* No map is available for this site.

EcoSummary

Carpenter Creek below Target Stormwater Pond Pensacola
November 17, 2003

IMPAIRED

FLORIDA AMBIENT

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

For samples collected before June 8, 2004
All field and laboratory methods followed FDEP Standard Operating Procedures and met FDEP quality assurance/quality control standards.
For samples collected on or after June 8, 2004
All field and laboratory methods followed FDEP Standard Operating Procedures (SOPs) and met DEP quality assurance/quality control standards.

Introduction



This Carpenter Creek site below the Target shopping center was sampled per a request by the Department's Bureau of Investigation to assist their case of an October 16, 2003 turbidity complaint of milky colors in Carpenter Creek above 12th Avenue in Pensacola. In response to that complaint, investigators found that 275 gallons of Eraguard Target Acrylic Coating had been dumped into a storm drain. This acrylic coating is used on roofs of commercial buildings and contains zinc oxide and ethylene glycol. The roofing material was washed into Carpenter Creek through a bypass pipe in the Target shopping center's stormwater treatment system. The Target Corporation was fined $75,000 after pleading guilty in U.S. District Court to a federal charge of illegally flushing pollutants in violation of the Clean Water Act. Target's nationwide roofing project supervisor was fined $80,000 and sentenced to five years probation with first six months under house arrest. The roofing foreman was sentenced to five months in prison followed by five months of house arrest.

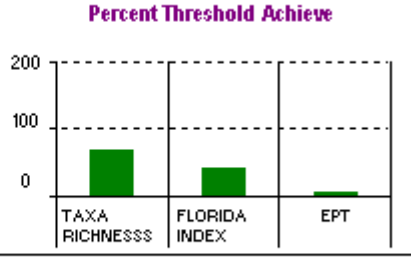
Carpenter Creek at this biomonitoring site (latitude N30 degrees 28 minutes 02 seconds longitude W87 degrees 12 minutes 37.5 seconds) is a third order tributary flowing to Pensacola Bay via Bayou Texar. The creek is located in Gulf Coast

Flatwoods of subecoregion 75A.

Results and Discussion

This BioRecon indicated a severely impaired biological community. All three biological indicators failed the threshold established for healthy aquatic ecosystems:

Biometrics	Value	Threshold
TAXA RICHNESS	16	>= 24
FLORIDA INDEX	9	>= 22
EPT	1	>= 17



Values and Percent Threshold Attained for Panhandle West BioRecon Metrics

The Taxa Richness (16), Florida Index (9), and EPT (1) below Target were essentially the same severely impaired macroinvertebrate community as found upstream at the 9th Avenue background site. That 9th Avenue background, above the Target stormwater discharge, BioRecon used as a control also indicated a severely impaired biological community with all three biometrics falling below thresholds established for healthy streams: Taxa Richness 14, Florida Index 9, and EPT 1.

A Carpenter Creek BioRecon bioassessment on August 1, 1995 just below 9th Avenue found essentially the same community with the biometric values of 14 Taxa, 3 Florida Index, and 1 EPT. These numbers fell to 6 Taxa, 3 Florida Index, and 0 EPT on February 26, 1996 following a diesel spill upstream at Sacred Heart Hospital. Carpenter Creek had a stable pollution-tolerant biological community adapted to nonpoint source runoff contaminants in this urban watershed. For a comparison, a bioassessment of Pond Creek at Arcadia Mill in Milton on March 1, 2002, had biometric scores of 74 Taxa, 49 Florida Index, and 37 EPT (see website ftp://ftp.dep.state.fl.us/pub/water/eco/Pond Creek Arcadia Mill.pdf).

The habitat score at the Carpenter Creek site below Target was significantly higher than the control site just upstream (66% to 44%) because of the highly disturbed riparian zone near 9th Avenue. Substrate diversity and availability, habitat smothering, artificial channelization, bank stability, riparian buffer zone width, and riparian zone vegetation quality scores below Target were better than the background upstream near 9th Avenue. Water velocity was excellent at both sites with a typical transect's highest rate 0.9 meters/second upstream and 0.95 meters/second below Target. Despite this high stream velocity, the dissolved oxygen (DO) and % DO saturation were lower downstream of Target (6.4 mg/l and 70%) versus the control site upstream (8.5mg/l and 94%). This was due in part by the high percentage (33%) of mud/muck/silt below Target compared to the absence of organic deposition (0%) at the upstream control. A French drainpipe from the stormwater treatment system

draining Target was observed flowing with clear water, although no significant rainfall since the discharge of the roof-coating material. It appeared to be constructed to de-water this former wetland seepage slope. Iron/sulfur bacteria smothered the stormwater treatment system discharge channel below Target at the time of this bioassessment. Some of the roof-coating material was observed on the storm drain behind Target and in the wetlands adjacent to Carpenter Creek below Target's stormwater discharge a month after the complaint. Zinc compounds, such as those used in roof-coating, are registered with the USEPA as herbicides and pesticides. They are used to control the growth of moss and to inhibit the growth of bacteria and fungus. The following is from the USEPA's website: http://www.epa.gov/oppsrrd1 / REDs/factsheets/4099fact.pdf.

"The labels of the zinc salt products must comply with EPA's current pesticide labeling requirements. In addition, the industrial preservative product must bear the following ecotoxicity statement: "This pesticide is toxic to fish and aquatic invertebrates. Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or public waters unless this product is specifically identified and addressed in an NPDES permit. Do not discharge this product into sewer systems without previously notifying the sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of U.S. EPA.""

Ethylene glycol, toxic to animals is used as an additive to prevent algae growth and as a rot and fungal treatment for wood. However, ethylene glycol will break down into other compounds, which exert an oxygen demand that consumes oxygen vital to fish and wildlife. The element zinc will persist in bottom sediments, adding to the existing pollution load of heavy metals in Bayou Texar.

Conclusions

These results confirm that this stream site does not meet Class III State Surface Water Quality Standards 62-302 for recreation and the propagation and maintenance of a healthy, well-balanced population of fish and wildlife.

Three major factors prevented observance of additional biological damage in this sample reach. First, the historical degradation from nonpoint source runoff already established a pollution tolerant aquatic community at this Carpenter Creek site below the stormwater treatment system draining Target. Second, the creek's high water velocity rapidly washed the roof-coating material downstream, where impacts of the spill of would be transferred downstream into tidal waters of Bayou Texar. And third, the habitat assessment score 66% below Target was better than 44% than the control site above the Target discharge pipe. Carpenter Creek, because it is already stressed by urban nonpoint runoff, is not able assimilate an additional pollution load from occurrences like dumping roof-coating material. The end results are impacts to Bayou Texar and Pensacola Bay. Millions of dollars of public funds for water quality restoration have already been spent on the Bayou Texar watershed. This has included the City of Pensacola dredging at 12th Avenue and at the mouth of Bayou Texar, the recently completed "Carpenter Creek Stormwater Needs Assessment report", grant funded studies by the University of West Florida, State funded studies by the Northwest Florida Water Management District, and federally funded studies by the US Environmental Protection Agency.