

EcoSummary

BioRecon Report



Murder Creek Hwy 85A in Okaloosa County July 23, 1998

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

Introduction

Murder Creek is located in Okaloosa County with its headwaters near Laurel Hill and flows to Pensacola Bay via Yellow River, Blackwater Bay, and East Bay. This subcoregion 65F stream's land use includes agriculture, silviculture, residential, strip mine, impoundment, dirt road, electrical transmission line, and road construction areas in the watershed.

Coliform bacteria and dissolved oxygen were nonpoint pollution concerns, which placed Murder Creek on the 303(d) list for 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. Murder Creek is designated Class III waters for recreation and maintenance of a healthy, well-balanced aquatic community.

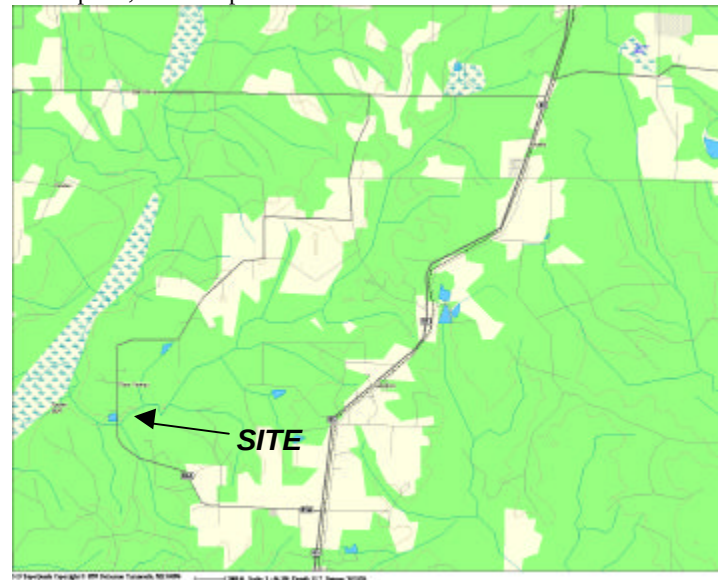


Murder Creek Hwy 85A – note sand bar & wide, shallow stream channel indicating sediment exceeding loading capacity.

Results and Discussion

Macroinvertebrate communities were sampled on 07/23/98 from in-stream habitats by the FDEP BioRecon method above State Road 87A (STORET 33040056). Three metrics, consisting of total taxa richness, the Florida Index, and total EPT taxa were calculated and compared to existing thresholds to determine the community's health. Murder Creek passed all 3 biometric thresholds indicating a healthy condition at the site. However, the EPT threshold was barely achieved and diseased mayflies were observed in the sample. The sample site is a local swimming "hole" with an artesian shower. While sampling, a woman brought 4 of her grandchildren (ages ~1 to 5) to swim in Murder Creek. Fecal coliform bacteria counts (580/100ml) were elevated, but within the water quality standard (800 colonies /100ml) during this non-runoff period. Total coliform counts of 3,500 colonies/100ml failed the Class III standard of 2400 colonies/100ml. This area experienced a record drought during the May/June period with hot temperatures and scattered showers for July. Upstream at SR 85A, cattle rested in the riparian zone and had accessed the creek.

The habitat assessment of the site was 65% of the % similarity to the reference score. A score of 65% is an interim biometric threshold. Substrate availability was poor with only 4% habitat present. Habitat smothering rated poor from 96% coverage of habitats with 95% sand and 1% mud/muck/silt. The stream banks were moderately stable with small areas of erosion mostly healed over. The riparian zone was suboptimal from historic affects of land clearing in the watershed. This had resulted in down cutting the stream channel and allowed colonization of some the invasive exotic plant, Chinese privet.



Conclusions

Murder Creek passed all three BioRecon metrics, indicating a healthy condition at this site. Physical/biological parameters such as habitat smothering and elevated coliform bacteria counts indicated anthropogenic disturbances. Sources of these problems were mainly agriculture (livestock) for bacteria but include silviculture, mining, construction, and dirt roads for sediment runoff. The presence of coliform bacteria and turbidity were rainfall dependent. Observations in Murder Creek upstream of this site noted algal blooms and evidence of cattle access to the stream. Dissolved oxygen depletion might occur after headwater impoundments flush after heavy summer rains by over reaching the stream assimilative capacity for organic loading. This sample was collected after a record drought so dissolved oxygen depletion and bacteria concerns were not adequately monitored for this watershed.

It is recommended that Murder Creek be monitored during and after significant rainfall events. This would determine effects on recreational activities in Murder Creek and downstream in the Yellow River along with shellfish harvesting in East Bay's Class II waters.

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