



Water Supply Planning: Current and Future Water Demands

Broad River Basin Council Meeting
June 9, 2022



Water Supply Planning: Current and Future Water Demands

- Statutory Requirements
- Water Use Registration
- Water Use Management
- Broad River Basin Water Use Demand and Outlook
- Challenges
- Q&A



Water Supply Planning

- Assures the availability of adequate supplies of good quality water to protect public health and support economic growth.
- Water supply planning and management requires an understanding of both available water resources (sources of supplies) and demands being placed on those resources.



Water Use Permitting & Registration

- **No State-wide Water Use Permitting Program**
- **Limited Regional Permitting**
 - Central Coastal Plain Capacity Use Area (CCPCUA)
 - Eno River Management (Voluntary)
- **Only State-wide Water Use Registration**
 - Local Water Supply Plan (LWSP)
 - Water Withdrawal Registration (WWR)



Local Water Supply Planning

- Law was established in 1989 by §143-355(I)
- Requires all unit of local governments and large community water systems to prepare a Local Water Supply Plan (LWSP)
 - Applies to systems with >1000 connections or >3000 people
- A LWSP is an assessment of a water system's current and future water needs and its ability to meet those needs
- A LWSP contains a systems water shortage response plan, water efficiency plan and surface water transfer worksheets (if needed)



LWSP Components

- Water System Information
 - Contact Information
 - Distribution Data
 - Maintenance
 - Conservation Programs
- Water Use
 - Service area
 - Water Use by Type
 - Water Sales & Purchases
 - Ground Water Sources
 - Surface Water Sources
 - Surface Water Transfers
 - Water Treatment Facilities
 - Wastewater Information
- System Planning
 - 50-Year Projections
 - Future Sale and Purchase Contracts
 - Future Supply Sources
 - Plan for Meeting Future Water Supply Needs

NC DEQ Division of Water Resources
Local Water Supply Planning

Overview | FAQ | Plans

NEW Online Reporting
Updating Local Water Supply Plans has never been easier, but don't take our word for it. See for yourself...
TAKE A TOUR | I'M READY TO GET STARTED!

A Local Water Supply Plan is an assessment of a water system's current and future water needs and its ability to meet those needs. By understanding current and future needs, local governments will be better able to manage water supplies and better prepared to plan for water supply system improvements.

North Carolina General Statute [General Statute § 143-355\(f\)](#) requires all units of local government that provide or plan to provide public water service to prepare a Local Water Supply Plan. All community water systems that regularly serve 1,000 or more service connections or serve more than 3,000 people are also required to prepare a Local Water Supply Plan.

North Carolina Administrative Code [15A NCAC 02E .0604](#) requires all systems subject to General Statute § 143-355(f) to electronically submit an annual water use update based on their water use and system conditions by April 1st of every year for the period of January 1st to December 31st of the prior year.

Helpful Tools

- [AWWA Free Water Audit](#)
- [LWSP Completion Assistance Tool](#)
- [LWSP Completion Assistance Tool Checklist](#)
- [Workbook to determine Max Day Well Withdrawal](#)
- [LWSP Projections Evaluation Tool](#)
- [Small System Water Audit](#)
- [Small System Water Audit Presentation](#)

Quick Search

Choose a County... ▾

Choose a Sub-Basin... ▾

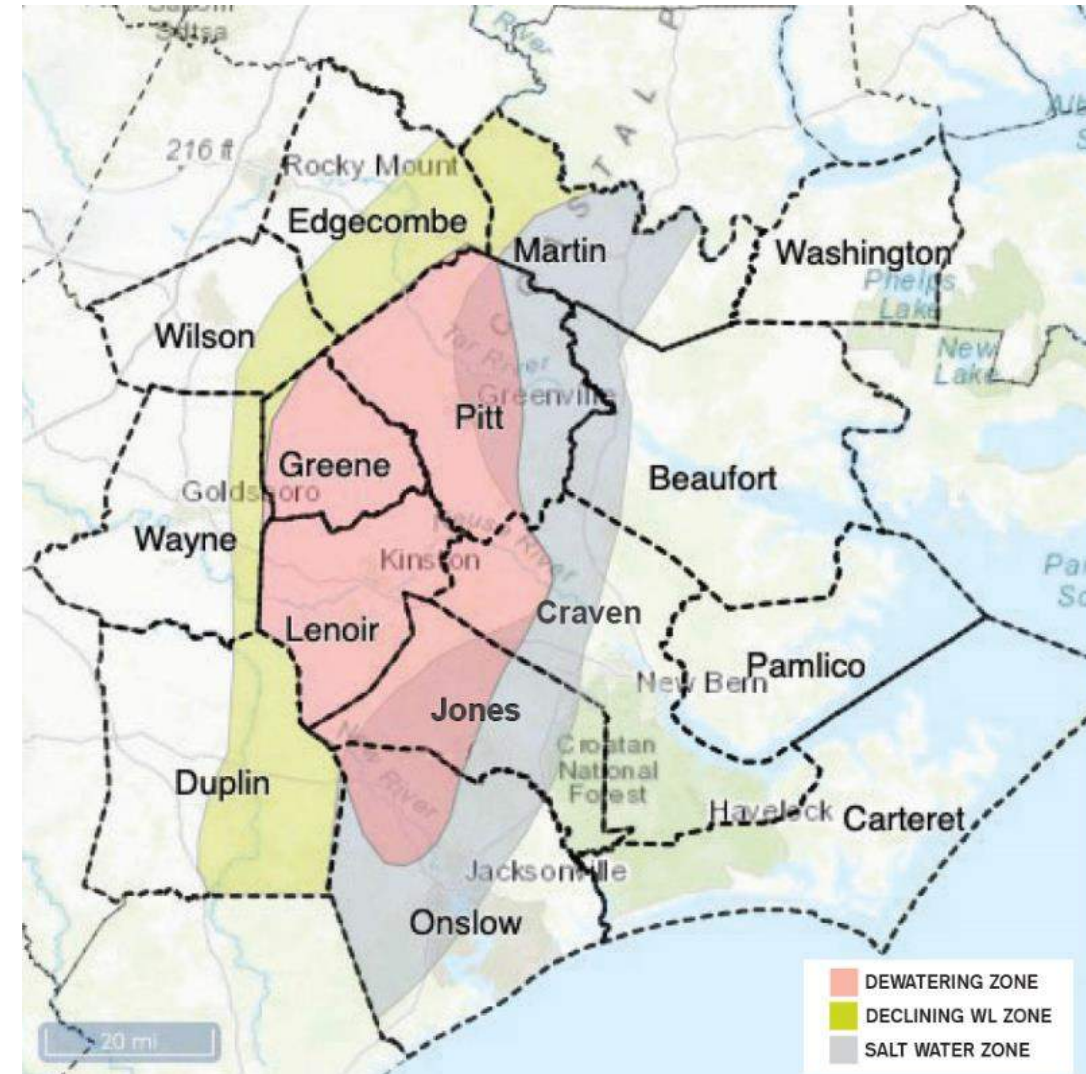
Choose a Reporting Year... ▾

Search

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Central Coastal Plain CUA

- Covers 15 eastern Counties in NC
- Intended to prevent “de-watering” & salt water encroachment in aquifer
- Registration required for withdrawals > 10,000 gpd
- Permit required for withdrawals > 100,000 gpd
- 54 active registrations at this time
- 320 active permits at this time
- Phased reduction of withdrawals were mandated for some water users
- 2018 was the last phase of 3 reductions from 30-75% from initial base rate



Water Withdrawal Registration Program

Requirements:

- G.S. 143-215.22H was established in 1991
- Agricultural users > 1,000,000 gallons any single day
- Non-agricultural users > 100,000 gallons any single day
- Registered water users have until April 1st to report water usage for the previous year
- Completing the Agricultural Water Use Survey does not fulfill this reporting requirement > 1 mgd

NC DEQ Division of Water Resources

Water Withdrawal and Transfer Registration

Overview | Reports | FAQ | NCID Login

The easy way to report your water withdrawals.

In an effort to make reporting of water withdrawals easier, we would like to welcome you to our new online reporting system. It's the fast and simple way to meet your reporting requirements!

[GET STARTED NOW](#) [Need a paper form? View our FAQ](#)

Water Withdrawal Registration

Please read the [FAQ](#) section for specific instructions regarding the completion of the annual water use report. Upon completion, please print out a copy for your records then upload your report by clicking the submit button on the registration form.

North Carolina Division of Water Resources
Water Withdrawal Registration
Annual Water Use Report 2009

Section 1: Facility Information

| | | | | |
|------------------|----------------------------------|---------------|-------------------|-----------|
| Registration No. | Facility Name | Facility No. | Facility Type | 0000-0001 |
| County | State | Facility Type | Industry | |
| City | Zip | State | North Pole (15-1) | |
| Working Address | 123 Main St RALEIGH, NC 27601 | Email | web@ncdeq.com | |
| Contact Person | Contact Person | Title | Contact Title | |
| Phone | 919-999-9999 | Fax | 919-999-9999 | |

[Get Facility Information](#)

Section 2: Withdrawal Information

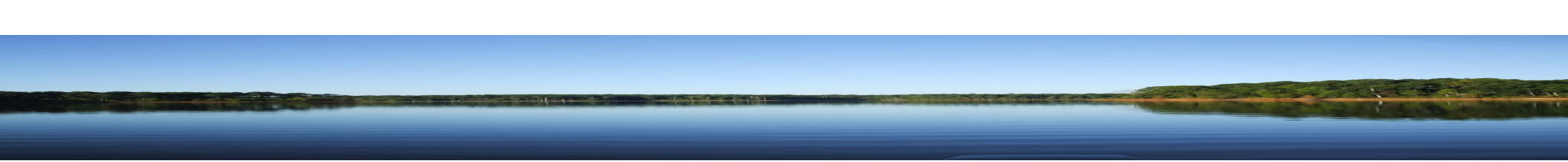
2-4. Average daily withdrawal and maximum day withdrawal in million gallons per day (MGD)

About Our Program

North Carolina [General Statute § 143-215.22H \(15A NCAC 02E .0301\)](#), originally passed in 1991, requires surface water and ground water withdrawers who meet conditions established by the General Assembly to register their water withdrawals and surface water transfers with the State and update those registrations at least every five years. Agricultural water users that withdraw one million gallons of water a day or more and non-agricultural water users that withdraw one hundred thousand gallons of water a day are required to register. Administrative rules that became effective in March 2007 (15A NCAC 02E.0600) stipulate that registrants must also report their water usage annually to the Department of Environment and Natural Resources. In its 2008 session, the General Assembly established civil penalties for failure to comply with these requirements. The links above will provide you with the information and forms you need to comply with these requirements.

Persons who have a permitted or registered withdrawal facility under the [Central Coastal Plain Capacity Use Area](#), which includes the following counties (Beaufort, Carteret, Craven, Duplin, Edgecombe, Greene, Jones, Lenoir, Martin, Onslow, Pamlico, Pitt, Washington, Wayne, Wilson) and have reported water use data as required, have met the requirements of the water withdrawal and transfer registration program for that facility. No additional reporting is required for that facility.

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Agricultural Water Use Survey

- **Session Law 2008-143**
- Prior to 2008, no official data set to represent agriculture existed
- Required NCDACS – ASD to collect annual information
- Required for entities that withdraw 10,000 gpd or more in any one day
- Surveys remain confidential & combined with other reports to produce totals
- 9th statewide survey

Data from 2020 NC Agricultural Water Use Survey, NCDACS-ASD



Water Use Management

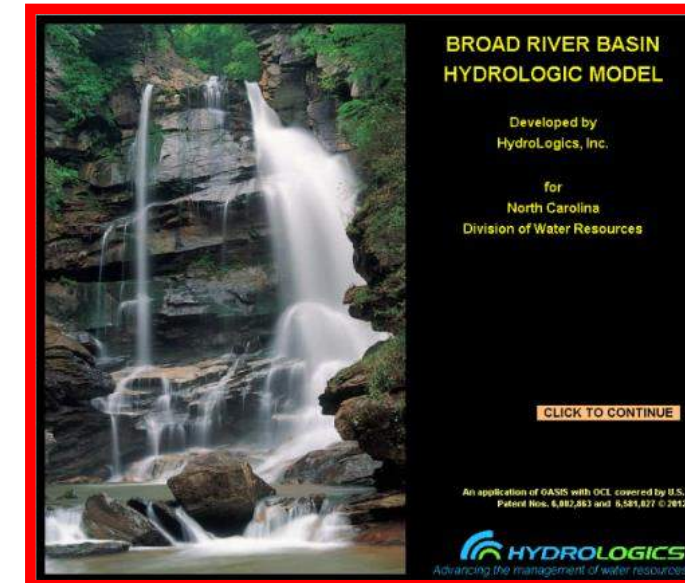
- Water Users
 - Agricultural
 - Domestic
 - Energy
 - Industrial
 - Mining
 - Public Water Supply Systems
 - Recreational (Golf, Snow making, Water sports, etc.)
 - Aquatic Wildlife, Habitat, and Associated Floodplain
- Future Water Users



Basinwide Hydrologic Models

Requirements:

- GS 143-355(o) – Subsection was created by S.L. 2010-143
- The model shall specifically be designed to predict the places, times, frequencies, and intervals at which any of the following may occur:
 - Yield may be inadequate to meet all needs.
 - Yield may be inadequate to meet all essential water uses.
 - Ecological flow may be adversely affected.
- OASIS – Operational and Simulations of Integrated Systems
- A patented, mass balance, water resources simulation/ optimization model
- Limitations – Do not include water quality or groundwater systems

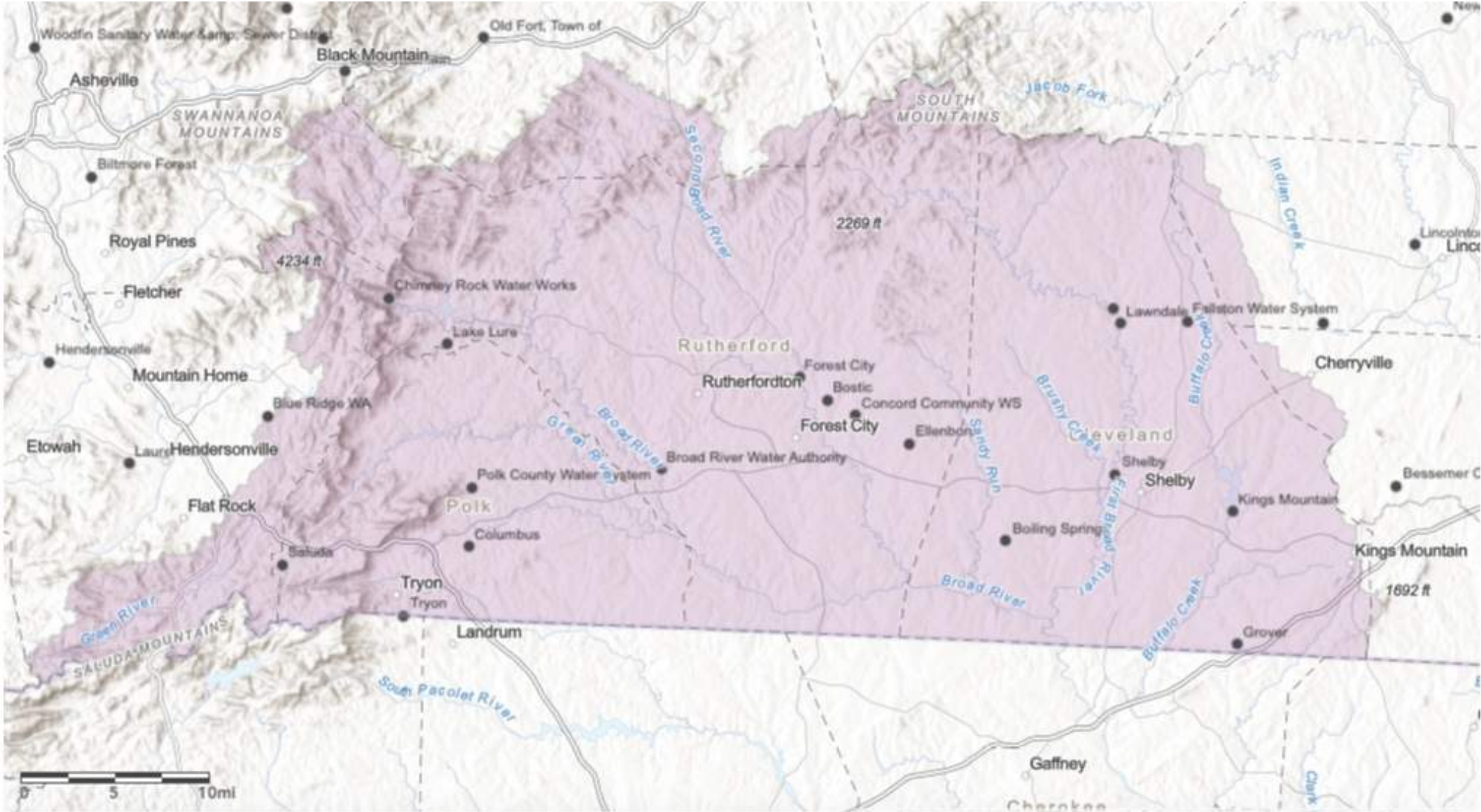


Drought Planning

- Minimize harmful impacts of drought and water supply emergencies on public health and safety, environmental quality, and the economy.
- Establish minimum standards and practices for:
 - water shortage response planning,
 - water use reporting,
 - water conservation, and
 - water reuse during droughts and water supply emergencies.
- Rules governing water use during droughts and water emergencies
- New Water Withdrawal Reporting



Broad River Basin



Water Systems in the Broad River Basin

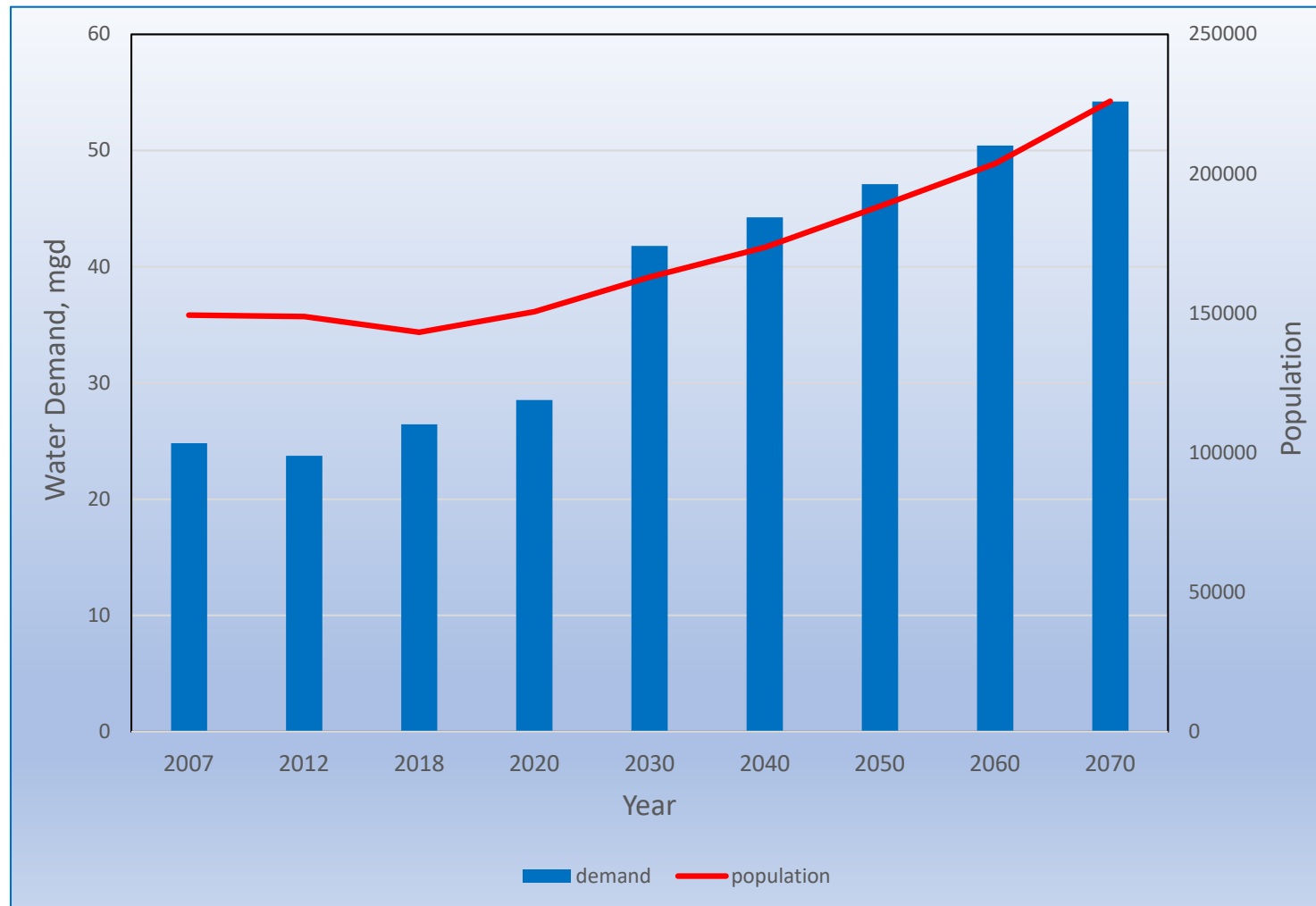
| PWSID | Water System | County | Service Area Population 2020 |
|------------------|-----------------------------|-------------------|------------------------------------|
| 01-23-025 | Boiling Springs | Cleveland | 4769 |
| 01-81-040 | Bostic | Rutherford | 850 |
| 01-81-035 | Broad River Water Authority | Rutherford | 17400 |
| 01-81-107 | Chimney Rock Water Works | Rutherford | 177 |
| 01-23-055 | Cleveland County Water | Cleveland | 52618 |
| 01-75-015 | Columbus | Polk | 999 |
| 01-81-050 | Concord Community WS | Rutherford | 1831 |
| 01-81-038 | Ellenboro | Rutherford | 2068 |
| 01-23-035 | Fallston Water System | Cleveland | 590 |
| 01-81-010 | Forest City | Rutherford | 21366 |
| 01-23-030 | Grover | Cleveland | 705 |
| 01-23-020 | Kings Mountain | Cleveland | 11000 |
| 01-81-020 | Lake Lure | Rutherford | 1068 |
| 01-23-045 | Lawndale | Cleveland | 636 |
| 10-75-010 | Polk County Water System | Polk | 585 |
| 01-75-020 | Saluda | Polk | 1400 |
| 01-23-010 | Shelby | Cleveland | 20353 |
| 01-75-010 | Tryon | Polk | 5334 |
| 01-45-010 | Hendersonville (10%) | Henderson | 6837 |
| CWSs (12) | CWSs (LWSPs Not required) | All Counties | 6050* |
| | | Total LWSP | 150586 |

Population, Demand and Supply

2007 - 2070

| Year | Population | Demand | Supply | %Demand vs. Supply |
|------|------------|--------|---------|--------------------|
| 2007 | 149392 | 24.817 | 119.143 | 21% |
| 2012 | 148822 | 23.757 | 97.127 | 24% |
| 2018 | 143169 | 26.452 | 89.198 | 30% |
| 2020 | 150586 | 28.55 | 97.388 | 29% |
| 2030 | 163012 | 41.789 | 97.388 | 43% |
| 2040 | 173662 | 44.266 | 97.388 | 45% |
| 2050 | 188396 | 47.107 | 97.388 | 48% |
| 2060 | 203693 | 50.431 | 97.388 | 52% |
| 2070 | 226029 | 54.221 | 97.388 | 56% |

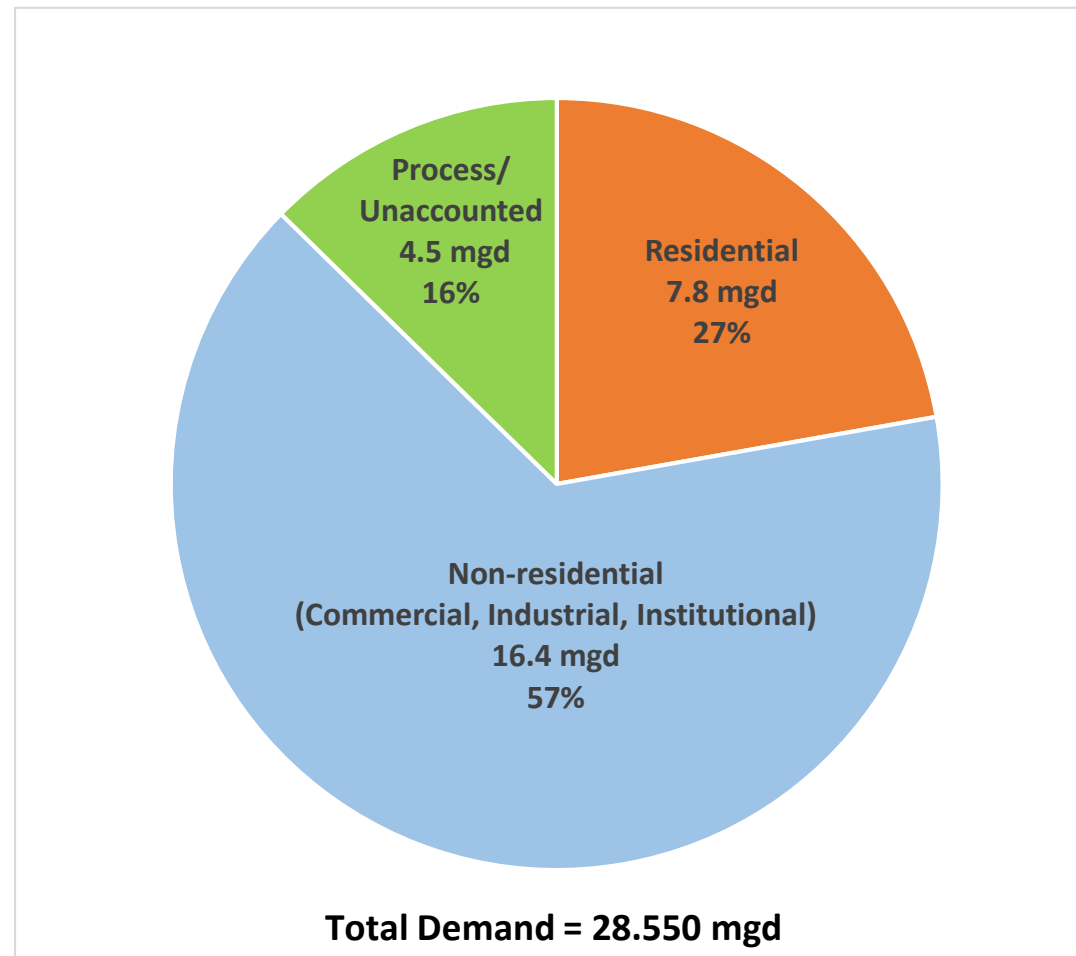
Water Demand & Population 2007-2070



Supply, Demand and Residential use rate 2007-2070



Water Demand by Category (2020 LWSP data)



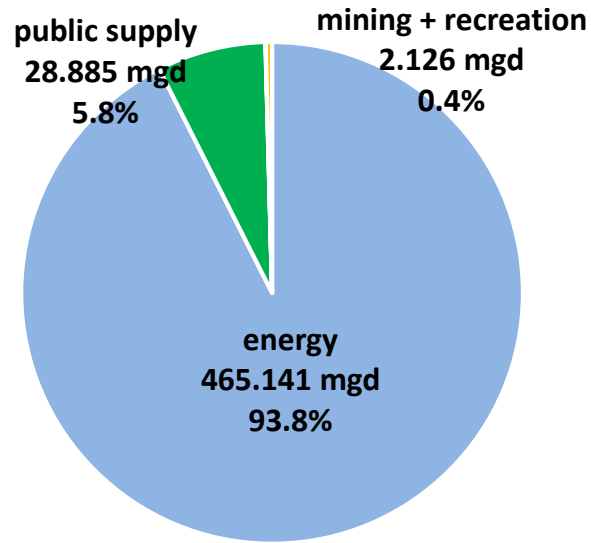
WW&TR Water Use and Sources

2020

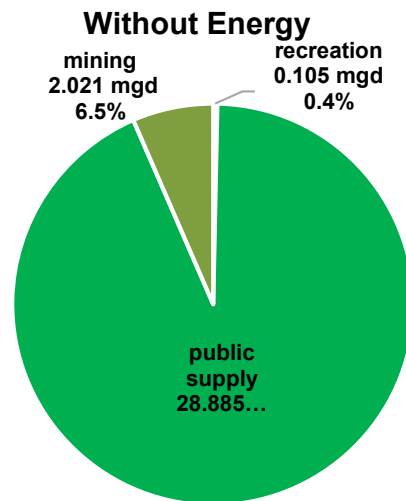
| WW&TR Category | Total Use (mgd) | Surface Water (mgd) | Ground Water (mgd) | Number of Facilities | Total Ground & Surface Water Sources |
|---------------------|-----------------|---------------------|--------------------|----------------------|--------------------------------------|
| Energy | 465.141 | 465.141 | 0.000 | 3 | 3 |
| Mining | 2.021 | 2.021 | 0.000 | 2 | 3 |
| Public Water Supply | 0.335 | 0.000 | 0.335 | 6 | 20 |
| Recreation | 0.105 | 0.105 | 0.000 | 2 | 4 |
| Total | 467.602 | 467.267 | 0.335 | 13 | 30 |

Water Demand by Use Type*

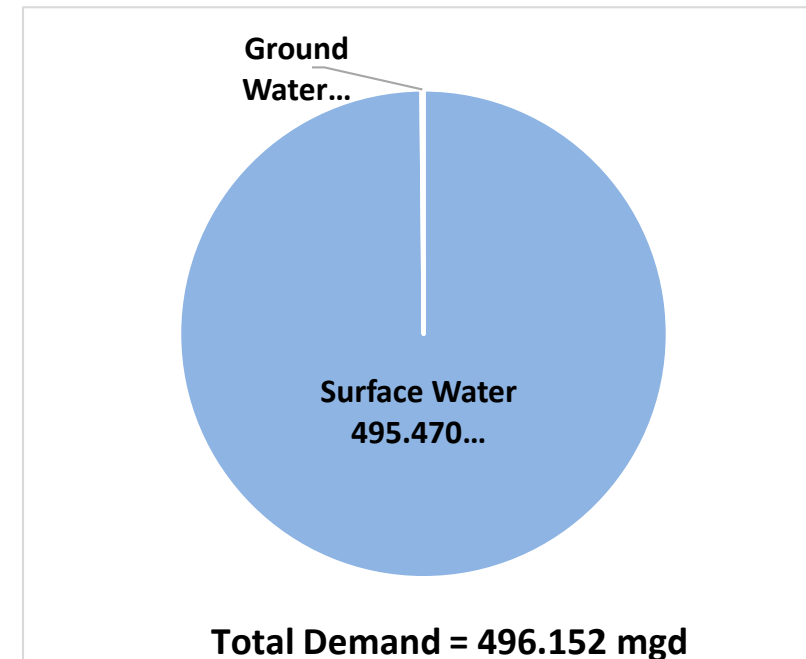
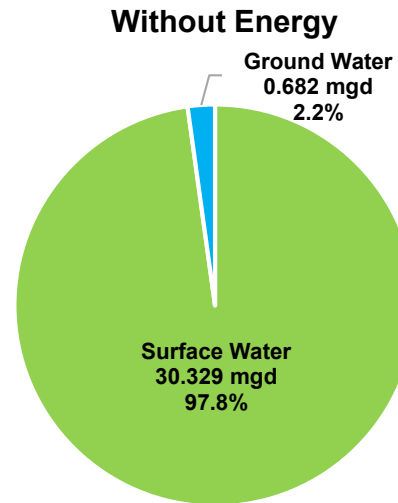
2020



Total Demand = 496.152 mgd



Total demand = 31.011 mgd



Total Demand = 496.152 mgd

*Includes both LWSP & WW&TR data



Challenges to NC Water Supply Planning

NC Water Law – Riparian Rights State

- No comprehensive plan for water quantity management in NC
- No federal oversight of / nor federal requirements for water quantity management
- No permitting program
- **Pros**
 - Less government regulation & permitting
 - Equal right to the water for all “reasonable use”
- **Cons**
 - No plan to ensure availability of water for future water supply, agriculture, industry, continued economic growth, & ecological health on NC’s water bodies
 - Courts would have to make the determination of reasonable use



Challenges to NC Water Supply Planning

- Lack the ability to plan and manage all water uses
 - Water use must be reported (especially large users)
 - Need better agricultural data
 - Need to consider Ecological flows (Instream uses)
- Difficult to quantify availability of water supply
 - How much surface water will be available?
 - How much ground water will be available?
- Coordination between water users

Water Supply Planning or Drought Response?



Manage our limited water supply for sustainability...





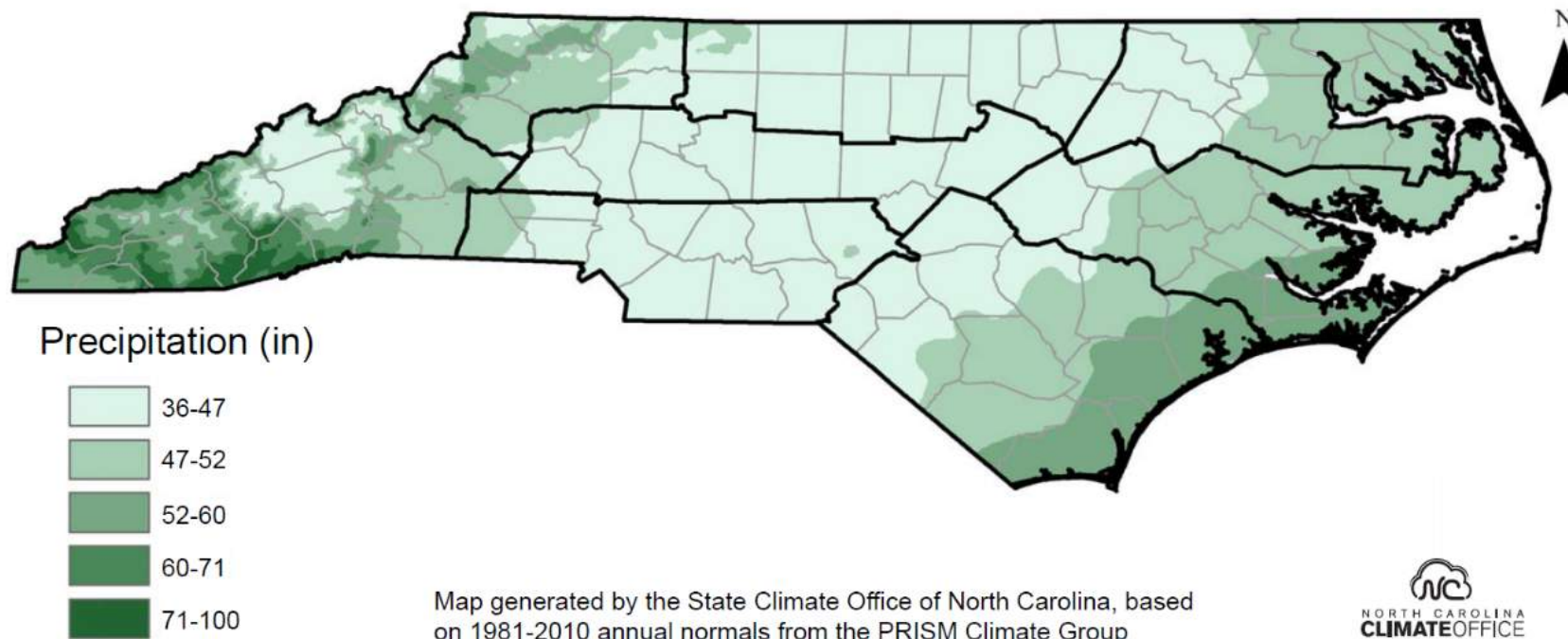
Linwood Peele, Supervisor
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Water Resources Condition

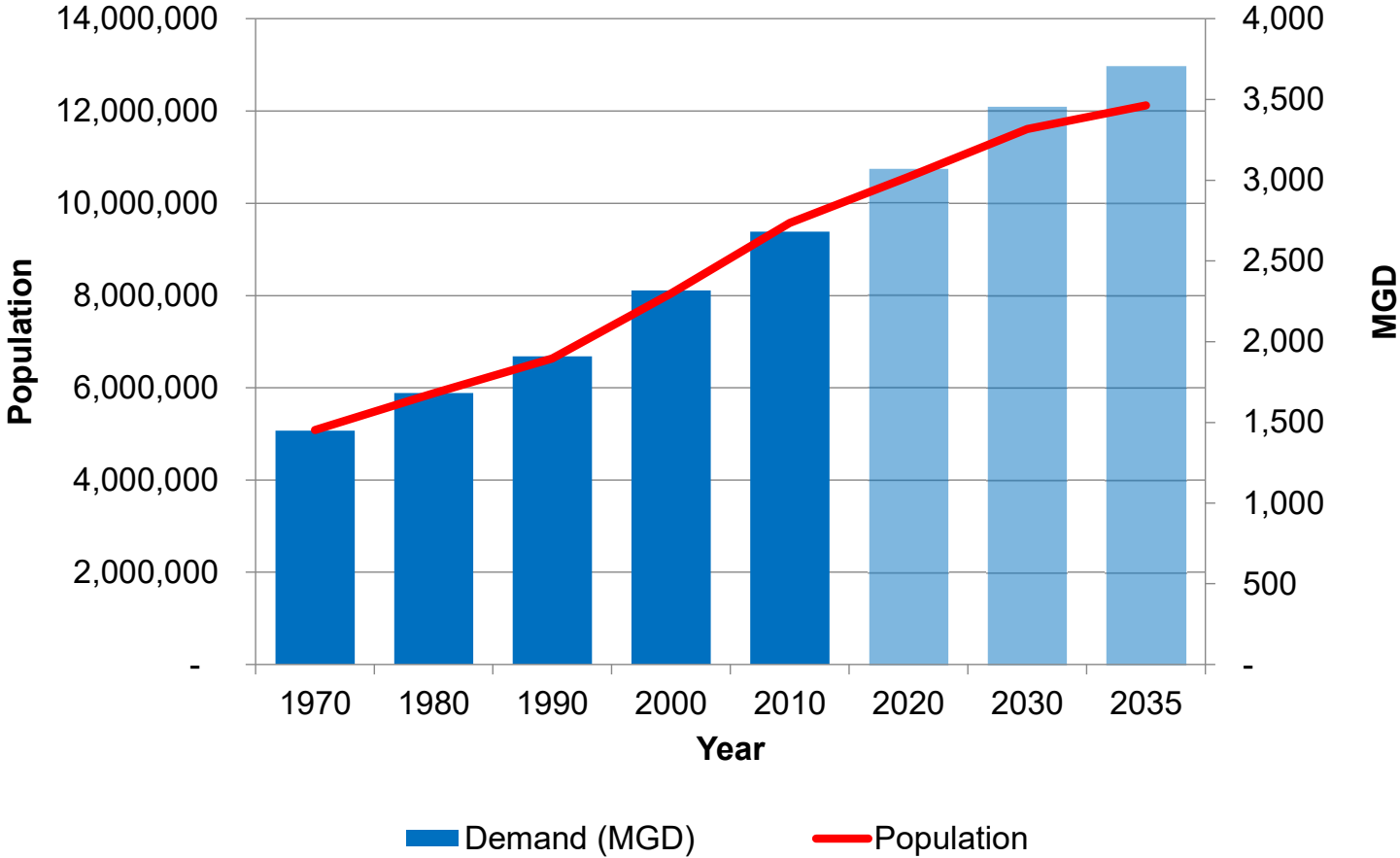
North Carolina Annual Average Precipitation



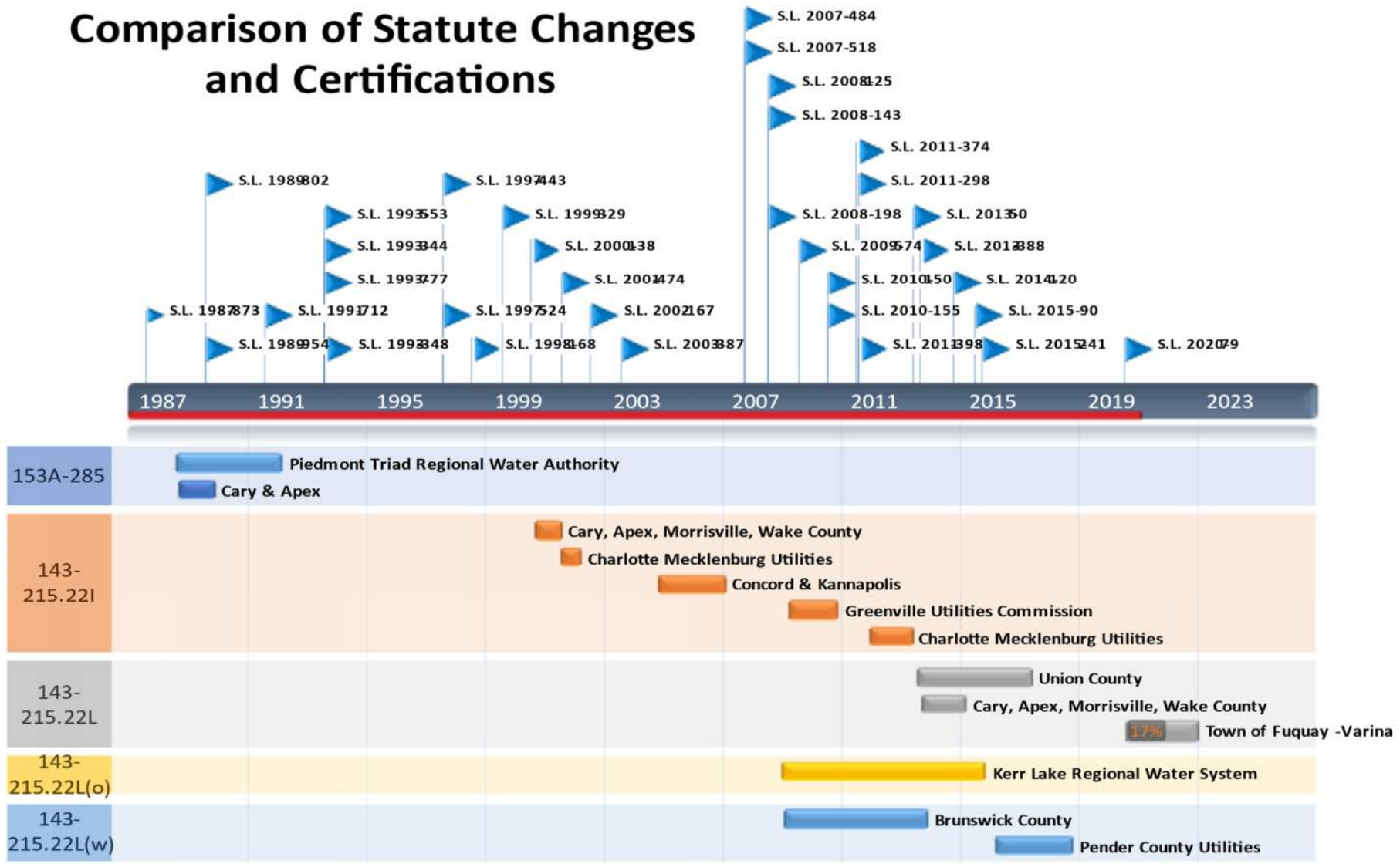
Map generated by the State Climate Office of North Carolina, based on 1981-2010 annual normals from the PRISM Climate Group



Water Resources Outlook



Comparison of Statute Changes and Certifications



153A-285 and GS 143215.I have been repealed. GS 143215.22L current active statute.