



Georgia's State Water Plan

COOSA-NORTH GEORGIA REGIONAL WATER PLANNING COUNCIL

March 24, 2021



<https://waterplanning.georgia.gov/>

Meeting Agenda

- Registration
- Welcome and Introductions
- CNG Council Business
 - Approve Minutes and Agenda
 - Seed Grant Project Update: 303d Stream Prioritization Tool
- Council Updates
 - EPD Updates
 - Industrial and Energy Water and WW Forecasting
 - Municipal Water and WW Forecasting
 - Water Quality Updates
- Biosolids Issues and Updates
- Metro District Update
- Georgia Wildlife Management
- Public Comments
- Next Steps
- Adjourn

Introductions and Housekeeping

- Welcome
- Approve minutes from the last meeting
- Approve today's agenda
- Review meeting objectives

Meeting Objectives

Objectives

- Updates on Council business and seed grants
- Discuss water quality and demand forecasting
- Discuss location and topics for future meeting

CNG Council Business

Brooke Anderson



CNG Council Business

- Approve Minutes from September 30, 2020
- Approve Today's Agenda
- Seed Grants Status

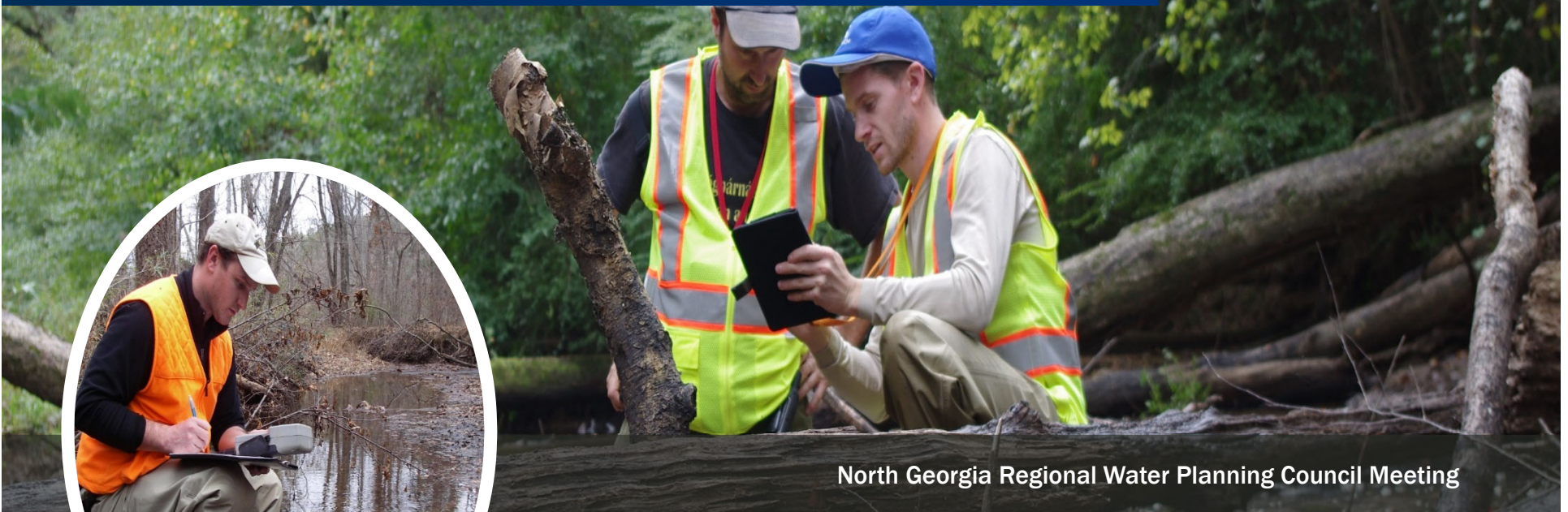
Seed Grant Project Update

Erin Lincoln, Tetra Tech



TETRA TECH

Coosa-North Georgia 303(d) Prioritization and Analysis



North Georgia Regional Water Planning Council Meeting

Erin Lincoln, PH
Natalie Postel, PE
March 24, 2021

Thank You to our Supporters and Contributing Partners



Funding through an EPD
319 grant



Support from the Northwest
Georgia Regional
Commission and North
Georgia Water Resources
Partnership

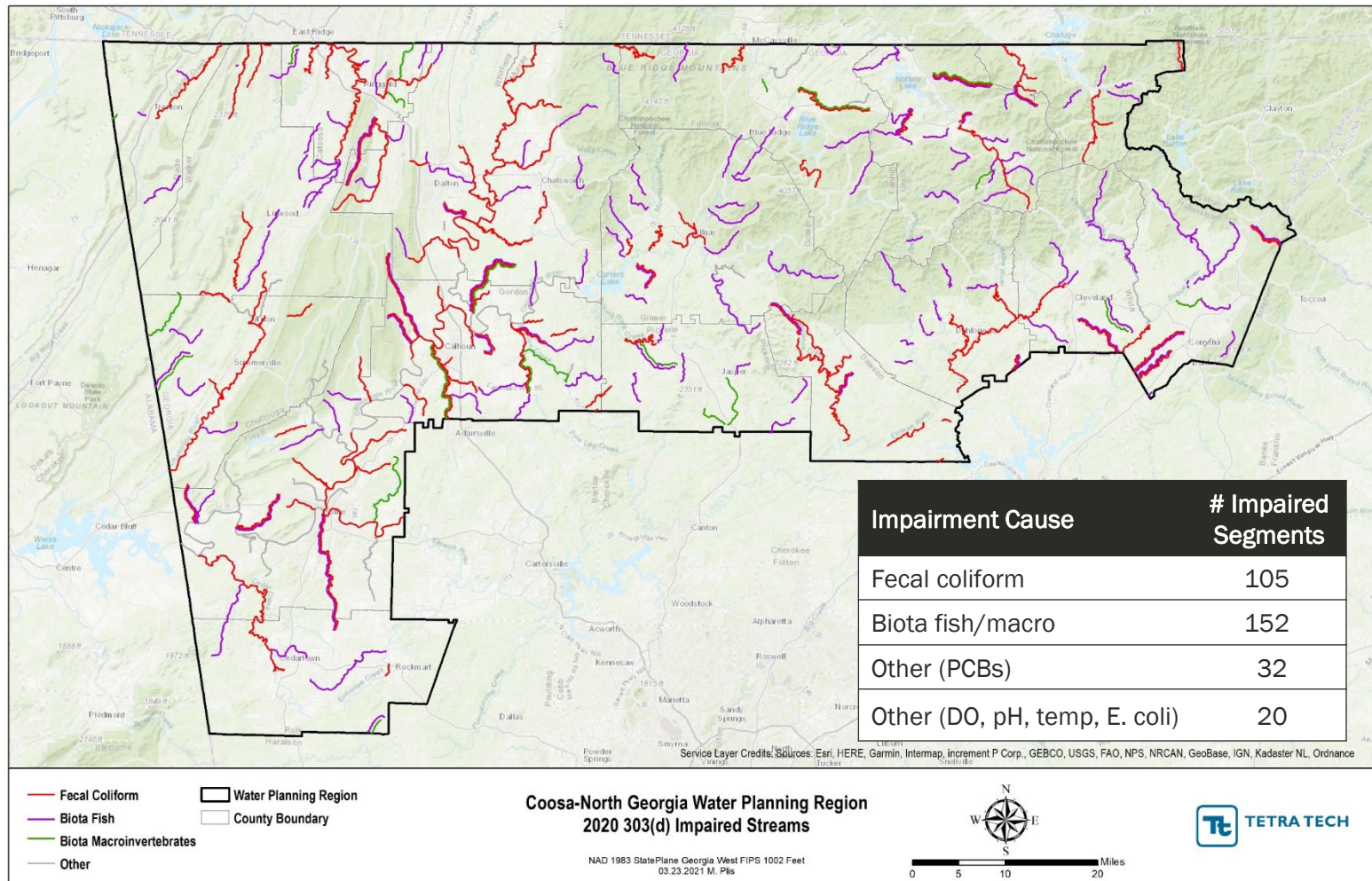


Contributions from
Hawks Environmental
and CCR
Environmental

Project Goal

Develop an impaired stream water quality assessment tool to guide private citizens, watershed groups, local governments, and the Council and Partnership in prioritizing and delisting impaired 303(d) listed streams in the Coosa-North GA region.





Project Activities and Tasks

- 303(d) Listed Streams Evaluation
 - Public data collection & assessment
 - Water Quality Listing Evaluation
- Prioritization Tool Development
 - Rate overall stream health
 - Prioritize streams for delisting/management efforts
- Water Quality Sampling Program
 - Collect water quality and biota data
 - Compare against prioritization tool results
- Social Media Posts
 - Facebook
 - LinkedIn





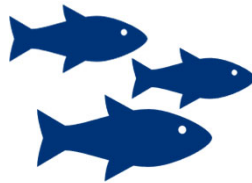
303(d) Streams Evaluation

Coosa-North Georgia 303(d) Analysis

Water Quality Standards and Listing Circumstances



Water quality standards
and scoring metrics



Listing data



Inventory of
Possible
Streams for
Delisting



Landuse



Point and non-point sources

Fecal Coliform Assessment Key Findings

- 12 impaired streams partially or fully located in national forests/wilderness areas
- 5 impaired streams with contributing areas >90% forested/wetland
- 6 impaired streams had low fecal coliform concentrations past two years

Potential Causes in Forested Areas



Biota Fish Assessment Key Findings

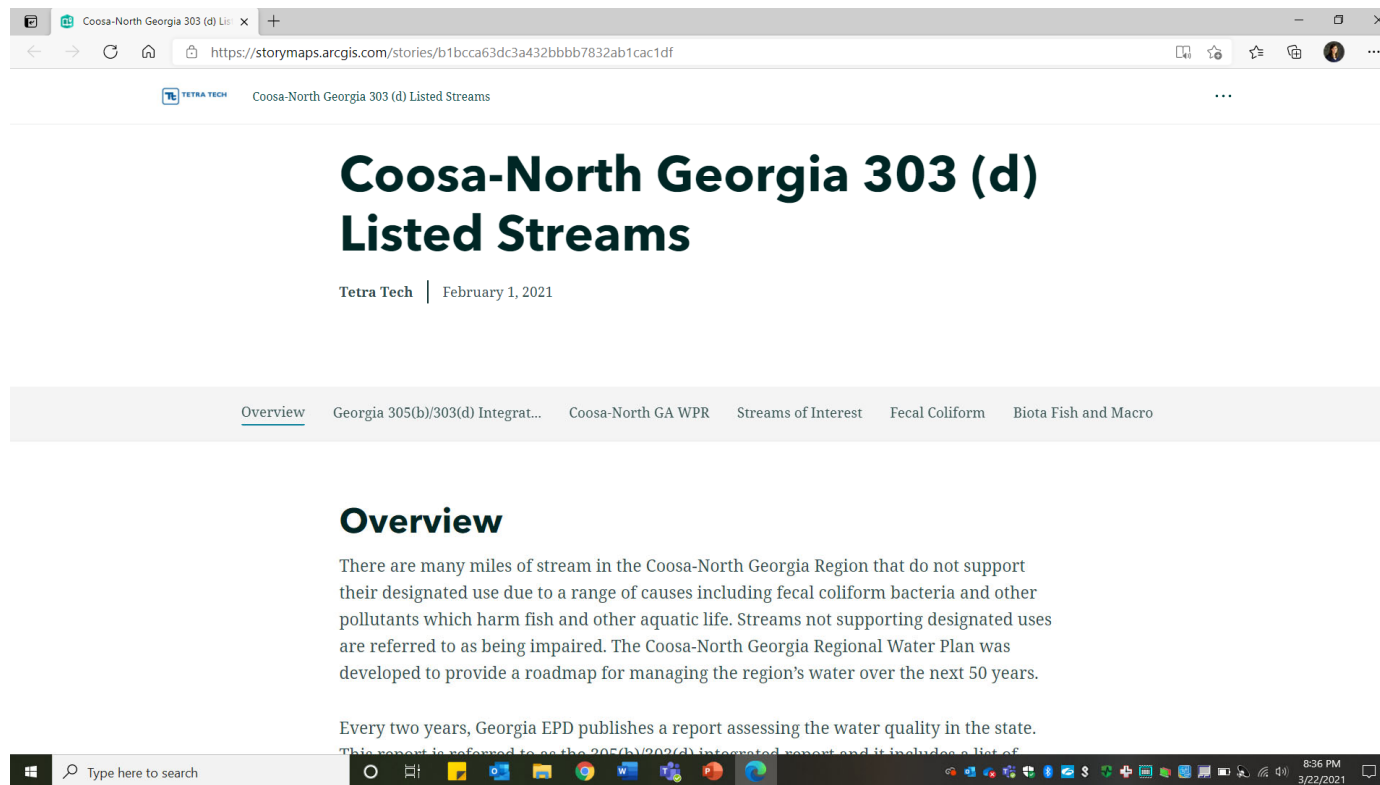
- 21 impaired designated trout streams with contributing areas >90% forested/wetland
- 15 impaired designated trout streams partially or fully located in national forests/wilderness areas
- Working with EPD to assess fish index of biological integrity scoring



ArcGIS StoryMap

Coosa-North Georgia 303 (d) Listed Streams

(arcgis.com)





Prioritization Tool Development

Prioritization Tool

- Assessed current 303(d) listed stream for fecal/biota impairments
- Stream Health Assessment
 - 25 factors and metrics to assess land use, human impacts, and water quality
 - Metrics scored using weighted average based on data quality and client concerns
 - Streams receive scores from 1 to 10, 10 being 'healthy'
- Prioritization Assessment
 - 7 prioritization metrics to assess opportunities for delisting of stream segments
 - Prioritized reaches with high restoration/preservation potential based on current health, watershed size, ecological significance, and funding opportunities
 - Metrics scored using weighted average based data quality and client concerns
 - Streams receive scores from 1 to 10, 10 being 'high priority'

Coosa-North Georgia Stream Health and Stream Prioritization Tool

This spreadsheet tool should be used in tandem with the Stream Health and Prioritization Process Guidance Document

Spreadsheet Tool Tab Descriptions	
Tool Results	Provides the Stream Health Score and Prioritization Score, with scores ranging from 1 to 10. For stream health, higher scores indicate a relatively healthier stream. For prioritization, higher scores indicate the stream should be targeted for remediation.
Stream Health Metrics	The metric categories, scores, and score weighting are pre-set in this worksheet, along with descriptions of each metric is used to identify stream health characterization (ranging from extremely developed to undisturbed) and stream health prioritization (ranging from lowest to highest priority). <i>User can change metric scores and weighting in this tab.</i>
Stream Prioritization Metrics	The metric categories, scores, and score weighting are pre-set in this worksheet, along with descriptions of each metric is used to identify stream mitigation prioritization (ranging from lowest to highest priority). <i>User can change metric scores and weighting in this tab.</i>
Imported Stream Data	The processed spatial and report data for each metric by stream. <i>User can update or input new data in this tab.</i>
Data Source	The date of each data source for metrics at the time of the analysis. This will make it clear when updates may be required for stream analyses when updated GIS files or additional data become available at a later date. User should update data source documentation when new data is input into Imported Stream Data tab.
Interim Processing Scores	Shows the scores for each stream and each metric that are used to calculate the overall scores.

Tool Descriptions and How To	
Clear Content	Press this button to clear all contents for a new run. Note that the StreamHealthMetrics, PrioritizationMetrics, DataSource, and ImportedStreamData tabs remain unaffected by this.
Results	Press this button to display the results. The results can be viewed in the "ToolResults" worksheet.



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Stream Health Metrics

Stream Health Metrics					
Negatively Impacting Streams; High Value = Low Score = More degraded					
Metric	Metric Comment	Metric Value	Metric Score	Score Weight (Fecal Coliform)	Score Weight (Aquatic Biota)
Imperviousness (percent area)	Indicator of development in a watershed and is correlated to watershed degradation through higher runoff and stream erosion	3%	1	High	High
		1%	5		
		< 1%	10		
Residential/Urban Land (percent area)	Indicator of population, stress to the watershed, and relative lack of open space; residential areas can be a source of pollutants due to fertilizer application, pets, and trash	9%	1	High	High
		5%	5		
		< 5%	10		
Human Population (count per acre drainage area)	Correlates to higher sanitary or septic loads, higher chance for spills, higher chance for illicit discharges, and higher water quality pollutant loads	0.15	1	Low	Low
		0.07	5		
		< 0.07	10		
NPDES Dischargers (count in drainage area)	Point sources that discharge nutrients and/or pollutants to the watershed may cause additional disturbance to watershed health	2	1	Low	Low
		0	5		
		< 0	10		
Septic Systems (count per acre drainage area)	Indicator of potential human fecal or nutrient loading; however, cannot determine if systems are maintained and functioning properly	0.10	1	Med	Med
		0.05	5		
		< 0.05	10		
Land/Biosolid Application Systems/Ag Lagoons (count in drainage area)	Municipal LAS, biosolid applications, and agricultural lagoons may contribute fecal and nutrient loads to local waterways	1	1	Med	Med
		0	10		
Row Crop Land Use (percent area)	Indicator or potential nutrient (fertilizer application) loading, and erosion from agricultural land could contribute sediment to streams	1%	1	High	High
		0%	5		
		< 0%	10		
Agriculture/Pasture Land Use (percent area)	Indicator or potential nutrient (fertilizer application) and fecal (livestock) loading the rural nature of a watershed, and erosion from sites could contribute sediment to streams	15%	1	High	High
		10%	5		
		< 10%	10		
Poultry houses/land application of litter (count in drainage area)	Common practice to use poultry litter to fertilize fields and pastures. May contribute to fecal depending on volume of application and proximity to waterways.	3	1	Med	Med
		0	5		
		< 0	10		
Deer/Hog Density (count per acre drainage area)	Estimated wildlife density related to fecal inputs to local waterways	0.05	1	Med	Med
		0.02	5		
		< 0.02	10		
Dispersed Campsites in Forested Area (count in drainage area)	Dispersed campsites do not have restroom facilities and could be	5	1	Med	Med
		0	5		

Stream Health Metrics					
Positively Impacting Streams; High Value = High Score = Less degraded					
Metric	Metric Comment	Metric Value	Metric Score	Score Weight (Fecal Coliform)	Score Weight (Aquatic Biota)
Existing BMPs (count in drainage area)	Existing BMPs may reduce storm flow, sediment, and bacteria from entering streams; however, this does not evaluate treated area and cannot determine if BMPs are functioning as designed	10	10	Low	Low
		5	5		
		< 5	1		
Forested Land Use (percent area)	Indicator of an undisturbed watershed, forests provide natural stormwater control and prevent erosion	80%	10	High	High
		60%	5		
		< 60%	1		
Wilderness/National Forest Area (percent area)	Generally undeveloped land should improve water quality; however higher wildlife population could contribute more fecal matter	50%	10	High	High
		20%	5		
		< 20%	1		
Wetlands (percent area)	Wetlands can act as nutrient sinks and retain floodwater, improving overall water quality; however higher waterfowl population could contribute more fecal matter	5%	10	Med	Med
		2.5%	5		
		< 2.5%	1		
Riparian Areas (percent linear stream area)	Riparian forests filter pollution and prevent erosion; however, rills/gullies in buffered areas allow stormwater flow to directly enter stream and cause erosion in localized areas	75%	10	High	High
		50%	5		
		< 50%	1		
Fish Biology Data Analysis (most recent IBI)	Instream aquatic biology data can be used to identify poor waterways conditions for potential remediation	44	10	High	High
		42	7.5		
		32	2.5		
		< 32	1		

Prioritization Metrics

Stream Prioritization Metrics				
High Value = High Score = Higher Prioritization				
Metric	Metric Comment	Metric Value	Metric Score	Score Weight
Stream Health Score	Depending on goals, can prioritize streams that are almost healthy to try to delist or prioritize very unhealthy streams to make them more healthy	7	10	High
		5	5	
		< 5	1	
MS4 area (percent of drainage area)	Indicator of potential opportunities receive funding for BMPs by partnering with MS4 that is required to address TMDL	5%	10	High
		0%	5	
		< 0%	1	
Future Development Areas (percent of drainage area)	Prioritize streams where development is expected to occur to prevent further degradation	1%	10	Low
		0%	5	
		< 0%	1	
Trout Stream Designation	Prioritize trout streams	Yes	10	Med
		No	1	
Number of Impaired Upstream Segments	Will be more difficult to improve stream health if upstream areas are also impaired; would require a larger project	0	10	High
		2	5	
		> 2	1	
Drainage Area Size	May be less expensive to improve water quality in smaller watershed by targeted known causes of impairment	2500	10	Med
		15000	5	
		> 15000	1	
DNR Element Occurrence of Sensitive Species (count per acre drainage area)	Prioritize streams that are considered significant to biodiversity due to native wildlife species and natural habitats	0.5	10	Med
		0.2	5	
		< 0.2	1	



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Stream Health/Prioritization Results

Stream Name/ID	Stream Name	County	Stream Health Score (Fecal Coliform)	Stream Health Score (Aquatic Biota)	Stream Prioritization Score (Fecal Coliform)	Stream Prioritization Score (Aquatic Biota)
GAR031501020409	Flat Creek	Gilmer	4.71	4.36	5.31	5.31
GAR031501020105	Tickanetly Creek	Gilmer	7.42	7.06	3.38	3.38
GAR031501010305	Mill Creek	Whitfield	4.02	3.71	5.13	5.13
GAR031300010205	Hazel Creek	Habersham	4.00	3.77	3.75	3.75
GAR031501020410	Fir Creek	Gilmer	7.11	7.11	4.13	4.13
GAR031501010205	Conasauga River	Murray, Whitfield	4.96	4.77	3.44	3.44
GAR060200020512	Youngcane Creek	Union	5.18	4.99	4.56	5.50
GAR031501040504	Sharp Mountain Creek	Pickens	5.26	4.86	4.06	5.00
GAR031501020101	Cartecay River	Gilmer	6.18	5.77	2.50	2.50
GAR031501020209	Boardtown Creek	Fannin, Gilmer	7.09	6.83	3.88	4.63
GAR060200020511	Wolf Creek	Union	7.55	7.43	4.50	4.50
GAR031501010502	Conasauga River	Whitfield, Murray	3.04	2.73	5.13	5.13
GAR031300010311	Mud Creek	Habersham, Hall	4.02	3.82	4.69	4.69
GAR031501020104	Clear Creek	Pickens, Gilmer	7.51	7.30	3.63	3.63
GAR031501030501	Armuchee Creek	Floyd	5.93	5.48	3.25	3.25
GAR060200010707	Cat Creek	Catoosa, Whitfield	5.23	5.45	4.88	4.88
GAR060200010713	Tributary #2 to Little Chickama	Catoosa	4.38	4.40	6.44	6.44
GAR031501050211	Horseleg Creek	Floyd	5.17	5.00	6.38	7.31
GAR031501030502	Lavendar Creek	Floyd	7.66	7.43	3.63	3.63
GAR060200010704	Little Chickamauga Creek	Catoosa	4.38	3.98	4.81	4.81
GAR031501030111	Oothkalooa Creek	Bartow, Gordon	3.98	3.69	3.75	3.75
GAR031501020811	Coosawattee River	Gordon	4.94	4.60	3.44	3.44
GAR060200010702	East Chickamauga Creek	Whitfield, Catoosa	4.67	4.33	4.94	4.94
GAR060200011015	Chattanooga Creek	Walker	4.51	4.10	5.88	5.88
GAR060200030123	Cooper Creek	Union	7.33	7.11	4.50	4.50
GAR060200010927	Peavine Creek	Walker	4.29	4.21	4.69	4.69
GAR031501020205	Big Turniptown Creek	Gilmer	7.36	7.09	3.88	3.88
GAR031501040108	Tributary to Etowah River	Lumpkin	6.04	6.21	6.13	6.13
GAR060200020503	Lower Youngcane Creek	Union	5.05	5.29	5.81	5.81

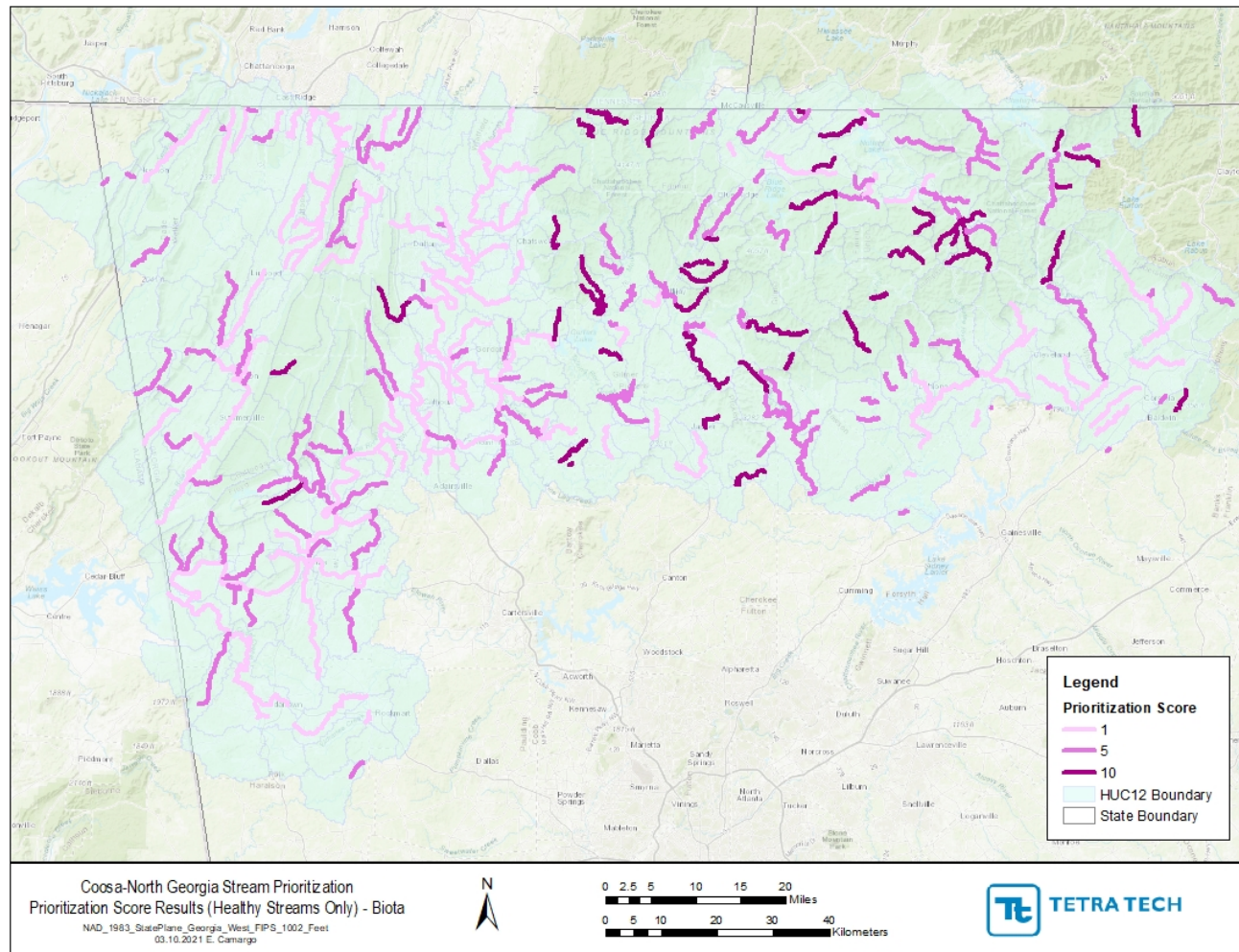
[Info](#)[ToolResults](#)[StreamHealthMetrics](#)[PrioritizationMetrics](#)[ImportedStreamData](#)[DataSource](#)[Interim ...](#)[+](#)[-](#)[<](#)[>](#)

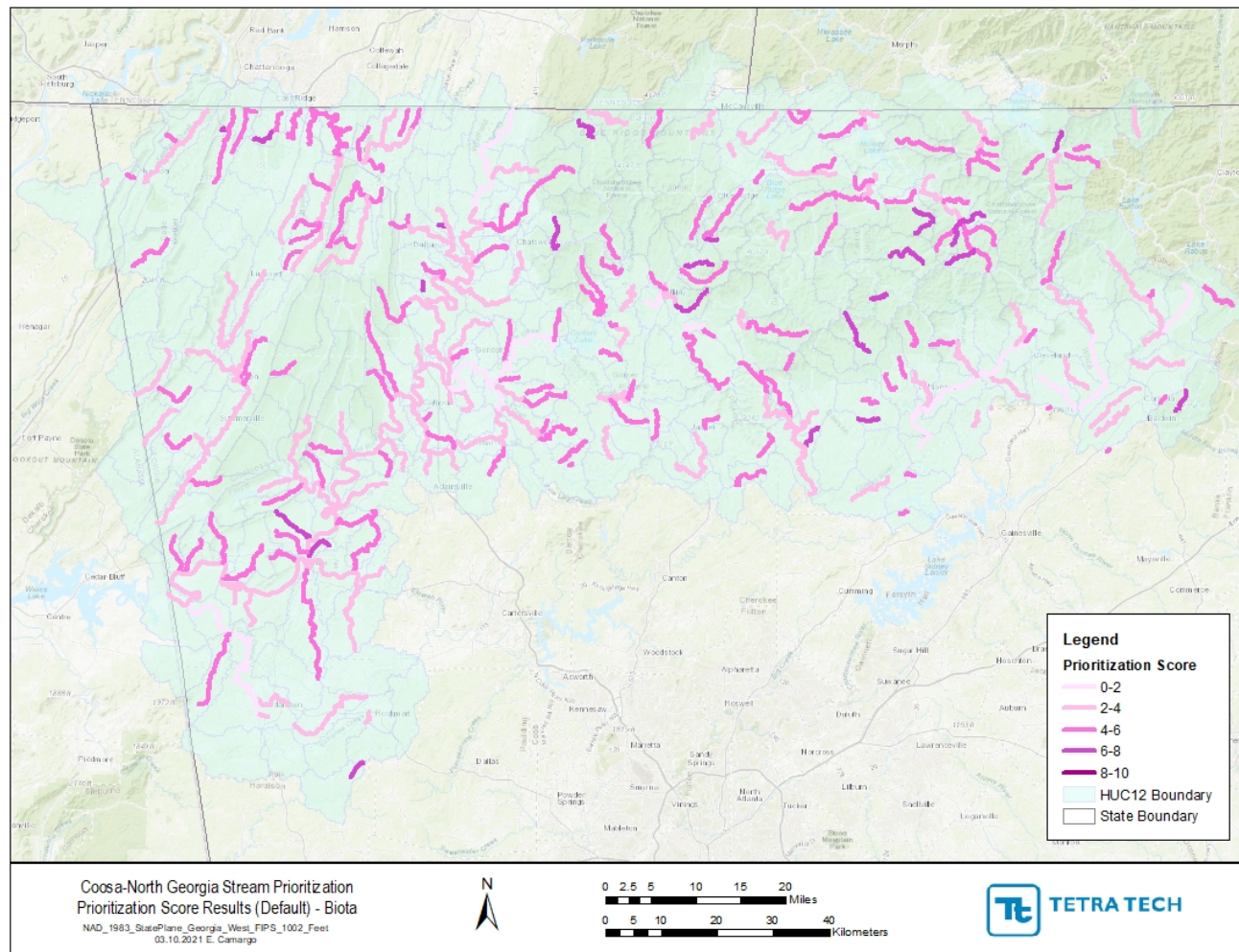


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Interim Stream Health/Prioritization Results

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Stream Name/ID	Imperviousness (percent area)	Residential/Urban Land (percent area)	Human Population (count per acre drainage area)	NPDES Dischargers (count in drainage area)	Septic Systems (count per acre drainage area)	Land Application Systems (count per drainage area)	Row Crop Land Use (percent area)	Agriculture/Pasture Land Use (percent area)	Poultry houses/land application of litter (count per acre drainage area)	Deer/Hog Density (count per acre drainage area)	Dispersed Campsites in Forested Area (count in drainage area)	Trails/Human Use in Forested Area (miles per drainage area)	Dirt Road Crossings (count per mile)	Co Area We
2	Corresponding Weights (Fecal Coliform)	3	3	1	1	2	2	3	3	2	2	2	1	2	
3	Corresponding Weights (Aquatic Biota)	3	3	1	1	2	2	3	3	2	2	2	1	2	
4	GAR031501020409	5	1	1	10	5	10	5	1	1	5	10	10	10	
5	GAR031501020105	10	10	10	10	10	10	5	10	1	5	10	5	1	
6	GAR031501010305	1	1	1	5	1	10	5	10	0	5	10	5	10	
7	GAR031300010205	1	1	1	1	1	10	5	1	1	5	10	10	10	
8	GAR031501020410	10	5	1	10	5	10	10	10	10	5	10	10	10	
9	GAR031501010205	10	10	5	5	10	10	1	5	0	5	1	1	10	
10	GAR060200020512	10	5	5	10	5	10	5	1	0	5	5	1	10	
11	GAR031501040504	1	1	1	10	1	10	5	5	1	5	10	10	10	
12	GAR031501020101	10	5	5	5	10	10	5	10	1	5	10	5	10	
13	GAR031501020209	10	10	5	10	10	10	5	10	10	5	10	5	10	
14	GAR060700020511	10	10	10	5	10	10	10	10	0	5	1	1	1	
15	GAR031501010502	5	1	1	1	5	1	1	1	0	5	1	1	10	
16	GAR031300010311	1	1	1	5	1	10	5	1	1	5	10	10	10	
17	GAR031501020104	10	5	5	10	10	10	5	10	1	5	10	10	10	
18	GAR031501030501	10	10	10	1	10	10	1	5	0	5	10	1	10	
19	GAR060200010707	10	5	5	10	10	10	1	1	0	10	10	10	10	
20	GAR060200010713	5	1	1	10	5	10	1	1	0	10	10	10	10	
21	GAR031501050211	1	1	1	10	1	10	10	10	0	10	10	10	10	
22	GAR031501030502	10	10	10	5	10	10	10	10	0	5	10	10	10	
23	GAR060200010704	5	1	1	10	5	10	5	1	0	10	10	10	10	
24	GAR031501030111	1	1	1	1	1	10	1	1	0	10	10	10	10	
25	GAR031501020811	10	5	5	1	5	1	5	10	1	5	5	1	10	
26	GAR060200010702	5	5	1	10	10	10	5	1	0	5	10	1	10	
27	GAR060200011015	5	1	1	10	1	10	5	5	0	5	10	10	10	
28	GAR060200030123	10	10	10	10	10	10	5	10	0	5	1	1	1	
29	GAR060200010927	5	1	1	10	5	10	1	1	0	5	10	10	10	
30	GAR031501020205	10	5	5	10	5	10	10	10	10	5	10	10	10	
31	GAR031501040108	10	1	1	10	1	10	10	10	1	5	10	10	10	
32	GAR060200020503	5	1	1	10	1	10	5	1	0	10	10	10	10	





Water Quality and Biota Sampling



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Recommended Sampling Locations

- Nottely River (fecal coliform)
 - High stream health and prioritization scores
 - Watershed partially located in national forest/wilderness areas
 - Dominated by forested land uses
 - No upstream fecal coliform impairments
 - Recent low fecal coliform concentrations
- Wolf Creek and Town Creek (biota fish)
 - High stream health and prioritization scores
 - Tributaries to Nottely River
 - Small upstream drainage areas
 - Designated trout streams
 - Watersheds partially located in national forest/wilderness areas
 - Dominated by forested land uses



Questions?

Erin Lincoln, PH
erin.lincoln@tetratech.com

Natalie Postel, PE
natalie.postel@tetratech.com

Council Updates



Council Updates

- EPD Updates
- Industrial and Energy Water and WW Forecasting
- Municipal Water and WW Forecasting
- Water Quality Updates

Georgia EPD Updates

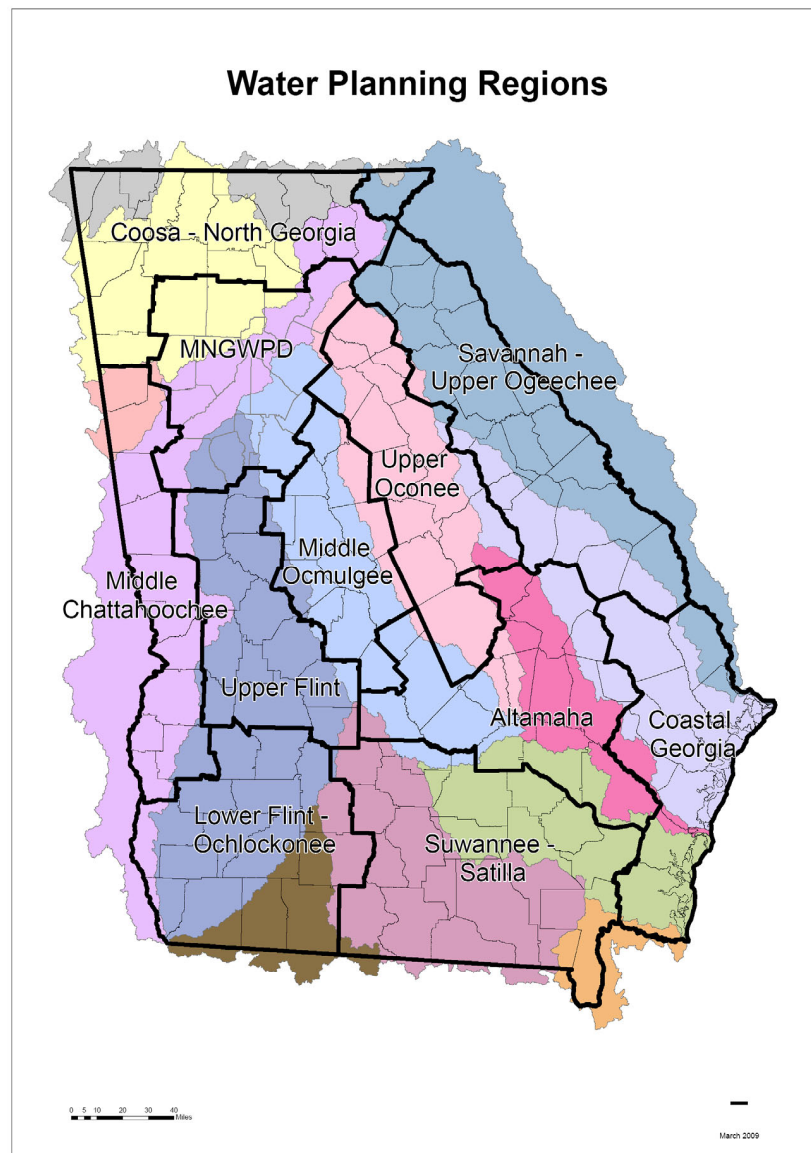
Christine Voudy, Georgia EPD



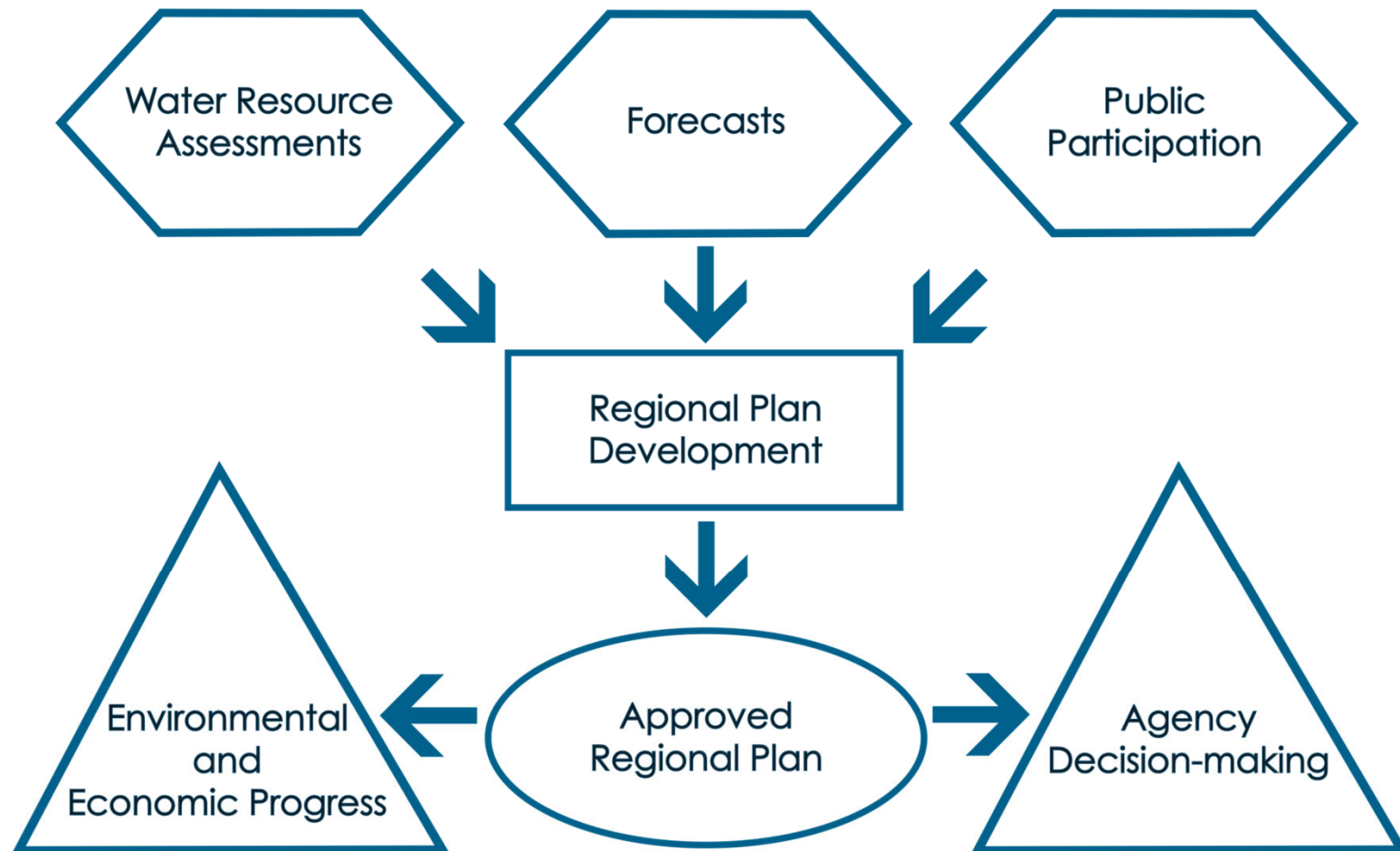
Regional Water Plan Update Process

- Coordinated with the Metro Water District
- Process began in 2020 with Forecasting work
- Target for updated Plans by end of 2022
 - Draft Plans on public notice by Sept. 30, 2022
 - Updated Plans completed by Dec. 2022
- Technical work completed/ongoing that underlies the Regional Water Plans
- Quarterly Council Meetings

Regional Water Council Areas



Regional Water Planning Process



Water Demand Forecasting

- Municipal Forecasting Stakeholder Group
 - Stakeholder Group included one representative from each Council & the Metro Water District
 - Draft report posted on Water Planning website
 - Final stakeholder meeting held on Feb. 2; report being finalized
- Industrial & Energy Forecasts are completed
 - Stakeholders/experts contributed to both
 - Final reports posted on Water Planning website
 - <https://waterplanning.georgia.gov/forecasting/industrial-water-use>
- Agricultural Forecast
 - To be completed Spring 2021

Industrial Water Demand Forecasting

- Industrial Forecasting Stakeholder Group
 - Initial stakeholder meeting held on June 3, and final stakeholder meeting held on November 13, 2020
 - Developed subgroups by major sectors to further inform data and methodology:
 - Poultry & Food Processing
 - Mining
 - Paper and Forest Products
 - Manufacturing
- Forecast prepared by CDM Smith team

Industrial Water Demand Forecasting (Cont'd)

Participating Industrial Stakeholders:

- Industry Trade Groups:
 - Georgia Poultry Federation
 - Georgia Mining Association
 - Georgia Paper and Forest Products Association
 - Georgia Association of Manufacturers
 - Georgia Chemistry Council
- Governor's Office of Planning and Budget
- Georgia Department of Economic Development
- Georgia Tech Research Institute
- Representatives from a cross-section of industries, including:
 - International Paper
 - Mohawk Industries
 - Gulfstream
 - BASF
 - KIA Motors
 - Rayonier Performance Fibers
 - Packaging Corp. of America

Industrial Water Demand Forecasting

Survey Questions:

- Average Water Use
- Water Sources
- Municipal Customer
- Average Discharge
- Receiving Bodies
- Municipal WW Customer
- Anticipated changes in next 5 – 10 years

Forecast no longer relies upon employment projections

Three of the sub-sector groups conducted surveys to inform the best approach to estimating future water demand:

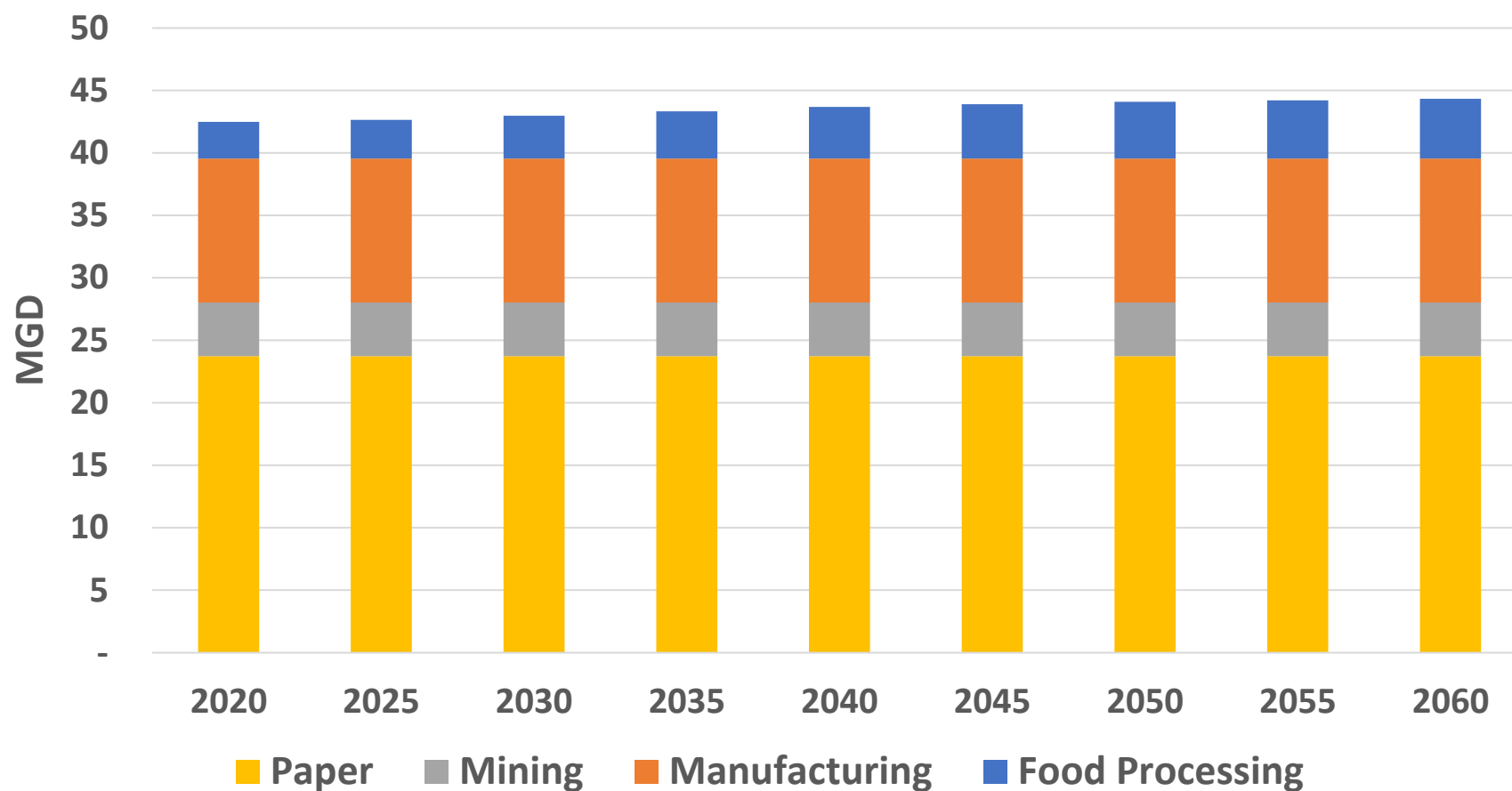
- Georgia Poultry Federation survey of membership with assistance from Georgia Tech Research Institute
- Georgia Mining Association survey of membership
- Georgia Association of Manufacturers survey of membership

The Paper and Forest Products group developed recommendations for estimating future water demand for their sub-sector.

Water demands should stay constant (on an annual avg. basis) due to conservation/efficiency efforts

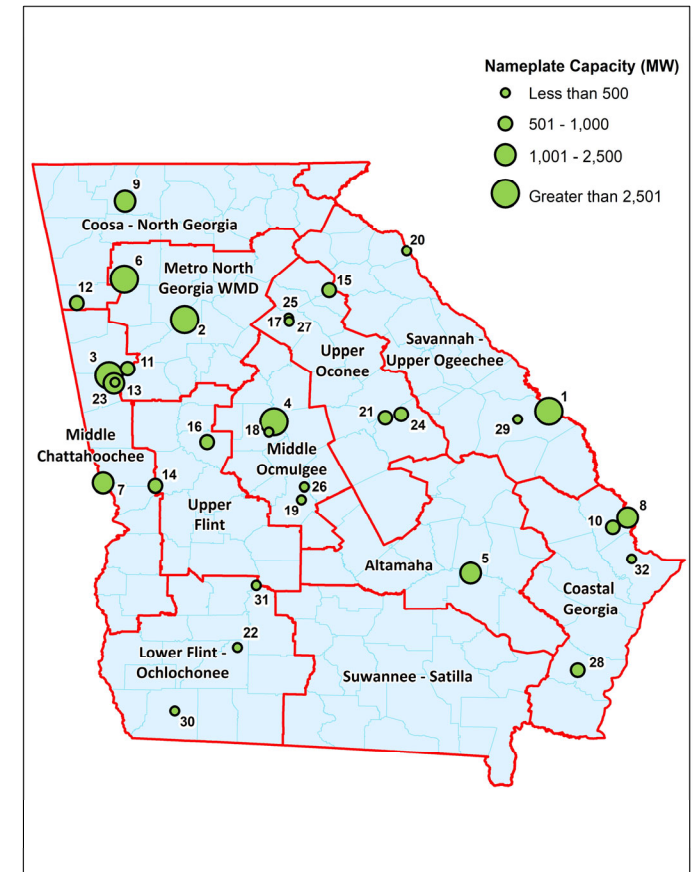
Modest growth in water demands

Industrial Water Demand Forecasting



Energy Water Demand Forecasting

- Stakeholders provide input on the methodology to estimate future water demand for thermoelectric power generation and statewide energy generation
- Factors evaluated:
 - List of thermoelectric facilities
 - Forecasts for water withdrawal and consumption by facility
 - Other available data



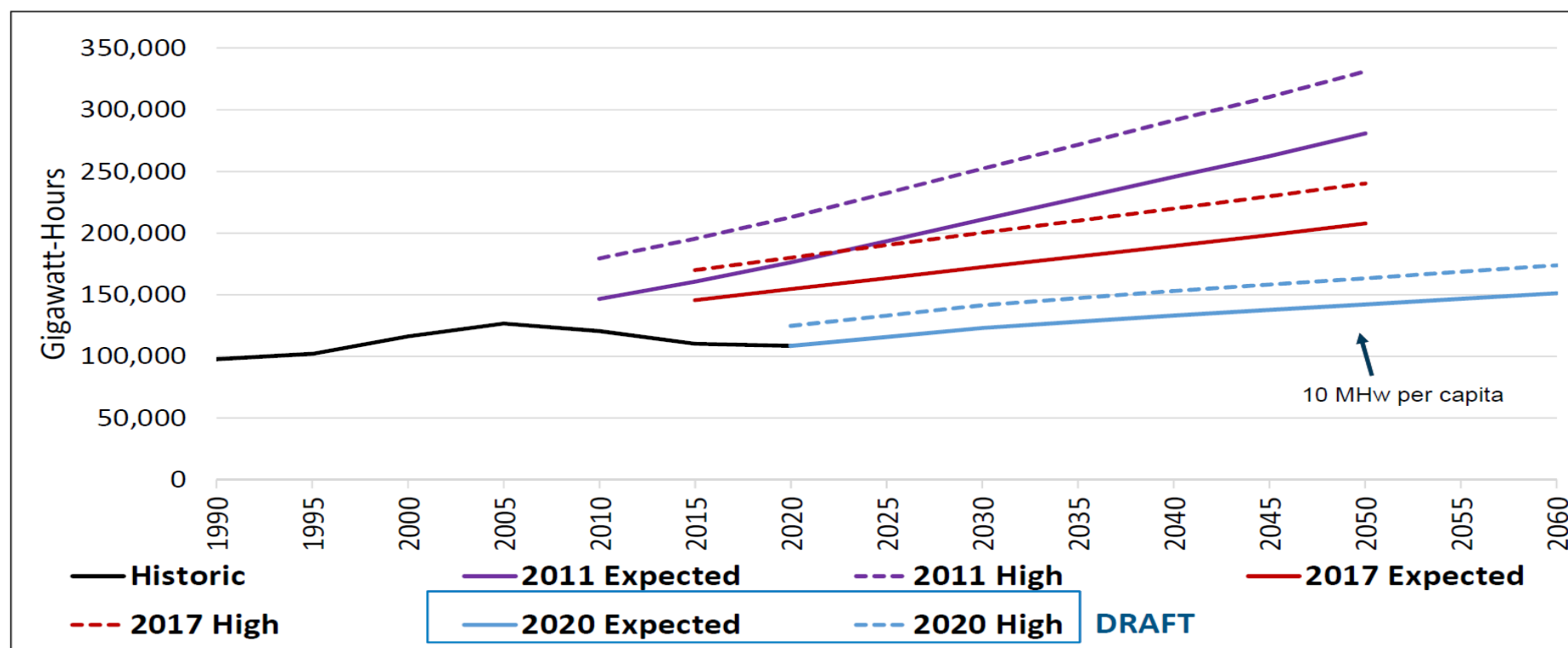
Energy Water Demand Forecasting (Cont'd)

Stakeholder group includes representatives from:

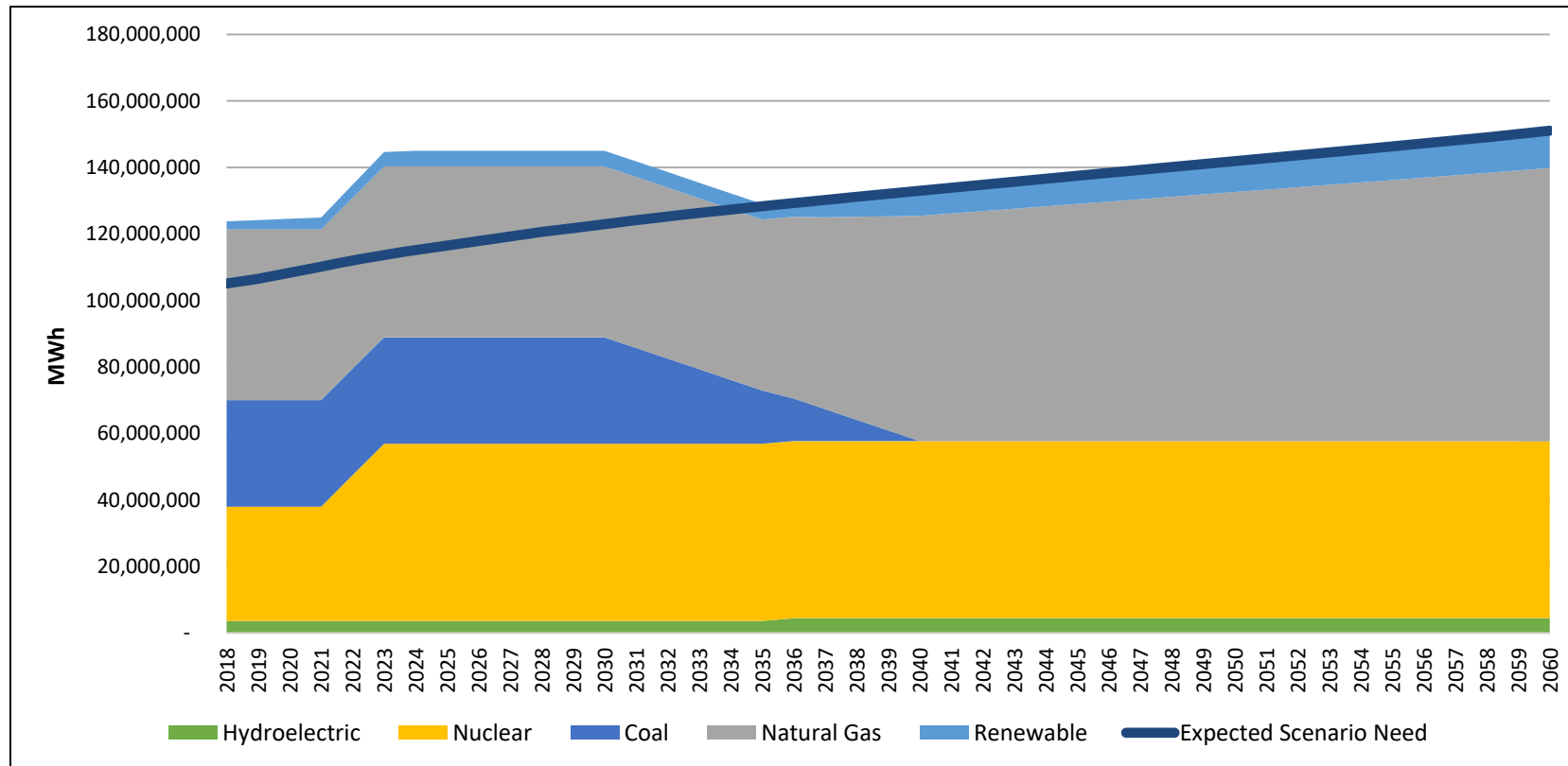
- Georgia Power / Southern Company
- Municipal Electric Authority of Georgia (MEAG)
- Oglethorpe Power Corporation
- Dalton Utilities
- Georgia Public Service Commission
- Georgia Environmental Finance Authority

Energy Forecasting – Looking back...

Step 1: How Much Power will Georgia Need?



Energy Forecasting – Estimated Power Generation



Energy Water Demand Forecasting

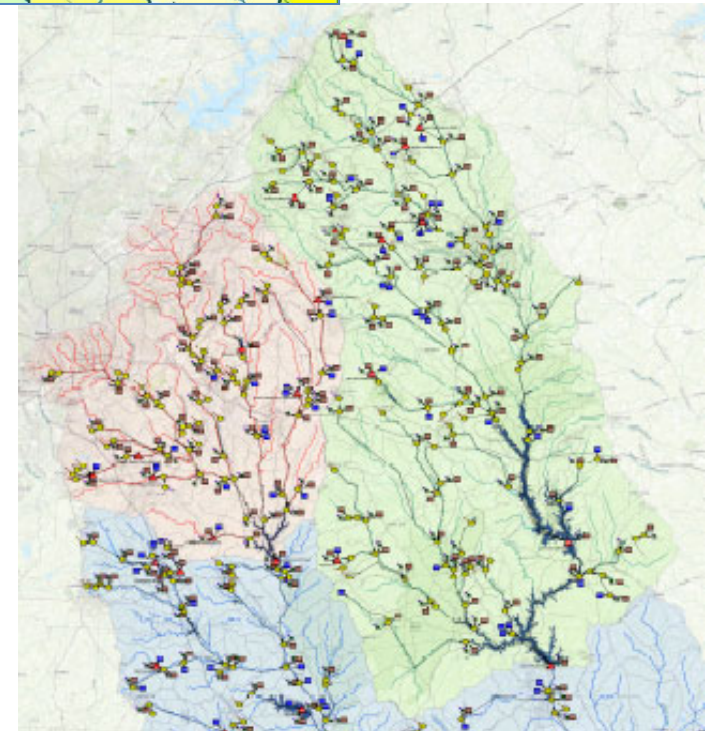
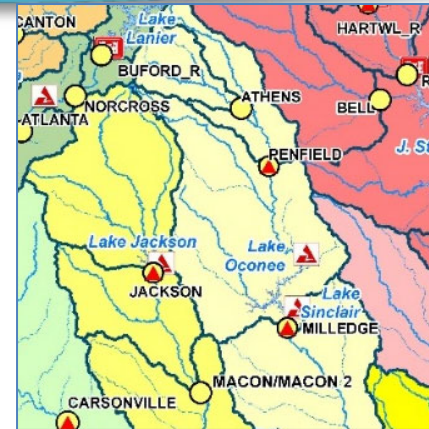
Thermoelectric Energy Water Demand Forecast

Statewide (MGD)	2020	2030	2040	2050	2060
Withdrawals	383	487	354	360	367
Consumption	235	301	242	247	253

CNG (MGD)	2020	2030	2040	2050	2060
Withdrawals	4.29	4.29	5.65	6.25	6.85
Consumption	3.78	3.78	4.97	5.50	6.03

Resource Assessments

- Updates to Modeling Tools used for:
 - Water Quality Resource Assessment
 - Updated information & model recalibration
 - Groundwater Availability
 - Refined groundwater model with smaller grid spacing and transient pumping
 - Surface Water Availability
 - New modeling tool that provides analysis at more nodes



FL v GA

Florida filed complaint with S. Ct. in Oct. 2013

Supreme Court

Oral arguments on Jan. 8, 2018

Ruling (remand) on June 27, 2018

Special Master Kelly appointed on Aug. 9, 2018

Oral arguments held on Nov. 7, 2019

Report issued on Dec. 11, 2019

Supreme Court

FL briefing exceptions on April 13, 2020

GA reply on June 26, 2020


FL sur-reply on July 27, 2020

Oral arguments held on Feb 22, 2021

Ruling expected during current term (ends June 2021)

<https://www.c-span.org/video/?507928-1/florida-v-georgia-oral-argument>

<https://www.ca10.uscourts.gov/special-master-142>



Christine Voudy
Georgia Environmental Protection Division
(470) 607-2621
christine.voudy@dnr.ga.gov



Municipal Water and WW Forecasting

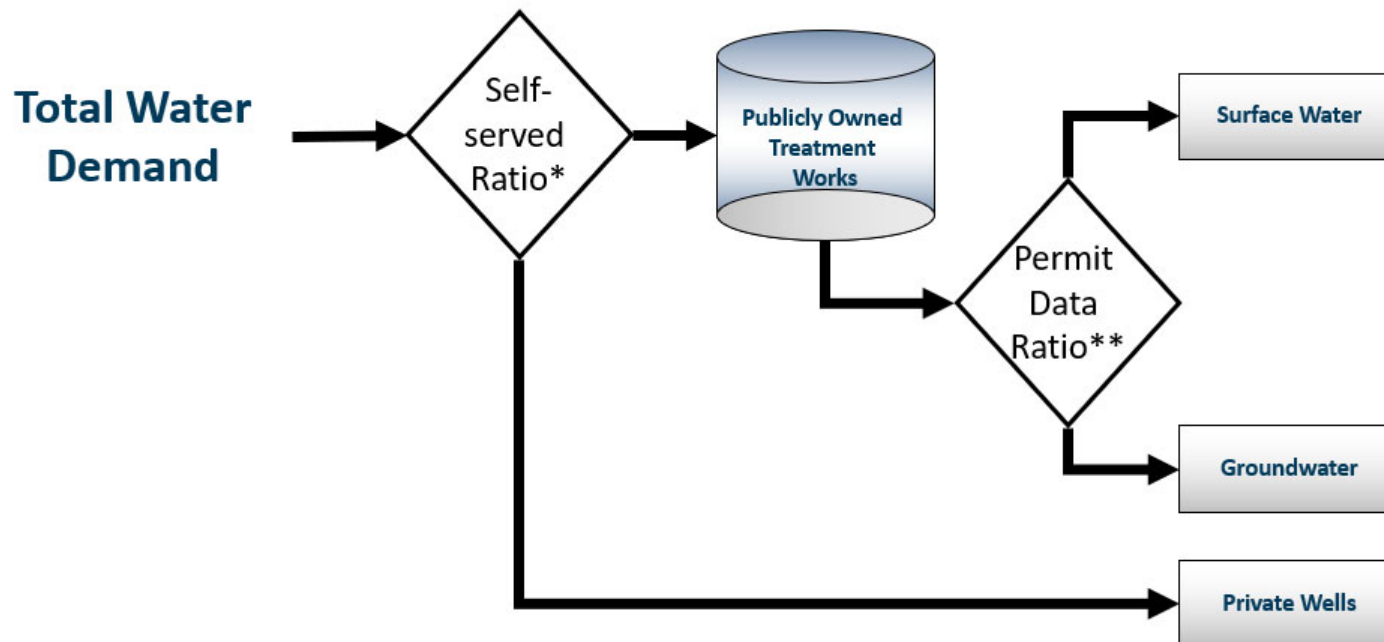
Brian Skeens, Jacobs



Water Demand Forecasting – Municipal

- Black & Veatch/Jacobs planning contractor team preparing water demand forecasts for this sector
- Municipal Forecasting Stakeholder Group
 - Includes one representative from each Council & the Metro Water District (Brooke Anderson represents Coosa-North Georgia Council)
 - Initial Stakeholder Meeting held on April 16, 2020
 - Reviewed methodology and initial data collection
 - Second Stakeholder Meeting held on June 3, 2020
 - Reviewed draft forecast results
 - Final Stakeholder Meeting held on February 2, 2021
 - Presented revised forecasting results
- Information being collected by Industrial forecasting efforts were incorporated into this forecast (municipally-supplied industries)
- Information on county-to-county transfers will be incorporated for source modeling.
- Report being finalized and will be distributed in April 2021

Municipal Water Demands



*Based on previous USGS estimates

**Based on existing GA EPD permit data

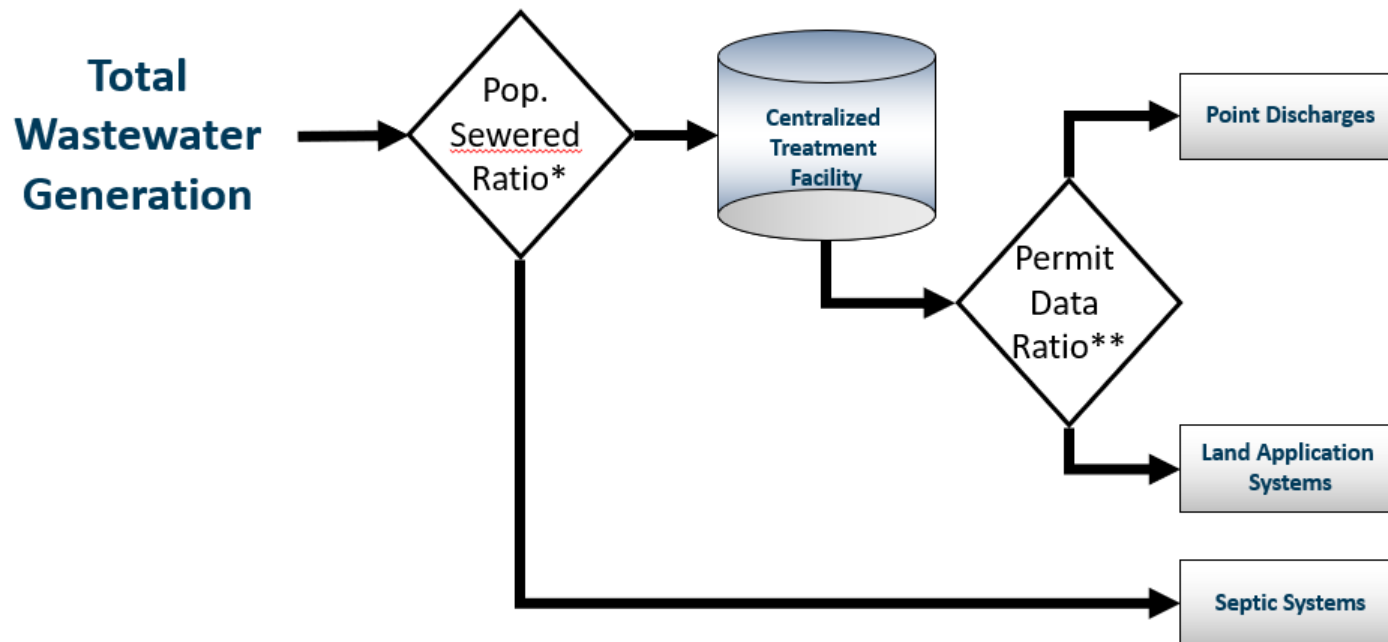
Municipal Water Demands

		Projected Need per Yr per County and Source (AADD-MGD)				
County	Source	2020	2030	2040	2050	2060
Catoosa	Surface Water	6.59	6.89	6.65	6.21	5.67
	Groundwater	-	-	-	-	-
	Self-Supplied	0.25	0.26	0.25	0.23	0.21
Chattooga	Surface Water	2.22	2.23	2.20	2.15	2.12
	Groundwater	1.06	1.06	1.05	1.03	1.01
	Self-Supplied	0.09	0.09	0.09	0.09	0.08
Dade	Surface Water	2.06	2.03	1.96	1.88	1.83
	Groundwater	0.08	0.08	0.08	0.07	0.07
	Self-Supplied	-	-	-	-	-
Dawson	Surface Water	1.85	2.79	3.64	4.60	5.87
	Groundwater	0.21	0.31	0.41	0.52	0.66
	Self-Supplied	0.58	0.49	0.40	0.32	0.24
Fannin	Surface Water	1.86	1.86	1.62	1.35	1.18
	Groundwater	0.09	0.09	0.07	0.06	0.05
	Self-Supplied	0.76	0.76	0.65	0.54	0.47
Floyd	Surface Water	11.35	11.69	11.08	10.22	9.34
	Groundwater	0.84	0.87	0.82	0.76	0.69
	Self-Supplied	0.39	0.39	0.37	0.33	0.30
Gilmer	Surface Water	2.89	3.03	3.09	3.04	2.99
	Groundwater	-	-	-	-	-
	Self-Supplied	1.23	1.26	1.14	1.01	0.92
Gordon	Surface Water	7.88	8.24	8.47	8.60	8.71
	Groundwater	2.07	2.16	2.23	2.26	2.29
	Self-Supplied	0.17	0.18	0.18	0.18	0.18
Habersham	Surface Water	5.39	5.99	6.61	7.07	7.49
	Groundwater	0.82	0.92	1.01	1.08	1.14
	Self-Supplied	0.62	0.59	0.57	0.54	0.51
Lumpkin	Surface Water	1.39	2.05	2.64	3.24	3.98
	Groundwater	0.27	0.39	0.50	0.62	0.76
	Self-Supplied	1.85	1.81	1.76	1.72	1.68

Municipal Water Demands

		Projected Need per Yr per County and Source (AADD-MGD)				
Murray	Surface Water	1.74	1.80	1.85	1.87	1.90
	Groundwater	1.46	1.51	1.55	1.57	1.60
	Self-Supplied	0.75	0.73	0.71	0.69	0.67
Pickens	Surface Water	2.38	2.79	2.92	3.01	3.16
	Groundwater	1.41	1.66	1.74	1.79	1.88
	Self-Supplied	0.40	0.39	0.38	0.37	0.36
Polk	Surface Water	4.14	4.27	4.18	3.97	3.72
	Groundwater	1.77	1.83	1.79	1.70	1.59
	Self-Supplied	0.10	0.10	0.09	0.08	0.07
Towns	Surface Water	1.27	1.39	1.56	1.83	2.21
	Groundwater	0.19	0.20	0.23	0.27	0.32
	Self-Supplied	0.14	0.15	0.17	0.20	0.24
Union	Surface Water	1.48	1.73	1.81	1.89	2.07
	Groundwater	0.46	0.54	0.56	0.59	0.65
	Self-Supplied	0.03	0.03	0.03	0.03	0.04
Walker	Surface Water	1.28	1.28	1.26	1.24	1.23
	Groundwater	5.80	5.78	5.72	5.62	5.59
	Self-Supplied	0.50	0.49	0.48	0.46	0.45
White	Surface Water	1.10	1.33	1.47	1.62	1.81
	Groundwater	0.94	1.13	1.25	1.38	1.54
	Self-Supplied	1.18	1.41	1.55	1.69	1.87
Whitfield	Surface Water	26.69	27.30	27.70	27.69	27.50
	Groundwater	-	-	-	-	-
	Self-Supplied	0.37	0.37	0.37	0.36	0.35

Municipal Wastewater Demands



*Based on 1990 US Census Bureau data

**Based on existing GA EPD permit data

Municipal Wastewater Demands

County	Source	2030	2040	2050	2060
Catoosa County	Point Source	0.01	0.01	0.01	0.01
	LAS	0.00	0.00	0.00	0.00
	Septic	2.97	2.93	2.81	2.63
Chattooga County	Point Source	5.84	5.89	5.88	5.93
	LAS	0.03	0.03	0.03	0.03
	Septic	0.99	0.99	0.99	1.00
Dade County	Point Source	0.48	0.47	0.46	0.46
	LAS	0.00	0.00	0.00	0.00
	Septic	0.80	0.79	0.77	0.77
Dawson County	Point Source	0.00	0.00	0.00	0.00
	LAS	0.84	1.09	1.40	1.84
	Septic	1.78	2.16	2.61	3.22
Fannin County	Point Source	0.40	0.35	0.30	0.26
	LAS	0.00	0.00	0.00	0.00
	Septic	1.36	1.20	1.01	0.90
Floyd County	Point Source	5.91	5.74	5.41	5.07
	LAS	0.00	0.00	0.00	0.00
	Septic	2.83	2.75	2.59	2.43
Gilmer County	Point Source	1.75	1.70	1.63	1.59
	LAS	0.00	0.00	0.00	0.00
	Septic	1.73	1.60	1.45	1.35
Gordon County	Point Source	5.84	6.08	6.25	6.42
	LAS	0.00	0.00	0.00	0.00
	Septic	2.62	2.73	2.80	2.88
Habersham County	Point Source	4.45	4.88	5.31	5.78
	LAS	0.01	0.01	0.02	0.02
	Septic	2.17	2.31	2.45	2.62
Lumpkin County	Point Source	0.88	0.98	1.08	1.20
	LAS	0.02	0.03	0.03	0.03
	Septic	2.03	2.24	2.47	2.75

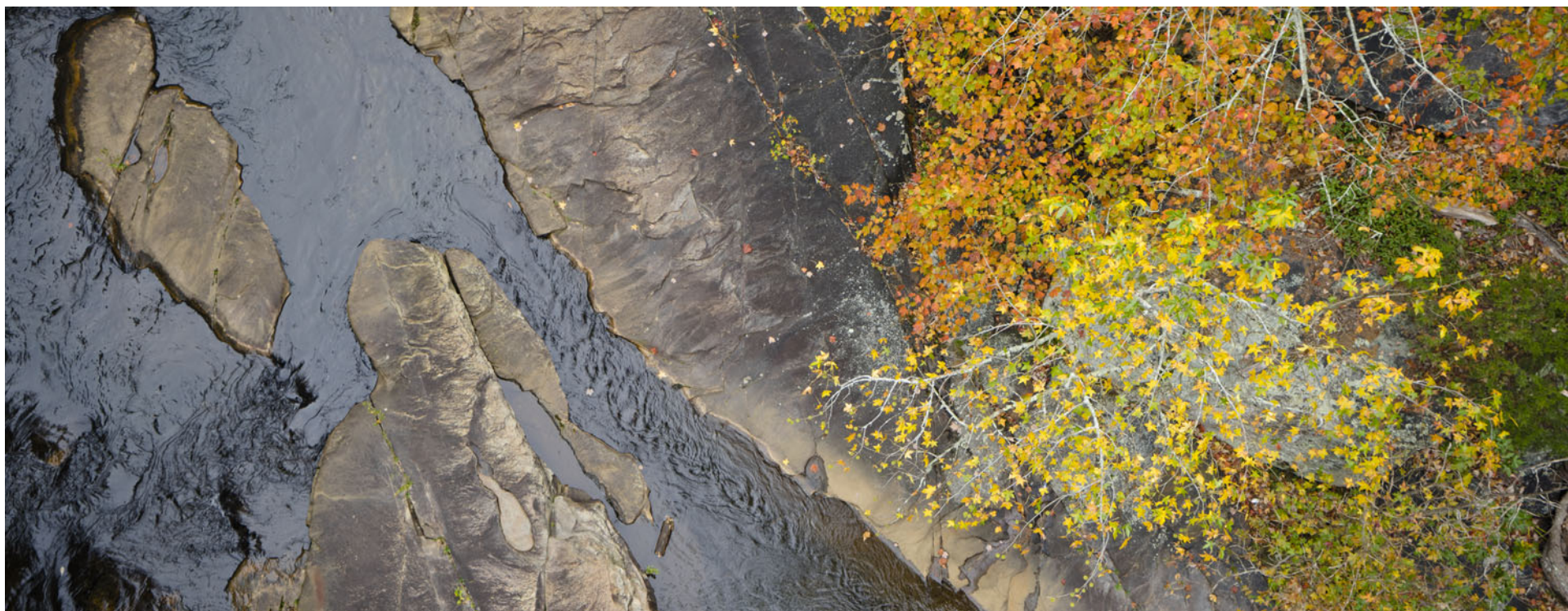
County	Source	2030	2040	2050	2060
Murray County	Point Source	1.76	1.82	1.87	1.92
	LAS	0.00	0.00	0.00	0.00
	Septic	2.09	2.17	2.22	2.29
Pickens County	Point Source	0.87	0.92	0.95	1.01
	LAS	0.02	0.02	0.02	0.02
	Septic	2.03	2.13	2.22	2.34
Polk County	Point Source	3.51	3.46	3.34	3.19
	LAS	0.00	0.00	0.00	0.00
	Septic	2.00	1.96	1.85	1.72
Towns County	Point Source	0.42	0.48	0.57	0.70
	LAS	0.00	0.00	0.00	0.00
	Septic	0.73	0.83	0.99	1.21
Union County	Point Source	0.43	0.46	0.49	0.55
	LAS	0.00	0.00	0.00	0.00
	Septic	1.62	1.73	1.85	2.08
Walker County	Point Source	4.17	4.23	4.26	4.35
	LAS	0.00	0.00	0.00	0.00
	Septic	3.46	3.51	3.54	3.61
White County	Point Source	0.65	0.73	0.81	0.92
	LAS	0.03	0.04	0.04	0.05
	Septic	2.03	2.28	2.54	2.88
Whitfield County	Point Source	0.18	0.18	0.18	0.18
	LAS	11.18	11.42	11.51	11.54
	Septic	3.86	3.96	4.00	4.02
Total	Point Source	37.55	38.37	38.82	39.54
	LAS	12.14	12.64	13.05	13.53
	Septic	37.08	38.26	39.17	40.68

Water Quality Updates

Elizabeth Booth, GA EPD



Current and Future Water Quality Resource Assessment

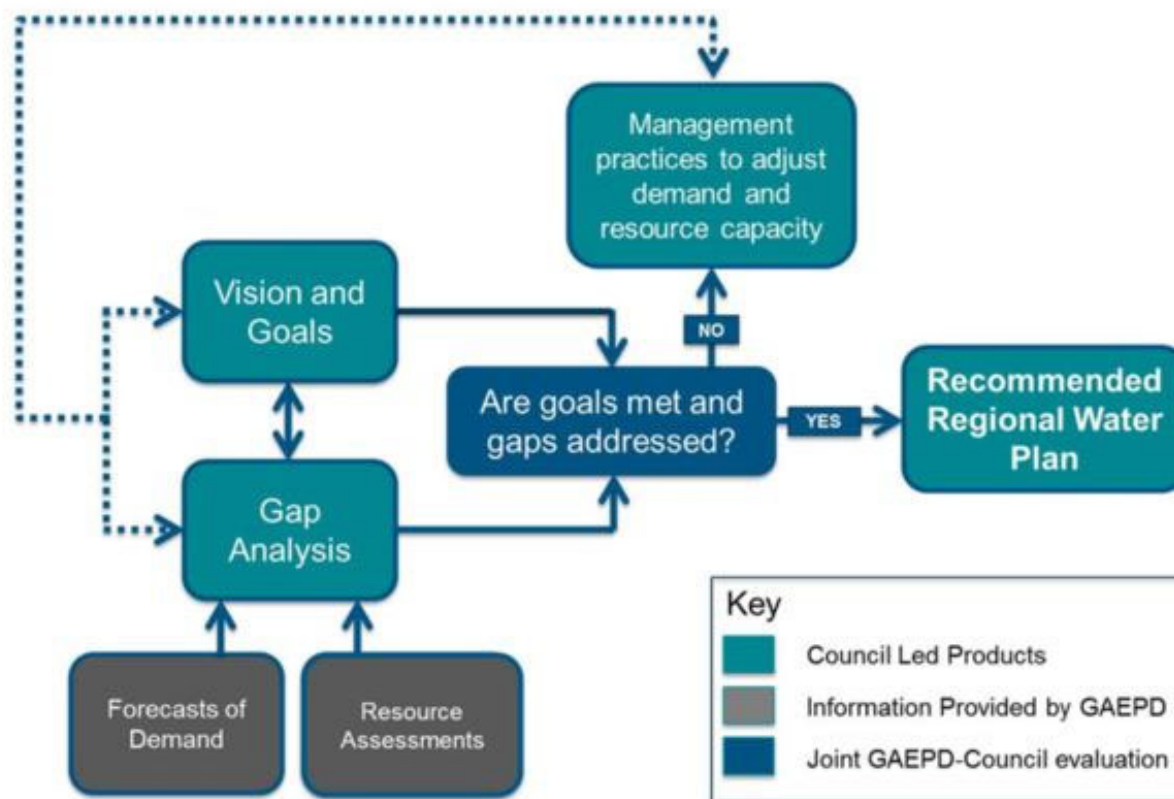


March 24, 2021

Elizabeth Booth, EPD



State Water Planning Process





CURRENT ASSIMILATIVE CAPACITY ASSESSMENT

Develop Models

Use available data & conservative assumptions

Calibrate models to existing conditions

Evaluate models using current permits

Determine available assimilative capacity

Determine areas of concern





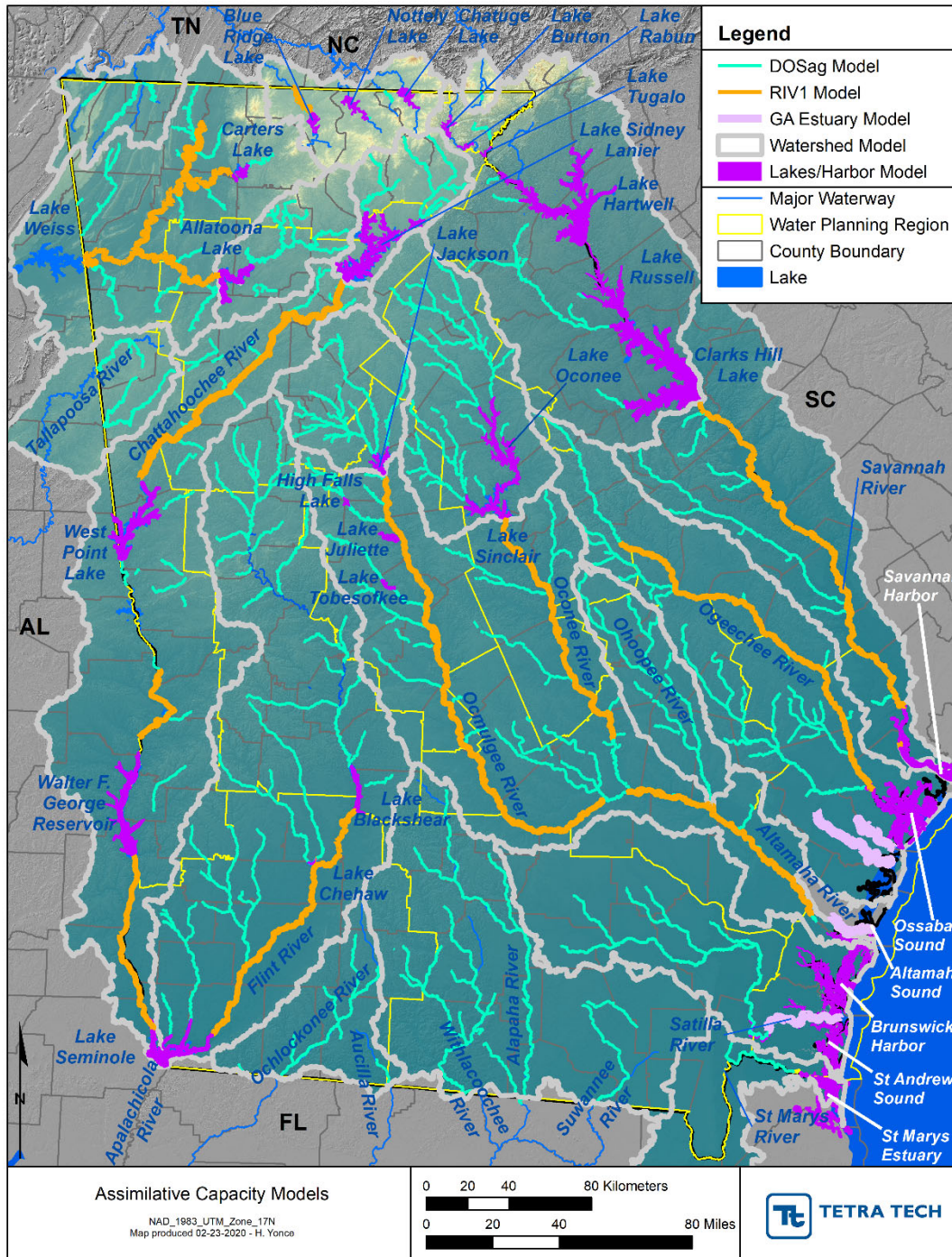
FUTURE ASSIMILATIVE CAPACITY ASSESSMENT

Determine future needs

**Using the models we evaluation future
permitted flow**

**Incorporate model assumptions regarding
future permits limits designed to meet water
quality standards**

Determine areas of concern



Round 3 of the State Water Plan 2000-2020



MODELS USED TO DETERMINE AVAILABLE ASSIMILATIVE CAPACITY

GA DOSAG

- Examines the effects of BOD and NH₃ on DO

GA ESTUARY

- Examines the effects of BOD and NH₃ on DO

GA RIV-1

- Examines the effects of BOD and NH₃ on DO

Watershed Model (LSPC)

- Examines the effects of Total P , Total N, and BOD

Lake and Estuary Models (EFDC)

- Examines the effects of nutrients on Chlorophyll a
- Examines the effects of BOD and NH₃ on DO



WATER QUALITY RESOURCE ASSESSMENT

Parameters of Concern

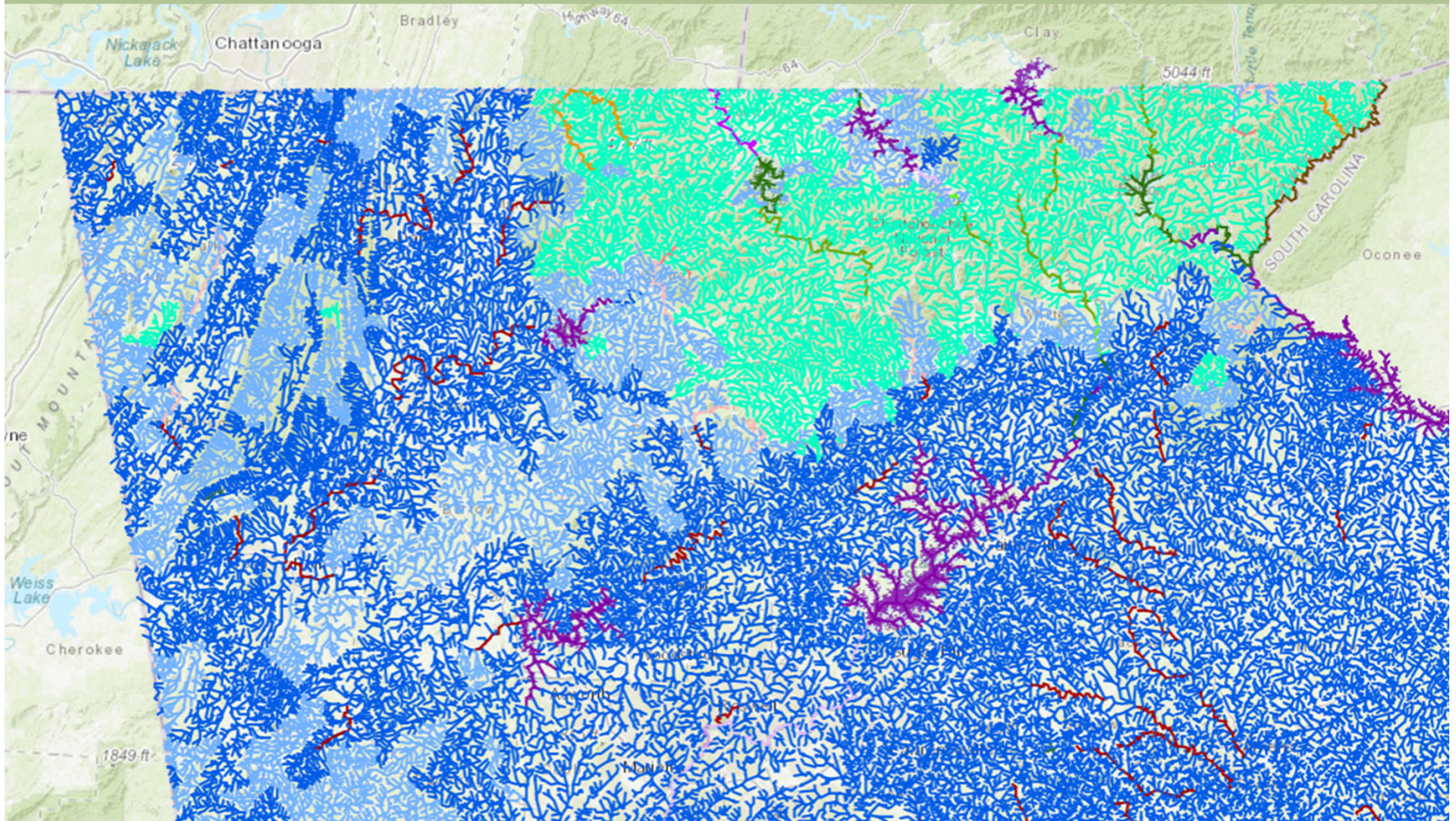
- Biochemical Oxygen Demand
- Ammonia
- Total Nitrogen
- Total Phosphorus
- Heat Loads

Water Quality Standards Effectuated

- Dissolved Oxygen
- Chlorophyll *a* (Algae)
- Nutrients
- Temperature



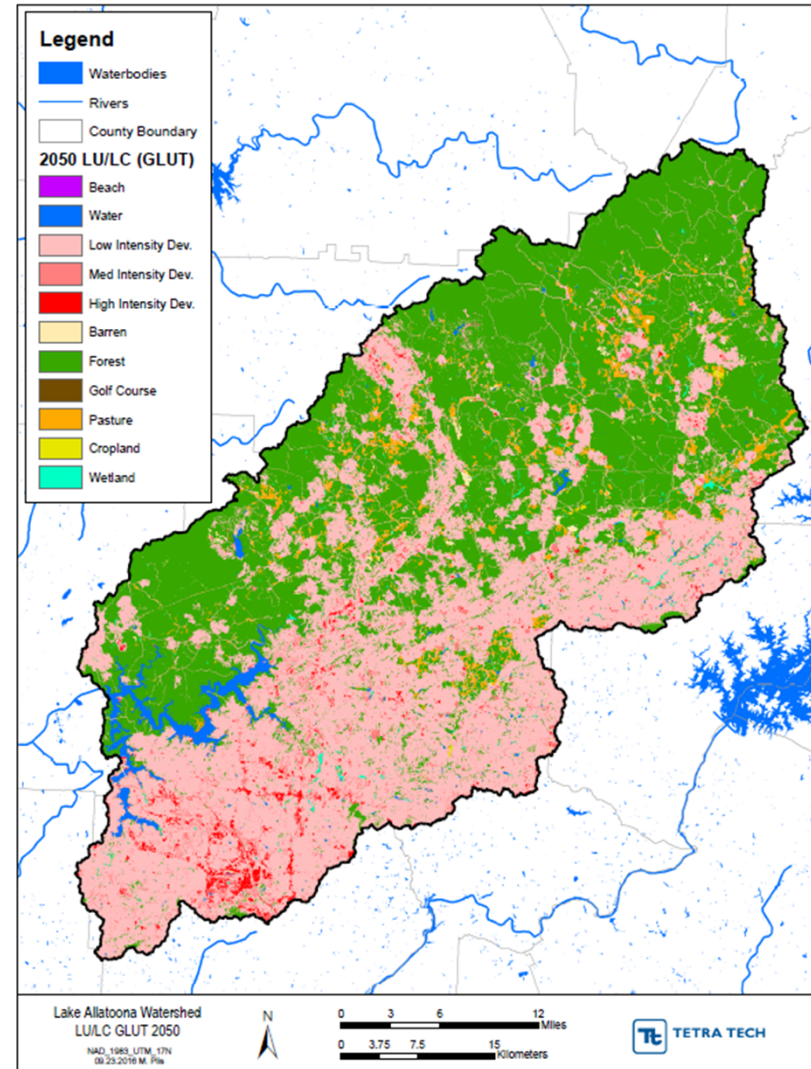
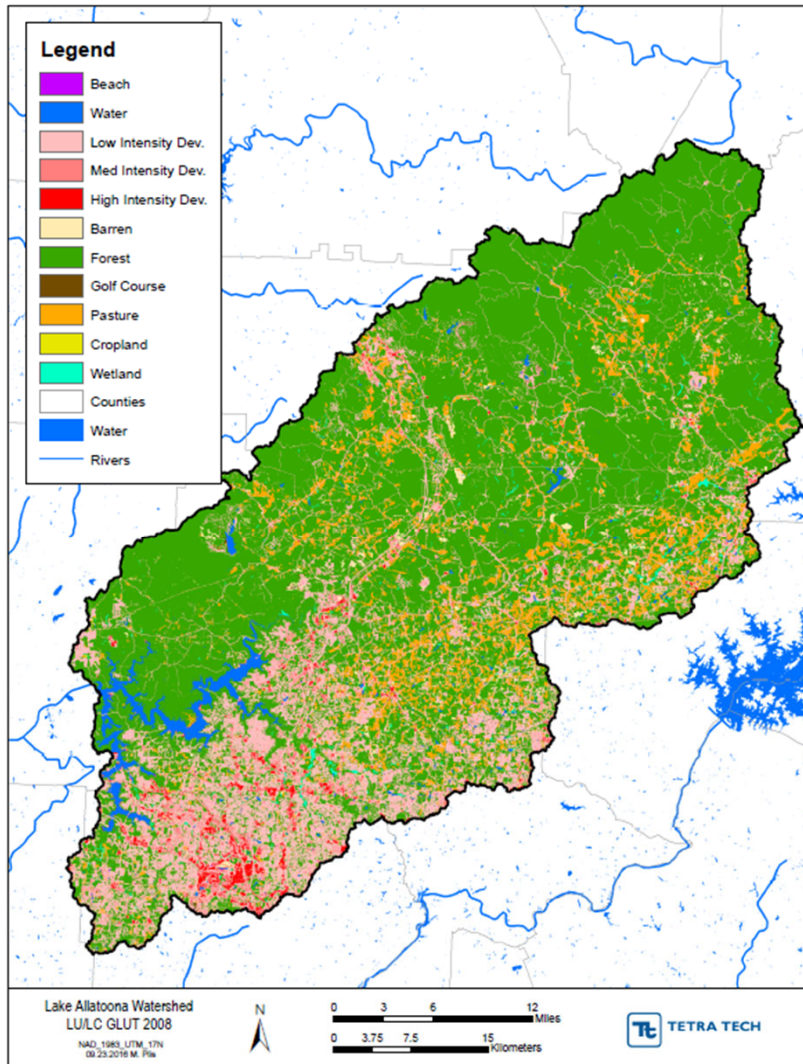
DESIGNATED USES



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LANDUSE CHANGES (2008-2050)

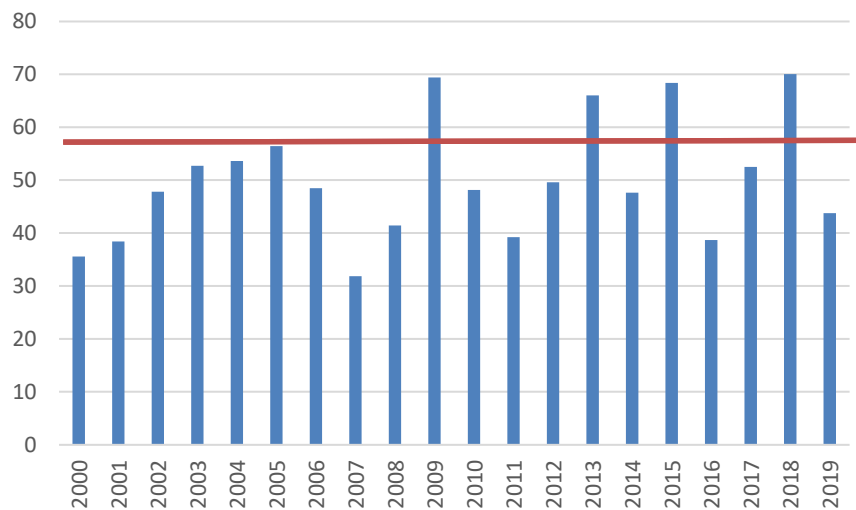


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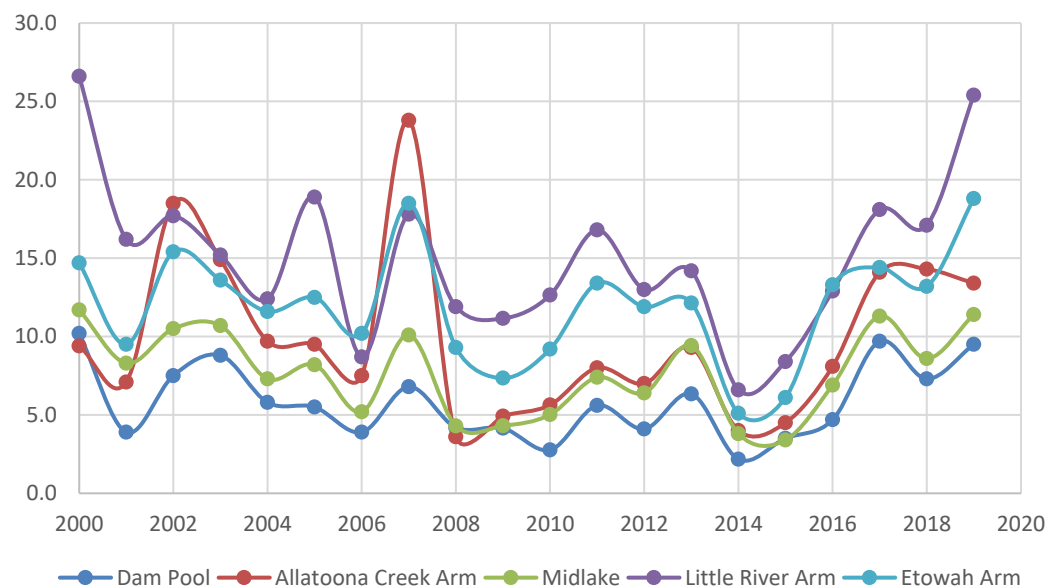


CLIMATE CHANGES

Atlanta Annual Rainfall (inches)










Lake Allatoona Chlorophyll (ug/L)

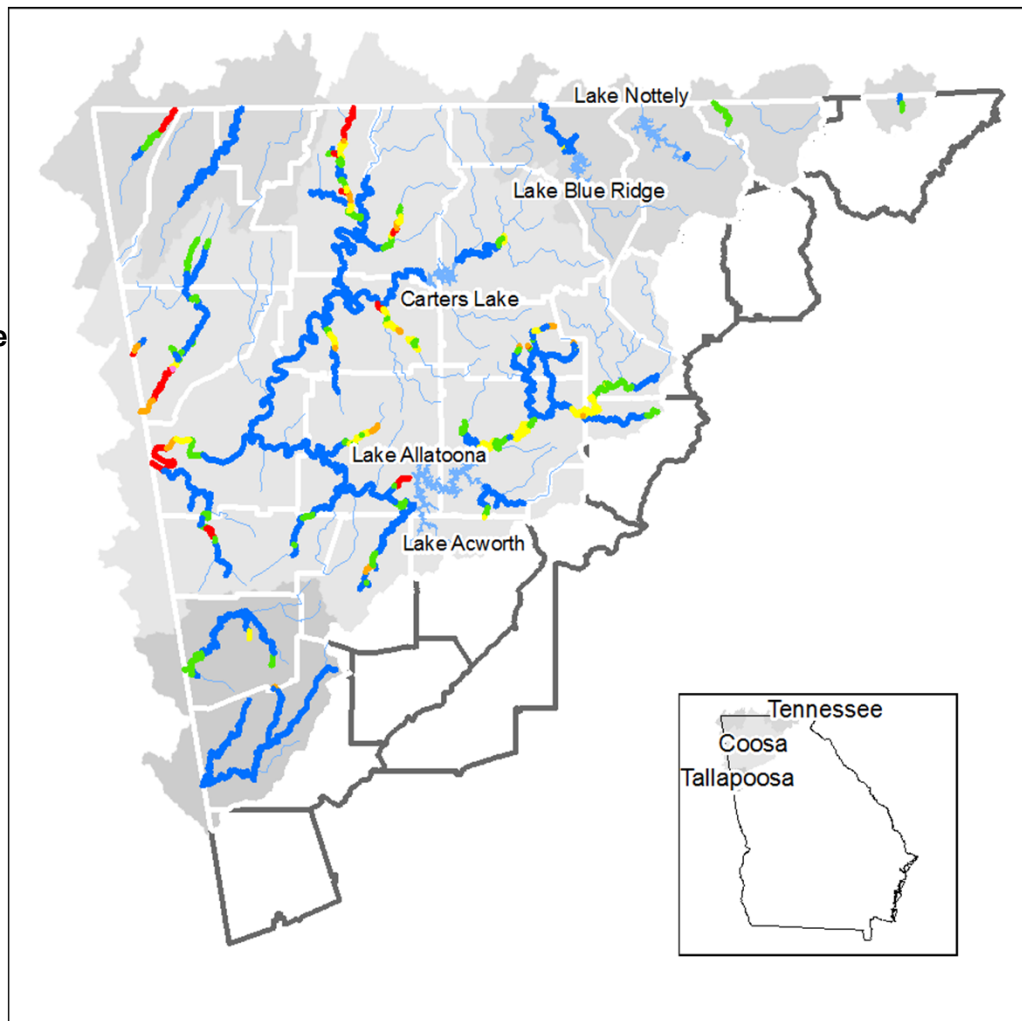


Current Permitted

Legend

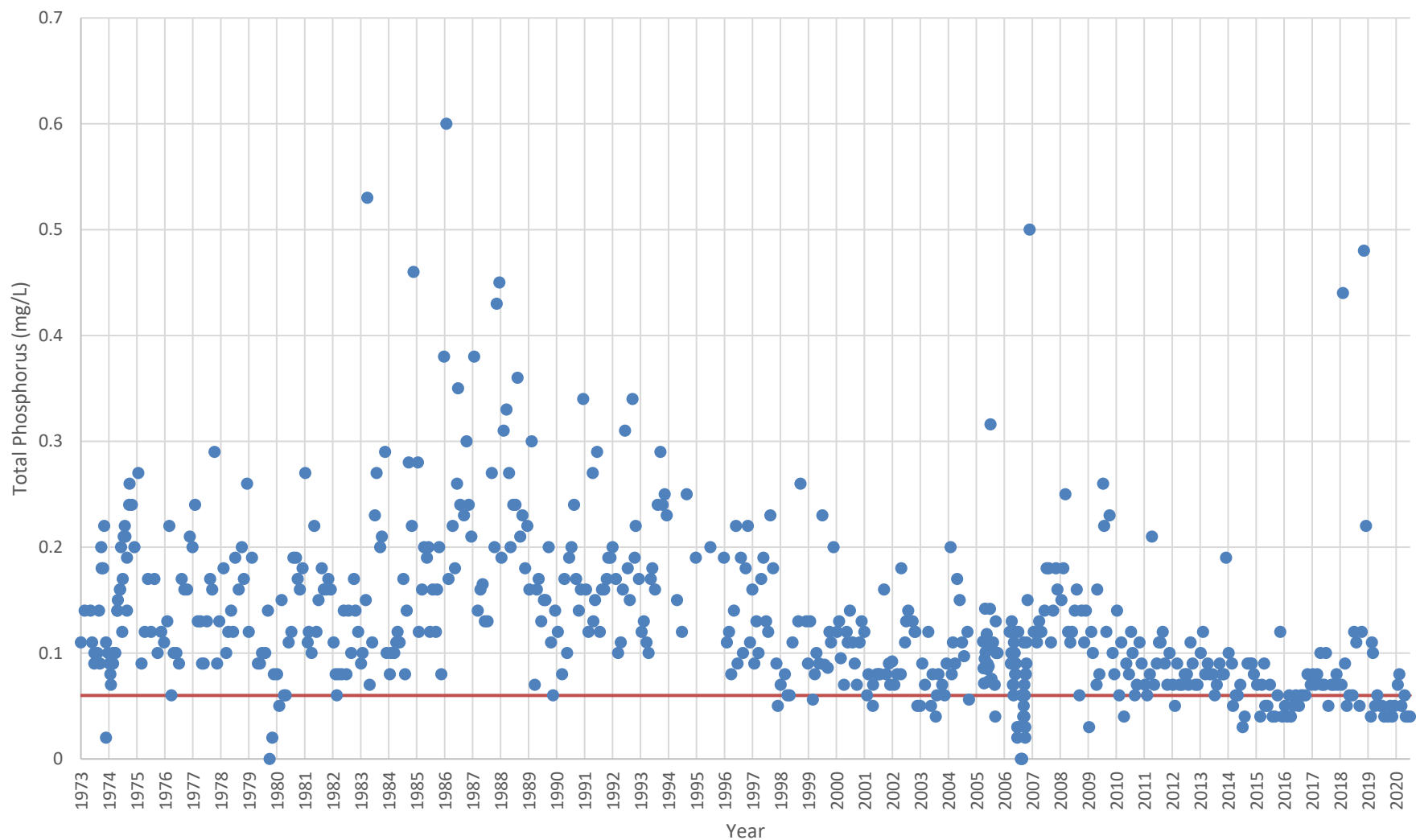
Available Assimilative Capacity

-  Very Good \geq mg/L DO available
-  Good 0.5 mg/L to $<$ 1 mg/L DO available
-  Moderate 0.2 mg/L to $<$ 0.5 mg/L DO available
-  Limited $>$ 0 mg/L to $<$ 0.2 mg/L DO available
-  At Assimilate Capacity 0 mg/L DO available
-  None or Exceeded $<$ 0.0 mg/L DO available
-  Unmodeled Lakes and Streams





TOTAL P LEVELS COOSA RIVER AT THE STATELINE



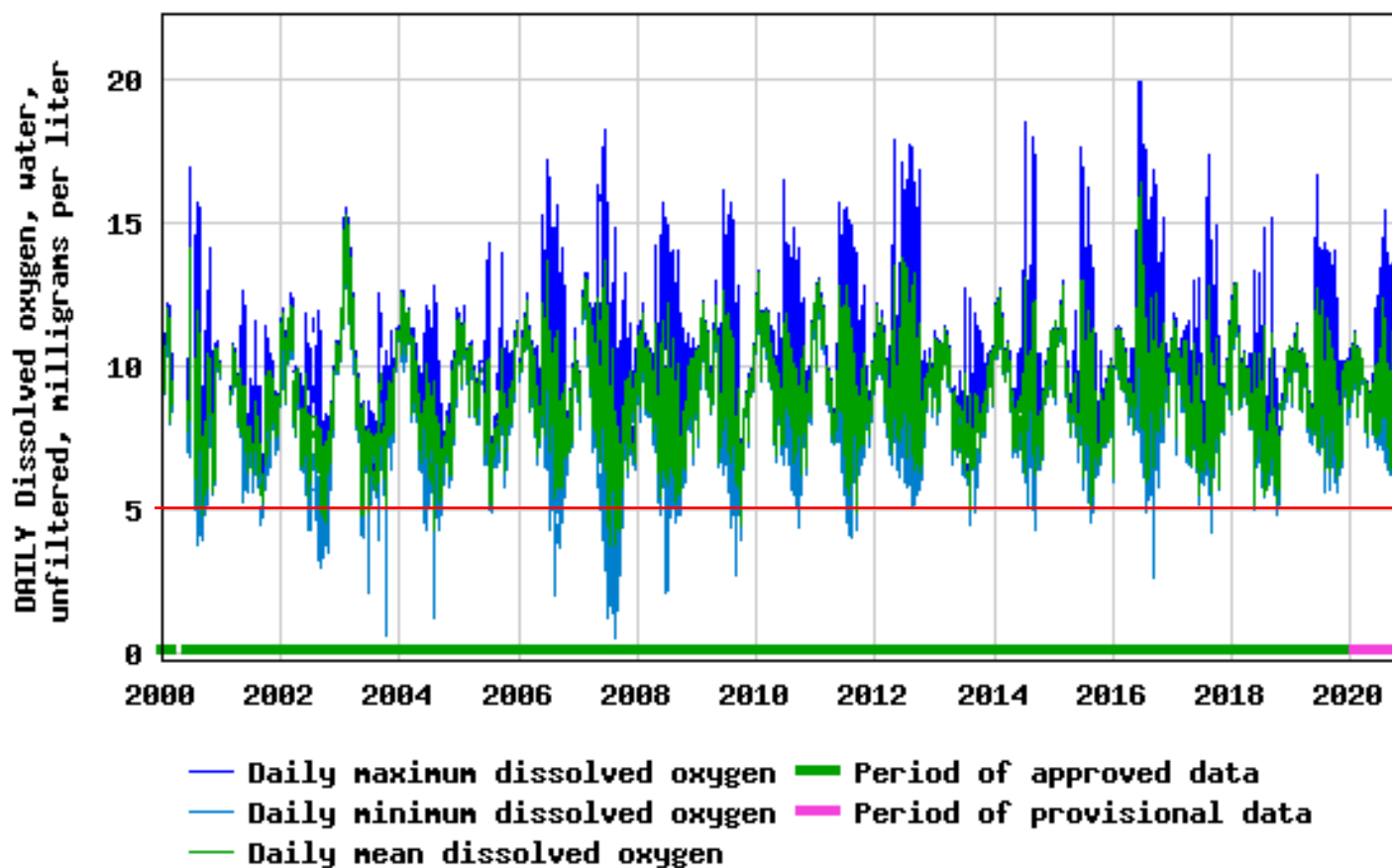
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DISSOLVED OXYGEN LEVELS COOSA RIVER AT THE STATELINE



USGS 02397530 COOSA RIVER AT STATE LINE, AL/GA



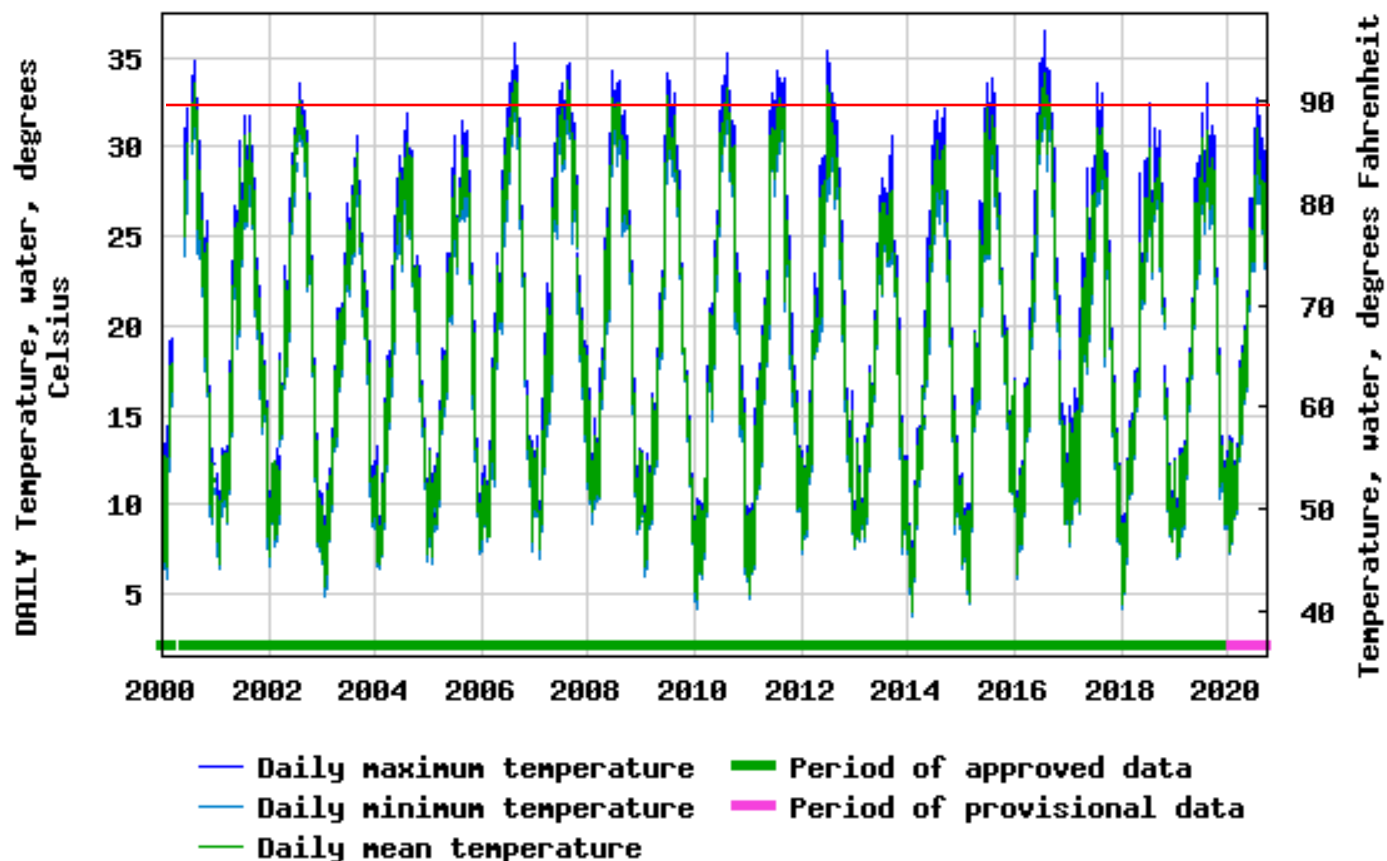
DEPARTMENT OF NATURAL RESOURCES

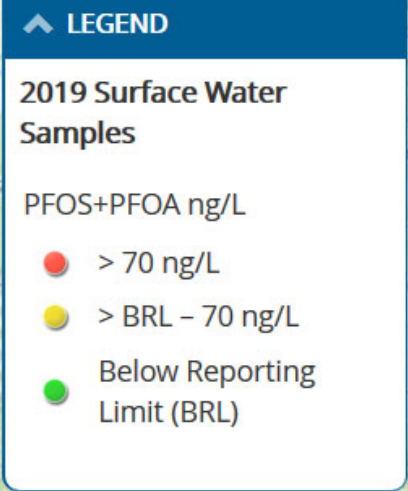


TEMPERATURE LEVELS COOSA RIVER AT THE STATELINE



USGS 02397530 COOSA RIVER AT STATE LINE, AL/GA

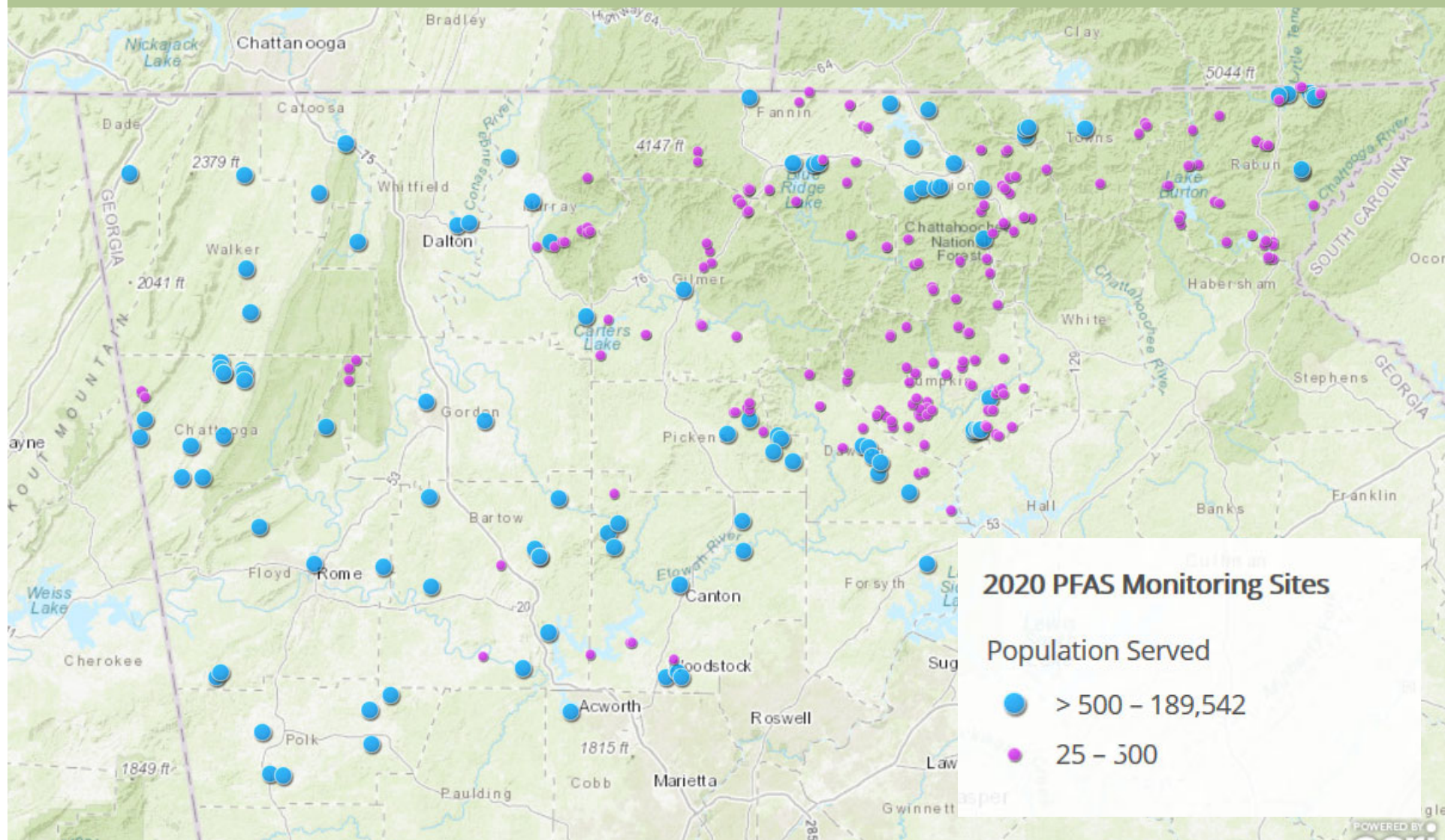




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FUTURE PFAS MONITORING PLAN



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POTENTIAL CHANGES TO FUTURE PERMITS

- Permit Updates
 - Increased Flows
 - Tighter BOD Limits
 - Tighter DO Limits New or Tighter Ammonia (NH₃) Limits
 - New or Tighter TP Limits
 - New TN Limits
 - New Temperature Limits
 - Emergent Pollutants



CURRENT AND FUTURE WATER QUALITY RESOURCE ASSESSMENT

QUESTIONS?

Biosolids Issues and Updates

Mike Thomas, GAWP





Biosolids and Residuals Management Challenges



Georgia
Association of
Water
Professionals

Mike Thomas

- Landfill Issues
- AG Dept Soil Amendment Rule
- Solid Waste Rule Changes
- Public Concerns
- New pollutants of concern - PFAS



Biosolids - Wastewater

Agricultural Benefits

- Nutrient value
- Organic matter – improves soil condition



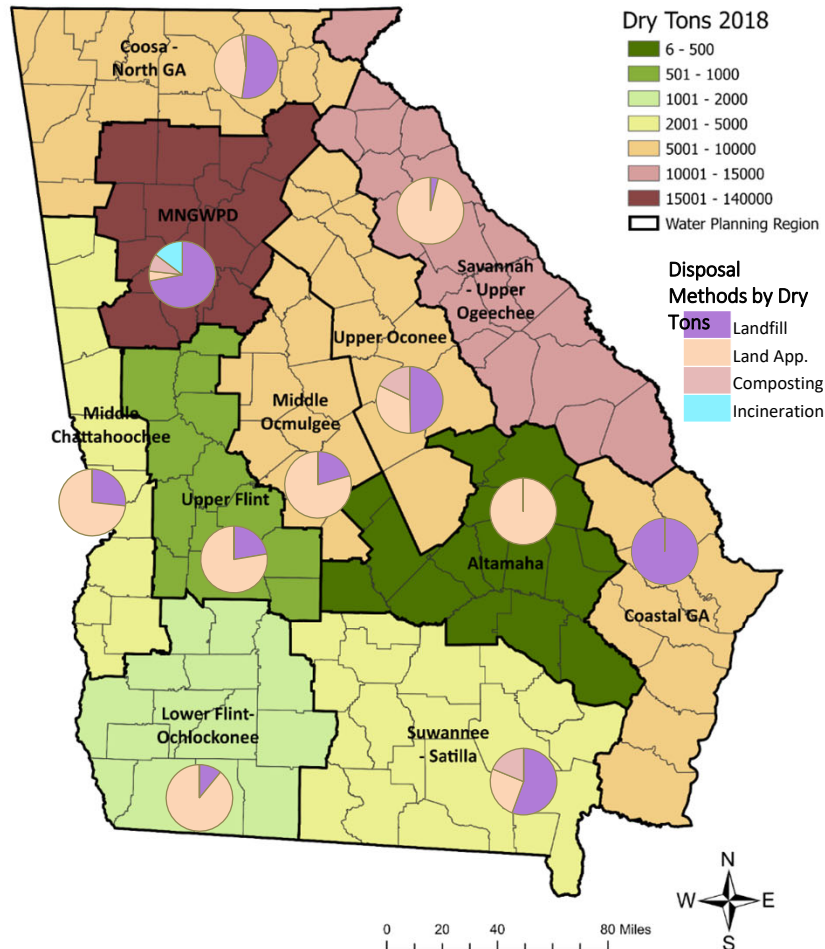
Residuals - Drinking Water

Agricultural Benefits

- Increase pH
- Can bind phosphorus and prevent runoff



Georgia Wastewater Biosolids for 2018 Water Planning Regions



Most common disposal methods

- Landfill – 65% of Dry Tons
- Land Application – 16% of Dry Tons

**Only incinerator used in 2018
was by the City of Atlanta**

Composting:

- 8% of Dry Tons
- 16 Facilities

Landfills - Where the storm began

Since 2018, the disposal of biosolids and residuals in landfills has become more difficult and costly due to recent slope instabilities:

- 2014 Pine Ridge Landfill
- 2018 Eagle Point Landfill
- 2014 Eagle Point Landfill
- 2017 Greentree Landfill, Pennsylvania





Landfills

Capacity Limitations

Price increases of 200% – 300%

Proposed Solid Waste Rule Changes in Georgia

- **Defines High Moisture Content Waste**
 - **> Greater than 60% solids**
 - **Biosolids & Residuals 15 – 30% solids**
- **Landfills receiving more than 5% HMCW**
 - **Re-evaluate design and operational practices to accommodate HMCW**



Land Application

Biosolids

- Permitted through NPDES program (wastewater permitting)
- Class A – very few limitations, sold as fertilizer, compost
- Class B – cannot be stored on agricultural sites – weather issues
- Emerging contaminants like PFAS
- Public opposition

Residuals

- No clear permitting path
 - “Industrial waste” under Solid Waste rules
- AG Department Soil Amendment rules
 - Reluctant to approve – may limit options after 2021



What does the future hold?
Is there light at the end of the tunnel?



Biosolids

- **GEFA Study**
 - Updated survey
 - Review of current conditions and obstacles
 - Evaluation of technology, financing and disposal markets
- **Improved drying technologies - >90% solids – but expensive**

Residuals

- **Lots of uncertainty**
 - EPD is willing to work on solutions regarding permitting
- **AG Department Soil Amendment rules**
 - Education on product characteristics and land application viability

Collaboration with Solid Waste Community

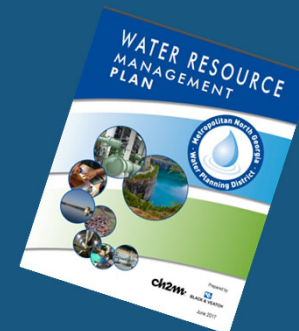
Regional Solutions?

Metro District Update

Danny Johnson, MNGWPD



2022 Plan Update Schedule



	Sep-20	Dec-20	Mar-21	Jun-21	Sep-21	Dec-21	Mar-22	Jun-22	Sep-22	Dec-22
Data Collection/Resource Forecasting		◆	◆							
Action Items Review and Update		◆	◆	◆	◆	◆	◆			
Appendix A - River Basin Profiles			◆	◆	◆	◆				
Appendix B - Facility Planning				◆	◆	◆				
Stormwater Forecasting			◆	◆	◆	◆				
Supporting Efforts										
Localized Demands										
Drought Response Options Menu		◆	◆	◆	◆	◆				
Watershed Resilience										
Full Draft Plan for Review								◆	◆	
Public Comment									◆	◆
EPD/Board Approval										◆



Moving Forward on Conservation Action Items

Improve our region's drought resilience and maintain our national leadership on water conservation by:

- Reducing long-term per capita demands by requiring use of proven water efficiency technology (Nov 2020 TCC)
- Preparing a menu of optional programs utilities can use to implement EPD's drought rule (Feb 2021 TCC)
- Promoting the voluntary, early adoption of new water efficiency technologies (Feb 2021 TCC)

Concepts for Potential Action Item Updates - Efficient Technologies and Water Waste

Codes for New / Renovated Buildings to require More Efficient Technologies

- Plumbing Fixtures
- Landscape Irrigation System Design
- Water-Efficient Appliances
- HVAC Cooling Towers

Adjust Premise Plumbing Sizing Requirements to Account for Efficiency

Update Water Waste Model Ordinance

Concepts for Potential Action Item Updates- Beyond Mandatory Codes

Rebate Programs to promote leading efficient technologies

- Smart Irrigation Controller rebate program
- Smart Leak Detector rebate program

Promoting whole home water efficiency

- HERS H2O Whole House Water Efficiency Rating



Georgia Wildlife Management

Alan Isler, GA DNR Wildlife Resource Division





Georgia's Wildlife Resources Division

Department of Natural Resources

Department Structure



Our Mission

To conserve, enhance and promote Georgia's fish and wildlife resources and outdoor heritage through science-driven research, management, regulation, and education.

Our Goals

- Carry forward the foundation of wildlife conservation through management and restoration of fish, wildlife and their habitats and continue to increase our understanding of these resources
- Increase participation in hunting, fishing, and wildlife-based recreation and instill conservation values in the public
- Achieve excellence in conservation education and training
- Enhance funding and improve policy for fish and wildlife conservation

Division Structure

Comprises three sections:

- Game Management
- Fisheries Management
- Wildlife Conservation



Game Management

Provides science-based management, conservation and protection of Georgia's wildlife and habitats for hunting, trapping and other compatible wildlife related recreation and education.



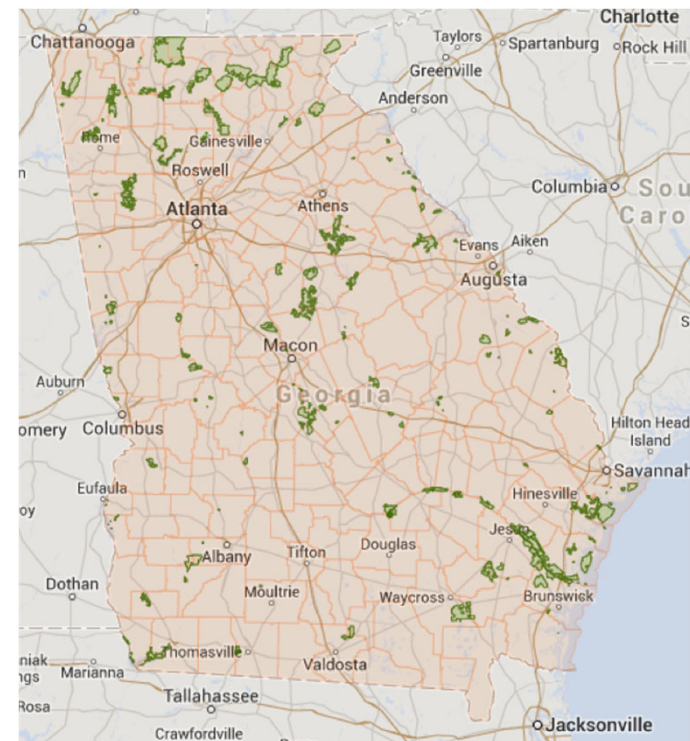
Game Management

Programs

- State Operations
 - Wildlife Management Areas (WMA)
 - Barrier Island Operations
 - Technical Assistance
 - Research, Survey & Monitoring
 - Hunting Regulations
- Forest Management
- Shooting Sports
 - Hunter Education
- Private Lands
 - Bobwhite Quail Initiative
- Farm Bill Program
- Urban Wildlife
- Deer Management Assistance Program

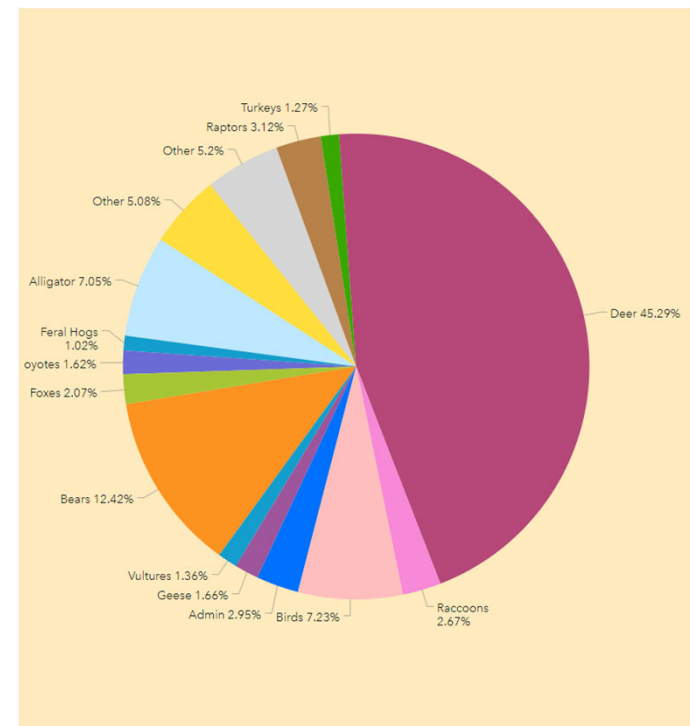
Wildlife Management Areas (WMAs)

- 114 WMAs
- Over 1.1 million acres of land
- At least one located within an hour of any location in Georgia
- Great hunting and other wildlife-related recreation at unbeatable price



Technical Assistance

- 7,000 calls annually
- 10,000 man hours annually

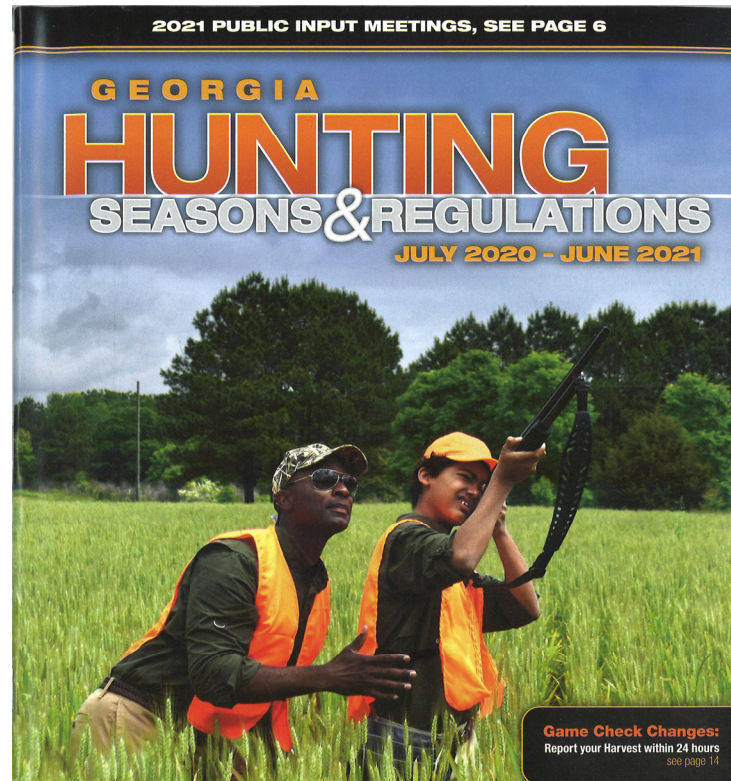


Research, Survey & Monitoring

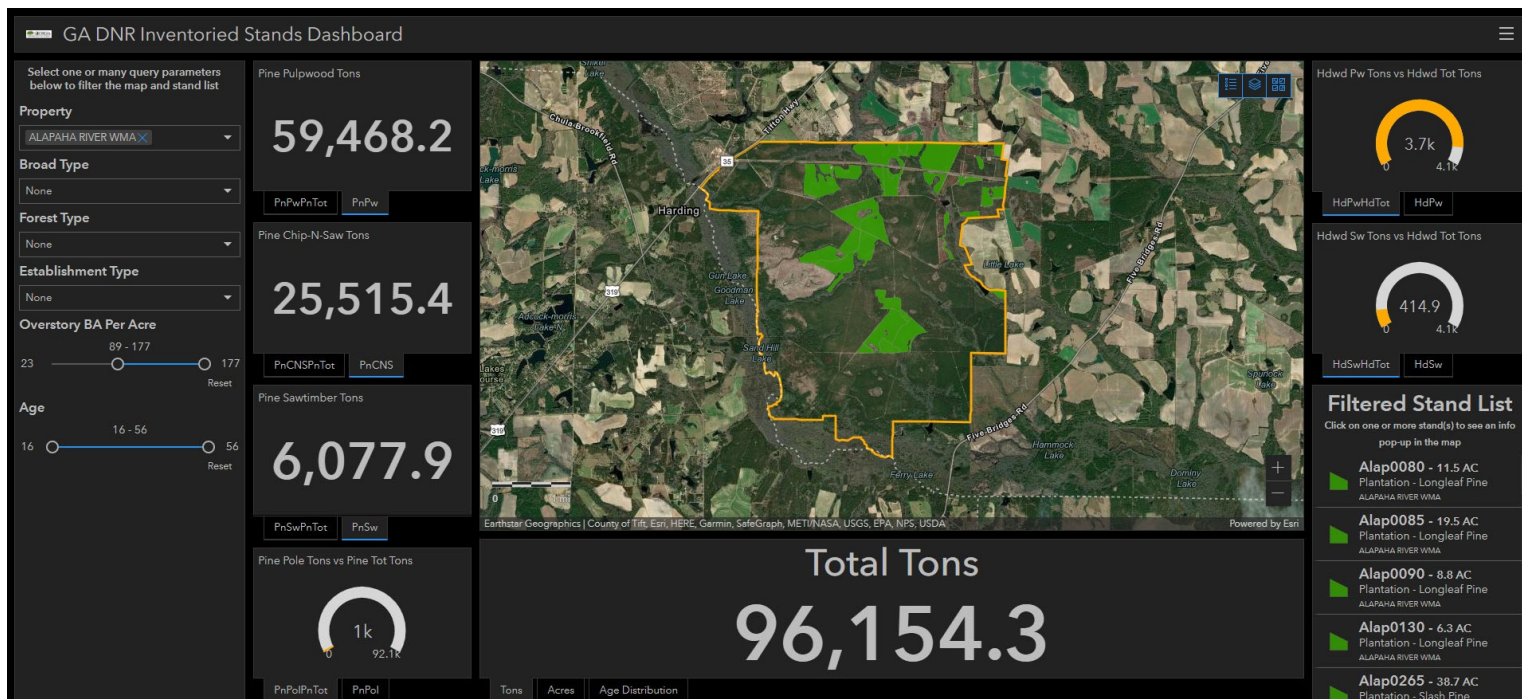
- Banding
- Cooler Checks
- Chronic Wasting Disease
- Fall Cover Counts
- Deer Chronology
- Fawn Recruitment
- Turkey Poult
- Mast Production



Hunting Regulations



Forest Management



Urban Wildlife



**2021 Fiscal Year
Biweekly Highlights**
March 1 to March 15

Biweekly Highlights:

Response

- Responded to 100 calls, 49% of these calls were in reference to injured or sick wildlife.
- Provided on site response to 37 calls and 4 call afterhours.
- Assisted Fisheries with confiscation of Beta Balls with zebra mussels found in them.
- Assisted Rockdale County Animal Control with capture of domestic Turkey (called in as a wild turkey).
- Assisted Region staff with Aerial bum.
- Captured and safely removed hook from goose.



Proactive

- Continued work with UGA Deer Lab on trials for new immobilization drug.
- Conducted Facebook Live session on "Bird Nesting Basics".
- Met with the Fulton County Animal Control, County Health Department and State Health Department on rabies response protocol and training.
- Met with DeKalb Animal Control for training on current and upcoming potential wildlife conflicts.
- Presented on Urban Wildlife Management at UGA Warnell First Year Odyssey Class.
- Media interview with WSB Channel 2 about a "friendly" doe in Braselton.



Total Calls = 2,960	Site Visits = 1,070	Outreach Events = 79
----------------------------	----------------------------	-----------------------------

Shooting Sports

- 48 Firearm/Archery Ranges
- NASP
- Hunter Education
- R3



Deer Management Assistance Program



GEORGIA
DEPARTMENT OF NATURAL RESOURCES
WILDLIFE RESOURCES DIVISION

**2021 Fiscal Year
Monthly Highlights
February 15 to March 15**

Monthly Highlights:

Technical Guidance

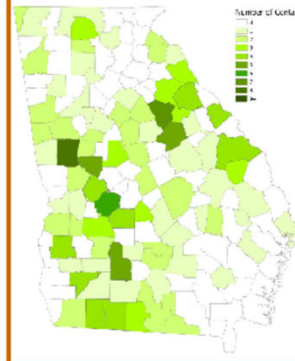
- Conducted 4 site visits with new DMAP cooperators to provide technical assistance about deer and turkey management
- Increased the number of DMAP cooperators to 77, for a total of 117,823 acres
- Provided technical guidance on 226,658 acres

Internal and External Engagement

- Continued collecting fetuses for the second year of the Southwest Georgia Deer Breeding Chronology Study
- Continued meeting with cooperators to gather deer jawbones and harvest data
- Attended the virtual Southeast Deer Study Group Meeting to learn about the latest in whitetail research



DMAP Customers by County



Left: View from a hunting blind while harvesting does for the breeding chronology study.

Below: Cooperators are beginning to conduct prescribed burns.



Fisheries Management

Manages and improves sportfish populations and freshwater habitats to meet angler needs while conserving fish populations for present and future generations.

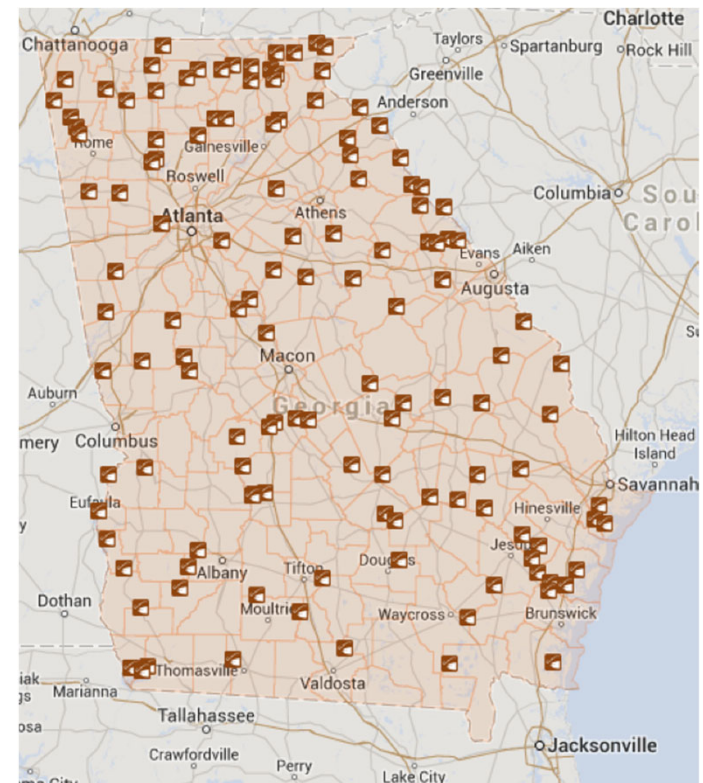


Fisheries Management

- 10 fish hatcheries for production and stocking
- Boating access and facility maintenance
- 10 Public Fishing Areas (PFAs) with more than 2,200 acres of water open for fishing
- Technical assistance
- Sportfish research, survey & monitoring
- Habitat enhancement
- Fishing regulations
- Aquatic education
- Aquatic nuisance species management
- 152 boat ramps maintained

Fishing Opportunities

- Public Fishing Areas
- Wildlife Management Areas
- State Parks



Funding for Hunters and Anglers

- Wildlife conservation predominantly is paid for by hunters and anglers through license sales and equipment purchases
- If you enjoy wildlife watching, thank hunters and anglers for conserving all wildlife through their support of sportfish and wildlife restoration funds
- Hunters and anglers have and continue to pay more toward conservation than all other conservation groups combined!



Wildlife Conservation

Protects and conserves nongame wildlife and threatened and endangered animals and plants and their habitats by conducting research and surveys, identifying critical habitats, cataloguing rare species, conducting education programs, implementing species recovery plans, and providing technical assistance.



Wildlife Conservation Funding

- Wildlife License Plates
- Weekend for Wildlife
- State Income Tax Checkoff
- State Funds
- Other Donations



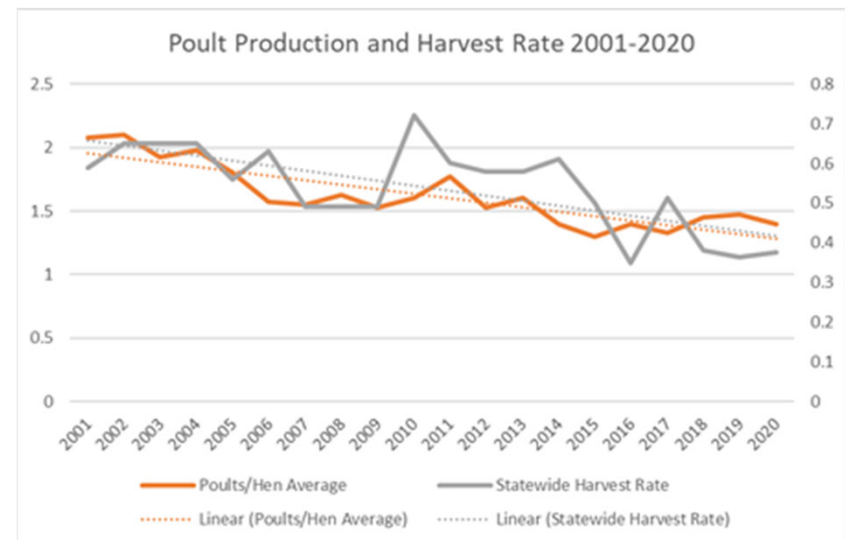
Want to Know More?

- www.georgiawildlife.com
- www.facebook.com/WildlifeResourcesDivisionGADNR
- www.instagram.com/GeorgiaWildlife
- www.twitter.com/GeorgiaWild
- Purchase a hunting/fishing license



Conserve, Enhance, and Promote

- Science-driven research,
- Management,
- Regulation, and
 - Science, Social, & Political Influence
- Education



Science Driven Research

Biological

- Deer Chronology Survey
- Fawn Recruitment Study
- Disease Surveys (CWD)
- Poult Surveys
- Bait Stations
- Camera Surveys
- Mast Surveys
- Reproduction Surveys

Social

- Dove Survey
- Turkey Survey
- Telephone Surveys

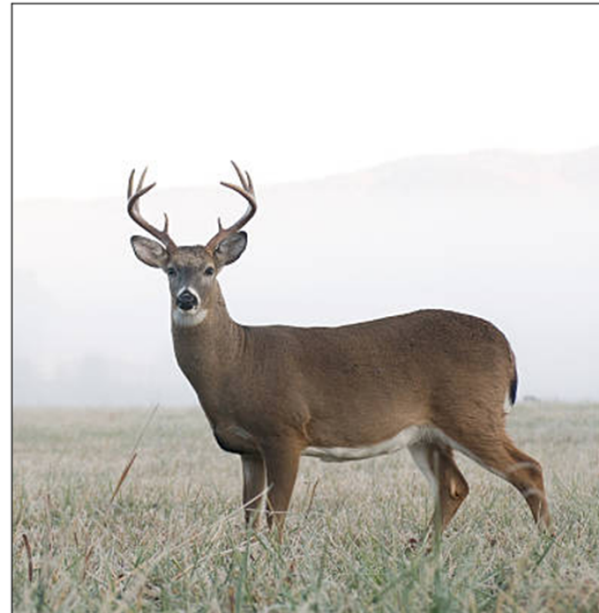
Timeline & Process

- January - Public Input
- February - Develop Proposals
- March - Board Briefing
- April - Public Comment
- May - Board Action
- June - Popular Guide Development
- July - Popular Guide Available



Regulatory Objectives

- Biologically Appropriate & Scientifically Sound
- Responsive to Public Desires within Biological Appropriateness
- Strive for Simplicity & Flexibility
- Minimize challenges for Recruitment, Retention & Reactivation (R^3)



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GEORGIA
DEPARTMENT OF NATURAL RESOURCES

WILDLIFE RESOURCES DIVISION

QUESTIONS



Public Comments

Please limit comments to 3 minutes total
Council encourages written submission of
comments as well



Next Steps

Brooke Anderson

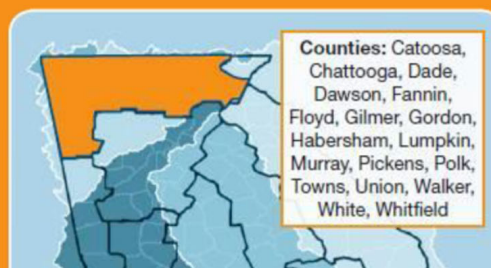
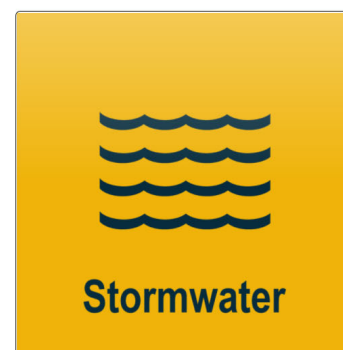
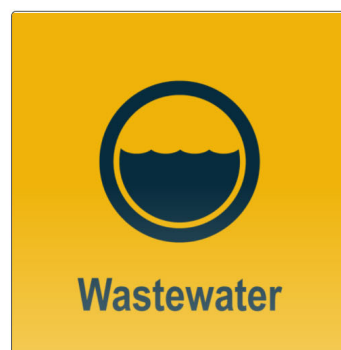
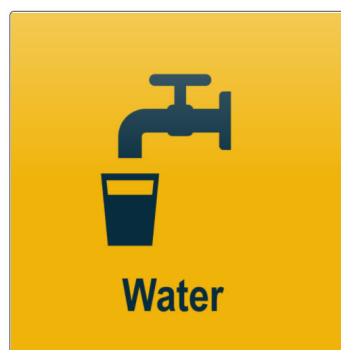
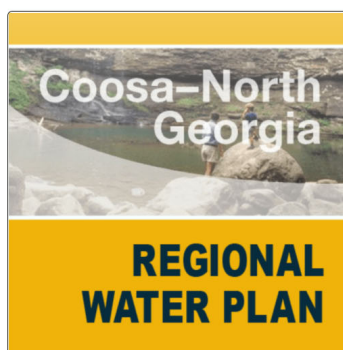


Next Steps

- Next Council Meeting
 - Date
 - Location
 - Topics
- Adjourn

Thank You!

Coosa-North Georgia



Upcoming Meetings

MARCH 24

Coosa-North Georgia Water
Planning Council Meeting: March
24, 2021

<https://waterplanning.georgia.gov/water-planning-regions/coosa-north-georgia-water-planning-region>

Thank You!

<https://waterplanning.georgia.gov/>

Christine.Voudy@dnr.ga.gov

Brian.Skeens@jacobs.com

Craig.Hensley@jacobs.com

