

Track Down Survey of Lyman Meadow Brook

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ABSTRACT

As part of an ongoing water quality monitoring study conducted by the Connecticut River Coastal Conservation District (CRCCD), high levels of *Escherichia coli* (*E. coli*) bacteria have been documented in Lyman Meadow Brook, a tributary of the Coginchaug River in Middelfield, CT.

In October through November of 2013 I accompanied Jane Brawerman and Kelly Starr from CRCCD in conducting a track down survey of Lyman Meadow Brook. We walked the entire length of the brook to identify potential sources of impairment possibly affecting the water quality and contributing to high bacteria levels.

Our research identified a downstream source, but further surveying and sampling is warranted to pinpoint possible upstream sources of bacteria in the brook.

INTRODUCTION

The Coginchaug River is considered an impaired water body ("state listed") by the Connecticut Department of Energy and Environmental Protection (DEEP), as elevated levels of bacteria that exceed the state's water quality standards are present in the river.

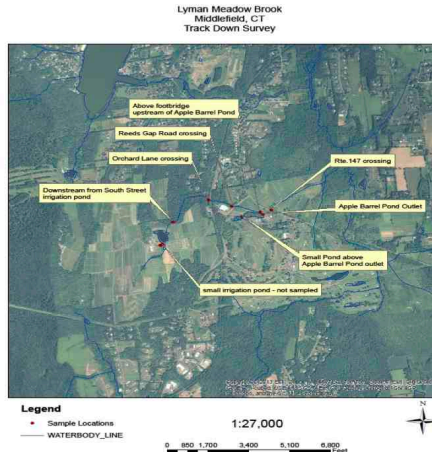
CRCCD has been working on a long-term project to improve water quality in the watershed in collaboration with a local stakeholder committee. Past water quality monitoring conducted by CRCCD in the Coginchaug River watershed has identified high levels of *E. coli* bacteria in Lyman Meadow Brook, identifying it as a bacteria "hot spot". Sampling performed in the summer of 2013 revealed that Lyman Meadow Brook samples had a geometric mean of 909 colonies/100mL, exceeding the criterion in the CT Water Quality Standards of 126 colonies/100mL for any group of samples.

To investigate sources of bacteria contributing to high levels in the stream, 2013 sampling also included an intensive water sampling survey of the brook, for which samples from seven different sites were collected and analyzed for bacteria in wet and dry weather. After initial analysis of the intensive survey data, the committee determined further investigation was warranted via a Track Down Survey stream corridor assessment to search for sources of impairments and identify potential prevention measures.

A Track Down Survey is an intensive stream walk in which specific sites or conditions are evaluated in order to identify potential sources of water quality concerns, such as livestock or septic system failure in the case of *E. coli* bacteria.



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MATERIALS AND METHODS

MATERIALS

- Waders
 - Camera
 - GPS
 - Impact and Reach Assessment Forms—used to record data in the field
- Specific Forms as described in the Urban Sub-Watershed Restoration Manual 10 include:

Outfalls - all storm water and other discharge pipes
 Severe erosion - bank sloughing, active widening or incision
 Impacted buffer - lack of natural vegetation, width
 Utilities in the Stream Corridor - leaking sewer, exposed pipes
 Trash and Debris - trash and illegal dumping
 Stream Crossing - culverts, dams, natural features
 Channel Modification - straightening, channelization, dredging
 Miscellaneous - unusual features or conditions

METHODS

The survey was separated into three reaches or segments of the stream that we walked through, heading upstream, on three separate days:

- Reach 1 - Rte. 147 to Reeds Gap Road (10/28/13)
- Reach 2 - Reeds Gap to Orchard Lane (10/30/13)
- Reach 3 - Orchard Lane to South Street Irrigation Pond (11/11/13)

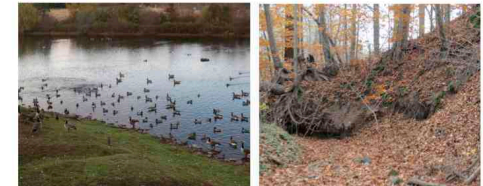
Using the Impact and Reach Assessment Forms, we stopped to record waypoints on the GPS for the impairment sites along the reach for that day. We also included notes about the specifics for that location and took photographs. After the completion of each reach, a Reach Level Assessment Form was used to summarize observations made from the reach.

RESULTS

The Track Down Survey revealed few problems that could account for the high levels of bacteria in the stream. Overall, the major impact site appeared to be the Apple Barrel Pond in Reach 1. The pond had a large waterfowl population and lacked a vegetated buffer along the bank. In Reach 2, we found virtually no vegetation on the right bank. In Reach 3, there were several sites of severe erosion along the right bank with bank scour and slope failure.

| Track Down Survey Reach Summary | | | | | | | | |
|---------------------------------|-----|-----------------|-------|-----|-----------------|-------|-----|-----------------|
| Reach | WPT | Impairment Type | Reach | WPT | Impairment Type | Reach | WPT | Impairment Type |
| 1 | 125 | SC | 2 | 133 | SC | 3 | 142 | SC |
| 1 | 126 | OT | 2 | 133 | SC | 3 | 143 | ER |
| 1 | 127 | SC | 2 | 134 | MI | 3 | 144 | OT |
| 1 | 127 | TR | 2 | 134 | MI | 3 | 145 | ER |
| 1 | 130 | MI | 2 | 135 | OT | 3 | 147 | ER |
| 1 | 131 | ER | 2 | 136 | OT | | | |
| | | | 2 | 137 | IB | | | |
| | | | 2 | 138 | DAM | | | |
| | | | 2 | 139 | OT | | | |
| | | | 2 | 141 | SC | | | |

DAM - natural and manmade dam; ER - severe bank erosion; IB - impacted buffer; MI - miscellaneous; OT - storm water outfalls; SC - structured stream crossing; TR - trash and debris



CONCLUSIONS

Although the lack of a buffer and high concentration of waterfowl at the Apple Barrel Pond are of concern, this does not account for high levels of *E. coli* found above the footbridge, upstream of the pond. The sampling revealed higher *E. coli* levels at sites upstream of the pond in dry weather, whereas the pond had higher levels in wet weather. This indicates the pond's *E. coli* is related more to pollution from runoff, most likely due to the waterfowl in the vicinity of the pond. More surveying and sampling needs to be conducted to pinpoint the source(s) of the *E. coli* levels upstream of the pond.

To help address the exceedingly high levels of *E. coli* in the Apple Barrel Pond during wet weather, a buffer should be planted to keep the waterfowl from the edge of the pond, stabilize the bank, and filter pollutants from storm runoff.

REFERENCES & ACKNOWLEDGMENTS

- Coginchaug River Watershed-based Plan, USDA - Natural Resources Conservation Service - 2008
- Connecticut River Watch Program - Coginchaug River Watershed Quality Results Summary - 2013
- Urban Subwatershed Restoration Series - Unified Stream Assessment: User's Manual Version 1.0, March 2004, Center for Watershed Protection
- Track Down Survey Map - produced by the Connecticut River Coastal Conservation District - 2013

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