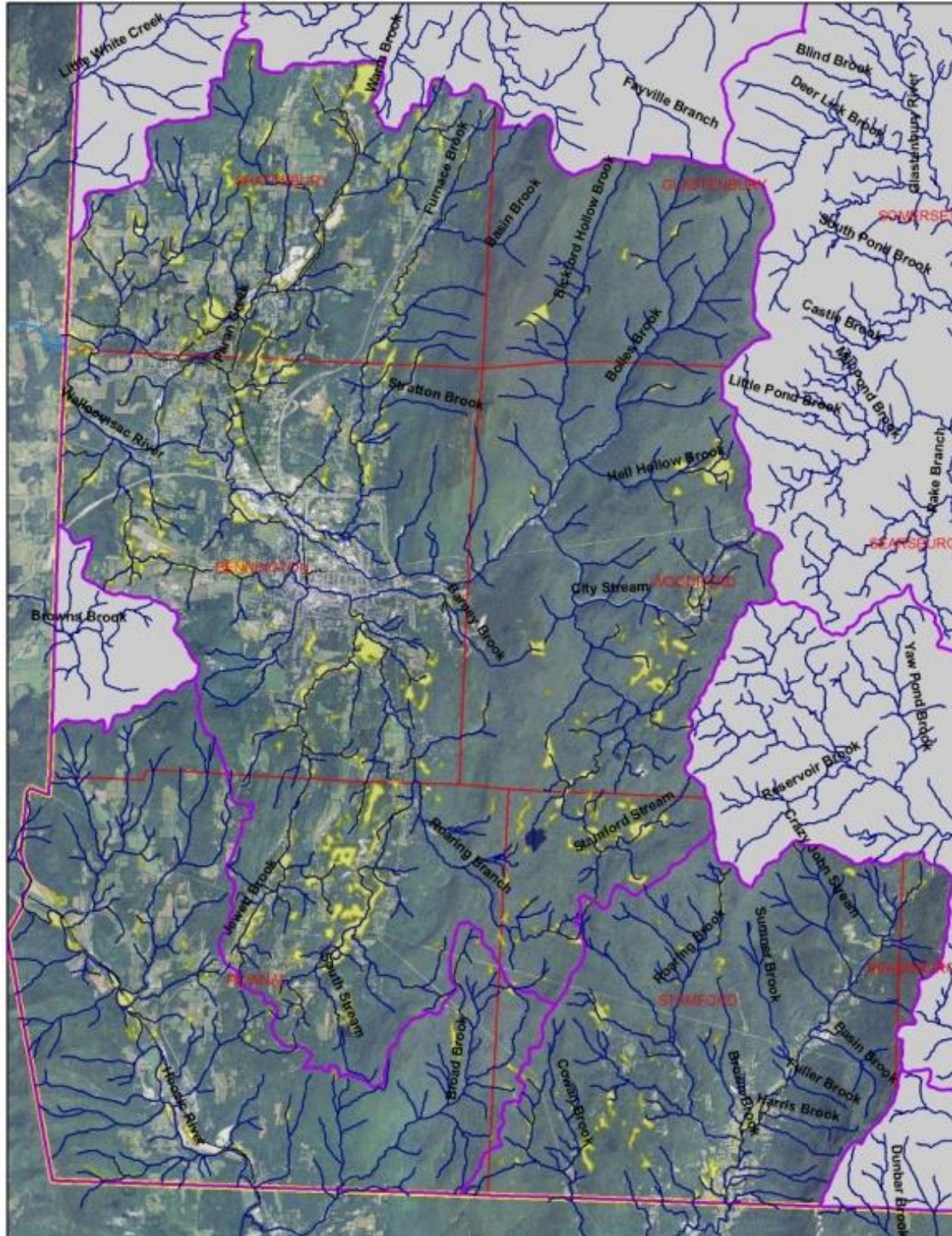


Figure 1. Hoosic River and tributary, Walloomsac River watersheds

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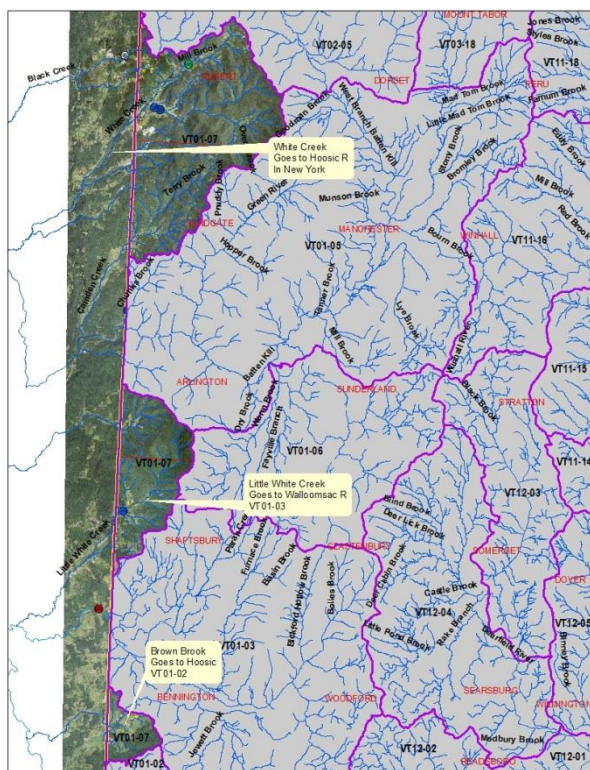
General Description of the Watershed

The Hoosic River has its source about two miles northwest of Dalton, Massachusetts at an elevation of 1,500 feet above sea level. It flows through the extreme southwest corner of Vermont where it drains a small portion of southern Bennington County, an area of approximately 89 square miles. The Vermont tributaries have narrow watersheds and drain the steep slopes of the Green Mountain Range for the most part.

The North Branch of the Hoosic River begins in the town of Stamford and flows southwestward to the city of North Adams, Massachusetts where it joins Hoosic River. Its length is 11 miles. Its principal tributary in Vermont is Roaring Brook. A number of small tributaries also flow down from the mountainsides of the Hoosic Range to join the North Branch.

The Walloomsac River watershed drains much of the southcentral portions of Bennington County being bounded by the Batten Kill watershed on the north and the upper Hoosic River watershed on the south. The headwaters of the Walloomsac River are located in Vermont draining 139 square miles of the state before entering New York. The Walloomsac River is a significant tributary to the Hoosic River.

The Walloomsac River begins where South Stream and Jewett Brook join just south of Bennington village. The river winds through Bennington in a northwesterly direction. Just north of Bennington village, the Roaring Branch enters from the east. As a larger river now, the Walloomsac flows northwestward through the northwest portion of the town of Bennington then into New York and to Hoosic Junction where it joins the Hoosic River. In addition to South Stream and the Roaring Branch, the major direct tributaries in Vermont include Jewett Brook, Furnace Brook, Paran Creek, and Cold Spring Brook.



Streams that are part of a separate waterbody VT01-07, White Creek, Little White Creek, and Brown Brook as well as some unnamed streams also go to either the Walloomsac or the Hoosic Rivers but join these rivers in New York State versus Vermont.

Hoosic and Walloomsac Watershed Impacts Summary

Table 1. Status of rivers, streams, lakes, ponds in Hoosic Watershed as of 2014 listing cycle

Stream or lake segment	Milage & status	Pollutant	Source	Other information
Hoosic River	7 miles, Impaired – Part A list	PCBs		elevated levels of PCBs in brown trout from Mass sources
Ladd Brook	0.4 miles Impaired – Part A list	sediment	Possibly gravel roads	“poor” & “fair-poor” bugs in 2008, 2009
Barney Brook	1.5 miles Impaired – Part A list	sediment, iron	Possibly old landfill, haz site, constructed wetlands	aquatic biota not supported from rm 1.5 downstream but healthy above
Lake Paran (Bennington)	40 acres Altered – Part E list	Eurasian milfoil		Weevil present
Bolles Brook	1.0 miles Altered – Part F list	water withdrawal	Bennington water supply	the system is permitted for 3.0 MGD* with the ADD* at 1.6 MGD
Hoosic River, through Vermont	7 miles Stressed Stressed List	metals, toxics	industrial sources	comes from Mass and Vermont
Tubbs Brook	0.5 miles Stressed – Stressed List	sediment		“fair” bugs in 2008
Jewitt Brook	1.0 miles Stressed – Stressed List	temperature		“fair” bugs in 2008 & 2009 – temperature thought to be the stressor
Bickford Brook, mouth to headwaters	4.0 miles Stressed	acidity	atmospheric deposition	
Bolles Brook, mouth to headwaters	5.0 miles Stressed	acidity	atmospheric deposition	

* Millions of gallons per day and average daily demand.

Assessment Information – Hoosic River and smaller tributaries

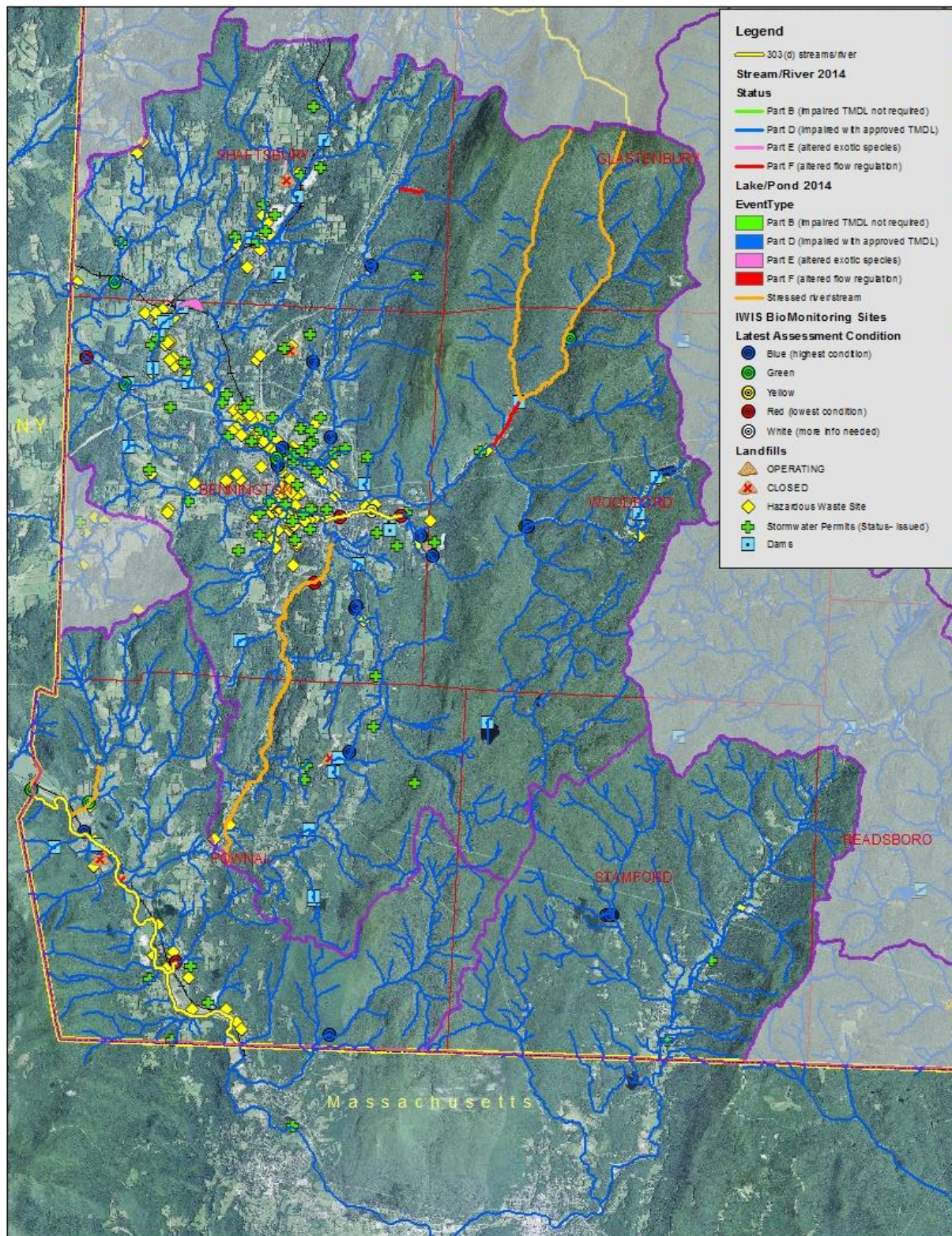


Figure 2. Hoosic and Walloomsac Rivers in Vermont Assessment Information

Biological Monitoring

Macroinvertebrate sampling was done on the Hoosic River in Pownal at milepoint 37.2 located above the Route 346 bridge at the Vermont/NY line; at rm 38.9 which is located above WWTF in North Pownal (access across the field at the WWTF); and at rm 42.0 which is located below the bridge in Pownal about 50 meters. The results are in Table 2:

Table 2. Macroinvertebrate sampling results from Hoosic River sites

	Rm 37.2	Rm 38.9	Rm 42.0
1998	fair	----	fair
2000	very good	----	----
2003	very good	----	very good
2008	vgood-good	very good	----
2013	good	---	---

Comments from the 2013 macroinvertebrate assessment on the Hoosic River at rivermile 37.2 which is right near the Vermont/NY line note that the density is moderate, the EPT metric is low, and the bio index is elevated indicating moderate enrichment stress.

The Hoosic River Watershed Association has done biological sampling in the Hoosic River watershed with sites in Berkshire Co, Mass, Bennington Co, Vermont, and Renesselaer Co, NY since 2006. Only two of the 13 sample sites are in Vermont with one site above the Route 346 bridge at the NY/Vermont border and the other just below the Main Street bridge in Pownal. The two sites have been considered to be "slightly impacted" for the most part over the years. This assessment of "slightly impacted" applied to both sites as recently as 2012.

Table 3. Biomonitoring results from Hoosic River tributaries (not including Walloomsac)

Year	Cardinal Brook rm 0.1	Cardinal Brook Trib 1 rm 0.1	Roaring Brook rm 2.4	Ladd Creek rm 0.4	Tubbs Creek rm 0.5	Broad Brook rm 2.4	White Creek rm 10.6	Mill Brook rm 2.8
2003	---	---	---	---	---	---	---	good
2008	---	---	---	poor	fair	---	vgood	---
2009	---	---	---	fair- poor	fair	---	---	---
2012	exc	vgood	---	---	---	exc	---	---
2013	exc	---	exc-vg	---	good	exc	---	---

As seen above, recent sampling on Cardinal Brook and on Broad Brook shows aquatic communities in excellent condition. The two samples on each brook provide the needed assessment for these streams to be considered Class A streams. Roaring Brook with its "excellent-very good" assessment could also be a candidate for re-classification. Another sample or two on this stream would be valuable.

In contrast, Ladd Creek and Tubbs Creek have two assessments in the recent past showing an impaired aquatic community. Tubbs Creek, however, did show an improvement in macroinvertebrate community health in 2013.

Table 4. Some biological monitoring needed in the Hoosic River watershed

Waterbody id	Stream or river name	Location/number of sites	Comments
VT01-01	North Branch Hoosic River	one site	We have no biological data on the North Branch
VT01-01	Roaring Brook	one site below the rm 2.4 site	There are three bio sites clustered near each other on Roaring Brook, Cardinal Brook, and Trib 1 Cardinal Brook which capture watershed above these. Need a site lower on Roaring Brook – rm 0.5, 1.0 area?
VT01-02	Unnamed Trib to Hoosic between W Carpenter and Carpenter Hill Roads	one site on this tributary up from mouth a little way	There have been no samples on this stream. It is located east of Tubbs Brook and north of the Hoosic.
VT01-02	Ladd Brook	Re-sample at rm 0.4	Need to see if improving & if not, what to work on.
VT01-07	White Creek	Re-sample at rm 10.6	The streams that are in VT01-07 and go into NY are not well sampled.

Table 5. Macroinvertebrate samplings results from the Walloomsac River

Walloomsac River	Rm 9.2	Rm 10.1	Rm 14.9	Rm 15.1
2003	good	---	---	---
2006	---	---	---	very good
2008	good	very good	---	---
2013	fair	good	good	---

Table 6. Macroinvertebrate samplings results from Barney Brook (trib to Walloomsac)

Barney Brook	Rm 0.3	Rm 0.8	Rm 1.5	Rm 2.2	Rm 2.7
2003	---	---	good-fair	---	---
2004	---	---	good-fair	---	---
2005	---	---	poor	---	---
2006 (bugs)	good-fair	---	poor	---	---
2006 (fish)	poor	---	fair	good	---
2008 (bugs)	fair	good-fair	fair-poor	excellent	excellent
2008 (fish)	fair	good	poor	---	---
2013 (bugs)	---	good-fair	---	---	---
2013 (fish)	----	very good	---	---	---

The habitat assessment that has been done at the Barney Brook rivermile 1.5 site over the most recent five years that macroinvertebrates were sampled (2003 to 2008) has found that the embeddedness and silt rating measures have varied but elevated iron and manganese have been persistent problems. Some of the habitat description notes include the following: “bottom coated with Fe precipitate”; “iron precipitate covered rocks”; “a constructed wetland.. above the reach appears to be.. mobilizing high levels of iron and manganese, which is coating the substrate..”; among others.

Table 7. Barney Brook biological monitoring sites

Milepoint	Location description
Rm 0.3	Just off Rt 9 on South Branch Road - site starts just above a culvert.
Rm 0.8	Located at the end of Shawmut Street.
Rm 1.5	Located above Barney Road crossing 50 meters.
Rm 2.2	Located below access road 50 meters - this site is below Burgess Landfill and confluence with old channel draining landfill.
Rm 2.7	Upstream of gravel pit road on Burgess property, site just above where diversion channel begins around old landfill.



Figure 3. Barney Brook and biomonitoring site locations

Table 8. Biomonitoring results from other Walloomsac River tributaries (not including Barney Brook)

	Cold Spring Brook rm 0.5	Furnace Brook rm 1.5	Furnace Brook rm 3.1	Furnace Brook rm 7.1	Bolles Brook rm 2.3	City Stream rm 2.0	Stamford Brook rm 0.1	South Stream rm 2.0	South Stream rm 2.1	South Stream rm 5.1	Hewitt Brook rm 1.8	Jewett Brook rm 1.0	Little White Creek rm 10.6
2005	---	---	---	---	vg-good	---	---	---	---	---	---	---	---
2006	---	---	---	---	---	---	---	---	---	---	exc-vg	---	---
2008	good	---	exc	---	---	exc	vg-good	---	---	vgood	---	fair	exc
2009	---	---	---	---	---	---	---	---	---	---	---	fair	---
2012	---	exc	---	---	---	---	---	---	---	---	---	---	---
2012 (fish)	---	exc	---	---	---	---	---	---	---	---	---	---	---
2013	---	---	---	exc	---	---	---	exc	exc	---	---	---	---
2013 (fish)	---	---	---	---	---	---	---	good	---	---	---	---	---

Table 9. Biomonitoring sampling site locations of Walloomsac River tributaries (not including Barney Brook)

Site name	Location
Cold Spring Brook rm 0.5	Above Route 67 bridge below a small tributary in Shaftsbury
Furnace Brook rm 1.5	Below Kocher Dump and seeps in Bennington
Furnace Brook rm 3.1	A half-mile up Old Dump Road where road goes right up hill and stream goes left in Bennington.
Furnace Brook rm 7.1	Above Wade Road in Shaftsbury.
Bolles Brook rm 2.3	Adjacent to Forest Service Road 288 in Woodford
City Stream rm 2.0	Above confluence with Stamford Brook (Dunville Hollow) in Woodford.
Stamford Brook rm 0.1	Above confluence with City Stream and Notch Road bridge in Woodford.
South Stream rm 2.0	Located 100 meters below Bennington Fish hatchery effluent stream in Bennington.
South Stream rm 5.1	Located 15 meters downstream from Cross Road in Pownal.
Hewitt Brook rm 1.8	Above Andre Lane off of Houghton Road in Bennington.
Jewett Brook rm 1.0	Above Middle Pownal Road bridge, next to horse farm in Bennington.
Little White Creek rm 10.6	Below Granger Hollow Road in Shaftsbury.

Table 10. Some biological monitoring needed in the Walloomsac River watershed

Waterbody id	Stream or river name	Location/number of sites	Comments
VT01-03	Cold Spring Brook	2 sites	Re-sample at rm 0.5 and do another upstream
VT01-03	Hewitt Brook	1 site, rm 1.8	Re-sample, last sample in 2006
VT01-03	Jewett Brook	1 site, rm 1.0	Re-sample & do more investigation
VT01-03	City Stream	1 site, rm 2.0	Re-sample, still excellent?
VT01-07	Little White Creek	1 site, rm 10.6	Re-sample, still excellent?

Wastewater Issues

A wastewater facilities planning report done for the Town of Pownal in 2000, updated March 2002, documented the direct sewage discharges and failed septic systems that were polluting the Hoosic River. A multi-phased project broke ground in 2004 and now the WWTF is built and operating - it was completed in September 2006. The sewer mains and laterals were constructed and are in use in North Pownal (contract 3). Pownal Center sewer construction is complete (contract 4) and operational. Eight of the 11 pump stations were done under Contract 5. All users under Contract 6 were hooked up in December 2007. Contracts 7 and 8 are also complete. Contracts 2A and 2B were combined and were to be completed in 2008. Contract 2C, the final contract, (install sewer lines west of the Hoosic River and part of Pownal Village) was awarded February 28, 2008. A memo from Forcier and Aldrich, the consultants, announced that the last sewer connection in Pownal was completed on September 5, 2008. "All identified points of pollution in Pownal Village, Pownal Center and North Pownal have now been abated." This is two years ahead of the original schedule and a success story.

The Pownal Wastewater Treatment Facility is operating under a permit that runs from September 2011 until June 2016 currently.

Two large WWTFs in Massachusetts (Adams and Hoosac) were issued NPDES permit renewals by EPA in 2005 and 2006 respectively (Massachusetts is a non-delegated state). The lowering of the phosphorus concentration at the plants to 1.0 mg/liter was calculated to have a significant beneficial effect on the water quality of the Hoosic River downstream of these plants. Prior to these changes, Vermont DEC calculations indicated that phosphorus control at the Hoosac WWTF alone would reduce concentrations in Vermont to a level sufficient to eliminate the impairment. These two recent improvements warrant taking the Hoosic River's lowest 2 miles that have been on the Part B - impaired but do not need a TMDL List - off. The segment is on the list for phosphorus (separately from the listing for *E coli* from the Pownal discharges).

Hazardous Waste sites

General Cable/Mack Molding

The groundwater at the former General Cable/ now Mack Molding site (#870129) "is contaminated with #6 fuel oil as a result of leaks/spills from onsite fuel oil storage tanks. Free phase product is present in onsite monitoring wells and sheen were observed on the water that had infiltrated into the fuel oil tank vault." This hazardous waste site is north of Pownal Village located between Route 346 and the railroad tracks. Just west of the railroad tracks is the Hoosic River.

Quarterly monitoring is done at this site by a consultant and Vermont DEC staff reviews the data that comes in. "To date, approximately 10,456 gallons of product/water mixture has been recovered by the former groundwater recovery system, the monitoring wells with measurable product, and the product skimmers since the initiation of remediation activities in December of 1991." In the latest round of sampling, third quarter of 2014, light non-aqueous phase liquid was found in monitoring wells MW-1 and GT-3. However, no evidence of petroleum discharge to the Hoosic River has been seen for many sampling rounds despite the groundwater flow direction being towards the river.

Pownal Tannery

There has been much investigation, assessment, monitoring and other activity and hundreds of millions of dollars spent on the Pownal Tannery site along the Hoosic River. The former tannery building has been decontaminated and taken down. The landfill that received sludge from the lagoons has been graded and capped. About 2500 cubic yards of contaminated fill has been removed from the Woods Road Disposal Area and the area has been graded. Rip-rap was put in place along the edge of the Hoosic River where the disposal area meets it.

A report on the latest inspections and monitoring at the Pownal Tannery site was produced on April 1, 2014 by Stone Environmental. The former lagoon area was inspected in June 2013 by three Department of Environmental Conservation (DEC) staff and they found the overall condition of the lagoon area very good. The lagoon area plus four other associated areas have groundwater monitoring wells and results from the groundwater samples taken in September 2013 are bulleted below:

- In the lagoon area, manganese was above the Vermont Groundwater Enforcement Standards (VGES) in four of the nine wells and arsenic was above the VGES in one well;
- Upgradient of the Lagoon Area, manganese was above the VGES in one sample of three (although an order of magnitude lower than in the lagoon area) and arsenic was detected by below the VGES;
- At the Mill Building and Woods Road Area, n-butylbenzene and n-propylbenzene were above lab reporting limits in one well of five (no VGES for these), manganese exceeded the VGES in two wells, and arsenic exceeded the VGES in two wells;
- At the Dean Road Landfill, there were no target VOCs or SVOCs found, manganese was above the VGES in two wells of six and in the leachate tank.

Sediment sampling occurred at the same time and Stone collected five sediment samples from the eastern bank of the Hoosic River adjacent to the lagoon area. These samples were analyzed for PCBs, PAHs, metals, and cyanide. The results were as follows:

- Anthracene was above the threshold effects concentration (TEC) in 2 samples;
- Benz(a)anthracene was above the TEC in two samples and above the probable effects concentration (PEC) in one sample;
- Benzo(a)pyrene above the TEC in two samples;
- Chrysene above the TEC in two samples (1 of the 2 samples close to the PEC);
- Dibenzo(a,h)anthracene above the TEC in three samples;
- Fluoranthene above the PEC in one sample;
- Pyrene above the TEC in three samples (1 of the 3 samples close to the PEC);
- Total PAHs above the TEC in all five samples with one sample getting up near the PEC.

Sample SD-4 always had the highest concentrations of these SVOCs. This sample also had cadmium above the TEC, chromium above the PEC, lead above the TEC, manganese above the TEC, and zinc above the TEC.

Burgess Brothers Superfund Site

Sampling done in spring 1989 below Burgess Landfill in Barney Brook had found organics and metals in the water column exceeding standards. Data from monitoring at both the Burgess CD&D Landfill and the Burgess Superfund Site showed only occasional elevated (but not above standards) levels of organics and metals in surface water samples by 1998.

Much progress at remediating the Burgess Brothers site has been made over the last 16 years. At the end of 2013, there was a Remedial Design Work Plan and currently, at the end of 2014, there is a draft Longterm Monitoring Plan that is close to completion. The two groundwater collection trenches and a groundwater treatment system have been installed and are starting up at the time of this writing (November 2014).

Dam Removal

The Briggsville Dam in Clarkson, Massachusetts on the North Branch of the Hoosic River was no longer used and in poor condition. Its removal was particularly important for the owner, a large employer in the rural community, as it helped them avoid abandoning the facility and laying off employees.

The dam removal project restored habitat, passage, and water quality for the state-listed longnosed sucker, in addition to populations of brook trout and slimy sculpin. Dam removal restored access to over 30 miles of high quality headwater streams and exemplary trout habitat. American Rivers raised critical grant funds and funds from NRCS to complete the project. Construction was completed in Fall 2010.

The Henry Bridge dam (State id 17.09) on the Walloomsac River was removed in September 2013.

Other States assessments

The latest data and information available from the Massachusetts Department of Environmental Protection is in its 2002 Water Quality Assessment Report for the Hudson River Basin on the segment of the Hoosic River that is just upstream of the Vermont state line (Segment MA 11-05). The segment is 8.2 miles long and is a Class B, Warm Water Fishery. In 2002, the aquatic life use was impaired for the upper 0.2 miles, supported for the middle 6.3 miles, and impaired for the lower 1.7 miles (adjacent to the Vermont border). Fish consumption and primary contact recreation were also impaired and secondary contact recreation and aesthetics were supported but had an alert status.

There is a fish consumption advisory for brown trout on the Hoosic River in Massachusetts from the channelized section in North Adams to the MA/VT state line, which also applies to the entire 7.0 miles in Vermont. The advisory started in April 1989 and is due to PCB contamination. The advisory was still on the October 11, 2011 Massachusetts Department of Public Health "Freshwater Fish Consumption Advisory List". There is also a fish consumption advisory due to PCBs for the Hoosic in New York with a "don't eat" warning for any fish species for women under age 50 and children under age 15 and with a brown trout limit of up to 1 meal/month for brown trout greater than 14 inches and a limit for smaller brown trout and all other fish of up to four meals per month.

Information Sources

- 1) *Biological and Aquatic Life Use Attainment Assessment Barney Brook*, Bennington, Vermont, January 25, 2010. Vermont DEC Water Quality Division Biomonitoring and Aquatic Studies Section, La Rosa Environmental Laboratory, Waterbury, Vermont.
- 2) Former General Cable Facility, Pownal, Vermont Quarterly Groundwater Report Third Quarter 2014. Prepared for American Premier UnderWriters, Inc by Unicorn Management Consultants, LLC, Danbury, Connecticut. October 2014.
- 3) Hoosic River Watershed Association 2012 Watershed Report Card, Hoosic River Watershed Association, Willamstown, Mass.
- 4) Hudson River Basin 2002 Water Quality Assessment Report, Massachusetts Department of Environmental Protection, Division of Watershed Management, June 2006.
- 5) Massachusetts Fish Consumption Advisory at:
<http://www.mass.gov/eohhs/docs/dph/environmental/exposure/fish-consumption-advisory-list.pdf>
- 6) New York State Department of Health Home Page > Health Advice on Eating Sportfish and Game > Hudson Valley Region Fish Advisories, updated May 2014.
- 7) Pownal Tannery Operation, Maintenance, and Monitoring Report 2013, April 1, 2014. Prepared by Stone Environmental, Montpelier, Vermont for Vermont Department of Environmental Conservation, Montpelier, Vermont.
- 8) Remedial Design Work Plan Burgess Brothers Superfund Site Woodford and Bennington, Vermont, November 7, 2013. Done by Environmental Partners Group, Quincy, Massachusetts.
- 9) Town of Pownal, Vermont, Wastewater Facilities Planning Preliminary Engineering Report, August 2000. Update March 2002 - lists and briefly describes the direct pipes and failing septic systems in North Pownal, Pownal, and Pownal Center.