Stream Team Report

A Marlborough Stream Team Meeting, April 2008

Millham and North Branch Brooks Marlborough, Massachusetts

Study Conducted March-June 2008

Submitted
June 2008

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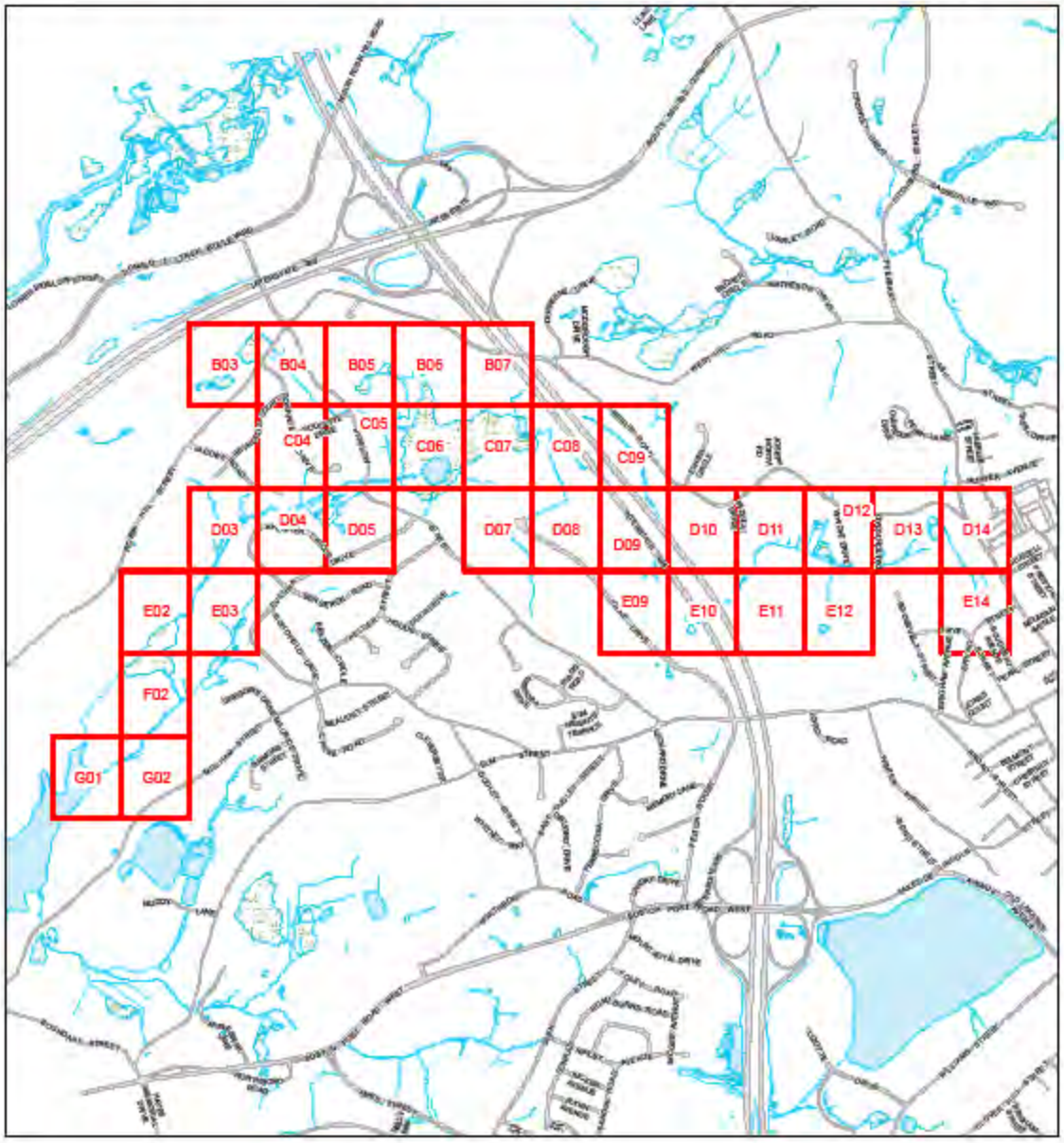
North Branch Brook Study



Introduction

The Milham Brook and North Branch Brook Studies were conducted by Marlborough residents under the supervision of Priscilla Ryder, Marlborough Conservation Officer, with materials and assistance from the Massachusetts Riverways/Adopt-A-Stream Program.

This report covers Milham and North Branch Brooks which both empty into Milham Reservoir which is a source of drinking water for Marlborough. Milham Reservoir is located just west of Interstate 495 and South of 290.

Information for this report was provided by stream team members whose names appear with their reports on the following pages.

Getting Started: Training Residents as Volunteers
Training included an interactive slide show, maps, and stream survey data collection sheets for 15 residents. Training was conducted by Rachel Calabro, DFWELE, and Priscilla Ryder, Marlborough Conservation Officer. At this meeting, the stream survey was divided into six sections and six groups were assigned a section. The study was to be done within one month.

Notifying Abutters
The conservation officer, Priscilla Ryder, mailed letters to notify residents and businesses abutting the stream and inviting them to participate in the stream team study.

Publicity
The local newspapers and TV station reported on the Stream Team meetings and activities.

Mapping/GPS/Photos Detailed stream survey maps were provided to stream team members. The stream team members were instructed to take notes and photos to document their work.

Survey Kits
Each team was provided with:

- Stream section maps
- A copy of letter to abutters
- Shoreline Survey Field Data Sheets
- Orange Vests from the DPW

Field Work
Six groups surveyed the stream in April, May, and June 2008.

Follow Up: Meeting
The Stream Team reconvened in a follow up meeting to report problems (debris/trash, chemical spill), resources (habitat, wetlands) and priorities (debris/trash, chemical spill) to the conservation officer.

Action
The conservation officer notified the DPW about the priorities.

Implementation
One stream team reported an area with a significant amount of debris and some erosion which was then reported to the DPW and addressed.

Stream Team Members and Stream Sections Studied
(see map above which corresponds to sections noted)

Stream Team for North Branch Brook Study
Jen Boudrie, Rick Boudrie
Map Sectors: B03-05, C04-05, D03-05, E02-03, F02, G01-02

Steve Strella Sr., Stevie Strella Jr.
Map Sectors: B06-07, C06-09, D07-10, E09-10

Melissa Kapeckas, Nina Bloomquist
Map Sectors: D11-14, E1-12, E-14

Stream Team for Milham Brook Study
Peggy Clark, Bob Clark, Ginger Ryan
Map Sectors: B01, C01-03, D03

Gary Crossman, Susan Alatalo
Map Sectors: D04-D08

Mike Manning, Gail Todaro, Paul Todaro, Billy Winer, Anne Coffey
Map Sectors: D09-11, D13, E11-13

North Branch Brook

Map Segments: G01, G02, F02, E03, E02, E03, D03
Date: April 19, 2008
Observers: Jen and Rick Boudrie
Weather Sunny, warm, 70 Fahrenheit
Recent weather: same

Stream Description

Stream bottom: gravel, sand, organic debris
Water: tea-colored, 3-12 inches deep. Judging from the stream banks the water level was low
Flow: fast, moderate
Gradient: moderate
Sinuosity: straight/channelized, some meandering
Reach: moderate/rapid flow, one dam

Habitat

Large and small woody material, small organic materials, undercut banks.
Algae on underwater rocks in long sections of the brook.

Human Alterations

Former farm lands turned into residential area and reservoir. A long portion of the banks are lined with rocks to channel the water. Some oily areas, foam and scum in the storm water run-off from Evelina Drive (E03). There is a large sand pit and a dump for leaves and dirt mixed with some trash. Fresh vehicle tracks indicate recent activity. This site is clearly visible on the map (F02)

Riparian Area and Land Use

The banks are moderately undercut in most areas where rocks do not line the banks and where there are no wetlands. The stream has a moderate gradient with a fast/moderate flow. Near the stream are a few large, scattered wetland areas but most of the area is forested with trees. Tree coverage is 200-2000 feet on left and right banks between the streams and the roadways. Visible land uses are residential areas (houses), wetlands, and wooded areas. The area described is bordered by Robin Hill Road, I 495, Milham Street, and Boundary Road.

Recreation

None

Wildlife

No fish	Chipmunk
Fox and deer scat	Small animal tracks
Deer track	Lots of chirping birds
Three mallard ducks	Water snake (black and yellow stripes)

Wildlife Habitat

Trees, standing dead trees, fallen limbs, scattered rocks and boulders, springs and seeps.

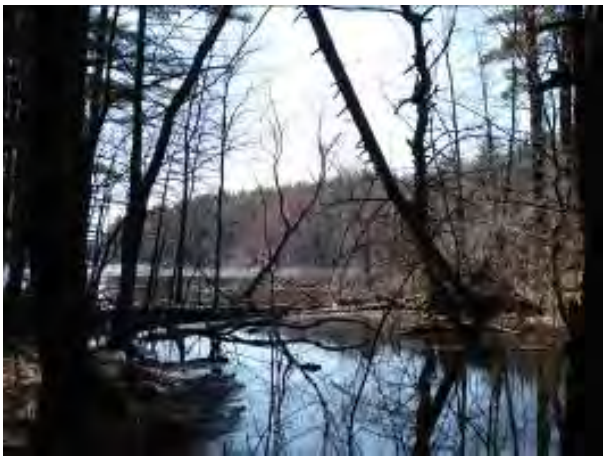
Narrative

We decided to walk upstream from the Reservoir. We parked on Milham Street. Trash was abandoned at this site. (See photo on right.) We walked about 200 feet and found what looked like a repaired sewer line. The area looked recently flooded and the ground surface cleaned up. The surrounding area was covered with a white substance that smelled of chlorine. It covered the roadway, an area under the trees, and flowed down the bank towards the reservoir. It is possible that the sewer line breached near the reservoir and in an attempt to mitigate the pollution the area was covered with chlorine. The chlorine-like smell was quite strong. No doubt the attempt to protect the water supply was a priority but the chlorine is clearly toxic and hazardous to flora and fauna.

(NOTE: This was reported to the DPW and Conservation Departments. Apparently a couple days beforehand a crime was reported and was under investigation.)

Two views: The sewer line and the chlorine-like chemical deposit.

Some trash is visible near reservoir.



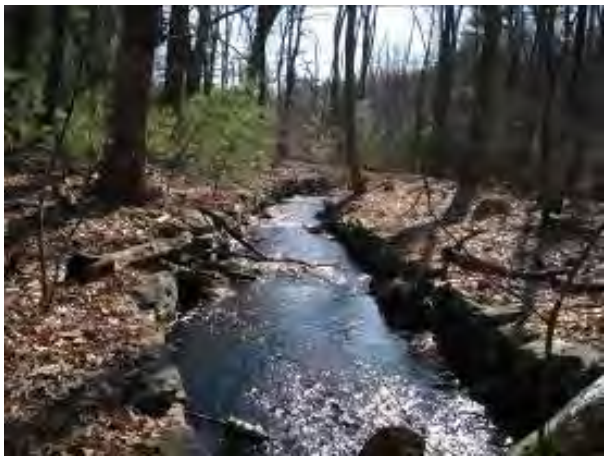
The stream mouth by Milham Reservoir.

Culvert (map F02)

Nice view, skunk cabbage in early spring.

Two views of storm drainage from Evelina Drive and red stream bed (product of iron-loving algae not pollution)

Storm drainage water near Evelina Drive, shiny surface



Channeled streams with rock banks.

Little dam with debris

Algae or some sort of water plant 1-2 inches long and clinging to rocks underwater

Debris pit near sand pit

Sand pit

PROBLEMS:

The city sewer line runs parallel to the stream and the reservoir. If it ruptures or overflows it can pollute Milham Reservoir which is about 25% of the city's drinking water supply. The chemicals used for clean up are toxic to people, flora and fauna in the immediate area.

Storm water drains from Evelina Drive into the stream. The streambed was very red, and the water was a bit foamy and scummy. It is possible that soap from people washing their cars, residue from the streets, and unknown sources are polluting the stream.

Trash was strewn in a few areas. A few tires were in the stream. Old metal debris, such as a car bumper and an old Coca-cola machine were in the water or near the stream.

A culvert (two pipes 24 feet long and about 40 inches in diameter) was placed at an angle in the stream. Water was not running through it. It was inadequate as a bridge. Some erosion was occurring around it.

Algae on underwater rocks was visible for several yards.

A small dam made of trash (tire and metal objects and small logs) was in the stream (D03).

At the sand pit, a large dirt and leaf dump nearby had trash mixed in. The source of the dirt/debris is unknown and is about 50 feet from the stream. It was a breezy day and dust/dirt was blowing around the sand pit. (F02)

ASSETS

The woodlands are beautiful.

PRIORITIES

Investigate the sewer line and the chemicals.

Investigate the source of pollution from the storm drain near Evelina Drive.

Investigate the dirt/debris dumping and possible leaching near the sand pit (Map F02). Test the piles for pollution/toxins.

Investigate the algae.

Remove the trash.

Display signs to protect the watershed.

Display signs/higher fines to discourage dumping and enforce them.

North Branch Brook

Map Segments: B03, B04, C05
Date: June 21, 2008, Saturday morning
Observers: Jen and Rick Boudrie
Weather Sunny, warm, 75 Fahrenheit
Recent weather: Same

Stream Description

Stream bottom: Muddy, pebbles in some places, organic debris
Water: Clear or muddy like black coffee, 1-3 inches deep. Water level was low.
Flow: Slow or still
Gradient: Almost none
Sinuosity: Most meandering, some channelized
Stream width: 2-6 feet wide…. standing water in swampy areas.
Reach: Abundant vegetation: trees, bushes, low plants

Habitat

Small woody material, small organic materials, small banks.
Trees on both sides of stream

Human Alterations

Backyards start about 10-50 feet from the stream. Yard waste is evident. Several piles of leaves and yard clippings, a few abandoned tires and other debris. A large sealed barrel with liquid. A couple of small stone bridges. Wooden planks cross the stream in some places.

Riparian Area and Land Use

A large housing development is built around the stream and wetlands. Most of the area on the stream banks is forested with trees about 10-100 feet on either side.
Visible land uses are residential areas (houses), wetlands, and wooded areas. The area is bordered by Robin Hill Road, Bigelow Street, Donahue Drive and Doucette Drive.

Recreation

None

Wildlife

No fish, one frog
Small animal tracks (the size of raccoon)
Chirping birds
Chipmunk

Wildlife Habitat

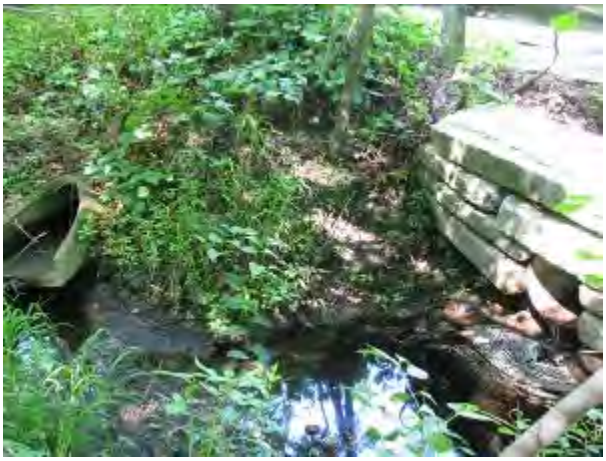
Trees, standing dead trees, fallen limbs, stream banks, swampy areas

Narrative

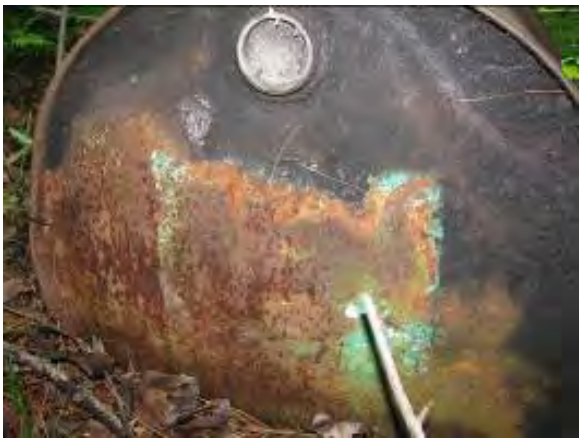
We started our walk where Donahue Road meets Robin Hill Road. We walked westward along the swamp/stream to the two small ponds with water in them. In some areas the streambed was dry. Then we reached the power line clearing and walked a short distance to Robin Hill Road.

We walked to the culverts on Robin Hill Road and then walked the stream southeast towards Doucette Drive. Homes were visible on both sides. Yard waste was evident near backyards. Households are throwing leaves, grass, and other household debris in the woods near the stream. Residents may not be aware this stream flows directly into Marlborough drinking water supply. Grass clippings and other debris that may contain fertilizers, pesticides or other hazardous chemicals can easily seep into water supply along the stream.

Just southeast of the place where Doucette Drive meets Bigelow Street there is a swamp. One of the stream team members accidentally stepped into the swamp. The trip was abandoned for the day due to wet feet and papers.



Pipe and culvert on Robin Hill Road



Abandoned barrel with unknown contents in the middle of B04 near stream bank

Grass clippings and lawn debris near stream

Streambed, tire, and backyard

PROBLEMS

Large barrel with unknown contents in the middle of B04 on the east side of the stream near someone's backyard on Bigelow Street.

Yard waste dumped near stream. Grass clippings and other waste may have pesticides, fertilizers, and other waste.

ASSETS

Trees, bushes, plants, wetlands, wildlife, buffer areas protecting watershed near reservoir.

PRIORITIES

Inspect and remove barrel.

Educate residents about the hazards of dumping along streams.

North Branch Brook

Map Segments: B03, B04, C05
Date: June 22, 2008, Sunday morning
Observers: Jen and Rick Boudrie
Weather Sunny, warm, 75 Fahrenheit
Recent weather: Same

Stream Description

Stream bottom: Muddy, pebbles in some places, organic debris
Water: Dark brown/red, 1-10 inches deep. Water level was low.
Flow: Slow flow
Gradient: Slight
Sinuosity: Mostly straight, some channelized
Stream width: 5-12 feet wide….
Reach: Abundant vegetation: trees, bushes, low plants

Habitat

Small woody material, small organic materials, woods, marshes
Trees on both sides of stream, bushes, skunk cabbage, flowers, grasses…

Human Alterations

Backyard lawns start at stream side in some places. In most places yards are not visible. Yard waste is evident in some places where piles of leaves and yard clippings are dumped over fences. Wooden planks and stepping stones cross the stream in two places.

Riparian Area and Land Use

A large housing development is build around the stream and wetlands. Most of the area on the stream banks is forested with trees about 0-100 feet on either side of the stream and swamps. Visible land uses are residential areas (houses), wetlands, and wooded areas. The area is largely bordered by Bigelow Street, Donahue Drive and Ahlgren Circle.

Recreation

None

Wildlife

No fish, one frog, water striders
Deer tracks, and small animal tracks
Chirping birds

Wildlife Habitat

Trees, standing dead trees, fallen limbs, stream banks, swampy areas

PROBLEMS: Development near streams and wetlands; red side-stream in D04?
ASSETS Wooded areas and wetlands
PRIORITIES Educating abutters about stream and watershed care

Culvert at Bigelow Street C05

Development near stream, Jacobs Rd

Red material in side-stream at D04 behind houses 52-52 and 52-51 on Ahlgren

Duck weed in stream D03

Forested area, stream team member D03.

Flowers

Small animal track D03

Abundant ferns D03

North Branch Brook Study
Marlborough, MA

Map Segments:	The survey included Grid Sections D11-14, E11-12, and E14.
Date:	Survey completed April 5, 2008
Observers:	Melissa Kapeckas and Nena Bloomquist
Weather:	Weather was overcast, about 40°F; previous day's weather was rainy and Cool.
Recent weather:	

Stream Description

Stream bottom:	Cobbles and silt moves to silt with no rocks and then marshy
Water:	Less than a foot deep
Flow:	Moderate flow – shallow at the start to little or no flow near the end of this section.
Gradient:	Low gradient
Sinuosity:	Meanders just a bit
Reach:	Abundant vegetation: trees, bushes, low plants

Narrative:

Sections E14 & D14: It was difficult to discern exactly where the stream began as it was so small in this area. In E14, we only saw the branch behind 55-33 (assessors map & parcel) on the aerial photo, near Russell St. The water was less than 1 foot deep and clear, with the stream bottom mostly made up of cobbles and silt with occasional gravel and boulders. There was a moderate flow in this low gradient area. There was a lot of overhanging vegetation. Trees did not currently block flow of the stream but cut over the banks. The left bank was largely shrubs and brambles which gave way to a larger forested area. The right bank abutted several yards from homes on Pleasant Street. There was a small manmade dam behind 306 Pleasant Street, which did not seem to impact the flow of the stream. No problems in this area were detected, but it is important that the homeowners along Pleasant Street are knowledgeable about the potential for runoff from their lawns into the stream.

Section D13: Near the start of this section, by 55-25 (assessors map and parcel) on the aerial photo, the stream becomes quite flat with a silt bottom and no rocks. It then flows into a marshy wetland area, and the stream was not discernible. Skunk cabbage grew here and there seemed to be a lot of "backyard" birds in this area. After emerging from the wetlands, the stream was straighter in this portion with a sandy bottom with some gravel. The water continued throughout the entire survey to be less than one foot deep. Two branches of the stream reconvene in this section. The stream that flows from the left bank had lots of leaves in it, and a tree had fallen in it, resulting in low flow. When the stream emerged from the wetlands, it was further behind the residential area, with both banks sides grassy and with trees. The left bank was too thick to estimate the vegetated area, while the right bank had about 100 feet of vegetated area. There was also a culvert in this area, at 55-15 (assessors map and parcel) in the aerial photo. The pipe was made of concrete and seemed to be in good condition. It was 36 inches in diameter and 5 inches

in depth. Clear water flowed through the pipe, with no algae growing below the pipe. There was some sand and gravel in the pipe, more so in the pipe closest to the right bank. While no fish were spotted during our survey, this culvert would allow their passage.

Section D12: In this area, the stream flowed further into the woods, at a greater distance from the residential area. The water was clear, but tea-colored with a lot of organic debris in the water, and a silt bottom. The flow here varied from slight to almost still. There seemed to be some stagnant water in the area of the aerial photo near 55-246 (assessors map and parcel) with a lot of skunk cabbage growing. There was some moss growing on rocks in the water, and some brown foam in the water. There were a lot of trees and brambles in the water, and a fence had fallen in the stream around the border of D12 and D13. We were not able to get to the small portion of the stream at E11 and E12 as the vegetation was too thick.

PROBLEMS:	**1)Remove fallen fence in area bordered by D12 and D13** 2)homeowners should be educated about lawn care impacts to the stream and water quality
ASSETS	**Headwater marshy area,** Wooded areas and wetlands, this section was very clean.
PRIORITIES	Educating abutters about stream and watershed care Remove fallen fence.

North Branch Brook Study
Marlborough, MA

Map segments:	B06, B07, C06, C07, C08, C09, D07, D08, D09, D10, E09, E10
Date:	4/26/08
Observers:	Steve and Stevie Strella
Weather:	Warm, 65 degrees and sunny
Recent weather:	Sunny

Stream description

Stream bottom:	Silt, organic debris
Water:	Tea colored, .5-2 feet deep.
Flow:	Fast near 495, slight towards Howe Pond
Gradient, sinuosity:	Steep and straight near the 495 area, low and meandering towards the Howe Pond area
Reach:	Riffles upstream, more runs toward Howe Pond
Obstructions:	Beaver dam (section C06)

Habitat

Large woody material:	Moderate
Small organic material:	Abundant
Undercut banks:	Sparse
Overhanging vegetation:	Abundant
Algae:	Streambed, rocks

Human alterations

Some litter
Culverts under 495

Riparian area and land use

Bank stability:	Muddy undefined banks downstream of 495, intact upstream of 495.
Bank cover:	Mostly mud, with moss and small vegetation Banks were similar, surrounded by a few acres of wooded areas and wetlands on both sides
Land use:	Residential, roads, highway, sewer line, and parking lot. The rest was wooded forest and wetlands.

Recreation

No formal entrances, but a sewer line provides good access to walk the stream. Howe Pond has no access.

Aquatic species

Fish:	Unknown, some sunfish nests visible in Howe Pond.
Other species:	Frogs, aquatic insects

Riparian habitat/species

Animals:	Deer tracks
Habitat elements:	Standing dead wood, wetlands adjacent to stream
Birds:	Mallard ducks, crows, wood peckers

Narrative

This section of stream covers Howe Pond and the intersections under Interstate 495. There is a grassy opening along a sewer line that follows the south bank of the river and provides the best access. The water flows from Howe Pond with a dark red tint, and carries a large amount of organic debris. There are two small beaver dams near the beginning of Howe Pond, both somewhat eroded, but still causing the water level to be higher than normal. Past the dams the shoreline becomes very muddy, and gradually progresses into wetlands. There is no defined shoreline of Howe Pond, and all access is impeded by small shrubs that grow in the shallows. Howe Pond should be able to support small warm water species of fish, although none could be seen from behind the brush, but a few sunfish nests were visible in the shallows.

Past Howe Pond, the stream meanders through a large muddy swamp. There are stagnant pools covered with a brown scum or algae (a stick does break it up). The major vegetation is skunk cabbage and some softwood trees that can handle the wet soil. There are many standing dead trees that have been killed by flooding. The streambed is mostly silt and organic debris. There were a few frogs and tadpoles in the adjacent wetlands, and the stream supports aquatic insects such as water beetles and striders. There were a few deer tracks along the stream, and bitten off fiddleheads (fern shoots).

The stream flows under 495 (section C08) beneath a small arch, the water is clear, and the bottom is gravel. The stretch of river along Berlin Road flows much faster, with many more riffles and large rocks than before. The streambed is stained a rusty brown color, but the water is clear. The stream passes under 495 again, then under a parking lot off of Locke Drive, then back under 495 again. The four-foot wide culvert at D09 is slightly raised above the water level, but that should not affect any of the wildlife present. The areas around 495 have a large amount of roadside litter, but most of it is on the other side of the fence and stays out of the water. Overall, this section of the stream is in good condition, but could probably support more variety of wildlife than it currently does with some effective conservation.

Culvert at 495(section C08)

Problems

1. The wetlands adjacent to the stream are stagnant and unproductive, the stream may carry bacteria and algae into the water supply.
2. Beaver activity may cause further flooding and contamination of water.
3. Runoff from 495 may put excess salt in the water.

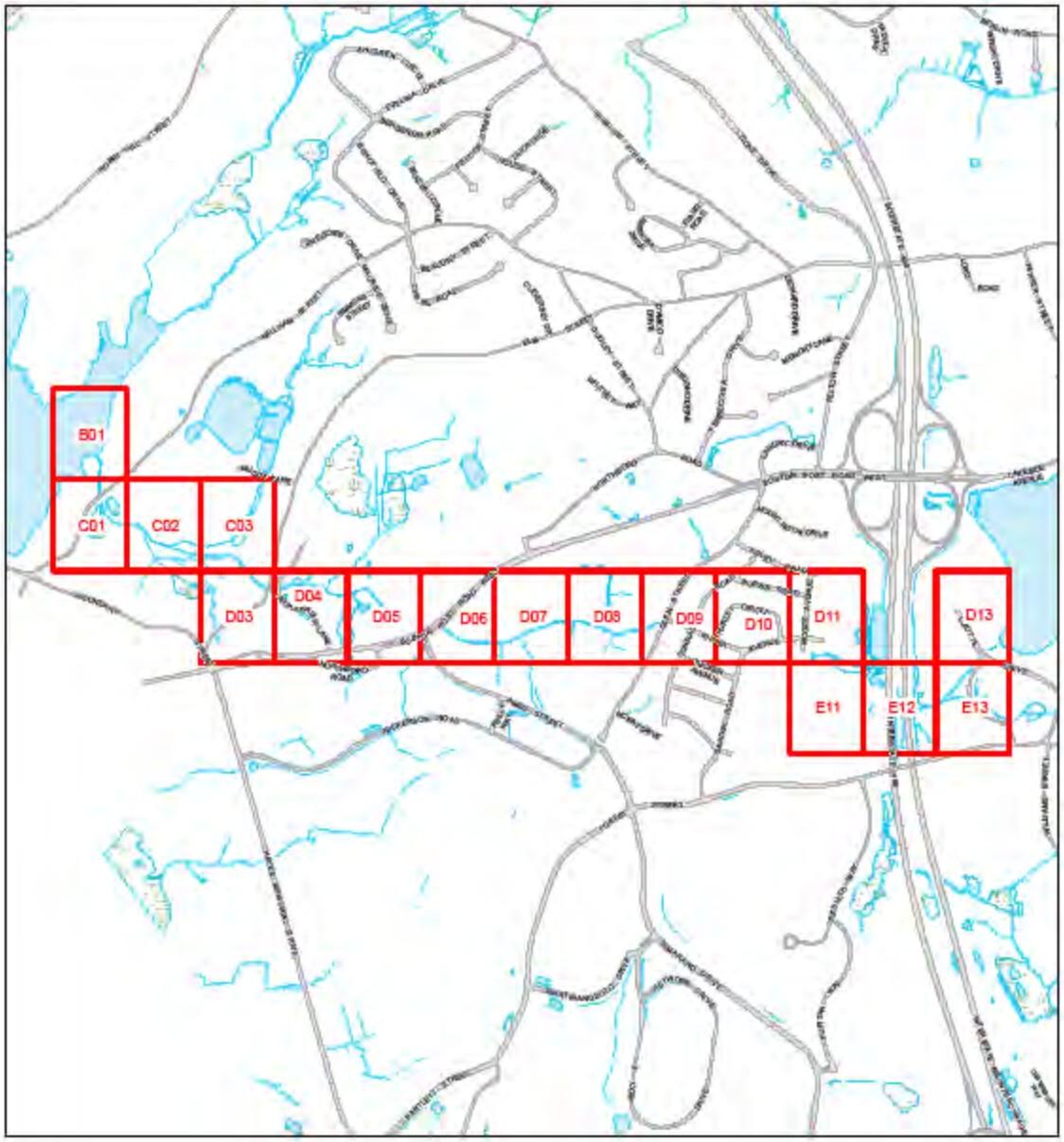
Assets

This area provides a large wooded habitat for native wildlife. The stream is very clean up until it reaches Howe Pond. The sewer line provides good access, and an opportunity to enjoy undeveloped land.

Priorities

1. Assess water quality in Howe Pond/wetlands area. Test for dangerous bacteria, algae, and other threats to water supply (and be sure no sewer lines are leaking).
2. Control beaver activity to prevent further flooding and debris.
3. Take action to improve the condition of the wetlands surrounding Howe Pond to create more habitat for wildlife and endangered species.

Millham Brook Study



Milham Stream Survey

Map Segments:	**Sections: B 01, C 01, C 02, C 03, D 03**
Date:	March 29, 2008
Observers:	Observers: Peggy Clark, Bob Clark, Ginger Ryan
Weather:	The weather was cold (around freezing), generally clear but with a few intermittent flurries

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Stream Description

Stream bottom:	
Water:	Clear and clean
Flow:	Good flow
Gradient:	Gradual
Sinuosity:	Small amount of meandering
Reach:	

Habitat
Good riparian habitat area, mostly wooded and unimpacted

Human Alterations
Not much most of the land is protected land or Fish and Game land except as the stream passes the Apple Briar apartments.

Riparian Area and Land Use
Well vegetated riparian area, little human land use except at road crossings.

Recreation
No recreation on watershed land is permitted, however, the fish and game do have a shooting range and fishing ponds on their property

Wildlife
Not much observed, except the deer skeleton, but area would be very suitable for wildlife.

Wildlife Habitat
Well vegetated, wetland areas with thick vegetation, stream banks vegetated too.

Narrative:

The weather on this morning was cold (around freezing), generally clear but with a few intermittent flurries. The overall condition of the segments from the Milham Reservoir to the Applebriar condominiums, abutting the north side of U.S. Route 20, were very good. Water was clear and flowing well. No blockages were noticed along the way. There was very little vegetation since it is still very early in spring and weather has been consistently cold.

The stream in section B 01 is protected land, since it borders on the City drinking water supply (Milham Reservoir). Though the area is remote, there was very little trash to indicate people were accessing this area.

Once the stream crossed under Milham Street, the stream passed through land belonging to Marlborough Fish and Game. This area is used by this club and in fact, on this morning, targets were being set up for a "shoot" on the following day. (Anyone walking through here might want to check in first with the Fish and Game to ensure safety.) About 75 yards in, the land on both sides of the stream was extensive wetlands and forced us to return to Milham Street, retrieve the car and head a little way south to re-enter the stream from Elm Street. Heading North with the stream we again came to these wetlands and still we could not penetrate through. (Estimated distance is about 100 yards of stream passing through this wetland.)

Crossing Elm Street, we observed the stream running full, clear and unimpeded through Applebriar Condos. This terrain was much steeper than the relatively flat stream we had been observing. The stream flowed under a bridge that was a roadway in the complex.

The culverts and bridges throughout these sections were generally in good repair, and allowed unimpeded flow. A few minor clean up areas were noted on the "Data Sheets". Photos of all culverts are included in the report. Throughout the area, there was very little trash or litter. Perhaps that was due to the limited public use of land that we surveyed.

PROBLEMS: **A few areas for cleanup**

ASSETS **Well protected forested land, great for wildlife**

PRIORITIES **Minor cleanups, nothing more.**

B1 Entering reservoir "Upper" Branch

B1 Near reservoir "Lower" branch

B1 Deer? Skeleton

B1 Concrete Structure built 1916

B1 Water near entrance to reservoir. Some rock bank collapse

B1 Stream flow

B1 Culvert. Stream entering B1 from under Milham St.

C01 Fish and Game area

C01 Fish and Game area

C02 Stream in Fish and Game area

C02 Stream a little more southward
just before very marshy area on both sides

C03 Stream flowing fom under Elm St to
Milham Res. Culvert from N side of Elm

D03 “Applebriar” bridgeway over Milham Brook

STREAM TEAM **Milham Brook, Marlborough, MA**

Map Segments:	D04-D08
Date:	April 13, 2008
Observers:	Gary Crossman & Susan Alatalo
Weather	Raining intermittently 49 degrees Fahrenheit
Recent weather:	

Stream Description

Stream bottom:	Gravel and silt (varies with channelized banks and natural banks)
Water:	Clear and clean
Flow:	Flowing well
Gradient:	Gradual
Sinuosity:	stream meanders a bit

Narrative:

Glen Street. D07, D08:
Where **Milham Brook** flows under **Glen Street** there were many singing and calling birds, fewer as we walked further into the woods. Species spotted included red-winged blackbirds, a cardinal, a blue jay, a robin and smaller birds. Small amounts of litter were evident near the banks, even quite far into the thick brush, thorny vines and fallen limbs and branches. The largest amount of litter was near the road. The water appears very clear and clean with a stream bottom of mostly gravel.

It had been raining most of the morning and showered intermittently throughout the afternoon. The sun popped in and out and the air temperature was about 49 degrees.

Under **Glen Street** is a 4' diameter pipe and double catch basin, across from **Ripley Avenue** which catches rain runoff from **Glen Street.** There is a 2' x 6' piece of lumber across the pipe at water level, which could be removed.

Also on **Glen Street,** west side, is a newly-installed 4' diameter pipe/drainage system. The water is about 3" deep. The brook opens to a small pool which is 10" deep and about 30' x 30' in size. There is blue surveyor's tape tied to branches on both sides of the **Milham Brook.** The width of the Brook varies from 6' to 8'. As we push our way through the thick vegetation along the banks, we note that the water is as deep as 10" in some areas. Although the water runs clear, the stream bed of rock and gravel has a rusty brown color.

Intended for crossing the Brook, small pallets have been placed across the water. There is a large tree lying across the bank and is partially in the water. The area here is fairly litter-free, although there are several tires. The sewer pipe access situated 20-40 yards from **Milham Brook's** north side does not appear on the Google maps.

The major greenery spotted on this early spring day is of small plants sprouting through the brown vegetative cover near the Brook, mainly skunk cabbage; its pungent odor is quite evident. Fresh raccoon tracks are in the mud by the bank.

Briarwood Lane, East, condo area. D04
There are twin 5' x 8' concrete rectangular pipes going under road. Here **Milham Brook** is about 6' to 8' across, running clearly and quickly. Flowers have been planted along the road. Just a little further in from the road is another stream entering from the north that appears very clean. There are rust-colored rocks of varying sizes, as well as various pools, some up to a foot deep and some with clean, sandy bottoms. Some areas are channelized with stone walls. There is green moss on many rocks. The briar bushes are covered in leaves. We hear woodpeckers and chickadees and spot a squirrel, along with a hole in a log created by a small animal.
The banks are mossy. It is a very clean, picturesque area with no litter but there is some bank erosion. The 24" cement pipes drain into the Brook from swampy areas, one from the south and the other from the north. The condos are visible from here.

While departing via **Elm Street** we heard spring peepers and discovered two ticks on clothing.

Route 20, Ames Street. D05, D06
This segment of the **Milham Brook** goes under busy **Route 20** and is bordered by the landscaped land of a corporation. The water enters a 4' diameter concrete pipe. There is blue surveyors' tape on both sides of the Brook. There are pools and a variety of rocks. We see no blockage and the water is running clearly. There is not much litter. Rocks are rust-colored. It is very tough to walk the steep banks due to thick brush.

The water is exiting a pipe behind the buildings in **D05.** There is water draining out of a 6" pipe, also a 4' concrete pipe. There is a sandy stream bed, with mossy stones on one side, but no signs of wildlife. A large foam package measuring about 3' x 4' covered in cardboard is on the stream's bank. There is other litter in the area. The stream bank is difficult to walk on without getting into the water.

PROBLEMS:
In **D08** segment, a piece of lumber partially blocks the pipe opening at **Glen Street** by **Ripley Avenue.**

In adjacent segment, **D03,** on **Elm Street** one of two Jersey barriers is knocked over. These cement barriers are situated on the road curve going over the brook, thus preventing vehicles from entering water, if they go off the road.

ASSETS:
Close to **Briarwood Lane** where the condos are in view, the brush is less dense in this shady, wooded area, and with its two rocky streams, it makes for a lovely area to explore.

PRIORITIES:
Alert DPW to overturned Jersey barrier on **Elm Street** by **Milham Brook** in **D03** segment.

Photos: Gary Crossman & Susan Alatalo, D04-D08

Photos: Gary Crossman & Susan Alatalo, D04-D08

Narrative Description of the survey: Milham Brook, Marlborough, MA

Map Segments: DO9, D10, D11, D13, E10, E11, E12, and E13

Date: Survey completed: 03/29/08

Observers: Mike Manning, Gail Todaro, Anne Coffey, Paul Todaro, Billy Winer

Weather

Stream Description

Stream bottom: Banks change from walls to natural bank see narrative
Water: Very clean
Flow: Moderate to fast – see narrative
Gradient: Changes – see narrative

Narrative:

Grid section D13: The survey started at the south western shore of Lake William in Grid section D13. The Milham Brook begins here in a concrete 43" wide dam and sluice gate which flows south to Lizotte Drive. From the shore of the Lake to the culvert under Lizotte Drive, Milham Brook is extremely clean and flows at a moderate to high rate. Incidentally, the water at the shore line is very clean and clear – the bottom of the Lake, at the shore line, is very visible. Walkers and dog walkers frequent the area at the Lake – there was some minor trash scattered – but no deliberate dumping. The banks of the brook in this section are composed of concrete walls. The walls end approximately 100' north of Lizotte Drive and transition to natural banks. The brook flows under Lizotte Drive in a 24" diameter steel culvert. The culvert is in very good condition. The brook flows at a fast rate southward from Lizotte Drive as the gradient becomes very steep. The brook is very clean and there is no discernable odor.

Grid section E13. The survey starts on the southern edge of Lizotte Drive. Just south of Lizotte Drive, Milham Brook divides on the western side of the access road between Lizotte Drive and Forest Street. On the western side of the access road, the brook flows through a culvert – which is rusted through its upper surface. The other leg of the brook, heading south, flows under the access road through a 36" wide culvert. This leg of the brook flows south and joins another branch of the brook which flows northwest from Forest Street. At the juncture, the brook flows back under the access road through a 24" diameter concrete culvert. The culvert is in very good condition. The brook continues its northwest flow until is merges with the main branch of the brook – which flows southwardly from the rusted-through culvert. In all these branches, the flow of the brook is moderate. The water is very clean and clear. There is no odor. There were signs of dumping (water heater, microwave oven, tires, etc). These items were removed with the assistance of the City of Marlborough DPW.

Grid section E12. The brook, now in a singular main flow, flows westward towards I-495. In this section, the water flows very quickly. There are a number of small waterfalls and hand-

stacked stone walls. At a distance of 100' east of the highway, there is an animal fence along the entire length of the highway. Also at this point, the brook redivides into two branches. The branches then flow through two culverts under Route I-495. Due to the fence, an inspection of the culverts was not possible. The southern branch then flows south through the median of the highway. The northern branch flows under the highway and resurfaces on the western side of the southbound lanes of the highway. At this point, the area is very swampy and difficult to traverse. Adjacent to this swampy area is a large pond. The pond is very heavily polluted with oils, trash, and debris. From this swampy area, the brook flows westward through the upper section of Grid section E11.

Grid section E11. The area was very heavily wooded and difficult to traverse. The brook flows in a more northwestern direction. The brook flows fairly quickly through a number of waterfalls towards McGee Avenue and into Grid section D11.

Grid section D11. As the brook flows northwestward, it divides into two branches – the northern branch is relatively wide. The southern branch is much more narrow. As the two branches near the end of McGee Avenue, the branches rejoin in a 36" diameter culvert. The flow of the Brook is moderate to fast in this section. At the southern end of McGee Avenue, the brook then transitions to the underground in a series of underground pipes and culverts. Along the entire length of McGee Avenue, the brook's flow becomes very stagnant. Many of the pipes are clogged with leaves and debris. The brook divides into two branches – the southern branch on Ripley Avenue and the northern branch on Burns Road. The end of McGee Avenue has become a dumping ground for trees, shrubs, plastic bags of grass clippings, and trash. All these items were collected and left for pickup by the City of Marlborough DPW.

Grid section D10. In Grid section D10, the southern branch divides into two branches – one continuing Ripley Avenue and the other branch on Hurley Circle. The northern branch continues westward on Burns Road. As in Grid section D11, Grid section D10 has very stagnant flow. Many of the pipes are clogged with leaves and debris.

Grid section D09. In Grid section D09, Burns Road becomes Conrad Road. Ripley Avenue continues westward until in intersects with Glen Road. As in the previous grid sections, the flow of the brook in Grid section D09 is very stagnant – due to leaves and debris in the underground pipes. The branches of the brook, from Glen Road, Tucker Avenue, and Ripley Avenue combine at the intersection of Glen Road and Ripley Avenue and resurface on the western side of Glen Road.

PRIORITIES:
E12 - polluted pond, work with Mass Highway to improve detention pond function at I-495.
D11- dumping- pick up trash collected (DPW has done pickup);
Glen St. culvert - Remove board from Glen St. culvert.
Fix eroded bank

Mike Manning, Gail Todaro, Anne Coffey, Paul Todaro, Billy Winer D09-11, D13, E11-13
Lizotte Drive to Route 495 April 29-30? 2008

Lake Williams Reservoir

Stream team

Damage near a storm drain

Uncapped pipe near Lake Williams

Two views of Stream Team members removing debris from the stream

Phragmites

Debris dumped near stream

Glen Street neighborhood
April 2008

Erosion

Culvert on Glen Street

Storm drain

Abandoned debris

Billboard at Route 495 from McGee Avenue