EcoSummary

Wakulla Springs

10/07/2002

Background

The Florida DEP Bureau of Laboratories has been conducting quarterly sampling of the Wakulla River within the boundaries of Wakulla Springs State Park, just below the tour boat turn-around area. Data from these efforts will be used for documenting conditions within the river and for making resource protection decisions. Wakulla Springs State Park is located in Wakulla County, Florida; see Figure 1. The Wakulla River begins in the park, flows south, and joins the St. Mark's River before flowing into the Gulf of Mexico. Wakulla Springs is a Floridan Aquifer-dominated system known for its recreational and aesthetic qualities.

Wakulla Springs was sampled on October 7, 2002 as part of the quarterly monitoring program and to determine the long term results of the April 15, 2002 Aquathol® herbicide treatment. Water chemistry samples were taken for ammonia, nitrate-nitrite, total Kjeldahl nitrogen (TKN), total phosphorus, *Enterococci*, *Escherichia coli*, fecal coliform, total coliform, and other analyses; see Figure 2. Habitat assessment, qualitative periphyton sampling, and benthic invertebrate stream condition index (SCI) sampling were conducted.

Results

Ammonia, TKN, and total phosphorus concentrations continue to remain low; see Figure 2. The nitrate-nitrite concentration was elevated (0.59 mg/L), higher than the values found in approximately 85% of other Florida streams. Note that the sampling site is approximately a mile downstream from the spring boil, and nutrients there are expected to be lower than those at the boil due to uptake by the vegetation in the river. The habitat assessment score (132) was in the optimal category.

In October 2002, *Enterococci* (14 CFU/100 mL) and *Escherichia coli* (43 CFU/100 mL) densities were below the EPA single-sampling guideline value of 61 CFU/100 mL and 235 CFU/100 mL, respectively, for designated beach areas. Fecal and total coliform levels complied with Class III water quality standards.

The stream condition index (SCI) ranked in the "good" category (23) in October 2002; see Figure 2. This score is higher than the SCI score in August 2002 (17), and is the best SCI score noted at this site since Aquathol® herbicide treatments were implemented for *Hydrilla* control. The periphyton community was dominated by taxa tolerant of nutrient enriched conditions.

In conclusion, nitrate-nitrite concentrations remain elevated. The periphyton community also reflects nutrient enrichment. The increased health of the macroinvertebrate community may be related to the partial removal of the *Hydrilla* population in April 2002. Further monitoring is recommended to establish trends.

Figure 1: Overview Map

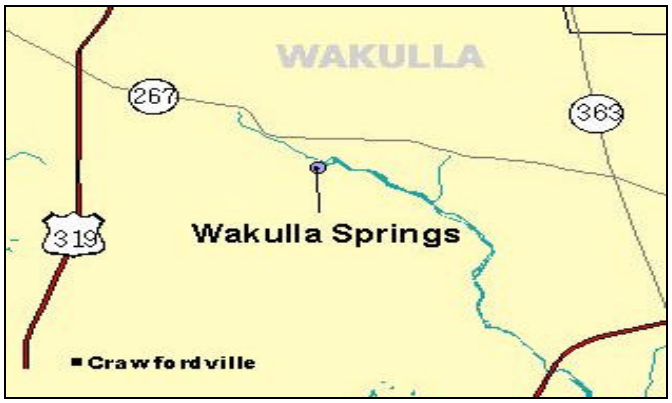
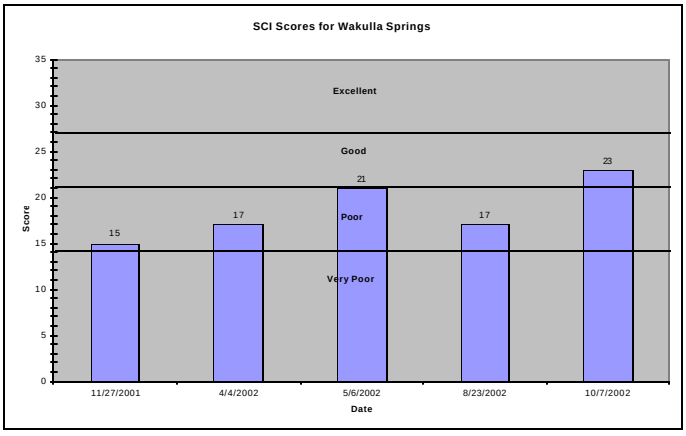


Figure 2: Data Table

Wakulla Springs			
Sampling Date		10/7/2002	
Macroinvertibrate Parameters		**Periphyton Parameters**	
SCI	23	% Bacillariophyceae	96.6
SCI Evaluation	Good	% Cyanophyceae	2.64
Number of Taxa	27	% Chlorophyceae	0.75
EPT Index	4	Dominant taxon	*Cocconeis placentula*
FL Index	8	Percent Dominant taxon	35.85
% Dominant Taxon	47.66	**Physical-Chemical Data**	
% Diptera	26.17	Habitat Assessment	132
Total number of Chironomidae	9	Specific Conductivity (umhos/cm)	305
% Filter-Feeders	9.35	Dissolved Oxygen (mg/L)	4.42
Chemistry Data		pH (SU)	7.5
Ammonia (mg/L)	0.013 I	Temperature (deg C)	21.2
Nitrate-Nitrite (mg/L)	0.59	**Bacteria Parameters**	
TKN (mg/L)	0.11 I	*Enterococci* (col/100mL)	14 A
Total Phosphorus (mg/L)	0.022 I	*Escherichia coli* (col/100mL)	43 A
Color (PCU)	15	Fecal Coliforms (col/100 mL)	21 A
Turbidity	0.3	Total Coliforms (col/100mL)	150 A

"I"-Below Quantitation Limit; "A"- Mean of Two or More Determinations

Figure 3: SCI Scores Over Time



FOR MORE INFORMATION, CONTACT:
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