



Volunteer Monitoring Program

2002

Water Quality Report

For:

River Section: (7) North Nashua and Tributaries. This section includes the North Nashua River in Fitchburg and Phillips Brook.

Description: The North Nashua River begins at the confluence of Whitman River and Flag Brook in West Fitchburg. It flows southeasterly through the cities of Fitchburg and Leominster, where it is affected by urban influences, including ten dams and three wastewater treatment facilities. Forested areas of Cook Conservation Land borders the river to the north in east Leominster into Lancaster.

Phillips Brook begins at the outflow from Winnekeag Lake in Ashburnham, flows south through Westminster to join the North Nashua River in West Fitchburg. Phillips Brook is affected by suburban development in Ashburnham, then flows through forested and agricultural lands in Westminster and is influenced by more urban development for a short stretch in Fitchburg.

Site	Water Body, Town	Field Description of Site Location
PB01	Phillips Brook, Fitchburg, MA	Upstream of confluence with North Nashua River off Rte. 12, behind British American Club.
NN09	North Nashua River, Fitchburg, MA	At drainage swale from rear of McDonald's parking lot/ Route 12.
NN10	North Nashua River, Fitchburg, MA	Upstream from Depot St. bridge. South side of river.

Assessment:

Samples were collected in May, July and August only, because the volunteer moved away from the area. The assessments provided below summarize the results for these three months only, though more data points are usually used to get geometric means for fecal coliform.

Biology

Coliform Bacteria – One site on the North Nashua (NN09) exceeded the geometric mean state standard for fecal coliform (200 colonies/100mls). The geometric mean for the site was 476 col/100mls. Two samples collected in July and August from the Depot Street location (NN10) resulted in “too numerous to count”, which cannot be averaged for a true geometric mean. However, if it is assumed that the “TNTC” value is over 200col/100mls, then the site would exceed the state standard as well. The Phillips Brook site had a “TNTC” value in August, 360col/100mls in May and 0 col./100mls in July.

Chemistry

pH – All sites fell within the range of standards for Class B waters.

Dissolved Oxygen - All sites were well oxygenated throughout the season and maintained a good saturation level. The dissolved oxygen levels met coldwater fisheries criteria, though the % saturation was slightly below that standard (75%). The waters are considered warmwater fisheries.

Alkalinity - Alkalinity would be considered in the sensitive range for Phillips Brook (@ 18 mg/l as CaCO₃). Streams are considered “sensitive” with values between 10-20mg/l. The sites on the North Nashua are well buffered with values well above 20mg/l.

Physical

Temperature - All sites indicate support of warmwater fisheries, and approach coldwater fisheries criteria.

Standards Compliance:

Data from each site within the section are compared with Massachusetts (or New Hampshire) **class B** water quality standards. For each parameter the geometric mean of seasonal results is used.

Site	Dissolved Oxygen	Fecal Coliform	pH	Temperature
PB01	Yes	Yes	Yes	Yes
NN09	Yes	No	Yes	Yes
NN10	Yes	No	Yes	Yes

(Note: Yes = supports uses outlined; No = does not support uses outlined)

Summary: Fecal coliform is a major problem on the North Nashua and Phillips Brook in Fitchburg. If combined sewer overflows are the major contributing source, ameliorating the problem is likely to take a long time. Contact in these areas should be limited and/or cautious. Unfortunately, no samples were analyzed for E. coli so it is difficult to determine pathogenicity of the water at these sites.

Recommended Actions:

- ◆ Continue to sample at all three sites if a volunteer can be found. Analyze for E. coli, if possible.
- ◆ Perform more sample dilutions to ensure ability to count bacterial colonies on augers.