

Volunteer Monitoring Program

2001

Water Quality Report

for:

River Section: (2) Nissitissit River

Description: The headwaters for the Nissitissit are in Brookline, NH near Melendy Pond. The river flows south forming extensive wetlands through Brookline then forms Potanipo Pond. Much of the low land through which the river flows here is inundated and contains many wetlands. The lower portion of the river is swift moving and contains many riffled areas that are well-shaded. There are several adjacent farmlands that may contribute nutrients to the river. The river is a well-regarded cold-water fishery. Sucker Brook flows north through forested and residential areas and joins the Nissitissit River north of Brookline Road.

Site	Water Body, Town	Field Description of Site Location
NT01-01	Nissitissit River, Pepperell, MA	~ 100 yds upstream from mouth of river. Behind industrial complex.
NT02-01	Nissitissit River, Pepperell, MA	upstream of Prescott Street bridge
NT03-01	Nissitissit River, Brookline, NH	At Pepperell Rd. in W. Hollis
NT04-01	Nissitissit River, Brookline, NH	100 ft. downstream from Bohannon bridge at "fishing area"
NT05-01	Nissitissit River, Brookline, NH	150 ft. from Potanipo Lighthouse w/Mason Rd. West on right.
SB01-01	Sucker Brook, Pepperell, MA	upstream of Brookline Road

Assessment:

Biology

Coliform Bacteria - Only one sampling event at one station exceeded the 200 col/100 ml standard at 290 col/100ml.: the October sample collected from the Nissitissit near Lomar Industrial Park. Two samples collected from the Nissitissit at the Prescott Street bridge were close to the water quality standard (May and July), and E. coli samples were also high for the May event at this site. Upstream (New Hampshire) Nissitissit sampling locations were analyzed for E. coli, but did not contain significant concentrations of the bacteria. Sucker Brook had consistently low concentrations of fecal coliform.

E. coli is a subset of fecal coliform, indicating a warm-blooded animal source of for the bacteria. A few E. coli results are close to or exceed the fecal coliform results in this river section. This may be explained by the precision ranges for the bacteria at low concentrations, which are +/- 35% for concentrations greater than 100col/100 mls., and +/- 50% for concentrations less than 100col/100 mls.

Chemistry

pH - All but the most downstream site are slightly below the state standard of 6.5. Data from previous years indicate that this is normal background pH. Consistently low pH readings probably result from a limited buffering capacity as indicated by alkalinity.

Dissolved Oxygen - All sites meet the state standard for coldwater fisheries. Saturation levels are slightly below the 75% threshold which is also consistent with previous years.

Alkalinity - Alkalinity at all sites in this section are relatively low and correspond with respective pH readings.

Physical

Temperature - Seasonal means for all sites meet the standard for support of cold water fisheries.

The upstream-most site experienced several days with temperature above 20 °C which is likely influenced by its proximity to Potanipo Pond and the warming that occurs therein.

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
NT01	Yes	Yes	Yes	Yes
NT02	Yes	Yes	No	Yes
NT03	Yes	Yes	No	Yes
NT04	Yes	Yes	No	Yes

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

Summary: The Nissitissit remains a rather healthy and clean river. Occasional spikes in fecal coliform may indicate the influence of farm fields and limited development in the watershed and give an idea of potential hazards that come with increased development and lack of attention. Low pH could be a factor for some aquatic life, but the river appears to have a naturally low buffering capacity.

Recommended Actions:

- ◆ Continue monitoring at all current sites.