The Housatonic Valley Association (HVA), founded in 1941, works to conserve the natural character and environmental health of our communities by protecting and restoring the lands and waters of the Housatonic Watershed for this and future generations.

The shoreline survey form and the concept of the Stream Teams is a statewide program coordinated by the Massachusetts Division of Ecological Restoration.

This Project was made possible by a grant from Berkshire Taconic Community Foundation, Berkshire Environmental Fund, and from membership contributions.

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Publication Date: December 14, 2017
I. Introduction: The Southwest Branch Stream Team

After 45 years of federal, state & local action under the Clean Water Act of 1972, most of the direct sewage and wastewater discharges into our waterways have been eliminated. However, a recent report by the Federal Environmental Protection Agency (EPA) classifies more than half of the rivers in the U.S. as still not safe for swimming and the fish are not safe to eat.

Today, pollution more commonly comes from “non-point sources”, such as stormwater runoff from streets, parking lots & lawns. Failed septic systems, soil erosion, and seepage from abandoned dumps and landfills are also contributing factors. Much more needs to be done to improve our water quality, and these improvements depend on the proper conduct of citizens, industry and municipalities.

These are difficult problems that need creative solutions and constant oversight. Government agencies and regional environmental groups are striving to help communities find practical answers to water quality issues through partnerships with community leaders, industry, and concerned citizens. The first step in the process is to obtain accurate, local information on the quantity and quality of water flowing through our neighborhoods. We need to know the condition of the river and surrounding environment to help us understand all aspects of the pollution that comes from our everyday decisions and actions.

The Southwest Branch Stream Team is one of the teams formed by the Housatonic Valley Association (HVA) in the Housatonic watershed in Massachusetts to collect visual data that increases our knowledge of the condition of the river and its adjacent landscape. The teams are comprised of local community volunteers that act as the ‘eyes and ears’ of their community. These volunteers identify and record the present conditions and character of the river.

The Southwest Branch of the Housatonic River is located entirely within the City of Pittsfield. The river originates at the outflow of Richmond Pond below the dam and meanders for 5.8 miles north east and east where it terminates in Clapp Park at the confluence with the West Branch of the Housatonic River. While much of the land use around the river is residential, the river flows through several extensive wetland areas which provides the river with significant riparian buffer and affords some protection of its water quality. There are also stretches where the river flows behind commercial businesses and even farm fields. Classified by the Department of Environmental Protection as a Class B, Cold Water Fishery, this branch of the Housatonic is also currently on the State’s 303D list of impaired waters for high bacteria levels.

The Southwest Branch Stream Team divided the river into 7 separate sections. Several areas have been identified as public attributes, others as areas of concern that need remedial action. Team members have prioritized the importance of these projects, and HVA will, over time, work with the community to implement these suggestions.

This report is intended as a management resource and not as a paddling guide to the river. HVA has published a Paddling Guide to the Housatonic River: Berkshire County which is available at www.hvatoday.org or by contacting an HVA office.
II. Map of the Southwest Branch of the Housatonic River Stream Team River Sections

Legend
- Red: Section G
- Section F
- Section E
- Purple: Section D
- Green: Section C
- Yellow: Section B
- Orange: Section A
- Black: Start/End of Section

Start Section A
Start Section B
Start Section C
Start Section D
Start Section E
Start Section F
Start Section G
End Section G

Service Layer Credits: USGS The National Map; National Boundary Dataset; National Elevation Dataset; Geographic
III. Section Descriptions and Proposed Action Items

Refer to the Section Maps and Feature Data, beginning on page 20, for the specific findings that are located on the Section Maps.

(Please note in the narrative and tables: Facing downstream, river right refers to the right bank and river left refers to the left bank.)

Section A: Richmond Pond Dam to Cloverdale Street Bridge

Surveyors: Brigid Glackin, Michael Murphy

Date of Survey: May 12 2017
Distance: 1.1 miles
Elevation: 1121 - 1108 feet
Significant Tributaries: Shaker Brook
Access Points: Cloverdale Street Bridge (informal)
Associated Ecologically Sensitive Areas: Richmond Pond

Section Overview:

The Southwest Branch of the Housatonic River begins at the Richmond Pond outflow just below the dam. The majority of the land abutting the river on both banks as well as the dam on this river section has been owned by the Lakeside Christian Camp for approximately 100 years. Previously a sizable farm was in operation at this site. This entire section of river is undeveloped until the river approaches the Cloverdale Street Bridge where there are a few residential properties.

The river water in the beginning of this stretch generally moves swiftly increasing from a depth of just a few inches to approximately 3 feet for 0.2 miles across a substrate composed equally of gravel, boulders, and sand. The flow then slows and the vegetation becomes predominantly a shrub-wetland habitat with silt and organic debris composing the substrate. Shaker Brook enters the Southwest Branch approximately half way between the dam and Cloverdale Street. Downstream of Shaker Brook, and 0.5 miles before the Cloverdale Street Bridge, the Southwest branch passes underneath the Lakeside Drive Bridge, the camp’s private access road bridge. The water depth increases to approximately 5 feet deep and the current slows.

Section Condition:
The general condition of the river and adjacent land appears to be healthy and productive wildlife habitat. There is a beaver dam just upstream of the Cloverdale Street Bridge and signs of beaver activity are found along the section especially upstream of the Lakeside Drive Bridge. Along almost the entire section there is a significant riparian buffer and no bank erosion. No trash is evident until the final stretch at the Cloverdale Street Bridge. The owners and managers of the Lakeside Christian Camp appear to be conscientious and environmentally sensitive landowners who utilize Best Management Practices. For example, the Camp does not apply herbicides to their ball fields, good riparian buffers are maintained on both banks and all gray water and solids are filtered in a holding tank and trucked out.

Closer to the Cloverdale Street Bridge there are houses located on river left and one on river right at the bridge. On river left is an informal river access site near the bridge. There is evidence of people fishing, swimming, and picnicking. Invasive Japanese knotweed (*Polygonum cuspidatum*) is first observed (river right) upstream of the Cloverdale Street bridge. Trash in the water and on the banks were also observed near the bridge, mostly river left, where people are accessing the river. Debris is being trapped upstream of the bridge.

<table>
<thead>
<tr>
<th>Natural Resources and Assets</th>
<th>Concerns</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Lakeside Christian Camp practices good land and water stewardship</td>
<td>• Trash near Cloverdale St. Bridge</td>
<td>• Clean up trash around Cloverdale St. Bridge</td>
</tr>
<tr>
<td>• Good wildlife/fish habitat</td>
<td>• Invasive Japanese knotweed upstream of Cloverdale St. Bridge</td>
<td>• Encourage property owners to remove/treat Japanese knotweed</td>
</tr>
<tr>
<td></td>
<td>• Woody debris being trapped at the inlet of the bridge</td>
<td>• When bridge is replaced work with City to improve woody debris transport and connectivity</td>
</tr>
</tbody>
</table>
Section B:  Cloverdale Street Bridge to Melbourne Road Bridge

Surveyors: Dylan LaChance, Mike Martin

Date of Survey: June 19 2017
Distance: 0.72 miles
Elevation: 1108 – 1105 feet
Significant Tributaries: None
Access Points: Informal access at road bridges
Associated Ecologically Sensitive Areas: None

Section Overview:

Below the Cloverdale Street Bridge the river initially meanders past back yards of residential properties located along Chapel Street (river right) on the east bank and past a farm field (river left). About 100 yards down, the river veers northwest away from these residences and winds its way through an extensive shrub wetland with some trees. Only in the last 1000 feet are residential properties (river right) evident once more.

At the Cloverdale bridge area, the river is shallow and fast moving with abundant overhanging vegetation but approximately half way to the Melbourne Road Bridge, a beaver dam causes the water to pond and increases the depth to 5 or 6 feet deep. Below the dam the water is 2 to 3 feet deep with a moderate flow. The substrate ranges from boulders and gravel at the fast moving sections to silt at the ponded area. Closer to the Melbourne bridge the river banks become steeper.

Section Condition:

The Cloverdale Street bridge is a perched, double box culvert which may be impeding aquatic connectivity. The river is also constricted below the bridge by a retaining wall (river right). Just downstream of Cloverdale Street Bridge to the Melbourne Road Bridge, the water appeared to have a gray/milky tint. There was also a ‘sewage’ odor in the Cloverdale area. (In 2017, HVA was monitoring the water quality in this area to isolate potential sources of bacterial contamination.)

A significant amount of plastic plant potters, cinder bricks and other miscellaneous trash were evident along this section primarily in the vicinity of residential properties. A small water pump was observed at the shoreline with one hose in the river and another hose leading up towards a riverside house. Invasive Japanese knotweed appears in patches along this stretch and winged euonymus was observed (river left) towards the end of the section.

At the beginning of the section, property owners are mowing their lawns right up to the river bank (river right). Some property owners are also piling grass clippings on the river bank. A
Section B: Cloverdale Street Bridge to Melbourne Road Bridge...continued

narrow (10 foot), buffer exists river left along the farm field. Beyond these properties, where the river is flowing through the shrub wetland, there is a significant riparian buffer with considerable overhanging vegetation and vines providing great wildlife habitat. Rainbow trout and other fish species, plus a snapping turtle and a beaver and beaver dams were observed. In the beaver impoundment area, a landowner is mowing up to the edge of the river bank (river right) and has a deteriorating concrete dock on the edge of the river.

According to Pittsfield’s Storm Drain System map, there are two storm drain outfall pipes located along this section. The one-foot pipe just downstream of the Cloverdale Street Bridge (river right) was observed to be coated in algae and trickling, despite dry weather and a sewage odor was noted. The second storm drain outfall on the City map is located about 600 feet further downstream from the Cloverdale Street Bridge. This pipe was not observed by the survey team. However, an algae-coated, 4” PVC pipe was observed just upstream from the Melbourne Road Bridge which is not on the City Storm Drain System map or the BEAT Storm Drain Outfall Survey. This pipe may be impacting water quality. Another possible water quality impact may be happening where oily sediment was observed near a small inlet, though no pipe was seen.

<table>
<thead>
<tr>
<th>Natural Resources and Assets</th>
<th>Concerns</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Good fish/wildlife habitat</td>
<td>• Trash</td>
<td>• Educate landowners on importance of vegetative buffers</td>
</tr>
<tr>
<td>• Well used, informal, private access indicates people are using the river</td>
<td>• Pump (water extraction?) on shoreline</td>
<td>• Educate landowners about invasive knotweed removal and management</td>
</tr>
<tr>
<td></td>
<td>• Lawns mowed to river’s edge</td>
<td>• Conduct a river cleanup</td>
</tr>
<tr>
<td></td>
<td>• Farm field (narrow riparian buffer)</td>
<td>• Investigate operation and impact of riverside pump</td>
</tr>
<tr>
<td></td>
<td>• Gray tinted water can be indicative of high bacteria levels</td>
<td>• Determine source of potential bacterial source and sewage order</td>
</tr>
<tr>
<td></td>
<td>• Sewage odor noted in Cloverdale St. area</td>
<td>• Revisit 4” PVC outfall pipe – determine source and monitor discharge in dry weather. Locate/confirm 2nd outfall.</td>
</tr>
<tr>
<td></td>
<td>• Algae coated outfall pipes</td>
<td>• Investigate farm field to determine if there are any negative impacts to river.</td>
</tr>
<tr>
<td></td>
<td>• Cloverdale St. Bridge crossing is a perched boxed culvert disrupting aquatic connectivity</td>
<td>• Improve aquatic connectivity when box culvert (Cloverdale Street Bridge) is replaced</td>
</tr>
</tbody>
</table>

1 Pittsfield Online property viewer, visit http://host.appgeo.com/PittsfieldMA/ (Refer to Appendix A for more information)
2 BEAT conducted a Storm Drain Outfall Survey and Sampling project in 2015 (Refer to Appendix A for more information)
Section C: Melbourne Road Bridge to West Housatonic/Route 20 Bridge

Surveyors: John Messerschmitt and Dick Noble

Date of Survey: May 12 2017
Distance: 1.0 miles
Elevation: 1105 – 1040 feet
Significant Tributaries: Unnamed tributary from Mud Pond
Access Points: Informal access at road bridges
Associated Ecologically Sensitive Areas: Mud Pond Watershed and tributary

Section Overview:

Beginning at the Melbourne Road Bridge, the Southwest Branch in this section flows almost parallel to Lebanon Ave and under the Lebanon Avenue and Hungerford Road Bridges. Towards the end of the section the river veers away from Lebanon Avenue and flows through a wetland area before reaching the Route 20 (West Housatonic Street) Bridge.

Initially, the river is approximately 15 feet wide and 1-2 feet deep and flows quickly over a predominantly rocky streambed through a residential area. High river banks with trees and abundant shrubs on both sides make river access difficult. The river then widens due to an old stone and cement dam which causes an impoundment. The dam (estimated at 15 feet tall) traps river debris and downed trees (river left) while water spills over a sluiceway (river right). At the side of the dam there is large cement structure with vent pipes and 5 cement pillars suggesting a former hydro-facility and aqueduct. Only three houses are visible along the river between the Melbourne Road and Lebanon Avenue bridges. Here, mostly trees and shrubs border the river.

Upstream of the Lebanon Avenue Bridge is a 2 foot diameter pipe that spans the river and is anchored by concrete structures either side of the river. Parallel to the bridge is a rusty pedestrian bridge. Downstream of the Lebanon Avenue Bridge, the river turns right behind a series of houses, before reaching the Hungerford Street Bridge. Before this bridge, river left is forested while river right is mostly backyards with mowed lawns down to the river’s edge. Below the Hungerford Bridge, the river continues with a rapid, shallow flow past backyards with lawns up to the river’s edge (river left) before continuing through a wooded area that contains two old stone abutments. The unnamed tributary from Mud Pond flows under Lebanon Avenue through a stone arch. The river then meanders past more lawns (river right) before flowing through a large marshy area just upstream of the Route 20 Bridge with a water depth of several feet. An old breached beaver dam is located just upstream of the bridge which causes the impoundment. The river’s substrate changes from gravel and small boulders to silt and organic debris at the marshy area.
Section C: Melbourne Road Bridge to West Housatonic/Route 20 Bridge...continued

Section Condition:

At the Melbourne Road Bridge, the river is steeply banked and some lumber and construction materials were seen spilling down the bank, river right. Between the Melbourne Road and Lebanon Avenue bridges, the surrounding riparian area is mostly forested whereas after that there are a number of lawns being mowed right up to the river’s edge and some yard debris being piled on the river banks.

Nearby the dam which traps debris, is a metal dump on the river bank. A rope swing provides evidence of people swimming upstream of the dam. From the Lebanon Avenue Bridge to the Route 20 Bridge, there is limited overhanging vegetation, and there are several patches of Japanese knotweed.

Along this section, four storm drain outfalls are recorded on the City’s Storm Drain System map. Not all were observed during this visual survey. Downstream of the Melbourne Road Bridge, a storm drain outfall pipe with some flow was observed, despite dry weather in previous days. This location matched a storm drain outfall location on the City’s Storm Drain System map. Another pipe, collapsed and buried under a cement block, was observed (river left) with water still draining from it during dry weather. This pipe is not on the City’s Storm Drain System map and may warrant further investigation. Under the Lebanon Avenue Bridge, an asphalted and rocky storm drain channel, river right, carries stormwater to the river from Lebanon Avenue. According to the City’s map, storm drain outfalls also exist under the Hungerford Bridge (river left, observed), in the vicinity of the confluence with Mud Pond (river right, not observed) and behind residential properties opposite Stearns Elementary School (river right, not observed, possibly buried under yard debris) draining Bryant Street and the school’s parking area.

The property owner (river right) just upstream of the Route 20 Bridge feeds ducks and geese which causes these waterfowl to congregate. This congregation of waterfowl could be negatively impacting the water quality. City employees have discussed this concern with the homeowner. HVA water quality monitoring in 2017 confirmed that bacteria levels are most often above state water quality standards downstream of this area.
### Section C: Melbourne Road Bridge to West Housatonic/Route 20 Bridge...continued

<table>
<thead>
<tr>
<th>Natural Resources and Assets</th>
<th>Concerns</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Historic old stone abutments</td>
<td>Lawns mowed down to river’s edge</td>
<td>Improve fishing access to upper Lebanon Ave.</td>
</tr>
<tr>
<td>Wetland area provides good riparian buffer and wildlife habitat area upstream of Rte. 20 bridge</td>
<td>Trees &amp; debris trapped at dam upper Lebanon Ave.</td>
<td>Remind landowners to not dump yard debris on the river’s edge</td>
</tr>
<tr>
<td></td>
<td>Congregation of waterfowl upstream of Rte. 20 bridge</td>
<td>Educate property owners about vegetative buffers</td>
</tr>
<tr>
<td></td>
<td>Storm drain outfall discharge observed during dry weather</td>
<td>Discuss with property owner and City officials about the negative impacts of feeding the water fowl.</td>
</tr>
<tr>
<td></td>
<td>Pipe not recognized on City map observed with some flow. Source of discharge unknown</td>
<td>Revisit outfall pipes on this section during dry weather to determine if sampling is warranted.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Determine source of flow for pipe not mapped on City Storm Drain System map</td>
</tr>
</tbody>
</table>
Section D: West Housatonic Street /Rte. 20 Bridge to West Housatonic Street near Betnr Industrial Drive

Surveyors: Ed & Diane Wetzel

Survey Date: May 27, 2017
Distance: 0.66 miles
Elevation: 1040 – 1008 feet
Significant Tributaries: Jacoby Brook, Smith Brook
Access Points: Informal access at road bridges
Associated Ecologically Sensitive Areas: None

Section Overview:

From West Housatonic Street / Route 20, the river meanders through a residential area, along and under Hungerford Street twice before it crosses Route 20 again. The river flows swiftly over a substrate of gravel and cobbles and silt and organic debris (especially upstream of the dams). Three dams are encountered in this section. One is just a low dam made of small rocks and boulders while the other two are more significant in height.

There are few houses visible as the river flows between the Route 20 Bridge and the first Hungerford Street Bridge. The houses (river left) and “Heart of Berkshires Motel” (river right) are initially hidden by a significant forested buffer. After the Jacoby Brook confluence (river left), the river passes by backyards (river left) and forested land (river right). The first dam is encountered before the first Hungerford Bridge. This is an old, breached dam (approximately 3 feet high) made of large boulders.

Below the first Hungerford Street bridge, the river continues swiftly and parallels Hungerford Street where backyards are visible (river right) and forest buffers the river (river left). Railroad tracks also parallel the river here, but are not easily seen as they are located on top of a high dirt embankment. A stone arch channels Smith Brook under the railroad (river left) about 0.2 miles upstream of the second bridge on Hungerford Street.

The second dam is encountered just below the Smith Brook confluence. This is an informal knee-high dam made of small rocks and boulders. The final stretch of river between the second Hungerford Street Bridge and the intersection with Route 20, where this section ends, is primarily residential with houses abutting the river (river right). The only property high up on the left bank is a machine shop (river left). Just before the end of this section at Route 20, the third dam, an old, breached dam (approximately 10 feet high) is encountered.
Section D: West Housatonic Street /Rte. 20 Bridge to West Housatonic Street near Betnr Industrial Drive...continued

Section Condition:

The river has a consistently quick flow, but the water has a milky cloudiness throughout the entire section. Bacteria levels were high during HVA’s 2017 water quality monitoring. There is abundant vegetative cover at times, but also many residential lawns that are mowed up to the river’s edge. There is evidence and reports of fishing and swimming. Several invasive plants including multiflora rose, Japanese knotweed, barberry, garlic mustard, Asian honeysuckle, goutweed, and phragmites were observed along this stretch. No significant litter or debris was noted. No recent evidence of beaver activity observed.

Upstream of the first Hungerford Street Bridge at the corner of Hungerford Street, an unmortised retaining wall, approximately 100-foot-long x 10-foot-high is collapsing in places (river left). Just downstream of the wall, is an old breached dam which has created a popular fishing area with unofficial access paths evident from Hungerford Street (river left). Past the first Hungerford Road bridge, more residential area is visible with lawns mowed to the river bank (river right) while a significant vegetative buffer protects the river on the opposite bank (river left).

One large area of erosion is a concern downstream of the 10-foot breached dam (the third dam on this section, downstream of the second Hungerford Bridge). According to the owners, erosion accelerated following Tropical Storm Irene in 2011. The local homeowners have talked to City conservation personnel. Homeowners have placed organic fill along the bank, as recommended by the City, to slow the erosion. The homeowner near the dam finds it attractive and is concerned removal might aggravate the erosion problem. The dams along this section have created pools that enhance fish habitat.

Five storm drain outfalls are located on the City’s Storm Drain System map and additional pipes were observed during this visual survey and BEAT’s stormwater outfall survey. However, no discharge was observed from any of the pipes during dry weather. Stormwater runoff is forming a gully at the end of Crossin Terrace. The runoff flows about 25 feet from the road down to the river.
### Section D: West Housatonic Street /Rte. 20 Bridge to West Housatonic Street near Betnr Industrial Drive...continued

<table>
<thead>
<tr>
<th>Natural Resources and Assets</th>
<th>Concerns</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Good wildlife/fish habitat</td>
<td>• Runoff gully at the end of Crossin Terrace</td>
<td>• Discuss with City remediation ideas for runoff from Crossin Terrace</td>
</tr>
<tr>
<td>• Forested edge for parts of this section</td>
<td>• Collapsing unmortised retaining wall</td>
<td>• Evaluate retaining wall and determine if this is a problem that requires attention</td>
</tr>
<tr>
<td></td>
<td>• Erosion downstream of breached 10-foot dam</td>
<td>• Find permanent solution for erosion downstream of breached 10-foot dam</td>
</tr>
<tr>
<td></td>
<td>• Several invasive plants encountered</td>
<td>• Educate property owners about the importance of vegetative buffers</td>
</tr>
<tr>
<td></td>
<td>• Lack of vegetative buffer along residential areas</td>
<td>• Educate property owners about invasive knotweed removal and management.</td>
</tr>
<tr>
<td></td>
<td>• Lack of public access</td>
<td>• Review site of stormwater channel for potential remediation using green infrastructure</td>
</tr>
<tr>
<td></td>
<td>• Milky/cloudy river appearance can be indicative of high bacteria levels</td>
<td>• Determine source of bacterial contamination</td>
</tr>
<tr>
<td></td>
<td>• Asphalted stormwater channel</td>
<td></td>
</tr>
</tbody>
</table>
Section E: West Housatonic/Route 20 bridge (near Betnr Industrial Drive) to Cadwell Street Bridge

Surveyor: Tom Doyle

Date of Survey: April 29 & June 2, 2017
Distance: 1.1 miles
Elevation: 1008 – 975 feet
Significant Tributaries: Unnamed from Wild Acres
Access Points: Hungerford Road Bridge (informal) & Barkerville Conservation Area
Associated Conservations Areas: Barkerville Conservation Area
Associated Ecologically Sensitive Areas: Wetlands south of Route 20

Section Overview:

In the beginning of this section, near Route 20, the river flows through a semi-residential area before it meanders past open fields and a forested area behind an industrial park (river left). It then flows past the Barkerville Conservation Area (river right) owned and managed by the City before flowing past a densely populated residential area upstream of the Cadwell Street Bridge. For the most part, this section is wild and heavily vegetated with little evidence of human activity along the shoreline. This section also includes the remains of a woolen mill and tannery.

Section Condition:

The majority of this section flows through an unspoiled and fairly pristine area. There are barely any traces of human use besides evidence of ATV tracks crossing the river. Much of the section is heavily vegetated with a good riparian buffer. There is evidence of healthy fish habitat and of active fishing in this section, however there is limited public access to the river.

In the banks of the river adjacent to the Barkerville Conservation Area, there is man-made rock-like debris which is a by-product of the woolen mill and tannery that used to operate in this area. This type of remains is referred to as coal ash. The debris is buried in the banks and becomes exposed through erosion. The coal ash site is still privately owned.

In the area just upstream from Cadwell Street Bridge at the residential area, there are several properties which lack a vegetative buffer along the river. The lack of vegetation may have led to the bank erosion observed. One property owner has recently cleared trees and piled the debris on the river bank. Patches of invasive Japanese knotweed were observed along this section.

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3 Information obtained from City Personnel. “The Phase I Environmental Site Assessment Report” was conducted on this property for the City of Pittsfield. Refer to Appendix A for more information.
Section E: West Housatonic/Route 20 bridge (near Betnr Industrial Drive) to Cadwell Street Bridge...continued

Commercial development observed from the river included a solar panel array, radio tower, high tension wires, and a business complex but there is mostly a forested area between these structures and the river. However large items of trash and debris were noted on the land area across from a car wash between Route 20 and the river. Trash was also observed in multiple locations behind residential properties near the river.

Several pipes leading to the river were observed along this length. One near the Route 20 Bridge was trickling during dry weather and had an oily appearance in the residue below the pipe. It is not clear the source of the flow. Other pipes observed may carry runoff from a road or the Industrial Park and may be impacting the water quality.

<table>
<thead>
<tr>
<th>Natural Resources and Assets</th>
<th>Concerns</th>
<th>Recommended Actions</th>
</tr>
</thead>
</table>
| • Good wildlife habitat  
• City owned Barkerville Conservation Area | • ATV use behind radio tower on West Housatonic Street  
• Dumping ground (big items) between river and Rte. 20 in the vicinity of 730 W. Housatonic St. (car wash)  
• Removal of riparian buffer by some land owners  
• Coal ash debris at site of former woolen mill and tannery.  
• Pipe with oily appearance and slight flow despite dry weather  
• Invasive Japanese knotweed observed | • Manage ATV use where they are crossing the SW branch  
• Work with property owner to remove trash and control dumping  
• Work with landowners who have trash and debris along riverbank.  
• Educate property owners about the importance of vegetative buffers  
• Educate property owners about invasive plants and their removal  
• Determine if monitoring mill site is necessary and who’s responsible  
• Support Conservation Commission’s enforcement order for unpermitted clearing of riparian vegetation  
• Recheck pipe that had a little flow. Determine if monitoring is necessary |
Section F: Cadwell Road Bridge to Barker Road Bridge

Surveyors: Dylan LaChance & Ethan LaChance

Date of Survey: June 21, 2017
Distance 0.62 miles
Elevation 975 – 970 feet
Significant Tributaries: Maloy Brook
Access Points: Informal access at the road bridges
Associated Ecologically Sensitive Areas: None identified

Section Overview:

Section F begins at the Cadwell Road Bridge. The river first meanders behind a mix of residential and commercial properties (most located on West Housatonic Street). Initially the river has a fast current and riffles and runs with a gravel substrate are encountered with a water depth of 2 inches to 2 feet. Visibility of human impact lessens as the river slows and becomes deeper as it flows through an undeveloped, wetland. Residential land use is visible again (river left) with the banks becoming steep before the end of the section at Barker Road bridge.

Section Condition:

For almost half of this section of the Southwest Branch, the river flows through a wetland area. This extensive wetland provides the river with an extensive vegetative buffer and protection from development. However, where the river comes close to back yards and businesses, some property owners are mowing their lawns up to the river’s edge, leaving the river banks vulnerable to erosion. One business’ parking area has a buffer of 10 feet or less. Stormwater runoff from the parking lot could be impacting the water quality of the river.

A rope swing behind a residence indicate that people are using the river but there isn’t any official access to the river. Miscellaneous trash was noted along the section but, for the most part, not in any great concentration. Items observed include a tire, shopping cart and scooter. However, behind the “Roasted Garlic” restaurant and “Tony’s Berkshire Boats” there was an abundance of industrial trash.

The confluence with Maloy Brook is encountered with no visual degradation to the river. Just downstream of the confluence, a stretch of serious bank erosion is evident in this area. The erosion extends approximately 30 feet on a 6 foot tall river bank. Additional bank erosion was noted upstream (about 0.1 miles) from the Barker Road Bridge.

Several storm drain outfall pipes were recorded along this section. Most were located at the bridges either end of the section with just a couple of pipes encountered along the way. BEAT’s
survey of these outfalls indicated that none were discharging during dry weather. (Refer to Appendix A for more information about BEAT’s Pittsfield Stormwater Outfall Survey Project.)

The invasive plant, Japanese knotweed continues to be seen on the riverbanks. Several patches of knotweed observed were quite large (30 feet or more in length).

<table>
<thead>
<tr>
<th>Natural Resources and Assets</th>
<th>Concerns</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Good fish habitat</td>
<td>• Extensive patches of Japanese knotweed</td>
<td></td>
</tr>
<tr>
<td>• Extensive undeveloped wetland areas provide wildlife habitat</td>
<td>• Industrial trash behind businesses along Route 20 and miscellaneous trash along the section</td>
<td></td>
</tr>
<tr>
<td>• People are accessing the river for swimming and possibly fishing</td>
<td>• Lack of vegetative buffer behind some of the houses &amp; businesses.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Significant bank erosion upstream of Barker Road</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• The 7 outfall pipes contribute pollutants to river during precipitation events</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Patches of invasive Japanese knotweed observed</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Organize a river cleanup to remove miscellaneous trash</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Work with the City of Pittsfield to trash behind businesses on W. Housatonic St.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Educate landowners about the importance and need for vegetative buffers</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Educate landowners about invasive plants and removal</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Investigate possible remediation for eroded river banks.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Investigate green infrastructure for storm drain outfall locations and the business parking area</td>
<td></td>
</tr>
</tbody>
</table>
Section G: Barker Road Bridge to West Branch of the Housatonic River confluence

Surveyors: Yvonne Borsody, Carol Zullo, Diane Cote & Dylan LaChance

Dates of Survey: May 20 & 27, 2017
Distance: 0.9 miles
Elevation: 971 – 964 feet
Significant Tributaries: None
Access Points: Informal from Barker Road Bridge and Clapp Park
Associated Ecologically Sensitive Areas: Confluence with West Branch Housatonic

Section Overview:

Section G begins at the bridge on Barker Road and meanders east passing under the Housatonic railroad just upstream of Clapp Park and then southwest to the confluence with the West Branch of the Housatonic River. The river is about 12-25 feet wide throughout, with little sign of human impact except in the vicinity of the park. The land on both sides of this river section is undeveloped. Much of the land river left, downstream of the railroad crossing is owned by the City of Pittsfield and includes Clapp Park. As a result this section remains wild with a significant riparian buffer and provides great wildlife habitat and fishing. The water ranges from less than a foot to about 5 feet in some places. The water is clear and odorless throughout the section.

Section Condition:

There is considerable vegetative buffer along this stretch which consists of mostly low shrubs, grasses and scattered mature trees. Invasive plants such as Japanese knotweed, barberry, and Asian honeysuckle were also noted. There was an abundant amount of mammal, waterfowl, and bird evidence on this section, as well as a snapping turtle and fish.

The water quality of this section is likely to be good due to the lack of human impact, with one exception. An old woods road off Barker Road initially follows the river and continues away from the river. A dump of bulky waste items, such as furniture and mattresses was observed but confirmed to be on private property from the City’s online property viewer. Otherwise between Barker Road and the railroad crossing, the river shoreline is undeveloped with small amounts of trash and informal trails that are evidence of people accessing the river. Only small amounts of bank erosion were observed near the beginning of the section.

A possible concern is the railroad crossing. At the time of the survey, the series of culverts were partially blocked by woody debris which has also trapped miscellaneous trash. There was no evidence of stormwater outfalls along this section. At Clapp Park, a large sewer pipe, enclosed in cement, spans the river. This is also used as a pedestrian bridge. The pipe is becoming visible where the concrete has
Section G: Barker Road Bridge to West Branch of the Housatonic River confluence...continued

eroded away. Trash was also trapped behind downed trees and this concrete “bridge.” ATV activity was observed in the area behind Clapp Park. ATV use continues along a trail that connects Industrial Drive to the park and also to the railroad and Barker Road. Occasional partying was noted by a local resident who also confirmed the ATV activity and connectivity.

<table>
<thead>
<tr>
<th>Natural Resources and Assets</th>
<th>Concerns</th>
<th>Recommended Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Good wildlife/fish habitat</td>
<td>• ATV use from Barker Rd-Industrial Drive</td>
<td>• Work with city to inform property owner of dump sites</td>
</tr>
<tr>
<td>• No evidence of storm drain outfalls</td>
<td>• Bulky waste trash along riverside woods road</td>
<td>• Inform Housatonic Railroad of clogged culverts – find out maintenance plan</td>
</tr>
<tr>
<td>• Informal foot trail follows the river and provides access for fishermen</td>
<td>• Invasive plants: Japanese knotweed, barberry and Asian honeysuckle</td>
<td>• Educate property owners about invasive plants and removal</td>
</tr>
<tr>
<td>• City owned property along Southwest before confluence provides potential access</td>
<td>• Railroad culverts clogged with organic debris and trash</td>
<td>• Organize cleanup of trash in vicinity of Clapp Park</td>
</tr>
<tr>
<td></td>
<td>• Trash noted in vicinity of Clapp Park</td>
<td>• Monitor bank erosion</td>
</tr>
<tr>
<td></td>
<td>• Minor amounts of bank erosion</td>
<td>• Determine if ATV activity is a nuisance and, if yes, how to restrict ATV activity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Investigate possibility of connecting Westside Riverway to the Southwest Branch</td>
</tr>
</tbody>
</table>
Photo 1 Looking downstream below Mud Pond Confluence (HVA Photo)

Photo 2 Breached dam above Rte. 20 Bridge near Hungerford Avenue (Photo by Diane Wetzel)
IV. Southwest Branch Section Maps and Feature Data

The following are the definitions of the feature descriptions used in the Section Maps and Feature Data:

**Access**: Includes locations that are being used to access the river; pedestrian trails and car-top boat accesses (both recognized and ones that have seen traditional use), informal fishing and swimming accesses. HVA does not intend to construe these locations are acceptable canoe/kayak put-in sites. Note: main bridges are not indicated as “Access” although, they are often used to access the river.

**Confluence**: Marks the location of a tributary entering the Housatonic River that is not visible on the map.

**Historic**: Denotes an identified feature that has historical significance.

**Impediment**: Includes any physical structure, man-made or natural, which creates a partial or full blockage of the river channel; manmade dams, beaver dams, fallen trees, *culverts*, pipes across the river that are at or below the water’s surface and mid-channel bridge abutments. *Only stream crossings that impede aquatic connectivity are included here.*

**Invasives**: Includes plants considered invasive in Massachusetts such as Japanese knotweed, common reed, purple loosestrife as well as aquatic invasive plants and animal species (zebra mussels, *Dreissena polymorpha*) and Didymo (*Didymosphenia geminata*), an invasive algae.

**Land Impact**: Significant land use that may impact the river’s health: For example, gravel pit operations, scrap yard businesses, and monitoring wells.

**Pipe**: Includes all pipes (and hoses) observed that (a) outfall to the river (b) cross the river or (c) pipes or hoses that may be extracting water. Pipes that outfall to the river are predominantly storm drain outfalls but include outfalls to the river with an unknown origin. Pipes that cross the river above the water level in normal flow and do not impede flow or navigation or cross the river bottom are also included.

**Stream Impact**: Any activity or structure that is likely to *constrict* the river or *impact* the *water quality or volume*. This includes structures that are channeling the river, such as riprapped banks and retaining walls and conditions such as lack of riparian buffers (vegetation along the river banks) and bank erosion.

**Trash**: While miscellaneous small amounts of trash were noted in many locations, this feature is used to indicate a dumpsite or heavily trashed area that requires more immediate attention.

**Water Quality Monitoring Site**: Locates HVA’s 2017 water quality sampling sites.

**Wetland Impact**: Any impact to a wetland in the riparian buffer.

**Wildlife**: Denotes any area that has particular wildlife significance.
### Section A: Richmond Pond Dam to Cloverdale Street Bridge

<table>
<thead>
<tr>
<th>CODE</th>
<th>GPS COORDINATES</th>
<th>FEATURE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>A00</td>
<td>42.41916,-73.32333</td>
<td>Beginning of Section A</td>
<td>Richmond Pond Dam</td>
</tr>
<tr>
<td>A01</td>
<td>42.41916,-73.32333</td>
<td>Impediment</td>
<td>Richmond Pond Dam</td>
</tr>
<tr>
<td>A02</td>
<td>42.41895,-73.32346</td>
<td>Water Quality Monitoring Site</td>
<td>HVA - SW 07.1 Richmond Pond Dam (sampling done in 2017)</td>
</tr>
<tr>
<td>A03</td>
<td>42.41929,-73.32331</td>
<td>Pipe</td>
<td>Pipe across the river above water level. (Camp water source/sewer pipe for two cabins)</td>
</tr>
<tr>
<td>A04</td>
<td>42.42134,-73.32134</td>
<td>Stream Impact</td>
<td>Drainage ditch (used historically to drain fields)</td>
</tr>
<tr>
<td>A05</td>
<td>42.42147,-73.32143</td>
<td>Trash</td>
<td>Trash and debris trapped at remains of foot bridge</td>
</tr>
<tr>
<td>A06</td>
<td>42.42257,-73.31002</td>
<td>Invasives</td>
<td>Japanese knotweed (river right) 150' upstream of Cloverdale Street bridge.</td>
</tr>
<tr>
<td>A07</td>
<td>42.42274,-73.30978</td>
<td>Trash</td>
<td>River Left: Visible trash in deep water and river bank. Note also small beaver dam.</td>
</tr>
<tr>
<td>A08</td>
<td>42.42272,-73.30963</td>
<td>Access</td>
<td>River left: Informal access just above the Cloverdale Street bridge.</td>
</tr>
</tbody>
</table>
## Section B: Cloverdale Street Bridge to Melbourne Road Bridge

<table>
<thead>
<tr>
<th>CODE</th>
<th>GPS COORDINATES</th>
<th>FEATURE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>B00</td>
<td>42.42282 -73.30955</td>
<td>Beginning of Section B</td>
<td>Cloverdale Street Bridge</td>
</tr>
<tr>
<td>B01</td>
<td>42.42282 -73.30955</td>
<td>Impediment</td>
<td>Perched double box culvert (6 - 8&quot; outlet drop); armored outlet</td>
</tr>
<tr>
<td>B02</td>
<td>42.42289 -73.30942</td>
<td>Pipe</td>
<td>Storm drain outfall (metal corrugated pipe 12&quot; diameter) Also indicated on the City of Pittsfield storm drain system map; water trickling following dry weather; bottom of pipe algae coated</td>
</tr>
<tr>
<td>B03</td>
<td>42.42292 -73.30928</td>
<td>Stream Impact</td>
<td>Armored bank (river left); old rock wall/rip rap - extends 100 ‘ or more</td>
</tr>
<tr>
<td>B04</td>
<td>42.423150 -73.309160</td>
<td>Stream Impact</td>
<td>Grass clippings dumped over fence onto river bank</td>
</tr>
<tr>
<td>B05</td>
<td>42.42338 -73.30894</td>
<td>Access</td>
<td>Private, informal canoe/kayak/fishing access (river right), off Chapel Street and upstream of beaver dam.</td>
</tr>
<tr>
<td>B06</td>
<td>42.42444 -73.30917</td>
<td>Pipe</td>
<td>Storm drain outfall; Mapped by the City of Pittsfield - not observed by surveyor</td>
</tr>
<tr>
<td>B07</td>
<td>42.42449 -73.30919</td>
<td>Stream Impact</td>
<td>Lawn mowed to river’s edge; deteriorating cement dock.</td>
</tr>
<tr>
<td>B08</td>
<td>42.42582 -73.31026</td>
<td>Impediment</td>
<td>Beaver dam, raises water level 1.5'-2'</td>
</tr>
<tr>
<td>B09</td>
<td>42.42680 -73.31089</td>
<td>Trash</td>
<td>Metal sticking out of water</td>
</tr>
<tr>
<td>B10</td>
<td>42.42706 -73.31074</td>
<td>Stream Impact</td>
<td>Oily sediment on bank, near a small inlet, followed and showed no pipe, not sure where water comes from</td>
</tr>
<tr>
<td>B11</td>
<td>42.42892 -73.31021</td>
<td>Pipe</td>
<td>Possible water extraction; Pump on bank with hose leading to house; cinderblocks and some trash in the area.</td>
</tr>
<tr>
<td>B12</td>
<td>42.42966 -73.31010</td>
<td>Impediment</td>
<td>Dam manmade, constructed of large boulders</td>
</tr>
<tr>
<td>B13</td>
<td>42.43022 -73.31027</td>
<td>Pipe</td>
<td>Pipe outfalls to river (4&quot; PVC-consistent drip, algae in and around pipe)</td>
</tr>
<tr>
<td>B14</td>
<td>42.43061 -73.31010</td>
<td>Water Quality Monitoring Site</td>
<td>HVA site SW 04 Melbourne and Chapel Site 2017</td>
</tr>
</tbody>
</table>
## Section C: Melbourne Road Bridge to Route 20 Bridge (W. Housatonic St)

<table>
<thead>
<tr>
<th>CODE</th>
<th>GPS COORDINATES</th>
<th>FEATURE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>C00</td>
<td>42.43072 -73.31010</td>
<td>Beginning of Section C</td>
<td>Melbourne Road Bridge</td>
</tr>
<tr>
<td>C01</td>
<td>42.43097 -73.31004</td>
<td>Trash</td>
<td>Piles of lumber and other construction materials spilling down river bank.</td>
</tr>
<tr>
<td>C02</td>
<td>42.43129 -73.31022</td>
<td>Pipe</td>
<td>Storm drain outfall (16&quot; diameter - drains onto rocks 12' above the river) located on the City of Pittsfield Storm Drain System map; some flow, no odor, some green algae.</td>
</tr>
<tr>
<td>C03</td>
<td>42.43129 -73.31018</td>
<td>Trash</td>
<td>Trash on river bank, metal and yard debris</td>
</tr>
<tr>
<td>C04</td>
<td>42.43129 -73.31018</td>
<td>Access</td>
<td>Private rope swing, deep pool, behind the dam</td>
</tr>
<tr>
<td>C05</td>
<td>42.43203 -73.30977</td>
<td>Pipe</td>
<td>Collapsed drain pipe buried under concrete blocks, water trickles out, 30' above river. Some green algae. Japanese knotweed present. (Couldn't correlate pipe with BEAT's outfall survey)</td>
</tr>
<tr>
<td>C06</td>
<td>42.43208 -73.30944</td>
<td>Impediment</td>
<td>Dam, old and stone, upper and lower pipe for river flow</td>
</tr>
<tr>
<td>C07</td>
<td>42.43219 -73.30947</td>
<td>Pipe</td>
<td>16&quot; drain pipe in bank 75' from the river, no discharge.</td>
</tr>
<tr>
<td>C08</td>
<td>42.43348 -73.30718</td>
<td>Historic</td>
<td>Stone abutments, possibly for an aqueduct</td>
</tr>
<tr>
<td>C09</td>
<td>42.43398 -73.30669</td>
<td>Pipe</td>
<td>24&quot; pipe spans river with concrete structures on each side of river (Possible sewer pipe),</td>
</tr>
<tr>
<td>C10</td>
<td>42.43408 -73.30667</td>
<td>Stream Impact</td>
<td>Asphalted stormwater channel (no pipe) leads to the river (approx.. 25' long)</td>
</tr>
<tr>
<td>C11</td>
<td>42.43478 -73.30521</td>
<td>Pipe</td>
<td>4, 4&quot; pipes and 1, 12&quot; storm drain outfall pipe under the Hungerford Road Bridge (BEAT SW 100 - 140°)</td>
</tr>
<tr>
<td>C12</td>
<td>42.43498 -73.30430</td>
<td>Stream Impact</td>
<td>Lack of riparian buffer, several lawns mowed to river’s edge.</td>
</tr>
<tr>
<td>C13</td>
<td>42.43523 -73.30143</td>
<td>Pipe</td>
<td>Stone arch culvert crossing for Lebanon Ave and stream out of Mud Pond; Pittsfield SDS map locates a storm drain outfall here, but it was not visible (possibly inside the culvert?)</td>
</tr>
<tr>
<td>C14</td>
<td>42.436802 -73.30075</td>
<td>Pipe</td>
<td>Storm drain outfall? 18&quot;, very buried pipe, no discharge. (BEAT SW 146)</td>
</tr>
<tr>
<td>C15</td>
<td>42.43829 -73.30240</td>
<td>Stream Impact</td>
<td>Many ducks and geese; residents of house adjacent to river feeds them.</td>
</tr>
</tbody>
</table>

*BEAT’s Storm Drain Outfall Survey assigned codes to each pipe observed. (Refer to Appendix A for link to report information)*
### Section D: Route 20 Bridge (W. Housatonic Street) to Route 20 Bridge near Betnr Industrial Drive

<table>
<thead>
<tr>
<th>CODE</th>
<th>GPS COORDINATES</th>
<th>FEATURE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>D00</td>
<td>42.438450</td>
<td>Beginning of Section D</td>
<td>Route 20 Bridge (W. Housatonic St)</td>
</tr>
<tr>
<td>D01</td>
<td>42.438480</td>
<td>Pipe</td>
<td>Probable storm drain outfall; below the Rte. 20 Road Bridge, sulfur odor - no flow. (BEAT SW150)</td>
</tr>
<tr>
<td>D02</td>
<td>42.440460</td>
<td>Pipe</td>
<td>18&quot; concrete pipe in good condition, no flow or odor. (BEAT SW160)</td>
</tr>
<tr>
<td>D03</td>
<td>42.440700</td>
<td>Stream Impact</td>
<td>Retaining wall made of large unmortised stones, 8'-10' high, 100' long, collapsing at some points</td>
</tr>
<tr>
<td>D04</td>
<td>42.440680</td>
<td>Pipe</td>
<td>PVC, 9&quot;, in poor condition (BEAT SW170)</td>
</tr>
<tr>
<td>D05</td>
<td>42.440820</td>
<td>Impediment</td>
<td>Breached old stone dam, mostly made of boulders. Upstream large pool has developed- popular for fishing</td>
</tr>
<tr>
<td>D06</td>
<td>42.441010</td>
<td>Stream Impact</td>
<td>Road runoff, flows about 25' down the bank and into river, erosion path was visible from the river.</td>
</tr>
<tr>
<td>D07</td>
<td>42.441170</td>
<td>Pipe</td>
<td>Pipe is round, metal 7.75&quot; dry with no odor. (BEAT SW180)</td>
</tr>
<tr>
<td>D08</td>
<td>42.442100</td>
<td>Impediment</td>
<td>Dam, made of rocks/small boulders, knee height. Observed flow overtopping rocks.</td>
</tr>
<tr>
<td>D09</td>
<td>42.442440</td>
<td>Impediment</td>
<td>Stone arch culvert where Smith Brook crosses railroad before confluence with SW Branch. Approx. 6' wide 4' high. (probably BEAT SW185)</td>
</tr>
<tr>
<td>D10</td>
<td>42.441220</td>
<td>Water Quality Monitoring Site</td>
<td>HVA site SW 03.8 Hungerford &amp; Caroline Site (Sampling conducted in 2017)</td>
</tr>
<tr>
<td>D11</td>
<td>42.441070</td>
<td>Invasives</td>
<td>Common Reed (<em>Phragmites</em>) downstream from bridge</td>
</tr>
<tr>
<td>D12</td>
<td>42.440376</td>
<td>Impediment</td>
<td>Breached dam. Water drops approx. 10 feet.</td>
</tr>
<tr>
<td>D13</td>
<td>42.440240</td>
<td>Stream Impact</td>
<td>Bank erosion-reportedly began after Tropical Storm Irene</td>
</tr>
<tr>
<td>D14</td>
<td>42.440290</td>
<td>Pipe</td>
<td>River left: Pipe 12&quot;, metal. No flow in dry weather. Not on City’s Storm Drain System map. (BEAT SW186)</td>
</tr>
<tr>
<td>D15</td>
<td>42.440190</td>
<td>Pipe</td>
<td>River right: 24&quot; concrete pipe with concrete apron, 1/4&quot; of standing clear water with no odor, (BEAT SW190). Also indicated on City's Storm Drain System map</td>
</tr>
<tr>
<td>D16</td>
<td>42.440080</td>
<td>Pipe</td>
<td>River right: 2 concrete pipes: 12&quot; (damp) and 18&quot; (dry), no odor or flow (possibly BEAT SW200 &amp; 210 though both of these are indicated as 12&quot; concrete).</td>
</tr>
</tbody>
</table>
## Section E: Route 20 near Betnr Industrial Drive to Cadwell Street Bridge

<table>
<thead>
<tr>
<th>CODE</th>
<th>GPS COORDINATES</th>
<th>FEATURE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>E00</td>
<td>42.440000 -73.294130</td>
<td>Beginning of Section E</td>
<td>Rte. 20 Bridge (near Betnr Industrial Ave)</td>
</tr>
<tr>
<td>E01</td>
<td>42.440081 -73.294167</td>
<td>Pipe</td>
<td>Concrete 12&quot; diameter pipe - no flow during dry weather – (BEAT SW210)</td>
</tr>
<tr>
<td>E02</td>
<td>42.440000 -73.293060</td>
<td>Pipe</td>
<td>Old concrete pipe, trickling despite dry weather, oily appearance (not on City's Storm Drain System map or BEAT survey)</td>
</tr>
<tr>
<td>E03</td>
<td>42.439254 -73.290393</td>
<td>Land Impact</td>
<td>ATV tracks several places on both sides of river, behind radio towers. It appears 4 wheelers are being driven through the river itself.</td>
</tr>
<tr>
<td>E04</td>
<td>42.440342 -73.290137</td>
<td>Pipe</td>
<td>18&quot; metal pipe, storm drain outfall (BEAT SW215); Also indicated on City's Storm Drain System map</td>
</tr>
<tr>
<td>E05</td>
<td>42.440253 -73.289853</td>
<td>Stream Impact</td>
<td>Observed lots of green algae in stream bed. Looks like runoff coming from road, brown/oil color.</td>
</tr>
<tr>
<td>E06</td>
<td>42.399640 -73.288529</td>
<td>Trash</td>
<td>Dumping ground between river and road, in the vicinity of 730 W. Housatonic St (across from car wash)</td>
</tr>
<tr>
<td>E07</td>
<td>42.439444 -73.287778</td>
<td>Pipe</td>
<td>4&quot; pipe black plastic, up top coming from parking lot</td>
</tr>
<tr>
<td>E08</td>
<td>42.439440 -73.287780</td>
<td>Historic</td>
<td>Site of old bridge which has been removed, bridge abutments remain.</td>
</tr>
<tr>
<td>E09</td>
<td>42.439260 -73.288110</td>
<td>Land Impact</td>
<td>Coal ash debris (remains of mills)</td>
</tr>
<tr>
<td>E10</td>
<td>42.439290 -73.287780</td>
<td>Pipe</td>
<td>2 pipes (3&quot; &amp; 12&quot; metal pipes) (BEAT SW220, SW230)</td>
</tr>
<tr>
<td>E11</td>
<td>42.438890 -73.287778</td>
<td>Confluence</td>
<td>Unnamed tributary coming from woods 'looks clean'</td>
</tr>
<tr>
<td>E12</td>
<td>42.437780 -73.285560</td>
<td>Impediment</td>
<td>Beaver evidence, water running over the dam (and another confluence with small stream)</td>
</tr>
<tr>
<td>E13</td>
<td>42.438629 -73.284601</td>
<td>Pipe</td>
<td>12&quot; plastic pipe; (BEAT SW240)</td>
</tr>
<tr>
<td>E14</td>
<td>42.438683 -73.283541</td>
<td>Confluence</td>
<td>From Wild Acres pond, 'looks clean'</td>
</tr>
<tr>
<td>E15</td>
<td>42.439167 -73.291944</td>
<td>Pipe</td>
<td>Very small, 2&quot; metal pipe behind house with no flow, or odor.</td>
</tr>
<tr>
<td>E16</td>
<td>42.439170 -73.281940</td>
<td>Stream Impact</td>
<td>Cut brush piled up at river's edge</td>
</tr>
<tr>
<td>E17</td>
<td>42.439851 -73.280893</td>
<td>Stream Impact</td>
<td>Lack of riparian buffer: recent clearing of shrubs and trees on bank (river left)</td>
</tr>
</tbody>
</table>
## Section F: Cadwell Street Bridge to Barker Road Bridge

<table>
<thead>
<tr>
<th>CODE</th>
<th>GPS COORDINATES</th>
<th>FEATURE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>F00</td>
<td>42.43997 -73.28076</td>
<td>Beginning of Section F</td>
<td>Cadwell Street Bridge</td>
</tr>
<tr>
<td>F01</td>
<td>42.440110 -73.280740</td>
<td>Pipe</td>
<td>Cadwell Bridge. Multiple pipes: 3 within concrete bridge structure, 1 plastic corrugated pipe, all pipes dry during BEAT survey. Trickle and sewage smell from plastic pipe at time of HVA survey (had not been dry weather): (BEAT SW260, SW270, SW280, SW290)</td>
</tr>
<tr>
<td>F02</td>
<td>42.440310 -73.280540</td>
<td>Impediment</td>
<td>Multiple trees /branches across river just downstream of Cadwell Bridge</td>
</tr>
<tr>
<td>F03</td>
<td>42.440820 -73.280130</td>
<td>Pipe</td>
<td>BEAT SW 300, 12&quot;, no flow observed during BEAT’s dry weather survey</td>
</tr>
<tr>
<td>F04</td>
<td>42.441630 -73.278670</td>
<td>Stream Impact</td>
<td>Residential lawn to river’s edge (river left)</td>
</tr>
<tr>
<td>F05</td>
<td>42.441695 73.278520</td>
<td>Invasives</td>
<td>Japanese knotweed - opposite bank from residence</td>
</tr>
<tr>
<td>F06</td>
<td>42.442040 -73.277770</td>
<td>Pipe</td>
<td>18&quot; outfall pipe, upstream of footbridge, river left) &amp; (15&quot; pipe under footbridge) Neither had discharge in dry weather. Trash in vicinity. (BEAT SW 310 &amp; SW 320)</td>
</tr>
<tr>
<td>F07</td>
<td>42.441870 -73.276890</td>
<td>Trash</td>
<td>Barrels, miscellaneous household waste.</td>
</tr>
<tr>
<td>F08</td>
<td>42.441916 -73.276731</td>
<td>Stream Impact</td>
<td>Business parking lot close to river - low scrubby vegetation 10+- feet buffer</td>
</tr>
<tr>
<td>F09</td>
<td>42.441590 -73.275480</td>
<td>Stream Impact</td>
<td>Lack of riparian buffer, mowing right up to the bank</td>
</tr>
<tr>
<td>F10</td>
<td>42.441370 -73.275550</td>
<td>Stream Impact</td>
<td>Large area of bank erosion</td>
</tr>
<tr>
<td>F11</td>
<td>42.441380 -73.273370</td>
<td>Invasives</td>
<td>Japanese knotweed, medium sized patch</td>
</tr>
<tr>
<td>F12</td>
<td>42.440580 -73.272830</td>
<td>Impediment</td>
<td>Tree across river (approx. 18&quot; diameter), above water level.</td>
</tr>
</tbody>
</table>
### Section G: Barker Road Bridge to confluence of the Southwest and West Branch of the Housatonic River

<table>
<thead>
<tr>
<th>CODE</th>
<th>GPS COORDINATES</th>
<th>FEATURE</th>
<th>NOTES</th>
</tr>
</thead>
<tbody>
<tr>
<td>G00</td>
<td>42.44028 -73.27251</td>
<td>Beginning of Section G</td>
<td>Barker Road Bridge</td>
</tr>
<tr>
<td>G01</td>
<td>42.43998 -73.27254</td>
<td>Trash</td>
<td>Trash dump site for bulky waste - accessed via old woods road from Barker Road bridge</td>
</tr>
<tr>
<td>G02</td>
<td>42.44014 -73.27237</td>
<td>Water Quality Monitoring Site</td>
<td>HVA site SW 01.1 Barker Rd Site (Sampling conducted in 2017)</td>
</tr>
<tr>
<td>G03</td>
<td>42.44018 -73.27130</td>
<td>Stream Impact</td>
<td>Minor bank erosion</td>
</tr>
<tr>
<td>G04</td>
<td>42.43980 -73.26722</td>
<td>Invasives</td>
<td>Japanese knotweed patch, patch size about 15’ x15’</td>
</tr>
<tr>
<td>G05</td>
<td>42.43977 -73.26715</td>
<td>Impediment</td>
<td>Railroad crosses SW Branch, multiple culverts trapped debris /tree debris partially clogging all culverts.</td>
</tr>
<tr>
<td>G06</td>
<td>42.43956 -73.26732</td>
<td>Land Impact</td>
<td>ATV use between Barker Road Bridge, Clapp Park and Industrial Ave downstream</td>
</tr>
<tr>
<td>G07</td>
<td>42.43982 -73.26635</td>
<td>Water Quality Monitoring Site</td>
<td>HVA site SW 02 Clapp Park Site (Sampling conducted in 2017)</td>
</tr>
<tr>
<td>G08</td>
<td>42.43899 -73.26623</td>
<td>Impediment</td>
<td>Large encased concrete pipe spans river and used as a bridge over the river, only just above water level; traps trash and debris.</td>
</tr>
<tr>
<td>G09</td>
<td>42.43896 -73.26619</td>
<td>Trash</td>
<td>Caught behind downed trees, the railroad crossing, and pipe across river. 4 tires in sediment (vicinity of Clapp Park)</td>
</tr>
<tr>
<td>G10</td>
<td>42.43738 -73.26137</td>
<td>End of Southwest Branch</td>
<td>Confluence of the Southwest and West Branch of the Housatonic River</td>
</tr>
</tbody>
</table>
V. **Southwest Branch Recommended Action Plan**

A. **Condition Summary**

The Southwest Branch of the Housatonic River is an urban river which still has some relatively wild and protected stretches and is an asset to this part of Pittsfield as it is aesthetically pleasing for much of its length. While it is uncontaminated by the PCBs that plague the main stem of the Housatonic River, according to the water sampling results in 2017, bacteria levels can be high, even in dry weather, on certain segments. The river’s milky appearance on Sections B, C & D could be indicative of those high bacteria levels.

Although there isn’t any official public access to the river, it was evident up and down the river that property owners appreciate and enjoy the river and people are accessing the river at some of the bridges. More protection could be afforded the Southwest Branch by improving riverside vegetation and implementing green infrastructure to infiltrate stormwater wherever possible. An education program that helps residents understand how their actions and their property management can lessen the impact on the river could be beneficial.

Trash was minimal along the river, but there were a couple of dump sites that could be addressed and a river cleanup scheduled every two or three years would help keep abreast of the small amounts of miscellaneous trash that end up in and along the river.

Unfortunately, the invasive plant, Japanese knotweed is invading the banks of most of the Southwest Branch. The first location observed was in the first section upstream of the Cloverdale Street Bridge. It is difficult to eradicate once established, but it would be worthwhile to prevent Japanese knotweed from taking over the river banks completely as this does degrade the habitat especially where turtles are nesting and can make the river banks more susceptible to erosion.

B. **Short-Term/ High Priority Projects**

1. With city and property owner cooperation, ensure the removal of trash from identified dump sites. (Sections E, F & G)
2. Sponsor a river cleanup on the Southwest Branch with BEAT. (Sections A, B, E, F & G)
3. Investigate farm field along river for any negative impacts. (Section B)
4. Educate property owners about impacts of dumping yard debris on river banks (leaves, branches grass clippings. (Sections B & C)
5. Discuss with landowner the negative impacts of feeding wildfowl. (Section C)
6. Inform Housatonic Railroad of clogged culvert pipes. (Section G)
7. Inform Conservation Commission about pump on river bank. (Section B)
8. Inform Conservation Commission about homeowner’s clearing property. (Section E)
C. Long-Term/Ongoing Projects

1. Create a management plan for invasive plants for the Southwest Branch, especially where present on City protected lands. (All sections)

2. Conduct Water Quality Monitoring program, to collect data to address E. coli and storm drain outflow pipe concerns. (All Sections, especially B & F)

3. Develop an educational program for property owners abutting river about the importance of riparian buffers. Reprint and distribute an informational vegetative buffer brochure. (Section B, C, D, E & F)

4. Educate landowners about impacts of dumping yard debris (leaves, branches, grass clippings) on the river banks. Encourage appropriate composting of the yard debris. (All Section, especially B & C)

5. Continue to provide “Storm Drain Awareness” program to Elementary students and install storm drain decals on storm drains in adjacent neighborhoods. (All Sections)

6. Work with city to improve public access to Southwest Branch. (Section C, D)

7. Investigate river bank erosion areas and discuss possible remediation alternatives with the City of Pittsfield. (Section D & F)

8. Discuss with City of Pittsfield the ATV negative impacts on riverside land and work to minimize problem. (Section E, & G)

9. Determine if coal ash site should be monitored for leachate and, if yes, who is responsible. (Section E)

10. Consider implementing an adopt-a-river program to increase funding support and volunteers. (All Sections)

11. Develop relationships with businesses to foster appreciation for the Southwest Branch, educate about stormwater runoff and explore possibilities to mitigate stormwater runoff from buildings and parking lots. (Sections A, D, & E)

12. Work with BEAT to further develop a partnership with City of Pittsfield to create an effective stormwater management plan. Ensure that all storm drain outfalls are mapped, and monitored for ‘dry weather’ flow. Any flow should be monitored for E. coli. (All Sections, especially Section B & C above Lebanon Avenue Bridge)

13. Continue to support the City of Pittsfield’s Greenway plan from the Pittsfield airport to Clapp Park. (Section G)

14. Create a River Smart program that fosters appreciation for the river in the neighborhoods adjacent to the Southwest Branch and helps residents understand how they can positively impact the health of the river by their property management (storm drain awareness education; yard debris management; lawn care, invasive plant management, etc.) (All sections)

15. Identify appropriate green infrastructure recommendations for stormwater gullies and channels to reduce stormwater runoff entering the river. (Sections C & D)
VI. Appendix A: Reference Information

Housatonic Valley Association (HVA)
Southwest Branch Water Quality Monitoring Program (2017)

In 2017, HVA collaborated with the Berkshire Regional Planning Commission (BRPC) and the Hoosic River Watershed Association to complete water quality sampling in both watersheds. Federal funding for this project was provided to BRPC under the Clean Water Act through Massachusetts Department of Environmental Protection. As part of this project, HVA coordinated water quality sampling along the Southwest Branch of the Housatonic River and Wahconah Falls Brook, Dalton. Currently, both of these rivers are listed as impaired for bacteria by Massachusetts in accordance with the Clean Water Act\(^5\). The samples collected were tested for bacteria levels with the intent to demonstrate that these rivers were no longer impaired by high bacteria levels and could be considered for delisting.

Five sites on the Southwest Branch were sampled 1 – 2 times each month from June through October. The results indicated that portions of the Southwest Branch are still exhibiting high bacteria levels. HVA will be working to determine possible sources of contamination.

For more information, contact Dennis Regan at 413-298-7024 or dregan@hvatoday.org or visit www.hvatoday.org.

Berkshire Environmental Action Team’s (BEAT)
Pittsfield Stormwater Outfall Project (2015)

In September of 2015 BEAT received grant funding from the Massachusetts Environmental Trust (MET) to survey stormwater outfalls during dry weather conditions. Over the course of two years, BEAT’s volunteers surveyed the over 18 miles of the East, West and Southwest Branches of the Housatonic River in Pittsfield. In total, 288 stormwater outfalls were surveyed. Many of these outfalls were not documented on the City of Pittsfield’s storm drain system map. BEAT and the City will work to determine which pipes observed are additional storm drain outfalls and if any storm drain outfalls have flow during dry weather, test samples to determine if bacteria levels are high.

On the Southwest Branch 26 outfall pipes were documented by BEAT. None of these outfall pipes observed in this survey had any discharge during dry weather which indicates that no illicit connections appear to exist on the Southwest Branch (below Lebanon Avenue Bridge).

For more information about this project and to view the final report, visit http://www.thebeatnews.org/BeatTeam/beats-met-work/ to view a map that locates these outfalls and provides details and photos for each outfall recorded, go to this link: http://arcg.is/0enCOT For

\(^5\)Source: http://www.mass.gov/eea/agencies/massdep/water/watersheds/integrated-list-of-waters.html
The Richmond Pond outlet feeds the Southwest Branch of the Housatonic. This pond is managed by the Richmond Pond Association (RPA). Beginning in 2002, RPA has tested water quality in Richmond Pond and four tributaries that feed the pond: Clark’s Brook, Whitewood Brook, Nordeen Swamp, and Ford Brook. Whitewood Brook was contaminated by a leaching sewer until 2006; Clarks Brook runs through a valley with farms before reaching the pond. Nordeen swamp is a canal that leads to the pond, Ford Brook is swampy and riddled with beaver ponds but bacteria levels have not been a concern. RPA has observed that bacteria levels (E. coli) spikes after rain storms in all tributaries. However, levels at the Richmond Pond dam have been consistently low.

From 1950-1980 Richmond Pond was drawn down 5.5-6 feet to control aquatic vegetation, after 1980 the draw down was reduced to 2-3 feet. RPA also uses herbicide to control the invasive aquatic vegetation – Eurasian milfoil. Following a survey in early May, treatment takes place in late May. A second survey is completed in June to assess the effectiveness of the treatment.

For more information and contact details, visit the Richmond Pond Association’s website: http://www.richmondpondassociation.org

City of Pittsfield:

For more information about the items listed below, contact James McGrath, Park, Open Space and Natural Resource Program Manager, at jmcgrath@pittsfieldch.com, 413-499-9368

A. Phase I Environmental Site Assessment Report on Barker Road Woolen Mill & Tannery (Copies available upon request)

B. Barkerville Conservation Area
   The Barkerville Conservation Area is a 74-acre property that was acquired by the City of Pittsfield in 2011 and represents a strategic link in the long-range development of a greenway that would extend from the Pittsfield Airport to Clapp Park, along the Southwest Branch of the Housatonic River. Funding for the acquisition was provided through a grant by the MA Natural Resource Trustees. This is a shared public space provided for enjoyment and recreation.

C. Pittsfield’s Storm Drain System Map
   To view Pittsfield’s Storm Drain System map online visit: http://host.appgeo.com/PittsfieldMA/ log in as Guest and use guest as the password to view the storm drain system map within the “utilities” tab.
VII. Appendix B: Stream Team Survey Forms

The following multi-page “Shoreline Survey” form from the Massachusetts Division of Ecological Restoration’s *Adopt a Stream*\(^6\) program is the template HVA used for stream team members to record their river observations. These visual observations, along with locations identified with GPS coordinates and photographs taken by stream team members, are part of the permanent record for each stream assessment and are retained on file at the Berkshire office of the Housatonic Valley Association. The stream assessment data has been converted into a data layer by HVA staff. Digital versions of the data layer and maps are available. Please contact Dennis Regan at 413-298-7024 or email dregan@hvatoday.org.

ADOPT A STREAM

SHORELINE SURVEYS
A Stream Team Monitoring Project and Action Tool

Data Sheets

Riverways Program, Division of Ecological Restoration
Department of Fish and Game

Adapted from Shoreline Surveys Leaders' Manual, Publication No.17795-94-500-2.08.CIR
Approved by Philmore Anderson III, State Purchasing Agent

Riverways Program, Division of Ecological Restoration
Tips for Shoreline Surveyors

Safety and Legals
- Always walk with someone.
- Watch out for irate dogs. Walk cautiously and practice good dog etiquette.
- Do not drink the river water.
- Lifejackets are required by law for each person in the canoe.
- From September 15 to May 15 all canoe or kayak occupants must wear a U.S. Coast Guard Approved Personal Flotation Device.
- Wear long-sleeved shirts and pants to protect against, ticks, mosquitoes, poison ivy and nettles.
- Wear insect repellent if necessary.
- Consider landowner rights. Ask permission to cross private land, posted or not.
- Do not enter posted areas without permission. Take advantage of any public access points.

Environment:
- Don’t walk on unstable banks; your footsteps could speed erosion.
- Be aware of wildlife and animal homes, for both of your sakes.

NEVER PUT YOURSELF INTO DANGER TO GATHER SURVEY INFORMATION.
If at anytime you feel uncomfortable about the stream conditions or surroundings, please STOP your Shoreline Survey.
You and your safety are much more valuable than any of the objectives of the Shoreline Survey.

Checklist: What to take on your Survey

- A buddy
- Data sheets and map
- Clipboard or other surface for writing
- Two pens/pencils – color is good to mark on maps
- Long-sleeved, snag-free clothing/pants (for bugs and thorns)
- Sunblock
- Sunglasses (polarized to see into the water better)
- Lifejackets & paddles if canoeing
- Camera and film
- Gloves
- Copy of letter sent out to landowners

Optional:
- Rubber boots or waders
- Yardstick or measuring tape (useful for pipes)
- Compass
- Field guides (in ziplock bags)
- Food, for energy!

What you need to do:
Tonight: Coordinate with your segment team. Arrange canoes, meeting place, etc.

This weekend: Conduct the survey! Fill out the data sheets while you’re on the river.
With your team, fill out the Summary Sheets—the segment description and the priority Sheet—after you are finished surveying your segment.
Return all Data and Summary Sheets (one set per team) to:

Return by: ____________________________

This month: Attend action planning meeting, which will be held: ___________________________
Shoreline Survey Field Data Sheet

Stream Reach

What is the stream bottom made of? (mark from 1=most typical to 6=least typical)
- Organic debris (leaves, twigs)
- Silt (mud)
- Sand (1/16 to 1/4”)
- Gravel (1/4 - 2”)
- Cobble (2 - 10”)
- Boulders (> 10”)

What color is the water? (circle) Cloudy Tea Milky Muddy Other

How deep is the water? (circle) Less than 1’ More than 1’ More than 2’ More than 3’

How does the water level compare to normal for this time of year? (circle)
- Normal
- Higher
- Lower
- Don’t know
- If very high or low, can you tell why?

Flow (circle)
- Fast
- Slight
- Almost still

Gradient
- low
- moderate
- steep

Sinuosity
- straight
- meandering
- braided
- channelized

Is your reach characterized by
- step pools
- riffles/pools
- riffle/runs
- run

Is stream flow blocked by... (circle and *locate on map.)
- Trees
- Trash
- Large objects

Reach Habitat

Large woody material
- Abundant
- Moderate
- Sparse
- None

Small organic material
- Abundant
- Moderate
- Sparse
- None

Undercut banks
- Abundant
- Moderate
- Sparse
- None

Overhanging vegetation
- Abundant
- Moderate
- Sparse
- None

Aquatic vegetation
- Abundant
- Moderate
- Sparse
- None

Are there areas covered with algae? (Circle) Streambed Around pipes Rocks

If algae seems abnormally heavy, *locate on map. Draw in extent of algae on map.

Riverways Program, Division of Ecological Restoration
Human Alterations

Water Quality

- Oily sheen or smell
- Sewage: smell, milky color, toilet paper
- Foam or scum (describe. Does a stick break it up?)
- Fishy odor or fish kill
- Garbage

Hydrology

- Dams
- Culverts
- Excess Sedimentation
- History of Flooding
- History of Drying Up

If any of these are checked, please comment on in Narrative Section.

Do you see runoff from any of the following? (circle. *If run-off is significant locate on map.)

Manure  Pet/goose droppings  Parking lots  Sewage  Roads
Bridges  Construction  Plowed fields  Lawns  Other

Riparian Area and Land Use

Bank stability/Channel Condition:

- Intact
- Collapsed in some areas
- Collapsed in many areas
- Channelized

Erosion in some areas
Erosion in many areas

What is the stream bank cover? (circle. Put a star* next to the most common.)

**Left Bank:** (Looking downstream) (If doing only one bank, indicate which one)
- Eroding
- Moss
- Trees/Shrubs
- Exposed Roots
- Grass/Flowers
- Loosestrife/Phragmites

**Beaches:** Riprap/channelized
- Shrubs/brambles
- Wetlands/marsh

**Right Bank:**
- Eroding
- Moss
- Trees/Shrubs
- Exposed Roots
- Grass/Flowers
- Loosestrife/Phragmites

**Beaches:** Riprap/channelized
- Shrubs/brambles
- Wetlands/marsh

Is there a vegetated riparian area beyond the stream bank? If yes, indicate condition.

(circle. Put a star* next to the most common.)

**Left Bank:** Shrubs/grasses  mowed pasture/meadow  Forested/trees  Park with few trees  Lawn

**Right Bank:**
- Shrubs/grasses
- Mowed pasture/meadow
- Forested/trees
- Park with few trees
- Lawn

If area is not vegetated, please describe condition: (i.e. parking lot, pavement, roadway, buildings)

**Left Bank:**

**Right Bank:**

If the riparian area is forested or in shrubs and grasses, estimate width of the vegetated area (to a lawn, road, or other change in land use) left bank ___________________ right bank ___________________

What are the land uses visible from the river? (checkmark all that apply & circle the dominant land use type)

- Industrial
- Commercial
- Agricultural
- Residential
- Park/ballfields

- Parking lots
- Roads
- Landfills
- Railroads
- Junkyards

- Golf courses
- Protected/conservation land
- Undeveloped/unprotected land
- Wastewater treatment plants
- Wooded areas
- Other (describe)

Recreation

21. Is there designated public access to the stream? Is it appropriate for... (circle and *locate on map.)

- Canoeing
- Fishing
- Swimming
- Walking
- Bicycling

Other

22. Are there areas which are informal or potential access points?  No  Yes- Describe and *locate on map.

Riverways Program, Division of Ecological Restoration
WILDLIFE / HABITAT

Aquatic Species

23. Do you see fish or evidence of fish? (describe) __________________________________________
   Estimate number ______________________. If possible, describe species & size. __________________________
   Evidence of fish? (i.e. nests) __________________________

24. Other forms of aquatic life? (circle. identify species if known)
   Aquatic insects  Turtles  Frogs  Salamander  Snail  Mussels  Snakes  Clams
   Other __________________________
   Evidence of aquatic species? (i.e. eggs, tracks) __________________________

Riparian Habitat/Species (look along stream bank and vegetated riparian areas)

25. Animals or evidence of animals? (circle)
   Holes  Teeth marks  Food storage/eating  Dens  Scat  Footprints/tracks
   Specific animals seen (or evidence of) __________________________

26. Wildlife habitat elements located near the stream (check)
   ___ Standing dead trees
   ___ Fallen tree limbs and trunks
   ___ Scattered rocks and boulders
   ___ Stone walls (without cement)
   ___ Vines
   ___ Springs and seeps
   ___ Vernal pools

27. Birds? (circle)  Herons  Mallard ducks  Wood ducks  Kingfishers  Canada geese  Other _________
   Evidence of birds: (i.e. nests, footprints) __________________________

28. Do you know if there are rare & endangered species of plants or animals in your segment? If so, identify. __________________________

29. Links from riparian area to other areas of wildlife habitat: (check)
   ___ Wetlands adjacent to stream
   ___ Abandoned cropland or pasture near stream
   ___ The riparian area is vegetated with trees and/or shrubs at least 100 feet wide
   ___ The riparian area connects to adjacent open space or greenway

Optional: Additional Questions and notes.

Riverways Program, Division of Ecological Restoration
Adopt a Stream

These sheets are designed to give the “big picture” of your segment. They provide the basis of the narrative description of segments in the Shoreline Survey report.

NARRATIVE DESCRIPTION

| SAMPLE 1: The river flows slowly through this segment. The banks on the south side are eroded for a distance of about 100 yards (a football field), with parkland behind it. On the other side of the river, the banks have cement walls, industrial buildings and parking lots. There was a marsh at the lower end. A small stream came into the river, and the water quality seemed worse after it entered. Bits of oil floated on the water, and the stream smelled like asphalt. There were a few gulls in the industrial section, and there were turtles, a muskrat hole and a great blue heron in the wetland/marsh. |
|---|---|
| SAMPLE 2: Segment 2 flows quickly through conservation land, with several small riffles. We saw several anglers along the banks. There were many downed trees in the stream, which provide good habitat for fish. Vegetation along the stream is thick, second-growth forest with an old dirt road providing good access for walking or mountain biking. There are several old appliances in the river near the Rt. 20 bridge. |

Describe your segment in a paragraph:

Riverways Program, Division of Ecological Restoration
## Adopt-A-Stream Pipe Survey of River/Brook

**Segment #**

**Date:**

**Names of observers:**

**Weather today:**

**Weather over past 48-72 hours:**

### Pipe Survey Table

<table>
<thead>
<tr>
<th>Pipe#</th>
<th>Time</th>
<th>Pipe material and condition</th>
<th>Pipe size &amp; amount of flow</th>
<th>Color of Flow</th>
<th>Odor of Flow</th>
<th>Algae below pipe</th>
<th>Sediment below pipe</th>
<th>Comments? If pipe should be rechecked-describe location</th>
<th>GPS Latitude</th>
<th>Longitude: (Optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample #1</td>
<td>9:33 AM</td>
<td>Concrete in good shape</td>
<td>Constant Moderate Flow 1' diameter</td>
<td>Red-brown</td>
<td>fetid</td>
<td>Green growth coating rocks across the entire stream width and 100 yards upstream.</td>
<td>Sand accumulation at outfall</td>
<td>Should be rechecked. Downstream of Jones St. Bridge</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Riverways Program, Division of Ecological Restoration
<table>
<thead>
<tr>
<th>Shoreline Survey Priorities for Action</th>
<th>Adopt a Stream</th>
<th>Segment Begins:</th>
<th>Segment Ends:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Look back at your Field Data sheet and include your observations. The information from these sheets will be used to develop the Action Plan. <strong>PROBLEMS:</strong> Problems found in your segment, such as: pipes discharging in dry weather erosion, runoff trash, dense algae water quality problems (odor, color, oil, foam, sewage) degraded wetlands (phragmites, loosestrife) other problems (<em>describe, give location</em>)</td>
<td><strong>ASSETS:</strong> Assets found in your segment, such as: Good habitat, wildlife species businesses or landowners using the river (in a friendly way) recreational access (canoe, trails, parks) potential recreational access potential park/conservation land (<em>describe, give location</em>)</td>
<td><strong>PRIORITIES for action:</strong> List items from problems/assets columns that you feel need more work.</td>
<td></td>
</tr>
<tr>
<td>1.</td>
<td>1.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>2.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Riverways Program, Division of Ecological Restoration
Appendix C: Japanese Knotweed (*Polygonum cuspidatum*)

**What are invasive plants?**
Invasive plants are non-native species that have spread into native or minimally managed plant systems. These plants cause economic or environmental harm by developing self-sustaining populations that dominate and/or disrupt native ecosystems. Invasives have left behind the herbivores and diseases that typically control their populations in their native habitats and they have reproductive mechanisms that allow them to rapidly grow, mature and spread. Apart from forming dense stands that crowd or shade-out natives, certain invasive species can alter ecosystem processes such as hydrology, soil chemistry, and the frequency of natural fires.

**Japanese knotweed (Polygonum cuspidatum)** is also known commonly as “bamboo.” It is native to Japan and was brought to the United States from Britain in the late 1800’s as an ornamental.

**Ecological Threat:** Japanese knotweed spreads vegetatively and by seed, forming dense thickets that threaten native plant communities in wetlands and riparian areas. It has the ability to survive severe flooding and readily colonizes island habitats and shorelines. Once established, its populations are highly persistent and difficult to eradicate.

**Description:** Japanese knotweed is an upright perennial herb with multiple, dense shoots that can grow up to 10 feet in height. Like a bamboo, stems are stout, round and hollow, with swollen joints at leaf nodes. Shoots from stout subterranean rhizomes may spread horizontally as far as 65 feet. Leaves are broadly ovate and alternate. Tiny white or greenish-white flowers develop in late summer and grow in numerous linear clusters that form a mass of white over the plant when in full flower. Frost-killed stems turn bronze colored and may remain upright through the winter.

Japanese knotweed grows hardiest in full sun environments. It commonly grows along streams, riverbanks and in disturbed areas such as roadsides.

**Disposal:** Stem and root fragments as small as ½ inch can sprout so special care must be taken to contain the plant parts when using manual control. Do not allow plant parts to enter waterways during control. Cut stems may be piled on a raised platform, brush pile or tarp for drying. Do not compost plant materials as they may sprout and then spread. Piles may be burned. Do not remove soil or plant material from the site unless being disposed of in a landfill. 7

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