EcoSummary

Wakulla Springs

5/13/2003

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 and is known for its recreational and aesthetic qualities.

Wakulla Springs was sampled on May 13, 2003 as part of the quarterly monitoring program and to determine the long term results of the November, 2002 Aquathol® herbicide treatments. 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 also conducted.

Results

Ammonia, TKN, and total phosphorus concentrations continue to remain low; see Figure 2. The nitrate-nitrite concentration remains elevated (0.61 mg/L), higher than approximately 90% of 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 copious growth of vegetation in the river. The habitat assessment score (115) was in the sub-optimal category, which has dropped slightly from January 2003 (139 optimal).

In May 2003, *Enterococci* (10 CFU/100 mL) and *Escherichia coli* (2 col/100mL) densities were below the EPA single-sampling guideline value of 61CFU/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) score has increased significantly since January 2003, now placing it in the "excellent" category; see Figure 3. This increase in score may be related to the Aquathol® herbicide treatment that was performed in November, 2002. 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 reduction in *Hydrilla* (and associated improvement in the dissolved oxygen regime), which in turn could be attributed to the Aquathol® herbicide treatment. Further monitoring is recommended to establish future trends.

Figure 1: Overview Map

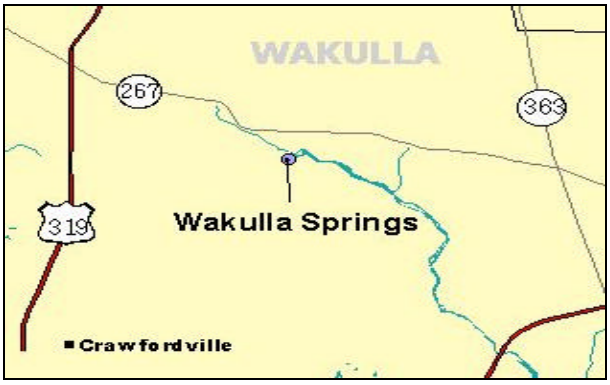
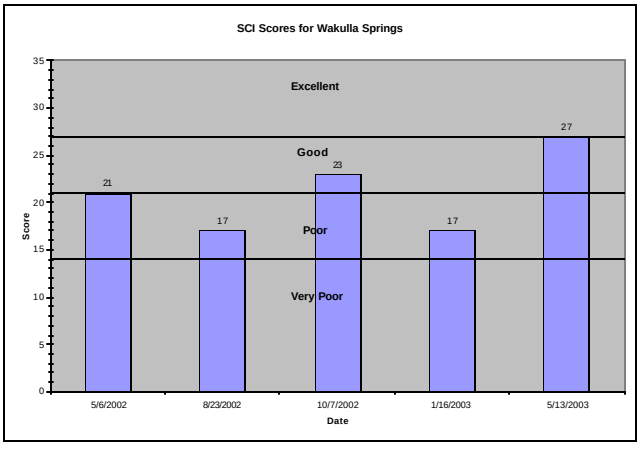


Figure 2: Data Table

Wakulla Springs			
Sampling Date		5/13/2003	
Macroinvertibrate Parameters		**Periphyton Parameters**	
SCI	27	% Bacillariophyceae	95.05
SCI Evaluation	Excellent	% Cyanophyceae	3.63
Number of Taxa	28	% Chlorophyceae	1.32
EPT Index	5	Dominant taxon	*Fragilariaceae*
FL Index	17	Percent Dominant taxon	25.74
% Dominant Taxon	21.36	**Physical-Chemical Data**	
% Diptera	69.9	Habitat Assessment	115
Total number of Chironomidae	15	Specific Conductivity (umhos/cm)	312
% Filter-Feeders	16.99	Dissolved Oxygen (mg/L)	8.92
Chemistry Data		pH (SU)	7.89
Ammonia (mg/L)	0.013 I	Temperature (deg C)	22.64
Nitrate-Nitrite (mg/L)	0.61	**Bacteria Parameters**	
TKN (mg/L)	0.087 I	*Enterococci* (col/100mL)	10
Total Phosphorus (mg/L)	0.027 I	*Escherichia coli* (col/100mL)	2
Color (PCU)	5 U	Fecal Coliforms (col/100 mL)	12
Turbidity	0.35	Total Coliforms (col/100mL)	120

"I"-Below Quantitation Limit; "U"- Below Detection Limit

Figure 3: SCI Scores



FOR MORE INFORMATION, CONTACT:
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