EcoSummary

Rock Springs

10/16/03

Background

Florida DEP's Division of Water Resource Management selected Rock Springs for biological and water quality monitoring. Data from these efforts will be used for documenting conditions within the spring run and for making resource protection decisions. Rock Spring is located inside Kelly Park in Orange County, Florida (Figure 1). Rock Spring, which flows into Wekiva River, is a Floridan Aquifer-dominated system known for its recreational and aesthetic qualities.

Water chemistry samples were taken for ammonia, nitrate-nitrite, total Kjeldahl nitrogen, total phosphorus, color, turbidity, *Enterococci*, *Escherichia coli*, fecal coliform, and total coliform analysis (Figure 2). Habitat assessment, qualitative periphyton sampling, and benthic invertebrate stream condition index (SCI) sampling were conducted.

During the October 15th, 2003 sampling of Rock Springs an additional sampling location was established due to concerns that human activity in the upper reach of Rock Spring run was artificially lowering the stream condition index (SCI) score. A site was established down stream of the swimming area that appeared to receive less traffic from people using the spring run for recreation.

Results

The nitrate-nitrite concentrations (1.5 mg/L) at both sampling sites were higher than those found in 95% of Florida streams (1.05 mg/L) (Figure 2). Elevated nitrite-nitrate levels in Rock Springs are related to nitrogen loading in the recharge basin. The total Kjeldal nitrogen (0.084 mg/L upper and 0.098 mg/L lower) were lower than those found in 95% of Florida streams (Figure 2). The ammonia concentrations (0.01 mg/L) at both sampling sites were below detection limits. Total phosphorus concentrations were relatively average at the upper and lower stations of Rock Spring (0.1 mg/L and 0.099 mg/L respectively)

Enterococci and Eschericia coli densities complied with the EPA single-sample guideline value of 61 CFU/100mL and 235 CFU/mL, respectively, for "designated beach areas." Fecal and total coliform levels complied with Class III water quality standards. The periphyton community in Rock Springs was dominated by diatoms with some blue-green taxa. The particular taxa found were indicative of eutrophic conditions, which was not surprising given the nutrient enrichment in Rock Springs. The stream condition index (SCI) scores for both upper and lower station were in the "good" range (21 and 23 respectively, which remains improved from the October 2002 "poor" score. With a habitat assessment score in the optimal range (128) the benthic invertebrate community was not limited by habitat availability or quality.

In conclusion, elevated nitrate-nitrate levels, and an algal community indicative of eutrophic conditions were issues of concern in Rock Springs. Both the upper and lower sampling stations received SCI scores in the "good" range. The SCI evaluations will remain closely monitored, and future sampling will attempt to determine potential causes for the "Poor" scores received during the May 2002 and October 2002 sampling, although physical disruption from swimmers remains a plausible cause.

Figure 1: Overview Map of the Rock Springs Area

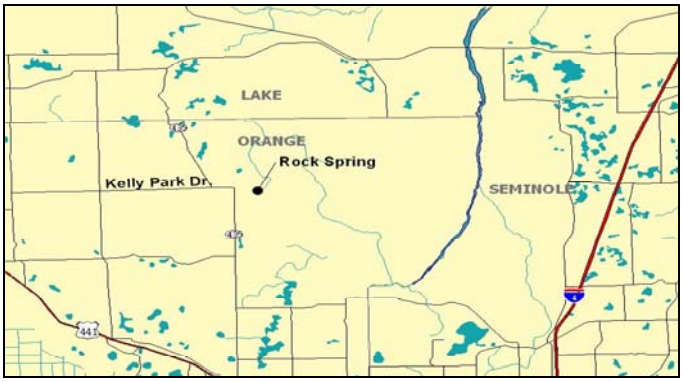
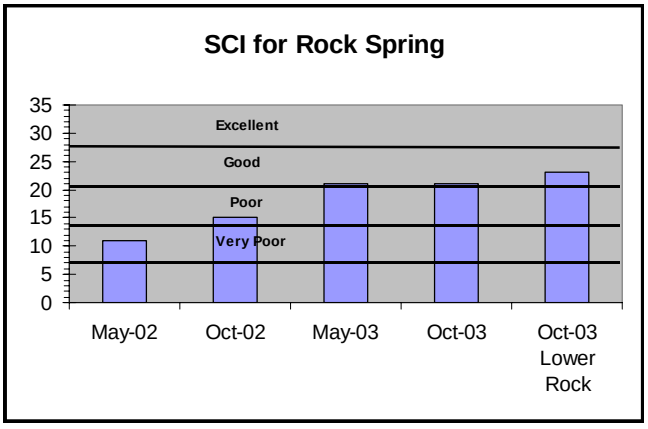


Figure 2: Data Table

Upper and Lower Rock Springs					
Sampling Date			10/16/2003		
Macroinvertibrate Parameters	Upper Rock	Lower Rock	Periphyton Parameters	Upper Rock	Lower Rock
SCI	21	23	%Bacillariophyceae	90.6	90.4
SCI Evaluation	Good	Good	%Cyanophyceae	7.2	5.1
Number of Taxa	18	22	%Chlorophyceae	2.3	4.5
EPT Index	1	6	Dominant taxon	Fragilariaceae	Fragilariaceae
FL Index	7	14	Percent Dominant taxon	18.9	19.3
%Dominant Taxon	45.6	33.6	Physical-Chemical Data	Upper Rock	Lower Rock
%Diptera	22.8	42.1	Habitat Assessment	128	NA
Total number of Chironomidae	8	5	Specific Conductivity (umhos/cm)	259	258
%Filter-Feeders	0	25.7	Dissolved Oxygen (mg/L)	2	3.2
Chemistry Data	Upper Rock	Lower Rock	pH (SU)	7.3	7.6
Ammonia (mg/L)	0.01 U	0.01 U	Temperature (deg C)	23.7	23.9
Nitrate-Nitrite (mg/L)	1.5	1.5	Bacteria Parameters	Upper Rock	Lower Rock
TKN (mg/L)	0.084 I	0.098 I	*Enterococci* (col/100mL)	2 ABQ	42 Q
Total Phosphorus (mg/L)	0.1	0.099	*Escherichia coli* (col/100mL)	1 ABQ	40 Q
Color (PCU)	5 U	5 U	Fecal Coliforms (col/100 mL)	1 AKQ	30 BQ
Turbidity (NTU)	0.15	0.1 A	Total Coliforms (col/100mL)	25 ABQ	250 Q

"B'-Based on colony counts outside the acceptable range; "Q"- Information Only, "U"-Below minimum detection limit; "I" –Value between method detection limit and practical quatitation limit

Figure 3. SCI Evaluation for Rock Spring



FOR MORE INFORMATION, CONTACT:
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