



EcoSummary

Goat Creek at Henderson Road, Valkaria,
Brevard County
March 26, 1998



BioRecon: A rapid, cost-effective screening mechanism for identification of biological impairment.

Introduction

A considerable portion of the upper reaches of Goat Creek is channelized, connected with a series of canals which drain the former swampland that is now Palm Bay and vicinity. Farther downstream, its course is wider and more naturally sinuous, flowing generally easterly until it empties into the Indian River Lagoon at the town of Valkaria. Land in the 16 mi² watershed is approximately 66%



natural uplands and wetlands. About 14% of the land use is urban, with agriculture and rangeland occupying about 7% and 9%, respectively. The remainder is comprised of barren lands, plus transportation, communications, and utilities developments. Goat Creek was placed on the 303(d) list due to dissolved oxygen violations and elevated nutrient levels. Waterbodies on the 303(d) list are required to undergo a Total Maximum Daily Load (TMDL) study. 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-balance aquatic community. DEP's Central District Surface Water Monitoring staff was requested to assess the status of selected waterbodies on the TMDL list that were placed on the list with "limited data". "Limited data" waterbodies were those with less than 10 observations in the STORET database, with the most recent observations occurring prior to 1990, or those with qualitative, non-point source survey data only.

Results and Discussion

Benthic macroinvertebrate community sampling, physical/chemical parameter measurement, and habitat assessment were carried out on March 26, 1998. Nutrients and total suspended solids were sampled on April 26, 1999. (We attempted to sample physical/chemical parameters on 4/26/99 also, but due to an equipment malfunction, this was not possible.) Macroinvertebrate communities were

sampled from in-stream habitats using 4 discrete dipnet sweeps, field picked, and lab identified (the Biorecon procedure). Three metrics, consisting of total taxa richness, the Florida Index and total EPT taxa (Ephemeroptera, Plecoptera and Trichoptera), are calculated and compared to existing thresholds to determine the community's health. Goat Creek passed all three metrics, with 26 taxa, 16 Florida Index points, and 7 EPT. Trichopterans, in particular, were quite well represented, with the caddisfly *Cheumatopsyche* being the macroinvertebrate species most commonly encountered in the sample. Physical/chemical measurements showed that Goat Creek had a dissolved oxygen level of 6.64 mg/L, well above the 5.0 mg/L state minimum standard. The pH was neutral at 7.08 su. The conductivity at this time was 486 mmhos/cm. (This value varies considerably in coastal streams like this. In April 1999, the conductivity measurement was 1600 mmhos/cm.) Water clarity was good, with a Secchi depth of >1.2 m. Total suspended solids measured a modest 2.7 mg/L. The habitat assessment was also good, scoring 124 out of a possible 145 points. All nutrient levels (phosphorus and the various forms of nitrogen) fell within the low to medium range at Goat Creek.

Conclusions

Based on the good biological community found here, the good dissolved oxygen level, and the low to moderate nutrient levels, we feel that Goat Creek should be removed from the 303(d) list.

For more information, please contact:

Dana R. Denson

DEP Central District 3319 Maguire Blvd., Suite 232 Orlando, FL 32803

(407) 894-7555

email: dana.denson@dep.state.fl.us

Published by the Florida Department of Environmental Protection, Tallahassee, FL.

For more information on the DEP Bioassessments program, please visit our website at <http://www2.dep.state.fl.us/water/Slerp/bio/>