

EARTH DAY
Lower Cape Fear Celebration

April
27

2003



Greenfield Lake Amphitheater

The Lower Cape Fear Celebration of Earth Day will be held on Sunday, April 27th, 2003, from noon - 6pm, at the Greenfield Lake Amphitheater. The event will feature live music, 35+ exhibitor booths, FREE giveaways, food vendors and a Kid's Eco-Zone. This year's theme is the oyster. Storm Water Services is a proud sponsor of this event. Come join the fun!

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STORM WATER WATCH

WATER QUALITY ISSUE

Winter/Spring 2003

A Publication of the City of Wilmington's Storm Water Services

CITY APPLIES FOR FEDERAL NPDES PHASE II STORM WATER PERMIT

According to the EPA, 40% of US water bodies do not meet water quality standards or are impaired by pollution. The main source of these impairments is polluted storm water runoff. When it rains, water that runs off streets, parking lots, rooftops and construction sites carries sediment, motor oil, yard debris, pet waste, and other pollutants into nearby storm drains and drainage ditches. Once this runoff enters the storm sewer system, it flows-untreated-into our local streams and waterways. This runoff pollution is a major threat to public health and water quality.

The Storm Water Phase II Final Rule is the EPA's effort to preserve, protect and improve the nation's water resources from polluted runoff. These regulations require municipalities with storm sewer systems serving urbanized areas with populations under 100,000 to obtain a National Pollutant Discharge Elimination System (NPDES) permit under the Clean Water Act. Municipalities that discharge runoff directly into surface waters are required to get this NPDES permit. The permit requires the City of Wilmington to establish and maintain a storm water management plan with the aim of protecting water quality and human health. The City of Wilmington will apply for this comprehensive permit in March of 2003.

The intended goals of NPDES Phase II storm water regulations are to control polluted runoff and thereby, protect and improve water quality, safeguard human health, protect aquatic habitats and encourage stewardship and pollution prevention within the community. The six mandated components of NPDES Phase II are:

- ◆ PUBLIC EDUCATION
- ◆ PUBLIC INVOLVEMENT
- ◆ ILLICIT DISCHARGE DETECTION AND ELIMINATION
- ◆ CONSTRUCTION SITE RUNOFF CONTROLS (1-5 ACRES)
- ◆ POST-CONSTRUCTION SITE RUNOFF CONTROLS
- ◆ GOOD HOUSEKEEPING/POLLUTION PREVENTION OF MUNICIPAL FACILITIES

Fortunately, the City of Wilmington has several measures already in place to comply with the pending NPDES permit. In particular, the City is on the forefront of providing outreach, education and public involvement in the community with programs such as the *Keep It Clean!* Storm Drain Awareness Campaign, school Enviroscape presentations, a storm water newsletter and fact sheet series, Earth Day participation, a media outreach campaign, and public meetings regarding capital improvement projects. A copy of the permit can be viewed at Storm Water Services, 305 Chestnut Street, 4th floor.

WATER POLLUTION SOLUTIONS

- ◆ Clean up after your pet
- ◆ Throw litter in the trash
- ◆ Have your soil tested to obtain fertilizer recommendations
- ◆ Never fertilize before a rain
- ◆ Plant native plants because they require much less water and fertilizer
- ◆ Put grass clippings back on the lawn as a natural fertilizer
- ◆ Wash your car on the grass or at a commercial car wash
- ◆ Repair vehicle leaks
- ◆ Dispose of used auto fluids at the County landfill or an auto parts store
- ◆ Never dump anything into a storm drain or drainage ditch

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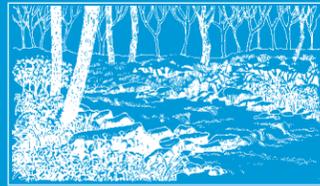


City of Wilmington
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UNCW
Annual Water
Quality Report
inside...

2001-2002 SUMMARY OF WILMINGTON WATERSHEDS PROJECT REPORT

The following information was provided by Dr. Michael Mallin, of the UNCW Center for Marine Science Research and lead scientist for the Wilmington Watersheds/Tidal Creeks Project:



Barnards Creek Watershed

There was a fecal coliform bacterial pollution problem at all of the stations sampled in the Barnard's Creek watershed. Lower Barnard's Creek at River Road had poor water quality as judged by turbidity and fecal coliform counts, and there was increased loading of all nitrogen species, suspended sediment, and biochemical oxygen demand (BOD) to this site compared with the 2000-2001 study.

Bradley Creek Watershed

Turbidity was not problematic during 2001-2002. Low dissolved oxygen was an occasional problem in brackish waters of the creek during summer and fall. Elevated nitrogen and phosphorus levels enter the creek in both the north and south branches, and one major algal bloom occurred in the south branch and one in the creek at College Acres. Fecal coliform bacterial contamination was excessive at five of the seven stations sampled. The station at College Acres proved to be contaminated on 83% of the occasions sampled.

Burnt Mill Creek Watershed

Fecal coliform bacteria and low dissolved oxygen are the primary problems in Burnt Mill Creek. A sampling station on Burnt Mill Creek at Princess Place had substandard dissolved oxygen during 33% of the sampling trips. This station also had poor microbiological water quality, exceeding the standard for human contact in seven of twelve samples, and hosted two algal blooms. The effectiveness of Anne McCrary wet detention pond on Randall Parkway as a pollution control device improved over last year. The pond led to significant reduction in conductivity, ammonium, orthophosphate, total phosphorus, and fecal coliform bacteria. Water quality worsened from where it exited the pond to the downstream Princess Place sampling station.

Greenfield Lake Watershed

All 3 tributaries of Greenfield Lake (near Lake Branch Drive, Jumping Run Branch, and Lakeshore Commons Apartments) suffered from low dissolved oxygen, high fecal coliform counts in excess of the state standard for human contact, and algal blooms occurred several times in the lake with several blooms exceeding 40 mg/L of chlorophyll *a*. The stream near Lakeshore Commons also maintained high nitrate and phosphate concentrations.

Generally, nutrient loading was highest at a station located in the south end that receives several urban and suburban inputs. Fecal coliform bacterial contamination was prevalent at all in-lake and tributary stations during 2001-2002, although this contamination was not as high as previous years due to low runoff as a result of the drought. A large regional wet detention pond on the tributary Silver Stream did a very good job of reducing pollutant loads to the lake from this drainage. However, contrary to previous years, ammonium and fecal coliform bacteria were not reduced (in the pond), likely because of construction activities occurring along the lower pond.

Hewletts Creek Watershed

This creek received lower nutrient loading in its three upper branches compared with last year, due to the drought, with only one algal bloom exceeding the State standard occurring in the south branch near Pine Grove Road. The middle branch of the creek had the highest nutrient concentrations, largely derived from two golf courses. Low dissolved oxygen was not a problem in 2001-2002. Fecal coliform bacteria were not sampled.

Howe Creek Watershed

Five stations were sampled in Howe Creek in 2001-2002. The lower creek maintained good water quality. In the upper creek, there were a few problems with low dissolved oxygen and occasional algal blooms. Fecal coliform bacteria counts were low near the Intracoastal Waterway, moderate in mid-creek, and high in the uppermost station during 2001-2002.

Smith Creek Watershed

Smith Creek had several moderate water quality problems. Turbidity and elevated suspended sediments occurred on occasion, and algal blooms exceeding 30 mg/L of chlorophyll *a* occurred twice at one station. Low dissolved oxygen problems occurred 25% of the time and 50% of the time at two sampling stations in Smith Creek during 2001-2002. Fecal coliform bacteria were not sampled.

Whiskey Creek

Whiskey Creek had relatively high nutrient loading but generally low chlorophyll *a* concentrations. There were several incidents of low dissolved oxygen at two of the five stations sampled this year, but high turbidity was not a problem. Fecal coliform bacteria were not sampled in 2001-2002.

Lower Cape Fear Watershed (Downtown Area)

Sampling was continued in the creek draining Greenfield Lake into the Cape Fear River. Fecal coliform concentrations exceeded the state standard for human contact waters on 33% of the sampling occasions during 2001-2002. Other parameters were not problematic at this station.

Greenfield Lake Watershed



A watershed is an area of land that drains runoff to a body of water such as a lake, stream, or river. On the map, the land area within the dark border is the Greenfield Lake Watershed. This area sheds runoff into Greenfield Lake and then into the Cape Fear River.

Size of watershed: 4 square miles

Size of Greenfield Lake: 100+ acres

History: Greenfield Lake was constructed in 1750 for the purpose of providing water for milling and irrigation for a nearby plantation. Years ago, people swam in the lake and could see the sandy bottom through clear water.

Lake Classification: "C". The designation "C" means that the intended uses of Greenfield Lake are for aquatic life propagation, general use, fishing, and non-body contact recreation such as canoeing.

Currently, Greenfield Lake is on the **State 303(d) list** - a listing of all water bodies in the state that do not meet water quality standards and their intended uses.

Lake inhabitants: Fish, turtles, alligators, great blue herons, egrets, ducks, geese and other waterfowl, macroinvertebrates, old growth Cypress trees, etc.

Surrounding land uses: Urban watershed, significant impervious surface coverage, commercial businesses, hospital, light industrial, multi-family residential apartment complexes, single family homes.

Primary causes of water pollution in the Lake: When it rains, runoff and the pollution in it, is carried through the storm drainage system directly into the lake.

- ◆ Pet and animal waste
- ◆ Fertilizer and pesticides
- ◆ Improper disposal of yard waste
- ◆ Litter and trash
- ◆ Car washing detergents and grime
- ◆ Construction and land-disturbing activities, eroding lawns, stream banks, and yards
- ◆ Illicit discharges (pouring motor oil, paint, household chemicals, etc. into the storm drainage system)

Water quality impacts on Greenfield Lake::

- ◆ Low dissolved oxygen levels
- ◆ High fecal coliform counts
- ◆ High nutrient levels
- ◆ Intense aquatic weed growth
- ◆ Frequent, extensive algal blooms
- ◆ Occasional fish kills
- ◆ Sediment accumulation

Solutions to water quality issues: It will take immense effort and care to improve the water quality in Greenfield Lake. Citizens, businesses and community leaders **must** work together to achieve this common goal. You can start to improve water quality in the Lake by practicing the "Water Pollution Solutions" listed on the front of this newsletter. Help protect water quality at the source - **you**.

Water Quality Profile



Algal blooms frequently cover Greenfield Lake and cause problems for fish and aquatic life. Blooms indicate that there are high nutrient levels and low dissolved oxygen levels in the water.



An egret stands on a cypress tree stump surrounded by litter and algae in Greenfield Lake.