2022

Source Water Protection Plan

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Cape Fear Public Utility Authority

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Cape Fear Public Utility Authority
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2022 SOURCE WATER PROTECTION PLAN

Introduction

In 2014, North Carolina House Bill 894: An Act to Improve Source Water Protection was signed into law. The law was passed after large spills into rivers in West Virginia and North Carolina affected source waters of nearby drinking water systems. The law was written to include all public water suppliers that rely on surface waters, affecting small and large utilities alike.

The concept of the law is simple but important: It requires water utilities to work with upstream dischargers and stakeholders to develop protocols for water system staff should a spill occur and to inventory existing protection efforts then build upon them by creating management strategies for potential contamination sources (PCSs). Unless otherwise stated, PCSs refer to point sources of contamination. In a contamination event, the time that might be saved by giving an upstream discharger a direct number to call or by training staff on proper protocol could make a significant difference in building an effective response.

At Cape Fear Public Utility Authority (CFPUA), plans to address contamination events are critical to the resiliency of our daily operations. CFPUA receives raw water from the Cape Fear River from its own pump station and one operated by Lower Cape Fear Water and Sewer Authority, both of which have intakes at Kings Bluff in Bladen County. Our intakes are the last on the Cape Fear River, downstream of hundreds of dischargers, industrial areas, and municipalities. Our largest water distribution system – which serves approximately 160,000 people and includes the local hospital, university, and the downtown district – relies on the river to produce an average of approximately 16 million gallons of drinking water per day and climbing. In addition, our watershed is classified as WS-IV, a designation given to waters in moderately to highly developed watersheds and that includes protections for aquatic life, wildlife, and secondary contact recreation. In short, protecting the Cape Fear River will support a flourishing environment, economy, and community.

In preparing this plan, CFPUA staff posed hypothetical worst-case scenarios and ensured CFPUA had plans to respond. The process also highlighted the legislation's limitations. As a public water supplier, CFPUA is unable to enforce this law and the PCSs identified are not required by law to communicate with us. Additionally, while the law is designed to address acute contamination events, it does little to encourage public water suppliers to prepare for chronic challenges to source water protection like emerging contaminants and the impacts of climate change.

This plan is the result of combined efforts of external partners and CFPUA staff across the organization, including plant operators, emergency response staff, and experts in environmental management and geographic information systems (GIS). CFPUA staff identified and attempted to contact more than 150 PCSs with the potential to impact CFPUA source water and ensured that protocol is in place to address these scenarios. The Source Water Protection Plan (SWPP) Team, made up of a few CFPUA staff and a growing number of external stakeholders, worked to identify existing source water protection efforts and how they can be improved.

This plan will be revised as additional threats to our source waters are identified or when the status of previously identified PCSs changes. Updated versions of the plan will be posted to the CFPUA website and shared internally and with our SWPP team.

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Threats to Source Water

The Cape Fear River crosses central and eastern North Carolina for approximately 200 miles and meets the Atlantic Ocean in Southport. Throughout its course, the river supplies water for a variety of municipal, industrial, and agricultural users, bolstering its economic importance but also increasing its vulnerability to pollution.

Staff has identified three categories of potential threats to CFPUA source waters: Acute Threats (Accidents and Malevolent Events); Acute Threats (Natural Events); and Chronic Threats. Each category requires different planning and response strategies, and most threats will necessitate coordination throughout the watershed to address them properly.

Acute Threats (Accidents and Malevolent Events)

Acute Accidents and Malevolent Events are the threats that spurred the development of House Bill 894. These threats are typified by events such as train derailments and major industrial spills into the Cape Fear River. These events typically last anywhere from a few hours to a few days.

To prepare for and respond to these events, CFPUA:

- Monitors water quality at its intakes
- Has the option of closing the intakes until the contamination passes
- Can implement emergency water conservation plans
- Can optimize use of storage tanks and system interconnects

Acute Threats (Natural Events)

Acute Natural Events are contamination events caused by short-term changes in the environment. These threats vary widely and can range from severe algal blooms to heavy precipitation events and flash droughts that degrade water quality.

To prepare for and respond to these events, CFPUA:

- Monitors water quality at its intakes
- Monitors environmental indicators across the state
- Maintains emergency water conservation plans
- Is increasing the resiliency of its infrastructure
- Uses advanced treatment techniques at the Sweeney Water Treatment Plant

Chronic Threats

The Cape Fear River and similar waterways may be affected by long-term problems that can degrade water quality or impact water quantity. Because these problems often occur over long periods of time, effective monitoring and response is difficult. Chronic threats faced by CFPUA include emerging contaminants and unregulated runoff, the impacts of climate change, and the potential for Interbasin Transfers upstream of our intakes. CFPUA regularly samples for emerging contaminants, including 1,4-dioxane and several PFAS compounds. To view CFPUA sampling results visit our Emerging Contaminants and Drinking Water Quality webpages.

To prepare for and respond to Chronic Threat events, CFPUA:

- Participates in watershed-wide groups and partnerships
- Reviews the latest research on treatment techniques and environmental change and monitors changes in federal and state regulations
- Comments on potential permitting and regulatory changes that may impact our operations
- Increases resiliency of infrastructure and systems

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Source Water Assessment Program Report

According to the Safe Drinking Water Act Amendments of 1996, all states must establish a Source Water Assessment Program (SWAP) and provide public water systems with findings that could impact their source waters. North Carolina House Bill 894 recommends identifying the SWPP's area of assessment by using the geographic radius surrounding the raw water intake provided by the North Carolina Department of Environmental Quality (NCDEQ) SWAP report. Each SWAP report evaluates "the potential of a drinking water source to become contaminated by identified potential contaminant sources (PCS) within the delineated area."[1] CFPUA's SWAP report assigned our drinking water source a susceptibility rating of moderate, a PCS rating of lower, and an inherent vulnerability rating of higher.

The Cape Fear River basin has 9,164 square miles of drainage area and 21,300 miles of river.[2] Within the river basin, CFPUA's SWAP report delineates a Protected Area and defines it as "the area within … 10 miles upstream and draining to a river intake. … In 1995, the state allowed local governments to request that the 10-mile Protected Area … be measured 'run of river' rather than using a 10-mile arc linear measurement." Two PCSs are located inside of the Protected Area and could threaten our source water with acute contamination. In this SWPP, our short-term goals and strategies will focus on the PCSs within the Protected Area, an area clearly delineated as a 10-mile arc upstream of the Kings Bluff intake in Appendix C.

While the PCSs identified by NCDEQ's SWAP report are point sources of contamination, non-point source contaminants are also an essential SWPP component. The EPA estimates that 70% of water contaminants come from stormwater runoff, a non-point source of pollution.[3] Tracing and mitigating non-point source pollution is difficult anywhere, but it is especially difficult in a large watershed. The long-term goals and strategies in this plan will focus on PCSs beyond the Protected Area and will include non-point source contamination.

Another type of non-point source contamination in our Source Water Protection Plan Area (SWPPA) are emerging contaminants like Per- and Polyfluoroalkyl Substances (PFAS). Given our current understanding of the distance contaminants can travel and the chronic threats that PFAS pose to our drinking water, we chose to expand our SWPPA to include contaminant sources up to Fayetteville. This extended the area of assessment and outreach to approximately 45 miles upstream of CFPUA's raw water intakes. The SWPPA provides crucial context that will guide future planning efforts and the expansion of the SWPP farther upstream to include more than 150 PCSs as well as non-point contamination sources. The 10-mile arc or Protected Area, the extended SWPPA, and the PCSs are shown in a series of maps in Appendix C.[4]

Additionally, in 2019 new language in America's Water Infrastructure Act was adopted by NCDEQ. As a result, water systems were asked to include all *known* contaminant sources that affect their raw water in their SWPPs. In response, staff added nine additional NPDES Wastewater Treatment Facility sites where sampling has indicated their discharge affects raw water at CFPUA's intake. These PCSs are outside of the SWPPA and extend as far as 160 miles above CFPUA's raw water intake.

Continuing to identify PCSs upstream of the minimum requirements helped CFPUA create a more realistic interpretation of the risks and opportunities for improvement. Although this plan outlines goals for PCSs within the 10-mile arc upstream of our intake, the maps in Appendix C include additional PCSs and illustrate the path forward. The SWPP Team supports this future expansion and already added a member from Fayetteville. We believe this plan will help to focus our efforts and customize solutions to each PCS type.

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[1] North Carolina Department of Environmental Quality's Division of Water Resources, Public Water Supply (2020). Source Water Assessment Program Report for CFPUA-Wilmington. https://www.ncwater.org/SWAP_Reports/NC0465010_SWAP_Report-20200909.pdf

[2] North Carolina Department of Environmental Quality (n.d.). *Cape Fear River Basin*. https://deq.nc.gov/cape-fear-river-basin

[3] North Carolina Department of Health and Human Services' On-Site Water Protection Branch, Non-Point Source Pollution Program: Resources. Ongoing and Emerging Issues Document. https://ehs.dph.ncdhhs.gov/oswp/docs/nps/OngoingandEmergingIssues.doc

[4] Note that the maps in Appendix C shows a single intake location because both of CFPUA's intakes are located only a short distance apart.

The SWPP Team

In early 2022, CFPUA staff contacted various stakeholders in the Lower, Middle, and Upper Cape Fear River basins with an invitation to join our SWPP Team. On April 28, 2022, the SWPP Team met for the first time and used CFPUA's existing Source Water Risk and Resiliency Plan as a basis for the conversation. The team discussed ongoing source water protection efforts in the various river basins, potential PCS management strategies, SWPP goals, how to involve the public in the SWPP process, and plans to improve CFPUA's source water protection planning.

Name	Agency, Title
Kathryn Pohlman (Co-Chair)	CFPUA, Assistant Director of Environmental Management & Sustainability
Erin Tremblay (Co-Chair)	CFPUA, Public Environmental Policy Specialist
Beth Eckert	CFPUA, Deputy Executive Director of Environmental Management and Sustainability
Glenn Walker	Brunswick County Public Utilities, Water Resources Manager
Amy Cox	Pender County Utilities, Utilities Analyst
Wayne Egan	Fayetteville Public Works Commission, Operations Supervisor
Dylan McDonnell	New Hanover County, Long Range Planner
Jordyn Apel-Hughes	Feast Down East, Executive Director
Dru Harrison	N.C. Division of Soil and Water Conservation, Director & Community Conservationist
Anna Reh-Gingerich	City of Wilmington Heal our Waterways, Watershed Coordinator
Tim Holloman	Lower Cape Fear Water and Sewer Authority, Executive Director

Table 1. CFPUA's SWPP Team members

The following goals were developed following the first meeting and subsequent research.

Short-Term Goals

The goals outlined in this section should be accomplished within three years of this submitted report and focus on PCSs within the 10-mile arc, as well as building a foundation for this program. Some of these goals will be ongoing. Data and updates will be compiled in an annual report.

GOAL 1: CULTIVATE AND SUSTAIN GENUINE PARTNERSHIPS WITH KEY STAKEHOLDERS THAT CONTRIBUTE TO THE SWPP

Performance Metric: Recruit at least one representative from each county in the 10-mile arc, the two PCS sites within that arc, and five other community members to serve on the SWPPT. The SWPPT should grow by at least five members per year in the first three years.

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Strategy	Responsible Party	Timeline
Solicit comments on the draft SWPP from the organizations that align with the SWPP's mission and goals. Invite invested members to join the team.	Each team member will be responsible for encouraging community feedback on the draft SWPP and suggesting new potential members to the co-chairs.	Fall-Winter 2022
Develop a resource for members to easily access information about the SWPP and the team.	Co-chairs with guidance from the team	Fall-Winter 2022
Host at least one event annually for team members, key stakeholders, and community members to share ideas and collaborate on source water protection efforts.	In the inaugural year, the team will work to identify a time and event and decide on the responsible party for future events.	2022-2023
Gain resolutions and letters of support from entities with missions that align with the SWPP or that implement strategies outlined in the SWPP.	Team members will liaise with affiliated organizations. Co-chairs will provide templates and other information as requested.	Ongoing

GOAL 2: CREATE A DATABASE OF RELEVANT RESOURCES RELATING TO SOURCE WATER PROTECTION ACROSS THE UNITED STATES. THE RESOURCES CAN GUIDE AND INSPIRE FUTURE GOALS AND STRATEGY DEVELOPMENTS IN THE SWPP

Performance Metric: Completion of the database and guidelines for updating it, including methodology, timeline, responsible party, and any notes

Strategy	Responsible Party	Timeline
Compile resources on source water protection from guiding documents and leading organizations.*	Team members will provide their knowledge of sources. Co-chairs will be responsible for the first year.	2022-2023
Identify strategies and programs that are innovative or may fill a gap in the SWPP.	Team members will review and provide feedback in the first SWPP update.	Fall 2023
Complete the database, make it accessible to SWPPT members, and determine a timeline with SWPPT for updating the database	Co-chairs with guidance from the team	2024
Connect with community colleges and universities to encourage research, projects,	Co-chairs will be responsible, but the team will be encouraged to share the opportunity.	Ongoing

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and coursework that could support the database.		
Interview utilities with innovative or successful ideas and identify their processes, funding sources, and any lessons learned.	Co-chairs	Ongoing

**Initial resources will include: American Water Works Association, Water Environment Federation, National Association of Clean Water Agencies, US Water Alliance, Water Utility Climate Alliance, Association of Metropolitan Water Agencies*

GOAL 3: BUILDING UPON GOAL 1 STRATEGIES, CREATE A COMMUNICATION TREE THAT 1) SURPASSES EXISTING SPILL AND RESPONSE NOTIFICATION (SPCC) REQUIREMENTS, 2) OPENS A TWO-WAY COMMUNICATION CHANNEL BETWEEN PCSs AND CFPUA AND FACILITATES TIMELY COMMUNICATION, AND 3) EMPHASIZES PROACTIVE COMMUNICATION IN EFFORT TO IMPROVE CFPUA REACTION TIME IN THE EVENT OF A SPILL INTO THE RIVER

Performance Metric: Development of a communication tree for the Cape Fear River

Strategy	Responsible Party	Timeline
Determine where there are gaps in the existing communication paths and listservs.	Team members will provide insight at the second SWPP Team meeting.	Winter 2022
Identify SWPPs with strong communication plans downstream from spills and interview a knowledgeable source on how it was developed.	Co-chairs will be responsible, but the team will be encouraged to provide insight.	2023
Identify utilities with community communication plans and identify any new practices to implement.	Co-chairs will be responsible, but the team will be encouraged to provide insight.	2023
Work with subject matter experts to develop the communications guide.	Co-chairs	Spring/Summer 2024
Make the communication tree accessible for stakeholders.	Co-chairs	Fall 2024
Collect comments and suggestions on the communications guide and update it as needed.	Team members will liaise between affiliated organizations.	Ongoing

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GOAL 4: DEVELOP A PROCEDURE FOR UPDATING THE PCS INVENTORY

Performance Metric: *Completion of a documented procedure for updating the PCS inventory*

Strategy	Responsible Party	Timeline
Review Unregulated Contaminant Monitoring Rule Reports as they are released.	Co-chairs	Ongoing
During utility interviews described in Goal 2, ask upstream utilities about known emerging contaminants.	Co-chairs	Ongoing
Identify additional state and federal databases not included in the SWAP report and record data source locations in the database described in Goal 2.	Co-chairs with guidance from the team	Ongoing

GOAL 5: DEVELOP A SWPP VISION STATEMENT

Performance Metric: Complete a final SWPP vision statement supported by the SWPP Team.

Strategy	Responsible Party	Timeline
Host a SWPP Team brainstorming meeting and provide vision statement inspiration for the team to vote on	Co-chairs	July 2022

Long-Term Goals

The goals in this section should be accomplished within three to five years of the submitted report and focus on PCSs beyond the 10-mile arc, as well as non-point sources within the SWPPA. These goals will build on existing infrastructure and create new resources to strengthen the SWPP.

GOAL 6: DEVELOP FUNDING STRATEGIES IN PARTNERSHIP WITH PCSs, BOTH POINT SOURCE AND NON-POINT SOURCES OF CONTAMINATION, TO IDENTIFY SOLUTIONS THAT ARE MORE COST-EFFECTIVE WHEN TREATED ON-SITE INSTEAD OF AT THE TREATMENT PLANT

Performance Metric: *Once the funding program is established, fund at least one project annually to reduce contaminants entering the Cape Fear River.*

Strategy	Responsible Party	Timeline
Establish a sub-team of individuals on the SWPPT and in the community that have experience with funding projects.	Co-chairs	2025

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Identify opportunities using the Source Water Risk and Resiliency Plan (SWRRP) and interview key stakeholders at the PCSs.	Sub-team	2026
Create an application process for funding partnerships, including a rubric, application, review committee, impact measurements, and check-ins.	Co-chairs with guidance from the Team and leadership from other utilities in the Lower Cape Fear River Basin.	2026
Create a list of "shovel-ready" projects for grants and other funding sources.	Sub-team	2026
Launch program for funding partnerships. (Example: Tampa Bay's Mini Grant Program)	Sub-team	2027
Create partnerships with interested schools, health and wellness organizations, wildlife organizations, and others that may have overlapping goals to apply for different grants.	Sub-team	2027

GOAL 7: CREATE REGIONAL RESOURCES FOR EDUCATING THE COMMUNITY ON THE SWPP AND HOW TO BE INVOLVED

*Performance Metric***:** *Connect with individuals in each county covered by the SWPP annually at events, community meetings, homeowner association meetings, schools, and as requested.*

Strategy	Responsible Party	Timeline
Establish a sub-team of individuals on the SWPPT and in the community that creates educational materials and/or are educators.	Co-chairs	2025
Utilizing the database in Goal 2, identify gaps in community education in the SWPPA.	Sub-team	2026
Create an educational campaign for the community to encourage actions that prevent the contamination of source water and provide information on how to respond to a spill.	Sub-team	2026
Create lesson plans for teachers around the SWPP.	Sub-team	2026-2027
Implement campaign and track the number of people we reach.	Sub-team	2027

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Potential Contaminant Source Inventory

PCS Risk Rating Rubric

The SWPPA includes a variety of PCSs that individually or collectively can affect the quality of CFPUA raw water. To assess these sites, staff created a Risk Rating Rubric (Appendix A) designed to objectively rate the risk associated with each category of PCS. The rubric asks eight general questions to quantify how severely a PCS could affect the Kings Bluff intake and/or CFPUA drinking water. These questions also serve to define the criteria used to rank the PCSs.

As our protection and planning efforts expand to encompass the entire SWPPA, we will use the risk rating scores to prioritize the development of management strategies for each of these PCSs. Management strategies for high-risk PCSs will be developed first.

Data and Limitations

The data used in this plan was gathered from NCDEQ's GIS website. This data is categorized by operation type. The data was downloaded and clipped to the initial CFPUA SWPP maps. Staff investigated each of the categories in the table below and identified the PCSs that could affect the Kings Bluff raw water intake.

PCS Types Within SWPPA	PCS Types Outside of SWPPA
Active Permitted Landfills	Brownfield Agreement Sites
Animal Operation Sites	Dry Cleaning Solvent Cleanup Sites
Hazardous Waste Sites	Federal Remediation Branch Sites
Inactive Hazard Sites	Manufactured Gas Plant Sites
NPDES Wastewater Treatment Facility Sites	Military Installations, Ranges, and Training Areas
Pre-Regulatory Landfill Sites	
Regional Underground Storage Tanks	

Table 2.
Note: PCS Types listed in boldface have instances within CFPUA's Protected Area.

NCDEQ datasets provided information that helped staff assess the risk associated with individual PCSs. The data provided general information about operations onsite and, when mapped, visualized trends and clusters of industries in geographic areas. However, the data had limitations. Some data is suspected to be out-of-date or incomplete, which may affect the quality and accuracy of the risk assessment associated with a particular PCS. Using the data available, staff created an individual datasheet for each PCS with information that may be relevant in the event of a spill (see Appendix B).

PCS Outreach

Per SWPP compliance requirements, staff created a comprehensive plan for communicating with identified PCSs. Staff attempted to contact each PCS via phone, email, and/.or letter. Each letter or email was accompanied by the contact form (see Appendix D) the PCS should use in the event of a spill or discharge that could reach the Cape Fear River. In a spill event, this form provides the necessary information needed for CFPUA to make timely decisions to protect our customers.

Management Strategies

PCSs identified by the SWAP report and within the Protected Area are animal operations and produce contamination treatable by our Sweeney Water Treatment Plant. Before developing PCS management

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strategies for the entire SWPPA, the SWPP Team began with an inventory of current source water protection efforts in the Cape Fear River Basin. Because our water quality is affected by numerous upstream dischargers, building strategic upstream partnerships will play an integral part in cultivating a regulatory management strategy approach. To start, the team generated the following list of ongoing non-regulatory protection strategies, including specific activities and programs. Additional protection strategies will be included in future SWPP updates.

Ongoing Source Water Protection Strategies
Community education, outreach, and partnership opportunities: • Lower, Middle & Upper Cape Fear River Basin Programs • Cape Fear River Watch • Cape Fear River Assembly • Cape Fear River Partnership • The City of Wilmington's Heal Our Waterways Program • Cape Fear Resource and Conservation Development • Fayetteville Public Works Commission (PWC) participates in: o Regional NC Envirothon o Fayetteville Fourth Friday events o Dogwood festival o Sewer overflow response and monitoring o Water quality monitoring of sixteen different locations in the Big and Little Cross Creek watershed o Hydrilla removal partnerships o Illegal dumping monitoring programs • Feast Down East wants to get involved with local soil and water districts to advocate and educate through the lens of agriculture and food. • Soil & Water Conservation districts have county newsletters, social media, in-classroom presentations, and contests. • 1-4 dioxane listserv and periodic meetings • NCDEQ list servs from specific divisions – Emergency Management, Public Water Supply, and Water Resources – notify subscribers of spills. • Watershed Roundtable • GenX Partner Meetings
Pollution Mitigation • Bladen County Soil & Water has incentives for farmers to keep nutrients out of the water. • Household hazardous collection programs • Community-based recycling
Stormwater BMPs • Forest management • Prescribed burning • Construction of wetlands • Stormwater retention ponds
Conservation easements or outright purchase of property, especially for use as riparian buffer zones

Table 3. The SWPP Team's list of ongoing, non-regulatory source water protection strategies and programs

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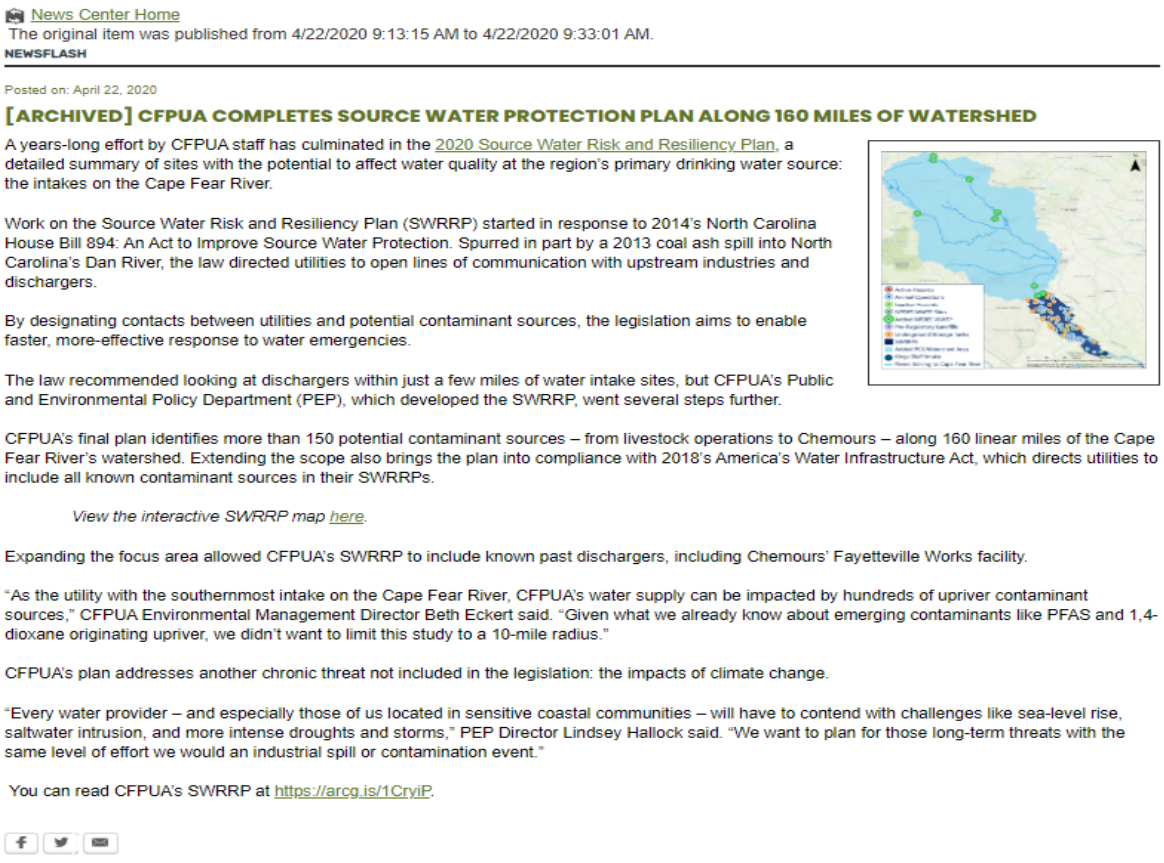
The SWPP Team will use these protection strategies as a basis for developing PCS management strategies for the SWPA. Exploring these avenues will facilitate outreach to upstream communities, help develop potential collaborations with other stakeholders, and identify areas where source water protection planning can be improved. Strengthening our connections with organizations like Heal Our Waterways and the Cape Fear River Watch will also help us gain access to community input on the development of management strategies. For instance, the Heal Our Waterways initiative installs stormwater best management practices throughout Wilmington, including in residents' yards. They also have an ambassador program, "Make a Ripple," that enlists citizen volunteers to represent the Heal Our Waterways program in their communities. Constituents of Cape Fear River Watch include concerned citizens, scientists, university students, and professors. Both organizations are nonprofits that engage the community with a similar vision: a clean and thriving Cape Fear River.

Public Outreach and Involvement

CFPUA intends to share this plan with our customers. To address the community's interest in local water quality, CFPUA has been employing a variety of communication techniques to reach our customer base. These include video production, social media outreach, and engaging web content. We intend to use these techniques to increase awareness of our 2022 Source Water Protection Plan beyond our customer base. The SWPP Team will share the plan through various communication platforms to spread awareness of the plan throughout the region. By sharing the plan upstream, we hope to spread awareness about how individual citizen actions like applying pesticides and fertilizers at home negatively affect the surrounding environment and drinking water quality. Additional efforts to share the plan are described in Goals 1 and 7.



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NEWSFLASH

Posted on: April 22, 2020

[ARCHIVED] CFPUA COMPLETES SOURCE WATER PROTECTION PLAN ALONG 160 MILES OF WATERSHED

A years-long effort by CFPUA staff has culminated in the 2020 Source Water Risk and Resiliency Plan, a detailed summary of sites with the potential to affect water quality at the region's primary drinking water source: the intakes on the Cape Fear River.

Work on the Source Water Risk and Resiliency Plan (SWRRP) started in response to 2014's North Carolina House Bill 894: An Act to Improve Source Water Protection. Spurred in part by a 2013 coal ash spill into North Carolina's Dan River, the law directed utilities to open lines of communication with upstream industries and dischargers.

By designating contacts between utilities and potential contaminant sources, the legislation aims to enable faster, more-effective response to water emergencies.

The law recommended looking at dischargers within just a few miles of water intake sites, but CFPUA's Public and Environmental Policy Department (PEP), which developed the SWRRP, went several steps further.

CFPUA's final plan identifies more than 150 potential contaminant sources – from livestock operations to Chemours – along 160 linear miles of the Cape Fear River's watershed. Extending the scope also brings the plan into compliance with 2018's America's Water Infrastructure Act, which directs utilities to include all known contaminant sources in their SWRRPs.

View the interactive SWRRP map here.

Expanding the focus area allowed CFPUA's SWRRP to include known past dischargers, including Chemours' Fayetteville Works facility.

"As the utility with the southernmost intake on the Cape Fear River, CFPUA's water supply can be impacted by hundreds of upriver contaminant sources," CFPUA Environmental Management Director Beth Eckert said. "Given what we already know about emerging contaminants like PFAS and 1,4-dioxane originating upriver, we didn't want to limit this study to a 10-mile radius."

CFPUA's plan addresses another chronic threat not included in the legislation: the impacts of climate change.

"Every water provider – and especially those of us located in sensitive coastal communities – will have to contend with challenges like sea-level rise, saltwater intrusion, and more intense droughts and storms," PEP Director Lindsey Hallock said. "We want to plan for those long-term threats with the same level of effort we would an industrial spill or contamination event."

You can read CFPUA's SWRRP at https://arcg.is/1CryiP.

Figure 1. A CFPUA press release about the SWPP

The formation of this plan was influenced by a diverse group of community representatives. Three students from the University of North Carolina Wilmington helped create various pieces of the plan. CFPUA staff has presented the plan to the CFPUA Board of Directors on multiple occasions to solicit their feedback. The SWPP will also undergo a two-week public comment period to solicit feedback from stakeholder organizations and the general public. The following image is a press release CFPUA's Communication staff issued about the SWRRP. We intend to release similar information to the public about the SWPP.

Contingency Planning

Emergency Response Plans

In the event CFPUA needs to respond quickly to river contamination, staff would refer to one or more of the following Incident Action Plans (IAP) or Standard Operating Procedures (SOPs):

Public Information and Policy Procedure:

- Directs internal communication procedures for customer notifications as required by Public Notification Rule

Critical Customer Call List:

- Lists contact information for CFPUA customers that service vulnerable populations (such as hospice and nursing homes), are critical to community resiliency (such as fire departments), or demand large volumes of water to sustain their operations (such as the University of North Carolina Wilmington)

Water System Contamination:

- Contains three IAPs depending on whether the contamination is possible, credible, or has been confirmed

Water Supply Interruption:

- Referred to if interruptions have occurred due to longer-term events such as drought or acute loss of one source

Water Emergency Advisory Stages:

- Outlines the stages of CFPUA water conservation procedures to be implemented depending on operating conditions such as drought advisories and water conditions

Water Emergency Management Plan:

- Action plan for complying with the CFPUA Emergency Water Conservation Ordinance

Algal Blooms:

- Outlines monitoring guidelines and responses to algal blooms of varying severity

2021 Water System Interconnects Map:

- Identifies locations of interconnects to help redistribute water throughout all three of CFPUA's water systems to maintain water supply during a shortage or other event

ICWater Software:

- Allows CFPUA to predict the timing of chemical spills that occur upriver of the CFPUA's water intake on the Cape Fear River

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The plans and protocols discussed above include strategies approved by the U.S. Environmental Protection Agency (EPA) from documents such as "Effective Risk and Crisis Communication during Water Security Emergencies," and "Critical Information Policies for Water Utilities," which helps utilities identify and manage potentially sensitive information.

In addition, we have encouraged PCSs in our SWPPA to follow instructions provided by the Incident Form (Appendix D) as soon as possible following the release of contamination into the Cape Fear River. This form includes CFPUA's emergency contacts and requests basic organizational, contact, site, and incident information from the PCS.

Closing the Intake

CFPUA uses two intakes at Kings Bluff, near Lock and Dam #1, on the Cape Fear River. In an emergency, both can be closed remotely until the contamination passes. Both can also be closed manually at several points. Another option would be to divert, isolate, or blow-off water at various points along the transmission line before the contamination reaches the Sweeney Plant. If CFPUA had to close an intake, the following would occur:

- Treatment processes would reduce and/or cease at the Sweeney Plant depending on the scenario
- Available stored water in clear wells and elevated tanks would be strategically utilized
- All interconnects would open
- Emergency wells would be activated
- CFPUA's groundwater sources would operate at maximum capacity

CFPUA water systems could sustain themselves for approximately 36 to 48 hours with a 10 percent margin of error. During this time, mandatory water conservation measures would be enacted to help retain water supply during the event. Detailed conservation procedures and implementation triggers are outlined in the CFPUA Water Emergency Management Plan.

Communications

Emergency Communication Flow

All public notices and media communications regarding a contamination incident will be conducted by the Director of Communications or a designated staff member. Utility staff has produced pre-formatted media releases and distribution lists for multiple incident types, ensuring that the public is adequately informed through multiple channels. Information sharing partnerships exist with local radio stations, news outlets, and government agencies. Additionally, information regarding a spill and any contaminant properties will be made available on the CFPUA website (https://www.cfpua.org/) and accessible through social media. CFPUA also may partner with New Hanover County Emergency Management to use the county's automated telephone notification system to distribute advisories, as well as recording information for use on the CFPUA Customer Information Line.

After initial notifications have been released, designated personnel will monitor social media outlets for information requests. Additional updates will be provided as the situation progresses via media outlets and the utility website. Samples are taken frequently during contamination events to monitor contaminant concentrations, providing data to support decision-making strategies.

In the event of a continuous or especially lengthy spill or low treated water storage levels at the start of the incident response, updates may also be provided addressing water supply levels. The tone of messages encouraging water conservation will change according to the severity of a water supply threat.

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Implementing, Maintaining, and Updating the SWPP

The SWPP will be updated every three years according to Section 6.1.3 of the SWPP Guidance. Events such as the construction of a new intake, the introduction of any new PCS located within the SWPPA, or major land use changes in the SWPPA will be captured in updated versions. Future SWPP updates will also include any additional information discovered through goal and strategy implementation. The SWPPT will meet quarterly to update the plan and/or implement the goals outlined in this plan according to individual goal timelines.

Although some of the goals outlined in this report could be considered PCS management strategies, the SWPP Team will include management strategies for each PCS type in our SWPPA in future iterations of the SWPP. It is important to note that CFPUA's current Emergency Response Plans (ERPs) are maintained by an in-house Security and Emergency Manager and address protections for CFPUA's drinking water. These plans will be considered by the SWPP Team in the development of additional management strategies. Personnel assignments for responsibilities identified in CFPUA's contingency plans are indicated in each ERP or SOP and at times are determined by CFPUA's Security and Emergency Manager.

If the need for funding arises to implement goals outlined in the SWPP, team members will explore various avenues, including the list of grant opportunities below:

- National Fish & Wildlife Foundation, especially the Emergency Coastal Resilience Fund Grants
- N.C. Clean Water Management Trust Fund Grants
- N.C. Coastal Non-point Source Program Grant
- National Water Quality Initiative

While the SWPP Team will be responsible for completing the SWPP goals, the team may work with external partners or use external sources to accomplish the goals. Further, the person responsible for overseeing the administration and implementation of the SWPP is Kathryn Pohlman. As CFPUA's Assistant Director of Environmental Management and Sustainability, Kathryn is involved with internal sustainability initiatives, water quality procedures, and emergency management plans. Kathryn also organized the SWPP Team, led the meeting, and has environmental ties in the community as the local university's previous Sustainability Director. For these reasons, Kathryn is the most appropriate SWPP program administrator.

Acknowledgements

Work on the SWPP began in 2018 and has continued through 2022. The progress made to date could not have been done without the dedication and guidance of CFPUA staff and our external partners. The plan's scope extends far beyond the required SWPP guidelines – a goal that was only achievable with the expertise and input from everyone involved.

We would like to acknowledge the work of the following departments at CFPUA for their contributions to the SWPP:

- Communications Department
- Environmental Management and Sustainability Department
- Linear Assets & Project Management Department
- Public & Environmental Policy Department
- Treatment & Engineering Department

We would also like to thank each member of the SWPP Team listed in Table 1, as well as students from the University of North Carolina Wilmington who devoted their time to the SWPP throughout the course of their internships with CFPUA. The students we would specifically like to thank are:

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- **Christina Smyth | UNCW Department of Environmental Sciences**
  - Bachelor of Science in Environmental Sciences, with concentration in Conservation
- **Bennett Winslow | UNCW Department of Physics**
  - Bachelor of Arts in Physics, with a minor in Environmental Sciences
- **Lauren Whitehouse | UNCW Department of Geosciences & Undergraduate Honors College**
  - Bachelor of Arts in Geoscience, with minors in Geospatial Technology and Environmental Studies

Appendices

Appendix A

Risk Assessment Rubric

Appendix B

PCS Data Sheets

Appendix C

Maps

Appendix D

PCS Contact Form

Appendix E

Acronym Definitions

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