Cape Fear River Basin Planning Introduction and Document Guide

North Carolina's Basin Planning Program

North Carolina's Basinwide Water Resources Management Plans (basin plans) are a nonregulatory, watershed-based approach to restoring and protecting North Carolina's water resources. The Basin Planning Branch (BPB) within the N.C. Division of Water Resources (DWR) prepares basin plans for each of the 17 major river basins in the state. While these plans are prepared by DWR, implementation of the plans' recommendations requires the coordinated efforts among many agencies, local governments, and stakeholders in the basin and across the state.

Basin plans were first officially authorized by the N.C. General Assembly in 1997. Session Law 1997-458, codified as G.S. 143-215.B and updated in Session Law 2021-158, required the development of basinwide plans for each of North Carolina's 17 river basins. Per statute, basin plans must implement a "comprehensive, systemwide management approach" to protecting and improving water quality. The statute requires consideration of "the cumulative impacts of all activities across a river basin and all point sources and nonpoint sources of pollutants" and directs basin plans to "provide that all point sources and nonpoint sources of pollutants jointly share the responsibility of reducing the pollutants in the State's waters in a fair, reasonable, and proportionate manner." Basin plans may include suggestions for regulatory action or improvement and encourage voluntary measures to protect and improve our water resources.

In 2012, Session Law 2012-200 changed the basin plan update schedule from a five-year to a ten-year cycle. The following year, Session Law 2013-413 combined the former Divisions of Water Quality and Water Resources into DWR's current structure. This merger resulted in the development of data management schemes and planning initiatives to support the creation of integrated basin plans to address both water quality and quantity issues. In 2021, Session Law 2021-158 further refined the scope of basin plans to formally include water quantity issues, better align with information sources available to the Division, and changed reporting requirements to the General Assembly.

Information presented in the basin plans is reviewed and approved by the Environmental Management Commission (EMC), but they are not rule. Water quality standards, classifications, or "any requirement or limitation of general applicability that implements a basinwide water resources management plan" must be adopted as rules in accordance with the North Carolina Administrative Procedures Act (Session Law 2021-158).

Chapter Overviews

This document is the fourth edition of the Cape Fear River Basin plan and the first to be published since moving to a 10-year cycle. Chapters 1 through 5 address topics that are applicable throughout the entire Cape Fear River Basin. Chapters 6 through 11 focus on water quality conditions between 2000 and 2020 for each of the six HUC-8 subbasin/watersheds. Chapters 12 and 13 focus on PFAS and 1,4-dioxane.

Chapter 1: Overview of Cape Fear River Basin Characteristics

Chapter 1 provides a description of the Cape Fear River Basin's geography, ecoregion, land cover, and population. Point and nonpoint sources of pollution are identified and include wastewater, stormwater,

forestry, and agriculture which includes a summary of USDA county statistics and how agriculture has changed over time. Chapter 1 also include information about biodiversity in the basin, including rare and endemic species like the Cape Fear Shiner, migratory fish populations, critical habitat needs, regions of ecological significance, significant aquatic habitats, and the different types of wetlands and why they are important. Other important issues discussed include climate risk and resiliency with a focus on sea level rise, hurricanes, and flooding and ways to protect water resources throughout the Cape Fear River Basin. Overarching basinwide recommendations are included in this chapter.

Chapter 2: Water Quality Assessment and Monitoring

Chapter 2 reviews the North Carolina water quality classifications and standards, water quality assessments, and monitoring data for the Cape Fear River Basin. Basinwide water quality monitoring summaries for physical and chemical parameters, biological monitoring for macroinvertebrate (benthic) and/or fish communities and aquatic habitat, as well as algal surveys and harmful algal blooms (HABs) are included here. Other important water quality related topics covered are shellfish growing areas, fish consumption advisories (including the new PFOS advisory), Contaminants of Emerging Concern (CECs), nutrient issues, and the Nutrient Criteria Development Plan (NCDP) process. U.S. Geologic Survey (USGS) stream flow gages, groundwater monitoring, and atmospheric deposition in the basin are also included along with basinwide recommendations related to monitoring and water quality.

Chapter 3: Permitted and Registered Activities

Chapter 3 provides summaries for permitted and registered activities across the basin. These programs include wastewater management, 404 and 401 wetland and stream permitting, stormwater permits, animal feeding operations (AFOs), water use programs, and programs managed by the Division of Waste Management (DWM). The section on wastewater management includes the current permitting procedures for NPDES wastewater facilities that discharge to surface waters in the basin. A permit summary analysis by drainage area of the Cape Fear River's major waterways is included to help identify potential pollution sources affecting water quality.

Chapter 4: Local Initiatives, Funding Opportunities, Planning, and Land Management

A wide variety of water resource management topics are covered in Chapter 4 including Total Maximum Daily Loads (TMDLs), Watershed Action Plans (WAPs), compensatory mitigation, local and statewide initiatives, and land conservation and preservation stewardship agencies, partners and tools. The Cape Fear River Basin has many active and engaged stakeholder groups focused on improving water resources. Many of these groups are highlighted in this chapter. Watershed planning, environmental justice (EJ), stakeholder engagement, grants and funding opportunities, and basinwide stewardship recommendations for protecting water quality in the basin are included here.

Chapter 5: Water Quantity Assessment and Planning in the Cape Fear River Basin

Chapter 5 provides information on water use programs managed by DWR including the Water Withdrawal and Transfer Registration (WWATR) Program, the Local Water Supply Planning (LWSP) Program, the Central Coastal Plain Capacity Use Area (CCPCUA), and the Interbasin Transfer (IBT) Certification Program, as well as agriculture water use collected the NC Department of Agriculture & Consumer Services (NCDA&CS). Other topics include geology, aquifer systems, streamflow and how it relates to ecological

flow and endangered species, impoundments, water shortage response plans, water conservation, and basinwide water quantity related recommendations for protecting water resources.

Chapters 6-11: Subbasin Chapters

The subbasin chapters provide detailed water resource information and analyses for the six HUC-8 scale watersheds that make up the Cape Fear River Basin. These chapters provide a general description of the subbasins and include important water resource issues and topics of concern. Information on population and land use, permitted facilities, impaired waterbodies, TMDLs, and restoration plans are provided. A detailed analysis of water quality data is presented on a HUC-10 watershed scale for reach of the subbasins as well as subbasin specific recommendations to better protect and improve water resources. Specific topics and issues identified in each of the subbasin chapters are listed below.

Chapter 6. Haw River Subbasin (HUC 030030002)

- Nutrient enrichment issues/Nutrient Sensitive Waters (NSW) watershed
- Jordan Lake nutrient management strategy re-adoption process
- Growth and development related water quality impacts
- Elevated fecal coliform bacteria and turbidity
- Emerging contaminants (EC) in wastewater impacting drinking water sources

Chapter 7. Deep River Subbasin (HUC 030030003)

- Nutrient enrichment issues; limited wastewater nutrient capacity
- Upper Rocky River nonpoint source impacts to drinking water reservoirs, reservoirs are hypereutrophic and exceeding criteria (impaired)
- Lower Rocky River point sources and high nutrient impacts (Siler City WWTP)
- Growth and development related water quality impacts (mega sites)
- Elevated fecal coliform bacteria and turbidity
- EC in wastewater impacting drinking water sources
- Haskette Creek point source, high nutrients, and EC impacts

Chapter 8. Upper Cape Fear River Subbasin (HUC 030030004)

- Nutrient enrichment issues; limited wastewater nutrient capacity
- Growth and development related water quality impacts in portions of the watershed
- Significant water quality changes in Harris Lake and the associated watershed
- Elevated fecal coliform bacteria and turbidity
- Algal bloom development during low flow periods
- EC in wastewater impacting drinking water sources

Chapter 9. Lower Cape Fear River Subbasin (HUC 030030005)

- Nutrient enrichment issues; limited wastewater nutrient capacity
- Algal bloom development during low flow periods, presence of HABs documented
- Significant water quality changes in White Lake
- Low Dissolved Oxygen issue in estuary
- EC impacting drinking water sources; Chemours located in the upper portion of the subbasin
- Fish consumption and other health advisories
- Flooding impacts from changing climate and storm events

Chapter 10. Black River Subbasin (HUC 030030006)

- High density of permitted animal feeding operations (AFOs)
- High density of poultry numbers based on USDA data (little to no information available on location or waste management)
- Nutrient related concerns
- Elevated fecal coliform bacteria
- White Lake wastewater discharge impacts to Colly Creek
- Unique black water systems

Chapter 11. Northeast Cape Fear River Subbasin (HUC 030030007)

- High density of permitted animal feeding operations (AFOs)
- High density of poultry numbers based on USDA data (little to no information available on location or waste management)
- Nutrient related concerns
- Elevated fecal coliform bacteria (including in recreational waters)
- Unique black water systems
- Chloride variances in headwaters of the subbasin and Panther Branch/Creek
- Stocking Head Creek special study which identified elevated bacteria and nutrients as a concern

Chapter 12: PFAS Related Emerging Contaminants in the Cape Fear River Basin

Chapter 12 focuses on how the North Carolina Department of Environmental Quality (DEQ) is addressing per- and polyfluoroalkyl substances (PFAS). The chapter identifies studies that have been completed and how those studies are helping identify actions and strategies for reducing PFAS, in air, groundwater and surface water.

Chapter 13: 1,4-Dioxane Emerging Contaminant in the Cape Fear River Basin

Chapter 13 focuses on how DEQ is addressing 1,4-dioxane in surface waters. The chapter identifies studies and actions taken to successfully reduce 1,4-dioxane in the basin and what additional permitting steps are necessary to further reduce 1,4-dioxane at the sources.

Conclusion

Water resource issues documented in basin plans provide support and data to local governments, natural resource groups, researchers, soil and water conservationists, and state and local resource agencies to identify current water resource issues, potential impacts from existing conditions, and potential project areas to focus restoration, conservation, or preservation activities to protect and/or manage water resources. All basin planners in DWR's Basin Planning Branch (BPB) contributed to developing the Cape Fear River Basin plan. This allowed for a more comprehensive assessment of conditions and a detailed list of recommendations for protecting our water resources. Many sections of the plan were reviewed by program experts and/or people familiar with the topic/issue. Everyone's feedback and input is greatly appreciated.