EcoSummary

Addison Canal at Enchanted Forest
Nature Preserve, Brevard County
January 9, 1998

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

Introduction

Addison Canal is a man-made water body which, according to a local source, was dug in 1913. It is a most unusual body of water in that it flows in two different directions at the same time. It connects Addison Creek, which flows into the Indian River, with the St. Johns River. However, due to surface topography, the portion north of SR 405 flows into the estuary, whereas the portion south and west of 405 makes its way to the St. Johns. The canal was cut through the limestone/coquina rock which lies near the surface in this area. The sampling site was just north of SR 405. Land use in the 3.13 mi2 watershed is 68% natural land. Residential and industrial developments account for 14% and 13%, respectively, of the total land use. The remaining five percent is devoted to agriculture and pasture. The Tico Airport is located immediately south of the eastern portion of the canal. Addison Canal was placed on the 303(d) list due to a non-point source assessment which identified it as not meeting its designated use. 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 communities and physical/chemical parameters were sampled on January 9, 1998. Macroinvertebrate communities were sampled from in-stream habitats using 4 discrete dip-net

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. Addison Canal failed to meet any of the three threshold values, which is an indication of an impaired aquatic system. There were only 10 macroinvertebrate taxa present, two of which are Florida Index (good water quality) species. There were no EPT taxa collected. The dissolved oxygen level recorded at this site at the time of sampling was 5.68 mg/L, which is above the state minimum standard of 5 mg/L. The conductivity was fairly high (595 mmhos/cm), which would be expected in this type of system. The pH measurement was 7.2 su. There was a very obvious abundance of iron at the site. The water and everything in it (including the macroinvertebrates) was stained orange. All aquatic substrates were heavily coated with an orange precipitate. In addition to our data, water quality samples taken by the St. Johns River Water Management District from 1989 through 1996 have shown high nutrient levels and turbidity downstream in Addison Creek at US Hwy 1.

Conclusions

Based on the results given here, we feel that Addison Canal should remain on the 303(d) list. Although most of the watershed is not a natural water body, it flows into two very important water bodies: the Indian River and the St. Johns River. We therefore believe that it is important that the poor water quality of Addison Canal be addressed.

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