CITY OF WILMINGTON STORMWATER SERVICES

Wilmington, NC | Spring 2025

STORMWATER WATCH

CANINES FOR CLEAN WATER

We love our dogs, but their waste is a serious water quality and public health issue. When it rains, bacteria from uncollected pet waste washes into local waterways, without treatment.

Bacteria, viruses and parasites in pet waste make surface waters unsafe for swimming, fishing, and shellfish harvest.

Pathogens in pet waste can make humans ill with diseases and infections such as salmonella, E. coli, giardia and roundworm. Nutrients in waste also harm aquatic habitat by fueling algal blooms and fish kills.

The city's Canines for Clean Water (C4CW) Program encourages pet owners to sign a pledge promising to clean up and properly dispose of pet waste to protect our waterways and human health. Pet owners receive a goody bag with a C4CW bandana, clean-up bags, water bowl, and other program materials. Pet owners can send a photo of their pet for the online photo gallery. To date, nearly 2,000 pet owners have signed the C4CW pledge at local events! ■

wilmingtonnc.gov/canines

WHAT IS A WATERSHED?

Everyone lives, works and plays in a watershed. A watershed is the land area that drains runoff to a particular body of water such as a creek, lake, or ocean.

For example, if you live in the Hewletts Creek Watershed, even miles away from the creek, runoff from your property will eventually drain into Hewletts Creek. From there it flows into the Intracoastal Waterway and then makes its way to the Atlantic Ocean.

You and everyone in your watershed are part of the watershed community. This includes animals, birds, and fish. You influence what happens in your watershed, good or bad, by how you treat the natural resources — the land, soil, water, air, plants, and animals. What happens in your backyard and in your neighborhood directly impacts our local waterways. ■

Find your watershed: wilmingtonnc.gov/watershedmap

HEWLETTS CREEK RECOGNIZED

The Environmental Protection Agency has added Hewletts Creek to its Success Story map in recognition of recent water quality improvements and restoration efforts. While the creek is still listed as impaired, and shellfish harvest is prohibited, bacteria levels in the creek have steadily improved in recent years. The most recent Sanitary Survey from the N.C. Division of Marine Fisheries credits these improvements to the city's and community's work implementing the Bradley and Hewletts Creek Watershed Restoration Plan. This voluntary restoration plan was adopted by City Council in 2012 and encourages nature-based stormwater solutions to improve water quality.

Nature-based stormwater solutions, like the constructed wetland the city installed at JEL Wade Park, helps slow down, soak in, and treat stormwater runoff before it can wash pollutants into Hewletts Creek. In total, more than 150 nature-based practices have been installed in the Hewletts Creek Watershed since the plan was adopted. Many citizens and local businesses are making an impact by reducing their stormwater pollution footprints. These include actions such as picking up pet waste and on-the-ground practices such as installing native plants, cisterns and rain gardens. This recognition for Hewletts Creek is also a recognition of these combined efforts from the community and city. ■

Learn more at healourwaterways.org

THE STATE OF WILMINGTON'S WATERWAYS
2024 UNCW SURFACE WATER QUALITY REPORT

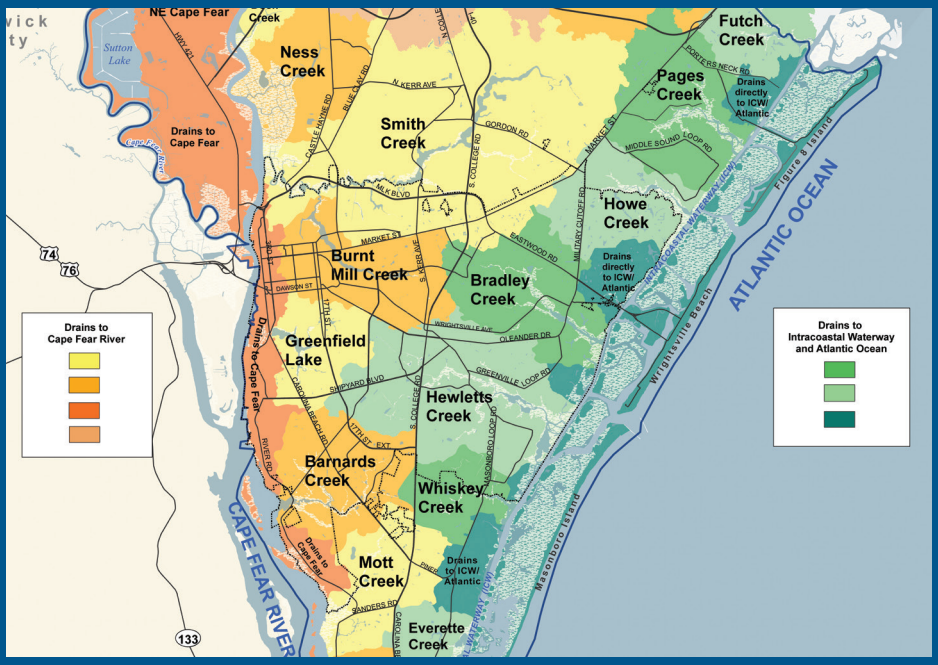
(The following is a summary of the condition of major creeks and waterways, not drinking water, within the city limits.)

The State of Wilmington's Waterways 2024 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 and December 2024** 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/



UNCW Results Summary:

Greenfield Lake continues to host nuisance algal blooms. The tributary creeks, Jumping Run Branch and Squash Branch, load high fecal bacteria and nutrients (nitrogen and phosphorus) into the lake. A large fish kill occurred in the lake in May-June, resulting from a large influx of polluted stormwater into the upper portion of the lake.

With funding from the city, partial dredging of phosphorus-laden sediment occurred in Squash Branch. Additional funding is being pursued to remove more sediment in this tributary.

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)

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.

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 low fecal coliform bacteria, but had occasional algal blooms. Lower Burnt Mill Creek sampled at Princess Place had good dissolved oxygen levels and low turbidity, but had excessive fecal bacteria counts and large algal blooms in May 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 suffered from fecal coliform bacteria, algal blooms, and low dissolved oxygen levels leading to a fish kill.

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: Barnards Creek is sampled at two stations which both showed problems with elevated fecal coliform bacteria counts and an algal bloom occurred at one station.

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; a portion of Howe Creek is also impaired for dissolved oxygen
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 suffered from high fecal coliform bacteria counts. Two sampling sites on the upper stream were also impacted by low dissolved oxygen and an algal bloom. The two Wrightsville Avenue sampling stations had generally good water quality except for high fecal coliform counts on two occasions.

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 did not experience algal blooms or turbidity issues, and dissolved oxygen was generally good. However, fecal coliform counts were consistently 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.*

EMPLOYEE SPOTLIGHT

Wilmington holds a federal stormwater permit, which requires inspection and maintenance of private Stormwater Control Measures (SCMs) like retention ponds, permeable pavement, and constructed wetlands. SCMs are designed to remove pollution from stormwater runoff before reaching local waterways. Within the city limits, there are more than 600 private SCMs that have been installed to meet stormwater regulations for neighborhoods and businesses.

The city has a dedicated stormwater inspector to accomplish this robust task. Michael Blagg has diverse experience including private consulting, engineering, and laboratory instruction at Duke University. He holds the necessary stormwater certifications to conduct inspections, issue compliance reports, and perform documentation for state reporting and audits.

The purpose of the inspection program is to bring ponds and other SCMs into compliance, but Michael acknowledges that building a trusting, open relationship with property owners is equally important to keep the SCMs in good working order.

In addition to SCM inspections, Michael works alongside the city's Code Enforcement Department to investigate illicit discharges. Illicit discharges are anything other than rainwater that enters the stormwater system and could impact water quality and aquatic habitat.

Part of the responsibility of preventing illicit discharges is to educate the public. Michael participates in community events to create relationships with the public and help ensure items such as motor oil, litter, chemicals, yard debris, and pet waste stay out of our stormwater system. ■

Learn more about inspections: tinyurl.com/SCM-Maintenance

2025 EARTH DAY FESTIVAL

The annual Earth Day Festival will be held on **Saturday, April 26, 2025** from **12 p.m.-6 p.m.** at Long Leaf Park in Wilmington. This year's theme is "Our Power, Our Planet."

The City of Wilmington Stormwater and Heal Our Waterways programs are major sponsors of the event and will host interactive exhibits. The festival features environmental information and activities with 50+ exhibitors.

This **free** fun-filled family event offers live music, food trucks, raffle prizes, and a Kids' EcoZone. Free on-site parking and trolley shuttles from the New Hanover County Senior Center will be available. ■

wilmingtonearthday.com

EV VEHICLES

The city's Public Works Division has two new Nissan Leaf vehicles, the first 100% electric vehicles (EV) in the city fleet.

One of these vehicles has been assigned to stormwater education staff to attend local events and school and community presentations.

These vehicles are the first step in helping the city reduce greenhouse gas emissions, with the goal of having 50% of the city fleet transition to EVs by 2035. ■

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