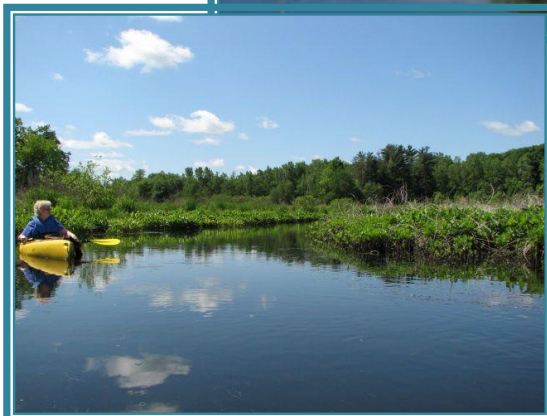


Blackstone River Watershed Association



Quinsigamond River Stream Team Shoreline Survey Report & Action Plan September 2009



Acknowledgements

Thanks to:

The Norcross Foundation

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An additional thanks to our valued Stream Team members without which this project would not be possible; the Brigham Hill Community Barn in Grafton; Commonwealth of Massachusetts Riverways Adopt-A-Stream Program; the cooperation of Quinsigamond River area residents, businesses, and landowners; and the Grafton Conservation Commission

Quinsigamond River Stream Team

The Quinsigamond River Stream Team members include

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Susan Thomas
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Kenneth Webb
John Wilson
Rebecca Wilson

Blackstone River Coalition
Donna Williams, Project Advisor

Blackstone River Watershed Association Project Coordinator
Michelle Walsh, Environmental Outreach Coordinator

Objective

The Quinsigamond River is the jewel that runs through the middle of Grafton and connects us all. From Hovey Pond all the way down to Fisherville Pond we see kayakers, canoeists, wildlife watchers, anglers, ice fishermen and many others enjoying this beautiful waterway and its bounty. The sunlight sparkling on the surface of Lake Ripple and reflections of fall foliage enrich our travels. We all look for the nesting swans. The River is an important resource that holds our admiration, but it also requires our attention to protect and restore it.

The Quinsigamond River is a river in central Massachusetts. It is a tributary of the Blackstone River and ultimately drains into Narragansett Bay. Although the Quinsigamond has many small tributaries and drains a sizable area, the river proper is only 5.3 miles long. It flows roughly southwards from its origin at Lake Quinsigamond at Worcester's eastern edge, past North Grafton where Bummet Brook enters, through Lake Ripple northwest of Grafton, and into the Fisherville Pond at Fisherville, where it merges into the Blackstone River.

To promote the Quinsigamond River's bountiful assets and create advocacy on a local level, The Blackstone River Watershed Association (BRWA) provides its local citizens with the tools necessary to educate residents, landowners, and business owners about their impact on the health of the River.

Through the use of a grant provided by the Norcross Foundation, the BRWA formed the Quinsigamond River Stream Team (stream team). This group is comprised of a group of local citizens concerned with protecting and restoring the health of the River. Their advocacy can lead to improving land use; water quality; and enhancing wildlife and recreational opportunities.

The stream team collects valuable information using shoreline survey field data sheets based on the protocol of Mass Riverways "Adopt-a-Stream" program. The findings are compiled into an action plan (Appendix A) and independent task forces work to achieve the goals outlined in this plan.

Methodology

The BRWA advertised for volunteers in various media throughout the Grafton area including the Grafton Land Trust, press releases in local papers, local cable channels, flyer distribution, and other pertinent groups.

Twenty-five volunteers attended a shoreline survey training session at Brigham Hill Community Barn in Grafton on May 6th, 2009. At this meeting, volunteers were instructed by Rachel Calabro of Save the Bay on how to conduct a shoreline survey. This survey is based on the protocol of Mass Riverways' "Adopt-a-Stream" program.

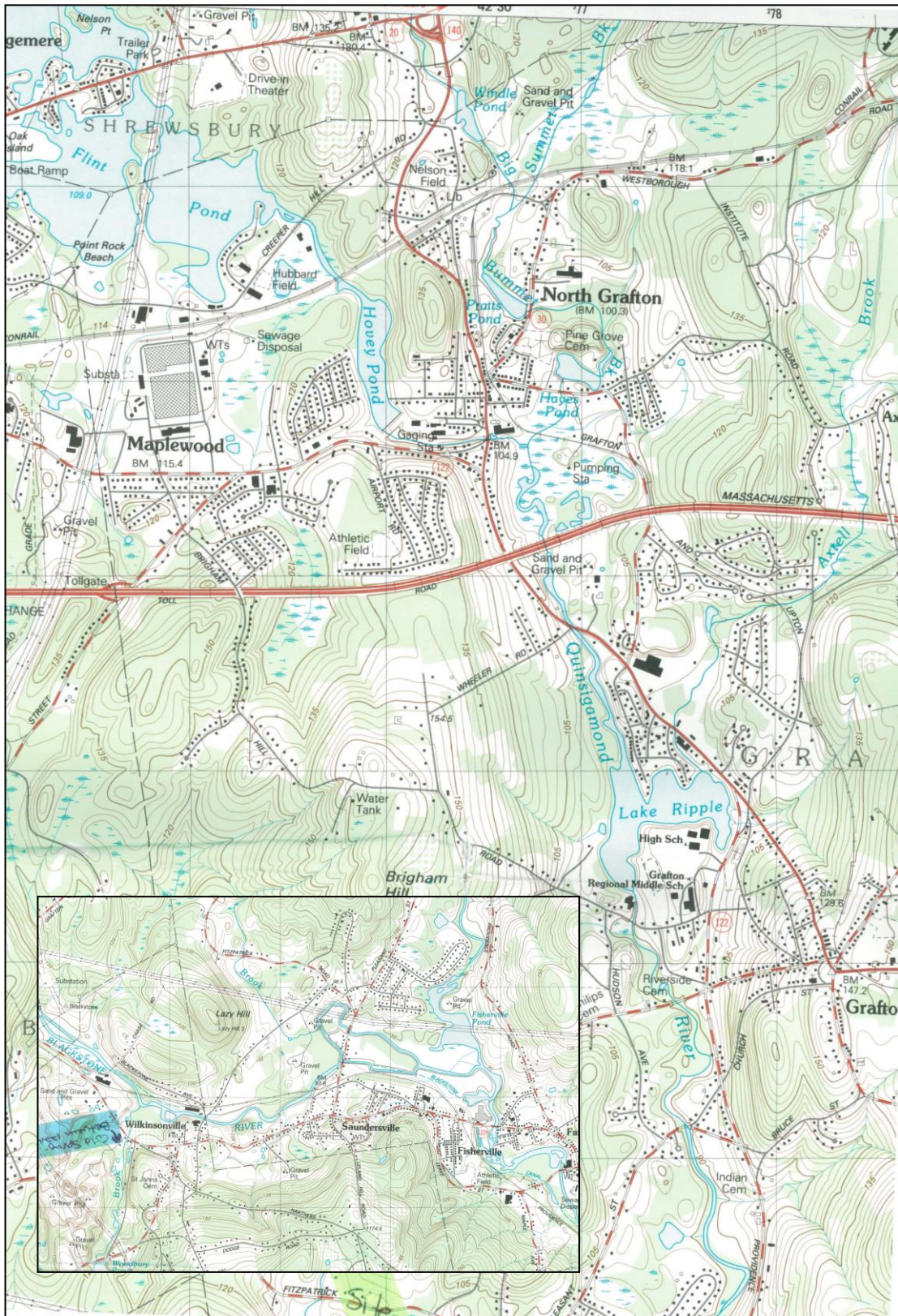
Volunteers were divided into several teams and given a section of the River to survey. Each team was given until June 3rd to complete their survey. Volunteers were also given the opportunity to summarize their findings at the follow up meeting on this same date. These summaries can be found under Summary of Findings in the next section.

On June 12th, Donna Williams, Rachel Calabro, and Michelle Walsh met to categorize the survey findings into the following:

- Brochure design and development
- Distribution of Homeowners Guides
- Organized river cleanups
- Invasive mapping and follow up with Con Com
- Outreach to businesses using the "In Business for the Blackstone" program
- Reporting to Town Officials
- Investigation/Recheck specific areas of concern

Details of each category can be found in Appendix A under "Action Plan." An Action Planning Implementation Schedule and Committee can be found in "Appendix B."

Map of Quinsigamond River



Summary of Findings

Section 1 – Irish Dam to Hovey Pond Dam

Narrative by Cindy Day and Jean Campbell

On May 9, we launched our kayaks onto Hovey Pond from a site at the eastern end of Anderson Lane. We paddled upstream along the left (eastern) bank of the pond.

About 15 ft of emergent vegetation (predominantly pickerel weed) extends into the water from the left bank. Pollen was observed on the water surface. We paddled toward the middle of the pond and saw moderate submerged vegetation (predominantly milfoil). Two Canada Geese and a Cormorant also were observed. Some ducks flew by but we weren't able to identify the species. A 55-gallon drum was observed partly on land and partly in the water (see photo, location marked on map). The drum is white, unlabeled, and may be plastic. In this area, we could see and hear a yellow crane doing a construction project beyond the tree line.

We also observed a blue plastic 55-gallon drum slightly upstream of the white drum. We believe these drums are part of a dock because two iron pipes were observed in the pond opposite the white drum.

We paddled upstream to a RR bridge where we could go no further due to the shallow water depths and fast velocity under the bridge. We got out of our boats and walked over the rail road tracks to the upstream side of the bridge. The upstream area is a wetland (predominantly cat tails). This area can be observed from land by walking down the rail road tracks or from Creeper Hill Road.

On the downstream right side of the RR Bridge about 10 feet below the abutment was a running inflow too small to be paddled. Further downstream on the right bank was a cove with a gate (see photos). A local resident said the stream behind the gate is where Wyman Gordon used to discharge their industrial waste. The water in this cove was stagnant and had a build up a humic material on the water surface.

Downstream from the cove on the right bank was a flowing stream I was able to paddle up for a short distance. I believe this is the inflow shown on the topo map as being near a sewage disposal facility. The water appeared clear and vegetation (floating, submerged, or emergent) was not evident. There was no sewage odor in this area.

The northern end of Hovey Pond has thick, densely rooted vegetation in the water along both sides. I don't know if this vegetation is invasive but it seems as though it could impede the flow of the river as it spreads into the channel over time.

The right (western) half of Hovey Pond is quite shallow and is covered predominantly with pond lilies. I measured about 1.5 feet deep in one spot. A Green Heron was observed in the trees and there were several bull frogs in this area.

Heavy iron floccing was observed both floating and in the sediments about 200 feet upstream of the Hovey Pond dam near the right bank (see photo). An inflow was noted on the topo map in this general area.

Upstream of the Hovey Pond dam on the left bank was a small pile of cans and other trash (see photo). Slightly upstream of this spot a red plastic gas can was observed at the edge of the pond. The 4-inch PVC pipe near the launch site had a clear flow. We observed an American Goldfinch drinking this water. The source of this flow is unknown. Storm drains were not observed on Anderson Lane near this area. The Swifts (homeowners) may have a sump pump in their basement that discharges through this pipe. On Thursday May 7, 1.18 inches of rain was recorded at the Worcester Airport which may help explain the flow source.

The elevation of Flint Pond at the dam was 7.42 feet. A staff backing was observed at Hovey Pond but the staff plates were removed.

Section 1 – Irish Dam to Hovey Pond Dam Field Data Sheets

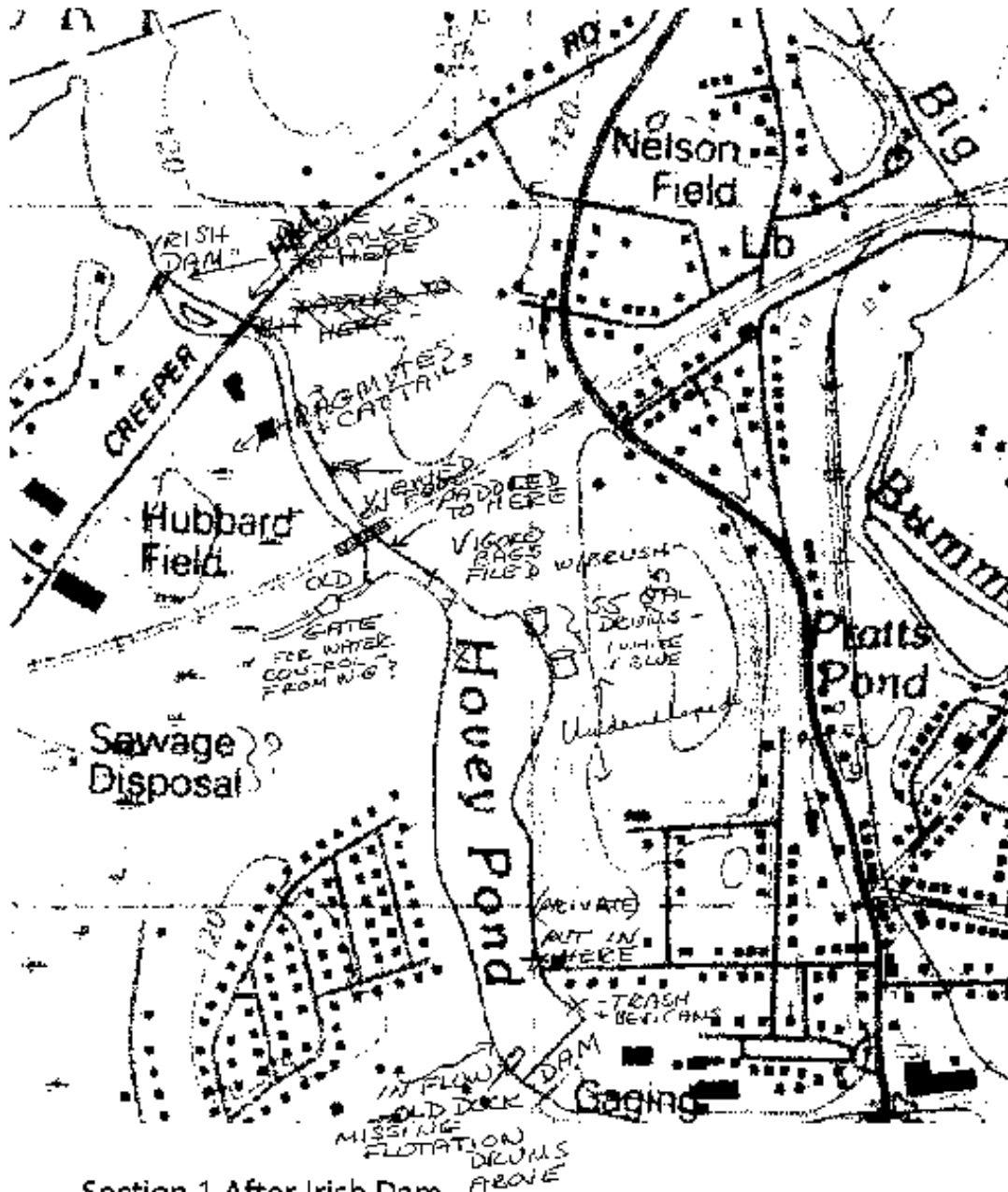
Look back at your field data sheet and include your observations. The information from these sheets will be used to develop the Action Plan.

Segment begins: **Lower end of Hovey Pond**

Segment ends: **Irish Dam**

PROBLEMS:	ASSETS:	PRIORITIES:
<p>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 (describe, give location)</p> <ol style="list-style-type: none"> 1. Heavy unknown vegetation on both banks of stream at northern end of pond. Thickly, densely rooted – if spreads could impede flow (photo) 2. Runoff trash – upstream on left bank above dam at Hovey Pond (photo) 3. Iron flocking – possibly due to groundwater discharge into Hovey Pond (photo) 4. Homeowners lawns go straight to water’s edge (photo) 5. Lots of phragmites – at edges of cattails along stream – both sides 	<p>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 (describe, give location)</p> <ol style="list-style-type: none"> 1. Lot of green space privately owned – along left bank – wooded 2. Numerous stands of cattails along stream and northern end of Pond. Outstanding cattails between RR Bridge and Irish Dam, improves water quality 	<p>List items from problems/assets columns that you feel need more work.</p> <ol style="list-style-type: none"> 1. See items 1 thru 4 under PROBLEMS

Section 1 – Irish Dam to Hovey Pond Dam
Topo Map



Section 1 After Irish Dam
@Creeper Hill Road to Hovey
Pond Dam

Section 1 – Irish Dam to Hovey Pond Dam Photos



Another Vigoro bag of brush/clippings.



Suspicious barrel that we figured out its origin later.



On west side of Hovey Pond, facing upstream. Very shallow on this side (as opposed to much deeper on the east side of the river). Lots of plant growth...lily pads, pickeral weed. Not much flow here. Notice the clearer, deeper water in the distance...on the east side of the pond.

Section 1 – Irish Dam to Hovey Pond Dam Photos



Facing north, on Hovey Pond, taken from the west side, showing heavy vegetation. There are homes and condos on this side of the pond. It is also very shallow and not much flow.



Lots of green, fertilized lawns going right down to the water...on the west, lower end of Hovey Pond.



Heavy vegetation on west side of Hovey Pond
...shallow.

Section 2 - Hovey Dam to Washington Mills Dam

Narrative by Robin Cutler and Bill Dausey

We started our survey of section 2 of the Quinsigamond River with Mr. Bruce Vigneaux, plant manager of Washington Mills as our guide. Mr. Vigneaux has worked for WM for 40 years and knows both factory and river history very well.

The right bank along Rte 122 is a steep drop off and is heavily over grown with second growth trees and vines all the way to the parking lot behind the restaurant (closed) and the old bridge at the junction of 122 and 140. There are a few drains on the upper side of Rte. 122 that catch the runoff from the highway into the river. There is a cement structure with a small solar collector on its top that houses the devise that measures the height of the river. It is surrounded by so many vines and heavy vegetation that we could only see it from the left bank. It is owned by the State.

From the parking lot by the restaurant, we could see a couple of houses above the river. There is a natural buffer of vegetation and young trees on the left bank that protects the river from the lawns of these homes. An old appliance (washing machine) had been dumped below at the water's edge. From the old bridge, we saw a shopping cart abandoned in the river. There was plastic trash near this walking area as well. However, the water was clean and clear and we could see the bottom.

The left bank is steep and very overgrown with second growth trees, kudzu and lots of poison ivy. We stood at Hovey Pond and the dam and saw that the water was running fairly rapidly and clear. Washington Mills has several buildings and parking areas along the left bank between the dam and the 122/140 bridge. The water was clear with no debris along this left bank area.

The river goes under the 140 bridge and becomes a pond at Washington Mills where the main office building sits above the water. The pond here is "gin" clear and we could see the stones on the bottom. The water flow is controlled to a great extent by the WM dam. The river narrows below this dam as and continues on its journey into the wetlands that border the backside of the WM property. There is a moderate drop off of the river at the WM dam. It makes a whirlpool where it levels out and turns towards the wetlands. It was here that we saw at least a dozen fish. Vegetation is thick with some downed trees and second -growth trees making good cover along the river. We walked to the edge of WM property to look at the wetlands. It is a glorious, open habitat where we saw many red-Winged black birds.

Several highway drains on Rte. 140 that fronts Washington Mills drain to a lower catch basin behind the Mill. Sand and silt collect in this area. It is noted that the State is responsible for the road salt, sand and maintenance of these drains. The drainage pipes cross under the RR easement. The responsibility for these belongs either to the State or the railroad. The pipe that exits into the wetland is silted up and has little drainage.

We were very impressed with the stewardship of Washington Mills and its section of the river. Bruce Vigneaux takes great pride in the company, its history, and its life along the Quinsigamond. We were grateful for this personal and excellent tour of this part of the river.

Section 2 - Hovey Dam to Washington Mills Dam Field Data Sheet

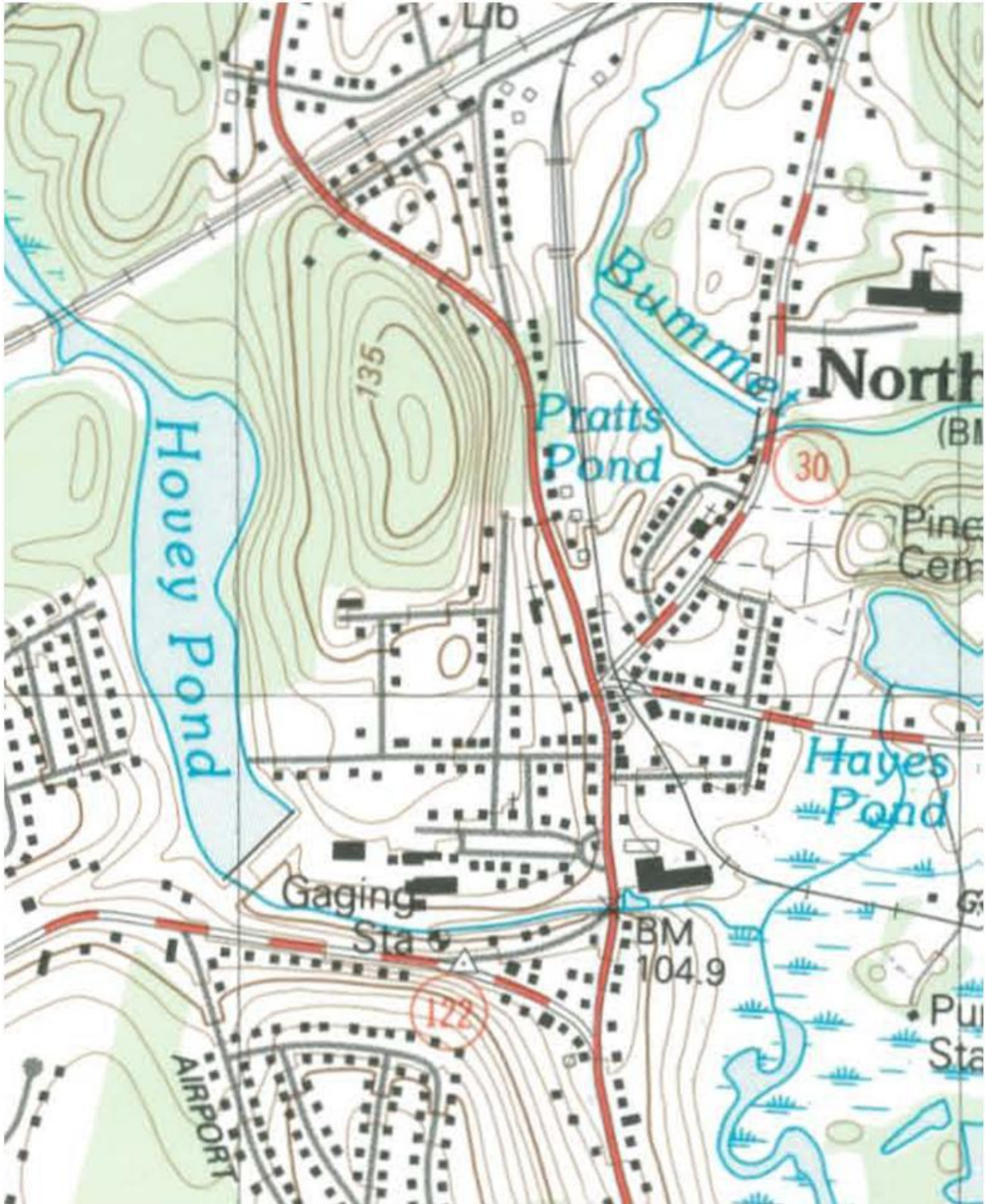
Segment begins: **Hovey Dam/Pond**

Segment ends: **Washington Mills**

Look back at your field data sheet and include your observations. The information from these sheets will be used to develop the Action Plan.

PROBLEMS:	ASSETS:	PRIORITIES:
<p>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 (describe, give location)</p> <ol style="list-style-type: none"> 1. Clean up trash in river and at old bridge on Route 140/122 	<p>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 (describe, give location)</p> <ol style="list-style-type: none"> 1. Excellent stewardship by Washington Mills. 2. No obvious issues from houses due to large buffer zone of trees, shrubs, and steep banks along the river. 	<p>List items from problems/assets columns that you feel need more work.</p> <ol style="list-style-type: none"> 1. Clean out catch basins that drain to wetland area (contact State) 2. Clean out pipe that is silted up at entrance to wetlands

**Section 2 - Hovey Dam to Washington Mills Dam
(northern and southern side)
Topo Map**

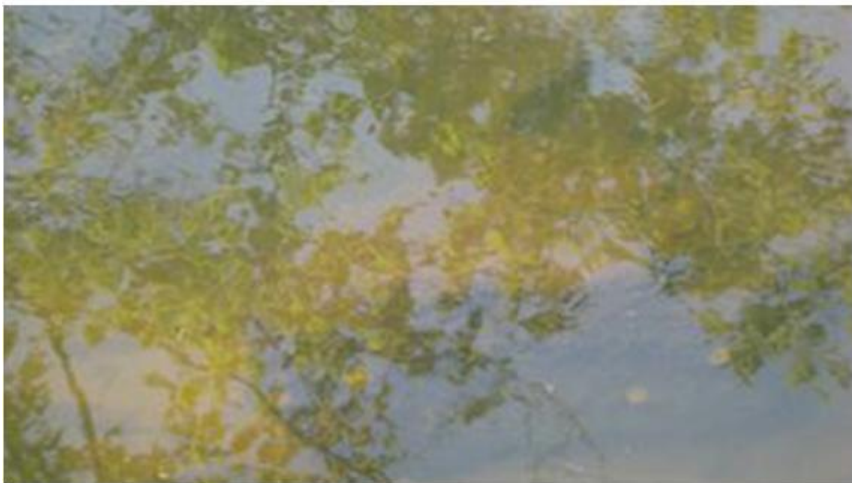


Section 2 - Hovey Dam to Washington Mills Dam

Photos



Vegetative buffer zone issues –
Hovey Pond area



Pond area at
Washington Mills -
water quality
appearance is
good



Washington Mills

Section 2 - Hovey Dam to Washington Mills Dam

Photos



Washington Mills
Dam



Silted up concrete
pipes



Clogged drain
Route 140

Section 3 - Washington Mills to Ekblaw Landing

Narrative by Catherine Czubacki and Matthew Urban

The segment of the Quinsigamond River is best described in two sections: the North section runs from Washington Mills to the Mass Pike; the South section runs from the Mass Pike to the Ekblaw Landing just south of the Route 122 Bridge. Overall the water is very clear throughout both sections.

The North section meanders through a marsh area with one defined area of braiding and a few channels (most only one or two feet wide) cutting into the river from the marsh. The average depth of the river is approximately 5 to 6 feet deep in the middle. A large amount of aquatic vegetation is growing throughout this section. A large snapping turtle was seen diving deeper in to the water. A small school of young fish was seen swimming along. Several kayakers and anglers were seen paddling along. Bass and pike were said to be caught. A swan was seen at the Northern end of this section. The right bank was protected by 15 to 75 yards of marshy vegetation then a tree line which blocked the view of Route 122 and any residential/commercial properties. One residence could barely be seen through the trees where a boardwalk and dock had been built. A john boat, canoe, and paddle boat were by the dock, but not in the river. The left bank had a very deep border of marsh all along this section with a tree line in sight past this marsh area.

The South section was much straighter and more often shallower. Average depth was 1 – 3 feet deep except near the Mass Pike Bridge, the Route 122 Bridge, and pond-like pool just west of the sand and gravel pit. Those three areas averaged 4 to 6 feet deep. Green Algae were found growing on the river bed in the shallow areas downstream of the two bridges. The left bank had a deep marsh area 10 – 15 feet leading to a tree line. The right bank had an intermittent marsh area and continuous tree line separating the river from Route 122. Large boulders have been placed on both sides of the bridges on both banks to reduce street run-off erosion. On the northwest corner of the Route 122 Bridge a section of asphalt has eroded away and the dirt underneath is beginning to erode. There were several downed trees on the right bank, some in the water and some overhanging the water.

Section 3 - Washington Mills to Ekblaw Landing

Field Data Sheet

Look back at your field data sheet and include your observations. The information from these sheets will be used to develop the Action Plan.

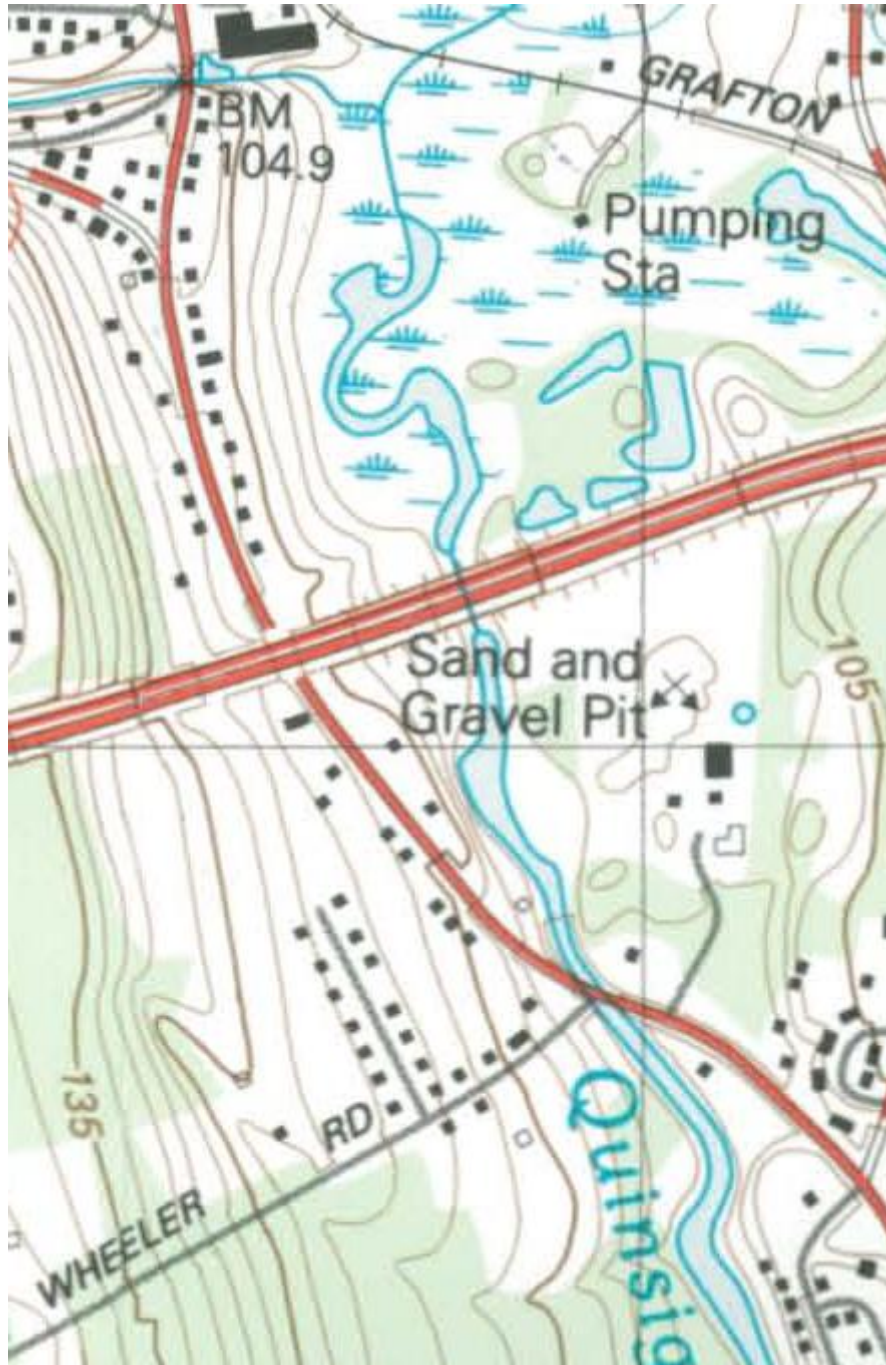
Segment begins: **Ekblaw Landing**

Segment ends: **Washington Mills**

PROBLEMS:	ASSETS:	PRIORITIES:
<p>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 (describe, give location)</p> <ol style="list-style-type: none">1. Purple Loosestrife and algae growth2. Erosion near Route 122 bridge	<p>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 (describe, give location)</p> <ol style="list-style-type: none">1. Good habitat/public use (canoe, kayak, fish, hike).2. Some land abutting is protected land. Marsh area is protected and full of birds.3. Dock found is clean and free of debris.	<p>List items from problems/assets columns that you feel need more work.</p> <ol style="list-style-type: none">1. Purple Loosestrife and algae2. Corner of bridge (asphalt erosion)

Section 3 - Washington Mills to Ekblaw Landing

Topo Map



Section 3 - Washington Mills to Ekblaw Landing

Photos



View from Ekblaw
Landing



Site of previous
erosion control
project
(downstream from
Rte 122 bridge)



Typical vegetation
along this stretch
of the river

Section 3 - Washington Mills to Ekblaw Landing

Photos



Second large turn
looking
downstream



Aquatic
vegetation



Mass Pike
overpass (north
side)

Section 3 - Washington Mills to Ekblaw Landing

Photos



Pond-like pooling
near sand and
gravel pit



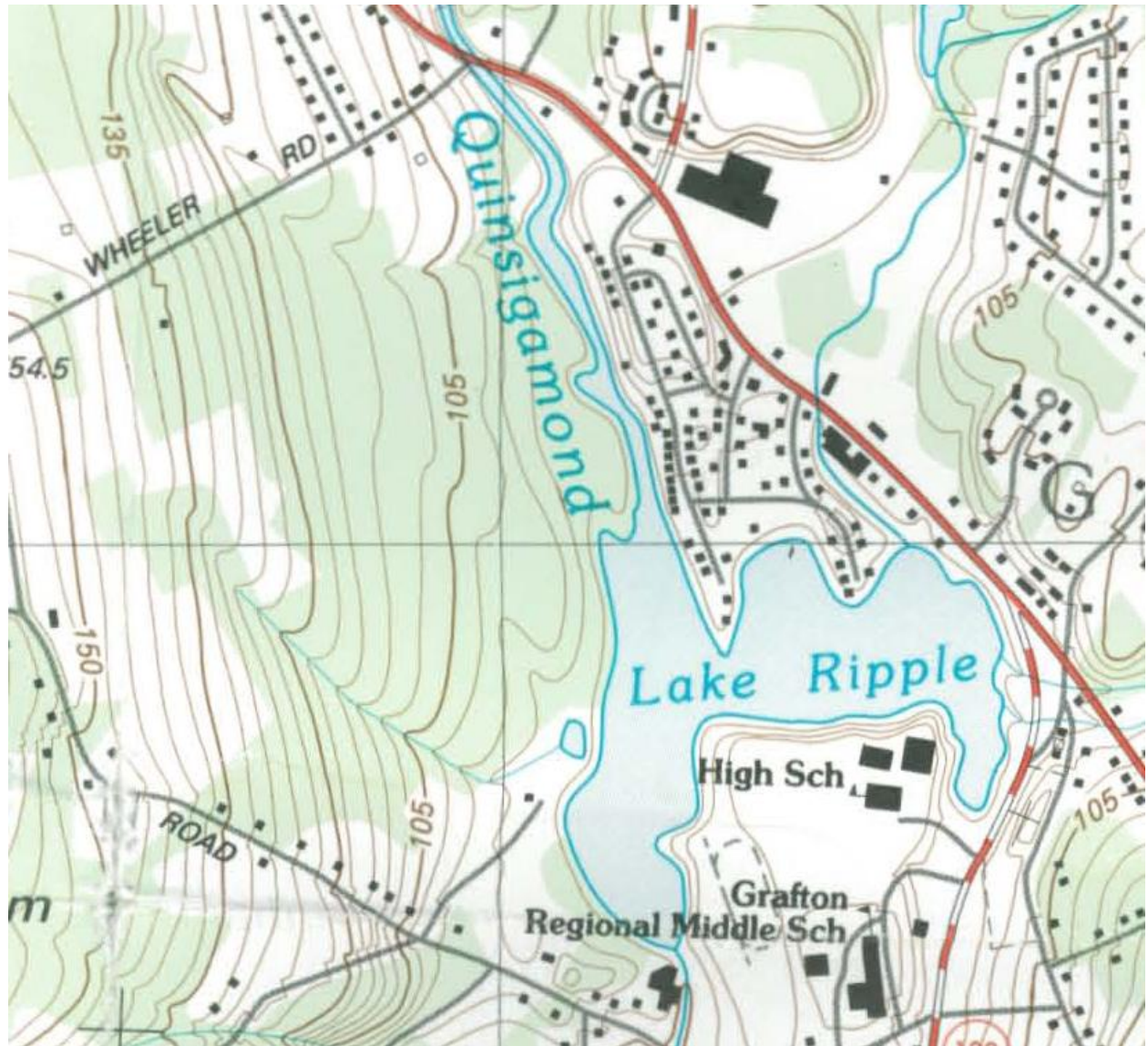
Right bank
erosion (north
side Rte 122
bridge)



Close up of
erosion

Section 4 - Ekblaw Landing to Southern Tip of Lake Ripple

Topo Map



Section 4 – Ekblaw Landing to Southern Part of Lake Ripple

Western part of Lake Ripple

Narrative by Chris Schonhoff

The river runs slowly through this segment (lake). On the right bank (North to South) I observed two pipes emptying into the lake. Both were dry. The first was rusted out possibly algae under this pipe. The second pipe was partially blocked by a small sapling. After the second pipe a small stream came into the river. Some trash was seen periodically along the bank. One house and the Lions Club soccer field also are along this part of the lake. At the Southern-most portion of the lake there is a dam. Vegetation along this portion is thick, second growth forest. I saw one guy fishing. At point #3 on my map there is a small concrete structure on the bank. At this point I observed a pipe sticking out of the lake about one foot in the air. Is this associated with the concrete structure? Saw several birds (geese, ducks), fish and two groundhogs.

Section 4 – Ekblaw Landing to Southern Part of Lake Ripple

Western Part of Lake Ripple

Look back at your field data sheet and include your observations. The information from these sheets will be used to develop the Action Plan.

Segment begins: **Western half of Lake Ripple**

Segment ends:

PROBLEMS:	ASSETS:	PRIORITIES:
<p>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 (describe, give location)</p> <ol style="list-style-type: none">1. Trash2. Old dock3. Rusted out metal pipe with algae and silt build up4. Rubber/plastic pipe – blocked by sapling	<p>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 (describe, give location)</p> <ol style="list-style-type: none">1. People fish the lake2. Ekblaw Landing close by	<p>List items from problems/assets columns that you feel need more work.</p> <ol style="list-style-type: none">1. Trash pickup2. Monitor pipes

Section 4 - Ekblaw Landing to Southern Part of Lake Ripple

Ekblaw Landing to Lake Ripple

Narrative by Matt Brady

This segment of the river is a slow run with depths up to eight feet. There is significant aquatic vegetation along the right bank (going downstream). This bank abuts conservation land for the entire segment. I spotted two people fishing from this bank. There is erosion just downstream of bridge, but bank is intact after that. The left bank has some wetland just downstream of the bridge/car top boat put-in. Downstream, near mouth of Lake Ripple are several houses with retaining walls (holding in lawns) in severe disrepair. I saw a variety of waterfowl in this stretch (primarily Canada geese and mallards grazing on lawns), as well as a muskrat. As the river enters Lake Ripple, the mouth expands to a very slow-moving flat with significant aquatic vegetation. I spotted numerous carp in these flats.



One of several houses with failing retaining walls



Close up of failed retaining wall



Bank erosion



Vegetation along river bank

Section 4 - Ekblaw Landing to Southern Part of Lake Ripple

Ekblaw Landing to Lake Ripple

Field Data Sheet

Look back at your field data sheet and include your observations. The information from these sheets will be used to develop the Action Plan.

Segment begins: **Ekblaw Landing**

Segment ends: **Lake Ripple**

PROBLEMS:	ASSETS:	PRIORITIES:
<p>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 (describe, give location)</p> <ol style="list-style-type: none">1. Erosion of private property is significant where retaining walls have begun to fall apart. Pictures show collapse of both stone and wood structures.	<p>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 (describe, give location)</p> <ol style="list-style-type: none">1. Conservation land on right bank offers significant wildlife habitat, as well as riparian buffer and controls erosion. There are two wood duck boxes, though there was no evidence of use at this time.	<p>List items from problems/assets columns that you feel need more work.</p> <ol style="list-style-type: none">1. New retaining walls for private property to reduce seepage of fertilizers into river.

Section 4 - Ekblaw Landing to Southern Part of Lake Ripple

Eastern segment of Lake Ripple

Narrative by Bob and Dave MacIndoe

The western portion of the peninsula of the north bank had flat lawns leading to the water with minor erosion. The west cove of the northern bank was partly wooded housed muskrats. The eastern peninsula of the northern bank had sloping lawns down to the water with intermittent shrubs. The eastern cove of the northern bank had a lot more trash and other forms of pollution. The northeast corner had some film over the water and some algae blooms. Parking lots were adjacent to this area along with dumpsters and 55 gallon drums (marked on map). The eastern shore paralleled Route 122 and had lots of trash, including tires. Marshland formed midway on the east bank down to the southeast corner. The entire south bank was wooded and steep with undercut banks and one washed out gully coming from Grafton High School. Ducks, fish, muskrats, and frogs were seen along with some red-winged blackbirds. Water wasn't very turbid (particulates) but was brown tea-colored.

We also checked a creek at the northeast corner. It had lots of trash and a sheen over the water. There was also lots of overgrowth. Businesses nearby included a car wash. Also dumpsters and parking lots border this section.



One of several houses with buffer zone issues—Lake Ripple (eastern segment)



Northeast corner—film and algae blooms



Several businesses (northeast corner) with dumpsters and 55 gallon drums near water



55 gallon drums along river bank

Section 4 - Ekblaw Landing to Southern Part of Lake Ripple

Eastern segment of Lake Ripple

Look back at your field data sheet and include your observations. The information from these sheets will be used to develop the Action Plan.

Segment begins: **Eastern segment of Lake Ripple**

Segment ends:

PROBLEMS:	ASSETS:	PRIORITIES:
<p>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 (describe, give location)</p> <ol style="list-style-type: none"> 1. Erosion. Some along peoples' lawns and undercut banks along south shore by High School. 2. Pollution. Lots of trash closer to the Route 122 end of the Lake. Also trash along some parts of the northern and southern shores. Runoff from peoples' lawns and parking lots of businesses on the east side. 3. Overgrowth in northeast corner and spots of algae blooms in/on water. 	<p>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 (describe, give location)</p> <ol style="list-style-type: none"> 1. Nice cover on the northern shore where its vegetated. Good habitat for muskrats and some birds. 2. Along part of Rte 122 there is a small patch of wetland with good plant cover (reeds and sedges) although some trash is caught in it. 	<p>List items from problems/assets columns that you feel need more work.</p> <ol style="list-style-type: none"> 1. Trash is fairly problematic. Could use a cleanup. 2. The creek on the northeast corner of the lake was in terrible condition. Trash and an oily wax/sheen over the water. Possibly from nearby car wash? Runoff from parking lots and lawns are possible to blame too.

Section 4 - Ekblaw Landing to Southern Part of Lake Ripple

Wheeler Road to Lake Ripple Dam

Narrative by John and Rebecca Wilson

We walked from Wheeler Road along the Quinsigamond to Lake Ripple dam through Conservation and Land Trust land. It's a very beautiful wildlife habitat for both forest and aquatic life. The segment needs to be preserved for future generations and the water quality improved upstream.



Wheeler Road Bridge



Typical vegetation along this stretch of the river



Outflow from soccer field drainage
– very green moss



Old TV dumped in river

Section 4 - Ekblaw Landing to Southern Part of Lake Ripple

Wheeler Road to Lake Ripple Dam

Look back at your field data sheet and include your observations. The information from these sheets will be used to develop the Action Plan.

Segment begins: **Wheeler Road**

Segment ends: **Lake Ripple Dam**

PROBLEMS:	ASSETS:	PRIORITIES:
<p>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 (describe, give location)</p> <ol style="list-style-type: none"> 1. Small pond at Lion’s club has lots of trash and no fresh water entering due to dredging project. 2. Soccer field at Lion’s Club has a drainage system that is discharging grass fertilizers into Lake Ripple. 	<p>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 (describe, give location)</p> <ol style="list-style-type: none"> 1. Great habitat mostly wooded conservation/land trust land adjacent to river. 2. Lion’s Club has potential for a launching area, fishing area. 3. A great canoe/row boat and wildlife habitat 	<p>List items from problems/assets columns that you feel need more work.</p> <ol style="list-style-type: none"> 1. Lion’s Club pond needs a cleaning – barrels and trash. 2. Soccer field drainage should not have fertilizers turning pond vegetation dark green. 3. Swans are causing problems with resident ducks and geese.

Section 5 - Lake Ripple Dam to Pleasant Street Bridge

Narrative by Dave Nichols, Mike Bouley, Ken Webb

The river flows slowly through this section with shallow riffles passing over gravel deposits in the upper section near the dam. Although shallow at the beginning the river is navigable for canoes and kayaks through the entire section with no non passable obstructions. The river gradually slows and becomes deeper (mostly 1 to 2 feet but up to 4 feet deep in places) farther downstream in this section. There is public access at the dam and Pleasant Street for car-top boat launching. The shoreline is too heavily vegetated for travel by foot beyond the access point; no trails exist along either side of the riverbank.

The banks are heavily overgrown with shrubs and brush along the shore and overhanging trees on the wooded land beyond the shore proved shade to much of the section. The water is clear and colorless. The riverbed consists of small gravel and stones up to 4 to 5 inches. The stones are covered with dark green algae which trails downstream like fine hair. The algae presence gradually diminishes farther downstream after the first mile. Several invasive species of Water milfoil and other plants grow in the river in some places forming thick patches up to the water surface.

On the west (right) side of the river, on the downstream side of Brigham Hill Road a small stream enters the river after passing through a marsh adjacent to the river. The water entering the river from this stream appears to be cloudy and milky colored and creates a cloudy plume in the river that is noticeable for at least 100 yards downstream. The land alongside the river is mostly wooded and undeveloped throughout this section. Two more open wetland areas border the river farther downstream in this section; both are heavily infested with purple loosestrife.

A few houses occasionally abut the east bank of the river at distances from as close as 20 feet up to 100 ft or more. Occasional debris such as car tires and bottles are present on the river bed, no concentrated trash piles were seen. A small stream of clear water enters the river from the east side about 1/3 through the section creating a small sandy delta.

Wildlife present included various songbirds along the riverside, mallards and wood ducks, great blue heron, red tailed hawk, belted kingfisher, redwing blackbird, catbird, sparrow were observed. Many fish were seen in the water including Yellow Perch, White Suckers, Largemouth Bass, Bluegills, and one Trout, signs of wildlife were tracks of white tail deer, beaver, and raccoon. There is a Beaver lodge on river right and many cut trees and branches about 1/4 mile upstream of Pleasant Street.

The Pleasant Street bridge can be seen from the water to be a scenic stone arch constructed bridge with the date of construction 1886 engraved in the keystone. The river gauge mounted on the downstream side of the Pleasant Street Bridge read 1.49 feet; this is about the lowest level that is passable for small boats.

Section 5 - Lake Ripple Dam to Pleasant Street Bridge

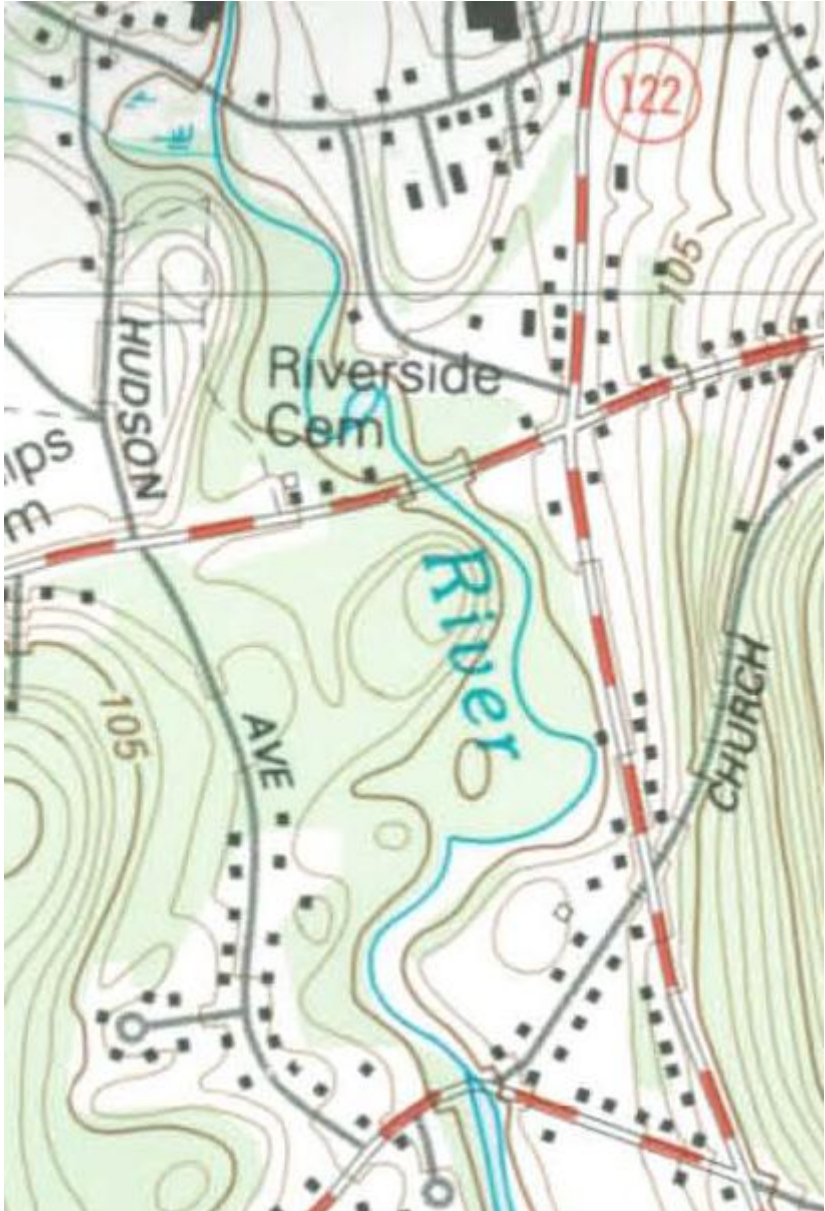
Look back at your field data sheet and include your observations. The information from these sheets will be used to develop the Action Plan.

Segment begins: **Below Lake Ripple Dam**

Segment ends: **Pleasant Street Bridge**

PROBLEMS:	ASSETS:	PRIORITIES:
<p>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 (describe, give location)</p> <ol style="list-style-type: none"> 1. Cloudy plume (milky) entering river from tributary stream downstream river right from Brigham Hill Road. 	<p>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 (describe, give location)</p> <ol style="list-style-type: none"> 1. Good wildlife and bird observation opportunities along undeveloped banks and adjacent wetlands. 2. Easy access for cartop boats. 3. River stocked seasonally with trout providing fishing opportunities. 4. Scenic landscape along most of river section. 	<p>List items from problems/assets columns that you feel need more work.</p> <ol style="list-style-type: none"> 1. Investigate contamination in tributary stream near Brigham Hill Road bridge river right. N42 deg 12.470/W71 deg 41.866 2. Educate homeowners along stream bed. Cleanup debris in river (tires, bicycle, bottles). 3. Eliminate invasive species. 4. Investigate tributary erosion creating sand delta at 40deg 12.094N/71 deg 41.566W

**Section 5 – Lake Ripple Dam to Pleasant Street Bridge
Topo Map**



Section 5 – Lake Ripple Dam to Pleasant Street Bridge Photos



Shallow riffles
passing over
gravel deposits
near dam



Downstream river
bottom consists of
dark green algae
for ½ mile



Thick patches of
milfoil

Section 5 – Lake Ripple Dam to Pleasant Street Bridge Photos



Downstream from
Brigham Hill Road
– wetland areas
infested with
purple loosestrife



River inlet – water
appearance
cloudy with plume
for 100 yards



Marsh land

Section 6 - Pleasant Street Bridge to Fisherville Pond

Narrative by Al and Elaine Sanborn

On May 23, 2009, Elaine and I inspected the river-right (west) side of the river, while Rick and Lori Muhr inspected the left side. The results are contained in the two Survey reports. Although the river was rather low, we enjoyed the leisurely paddling and the diverse surroundings.

As expected, there was quite a variety of conditions to report. Mostly, the river was devoid of trash and other debris; however the people on river-right by Fisherville Pond have dumped yard debris liberally on the bank of the pond: leaves, grass clippings, tree branches and Christmas trees in abundance. All of this will work its way to the pond and get there eventually, I think.

Some foreign invasives were detected, but there was other vegetation we were unsure about. For instance there is an abundance of some plant growing in shallow water by the river banks, and we were unsure if it might be purple loosestrife.

Section 6 - Pleasant Street Bridge to Fisherville Pond Field Data Sheet

Look back at your field data sheet and include your observations. The information from these sheets will be used to develop the Action Plan.

Segment begins: **Pleasant Street Bridge**

Segment ends: **Fisherville Pond (right bank only)**

PROBLEMS:	ASSETS:	PRIORITIES:
<p>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 (describe, give location)</p> <ol style="list-style-type: none"> 1. This segment is relatively free of trash, and is used some for fishing and canoeing. 2. We were unable to identify the plentiful aquatic plants that proliferated in shallow water close to the bank. 	<p>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 (describe, give location)</p> <ol style="list-style-type: none"> 1. There is one area when people have established a campsite – not sure if public or private land. Apparently not used very frequently. Asset? Liability? 2. This section of the river is a real asset for canoeists, but could use a designated parking area and better trail to the river. 3. Excellent takeout on left at Fisherville Pond. 	<p>List items from problems/assets columns that you feel need more work.</p> <ol style="list-style-type: none"> 1. Need to educate land and homeowners about the value of a clean river and pond 2. Check to see if irrigation pipes are permitted. 3. Establish the proper place for canoe parking (off Pleasant Street). Put up sign. 4. Establish an access trail to the river and put a sign there.

Section 6 - Pleasant Street Bridge to Fisherville Pond

Narrative by Rick, Lori, and Rider Muhr

Notes by the Muhr Family

The river is slow-flowing in this segment, some shallow areas where our canoe touched bottom, but still adequate flow considering the dry weather this spring. Overall health of the river seems good – no odor, pretty clear water, no oily sheen. Adequate vegetation and drooping tree branches providing great wildlife habitat. Trash/litter was minimal; two tires were present in the river. Mild erosion on the right bank. Some vegetative growth that might be loosestrife exists. We noticed various birds, fish, a weasel and chipmunks.

Two areas of water running from pipes into the river are noted on the map. Water appeared clear and odorless. Water flows constantly, even during dry weather.



Pleasant Street Bridge – (left) drain pipe has dry weather discharge (right) water depth at time of survey

Section 6 - Pleasant Street Bridge to Fisherville Pond Field Data Sheet

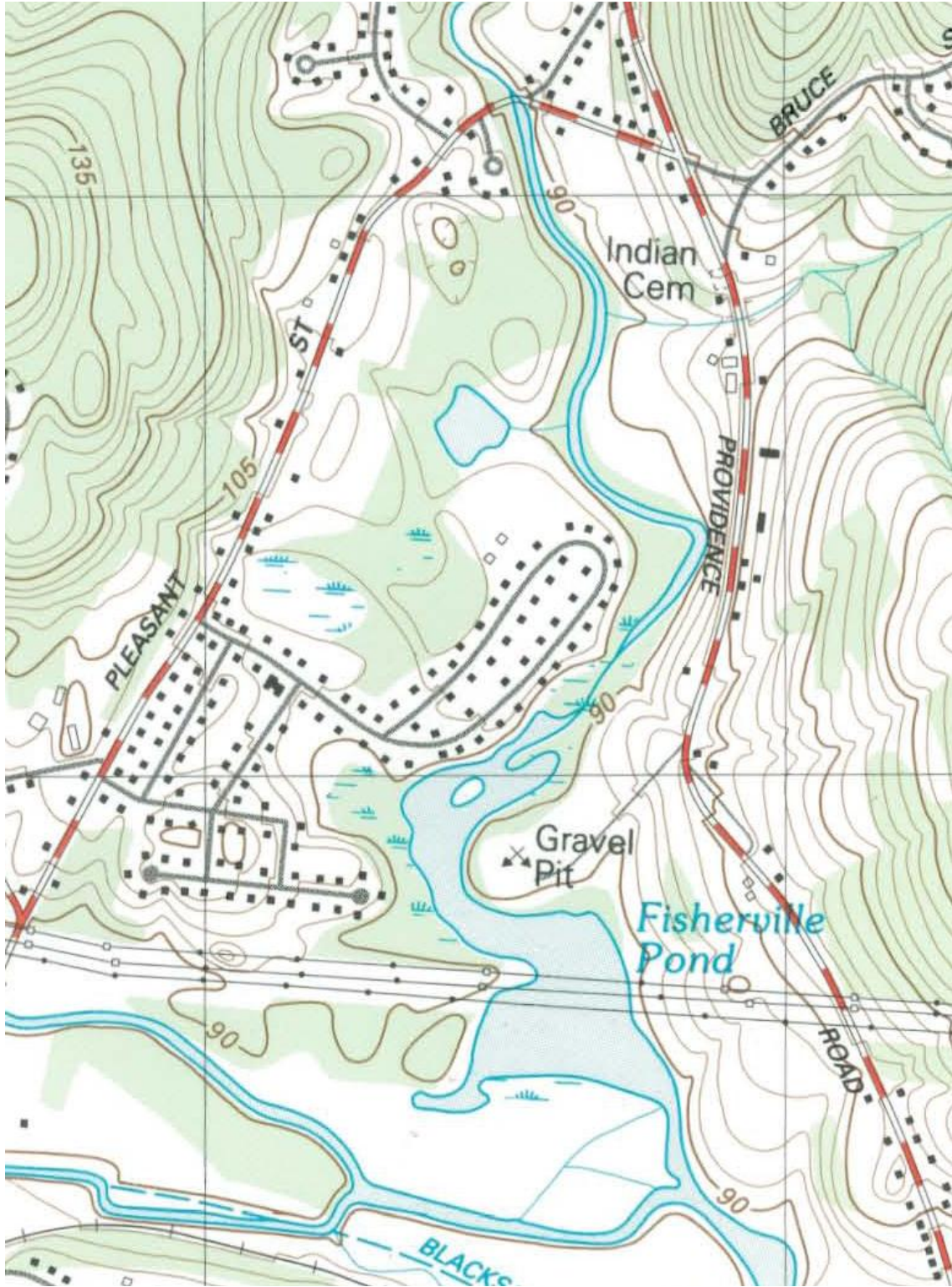
Look back at your field data sheet and include your observations. The information from these sheets will be used to develop the Action Plan.

Segment begins: **Pleasant Street Bridge**

Segment ends: **Fisherville Pond**

PROBLEMS:	ASSETS:	PRIORITIES:
<p>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 (describe, give location)</p> <ol style="list-style-type: none"> 1. Some purple loosestrife 2. Two pipes discharging in dry weather. 	<p>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 (describe, give location)</p> <ol style="list-style-type: none"> 1. Good habitat. 2. Wildlife is abundant. 3. Canoe access at Pleasant Street Bridge. 	<p>List items from problems/assets columns that you feel need more work.</p> <ol style="list-style-type: none"> 1. Monitor Loosestrife growth. 2. Monitor pipes #1 and 2

**Section 6 - Pleasant Street Bridge to Fisherville Pond
Topo Map**



Section 7 - Riverview Apartments to Confluence

Narrative by Donna and Tom Onacki

The river flows smoothly through this segment. Some parts are very shallow. ON one side there is the gravel pit, parking lot, power line access, and some woods. Though there didn't appear to be much erosion, there was a significant amount of trash – tires, bottles, cans, barrels (construction), and down near the turnaround before the dam, an old car (rusted metal). When we set out there was a small child's plastic pool in the middle. Lots of overhang from trees. On the other side was tall grass, some trash, an old basketball, construction barrel. There was a duck sitting in the low grass. We saw several redwing blackbird, a falcon? blue heron, and many painted turtles. Also a fair amount of fish jumping.

Section 7 - Riverview Apartments to Confluence

Narrative by Sue Thomas

Joy Road Impoundment This is a smallish (1-2 acre??) shallow marsh impoundment that has a narrow outlet to the Quinsigamond River. Landowners reported that a few years back there was a hard freeze (e.g. Freeze to bottom) that killed off the previously diverse fish population. Later in summer, you can 'walk across it'. At the time of the survey, it was estimated to be several feet deep.

It was ringed by mature trees and shrubby growth around the border. There was abundant wetland vegetation including floating (yellow water lily) and emergent (arrowhead). I would deem this as having high habitat value with dead snags and habitat stratification.

Bird species observed included red-winged blackbirds, yellow warbler, great blue heron, chickadee, swallow, and unidentified small heron/duck. I also saw water-striders and characterize it as good habitat for turtles, frogs, salamanders, aquatic insects, dragonflies, kingfishers, deer, fox, and more.

Landowners report that the area is used for boating, ice-skating, and fishing (prior to winter freeze).

Start of Stream Reach after impoundment The riparian habitat was intact and diverse with mature trees, shrubs, wetland areas (sedges, skunk cabbage, ferns) and grassy banks (ferns and wildflowers). Observed catbirds, redwing blackbirds, song sparrows, and water-striders. Landowners report crayfish, clams, turtle, and coyote. Grassy bank on near side; shrubby on far side. Narrow stream width is shaded here with maple and oak tree overhang. The stream bed was muddy/sandy with small rocks. The flow was slight without turbidity.

Observed first of several "pumping stations" with an electrical conduit coming from the residential area leading to a pump at the water's edge. An estimated 4" PVC pipe ran from the water to a hose that goes underground at the top of ridge behind the houses. At this point, the stream is ~ 20' wide. Opposite bank (left) had plowed fields behind houses and road. Yellowthroat warbler observed.

While the right bank became steeper and densely vegetated with a few areas undercut (mossy bank vegetation), the far shore was muddy with arrowhead, shrubs and trees comprising a buffer zone between the stream and the fields. This ran for ~1/4 mile before the field was once again close to the water's edge.

A third conduit water pipe was observed along with yard debris (tree cuttings) in the wooded area along the water. At this point, the shore was too hard to survey on foot and we walked out to the road by house #45.

#-53...Homeowner reported pair of bald eagles nesting by water earlier this year. Did not allow us access to water; used the neighboring property. At this point, the stream had widened to ~70 yards w/reduced flow. Observed small fish under overhanging maples.

#45/#55...The near shore was somewhat eroded and undercut with exposed roots. The hillside was steep and wooded and narrow. There was a 20" intact cement culvert from which a light flow (steady trickle) ran. The water was clear, without odor or sedimentation. There was no sign of trash or algal growth. The water emptied into a semicircle trough of cement of rough surface that did a good job of slowing the water down before entering the stream. The water here was clear, the bottom was sandy. The far shore (left) had boulders lining the grassy area that was vegetated with aspen/ cottonwoods. This area transitioned to a steep hillside leading to houses /road.

#59... Landowner permitted access. The grassy lawn led to a steep bank with some erosion at the base of which was arrowhead, songbirds in overhanging maple/oak trees. The water was clear with a sandy/pebbly bottom. Landowner reported occasional motorboat use which is being monitored (halted) by some entity. Access if via gravel pit? Observed a pump and pipe that led from the water's edge up the bank to a garden hose.

#67...Steep shore with grassy vegetation, few oak/maple trees, less overhang than previously. Property had a dock. Leaf litter present in water and yard debris near/in water (shrub cuttings). Arrowhead and jewelweed present. Water was still, somewhat murky. Far shore was wooded to the edge, undeveloped between houses.

#20....Landowner permitted access to upland peninsula/marshy cove behind houses. Upland area had pine and oak with sparse understory. End of peninsula had leafy substrate and mucky bottom with arrowhead, shrubby border, overhanging maple. Marshy inlet had shallow water with abundant wetland vegetation including purple loosestrife, cattail, 30' shrubs, sensitive fern, alder and more.

Utility line crossing...Lots of wetland emergent plants including loosestrife, dense shrubby border ideal for songbirds, frogs, small fish. Pebbly bottom, clear water, red wing blackbirds, song sparrow, kingbird, frogs and dragonflies.

Section 7 - Riverview Apartments to Confluence

Field Data Sheets

Look back at your field data sheet and include your observations. The information from these sheets will be used to develop the Action Plan.

Segment begins: **Riverview Apartments**

Segment ends: **Merge with Blackstone River**

PROBLEMS:	ASSETS:	PRIORITIES:
<p>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 (describe, give location)</p> <p>Water is being drawn off by landowners via pumps in several locations.</p> <p>Some areas of erosion/undercutting of bank.</p> <p>Purple loosestrife present at marshy inlet across from gravel pit.</p> <p>Sunrise Residential development is densely populated – lots of treated green lawns, paved driveways = runoff.</p>	<p>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 (describe, give location)</p> <ol style="list-style-type: none"> 1. Landowners report moderate recreational use-canoeing, kayaking, fishing. 2. Good wildlife habitat on upper portion of this section. Amphibians, reptiles, small mammals, song birds, water birds, aquatic invertebrates. 	<p>List items from problems/assets columns that you feel need more work.</p> <ol style="list-style-type: none"> 1. Determine impact of pumping stations on water quality/quantity. 2. Develop plan to remove loosestrife from otherwise healthy marsh area on lower stretch.

Section 7 - Riverview Apartments to Confluence

Photos



Joy Road
Impoundment



One of several
pumping stations
found along this
stretch



Eroded and
undercut
embankment

Section 7 - Riverview Apartments to Confluence

Photos



Yard debris
dumped near
river's edge



View from shore



Wetland
vegetation
including purple
loosestrife

Section 7 - Riverview Apartments to Confluence

Narrative by Stan Gordon

Enter river at Riverview Apartments – water tea-colored, with dept 2 – 3 feet – vegetation just below surface. This extends to just below the power line where water clearer and vegetation gone or at least not seen. Left side mostly trees and shrubs, right side wetlands. River very straight below power line, very pristine. Here saw the blue herons, geese and duck with babies. Gentle flow to Blackstone. Where Blackstone met there was a counter flow up river about 100 feet. Could have been caused by sw air flow.

There appears to be one informal access point along left side of river, 200 – 300 yards north of Blackstone River. Trees and shrubs come right to river edge. Doubt if you could walk along river. This is point of land separating a right fork and left fort of river just south of power line. If you take left fork, a waterfall can be heard about ½ mile south of line. Did not proceed any further. Went back upstream and took right fork. Some downed trees, bank low but drops vertically to river. Not easy to get out or into river.

Section 7 - Riverview Apartments to Confluence

Field Data Sheets

Look back at your field data sheet and include your observations. The information from these sheets will be used to develop the Action Plan.

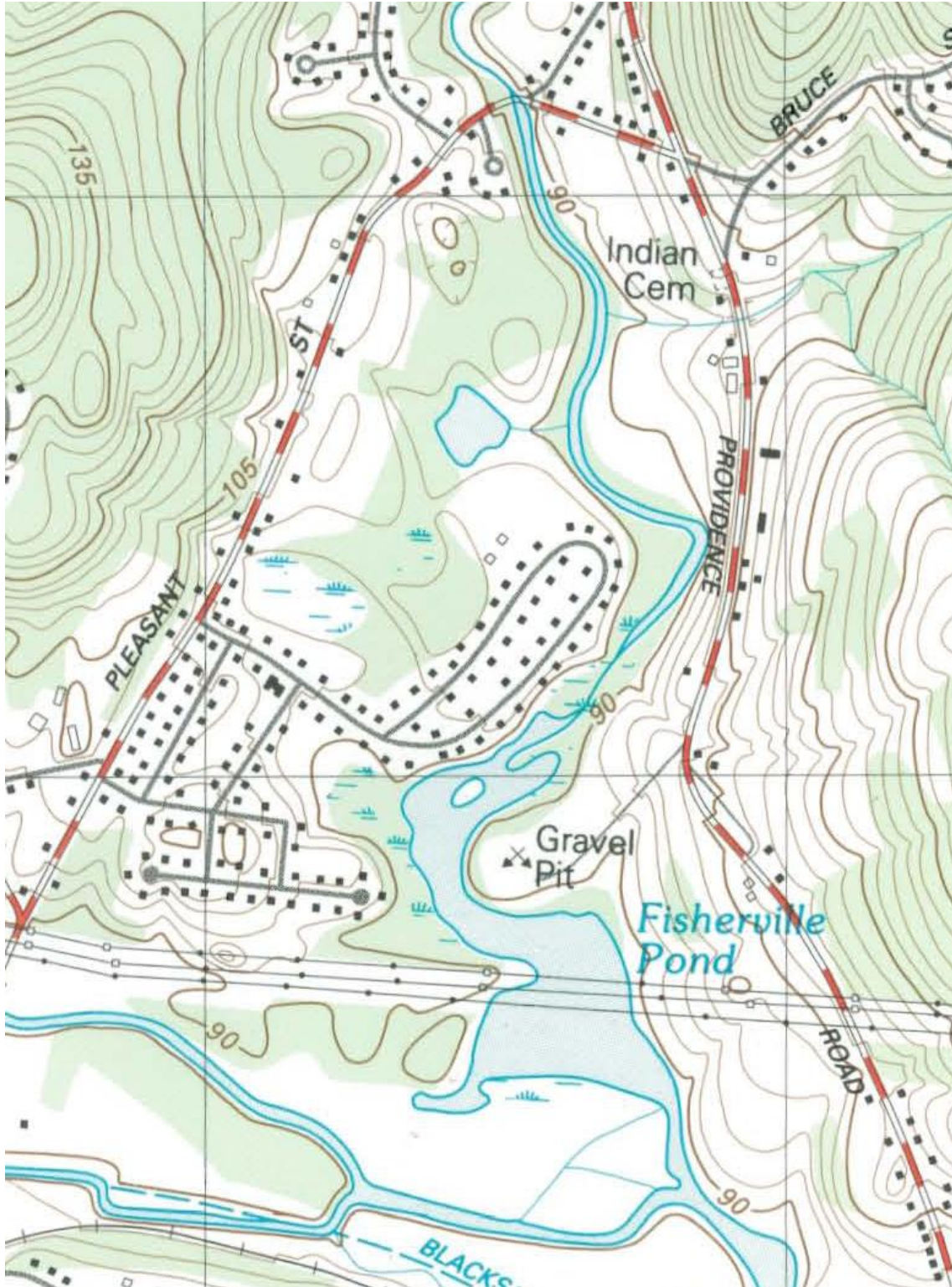
Segment begins: **Riverview Apartments**

Segment ends: **Merge with Blackstone River**

PROBLEMS:	ASSETS:	PRIORITIES:
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 (describe, give location)	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 (describe, give location) 1. River seemed almost remote. Seemed good for water activities (fishing, canoeing, etc.) but not walking or swimming.	List items from problems/assets columns that you feel need more work. 1. Better identified access points and map of river.

Section 7 - Riverview Apartments to Confluence

Topo Map



Appendix A

Action Items

Section#	Outreach/Education	Issue	Follow up
0	Quinsig River	Protected wildlife habitat/good fishing/canoe access	Create brochure/card to include official canoe access points/protected land/other features
1	Hovey Pond Area	Dumped grass clippings/lack of vegetative buffers	*Distribution of Homeowners Guides
4	Lake Ripple (Eastern & Northern)	Runoff from lawns	*Distribution of Homeowners Guides
4	Lake Ripple (Eastern side)	Runoff from businesses parking lots	"In Business for the Blackstone" type promotion with a spin on Axtell Brook
4	Pond near Lions Club	Needs cleaning	
4	Behind Cancun's	Dumpsters close to river's edge	"In Business for the Blackstone" type promotion with a spin on Axtell Brook
4	Soccer Field near Lion's Club	Drainage system into pond - dark green vegetation due to fertilizers	
5	Brigham Hill Road (58) plus others	Vegetative buffer issues	*Distribution of Homeowners Guides
7	Fisherville Pond	6 - 10 homes lawn debris and dumped grass clippings	*Distribution of Homeowners Guides
7	Sunrise Development	Treated lawns, heavy population, paved driveways	*Distribution of Homeowners Guides
	Investigation/Research		
2	Washington Mills	Several drains in front of the Mill on Route 140 - sand and silt collection	ID who is responsible for the cleaning of these
2	Washington Mills	drain pipe under RR exits into wetland silted up	ID who is responsible for the cleaning of these

3	Near Aggregate Industries	Determine, if any, impact business has had on river	
4	Northeast corner of Lake Ripple (behind car wash)	Oily sheen on surface and trash	Recheck area
4	Lake Ripple (western side)	Check pipes - no discharge but rusted and muddy/obstructed	Recheck area
5	Downstream from Brigham Hill Road	Tributary enters river through marsh. Milky colored plume for 110 yds downstream N42 deg 12.470/W71deg 41.866	Recheck area
5	Downstream from Brigham Hill Road (East side)	Sandy delta	Check where this area is and ID where this is coming from
6	Downstream from Pleasant St Bridge	2 pipes discharging in dry weather	Monitor
7	Riverview area	Water being drawn by pump	Need to see if being used and what for. Determine if legal.
	Reporting to Town Officials		
3	Downstream from Route 122 bridge	Roadway runoff through asphalt swale causing erosion	Contact DPW
3	Route 122 bridge	Erosion on both sides of bridge heading upstream	Contact DPW
4	Pond near Lion's Club	Outfall pipe from pond blocked/pond issues (?)	Dredging project/cleaning
4	Lake Ripple western shore cottages	Retaining walls collapsing	Contact Con Com
4	Riverbank abutting High School	Deep gully	Contact DPW
4	Eastern shore of Lake Ripple	Overgrowth of vegetation (caused by runoff from road)	Revisit project with DPW
7	Fisherville Dam	No signage	Contact Jean Burnat (dam owner) to make suggestions
	Trash		
1	Upstream from Hovey Pond dam	Light trash in cove	
2	Washington Mills - parking lot by restaurant	Old washing machine	
4	Lake Ripple (closer to Route 122 end)	Trash	
4	Lake Ripple (parts on northern and southern	Trash/barrels	

	shores)		
4	Axtell Brook inlet near dumpsters	trash	
4	Riverbank abutting High School	Trash	
4	Pond near Lion's Club	Junk includes TV, barrel, cabinet (?)	
5	Brigham Hill Road Bridge	Old bike	
6	Pleasant Street Bridge down	Junk includes stove, oil tank, car tires	
7	Fisherville Pond near powerlines (east)	Trash	
	Invasives		
1	Hovey Pond	New growth purple loosestrife patches	Con Com to work with Umass to extend their existing program?
3	Between Mass Pike to Eqblaw	Purple loosestrife	
5	Near cemetery (downstream BHR)	Purple loosestrife	
6	Muddy flats downstream from Pleasant St Bridge	Purple loosestrife	
6	Pleasant Street	Milfoil (need to ID if invasive)	
7	Marshy inlet across from gravel pit	Purple loosestrife	

Appendix B

Action Planning Implementation Schedule and Committee