

Emerging Contaminants and the Sweeney Water Treatment Plant

May 9, 2018 Board Meeting

Jim Flechtner, PE

Executive Director



The Problem of Emerging Contaminants



- Companies can make new chemicals faster than drinking water regulations, surface water standards and health science can keep up.
- Per-fluorinated compounds, like GenX, are just one type of emerging contaminant.
- 85,000 chemicals are registered under the Toxic Substances Control Act (TSCA). Fewer than 10,000 of those have toxicological studies associated with them.

How is Drinking Water Regulated?



EPA

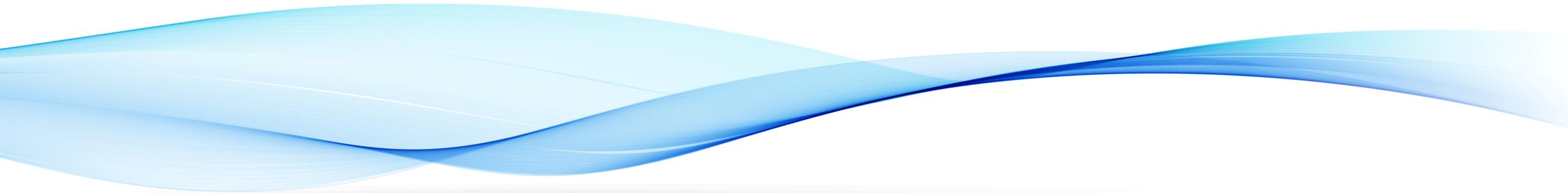
- Sets national drinking water standards
- Researches health effects and establishes new rules

NCDEQ

- Enforces drinking water standards at the state level
- Implements and enforces discharge permits for EPA
- Discharges are not to impact downstream designated uses, such as public water supply

CFPUA

- Meets drinking water standards
- Reports results
- Helps EPA strength regulations through periodic testing



The Unregulated Contaminant Monitoring Rule (UCMR)



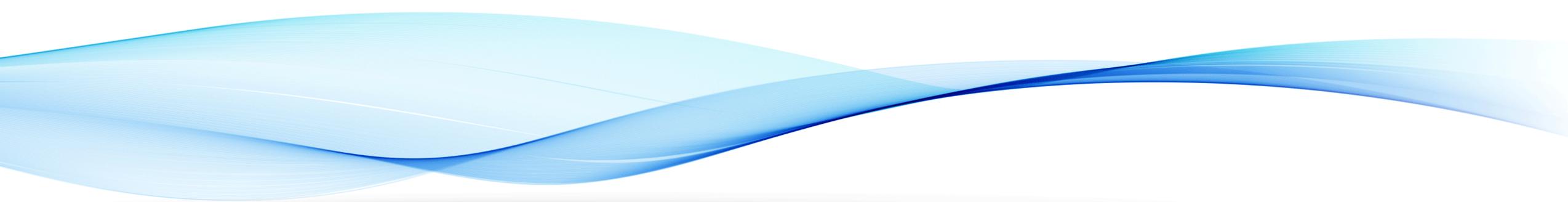
- Every five years, EPA uses the Unregulated Contaminant Monitoring Rule (UCMR) to identify up to 30 emerging contaminants in drinking water.
- UCMR 3 (2013-2015) required water utilities to test for six previously identified per-fluorinated compounds.
 - It did not include GenX.
 - Regulatory standards have not yet been set for any of them.
- The UCMR 4 period for CFPUA will begin in September 2018.
 - Requires monitoring for 30 chemical contaminants, including cyanotoxins, pesticides and metals.
 - Per-fluorinated compounds such as GenX are not included in UCMR 4.

How Should We Address Emerging Contaminants?



Controlling contaminants at the source remains the only option to:

- Maintain source and drinking water quality
- Protect public health
- Safeguard the environment
- Ensure associated costs are paid by discharger, not downstream communities



Regulatory Response to Per-Fluorinated Compounds in the Cape Fear Region



EPA

- Assisted with water sampling and analysis
- Will hold a summit on PFAS in May 2018
 - AWWA received four slots for utility representation and CFPUA has one of them

NCDEQ

- Has issued Notices of Violation to Chemours and required they implement control measures on-site, including an air abatement system
- Investigated NPDES permit
- Conducted sampling that discovered widespread groundwater contamination near the plant
- No guidance provided for other per-fluorinated compounds identified in wake of GenX
 - Nafion Byproducts 1 and 2
 - Compounds identified by academic researchers

NCDHHS

- Revised health goal from 71,000 ppt to 140 ppt for GenX

Customer Response to Per-Fluorinated Compounds



Since June 2017:

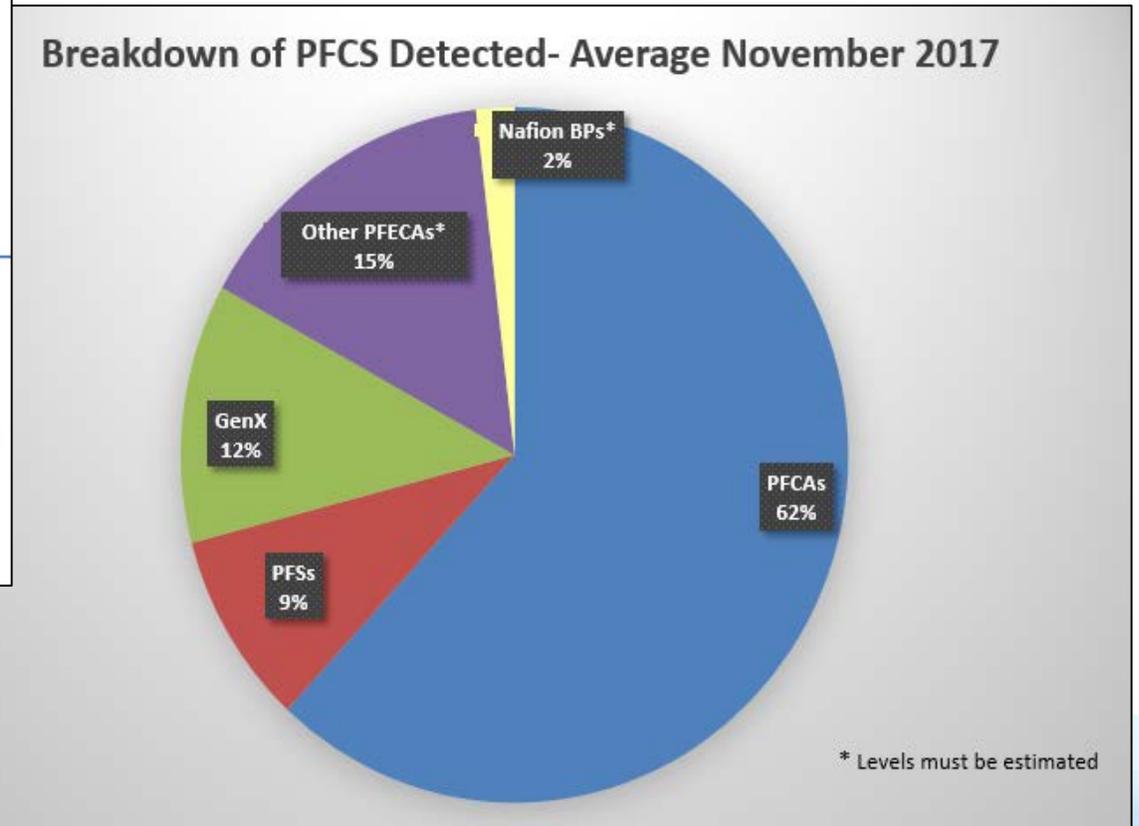
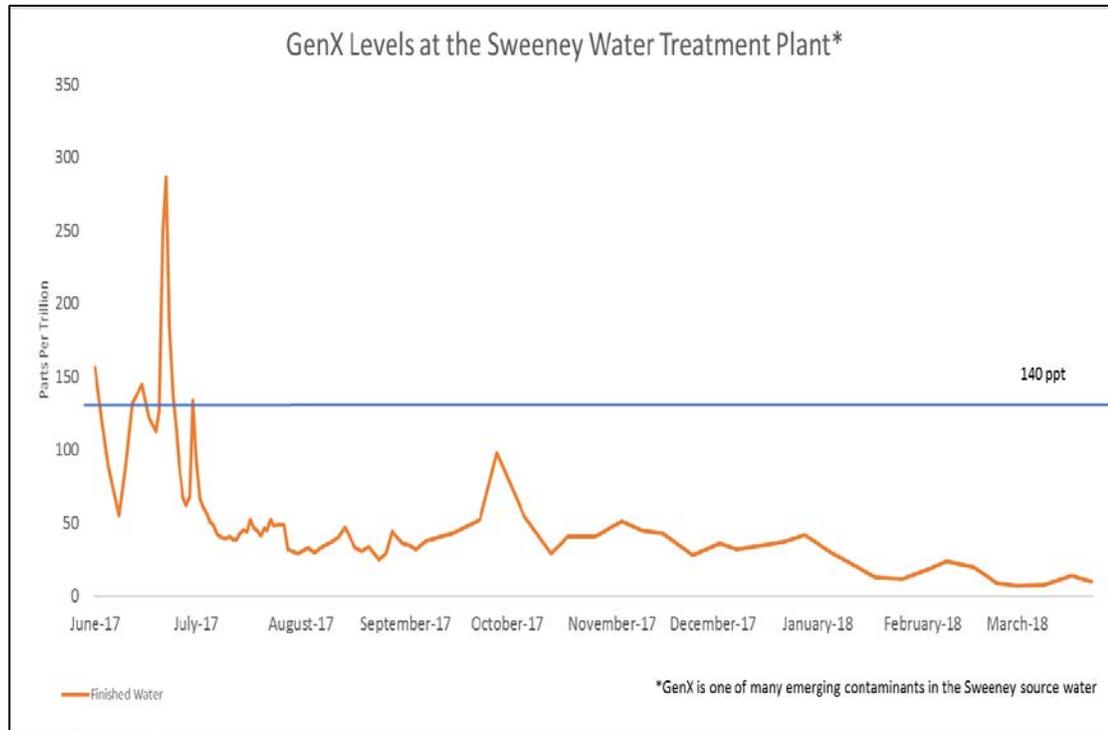
- Staff has answered thousands of calls from concerned customers. We continue to receive customer inquiries.
- Members of the community continue to contact us by phone, mail, with their payments, through social media and through our website.
- 9,400 people are members of the on-line “North Carolina Stop GenX in our Water” community organizing group.

CFPUA Action to Address the Issue of PFCs in Drinking Water

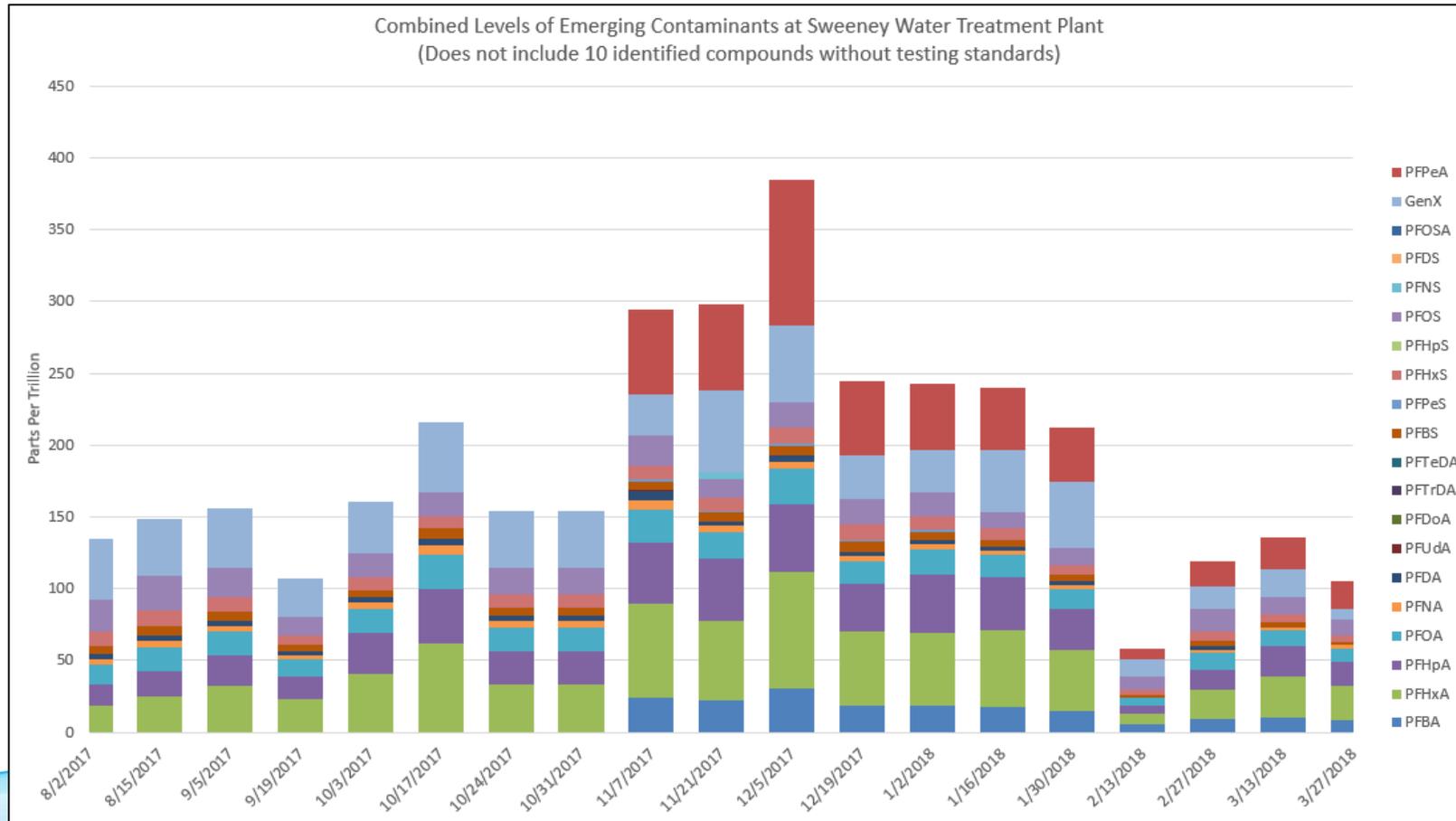


- Regular sampling of the water at Sweeney Water Treatment Plant.
- Removal of 50 million gallons of water containing per-fluorinated compounds from ASR.
- Partnered with UNCW to identify other per-fluorinated compounds in the River.
- Opened two water stations to provide water from the groundwater systems to customers at no cost.
- Conducted pilot study at the Sweeney Water Treatment Plant to investigate potential processes to remove per-fluorinated compounds from the drinking water.
- Working with EPA, NCDEQ and NCDHHS to remain informed on health information and potential future regulatory standards.
 - Attend Science Advisory Board meetings
 - Attend conference calls hosted by NCDHHS

Sampling Results from the Sweeney Plant



Combined Levels of Compounds Over Time



- Some compounds were not analyzed from August-October due to a lack of testing standards.
- Levels may be affected by Cape Fear River flows.
- Samples taken from Total Filter Combined Prior to UV streams

Pilot Study Findings Summary



- Levels of per-fluorinated compounds are decreasing, but they remain detectable.
- There are other per-fluorinated compounds in the drinking water for which we do not yet have testing capabilities.
- Reverse Osmosis was not chosen due to existing investments in the Sweeney Plant and limited surface water allocation.
- Ion Exchange was not chosen due to its narrow range of removal. We do not yet know the extent of the other per-fluorinated compounds being discharged.
- **Granular Activated Carbon is the best overall treatment alternative for the Sweeney Plant. It offers highly effective PFC removal, promotes flexibility and complements other advanced treatment processes investments previously made in the Plant.**

GAC Case Study: Cincinnati



Original goal for installing GAC:

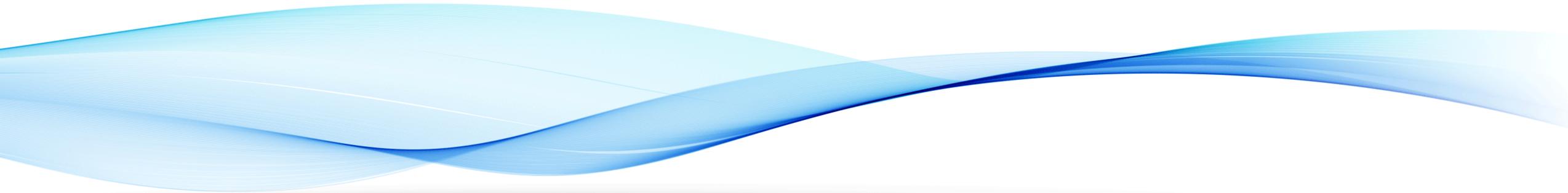
- Protect drinking water quality from spills on the Ohio River
- Remove trace contaminants
- Provide the safest, best quality water to its customers

Important Secondary Benefits of GAC:

- Protection from per-fluorinated compounds
- Lower disinfection byproducts due to reduced Total Organic Carbon (TOC)
- Removal of trace pharmaceuticals and personal-care products

*GAC has enabled Greater Cincinnati Water Works to provide better public health protection and water quality that meets or exceeds regulations, satisfies customer expectations, and secures community trust and confidence.**

We Still Do Not Know:

- Academic researchers have detected several per-fluorinated compounds not previously identified in the literature.
 - Levels of compounds without testing standards.
 - Health effects of combined levels of all PFCs.
 - Future regulatory standards on PFCs.
 - Impacts to commercial and residential markets and to general economic development.
- 

Expenses Related to GenX

- Approximately \$1.7 million expended to date.
- HB 56 provided \$185,000 to help offset expenses related to pilot testing and UNCW research.
- FY 19 Operating Budget includes \$650,000 for related legal fees and water quality testing.
- Balance is paid by customers and is driving up rates.
 - \$1 million= 1.4% increase to water & sewer rates

Financial Impacts of an Upgrade at Sweeney

- Upgrading the Plant: \$46 million plus \$2.7 million in annual operating costs
 - CFPUA would issue bonds, paid over 25 year by ratepayers
 - 7% increase in total water & sewer bill—approximately \$5 per month or \$60 per year
- Source control is still needed. If levels return to what has been seen in the past, the technology would be overwhelmed.

Insight from the Community:



“If we don’t have clean, safe drinking water, no one is coming here. We need to get this problem solved and off the table.”

- Chad Paul, Harbor Island Equity Partners

“An initial conclusion from this study is that sediments are acting as a repository of GenX that may be released into the overlying water column, potentially impacting sensitive estuarine ecosystems as well as drinking water utilities, even if it is no longer being released into the environment.”

- UNCW Researchers

“I think the most important thing is we saw new chemicals in the water, that were at higher concentrations than GenX, and while we can’t quantify those for sure, it means that we need to keep looking and see what else is there.”

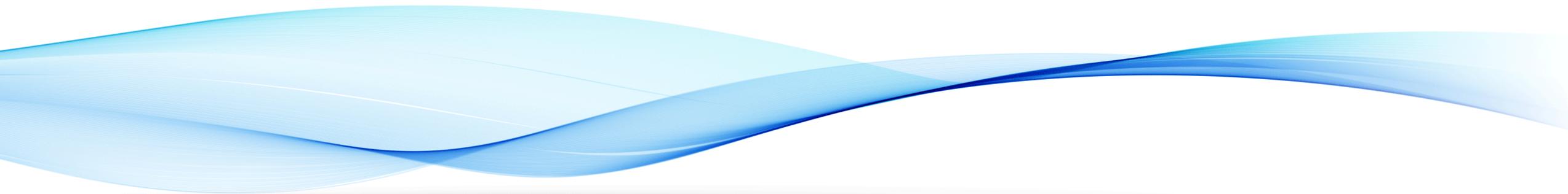
- Jane Hoppin, NC State

“It’s time for Chemours to own up to the level of contamination they have caused to the environment in and around their Fayetteville Works facility.”

- DEQ Secretary Michael Regan

What Does This Mean?

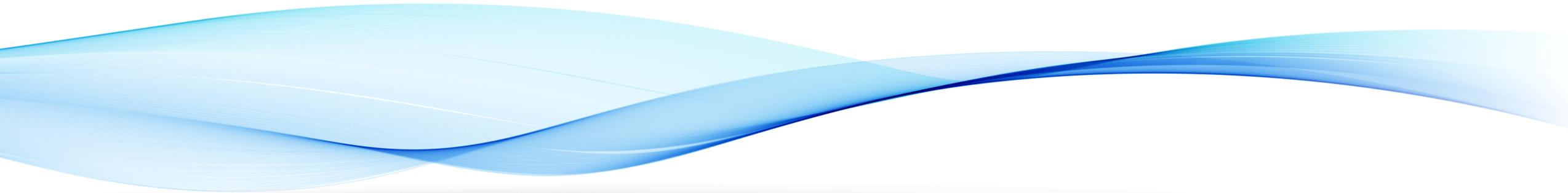
- We will always be at the end of the Cape Fear River.
- The upstream environment has been contaminated.
- We have learned over the past year that we cannot rely on regulatory framework to protect source water.
- We need to resolve this for our customers.



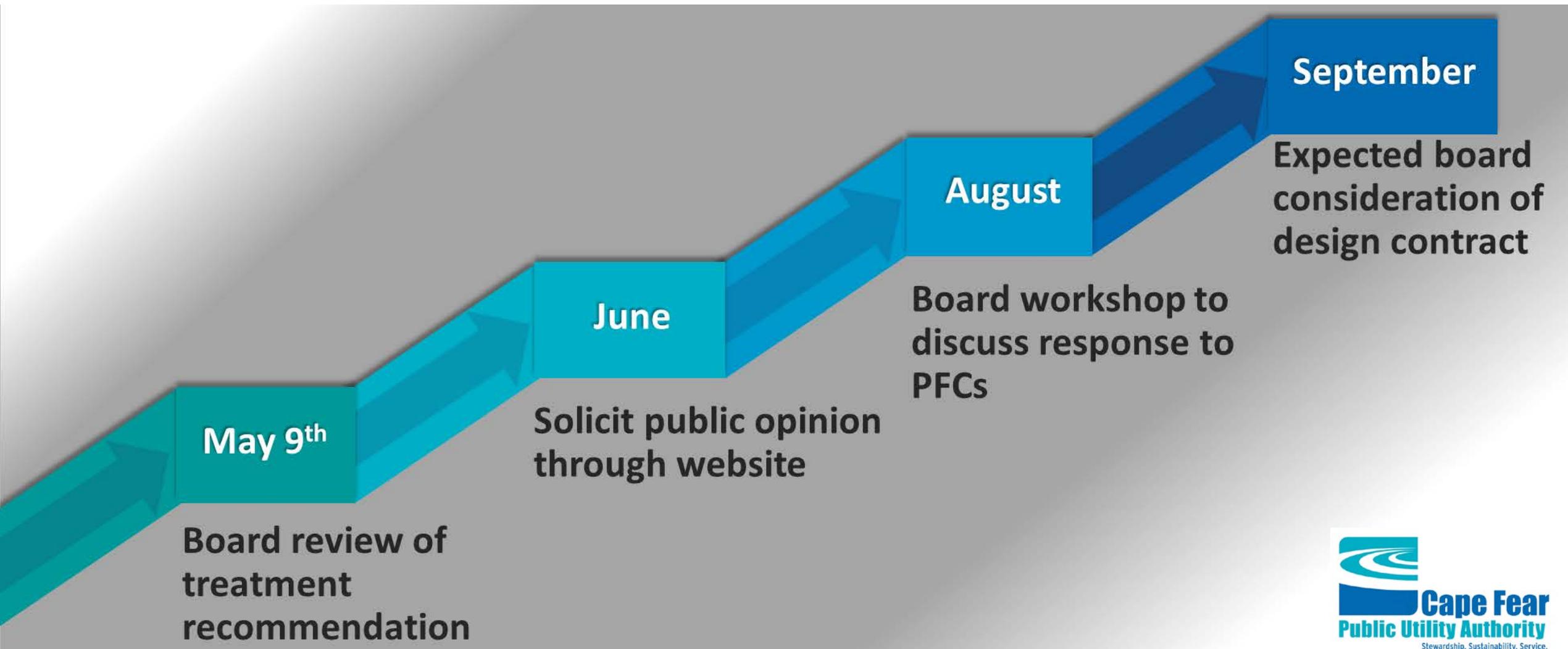
Recommendation:



Authorize Executive Director to move forward with negotiating a design contract for the construction of treatment enhancements at Sweeney Water Treatment Plant to reduce PFCs in the finished water.



CFPUA Decision Timeline for Plant Upgrade



Potential Next Steps:

- Authorize Executive Director to move forward with negotiating a design contract for the construction of treatment enhancements at Sweeney Water Treatment Plant to reduce PFCs in the finished water.
- Defer a decision until more information is available
- Take no action

