



# EcoSummary

Spartman Branch, Hillsborough County.  
Hillsborough River Watershed  
August 26, 1998



Stream Condition Index (SCI): The standardized biological assessment tool used by FDEP biologists to indicate ecosystem health and identify impairment as compared to reference (natural) conditions of streams within the various ecoregions of Florida.

## Purpose

Macroinvertebrate samples were collected for a Stream Condition Index (SCI) bioassessment of Spartman Branch in order to gain further information on the biological health of the watershed for use in the administration of Florida's Ecosystem Management Water Quality Assessment and Total Maximum Daily Loads programs. A field biorecon, a rapid screening method for identification of biological impairment, was also performed. Surface water samples were collected for analysis of parameters of concern. All work conducted by EMWQAS was conducted according to established DEP standard operating procedures and quality assurances plans. The SCI is based on seven measurements that assess the ecological integrity of the invertebrate community. If the Index score falls between 27 and 33, it is considered 'excellent'; if it falls between 21 and 26: 'good'; between 14 and 20: 'poor'; and between 7 and 13: 'severely degraded'. Biorecons are based on three measurements of the aquatic invertebrates present in the stream: the total number of different species (Total Taxa), the number of "good water quality" indicator species (Florida Index) and the total number of Ephemeroptera (mayflies), Plecoptera (stoneflies) and Trichoptera (caddisflies) species present. A stream scoring above the threshold value for all three of these measurements is considered healthy. If two of the threshold values are reached, the stream's health is considered ecologically suspect. If only one or none of the thresholds are reached, an impaired condition is concluded.

## Background

Spartman Branch, located in northeastern Hillsborough County, flows into Pemberton Creek west of Plant City. Pemberton Creek then flows into Lake Thonotosassa via Baker Creek. Spartman Creek was channelized some years ago, but some recovery of sinuosity and in-stream habitat has since occurred. The riparian zone has largely recovered at the sample site, although the understory is noticeably reduced. Other stream segments, however, do not enjoy an adequate buffer zone. The drainage basin consists primarily of urban development, draining Plant City and the Plant City Municipal Airport. A small amount of pasture and cropland is also present. Samples collected in 1993 indicated low dissolved oxygen levels, and moderately high turbidity, total suspended solids and high nutrient levels.

## Results

Physicochemical parameters were measured and water samples for chemical analyses were collected on the south side (upstream) of the SR 92 bridge. The stream was shallow and sandy-bottomed, with consistent water velocity of 0.17 to 0.25 m/s. The habitat score was 110 out of 160, in the suboptimal category, largely due to scarcity of in-stream habitat. Dissolved oxygen was below the State standard of 5.0 mg/l (4.1 mg/l), although this may not be terribly unusual for shallow peninsular streams in summer. . The total nitrogen (TN) concentration was moderate as compared to typical values of Florida streams, at 1.5 mg/l. Nitrate-nitrite was slightly elevated (0.2 mg/l). The total phosphorus (TP) measurement was comparably high at 0.52 mg/l, although TP values can be higher in south-central Florida than in streams from other areas of the state because of the natural phosphatic deposits in the area. The turbidity and total suspended solid (TSS) measurements were both at very low levels. Both Total and Fecal Coliforms were below the single day State standards for Class III waterbodies (Rule 62 - 302 FAC). Spartman Creek met all three threshold for the parameters of the Biorecon, though none exceeded the values. This suggests that the stream supported a fairly diverse and sensitive macroinvertebrate community, though values were 'borderline'. The SCI score was 23, also rating the macroinvertebrate assemblage at the low end of the 'good' category.

## Significance

The chemical and biological results on the day of sampling indicated that the parameters of concern for Spartman Branch did not differ significantly from typical levels for Florida streams, with the exception of slightly depressed DO, slightly elevated nitrates and moderately elevated TP (for the SW District). However, the macroinvertebrate community scored a borderline 'good' score for both the Biorecon and the SCI, suggesting the community was not as healthy as it could be. Water quality may be protected from degradation at the sampling site by the fairly extensive riparian zone at that location.

## Suggestions

Spartman Branch needs further study in reaches that lack a good riparian zone for better assessment of the quality of stormwater runoff. It would be appropriate to include metals and petroleum-based compounds, since Spartman Creek drains an airport.

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