

WETLANDS GUIDE

The City's Heal Our Waterways Program recently partnered with North Carolina State University's Department of Biological and Agricultural Engineering on a water quality improvement grant funded by the U.S. Environmental Protection Agency's 319 Grant Program.

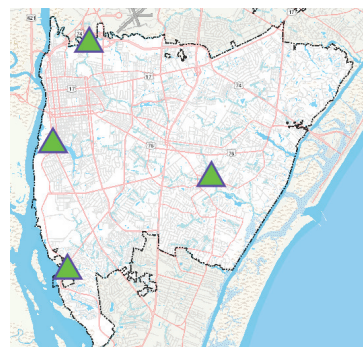
Several green infrastructure projects were installed near Clear Run Branch in the Bradley Creek Watershed, including a constructed wetland that replaced a retention pond behind University Commons. To help educate surrounding property owners and developers about the benefits of installing constructed wetlands, the partnership also created a "Constructed Wetlands Development Guide."

This approachable guide explores the key differences between retention ponds and constructed wetlands, including the environmental and community benefits they provide. Because no two man-made wetlands look the same, the guide highlights a variety of wetland projects in Wilmington and across North Carolina for inspiration. Developers and property owners can also find a "one-stop shop" of local and statewide resources to address specific design questions, measure water-quality benefits, and, in some cases, identify and apply for green infrastructure incentive programs.

To read the Constructed Wetlands Development Guide and other green infrastructure resources, visit the Heal Our Waterways Learning Library.

wilmingtonnc.gov/LearningLibrary

MONITORING WATER LEVELS



Wilmington has expanded its flood-monitoring network by adding four flood gauges along key waterways and in low-lying neighborhoods. The gauges were installed in flood-prone areas near Smith Creek, Hewletts Creek, Greenfield Lake, and Barnards Creek.

Flood gauges provide early warnings when heavy rain or storm surge pushes water past safe thresholds, giving residents more time to move vehicles, protect property, or evacuate if needed. They also help identify which streets are becoming impassable, reducing the risk of drivers getting stranded. Over time, the data can help the city improve drainage planning and better target infrastructure investments.



City residents can access the data and set their own alerts on the Flood Inundation Mapping & Alert Network website.

fiman.nc.gov

EARTH DAY FESTIVAL: POSTPONED

Due to unforeseen circumstances, the annual Earth Day Festival typically held in April is being postponed until 2027.

There are still opportunities to get involved and make a difference including the annual Work on Wilmington event on Saturday, April 18, 2026.

wilmingtonchamber.org/work-on-wilmington



Wilmington, NC | Spring 2026

STORMWATER WATCH

GREENFIELD LAKE SENSORS



The City recently added three AquaRealTime water quality sensors to Greenfield Lake. This technology supports the City's ongoing efforts to protect and improve local water resources.

The solar-powered sensors provide round-the-clock data of key water quality parameters including water temperature,

dissolved oxygen, and algae levels.

Water quality data is transmitted 24/7 and enables City staff to track patterns and trends over time. This allows the development of proactive maintenance plans to address potential issues in the lake. This is especially important for proactively identifying algal blooms and other water quality issues before they become emergencies.

Data collected from the sensors is also accessible via an online dashboard to City partners, including UNC-Wilmington, Cape Fear Community College, and Cape Fear River Watch. This partnership allows staff, educators, and researchers to stay informed about the condition of Greenfield Lake. Ultimately, the sensors help protect and improve the water quality of Greenfield Lake. ■

aquarealtime.com

PRESSURE WASHING 411

Under the Clean Water Act, the City is required to protect surface waters from pollution and to educate the public. The City's Illicit Discharge Ordinance prohibits washwater from commercial pressure washing and vehicle detailing that uses detergents and chemical cleaners from entering the stormwater drainage system.



Washwater from these activities contains pollution including soap, dirt, oil, grease, chemicals, and heavy metals which wash off hard surfaces like parking lots and end up in our creeks and waterways. Polluted washwater harms aquatic habitat, recreational waters, and drinking water sources.

Commercial pressure washers and detailers have several options to address dirty washwater that include:

- Using pressure or steam but no detergents or chemicals
- Setting up a containment system to collect and properly dispose of contaminated washwater
- When cleaning vehicles, rinsing with plain water or utilizing a commercial car wash ■

wilmingtonnc.gov/stormwaterregs

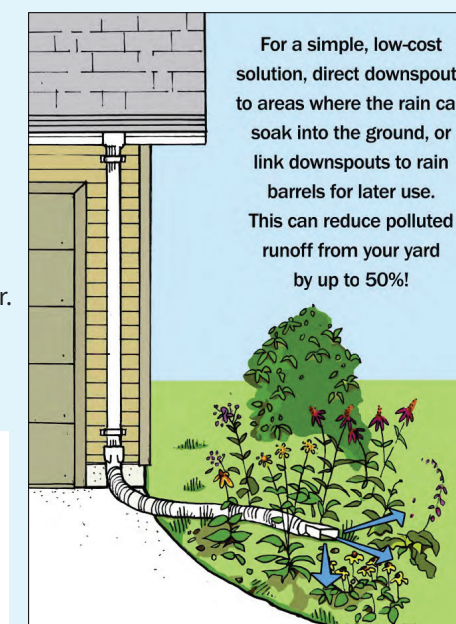
REDIRECTING RAIN

Stormwater runoff carries pollution such as bacteria from pet waste, fertilizer, pesticides, and litter straight to our waterways, untreated. Residential properties and businesses can play a significant role in reducing polluted runoff flowing from their properties. The solution is often simple and inexpensive.

Rerouting downspouts onto a lawn or landscaped areas allows stormwater to soak into the ground naturally, rather than allowing polluted runoff to flow into creeks and waterways. As a bonus, plants prefer mineral and nutrient-rich rainwater over treated tap water. If you redirect downspouts into a rain barrel, you can use the stored water to water your plants or wash your car.

There are a few ways to reroute a downspout. The easiest method is to purchase a low-cost flexible gutter extender that directs the runoff away from hard surfaces and onto a lawn, landscaped area, rain garden, or rain barrel. There are also low-profile extenders, allowing you to divert water across a walkway without creating a tripping hazard. A more permanent solution is to purchase a new, rigid fitting for the end of the gutter that redirects flow without the extender. Parts can be purchased at your local hardware store. Every option is easy and inexpensive and makes a big difference for our waterways. ■

[Learn more at healourwaterways.org](http://healourwaterways.org)



For a simple, low-cost solution, direct downspouts to areas where the rain can soak into the ground, or link downspouts to rain barrels for later use. This can reduce polluted runoff from your yard by up to 50%!



CONTACT

Stormwater
Administration..... 910.343.4777
Drainage/Maintenance..... 910.341.4646
Billing Questions 910.343.4777

Report Stormwater Pollution Hotline
910.341.1020
wilmingtonnc.gov/reportstormwaterpollution

City of Wilmington Public Works Department
P.O. Box 1810, Wilmington, NC 28402

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wilmingtonnc.gov/stormwater



The Stormwater Watch is printed using recycled paper content.

THE STATE OF WILMINGTON'S WATERWAYS 2025 UNCW SURFACE WATER QUALITY REPORT

(The following is a summary of the condition of major creeks and waterways, not drinking water, within the city limits.)

The State of Wilmington's Waterways UNCW Surface Water Quality Report is a summary of the current health and condition of the major creeks and waterbodies that fall within Wilmington's city limits. UNCW water quality sampling information was provided by lead scientist for the Wilmington Watershed Project, Dr. Michael Mallin, of the UNCW Center for Marine Science.

The water quality sampling summary is based on data collected between the months of January-December 2025 and is presented from a watershed perspective, regardless of political boundaries.

The summary describes each watershed by size, state classification, state status, reason for impairment, and UNCW sampling summary.

uncw.edu/research/centers/marine-science/research/aquatic-ecology/

Water Definitions

Algal Bloom Rapidly occurring growth and accumulation of algae in a waterway resulting from excess nutrients that can lead to low dissolved oxygen levels and fish kills. (Sources: fertilizers, grass clippings, pet waste)

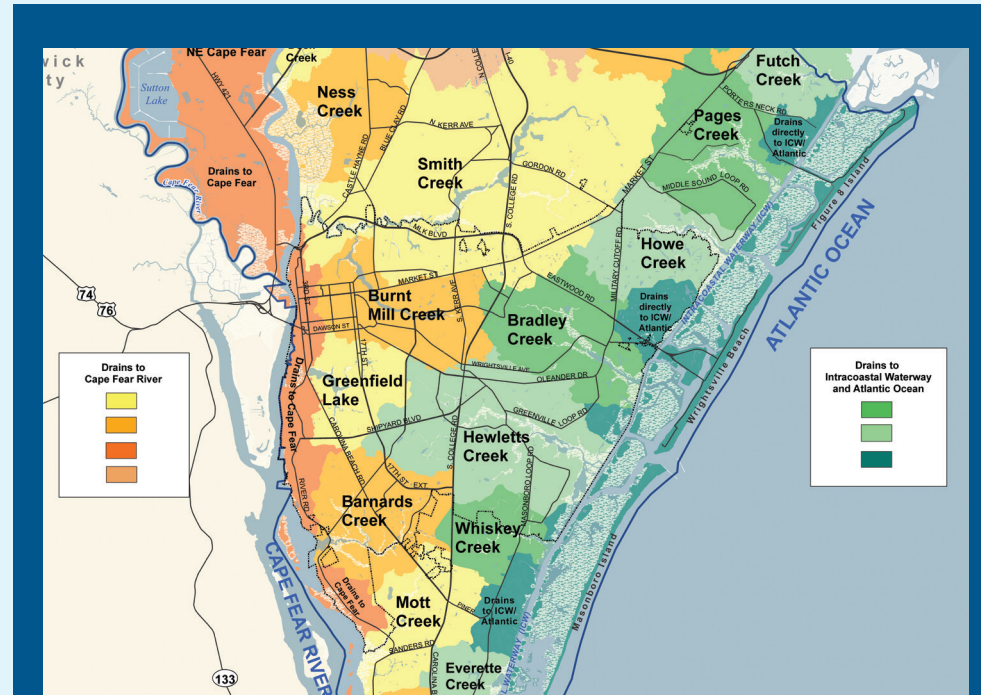
Biological Integrity The ability of an ecosystem to support and maintain a balanced and indigenous community of organisms.

Best Management Practice (BMP) or Stormwater Control Measure (SCM) Action or landscape modification that reduces the amount of pollution and/or the quantity of stormwater flowing into waterways. BMPs are actions, like picking up pet waste, or on-the-ground practices, such as rain barrels and rain gardens.

Chlorophyll a Allows plants to photosynthesize and gives plants their green color. Waters that have high chlorophyll a levels are typically high in nutrients (phosphorus and nitrogen), which cause algae to grow or bloom. When algae die, it depletes oxygen from the water and can cause fish kills.

Dissolved Oxygen (DO) The amount of oxygen available in water. Fish and aquatic organisms require adequate levels of DO to survive.

Fecal Coliform Bacteria Bacteria present in the intestines and feces of warm-blooded animals. High counts of fecal coliform bacteria in a waterway indicate the presence of other disease-causing pathogens, which can cause sickness and disease in humans and animals. (Sources: pet waste, sewer overflows, septic system failure)



UNCW Results Summary:

Greenfield Lake continues to host nuisance algal blooms, although fewer than the previous year. The tributary creeks of Jumping Run Branch and Squash Branch, continue to load high fecal bacteria and nutrients (nitrogen and phosphorus) into the lake. Additional funding is being pursued to rehabilitate the lake. Upper Barnards Creek, Bradley Creek and Burnt Mill Creek also had high fecal coliform bacterial counts.

Hypoxia Low dissolved oxygen levels in a waterway, which can result in fish kills.

Nutrients Substances (e.g. nitrogen and phosphorus) needed by plants and animals for growth; however, excessive nutrients in a waterway can lead to harmful aquatic weed and algae growth, low DO levels, and fish kills. (Sources: fertilizers, yard waste, pet waste)

Pathogens Disease-causing organisms, such as bacteria and viruses. (Source: pet waste)

PAHs (Polycyclic Aromatic Hydrocarbons) Toxic byproducts of petroleum and fossil fuels, which can be harmful to humans and aquatic life and can persist in the environment for a long time. (Sources: auto exhaust, motor oil, parking lot sealcoats, roofing tars, coal power plants)

Sediment Particles of silt, clay, dirt, or sand, caused by land-disturbing activities or natural weathering that wash into waterways. Sediment can settle to the bottom or remain suspended in water. (Sources: construction sites with failing erosion control, eroding streambanks, exposed soil)

Tidal Creek A saltwater creek that is influenced by tides. Many tidal creeks have oyster reefs along their shorelines.

Turbidity A cloudy condition in water caused by suspended sediment.

Watershed An area of land that drains into a specific body of water, such as a creek, lake, or river.

Water Classifications

The N.C. Division of Water Resources applies classifications to waterways which define the best uses to be protected within those waters (e.g. swimming, fishing, drinking water supply, aquatic life). These classifications have an associated set of water quality standards to protect their designated uses. These standards may be designed to protect water quality, fish and wildlife, the free flowing nature of a stream, or other special characteristics. In addition, there may be a **supplemental classification** applied to protect several different uses or special

characteristics within the same waterbody. Listed below are the freshwater and saltwater classifications that apply to Wilmington's waterways

deq.nc.gov/about/divisions/water-resources/water-planning/classification-standards/classifications

Freshwater Classifications

Class C Waters protected for secondary recreation (fishing, boating, and other activities involving minimal and infrequent skin contact), wildlife, agriculture, biological integrity, and fish/aquatic life propagation and survival.

Supplemental Classification

Swamp Waters (Sw) Waters that naturally have low flow and other characteristics which differ from creeks that drain land with steeper topography.

Saltwater Classifications

Class SC Saltwaters protected for secondary recreation (fishing, boating, and other activities involving minimal skin contact), fish and noncommercial shellfish consumption, fish/aquatic life propagation and survival, and wildlife.

Class SB Saltwaters used for primary recreation, such as swimming, and all Class SC uses.

Class SA Saltwaters used for commercial shellfishing and all Class SC/SB uses. SA waters are also High Quality Waters (HQW) by supplemental classification.

Supplemental Classifications

High Quality Waters (HQW) Waters rated excellent based on biological, physical, and chemical characteristics and having primary or functional nursery areas.

Outstanding Resource Waters (ORW)

Unique and special waters having excellent water quality and being of exceptional state or national ecological or recreational significance.

State Status/Reason

Indicates whether or not a creek is supporting its state classification/use and the reason why.

NC 303(d) List of Impaired Waters

Section 303(d) of the Clean Water Act requires states to develop and frequently update a list of waters that do not meet water quality standards or have impaired uses. This newsletter is based on the NC 303(d) list:

deq.nc.gov/about/divisions/water-resources/water-planning/modeling-assessment/water-quality-data-assessment/integrated-report-files

Unfortunately, several of Wilmington's waterways are on the 303(d) list because of pollution, such as fecal coliform bacteria and nutrients, which is washed from the land by stormwater runoff.



Cape Fear River



Intracoastal Waterway

Watersheds that drain to the Cape Fear River (CFR)

Smith Creek

Size of watershed: 16,650 acres

State classification/use: C, Sw

State status: Currently supporting use

Reason: Meets standards for Class C waters

UNCW sampling summary: There were no issues with dissolved oxygen (DO), turbidity, chlorophyll a, or fecal coliform bacteria. The creek was rated "good".

Burnt Mill Creek

Size of watershed: 4,207 acres

State classification/use: C, Sw

State status: Impaired. On NC 303(d) List

Reason: Does not meet standards for Class C waters, specifically for biological integrity of benthos (bottom dwelling organisms)

UNCW sampling summary: The creek entering Randall Parkway Pond maintained good dissolved oxygen levels, low turbidity, and moderate fecal coliform bacteria, and hosted occasional minor algal blooms. Lower Burnt Mill Creek sampled at Princess Place had good dissolved oxygen levels and low turbidity, but had periodic excessive fecal bacteria counts and algal blooms in April and November.

Greenfield Lake

Size of watershed: 2,465 acres

State classification/use: C, Sw

State status: Impaired. On NC 303(d) List

Reason: Does not meet standards for Class C waters, specifically for chlorophyll a

UNCW sampling summary: The Jumping Run and upper Squash Branch tributaries into the lake were impacted by low dissolved oxygen levels and high fecal coliform counts. These tributaries are the main contributors of elevated nitrogen and phosphorus into the lake. The lake itself had low to moderate fecal coliform bacteria counts, algal blooms, and low dissolved oxygen levels.

Barnards Creek

Size of watershed: 4,173 acres

State classification/use: C, Sw

State status: Currently supporting use

Reason: Meets standards for Class C waters

UNCW sampling summary: Two sites sampled in upper Barnards Creek had high fecal coliform bacteria counts.

Mott Creek

Size of watershed: 3,342 acres

State classification/use: C, Sw

State status: Currently supporting use

Reason: Meets standards for Class C waters

UNCW sampling summary: Not sampled.

Watersheds that drain to the Intracoastal Waterway (ICW)

Howe Creek

Size of watershed: 3,516 acres

State classification/use: SA, ORW

State status: Impaired. On NC 303(d) List;

closed to shellfishing

Reason: Does not meet standards for Class SA waters, specifically for fecal coliform bacteria

UNCW sampling summary: Not sampled.

Bradley Creek

Size of watershed: 4,583 acres

State classification/use: SC, HQW

State status: Currently supporting use

Reason: Meets standards for Class SC waters

UNCW sampling summary: Bradley Creek is sampled at two sites along Wrightsville Avenue and three sites in the upper north branch (Clear Run Branch). All upper stream sampling sites had high fecal coliform bacteria counts and two of the sites had low dissolved oxygen. One Wrightsville Ave. station had good water quality, but the south branch had high fecal coliform and algal blooms.

Hewletts Creek

Size of watershed: 7,478 acres

State classification/use: SA, HQW

State status: Impaired. On NC 303(d) List;

closed to shellfishing

Reason: Does not meet standards for Class SA waters, specifically for fecal coliform bacteria

UNCW sampling summary: Hewletts Creek experienced one algal bloom and minor dissolved oxygen issues. Fecal coliform were elevated at two sampling sites.

Whiskey Creek

Size of watershed: 2,078 acres

State classification/use: SA, HQW

State status: Impaired. On NC 303(d) List;

closed to shellfishing

Reason: Does not meet standards for Class SA waters, specifically for fecal coliform bacteria

UNCW sampling summary: Not sampled.

**All waters in the State of North Carolina are impaired for mercury, based on high levels found in the tissues of several fish species.*