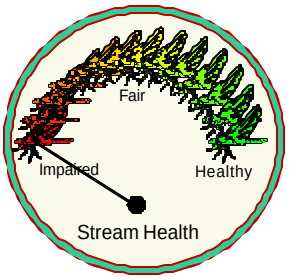
EcoSummary

BioRecon Report

Munson Slough
Central Drainage Ditch
3/17/99



BioReconnaissance Report (BioRecon): A rapid, cost effective screening mechanism for identification of biological impairment.

Purpose and Background

Munson Slough, located in Leon County, is part of the Munson Slough drainage basin. It is an artificially channeled drainage canal that empties into Lake Munson. Land use within the drainage basin is mainly residential, commercial and industrial.

Munson Slough at Orange Avenue (central drainage ditch) has been placed on the 303(d) list for violations of turbidity, total suspended solids (TSS), Biological Oxygen Demand (BOD), Chemical Oxygen Demand, coliforms, and nutrient limits. Waterbodies on this list are required by EPA to have a Total Maximum Daily Load (TMDL) study performed on them. 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-balanced aquatic community.

DEP's Environmental Assessment Section was requested to assess the status of selected waterbodies on the TMDL list that were placed on the list with limited data. The data available for these selected waterbodies consisted of less than 10 observations in the storet database, somewhat dated, pre-1990 information, or qualitative non-point source survey data only.

Results

Benthic macroinvertebrate communities, physical/chemical parameters, and nutrients were sampled in March of 1999. Macroinvertebrates were sampled using 4 discrete dip net sweeps (Bio-Recon). The samples were field picked, and brought back to the laboratory for identification under a dissecting microscope. Three metrics, total taxa richness, Florida Index, and total EPT (Ephemeroptera, Plecoptera, and Trichoptera; larval mayflies, stoneflies, and caddisflies), were calculated and compared to existing eastern Panhandle thresholds to determine the community's health. Munson Slough failed to meet the threshold for all three metrics (11 total taxa, 2 Florida Index points, and 0 EPT taxa) indicating suspected impairment.

Assessment results indicate that habitat at this site is "poor". Six of the eight habitat parameters measured received "poor" ratings including substrate diversity/availability, habitat smothering, degree of artificial channelization and riparian buffer width/quality. Bank stability at the site was "marginal" contributing to habitat smothering. Degradation of habitat is a leading cause in limiting macroinvertebrate assemblages.

Measured physical/chemical parameters and water quality variables met all of the criteria for Class III waterbodies except coliform counts. The dissolved oxygen concentration was 10.25 mg/L, exceeding the standard of 5.0 mg/L set for Florida streams. Nitrite-nitrate (0.1 mg/L), ammonia (below detection limits), total Kjeldahl nitrogen (0.63 mg/L), and total phosphorus (0.11 mg/L) were all acceptable (below the 50th percentile) for Florida streams. Turbidity levels were not in violation of Class III standards, however, were higher than 90% of other Florida streams. Fecal and total coliform counts (830 colonies/100 ml and 2400 colonies/100 ml respectively) were in violation of Class III standards. Total suspended solids were not measured during the course of this investigation.

Suggestions

The aquatic macroinvertebrate communities at Munson Slough, Central Drainage Ditch are impaired as indicated by the failure of this site to pass any of the biological parameters measured. Inadequate riparian buffer width/quality has led to "poor" habitat diversity/availability contributing greatly to the scarcity of macroinvertebrates found at the site. Moderately unstable banks bordering the slough have resulted in the smothering of the remaining available habitat. Dissolved oxygen levels complied Class III surface water quality standards. All nutrients were within the acceptable range for other Florida streams. Turbidity levels, while not in violation of state standards, were higher than 90% of other streams in the state. Both fecal and total coliform counts failed to meet Class III standards. Due to the failure of the site to pass macroinvertebrate metrics and the violation of coliform criteria, it is recommended that this site remain on the 303(d) list.

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Figure 1: Overview Map of Munson Slough (central drainage ditch)



Figure 2: Data for Selected Parameters

Station	Date	# Taxa	Florida Index	EPT	pH (Std Units)	Temp (C)	NH_3 (mg/L)	NOx (mg/L)	TKN (mg/L)	TP (mg/L)	Turbidity (NTU)	Fecal Coliforms (col/100 ml)	Total Coliforms (col/100 ml)
Munson Slough @ Orange Ave	3/17/99	11	2	0	7.55	15.8	0.05 BDL	0.1	0.63	0.11	12	830	2400

STORET Code	Date	Average Depth (ft)	Width (ft)	Area (sq. ft)	Velocity (ft/s)	Flow (cfs)	DO (mg/L)	Cond. (umhos/cm)
302448084181800	03/17/99	0.32	24	7.78	0.186	1.449	10.25	303

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