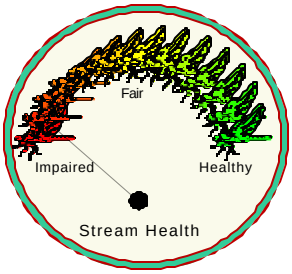
# EcoSummary

**BioRecon Report**

## Bryant's Mill Creek @ CR 157 A
## 5/04/99




**BioReconnaissance Report (BioRecon):** A rapid, cost effective screening mechanism for identification of biological impairment.

## Purpose and Background

Bryant's Mill Creek, originating in Grady County, Georgia, flows for only a short reach in Florida before its confluence with the Ochlockonee River. The closest accessible sampling location was at CR 157A in Georgia. Lying within the Tifton Upland/ Tallahassee Hills Subecoregion (65h), the land is predominately a combination of hardwood and pine forest, mixed with longleaf pine and xerophytic oaks. Land use within the basin consists of cropland and pastures.

Bryant's Mill Creek has been placed on the 303(d) list for violations of turbidity, coliforms, mercury (based on fish consumption advisory), and nutrient levels. Waterbodies on this list are required by EPA to have a Total Maximum Daily Load (TMDL) study performed on them. The purpose of the TMDL is to determine the amount of pollution reduction needed to restore the system to a condition suitable for its designated use. In this case, the designated use is for recreation and maintenance of a healthy, well-balanced aquatic community.

DEP's Environmental Assessment Section was requested to assess the status of selected waterbodies on the TMDL list that were placed on the list with limited data. The data available for these selected waterbodies consisted of less than 10 observations in the Storet database, somewhat dated, pre-1990 information, or qualitative non-point source survey data only.

## Results

Physical/chemical parameters and nutrients were sampled at Bryant's Mill Creek in May of 1999. Macroinvertebrate communities were sampled using 4 discrete dip net sweeps (Bio-Recon). The sample was field picked, and brought back to the laboratory for identification under a dissecting microscope. Three metrics; total taxa richness, Florida Index, and total EPT (Ephemeroptera, Plecoptera, and Trichoptera; larval mayflies, stoneflies, and caddisflies), were calculated and compared to existing western Panhandle thresholds (24 total taxa, 22 Florida Index, and 11 EPT taxa) to determine the community's health. A Bio-Recon is a screening tool that assesses freshwater macroinvertebrate communities based on geographic thresholds. Bryant's Mill Creek failed to meet the threshold for all three metrics with 20 total taxa, 13 Florida Index points, and 5 EPT taxa, indicating biological impairment. Low water levels were noted at the time of sampling.

Habitat assessment results indicate the site is in the high "suboptimal" range. "Poor" substrate availability and bank stability may have negatively affected aquatic macroinvertebrate communities.

Dissolved oxygen concentrations (9.05 mg/L) exceeded the Class III water quality standard of 5.0 mg/L. Total Kjeldahl nitrogen (0.34 mg/L) levels were lower than 93% of other Florida streams. Ammonia (0.055 mg/L) and phosphorus (0.099 mg/L) levels were also in the acceptable range (below 60% of other Florida streams). Nitrite-nitrate (0.52 mg/L) levels, however, were elevated, exceeding those found in 85% of other state streams. Mercury levels were not sampled at this date.

Turbidity levels (8.3 NTU), while not in violation of state standards (29 NTU above background), were higher than 80% of other Florida streams. Fecal (320 colonies/100 ml) and total (2000 colonies/100 ml) coliform counts were below the Class III standard of 800 colonies/100 ml and 2400 colonies/100 ml, respectively.

## Suggestions

It is suspected that the aquatic macroinvertebrate communities at Bryant's Mill Creek are impaired as indicated by the failure of the site to pass any of the biological parameters. Habitat at the site was in the high "suboptimal" range, despite "poor" habitat availability and bank stability. Dissolved oxygen, fecal and total coliforms complied with Class III standards. Total Kjeldahl nitrogen, ammonia, and phosphorus levels were all within the acceptable range. However, nitrite-nitrate levels exceeded 85% of other Florida streams. Turbidity levels, though not in violation of state standards, were higher than those found in 80% of other Florida streams. Due to the failure of the site to pass any macroinvertebrate metrics, and the elevated levels of nitrite-nitrate and turbidity, it is recommended that Bryant's Mill Creek remain on the 303(d) list.

**FOR MORE INFORMATION, CONTACT:**
Tom Frick, FDEP Environmental Assessment Section
2600 Blair Stone Road MS#6511 Tallahassee, FL 32399-2400 (850) 413-0247 Thomas.frick@dep.state.fl.us

*Figure 1: Overview Map of Bryant's Mill Creek @ 157 A*

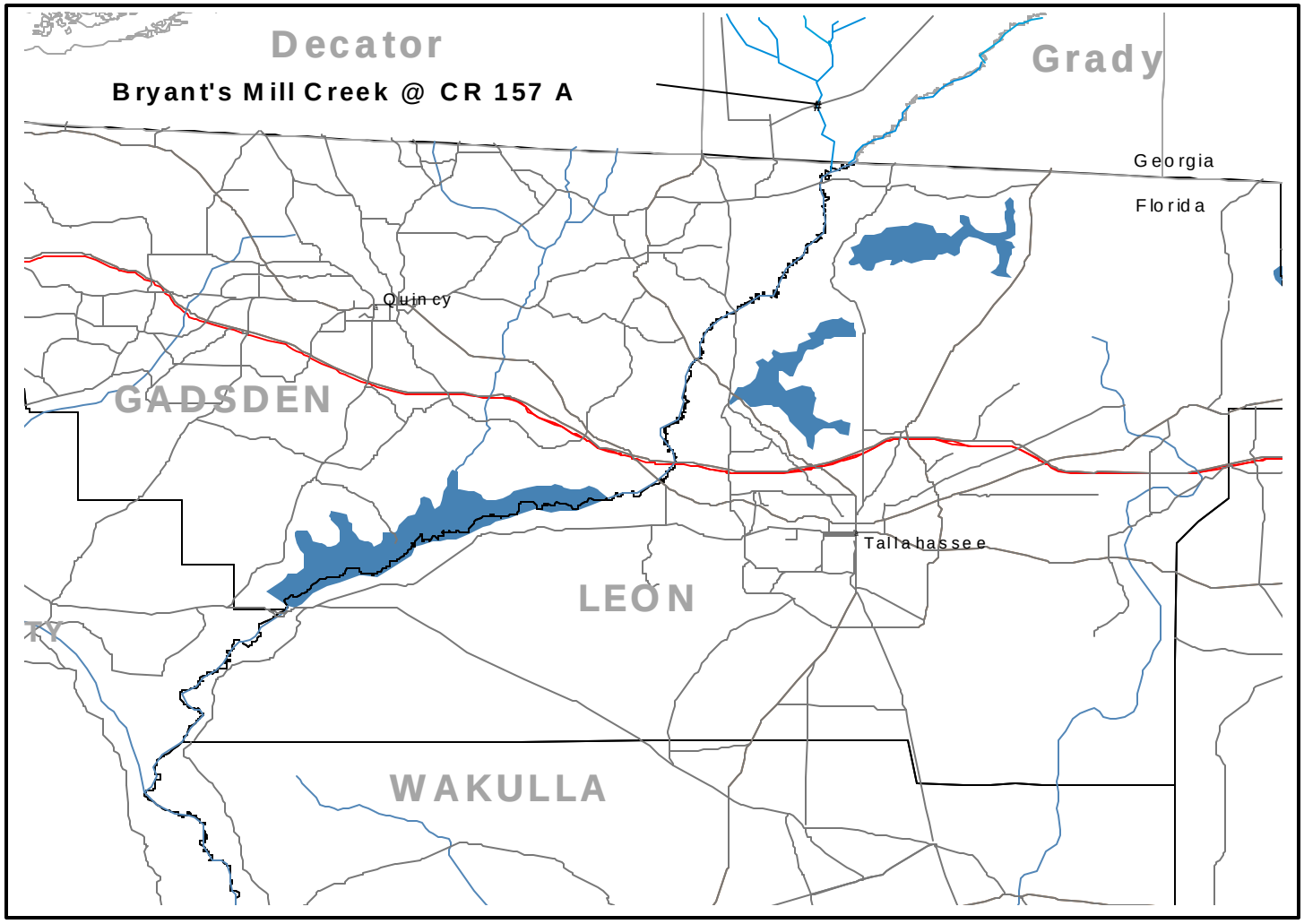



*Figure 2: Data for Selected Parameters*

| Station | Date | # Taxa | Florida index | EPT | pH (Std Units) | Temp (C) | $NH_3$ (mg/L) | NOx (mg/L) | TKN (mg/L) | TP (mg/L) | TSS (mg/L) | Turbidity (NTU) | Fecal coliforms (col/100 ml) | Total coliforms (col/100 ml) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Bryant's Mill Creek @ CR157A | 05/04/99 | 20 | 13 | 5 | 6.1 | 15.8 | 0.055 | 0.52 | 0.34 | 0.099 | 5 | 8.3 | 320 | 2000 |

| Storet Code | Date | Ave Depth (ft) | Width (ft) | Area ($ft^2$) | Velocity (ft/s) | Flow (cfs) | DO (mg/L) | Cond. ($umhos/cm^2$) |
|---|---|---|---|---|---|---|---|---|
| Nonstoret157 | 05/04/99 | 0.37 | 7.2 | 2.7 | 0.456 | 1.23 | 9.05 | 118.2 |

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