

“Niceville Landfill” South Branch below Niceville Landfill, Okaloosa County March 22, 2001

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

Purpose

A bioassessment was performed at this site to assess the impacts of Okaloosa County’s Niceville landfill to the biota and wildlife habitat in a tributary to Turkey Creek. This bioassessment was in technical support of a compliance action by the FDEP Northwest District’s Waste Management Cleanup Section.

Background

The Niceville Landfill South Branch at the bioassessment site is a first order stream, originating at the landfill, about 0.6 miles west of Highway 85, Okaloosa County (Lat. 30° 32’ 45.1” Long. 86° 30’ 31.7”). Okaloosa County, the landfill owner leases the property from Eglin AFB. This stream, a former steephead slope prior to the landfill siting, flows into Choctawhatchee Bay via Turkey Creek and Boggy Bayou. This site drains the Gulf Coast Flatwoods of subcoregion 75a.



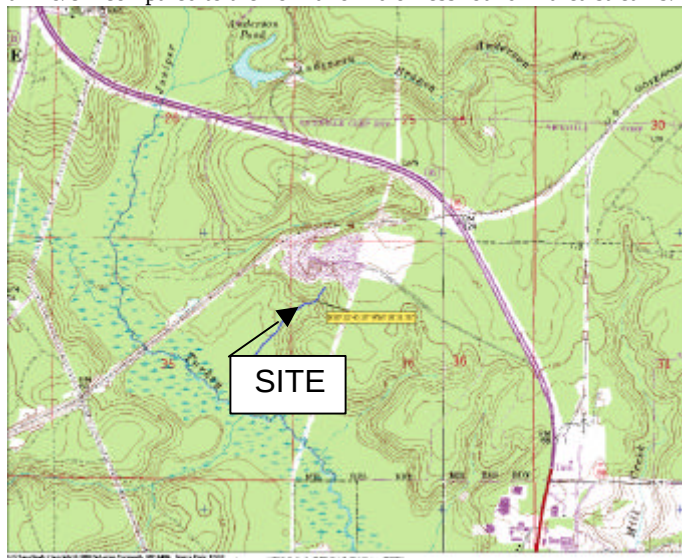
Results

The BioRecon indicated a severely impaired biological community. All 3 biological indicators failed thresholds established for a healthy aquatic wildlife community:

Biometrics	Value	Thresholds
Taxa Richness	9	≥24
Florida Index	2	≥22
EPT	0	≥17

The stream community was severely limited by pollutants from the landfill. A profuse bloom of iron/sulfur bacteria covered the stream and riparian wetland, producing a sheen that covered much of the water surface. Iron/sulfur bacteria smothered 100% of the aquatic habitats, which eliminated the stream’s wildlife diversity and productivity. These bacteria and the associated precipitated iron smother the gills and bodies of the fish and wildlife. Anaerobic sediments filled the stream channel to a depth of 2 feet or more in the upper reach. The stream was very turbid after disturbance, and the floc-like sediments re-suspended rapidly. During rainfall events the turbidity, iron and sediment pollution load will be transported down to Turkey Creek (an endangered Okaloosa Darter stream), Boggy Bayou

and into Choctawhatchee Bay. Iron is a contributor for algal blooms in marine waters. The Bay has experienced a fish killing red tide bloom for the past 2 years. Excessive iron loading may be a factor. The dissolved oxygen was low (1.45 mg/l) from excessive organic loading in groundwater discharge from the landfill. Specific conductance was 177 umho/cm compared to the normal of 20 or less found in area streams.



Significance

This Niceville Landfill Branch site did not meet Class III State Water Quality Standards 62-302 for recreation and the propagation and maintenance of a healthy, well-balanced population of fish and wildlife. The iron/sulfur bacteria, sediment, and chemical leachate effects from the landfill contributed to this stream not meeting State designated use. Organic sediment and nutrient loading from the landfill’s groundwater discharge caused an oxygen depletion (1.45 mg/l). The dissolved oxygen was in violation of the Florida Administrative Code 62-302.530(31), (“shall not be less than 5mg/l”). Organic deposition has reduced stream flow, which impairs the stream’s fish and wildlife nursery function. Habitat smothering from sedimentation and water pollution from the Niceville Landfill negatively affects this Turkey Creek tributary, Turkey Creek, Boggy Bayou, and Choctawhatchee Bay’s fish and wildlife. Reduced flows, nutrient, and organic sediment loading could affect the federally endangered Okaloosa Darter, which inhabits the Turkey Creek System.

Suggestions

Isolating the landfill leachate onsite would prevent contaminants from migrating to State Waters from natural springs surrounding the site. Restoration of the stream’s natural hydrology (i.e. flow, depth) and preserving riparian wetland forests buffer zones would benefit the watershed’s fish and wildlife. **For more information, contact Donald Ray, FDEP Northwest District, 160 Governmental Center, Pensacola, FL 32501 (850) 595-8300 x1126 or SC 695-8300**