



**Select Committee on North Carolina  
River Quality  
October 26, 2017**



# Material Topics



- Latest surface water and groundwater monitoring results
- Information on the air emissions from the Chemours Fayetteville Works facility
- How wastewater from the closed loop system at the facility is disposed of
- Improving the disclosure process for the NPDES permits
- Impact of interbasin transfers
- Description of Departmental resources devoted to the monitoring, analysis, and regulation of emerging compounds



# Divisions

- Division of Water Resources
- Division of Waste Management
- Division of Air Quality





## Division of Water Resources

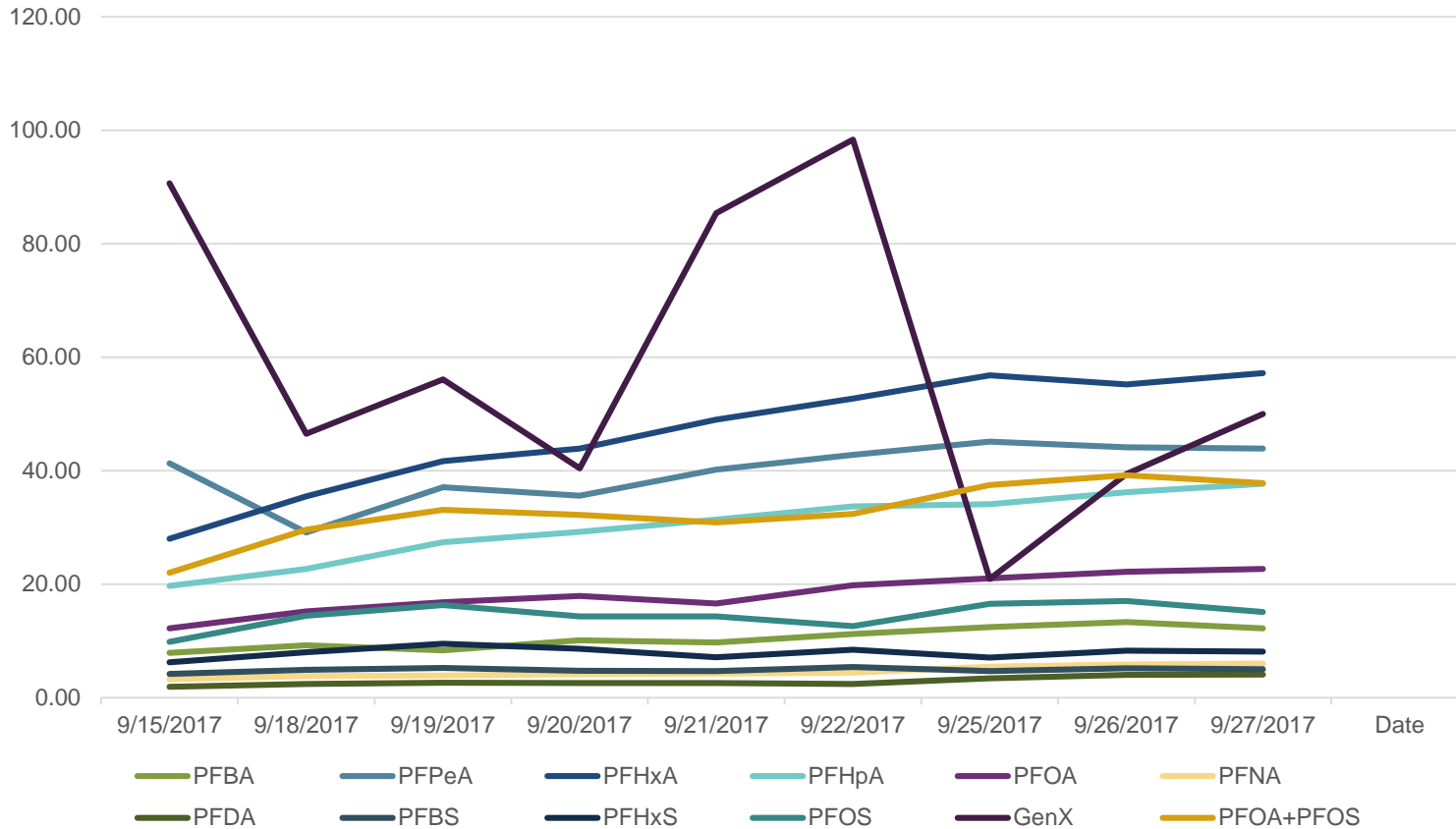




# Latest Cape Fear River Sampling Data



## Chemours Outfall 002 (ppt)

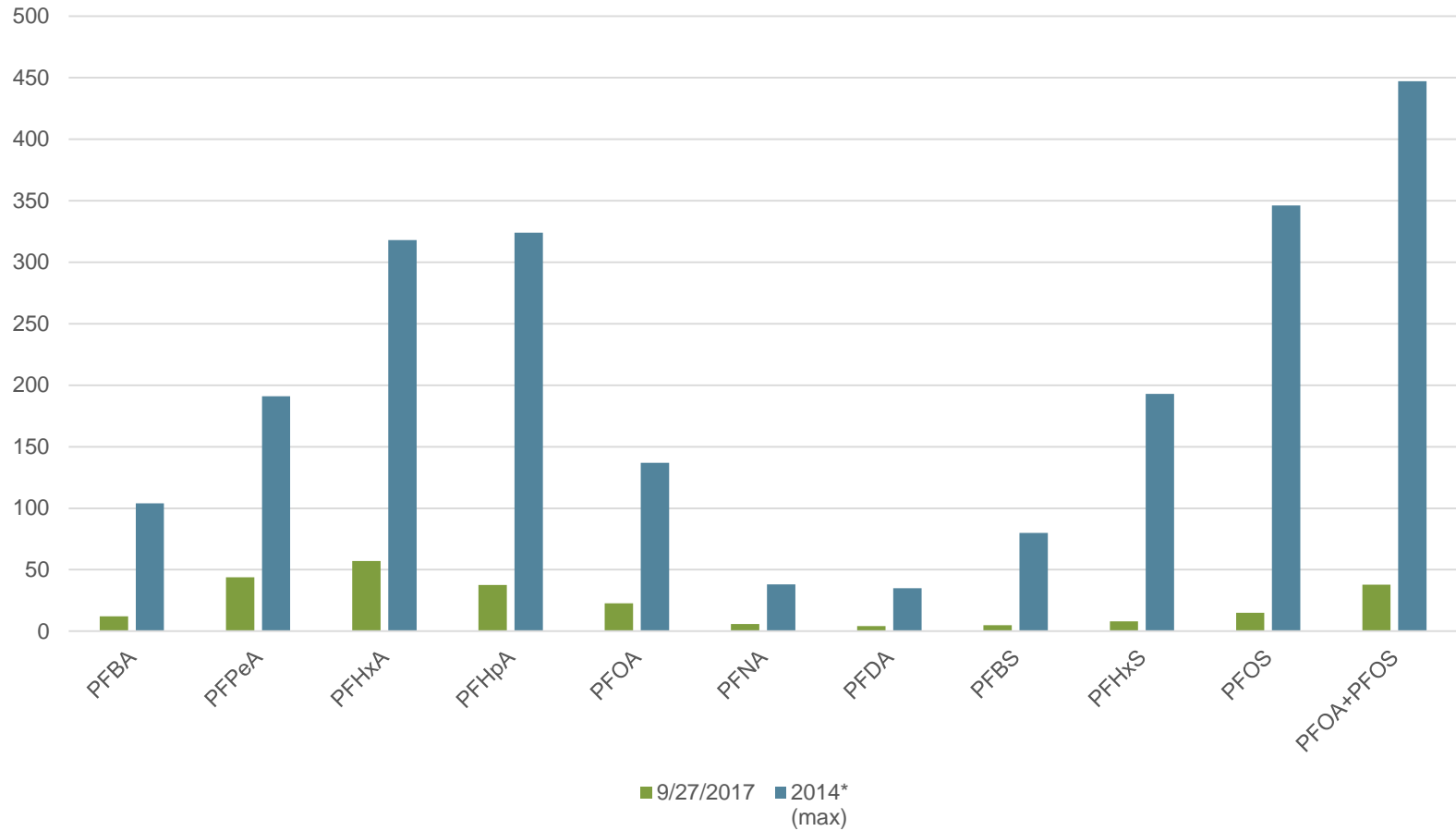


# Drinking Water Samples

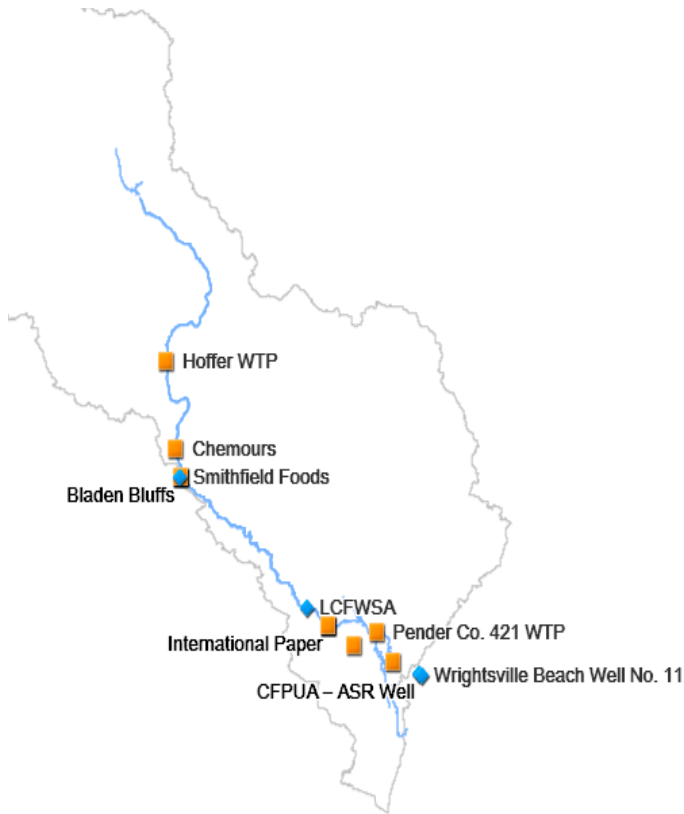
		Results (ppt)		
		9/14/2017	9/21/2017	9/28/2017
<b>International Paper</b>	PFOA	3.65	2.97	3.74
	PFOS	1.64 (J)	1.21 (J)	1.40 (J)
	PFOA+PFOS	5.29 (J)	4.18 (J)	5.14 (J)
	GenX	30.2	33.4	35.3
<b>Cape Fear Public Utility</b>	PFOA	15.1	10.1	12.1
	PFOS	17.2	17.3	14.5
	PFOA+PFOS	32.3	27.4	26.6
	GenX	33.2	36.1	28.9
<b>Pender County</b>	PFOA	12.2	2.74	2.87
	PFOS	0.544 (J)	1.02 (J)	0.977 (J)
	PFOA+PFOS	4.36 (J)	3.76 (J)	3.85 (J)
	GenX	40.4	41.0	42.4
<b>NW Brunswick County</b>	PFOA	9.98	7.96	8.16
	PFOS	7.78	5.98	7.78
	PFOA+PFOS	16.0	15.7	8.2
	GenX	33.1	35.0	24.3



# Historic Comparison



# DEQ Sampling



- Process area sampling at Chemours.
- Weekly composite sampling at the Chemours NPDES outfall 002.
- Weekly sampling of finished drinking downstream of the Chemours facility.



# **Division of Water Resources resources devoted to the monitoring, analysis, and regulation of emerging compounds**

- **Staff from the Fayetteville and Wilmington Regional Offices continue to conduct sampling initiated June 19<sup>th</sup>**
- **Evaluation of current renewal application and Chemours process manufacturing areas and potential contributions to chemical releases**
- **Onsite verification of wastewater containment**
- **Review of health studies and consultation with state and federal agencies**
- **Review of national and international water standards**
- **Research on wastewater and drinking water treatment technologies and effectiveness**
- **Coordination with laboratory support for analysis – EPA NERL, EPA SESD and private laboratories**
- **Quality Assurance review of lab data and research on test methods**
- **Organizing a workshop to help design future sampling plans to evaluate other end points – sediment, fish tissue, etc.**
- **Participating in public information meetings to ensure health directors, water utilities and the public have available information**

# Mass Spectrometer



# Improving the Disclosure Process for NPDES Permits

## **Need to initiate a Deliberative and Transparent process**

- Discussions need to include all Stakeholders:
  - Permittees both Industrial and Municipal
  - EPA (NPDES program is federally approved)
  - Environmental and Citizen Groups
- **Benchmark off other states' application processes with an emphasis on immediate surrounding states**

## **Guiding principles:**

- Prioritize Environmental and Health Risks
- Understanding Emerging Science
- Regulatory Cost/Benefits



# Impact of Inter Basin Transfers (IBTs)

## § 143-215.22L - Regulation of Surface Water Transfers Water Quality

- § 143-215.22L is about the movement of surface waters between river basins.
- The focus is water supply (water quantity) but does include water quality considerations.
  - § 143-215.22L (t) *Statement of Policy.* - *It is the public policy of the State to maintain, protect, and enhance **water quality** within North Carolina. It is the public policy of this State that the reasonably foreseeable future water needs of a public water system with its service area located primarily in the receiving river basin are subordinate to the reasonably foreseeable future water needs of a public water system with its service area located primarily in the source river basin. Further, it is the public policy of the State that the cumulative impact of transfers from a source river basin shall **not result in a violation of the antidegradation policy** set out in 40 Code of Federal Regulations § 131.12 (1 July 2006 Edition) and the statewide antidegradation policy adopted pursuant thereto.*



## § 143-215.22L - Regulation of Surface Water Transfers Water Quality

- Water Quality is included in the permitting process in several ways.
  - § 143-215.22L (d) *Environmental Documents.* - The definitions set out in G.S. 113A-9 apply to this section. The Department shall conduct a study of the environmental impacts of any proposed transfer of water for which a certificate is required under this section. ...
  - § 143-215.22L (k) *Final Determination: Factors to be Considered.* - In determining whether a certificate may be issued for the transfer, the Commission shall specifically consider each of the following items and state in writing its findings of fact and conclusions of law with regard to each item:
    - § 143-215.22L (2) *The present and reasonably foreseeable future detrimental effects on the source river basin, including present and future effects on public, industrial, economic, recreational, and agricultural water supply needs, **wastewater assimilation, water quality**, fish and wildlife habitat, electric power generation, navigation, and recreation. ...*
    - § 143-215.22L (4) *The present and reasonably foreseeable future beneficial and detrimental effects on the receiving river basin, including present and future effects on public, industrial, economic, recreational, and agricultural water supply needs, **wastewater assimilation, water quality**, fish and wildlife habitat, electric power generation, navigation, and recreation. ...*
  - § 143-215.22L (l) *Final Determination: Information to be Considered.* - In determining whether a certificate may be issued for the transfer, the Commission shall consider all of the following sources of information:
    - § 143-215.22L (4) *Information developed by or available to the Department on the **water quality of the source river basin and the receiving river basin**, including waters that are identified as impaired pursuant to section 303(d) of the federal Clean Water Act (33 U.S.C. § 1313(d)), that are subject to a total maximum daily load (TMDL) limit under subsections (d) and (e) of section 303 of the federal Clean Water Act, or that would have their assimilative capacity impaired if the certificate is issued.*



## § 143-215.22L - Regulation of Surface Water Transfers Lower Cape Fear Interbasin Transfers

- Brunswick County - at the November 2013 meeting the EMC approved a 17 MGD transfer from the Cape Fear to the Shallotte and Waccamaw.
- Pender County has a grandfathered Interbasin Transfer and in March 2016 submitted a Notice of Intent for obtaining an Interbasin Transfer certificate of 14.5 MGD from the Cape Fear to the South, Northeast Cape Fear and New rivers.
  - Current status - the Environmental Assessment was completed in April 2017. DWR is reviewing the final documentation. The public hearing and comment period dates will be established.
- Sampling at the water treatment plants for both Brunswick and Pender Counties indicate GenX is in the finished water and concentrations are consistently below the health goal of 140 ppt.







# Division of Waste Management



# Private Well Sampling Results

Private wells sampled:	110
Total # wells with exceedance of the GenX NC DHHS provisional health goal:	40 (36%)
Total # wells reported as not-detected (ND):	36 (33%)
Total # wells with a GenX detection (includes those above the health goal):	74 (67%)
Total # wells with a GenX detection less than the health goal:	34 (31%)
The maximum detected GenX concentration is	1300 ng/L (ppt)

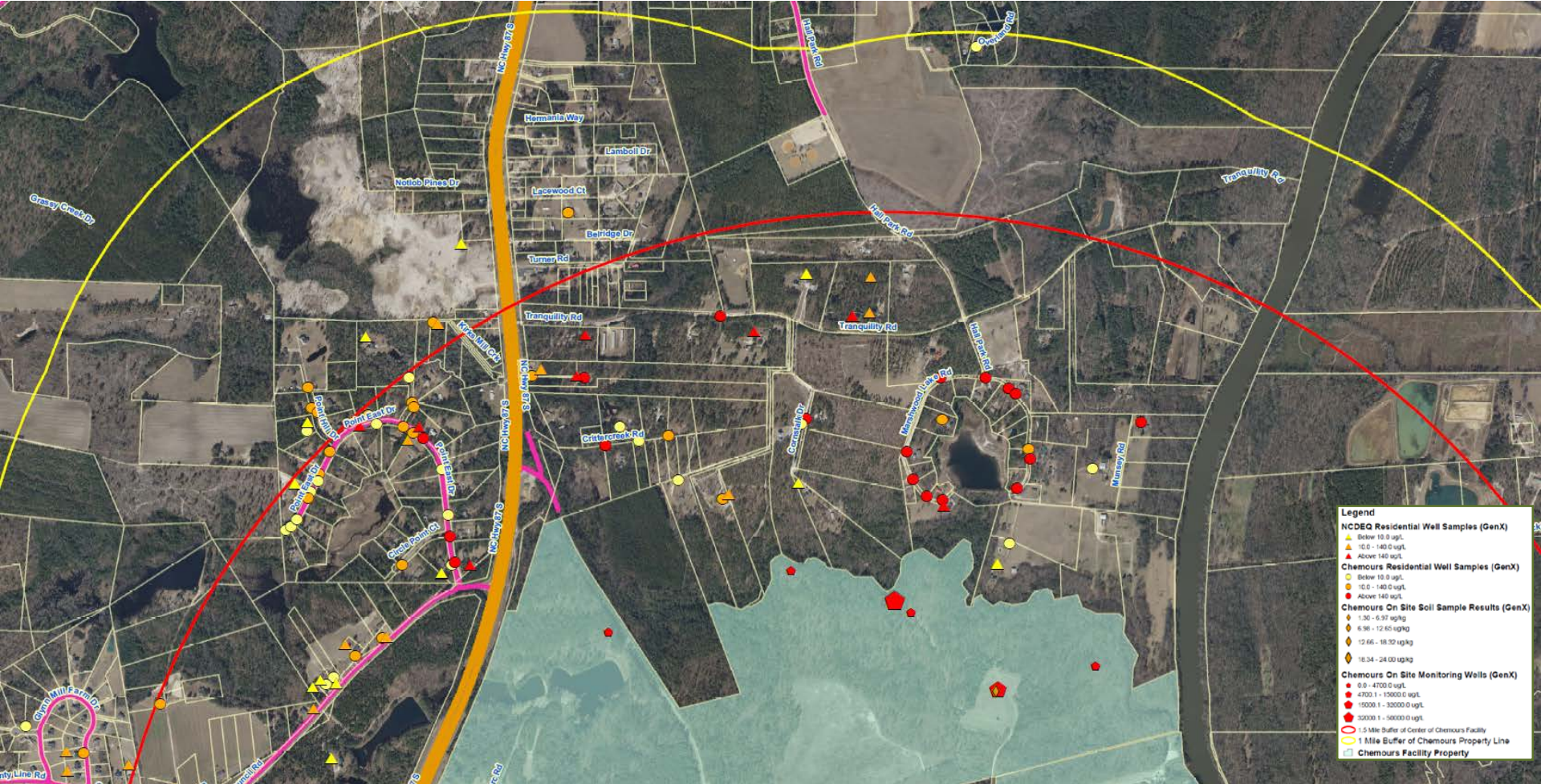


# Groundwater Next Steps

- **Private wells**
  - Chemours will sample wells at approximately 450 additional private properties. Sampling started October 12.
  - The sampling radius will be ~1 mile out from the site boundary line.
- **Chemours On-Site Investigation**
  - Sample some 40 additional on-site monitoring wells for Gen-X and other compounds of concern to determine groundwater contamination on-site.
  - Install both shallow and deep monitoring wells to refine the groundwater flow model for the site.
  - Conduct shallow and vertical soil profiling of Gen-X into deeper areas of the subsurface to learn the extent of soil contamination and the ability to impact the groundwater through leaching.
- **Determine if Willis Creek is a discharge point for groundwater.**
- **Conduct Aquifer tests to determine transport characteristics of the subsurface.**
- **Determine the areas of the site that caused the releases of contaminants.**

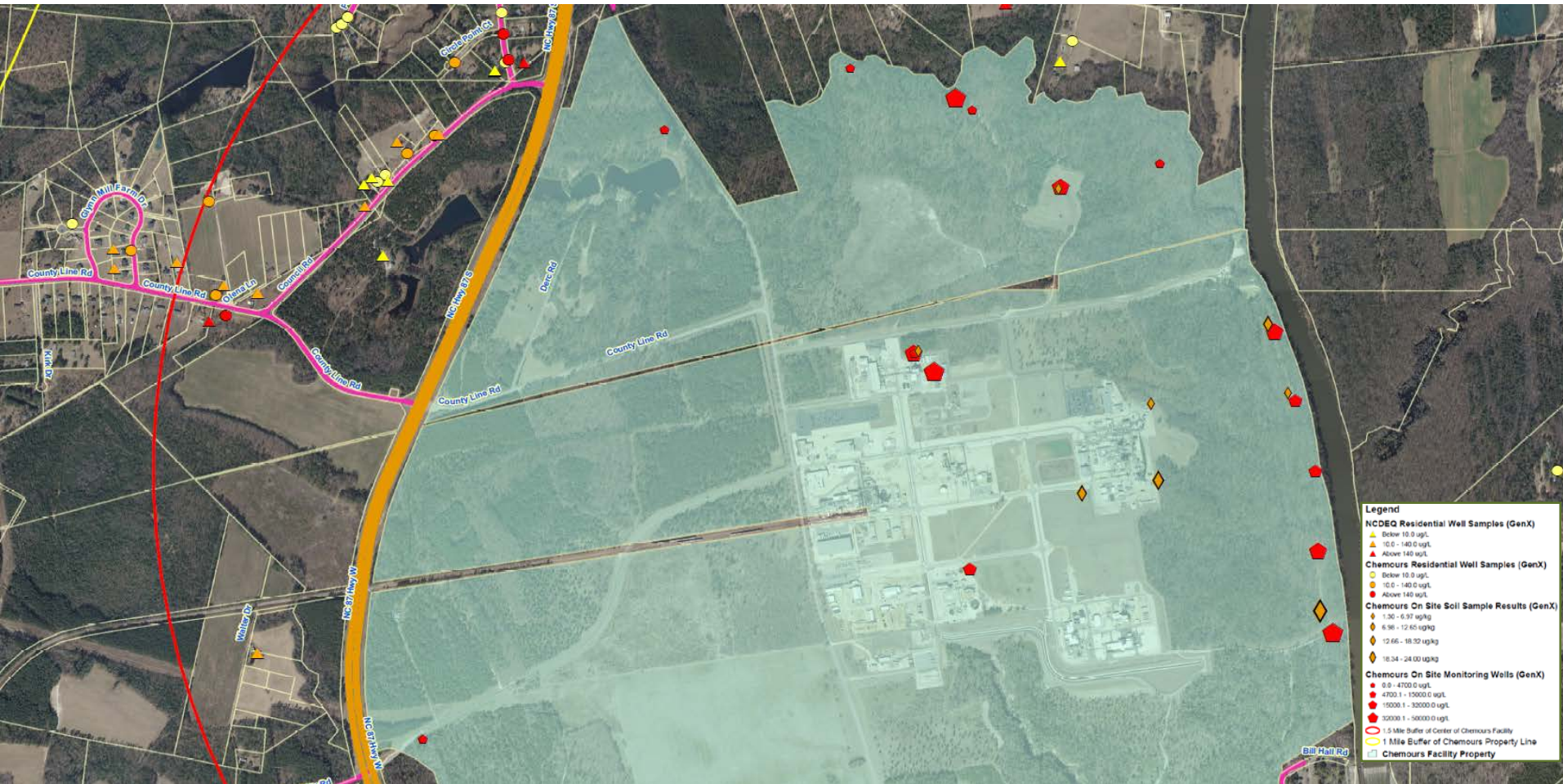


# Chemours Sampling Map (Northern Area)



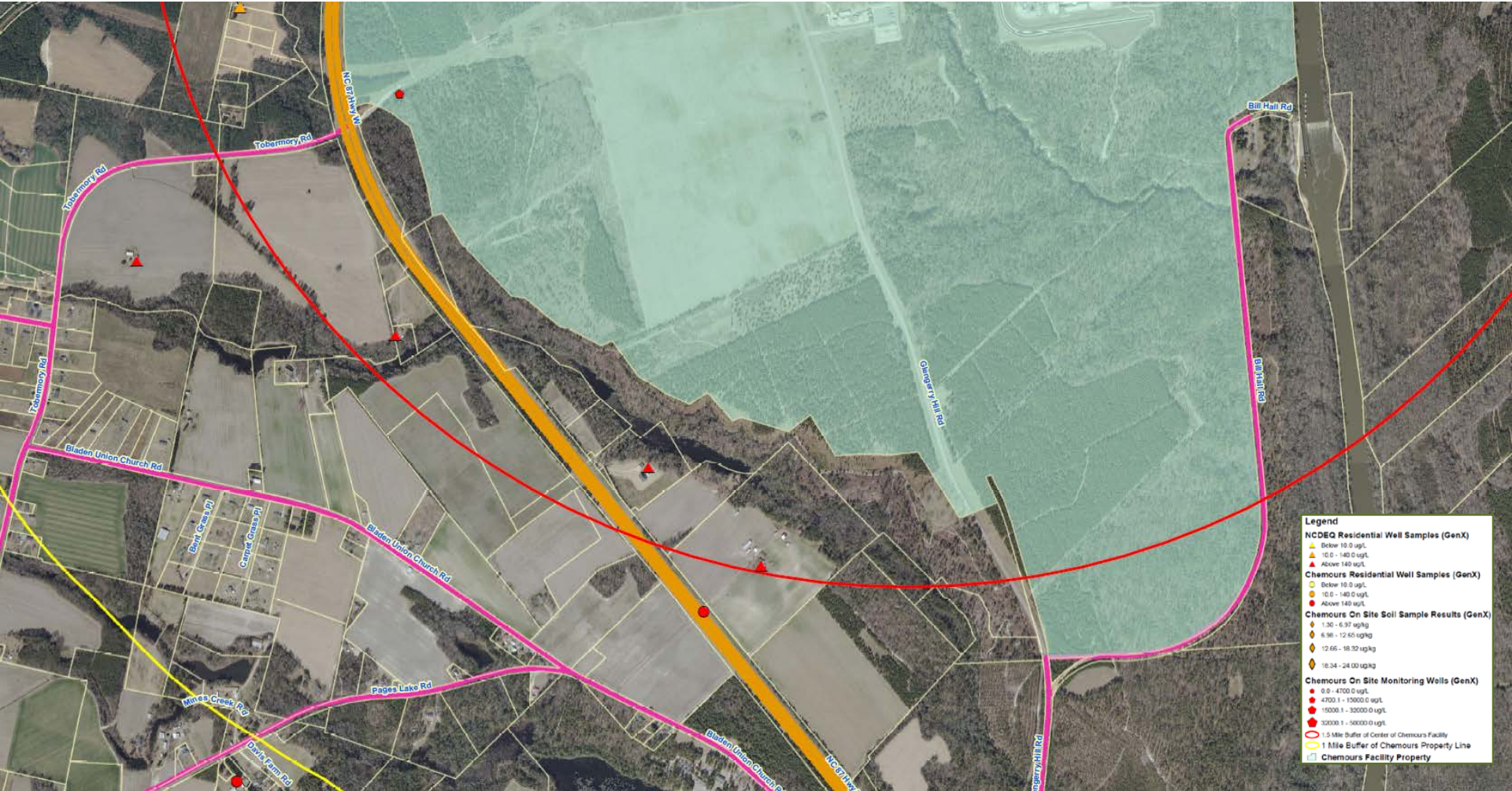


# Chemours Sampling Map (Central Area)





# Chemours Sampling Map (Southern Area)



**Legend**

- NCDEQ Residential Well Samples (GenX)**
  - Yellow Triangle: Below 10.0 ug/L
  - Yellow Triangle: 10.0 - 140.0 ug/L
  - Red Triangle: Above 140.0 ug/L
- Chemours Residential Well Samples (GenX)**
  - Yellow Circle: Below 10.0 ug/L
  - Yellow Circle: 10.0 - 140.0 ug/L
  - Red Circle: Above 140.0 ug/L
- Chemours On Site Soil Sample Results (GenX)**
  - Yellow Diamond: 1.36 - 6.97 ug/kg
  - Orange Diamond: 6.98 - 12.65 ug/kg
  - Red Diamond: 12.66 - 18.32 ug/kg
  - Dark Red Diamond: 18.34 - 24.00 ug/kg
- Chemours On Site Monitoring Wells (GenX)**
  - Small Red Circle: 0.0 - 4700.0 ug/L
  - Medium Red Circle: 4700.1 - 15000.0 ug/L
  - Large Red Circle: 15000.1 - 30000.0 ug/L
  - Very Large Red Circle: 30000.1 - 50000.0 ug/L
- Other Features**
  - Red Line: 1.5 Mile Buffer of Center of Chemours Facility
  - Pink Line: 1 Mile Buffer of Chemours Property Line
  - Yellow Outline: Chemours Facility Property





## **Division of Waste Management resources devoted to the monitoring, analysis, and regulation of emerging compounds**

- **25 DWM staff are currently working on the GenX issue:**
- **Performing field sampling of private wells and surface waters**
- **Reviewing private well water data from Chemours and DEQ for data analysis,**
- **data QC, HREs, planning and mapping**
- **Reviewing on-site groundwater and soil data as part of the RCRA process**
- **Participating in public information meetings**
- **Participating in regular informational meetings and calls with external partners**
- **Working on press releases and responding to data requests**
- **Answering phone calls and email inquiries from the public and external partners**
- **Meeting and communicating with Chemours**



# Division of Air Quality



# Chemours reported air emissions (pounds per year)

	2012	2013	2014	2015	2016
C3 dimer acid fluoride	500	539	545	669	591
C3 dimer acid (GenX)	1	3	4	3	3
C3 dimer acid ammonium salt	1	3	3	2	2

- All data based on chemical process computational model.
- Air emission data for other emerging contaminants has been received and is being analyzed by staff.
- Source information, emissions data, and stack parameters needed to conduct air dispersion modeling has been received.

# Stack Testing

- **DAQ and Chemours discussing/evaluating appropriate methods**
- **No “off the shelf” method. Developing test methods that will capture and measure the contaminants of interest**
- **Chemours has indicated that they will test to better quantify air emissions as soon as measurement issues are resolved.**

# Ambient Air Quality Monitoring

- **DAQ and EPA discussing/evaluating appropriate methods, equipment and lab capabilities**
- **Do the contaminants act as a gas or a particle?**
- **What analytical detection limits are possible?**

# Air Deposition Modeling

- **Source information, emissions data, and stack parameters needed to conduct air dispersion modeling have been received.**
- **Modeling will provide additional information about fate of air emissions.**
- **Could help inform ambient monitoring and groundwater sampling efforts.**



## **Division of Air Quality resources devoted to the monitoring, analysis, and regulation of emerging compounds**

- **Regional, permitting, monitoring, and compliance staff are all contributing to the analysis.**
- **Review information provided by Chemours**
- **Interactions with Federal/State and International contacts with experience with the contaminants of interest.**
- **Complex chemistry.**
- **Chemical and physical transformations of emissions in different conditions.**



# RECAP ACTIVITIES

- **Monitoring the Facility for surface water and groundwater and**
- **Air emissions modeling**
- **Continuing to delineate off-site groundwater contamination and its potential sources**
- **Reviewing private well water data from Chemours and DEQ for data analysis, data QC, HREs, planning and mapping**
- **Evaluating chemical pathways (chemicals created and transformed)**
- **Determine future sampling needs**
- **Continuing to host community meetings**
- **Engaging Federal/State and International partners**



# Questions?

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