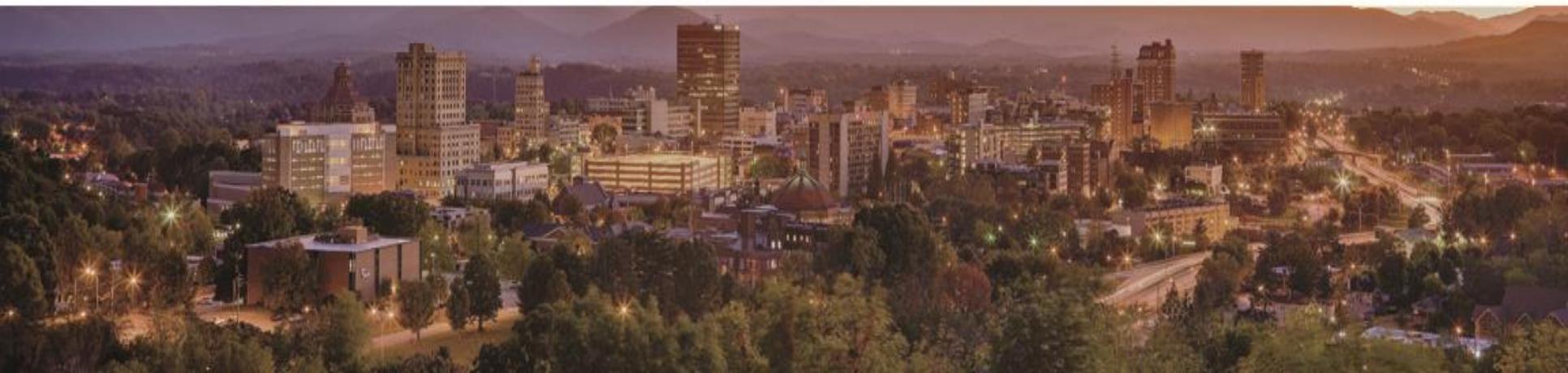




**Emerging Compounds
DEQ ESI Conference
April 24, 2018**



Advances in Emerging Compounds

Initiate a Deliberative and Transparent process for Improving Disclosure Process

- Discussions need to include stakeholders:
 - Permittees both Industrial and Municipal
 - EPA
 - Environmental and Citizen Groups
- Benchmark off other states' application processes with an emphasis on immediate surrounding states

Need for health information, test methods and treatment technologies

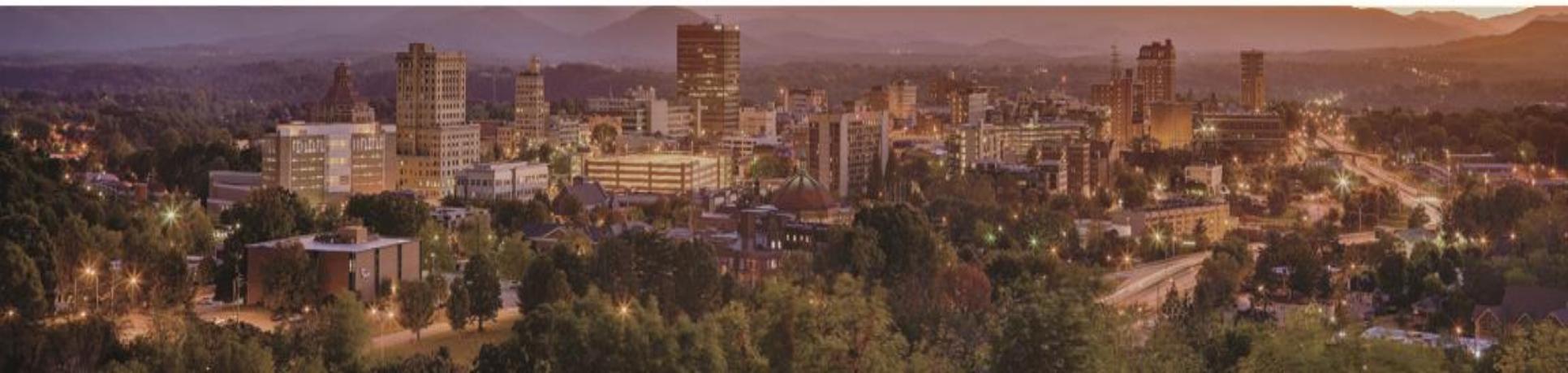
Guiding principles:

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





Division of Water Resources



Current Sampling for Chemours Project

- Two composite samples weekly at Chemours wastewater outfall into the Cape Fear River: Monday - Thursday and Friday - Sunday
- Drinking water facilities downstream are sampled weekly:
 - Bladen Bluff
 - International Paper
 - NW Brunswick
 - Pender County
 - CFPU Sweeney
- Ambient monitoring for PFAS across North Carolina
 - Jordan Lake watershed monthly Jan – June 2018
 - Cape Fear Reservoirs May – October 2018

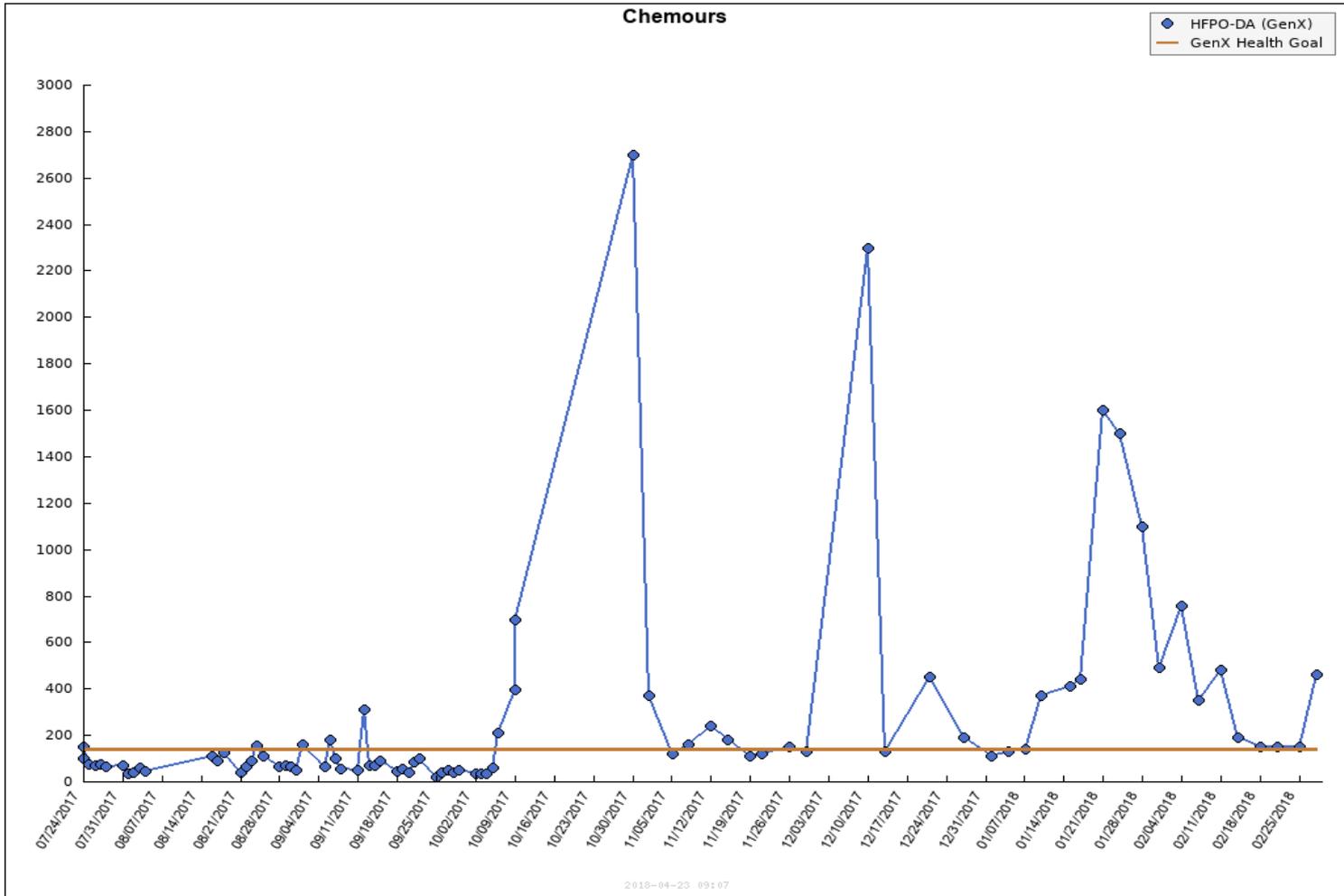


DEQ Sampling

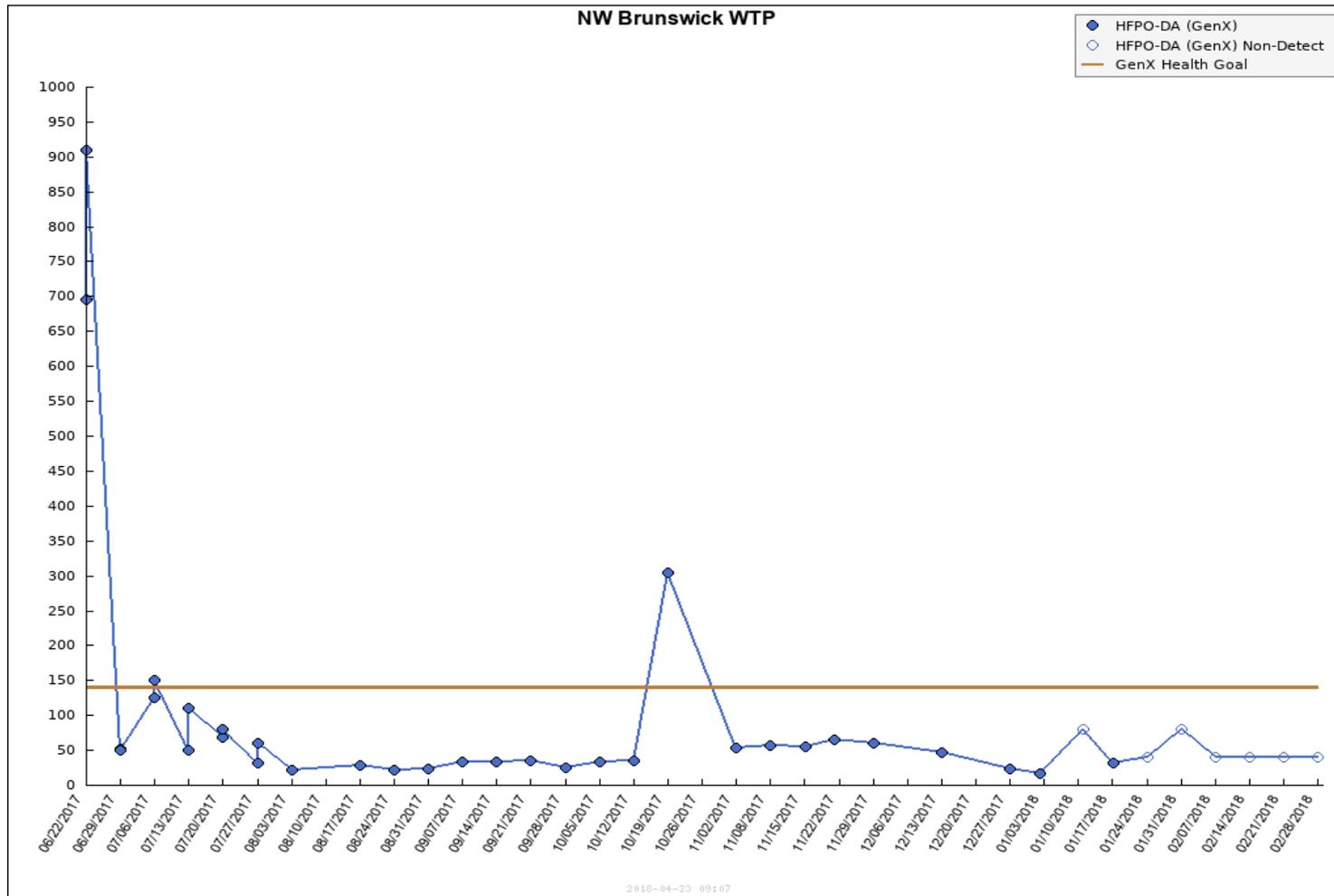


- Process area sampling at Chemours.
- Weekly composite sampling at the Chemours NPDES outfall 002.
- Weekly sampling of finished drinking downstream of the Chemours facility.

Data at Chemours Outfall 002 GenX (parts per trillion)



Data at Drinking Water Facilities GenX (parts per trillion)



Upcoming

- Resources to continue monitoring in the Cape Fear River basin and ambient monitoring for fluorinated chemicals across the state.
- Chemical analysis – continue EPA Athens lab analysis for weekly monitoring. Limitation – 5 week turnaround.
- Ambient monitoring will have to be coordinated to fit into EPA Athen's schedule, due to their support needed by other states.
- Evaluate factors for potential bioaccumulation and aquatic toxicity to develop surface water and groundwater standards, including SAB review.

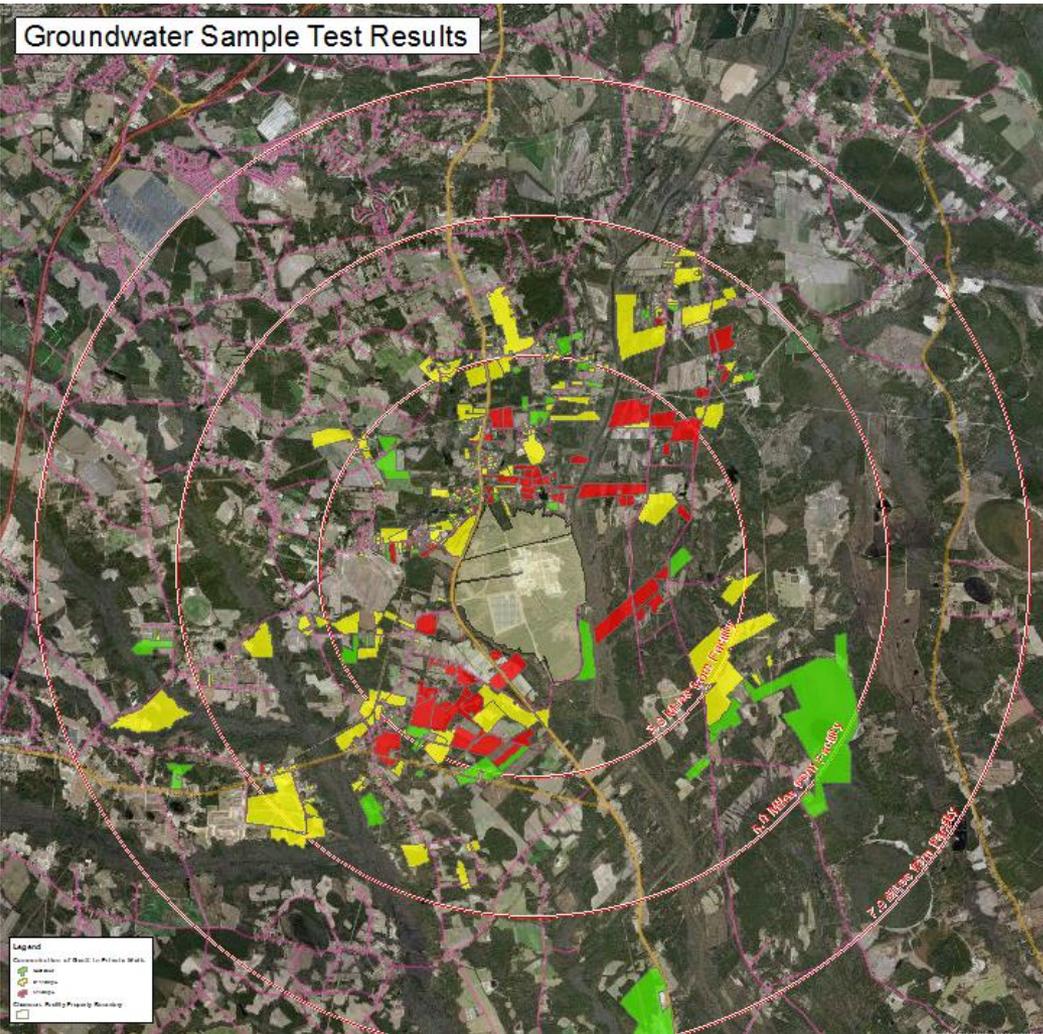




Division of Waste Management



Division of Waste Management



Well Sampling Results
in the Chemours area,
Approximate distances from
facility boundary:
Northeast – 5.5 miles
West – 1.8 miles
Southwest – 3.9 miles
East – 2.6 miles

GenX: NC health goal = 140 ng/l

Red = > 140 ng/l
Yellow = 0-140 ng/l
Green = Non detect



Division of Waste Management

Combined Phase I, II, III , IV (partial) Private Well PFAS Data, also Includes Robeson Co. and DEQ-collected Data

Private Well Water GenX Summary	Combined Well Data
Distance from Chemours' border	Up to 5.5 miles
Well Collection Dates	9/6/2017 – 3/26/2018
Number of Wells tested	837
Number of Exceedances of the GenX Provisional Health Goal	207
Number of Not-Detected ("ND") GenX Analyses	178
<small>a. The NC DHHS Provisional Drinking Water Health Goal for GenX is 140 ng/L (July 2017)</small>	
Number of GenX Detections Less than the Health Goal ^a	450
Maximum Detected GenX Concentration	4000 ng/L



Granular Activated Carbon Point of Use Filtration Systems



- Chemours has submitted to DEQ a proposal to install granular activated carbon filtration systems for residences with Gen X present in the well at or above 140 ppt
- DEQ has provided initial feedback to Chemours to include the requirement to install 5 additional filter systems for sampling.
- The final system was installed on April 20. Both DEQ and Chemours have sampled some of the five units. We are currently waiting for the results.
- Sampling data regarding the effectiveness of the systems will be shared online



Fish Tissue Testing

Marshwood Lake Testing by DEQ

- DEQ sampled Marshwood Lake on March 14:
 - 2 surface water sample locations
 - 2 composite sediment sample locations
 - 2 Largemouth Bass fillet tissue composites
 - 1 Redear Sunfish fillet tissue composite
- Catfish will be collected in the near future
- A drinking water well onsite at the lake was sampled
- A composite sediment sample was taken from Lock & Dam 3 in the Cape Fear River
- 2 surface water samples were collected at Camp Dixie Lake
- All samples collected will be analyzed using USEPA M537-modified for Full PFAS Suite at GEL Labs
- Surface water will also be tested for Total Organic Carbon, Dissolved Organic Carbon, pH and Total Particulates; Sediment will also be tested for Total Organic Carbon and %Lipids
- Partial data has been received and is under review

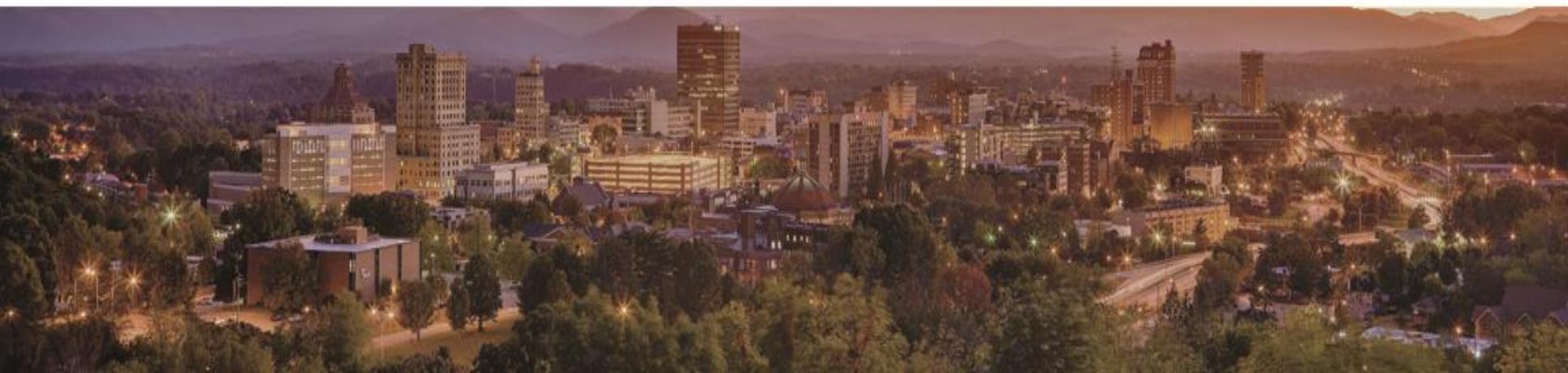


Additional Media Testing

- **DEQ continues to coordinate with DHHS and NCDA & CS regarding testing of other media (Garden Crops and Soil)**
- **Current areas of focus include evaluating if there are other sources of exposure to perfluorinated compounds around the Fayetteville Works Facility**
- **DEQ and DHHS continue to gather information from other states who have sampled food products for perfluorinated compounds**
- **DEQ has also been in discussions with different laboratories regarding their ability to test plant tissue for perfluorinated compounds**



Division of Air Quality



Emerging Compounds

DAQ's investigation involving GenX and other PFAS from Chemours

- **GenX emissions data**
 - Started with only estimates
 - Required stack tests
 - Method development
 - First of its kind measurements

Chemours 2016 emissions estimates as originally reported to DAQ	Chemours revised 2016 emissions estimates as of October 2017	Latest emissions estimates, including information from January 2018 stack test measurements
66.6 lb/yr	594 lb/yr	2758 lb/yr

Emerging Compounds

DAQ's investigation involving GenX and other PFAS from Chemours

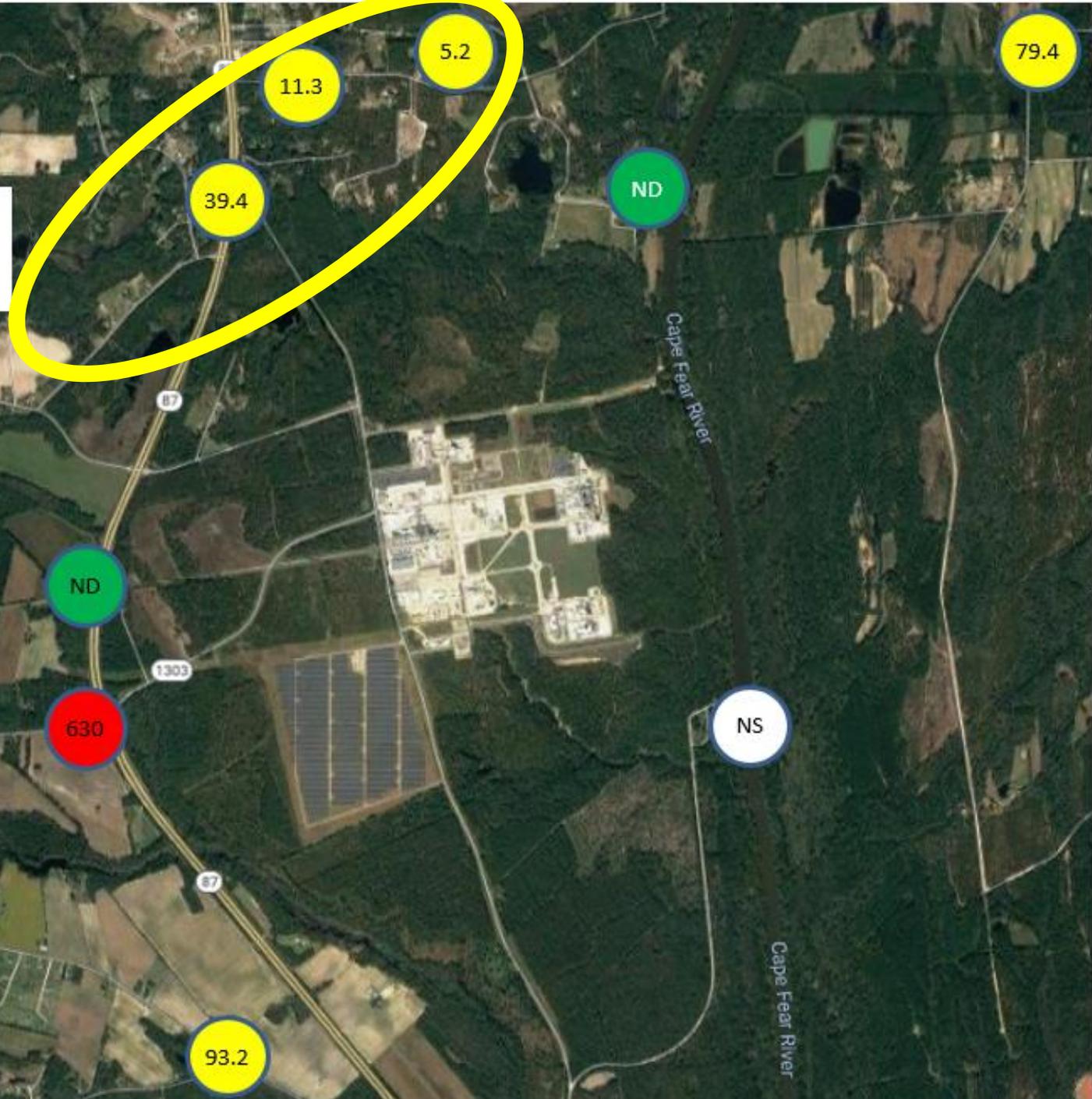
- **GenX ambient air quality data**
 - **Methods?**
 - **Wet deposition data - first of its kind**



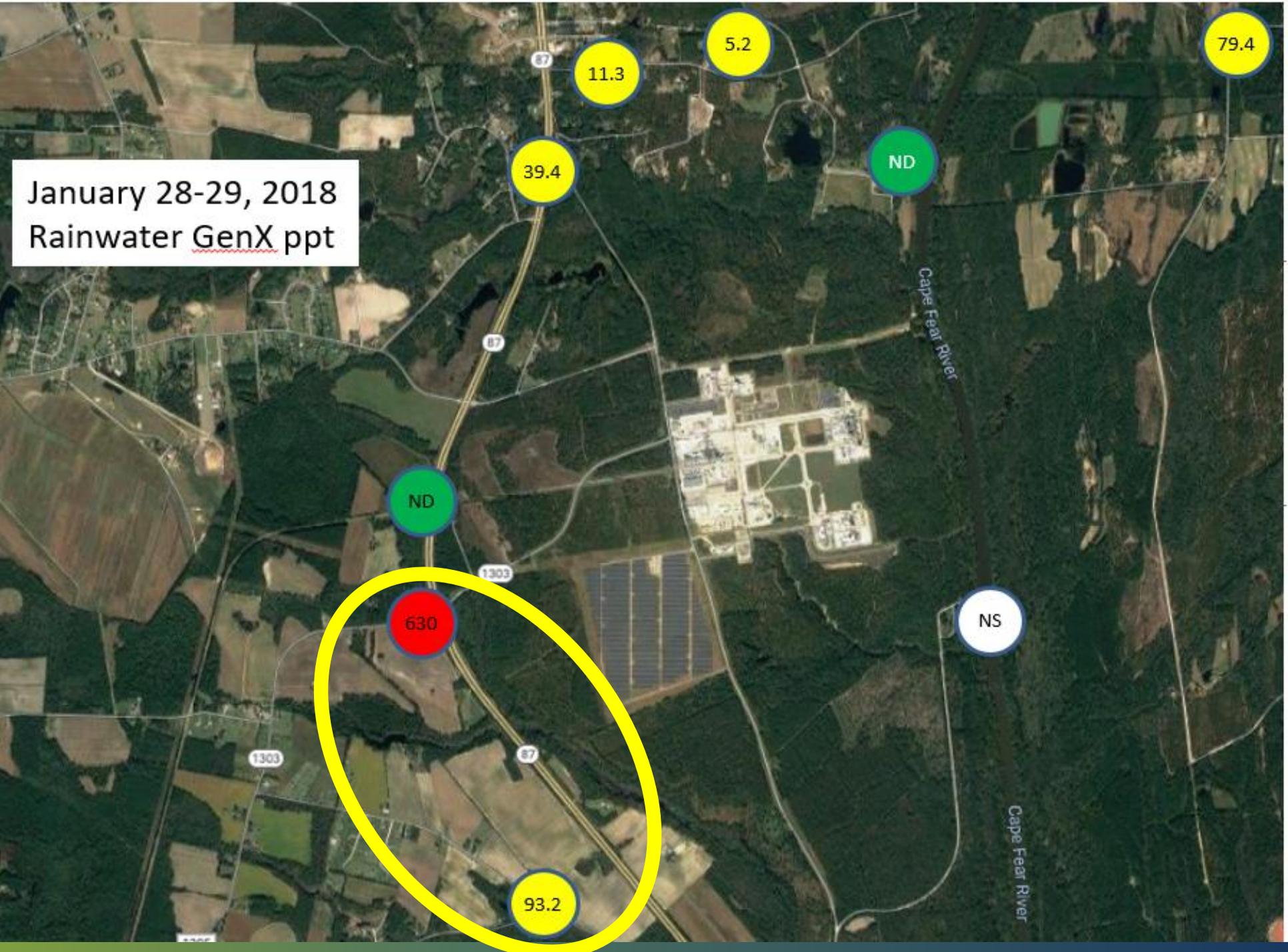
Department of Environmental Quality



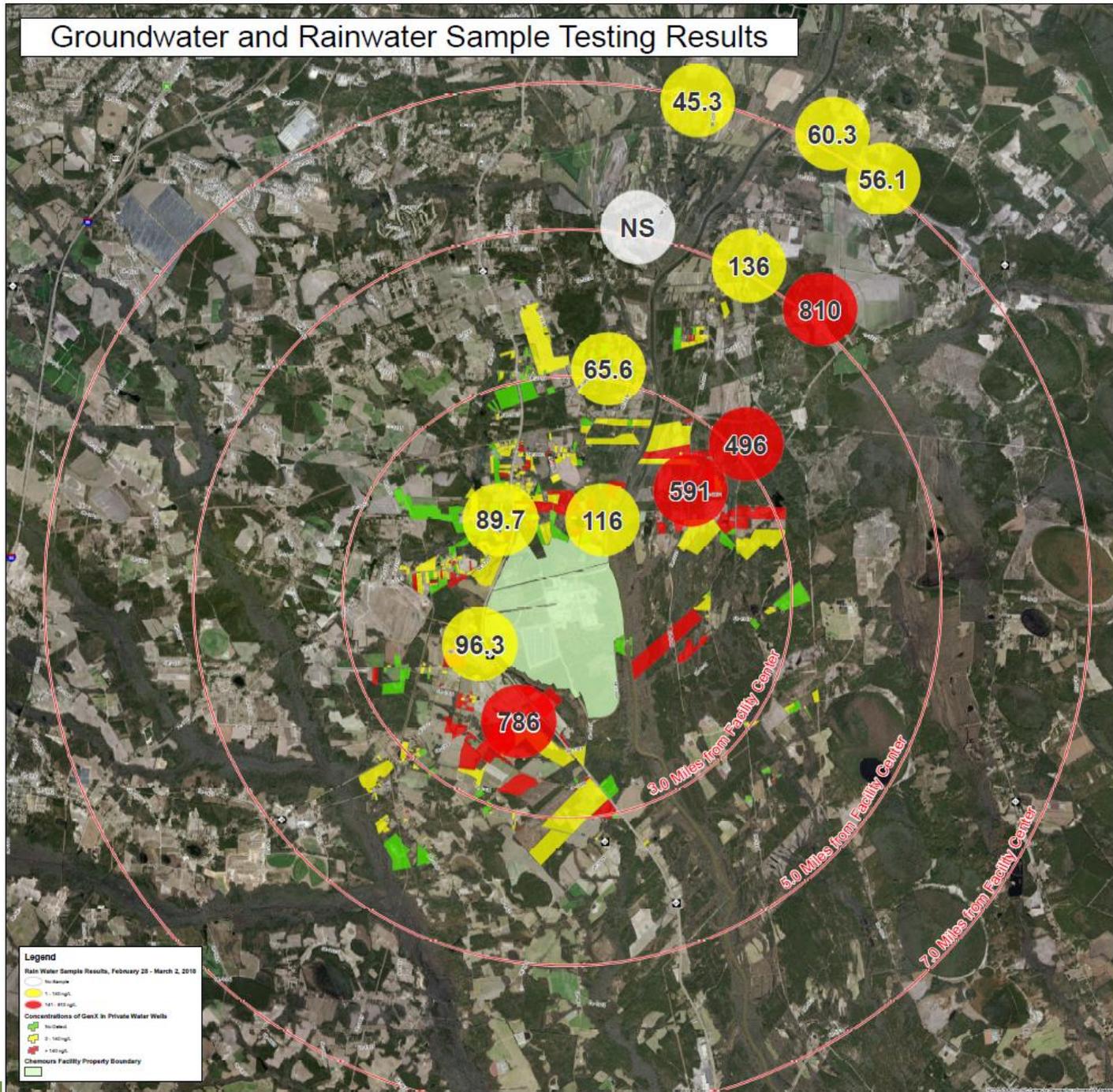
January 28-29, 2018
Rainwater GenX ppt



January 28-29, 2018
Rainwater GenX ppt



Groundwater and Rainwater Sample Testing Results



Emerging Compounds

DAQ's investigation involving GenX and other PFAS from Chemours

Summary of facts:

- The measured air emissions of GenX compounds are significantly higher than previously understood and reported.
- The GenX compounds are deposited on the land by rainfall at distances of at least 7 miles from Chemours.
- The evidence of atmospheric deposition of GenX shows a geographic footprint that is similar to the detection of GenX in groundwater samples.



Questions ?

Linda Culpepper
Interim Director Division of Water Resources

919-707-9014
linda.culpepper@ncdenr.gov

