



Reduction of Nutrient Loading to Greenfield Lake from Jumping Run Branch (Phase 1)

FUNDING SOURCE & AMOUNT

EPA 319 Grant Program
\$350,308 funded, including match

TIMEFRAME

Awarded January 2020
2-year grant

GRANT ADMINISTRATOR

Cape Fear River Watch (CFRW)

GRANT PARTNERS

Cape Fear River Watch
City of Wilmington -
Stormwater Services
UNCW
NCSU
Moffat & Nichol

SUMMARY / DESCRIPTION

Greenfield Lake Park in urban Wilmington, NC is a very popular 250-acre public park noted for live oaks, cypress trees, azaleas, a 5-mile scenic drive that follows the shoreline and wildlife including anhinga, alligators, turtles and fish. Recreational amenities include playgrounds, tennis courts, paddle boat and canoe rentals, a skatepark, a 4.9-mile hike-bike nature trail and a newly renovated amphitheater.

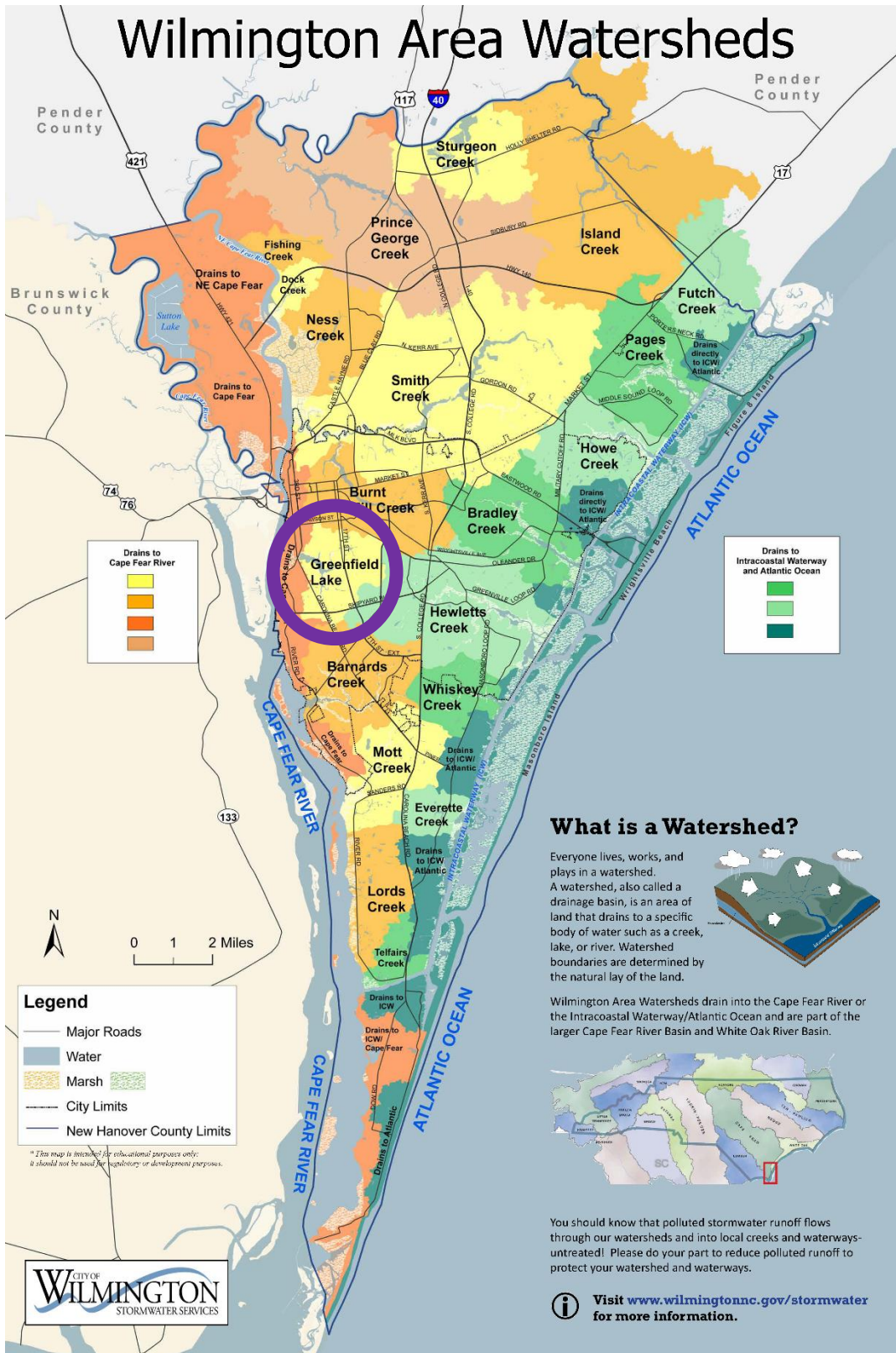
Greenfield Lake (GFL), the center piece of the park, suffers from green and blue-green algal blooms, bottom-water hypoxia, fish kills, and high fecal coliform bacterial counts. The lake was placed on the NC 303(d) list in 2014 for excessive chlorophyll a. As such, a consortium of major stakeholders (City of Wilmington, Cape Fear River Watch, UNCW, NC State University and private concerns) are working to reduce nutrient loading to the lake and curb eutrophication, with the foremost goal of allowing the lake to be removed from the 303(d) list. UNCW has conducted numerous studies and determined the two tributary streams with the highest nutrient input.

This grant project is reflective of Phase 1 of a Two-Phase plan to accomplish the goals of reduced nutrient inputs, lower chlorophyll a concentrations, and an improved lake ecosystem.

GRANT GOAL(S)

- Design of physical remodeling of Willard St. Wet Pond/Wetland – owned by the City of Wilmington and adjacent to the Jumping Run tributary stream that flows into Greenfield Lake. This will include: regrading the upper BMP cell to support wetland vegetation, stabilizing the cell; increasing length of flow path; installing new scour pools at the inlet locations with new rock; installing new concrete risers for each cell with new rock at the outlet pipe ends; vegetation management in the lower cell; wetland planting in much of the upper cell with an 18-inch spacing. (Construction will occur in Phase II)
- Installation of a retrofit innovative reactive treatment berm at a private retention pond by NCSU for monitoring. Enhancement aims to reduce nutrients and pathogens through passage of runoff through a proprietary filter media installed upstream of the outlet structure.
- Extensive monitoring and assessment of water quality and denitrification in key locations.
- Environmental education and outreach, as well as citizen science opportunities, in order to enhance public awareness and concern for the water quality of this ecologically, culturally and historically significant lake (that is today used by thousands of residents and tourists each year for recreation, education and entertainment.)

Wilmington Area Watersheds



Drains to Cape Fear River

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-
-
-

Drains to Intracoastal Waterway and Atlantic Ocean

-
-
-

Legend

- Major Roads
- Water
- Marsh
- City Limits
- New Hanover County Limits

* This map is intended for informational purposes only; it should not be used for regulatory or development purposes.



What is a Watershed?

Everyone lives, works, and plays in a watershed. A watershed, also called a drainage basin, is an area of land that drains to a specific body of water such as a creek, lake, or river. Watershed boundaries are determined by the natural lay of the land.

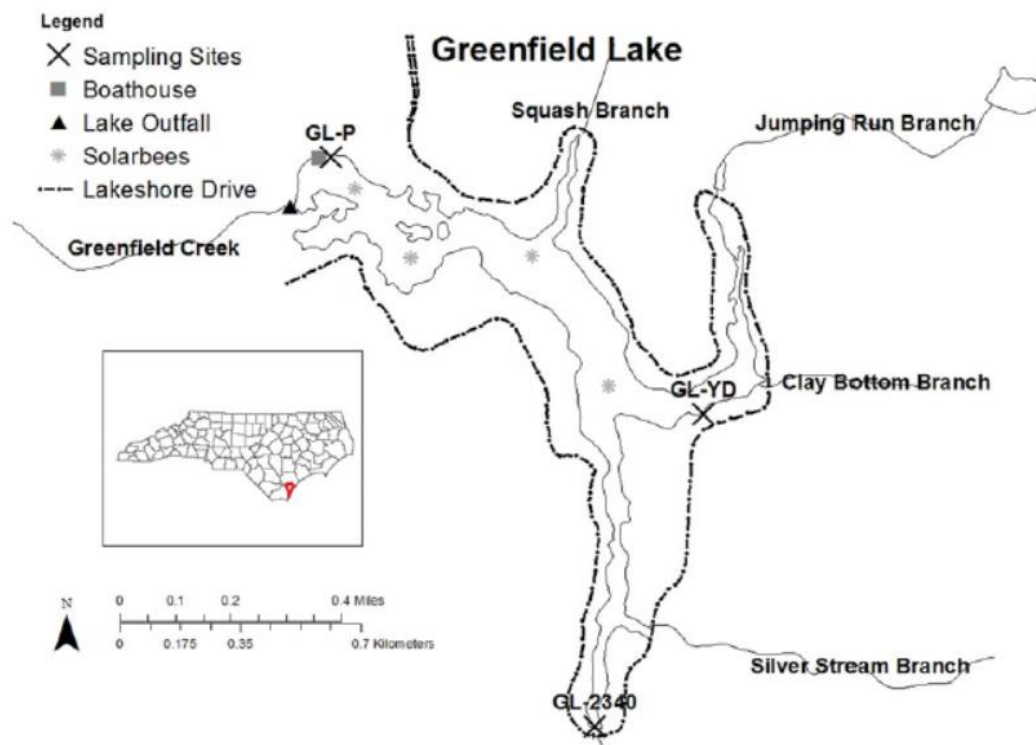


Wilmington Area Watersheds drain into the Cape Fear River or the Intracoastal Waterway/Atlantic Ocean and are part of the larger Cape Fear River Basin and White Oak River Basin.



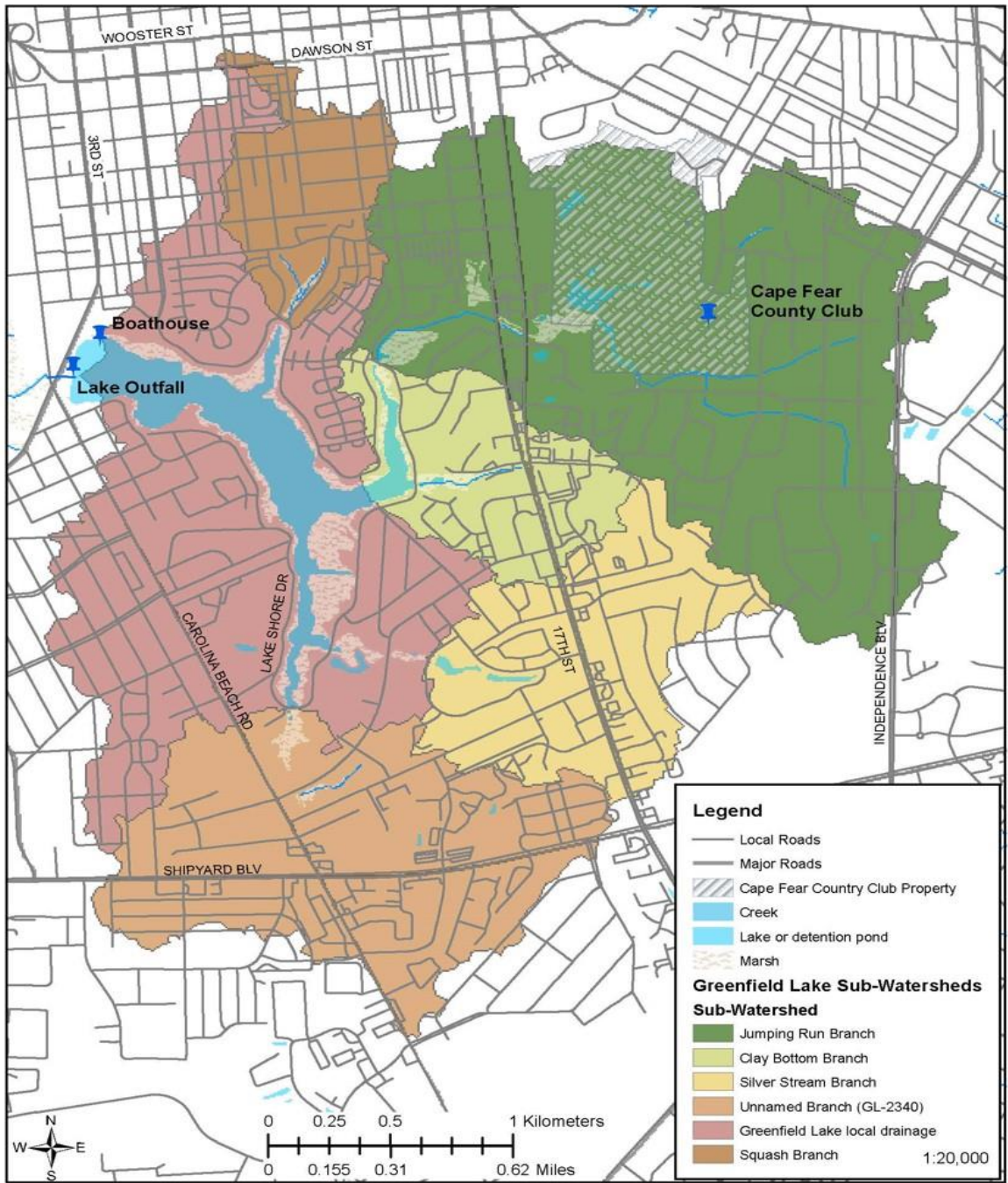
You should know that polluted stormwater runoff flows through our watersheds and into local creeks and waterways-untreated! Please do your part to reduce polluted runoff to protect your watershed and waterways.

i Visit www.wilmingtonnc.gov/stormwater for more information.



Greenfield Lake, showing UNCW water quality sampling stations, major tributaries into the lake, the road circling the lake, and locations of Solarbee mixers.

Map Credit: Mike Mallin, UNCW



Greenfield Lake Sub-Watersheds:

Phase 1 of the grant focuses on the Jumping Run tributary (**dark green** sub-watershed).

UNCW Researchers have determined that the Jumping Run Branch tributary that flows into Greenfield Lake, should be *prioritized* for inorganic nutrient reduction.

UNCW Aquatic Ecology Lab Research:

<https://uncw.edu/cms/aelab/research.html>

Jumping Run Branch Location Site Map





Willard Street Wet Pond/Wetland is bordered by 15th Street, 16th Street, and Willard St. and flows into the Jumping Run Branch Tributary of Greenfield Lake