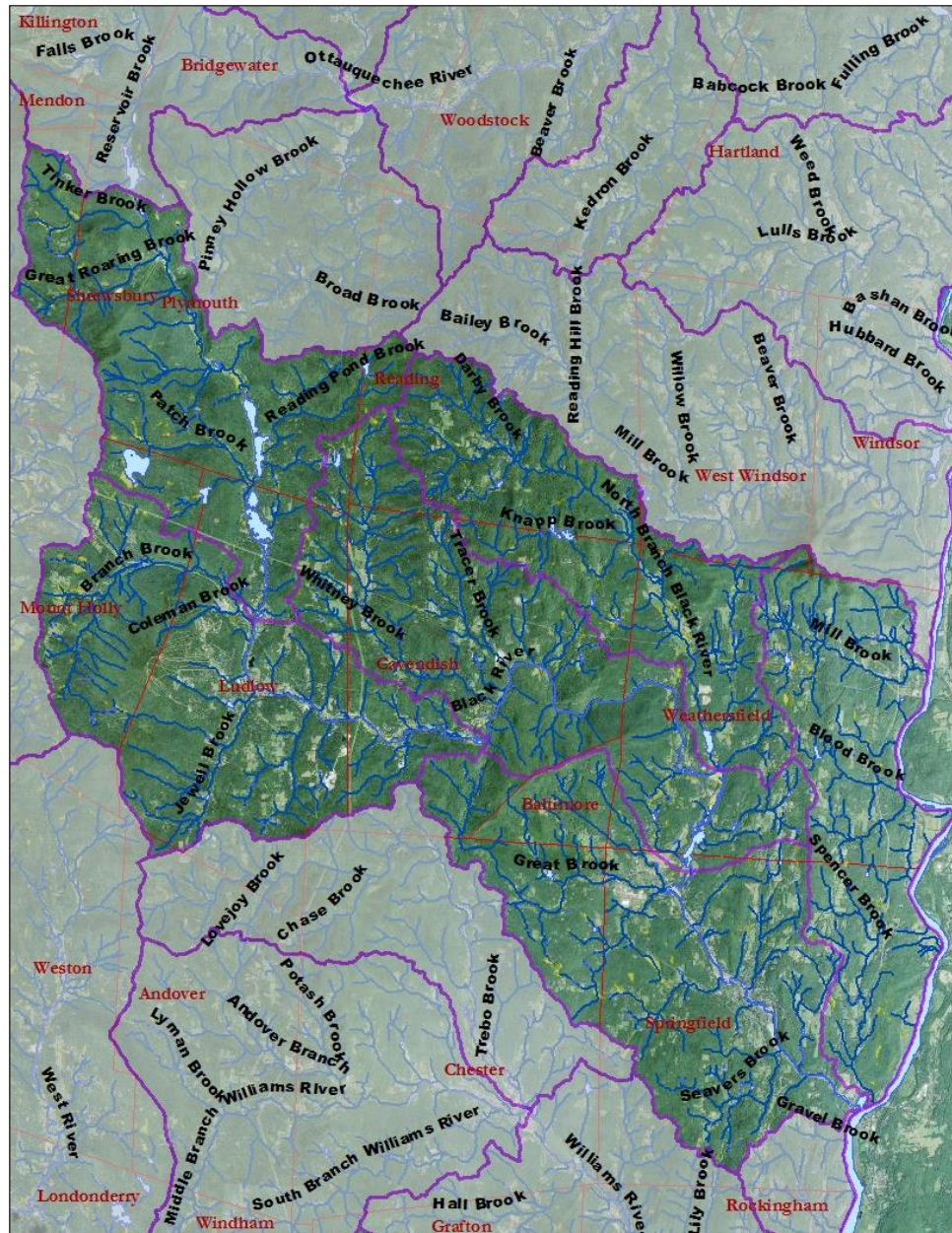


Black River Watershed

Updated Water Quality/Aquatic Habitat Assessment Report

Including direct tribs to Connecticut River Mill Brook, Blood Brook, Spencer Brook



Vermont Agency of Natural Resources
Department of Environmental Conservation
Watershed Management Division
Monitoring, Assessment and Planning Program
June 2016

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Black River Watershed

Earlier Information on the Black River Watershed

The last time that a formal assessment report was done on the Black River was in June 2000 as the Basin 10 – Black & Ottauquechee Rivers Water Quality and Aquatic Habitat Assessment Report. In 2012, there was the Basin 10 Water Quality Management Plan: Ottauquechee River and Black River, which used updated data and information. In addition, there have been several river corridor or geomorphic assessment reports done for stretches of these waters over the last seven years.

Smaller tributaries that drain directly to the Connecticut River (formerly Basin 13) are included with this Black River watershed updated assessment. These tributaries include Mill Brook in Weathersfield, Blood Brook, Spencer Brook and some unnamed tributaries.

This 2016 assessment is a further update in preparation for the 2017 Basin 10 plan.

General Description of the Black River Watershed

The Black River, which has a mainstem length of 40 miles, is formed at the outlet of Black Pond in the town of Plymouth. With its tributaries, the Black River drains an area of 202 square miles in Rutland and Windsor Counties. The valley of the Black River is generally narrow, as is characteristic of the rivers in eastern Vermont. The surrounding drainage basin is composed of hilly and mountainous terrain.

From its source at the outlet of Black Pond, the Black River flows southeasterly through the town of Plymouth passing into and through Amherst and Echo Lakes and just north of the Ludlow town line, it is joined by Patch Brook, which enters from the west.

Patch Brook begins at the outlet of Lake Ninevah in the town of Mt. Holly and is a flashy stream with a length of 3.0 miles and a drainage area of 5.5 square miles.

The Black River then continues southerly for a distance of 3.5 miles, passing through Rescue Lake and Reservoir Pond, to its juncture with Branch Brook.

Branch Brook, which enters from the west, is the first major tributary of the Black River. It is also a flashy stream with a length of 8.0 miles and a drainage area of 16.0 square miles.

From Branch Brook, the Black River continues southerly for 1.7 miles into the village of Ludlow where it is joined by Jewell Brook which enters from the south.

Jewell Brook, which is 4.5 miles long and has a drainage area of 9.5 square miles, rises in the southwestern part of Ludlow and flows northerly to join the Black River.

From the Jewell Brook mouth, the Black River flows easterly through Ludlow, and into Cavendish. Halfway through Cavendish, the Black River turns northerly at the Cavendish

Gorge. As it flows northerly, the Black River is joined by Twenty Mile Stream which enters from the northwest.

Twenty Mile Steam rises in the town of Reading and, contrary to its name, is 8.5 miles long and has a drainage area of 15.5 square miles.

The Black River then flows through a steep, narrow valley, alternating directions several times although generally flowing easterly before eventually being joined by the North Branch at a point about nine miles downstream from Twenty Mile Stream.

The North Branch is the largest tributary of the Black River, with a length of 11.0 miles and a drainage area of 33.0 square miles. It begins in the town of Reading, flows southeasterly through the northeast corner of Cavendish, and then flows over five miles through Weathersfield before entering Stoughton Pond. After leaving the pond, the North Branch flows southerly a short distance to its confluence with the Black River.

From North Branch mouth, the Black River flows southwesterly through the North Springfield Flood Control Reservoir in Weathersfield and Springfield. Shortly after the reservoir, the Black River enters North Springfield where it is joined by Great Brook from the west.

Great Brook originates in the town of Cavendish and flows south and then southeast and east through Chester and then east in the town of Springfield to its confluence with the Black River. It is approximately 8 ½ miles long draining a 20.5 square mile watershed.

For the remaining 7.6 miles of its length below North Springfield, the Black River flows southeasterly through the village of Springfield entering the Connecticut River just downstream of Interstate 91. A more detailed description of the Black River watershed is given in the 2000 Basin 10 Black and Ottauquechee Assessment Report and [located here](#).

Black River Watershed Summary of Segments with Impacts

Stream or Lake Segment	Mileage & Status	Pollutant	Source	Use affected & other information
Black River, mouth to Fellows Dam	4.6 miles Impaired Part A list	E. coli	CSOs	
North Branch Black River, above Stoughton Pond	9.3 miles Stressed	Sediment, physical channel alterations	Dredging, eroding stream-banks	Hit hard by TS Irene but post-flood dredging and berming also
Coleman Brook	0.4 miles Stressed	Stormwater runoff, changed hydrology	Development	Conditions improved - macroinvertebrate community "good" in 2015
Okemo Brook	0.1 miles Stressed	Sand/sediment, perhaps chlorides	Road runoff, roadside erosion	
Trailside Brook	1.8 miles Stressed	Sediment, oil, grease noted in field	Not yet known	Low abundance of macroinvertebrates 2015

Assessment Information

Following is a map showing the dams, landfills, and hazardous sites in the Black River watershed and the condition of the stream following assessments using all available information. After the map are tables with data from biological monitoring.

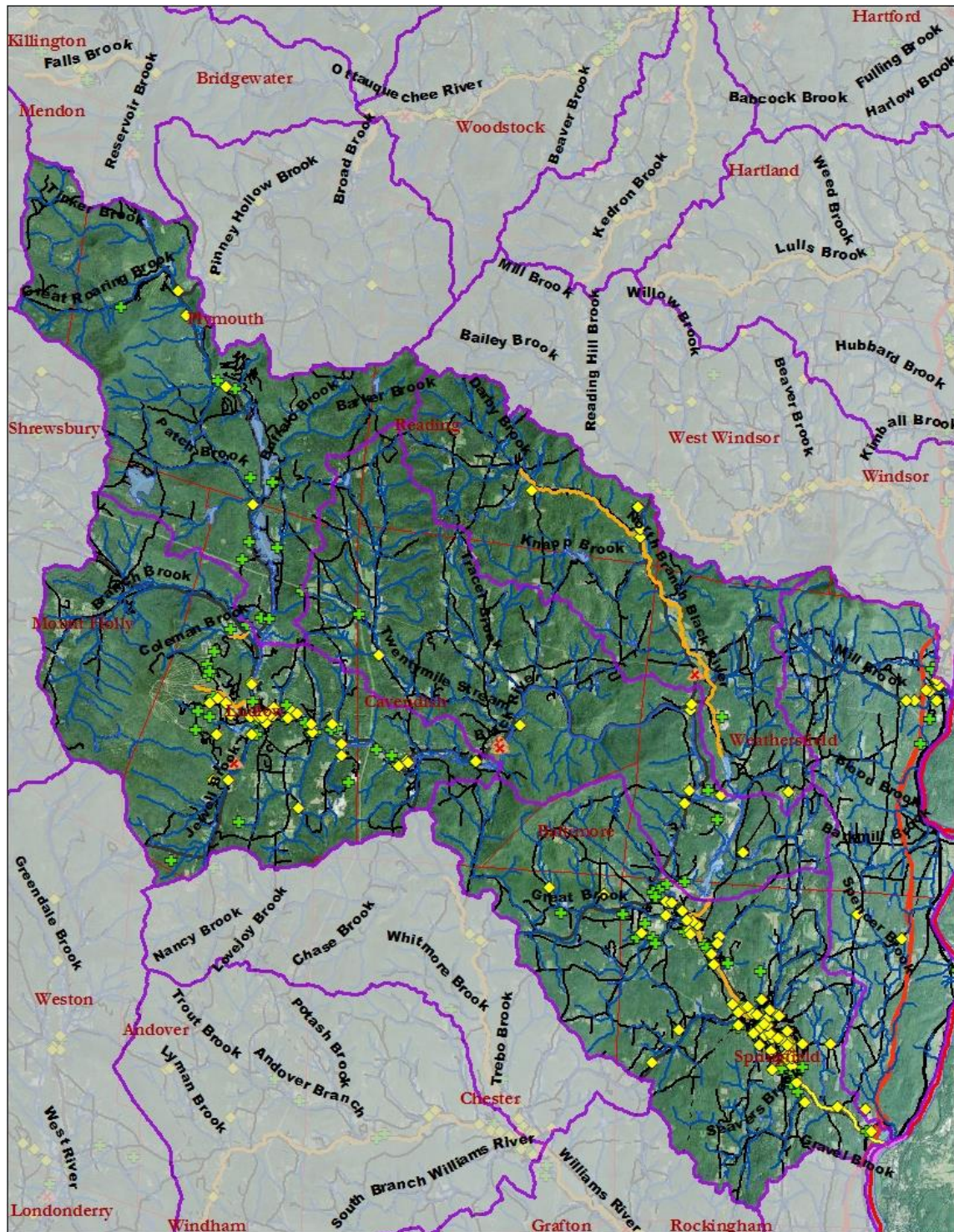


Figure 1. Black River Watershed with Assessment Information (yellow hazardous waste sites, green crosses stormwater permits & brown with red x are landfills)

Biological Monitoring

Table 1. Biological community sampling results for Black River & Tributaries – 2009-2015

Wbid	River/Stream	Station	Date	Assessment - macroinvertebrates	Assessment - fish
VT10-11	Black River	2.4	9/10/2014	excellent	----
VT10-11	Black River	3.0	8/19/2010	very good	----
VT10-11	Black River	7.1	8/19/2010	fair	----
VT10-11	Black River	7.8	8/19/2010	fair	----
VT10-11	Black River	8.2	8/19/2010	very good	----
VT10-13	Black River	20.0	9/10/2014	exc-vgood	----
VT10-14	Black River	25.3	9/10/2014	excellent	----
VT10-15	Black River	36.4	9/20/2012	very good	unable to assess
VT10-12	Black River Trib 9	0.2	9/10/2014	excellent	excellent
VT10-12	Black River Trib 9	0.2	9/9/2015	excellent	
VT10-12	Great Brook	6.9	9/11/2014	excellent	excellent
VT10-12	Mile Brook	0.2	9/10/2014	good	unable to assess
VT10-12	Spoonerville Brook	0.5	9/20/2012	exc-vgood	----
VT10-13	Tarbell Hill Brook	0.8	9/10/2014	very good	----
VT10-14	Branch Brook	0.5	10/8/2009	exc-vgood	----
VT10-14	Branch Brook	0.5	10/14/2010	excellent	----
VT10-14	Branch Brook	0.5	10/12/2011	poor	----
VT10-14	Coleman Brook	0.4	10/8/2009	very good	----
VT10-14	Coleman Brook	0.4	10/14/2010	fair	----
VT10-14	Coleman Brook	0.4	10/12/2011	poor	----
VT10-14	Coleman Brook	0.4	10/19/2015	good	----
VT10-14	Coleman Brook	0.8	10/8/2009	very good	----
VT10-14	Coleman Brook	0.8	10/14/2010	fair	----
VT10-14	Okemo Brook	0.1	9/11/2014	good-fair	----
VT10-14	Sanders Brook	0.9	10/22/2010	vgood-good	----
VT10-14	Sanders Brook	0.9	11/23/2013	exc-vgood	----
VT10-14	Sanders Brook	0.9	10/09/2014	exc-vgood	----
VT10-14	Sanders Brook	0.9	10/07/2015	very good	----
VT10-14	Sanders Brook	1.4	10/22/2010	excellent	----
VT10-14	Sanders Brook	1.4	11/23/2013	exc-vgood	----
VT10-14	Sanders Brook	1.4	10/09/2014	very good-good	----
VT10-14	Sanders Brook	1.4	10/07/2015	fair	----
VT10-14	Trailside Brook	0.8	10/22/2011	very good-good	----
VT10-14	Trailside Brook	0.8	11/23/2013	exc-vgood	----
VT10-14	Trailside Brook	0.8	10/9/2014	good-fair	----
VT10-14	Trailside Brook	0.8	10/7/2015	good	
VT10-14	Trailside Brook	1.7	10/9/2014	good	----
VT10-14	Trailside Brook	1.7	10/7/2015	poor	----
VT10-14	Trailside Brook	1.8	10/22/2010	good-fair	----
VT10-14	Trailside Brook	1.8	11/23/2013	good-fair	----

VT10-15	Great Roaring Brook	0.1	10/1/2014	very good	excellent
VT10-16	North Branch Black	4.9	9/20/2012	exc-vgood	fair
VT10-16	Sherman Brook	2.7	10/13/2013	very good	----
VT10-16	Sherman Brook	3.1	10/3/2013	poor	poor
VT10-16	Sherman Brook	3.2	10/3/2013	good	----

Table 2. Biological sampling sites locations

WBID	Stream or River	Station	Description
VT10-11	Black River	2.4	About ½ miles below Springfield WWTF & below Seaver Brook confluence
VT10-11	Black River	3.0	Above Bridge St & above WWTF effluent near the fire house
VT10-11	Black River	7.1	Behind VTEL & below the 1 st set of booms from the oil spill
VT10-11	Black River	7.8	Located just below Black River Produce
VT10-11	Black River	8.2	Behind Springfield welcome sign on Route 5 and above the Black River Produce oil spill
VT10-13	Black River	20.0	About 50 meters above first bridge crossing below Cavendish hydro dam & below WWTF
VT10-14	Black River	25.3	About 2500 feet below Ludlow WWTF, below and old dam.
VT10-15	Black River	36.4	Below 2 nd Route 100 bridge north of Amherst Lake
VT10-12	Black River Trib 9	0.2	Adjacent to Route 11 near West Springfield
VT10-12	Great Brook	6.9	Near intersection of Cavendish Road and Dean Brook Road
VT10-12	Mile Brook	0.2	Off Valley Street in Springfield
VT10-12	Spoonerville Brook	0.5	In riffles above Church Street bridge 50 meters, below large pipe
VT10-14	Branch Brook	0.5	Below confluence with Coleman Brook about 100 meters
VT10-14	Coleman Brook	0.4	Above access road crossing about 500 meters
VT10-14	Coleman Brook	0.8	About 100 meters above railroad bridge
VT10-14	Okemo Brook	0.1	Between Route 100 and confluence with the Black River next to the fire station in Ludlow
VT10-14	Sanders Brook	0.9	Just above West Hill Rd below proposed Timber Creek development
VT10-14	Sanders Brook	1.4	Above proposed Timber Creek development
VT10-14	Trailside Brook	0.8	Located above reservoir.
VT10-14	Trailside Brook	1.7	Below Trailside Road, new location in 2014
VT10-14	Trailside Brook	1.8	Located above Trailside Road
VT10-15	Great Roaring Brook	0.1	About 75 meters upstream from Route 100 bridge, above manmade channel
VT10-16	North Branch Black River	4.9	Across from old cemetery at Route 106 at hedge-row line between hayfield and fallow field
VT10-16	Sherman Brook	2.7	Below Horton Hollow Road about 50 meters
VT10-16	Sherman Brook	3.1	Below Route 131 about 50 meters
VT10-16	Sherman Brook	3.2	Above Route 131 culvert about 20 meters

Table 3. Biological monitoring needed in the Black River watershed

Water-body id	Stream or river name	Location/number of sites	Comments
VT10-16	North Branch Black River	1 site at rm 4.9	Re-sample bugs and fish – last sampled in 2012.
VT10-16	Knapp Brook	1 site	A trib to the North Branch and largely on state lands.
VT10-15	Tinker Brook	1 site	A site about a mile up the brook from the Black River – was sampled upstream in the late 90s. Likely very high quality.
VT10-15	Unnamed tributary to Black River	At least 1 site	This stream has never been sampled – enters Black River just downstream of Frog City Road
VT10-15	Buffalo Brook & its tributary Reading Pond Brook	At least 1 site on each brook	Never been sampled. Mostly on state land so it would be good to have data.
VT10-14	Branch Brook	Rm 0.5 and at least 1 additional site upstream	Rm 0.5 has been sampled 3 years but needs re-sampling and this stream is 8 miles long and a large watershed so additional sites upstream are needed.
VT10-14	Okemo Brook	2 sites	Re-sample at rm 0.1 and sample at another location upstream. Road runoff and roadside erosion potential stressors.
VT10-14	Grant Brook (a trib to Jewell Brook)	1 site	Never been sampled.
VT10-13	Twenty Mile Stream	At least 2 sites	Long stream and large tributary watershed – never been sampled
VT10-12	Great Brook	At rm 6.9	Sample bugs and fish another time. Likely can re-classify.
VT10-12	Seaver Brook	At rm 0.1	Was on the line with bugs at good-fair in 2002. Needs to be re-sampled.
VT10-12	Spoonerville Brook	Again at rm 0.5 and another site farther upstream	It was excellent-very good at rm 0.5 in 2012. Spoonerville Brook is a long stream and site higher would be good too
VT10-12	Trib #2 to Black River	1 site	New state park – Muckcross. No data on the stream.
VT10-11	Black River	A site upstream of rm 3.0 & downstream of rm 7.1	Minnow traps were set in this stretch through Springfield but no standard bio-monitoring - bugs or fish.
VT10-11	Black River	Re-do site rm 2.8	A site below the Jones & Lamson site. Last done in 2006.

E. coli Monitoring

The watershed organization, Black River Action Team (BRAT) has sampled water quality over several years now and the geometric means for the summer seasons from 2013 to 2015 are shown below. The EPA and State standard for *E. coli* in swimmable waters is a geometric mean of 126 organisms/100 ml of water.

Table 5. Black River and tribs *E. coli* geometric means per season 2013 to 2015

Site ¹	<i>E. coli</i> geometric mean 2013 (5 samples except where noted)	<i>E. coli</i> geometric mean 2014 (5 samples)	<i>E. coli</i> geometric mean 2015 (4 samples)
Black River Rm 1.6	150 ²	161	80
Black River Rm 2.4	109	144	145
Black River Rm 2.75	105	173	135
Black River Rm 3.6	156	156	168
Black River Rm 5.1	119	121	144
Black River Rm 8.6	58	55	48
Black River Rm 12.3	57 (4)	58	56
Mile Brook Rm 0.0	1225	2148	180
Mile Brook Rm 0.2	108	181	102
Spoonerville Brook Rm 0.1	218	76	227
Great Brook Rm 0.3	27	81	52

1 These are all sites of the Black River Action Team (BRAT); 2 The highlighted numbers are above the standard.

Physical Condition Monitoring

A geomorphic assessment took place on the Black River and major tributaries in 2008 and 2009. There were eight reaches of the Black River mainstem (8.6 miles) upstream of Cavendish Gorge; three reaches of the Black River (2.6 miles) downstream of the Gorge; one reach of Branch Brook (0.6 miles); seven reaches of Twentymile Stream (5.9 miles); and eight reaches (5.8 miles) of the North Branch Black River assessed. The reaches were sometimes broken into two or three segments for assessment purposes.

Table 4. Results of rapid habitat assessments on Black River and tributaries

Stretches assessed	"Fair" RHA	"Good" RHA	Comments
Black River upstream of Cavendish Gorge & Branch Brook reach	11	1	Sensitivity ranged from high to extreme in 3 segments.
Black River downstream of Cavendish Gorge	4	1	Sensitivity again high to extreme
Twentymile Stream	7	4	Sensitivity moderate to extreme (mostly high)
North Branch Black River	10	0	Extreme sensitivity all segments

Hazardous Waste Sites and Old Landfills

Jones and Lamson

On June 2, 2015, Stone Environmental produced a “Site-Specific Quality Assurance Project Plan: Soil Characterization and Remediation at the Former Jones and Lamson Property”. That report summarized much of the history of investigations into the site and the information below is from that Stone report.

The Jones and Lamson site was home to a metal manufacturing plant that produced metal lathes and optical comparators among other equipment. The plant is located on the banks of the Black River in Springfield and as a result of the manufacturing processes at the plant, a number of hazardous materials including PCBs, petroleum fuels, metals, and chlorinated solvents, were released at the site. The plant operated until 1985.

There has been: a site assessment of the J&L Plant #1 and Plant #2 properties in 1988 and 1989 by Dufresne-Henry; a corrective action plan by the Johnson Company in 2008; and some remedial actions by Tantara with subcontractor, Nobis, in August and September 2013. Following the remedial work by Tantara and Nobis, it became clear that the extent of swarf (fine chips of stone, metal, and cutting fluids) and oily soils was greater than originally estimated. There was an expansion of the materials removed but there was still swarf and oil soils along the river, and sampling found high PCBs, arsenic, and chromium in some of the hand augered soil borings. The excavation of materials stopped at this point because the further extent of the contamination was not known and remediation costs were rising rapidly.

Stone Environmental had performed investigations at four of the hazardous waste sites adjacent to the Jones and Lamson Plant #1 site: Bryant Grinder to the west (SMS #770123), Artisan Surfaces to the south (SMS #2013-4373), the Jones Center to the south (SMS#88026), and the Edgar May Health and Recreation Center to the north (SMS #2009-3906). Other investigations have been done on Former Springfield Gas (SMS #98-2399) and Lucas Industries (SMS #2006-3608) that are directly west of the Jones & Lamson Plant #1.

Stone Environmental did sampling in the summer of 2015 to further characterize the extent of contamination on the site and EPA Region 1 has sampled sediment, water, and pore-water in the Black River adjacent to the site in summer 2016. Reports on the results from each sampling regime are in progress at the time of this writing.

Bryant Grinder

The Bryant Grinder site has been a hazardous waste site since 1977 and consists of a former manufacturing facility with numerous large rooms and six out buildings on 16.2 acres of land. It is just southwest of the Jones & Lamson site on the western side of Clinton Street in Springfield.

Stone Environmental has done a Phase II Environmental Site Assessment and part of the State I investigation was soil gas monitoring, groundwater monitoring, building material monitoring, and some soil monitoring.

The groundwater monitoring found benzene, naphthalene, PCE, TCE, cis-1,2 DCE and 1,1-DCE as part of two plumes of contaminants originating on the site. One monitoring well had total metals (arsenic, chromium, lead and nickel) above the Vermont Groundwater Enforcement Standards (VGES). At this point it is not known if the plumes are stable, receding, or expanding. More investigation and assessment is needed to provide information for remediation recommendations.

Old Springfield Landfill

The Old Springfield Landfill is a Superfund Site located between the Black River and Route 11 to the east and Seaver Brook to the west. The landfill operated from 1947 to 1968 at which time it received municipal waste as well as hazardous industrial waste. The liquid and semi-liquid industrial waste made its way into the groundwater. After the landfill was closed, the land was developed into a mobile home park. Soon after the mobile home park opened, a nearby resident complained of foul-smelling water and the resulting EPA site investigation found the groundwater contaminated with VOCs including tri- and tetra-chloroethene and vinyl chloride and soils contaminated with PCBs and PAHs.

The site was listed as a Superfund site in 1983 and remediation investigations and agreements occurred in the late 1980s. The first group of actions on the site included design and construction of two groundwater extraction wells; a collection system for three areas of contaminated seepage; and a pre-treatment facility to remove VOCs from the collected water before it goes to the Springfield WWTF. By September of 1993, these were constructed and operating as expected.

The second set of remedial actions included design and construction of a third groundwater extraction well; some upgradient french drains and surface water diversions; and a multi-layer landfill cap with gas vents. By September 1994, these actions were complete and operating as intended. Some erosion and sparse vegetation that were noted in a June 1994 inspection were addressed and all was in good shape by the September signing of the Preliminary Close-Out Report.

Operation and maintenance of the remedial actions by the Potentially Responsible Parties (PRPs) for thirty years is required by two consent decrees. The town of Springfield is performing the operation and maintenance and an annual report of the activities and monitoring results is produced.

Four Five-Year Review Reports have been prepared for the Old Springfield Landfill Superfund Site with the latest having been done in August 2013 by U.S. EPA Region I. The report notes that ten monitoring wells are sampled annually and analyzed for VOCs. Of the ten wells, only four have had VOCs detected since 2008, however, unfortunately two of the sites with detections are those closest to the Black River. Concentrations of vinyl chloride, cis-1,2-DEC, and TCE have exceeded the maximum contaminant levels (MCLs) in those two wells in some years but not in others. The number of VOC detections are fewer compared to previous 5-year rounds and thus the treatment systems in place appear to be working.

Direct Tributaries to the Connecticut River: Mill, Blood, and Spencer Brooks

Earlier Information on the Waterbody 13-09 Streams

An assessment containing information on the streams that flow directly to the Connecticut River in Weathersfield and Springfield (waterbody identified as VT13-09) was done back in 2002. The Basin 10 – Black and Ottauquechee Rivers basin – plan completed in 2012 did not include these basin 13 streams because the merger of the lower Connecticut direct drainages with the major river basins in this region had not yet occurred. A monitoring and assessment focus on these streams is needed.

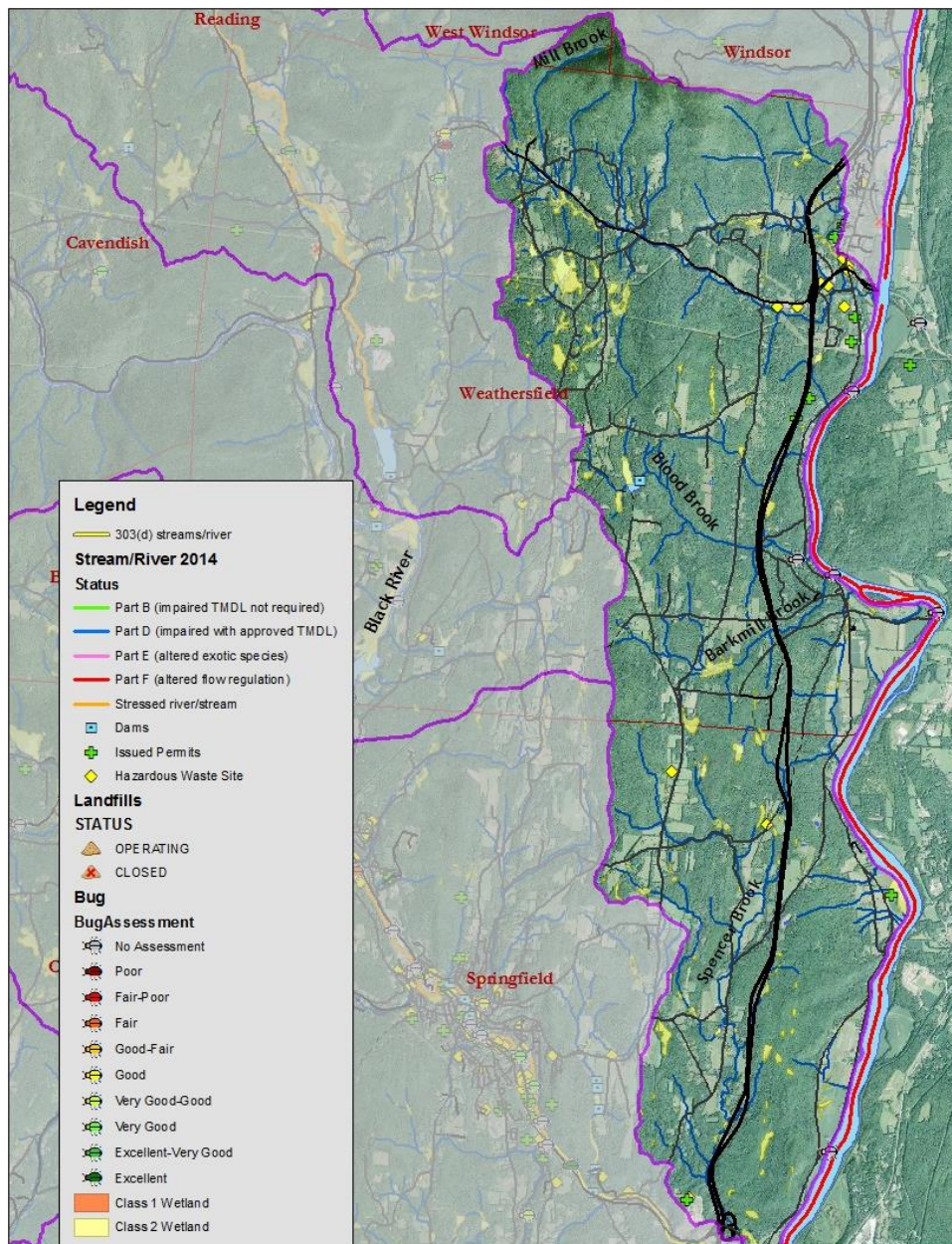


Figure 2. Direct tributaries to the Connecticut River north of the Black River

Assessment Information

Above is the map showing the dams, landfills, and hazardous sites that could influence the rivers and streams. Below is a table naming potential biological monitoring needed in order to know the aquatic community and habitat conditions of these streams.

Table 6. Biological monitoring needed in the VT13-09 Direct Tribs to Connecticut River

Water-body id	Stream or river name	Location/number of sites	Comments
VT13-09	Spencer Brook	At least 1 site	Never been sampled
VT13-09	Barkmill Brook	At least 1 site	Never been sampled
VT13-09	Blood Brook	Rm 0.1	Sampled in 2003. Re-sample – bugs and sample fish.
VT13-09	Mill Brook in Weathersfield	At least 1 site	Never been sampled.
VT13-09	Mill Brook tributary	At least 1 trib	There are many tributaries to Mill Brook with no sampling done in the past.

Information Sources

River Corridor Plan for Mill Brook in Windsor, West Windsor, and Reading, Vermont May 29, 2015. Fitzgerald Environmental Associates, Colchester, Vermont under contract to the Southern Windsor County Regional Planning Commission, Ascutney, Vermont.

Phase 2 Stream Geomorphic Assessment Black River Watershed, Rutland & Windsor Counties, Vermont, July 2009. South Mountain Research and Consulting, Bristol, Vermont under contract to the Southern Windsor County Regional Planning Commission, Ascutney, Vermont.

Phase 2 Stream Geomorphic Assessment Black River Watershed, Rutland & Windsor Counties, Vermont Addendum 1: Patch Brook & Buffalo Brook Tributaries Towns of Plymouth, Reading, Mount Holly, Ludlow. October 2010. Prepared by South Mountain Research and Consulting, Bristol, Vermont for Southern Windsor County Regional Planning Commission, Ascutney, Vermont.

Phase II Environmental Site Assessment State 2: Former Bryant Grinder Facility Final Report, August 4, 2014. Stone Environmental, Inc., Montpelier, Vermont for the Southern Windsor County Regional Planning Commission, Ascutney, Vermont and the Springfield Regional Development Corporation, Springfield, Vermont.

Site-Specific Quality Assurance Project Plan: Soil Characterization and Remediation at the Former Jones and Lamson Property, June 2, 2015. Stone Environmental Inc, Montpelier, Vermont for the Southern Windsor County Regional Planning Commission, Ascutney, Vermont.

Vermont ANR DEC Watershed Management Division Biomonitoring and Aquatic Studies Section – biological data and assessment through fall 2015 sampling season.

Appendix A – Dams

Table A-1. Dams of the Black River watershed

Wbid	Dam name	Stream	Town	Dam Status	State id
VT10-11	Powerhouse	Black River	Springfield	breached	194.13
VT10-12	Muckross	Black River tributary	Springfield	in service	194.08
VT10-12	Springfield-11	Black River tributary	Springfield	----	194.11
VT10-12	Springfield-10	Black River tributary	Springfield	----	194.10
VT10-12	Springfield-9	Black River tributary	Springfield	----	194.09
VT10-11	Vermont Snath	Black River	Springfield	breached	194.14
VT10-11	Lovejoy	Black River	Springfield	in service	194.06
VT10-11	Slack (Lower)	Black River	Springfield	in service	194.05
VT10-11	Comtu Falls	Black River	Springfield	in service	194.04
VT10-11	Gilman	Black River	Springfield	in service	194.03
VT10-11	Fellows	Black River	Springfield	not in use	194.02
VT10-12	Carey	Black River tributary			
VT10-13	North Springfield	Black River	Springfield	in service	194.01
VT10-13	Springfield Reservoir	Black River tributary	Weathersfield	in service	229.02
VT10-16	Stoughton Pond	North Branch Black River	Weathersfield	in service	229.01
VT10-16	Widow Hill	North Branch Black River tributary	Cavendish	in service	44.06
VT10-16	Knapp Brook Site #1	Knapp Brook	Cavendish	in service	44.04
VT10-16	Knapp Brook Site #2	Knapp Brook	Cavendish	in service	44.05
VT10-13	Tolles Hill	Black River	Weathersfield	in service	229.04
VT10-13	Soapstone	Black River	Weathersfield	----	229.03
VT10-13	Atherton	Black River	Cavendish	breached	44.07
VT10-13	Cavendish 11	Twenty Mile Stream	Cavendish	breached	44.11
VT10-13	Colby Pond	Twenty Mile Stream	Plymouth	in service	156.06
VT10-14	Cavendish	Black River	Cavendish	in service	44.01
VT10-14	Parker Brothers	Black River	Cavendish	breached	44.09
VT10-14	Murdoch	Black River	Cavendish	breached	44.02

VT10-14	Black Bear Woolen Co	Black River	Cavendish	breached	44.10
VT10-14	Smithville	Black River	Ludlow	----	117.11
VT10-14	Jewell Brook Site No. 3	Jewell Brook tributary	Ludlow	in service	117.04
VT10-14	Jewell Brook Site No. 3 Dike	Jewell Brook tributary	Ludlow	in service	117.12
VT10-14	Jewell Brook Site No. 5	Sanders Brook	Ludlow	in service	117.05
VT10-14	Jewell Brook site No. 2	Grant Brook	Ludlow	in service	117.06
VT10-14	Jewell Brook site No. 1	Jewell Brook	Ludlow	in service	117.07
VT10-14	Okemo Snow Pond Diversion Structure	Black River	Ludlow	in service	117.15
VT10-14	Okemo Snow Pond	Black River – off stream (OS)	Ludlow	in service	117.13
VT10-14	Branch Brook	Branch Brook tributary	Mount Holly	In service	135.03
VT10-15	Reservoir Pond	Black River	Ludlow	in service	117.02
VT10-15	Lake Rescue	Black River	Ludlow	in service	117.01
VT10-15	Lacoss	Patch Brook tributary	Plymouth	in service	156.12
VT10-15	Lake Ninevah	Patch Brook	Mount Holly	in service	135.01
VT10-15	Plymouth-8	Patch Brook tributary	Plymouth	in service	156.08
VT10-15	Reading Pond	Reading Pond Brook	Reading	breached	163.02
VT10-15	Amherst Lake	Echo lake tributary	Plymouth	in service	156.05
VT10-15	Duck Pond	Black river tributary	Plymouth	Breached (partial)	156.11
VT10-15	Plymouth Notch Snowmaking Pond	Black River – OS	Plymouth	In service	156.10
VT10-15	Black Pond	Black River	Plymouth	In service	156.02

Table A-2. Dams on Basin 13 Streams

Wbid	Dam name	Stream	Town	Dam Status	State id
VT13-09	Cooks Pond	Blood Brook	Weathersfield	In Service	229.08