



Georgia's Statewide Water Plan

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Georgia Environmental
Protection Division

December 15, 2011





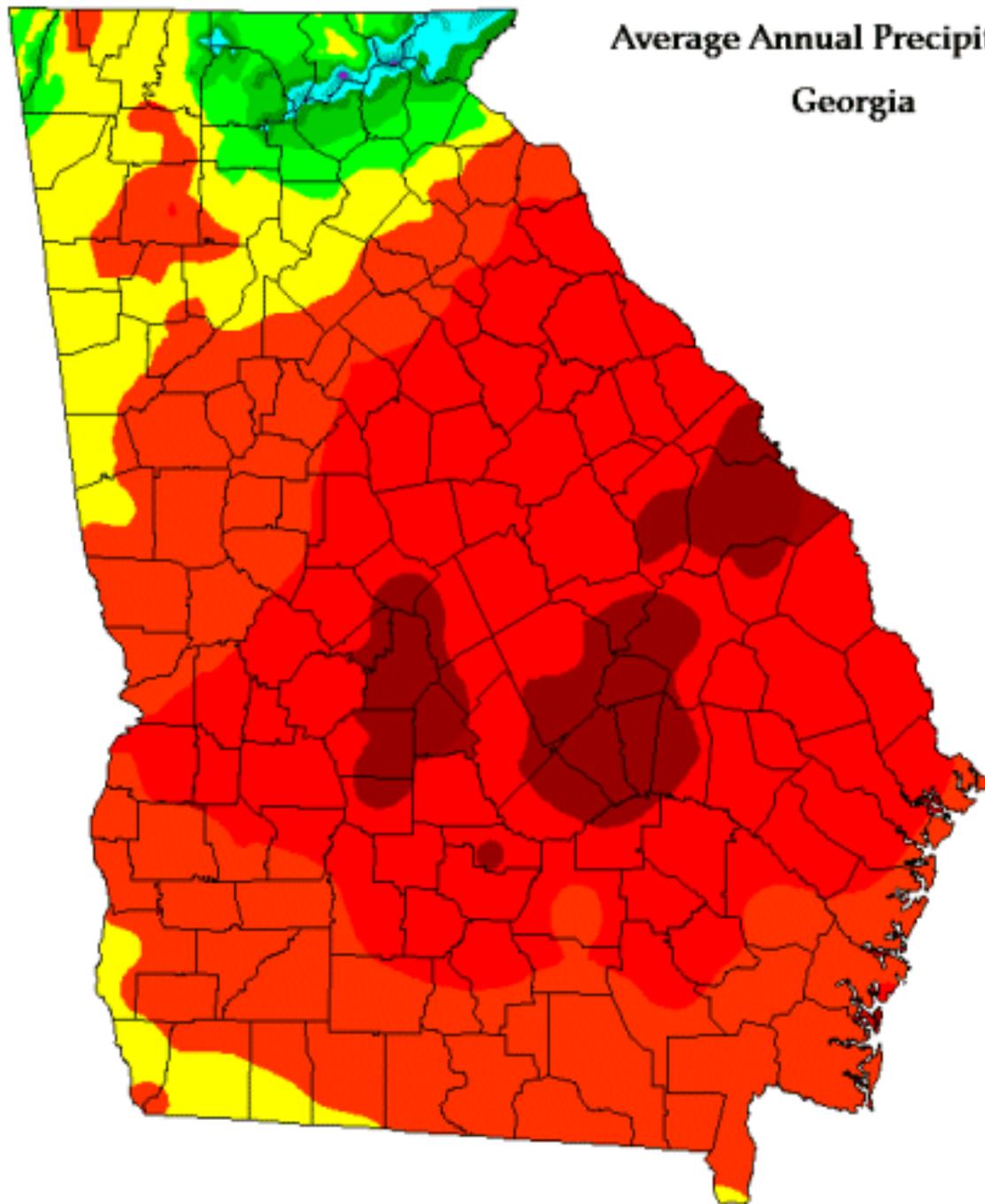
Today's Presentation

- Tour of Water in Georgia
- Statewide Water Plan
- Regional Water Plans
- Lessons Learned

Tour of Water in Georgia

Average Annual Precipitation

Georgia



Legend (in inches)

Under 46	66 to 70
46 to 50	70 to 74
50 to 54	74 to 78
54 to 58	78 to 82
58 to 62	82 to 86
62 to 66	Above 86

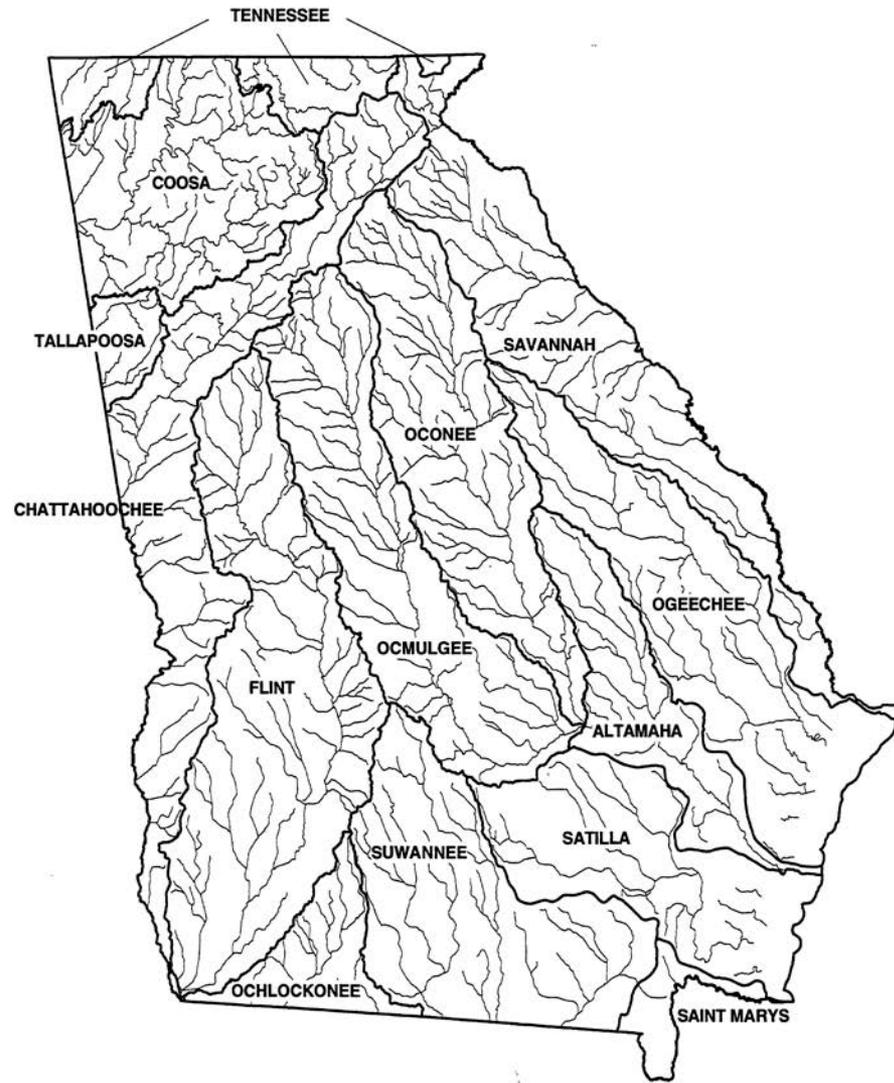
Period: 1961-1990

This map is a plot of 1961-1990 annual average precipitation contours from NOAA Cooperative stations and (where appropriate) NRCS SNOTEL stations. Christopher Daly used the PRISM model to generate the gridded estimates from which this map was derived; the modeled grid was approximately 4x4 km latitude/longitude, and was resampled to 2x2 km using a Gaussian filter. Mapping was performed by Jenny Weisburg. Funding was provided by NRCS Water and Climate Center.

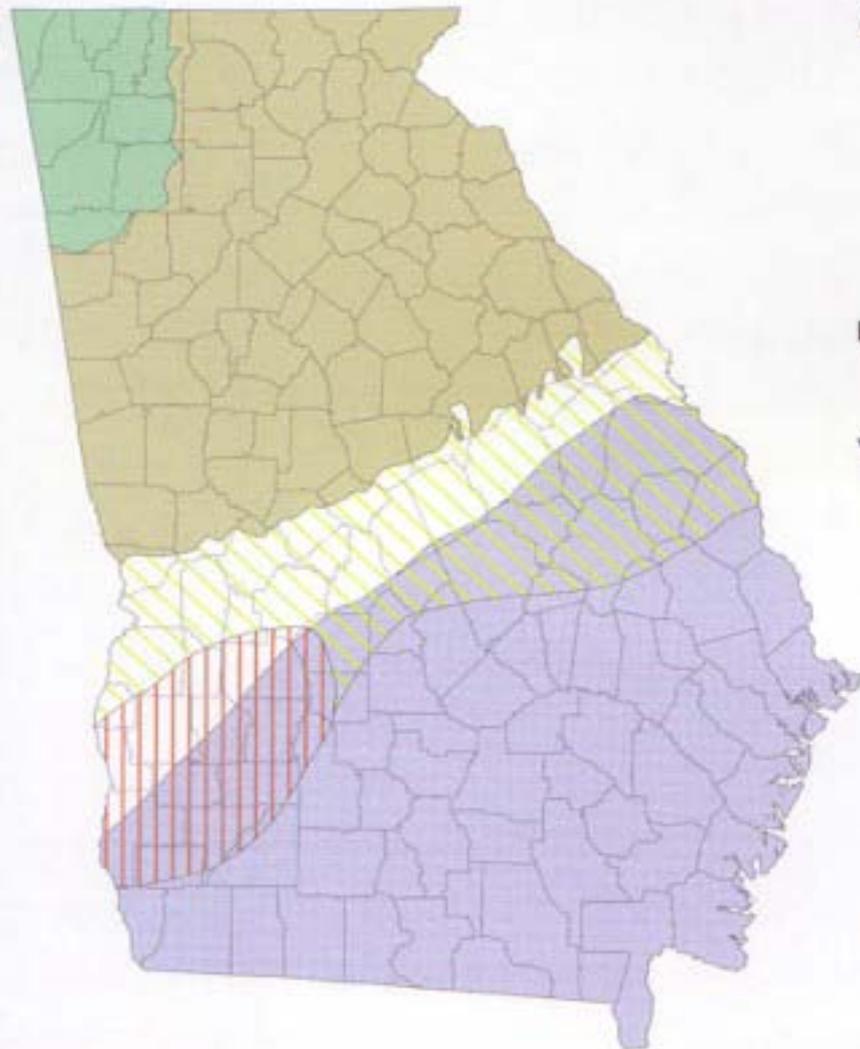
12/7/97

Major River Basins

FIGURE 2-1
MAJOR RIVER BASINS IN GEORGIA



Aquifers of Georgia



Coastal Plain Aquifers

-  Surficial
-  Floridan Aquifer System
-  Claiborne, Clayton, and Providence
-  Cretaceous

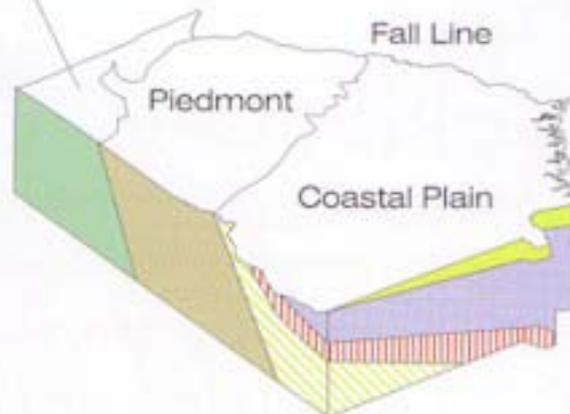
Piedmont and Blue Ridge Aquifers

-  Crystalline-Rock Aquifers

Valley and Ridge Aquifers

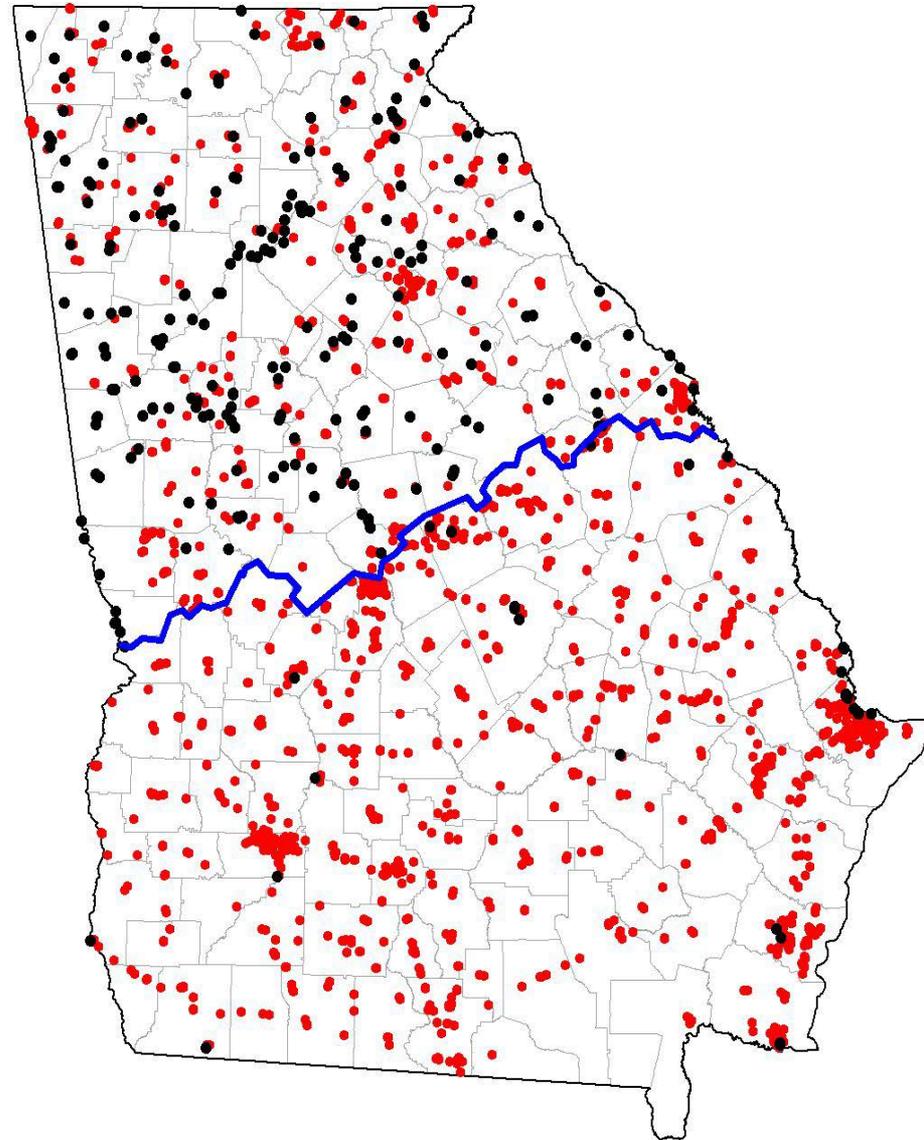
-  Paleozoic Rock Aquifers

Highlands

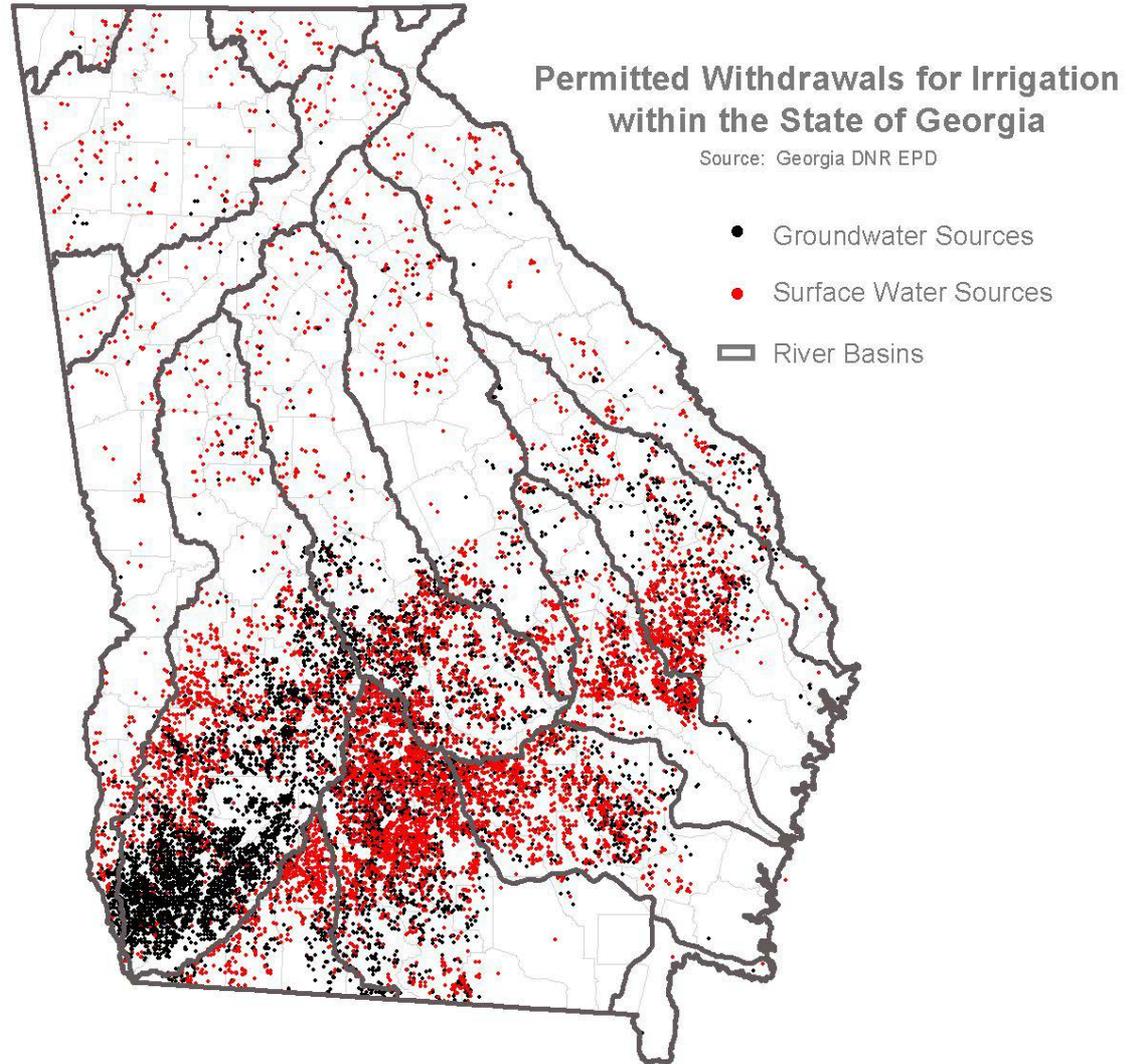


Water Users: M&I

- Municipal & Industrial Surface Water Withdrawals
- Municipal & Industrial Groundwater Withdrawals



Water Users: Agriculture

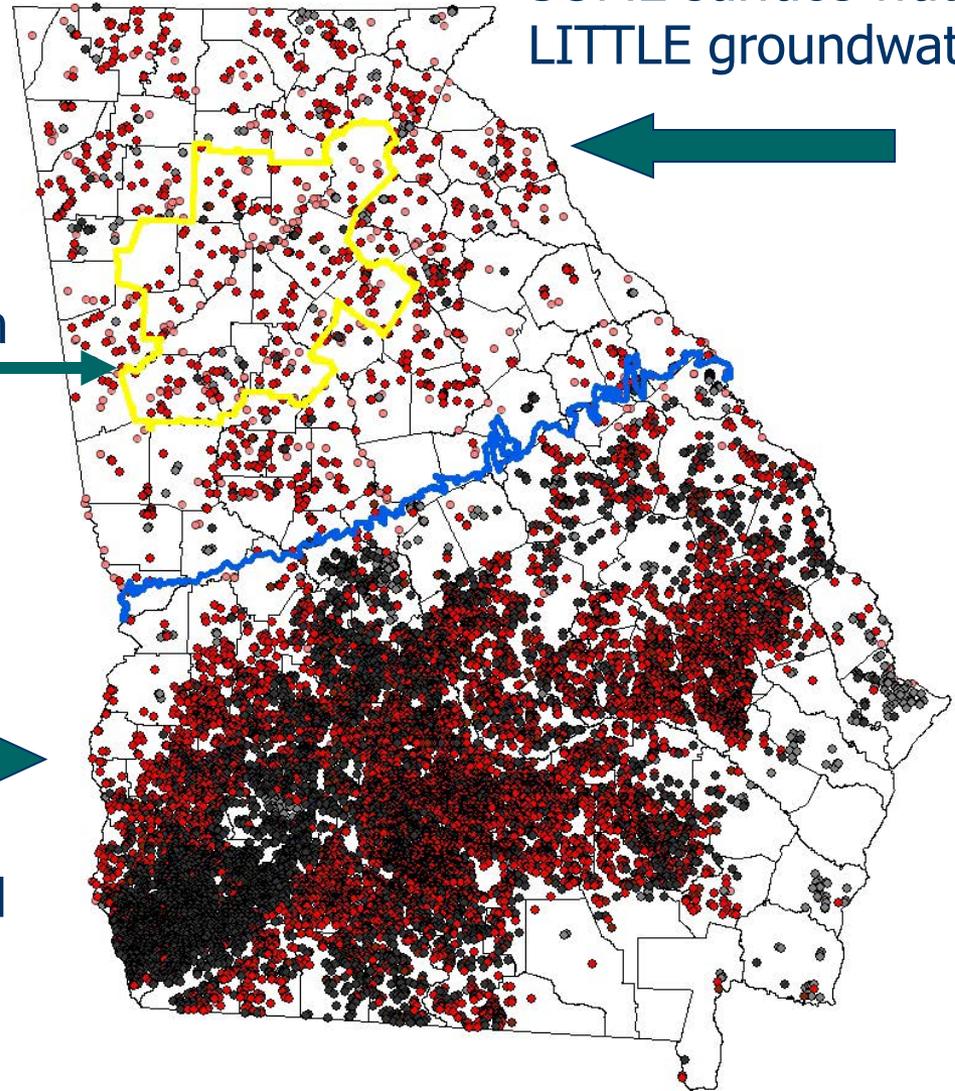


Water Availability and Water Users

≈6.2 M people
≈0.06 M acres irrigated
SOME surface water
LITTLE groundwater

Metropolitan
Atlanta

≈1.9 M people
≈1.9 M acres irrigated
MORE surface water
MUCH groundwater





Statewide Water Plan





Backdrop & Drivers

- Dramatic expansion in population and economy
 - 4.6 million in 1970
 - 2nd fastest ‘total employment’ growth among states in southeast between ’80 & ’93
 - 6.3 million in 1990
 - ~ 100,000 new jobs per year in 90’s
 - 9.4 million in 2006
- Droughts (’81, ’86 – ’88, ’98 – ’02, ’06 – ’08)
- Interstate water disputes
- Growing stresses on water supplies and water quality

2004 Comprehensive Statewide Water Management Planning Act

GA Environmental Protection Division

Draft plan by July 1, 2007

Water Council

Proposed plan by Jan. 14, 2008

GA General Assembly

Final plan by end of 2008 session

Implementation by state agencies

Beginning in FY2009

State Water Plan

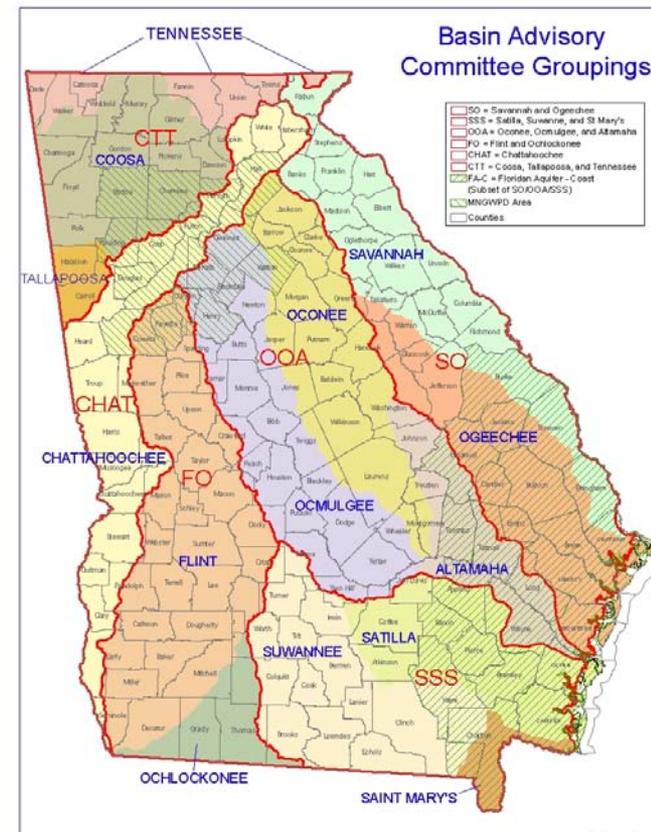


- July, '04 – Dec., '05
 - Design the planning process
 - Identify & secure planning funds
 - Create advisory groups
- Jan., '06 – June, '07
 - Execute planning process

*Art by: Brittany Thomas
Georgia Winner
2005 River of Words*

Executing the Planning Process

- Technical Advisory Committees:
45 members, 10 meetings
- Basin Advisory Committees:
187 members, 42 meetings
- Statewide Advisory Committee:
32 members, 8 meetings
- Town Hall Meetings:
22 total, attendance over 2700





But Then...



U.S. Drought Monitor

Georgia

March 13, 2007

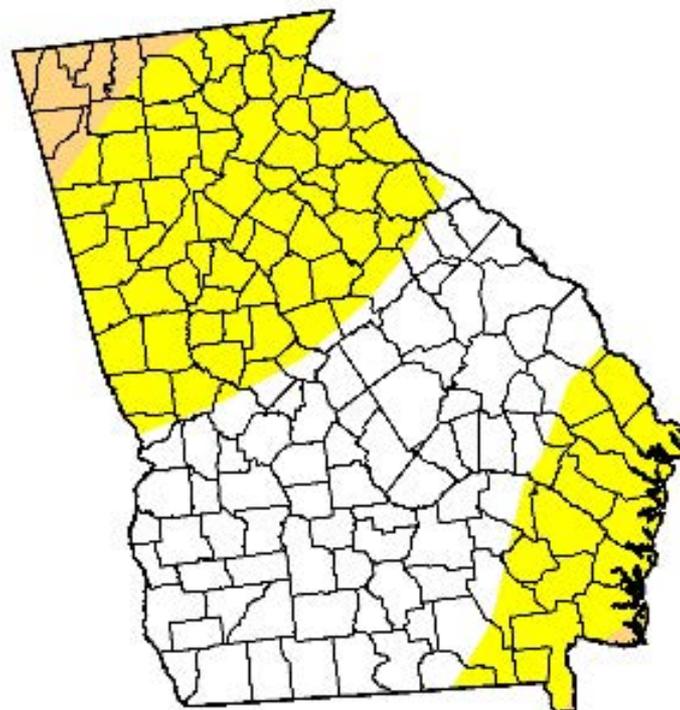
Valid 7 a.m. EST

Drought Conditions (Percent Area)

	None	D0-D4	D1-D4	D2-D4	D3-D4	D4
Current	48.8	51.2	4.1	0.0	0.0	0.0
Last Week (03/06/2007 map)	66.5	33.5	1.5	0.0	0.0	0.0
3 Months Ago (12/19/2006 map)	12.2	87.8	7.7	0.1	0.0	0.0
Start of Calendar Year (01/02/2007 map)	12.2	87.8	3.7	0.1	0.0	0.0
Start of Water Year (10/03/2006 map)	0.0	100.0	75.5	0.0	0.0	0.0
One Year Ago (03/14/2006 map)	94.0	6.0	0.0	0.0	0.0	0.0

Intensity:

- D0 Abnormally Dry
- D1 Drought - Moderate
- D2 Drought - Severe
- D3 Drought - Extreme
- D4 Drought - Exceptional



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements

<http://drought.unl.edu/dm>

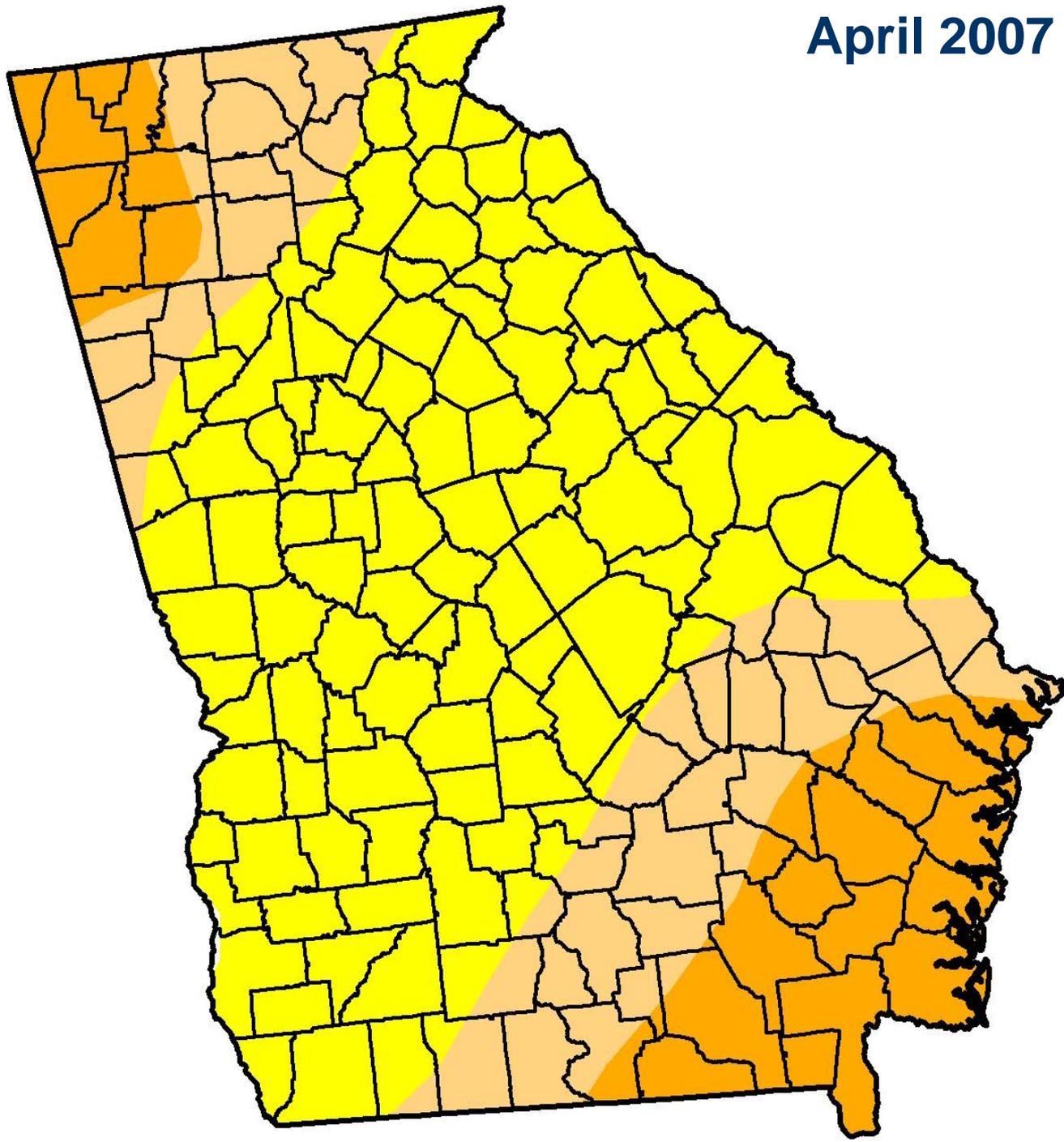


Released Thursday, March 15, 2007

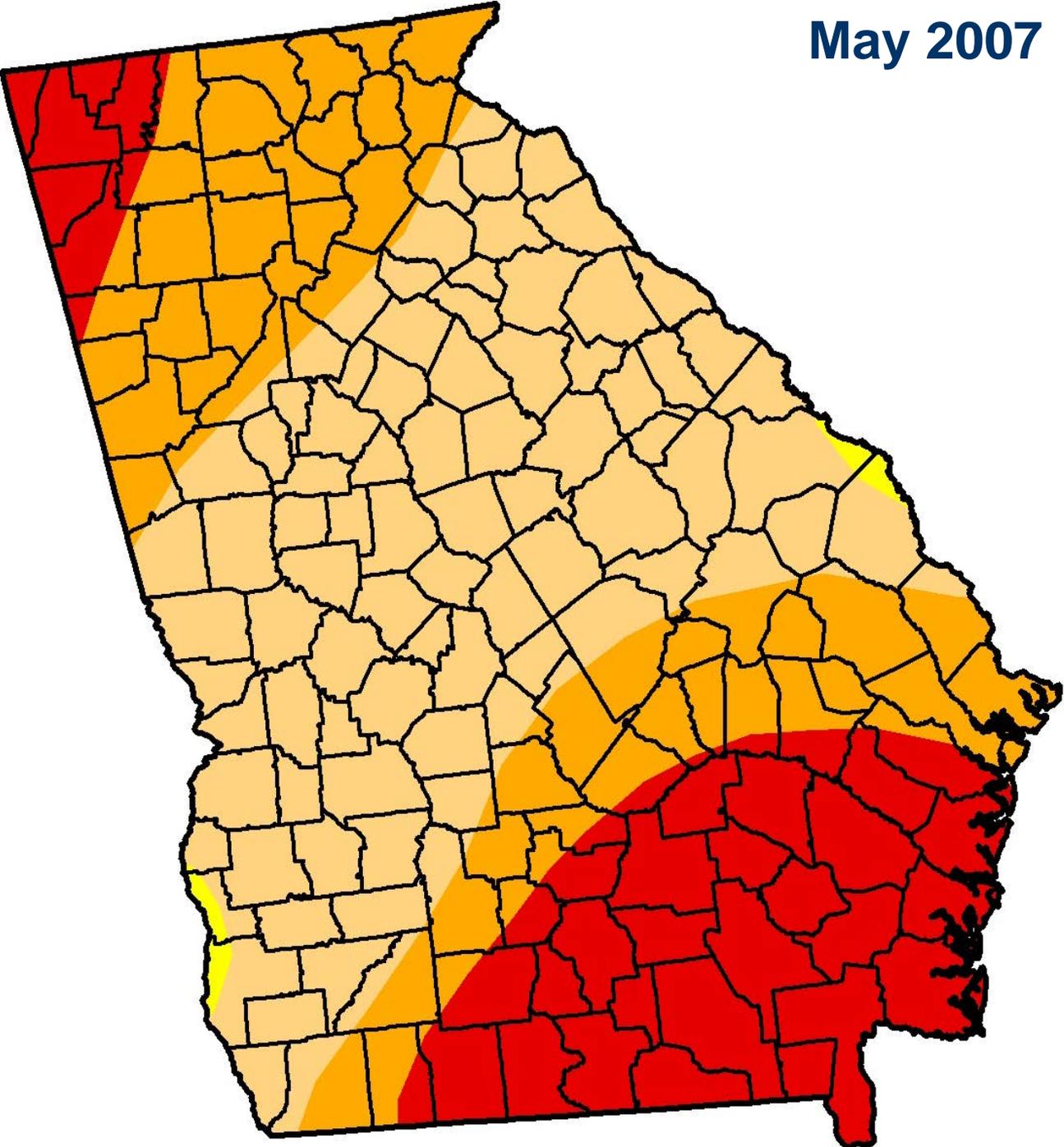
Author: Richard Heim, NOAA/NESDIS/NCDC



April 2007

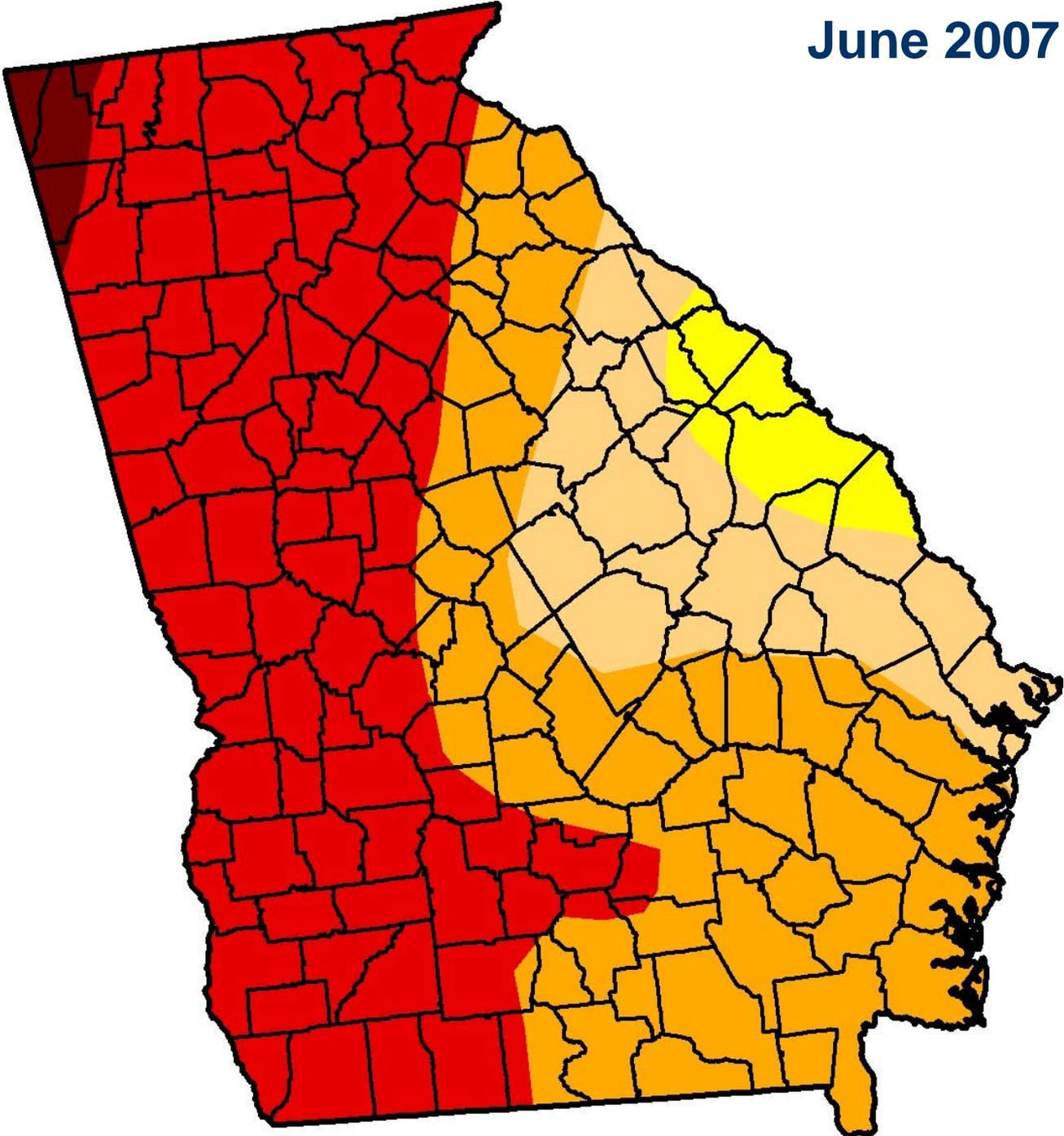


May 2007



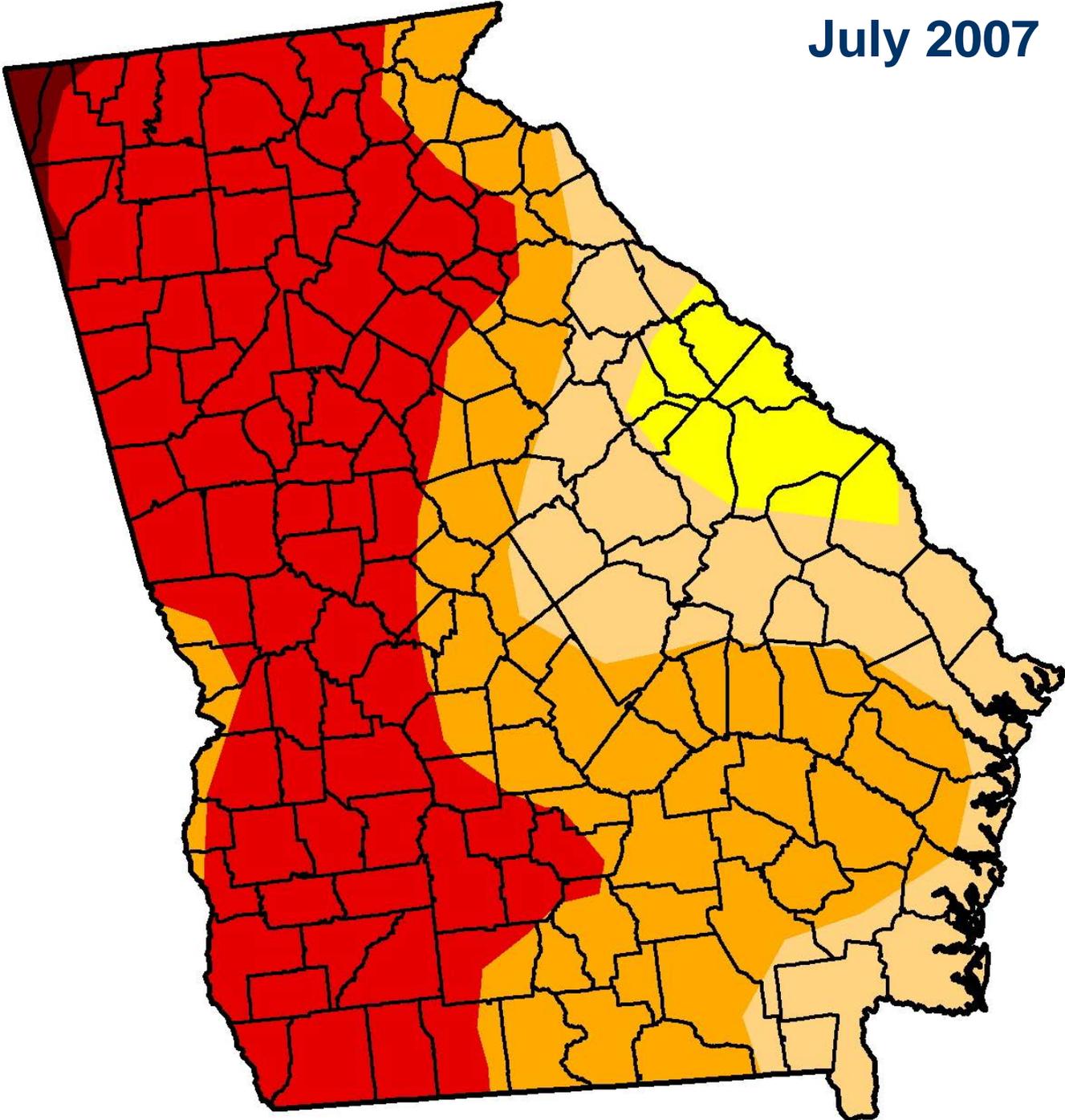


June 2007



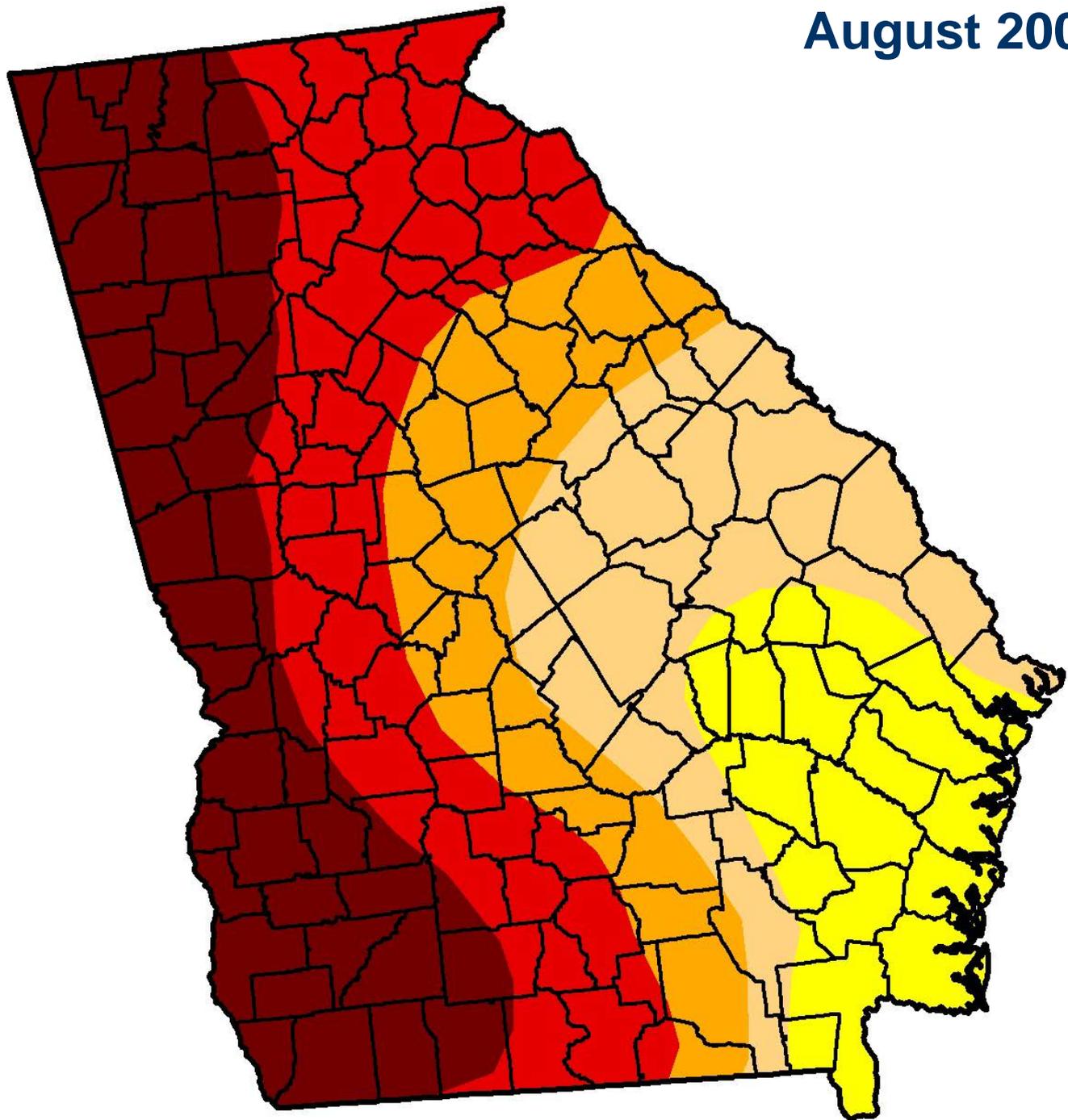


July 2007

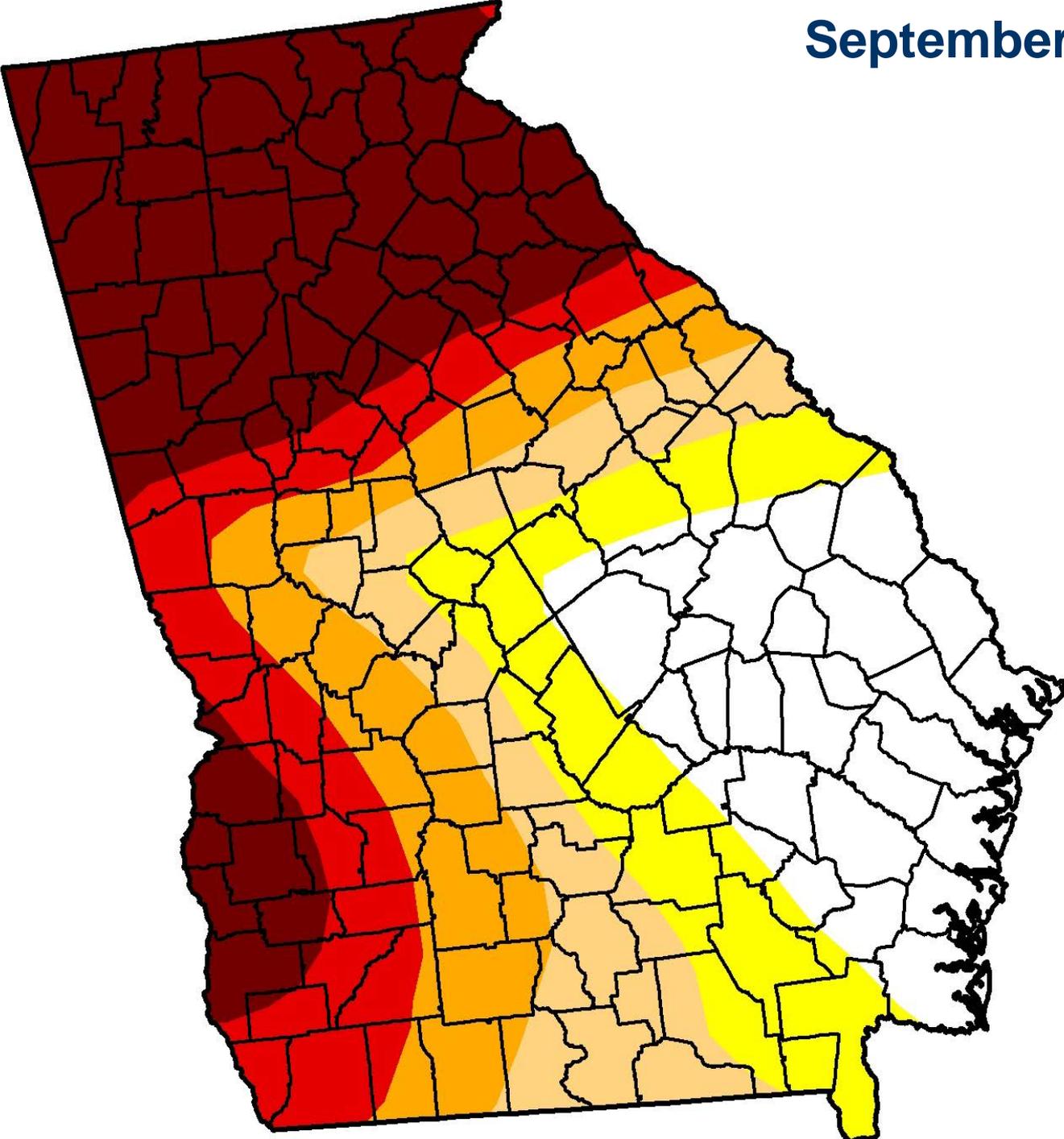




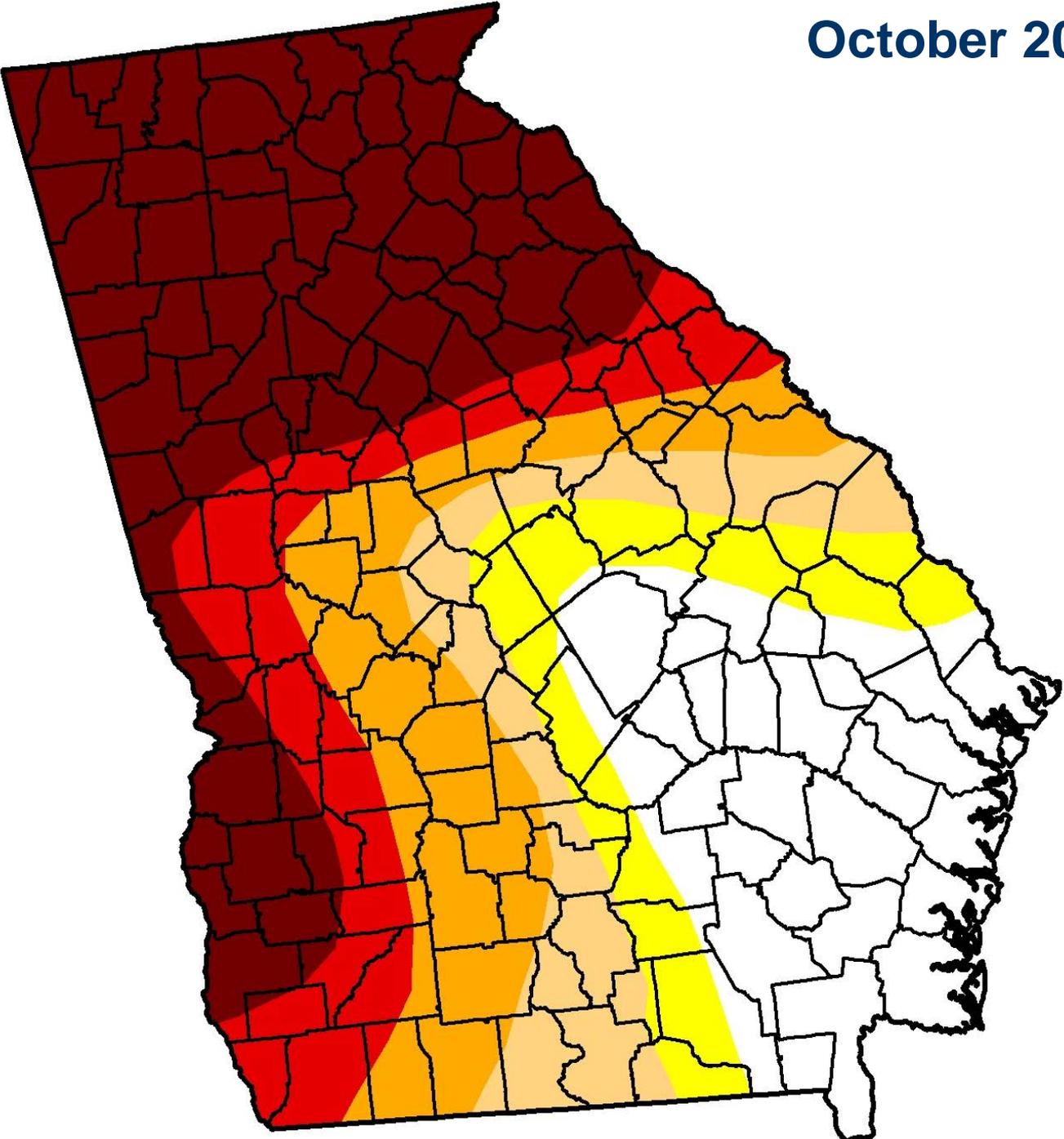
August 2007



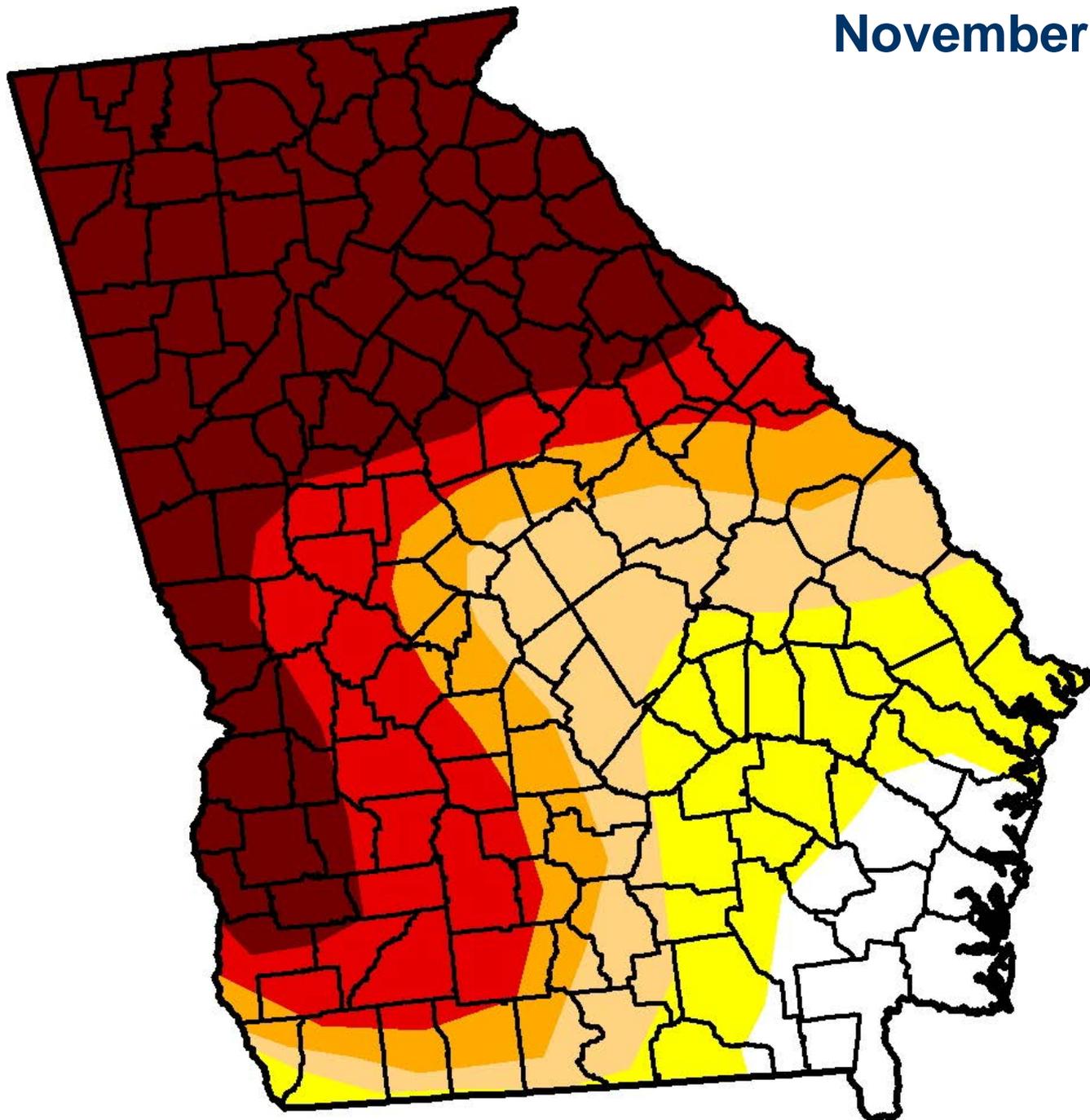
September 2007



October 2007

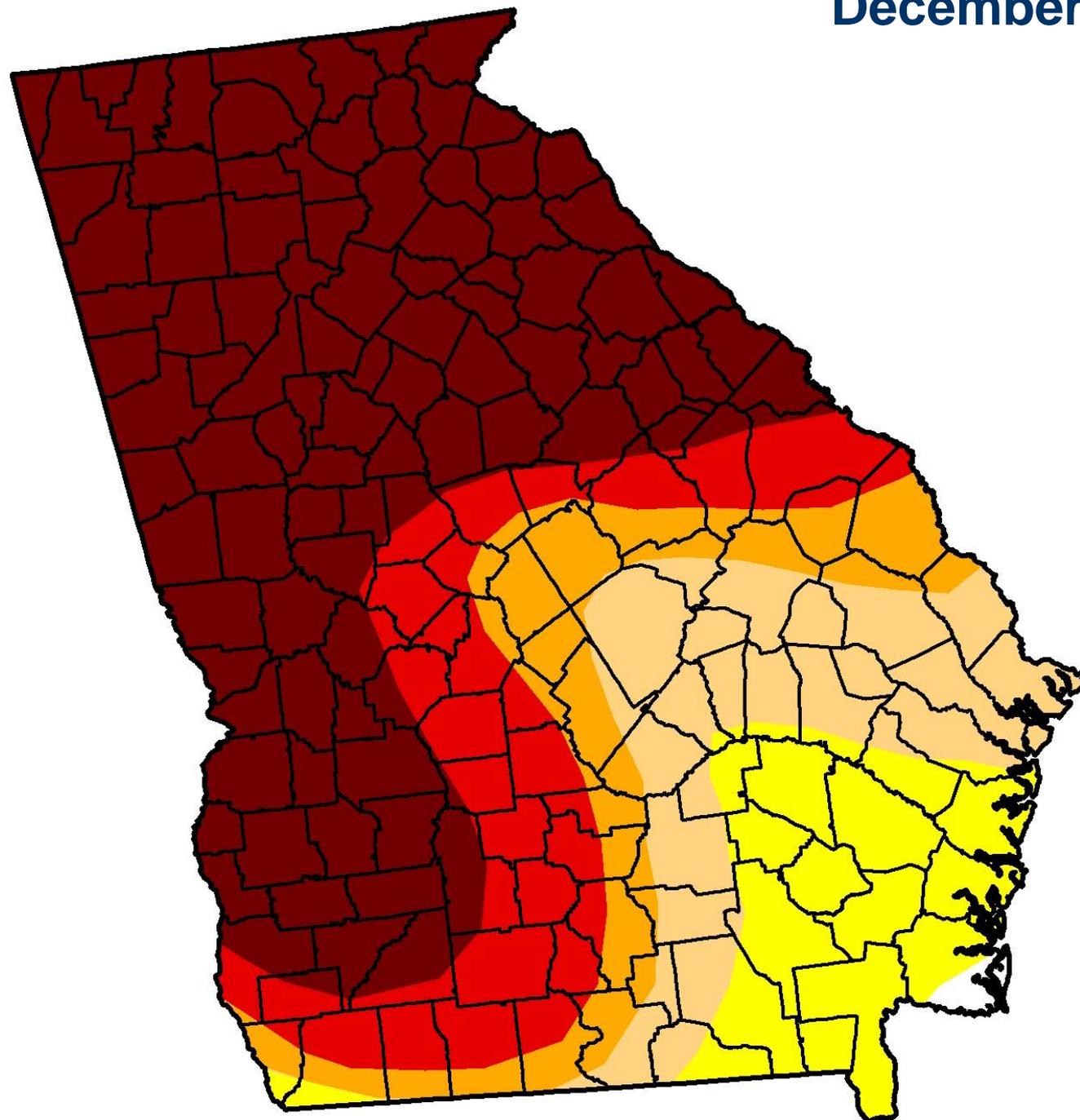


November 2007





December 2007

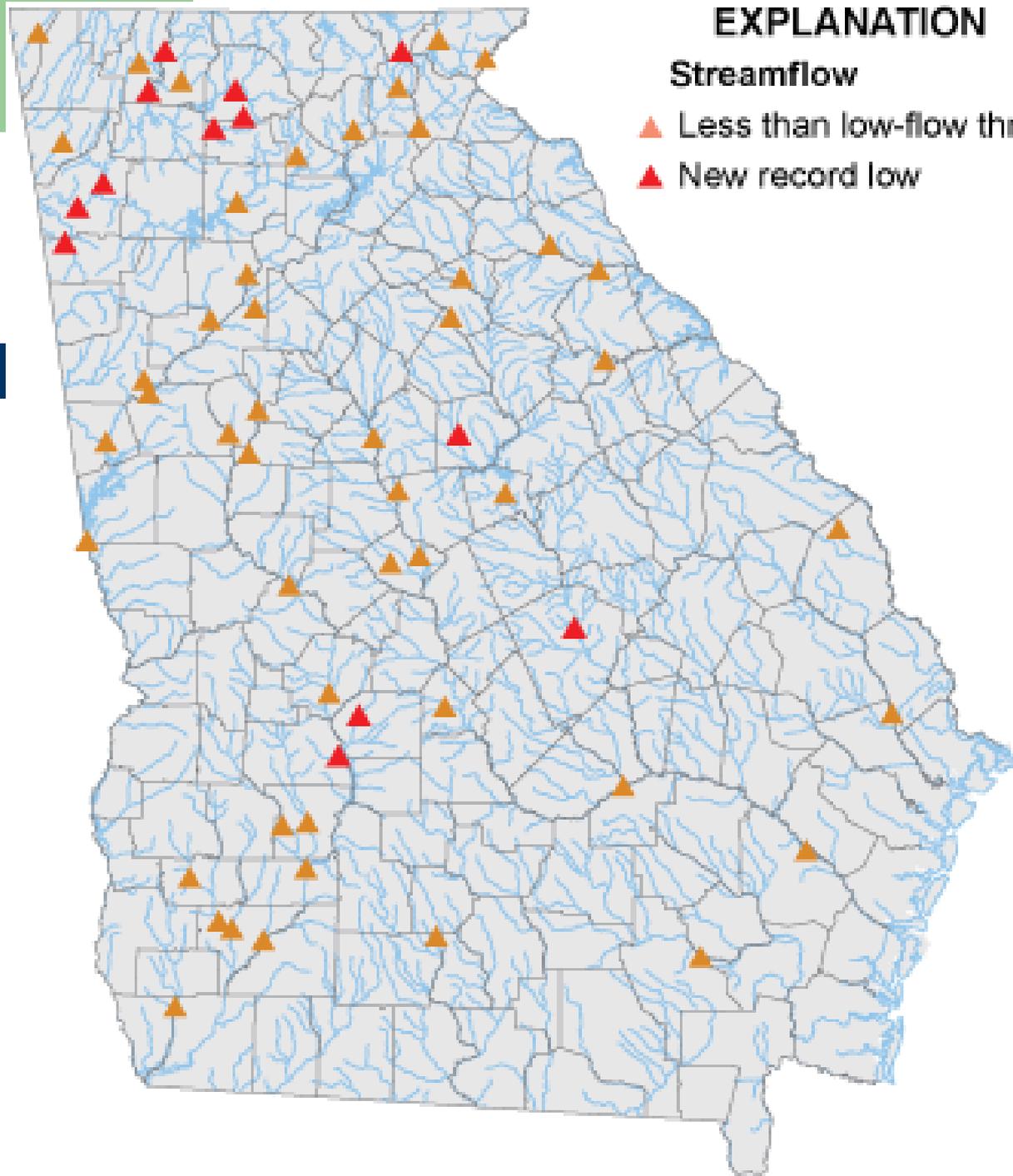




EXPLANATION

Streamflow

- ▲ Less than low-flow threshold
- ▲ New record low





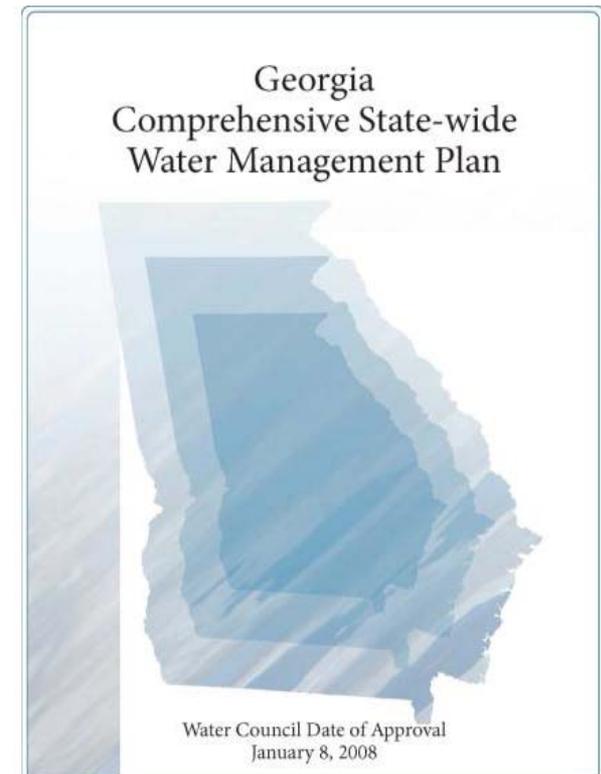
Drought Impacts:

Statewide but most significant in areas
reliant on surface water



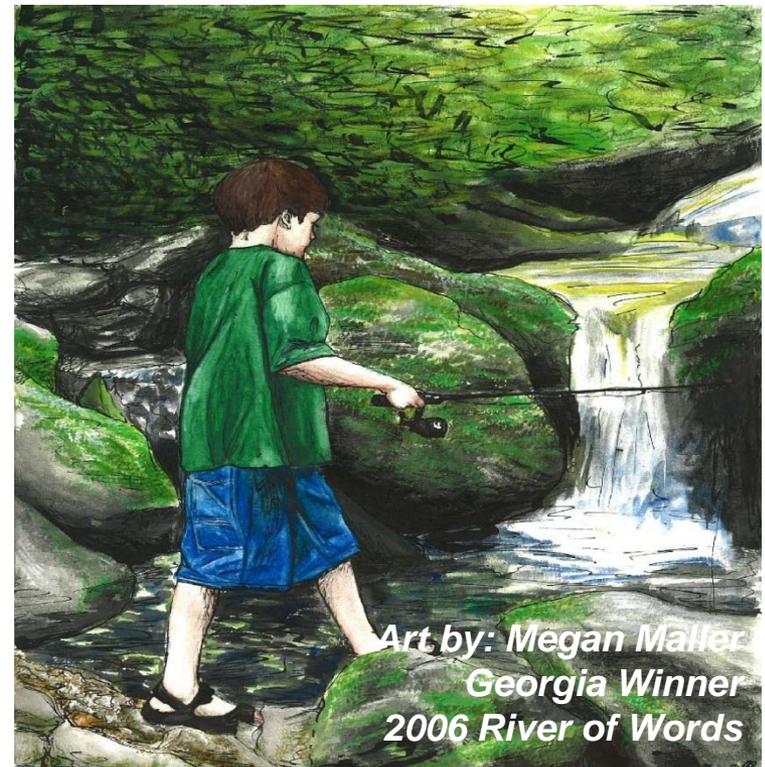
Developing the Plan

- July '07 – December '07
 - Public Input to Water Council
 - 18 public meetings/hearings
 - Interactive website
 - Water Council deliberations
 - Three revised drafts
- January '08
 - Water Council approval and submission of Plan to Legislature
 - Approved by General Assembly



Major Aspects of Plan

- Water Policies
 - Integrated Water Policy
 - Water Quantity Policy
 - Water Quality Policy
- Resource Assessments
- Management Practices
 - Water Quantity
 - Water Quality
- Regional Planning
 - Development of Regional Water Plans





Developing Regional Water Plans





Regional Water
Plans

GA Comprehensive State-
wide Water Mgt Plan 2008

Coastal and Flint River
Permitting Plans 1997-2006

Georgia Comprehensive State-wide Water
Management Planning Act 2004

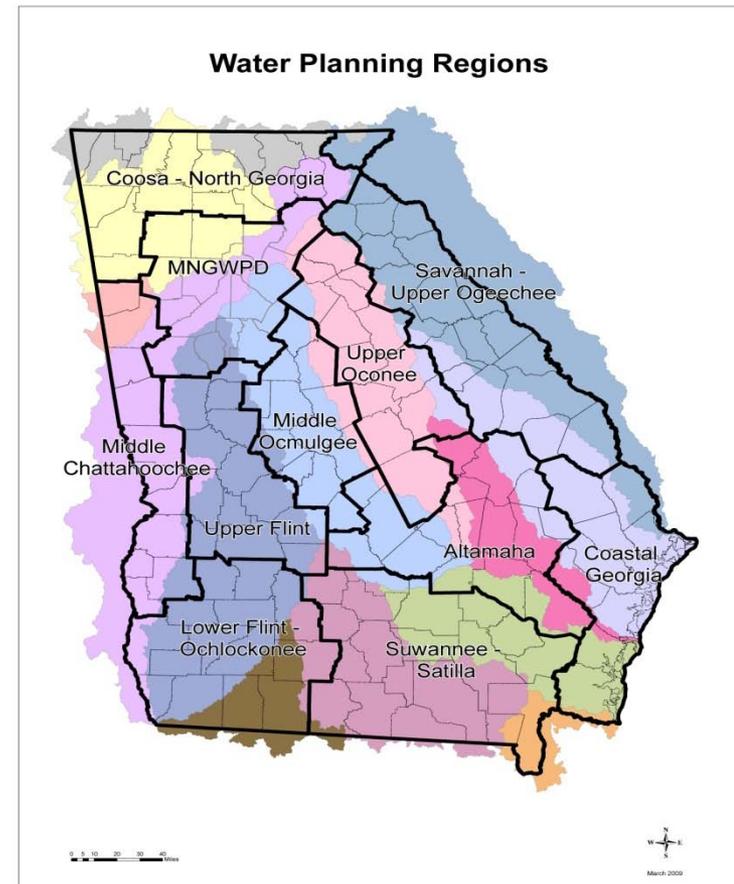
EPD Implements Basin-of-Focus Permitting
2003

Metropolitan N. GA Water Planning District Act 2001

14 River Basin Management Plans developed 1997-2005

Georgia River Basin Management Planning Act 1992

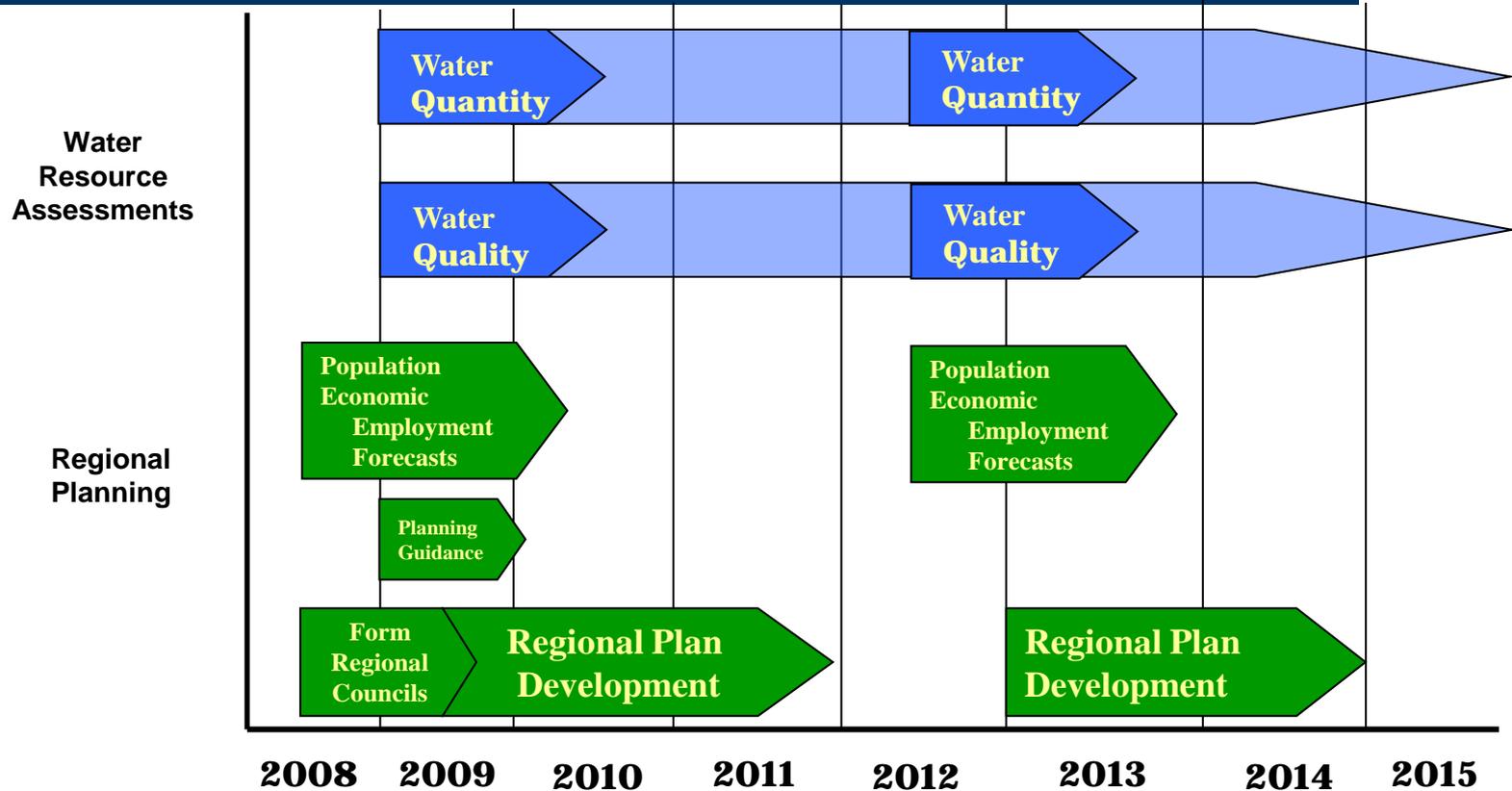
Water Planning Regions



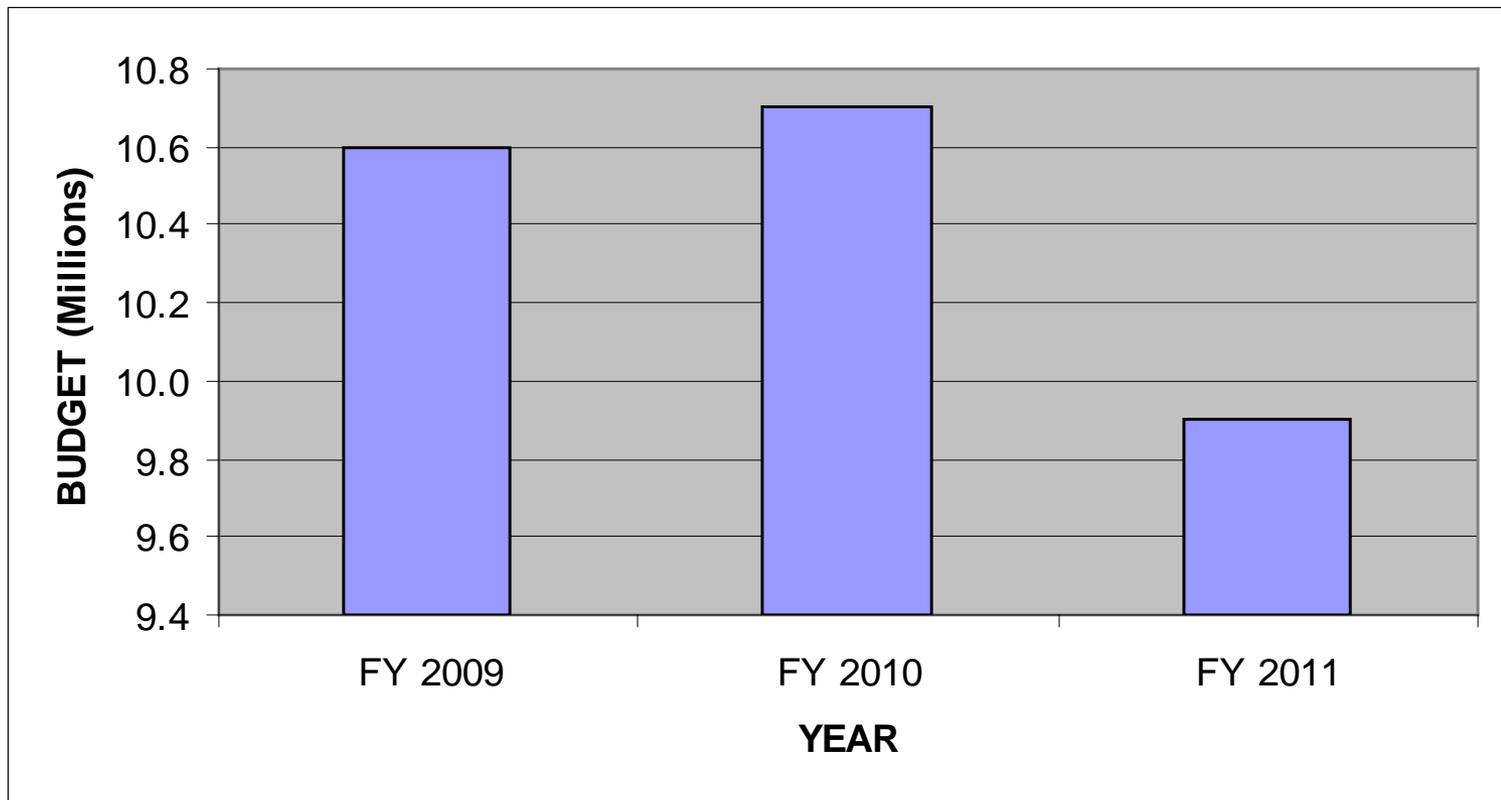
Regional Water Councils

- 25 Members, 3 Alternates, 2 Ex-Officio
- Appointed by the Governor, Lt. Governor, and Speaker of the House
- Represent a broad range of interests:
 - Agriculture
 - Industry
 - Local Governments
- Serve for 3 years

Phased Plan Implementation



State Water Plan Budget



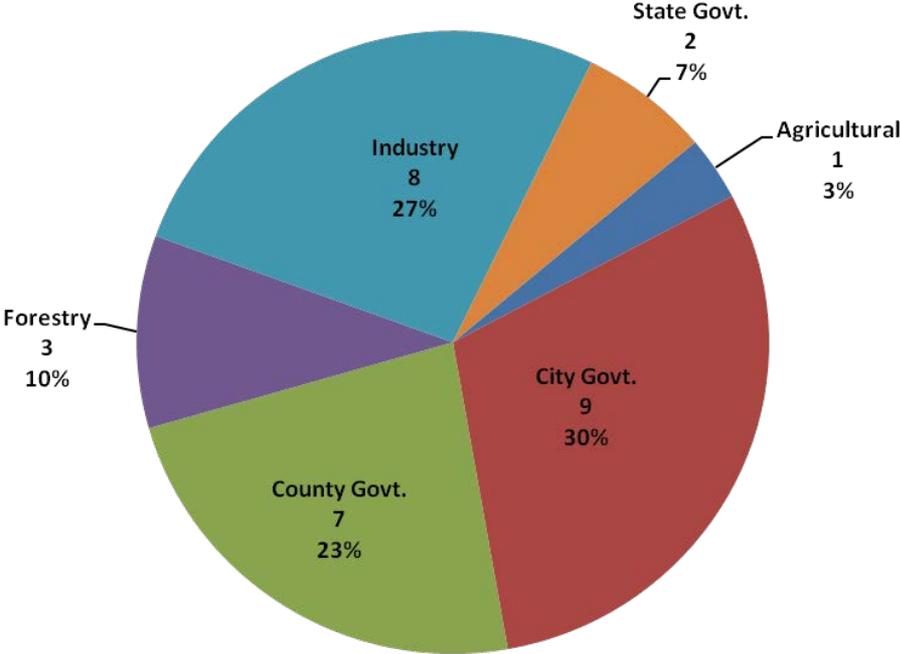
A Specific Example Coastal Regional Water Plan

Coastal Council Boundaries and Members



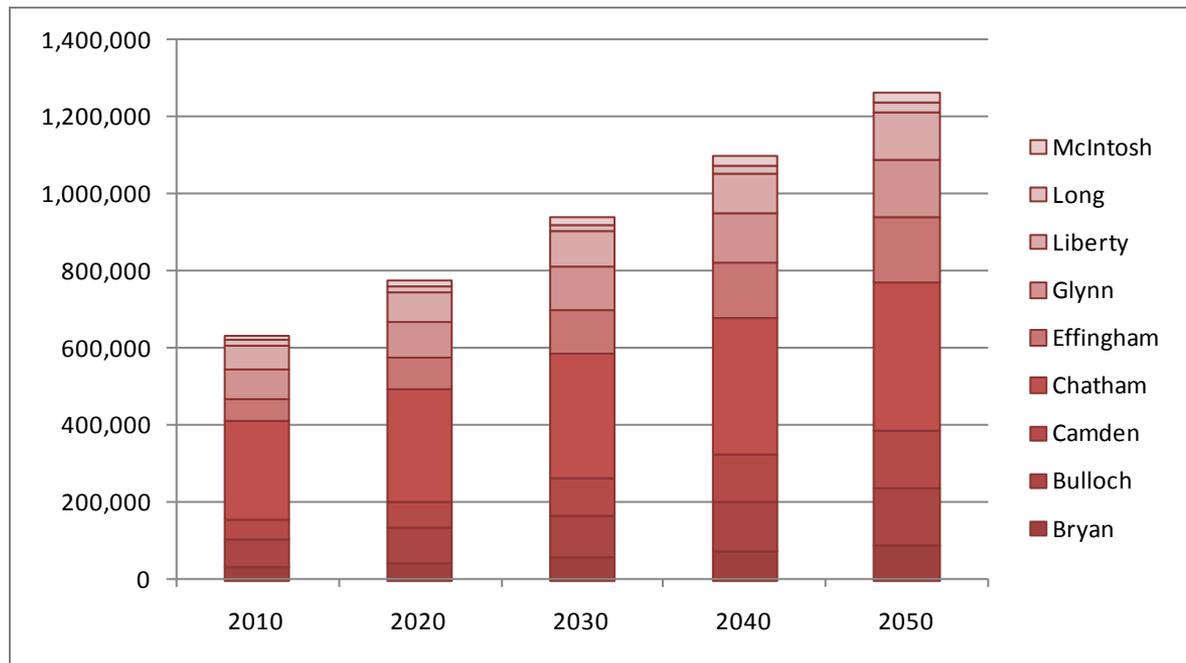
Name	City	County
Dennis Baxter	Bloomington	Chatham
Fred G. Blitch	Statesboro	Bulloch
Chris Blocker	Port Wentworth	Chatham
Kay W. Cantrell	St. Simons	Glynn
Frank E. Feild	Darien	McIntosh
Rick Gardner	Pembroke	Bryan
John F. Godbee	Brooklet	Bulloch
William K. Guthrie (Alternate)	Savannah	Chatham
Duane Harris (Alternate)	St. Simons	Glynn
Billy Hatcher	Statesboro	Bulloch
Don Hogan	Brunswick	Glynn
Michelle L. Liotta	Rincon	Effingham
Reginald S. Loper	Springfield	Effingham
John D. McIver	Riceboro	Liberty
Michael J. Melton	Richmond Hill	Bryan
Randal Morris	Brunswick	Glynn
Phil Odom (Alternate)	Hinesville	Liberty
Keith F. Post	St. Marys	Camden
Thomas Ratcliffe (Vice Chair)	Hinesville	Liberty
George T. Sammons	St. Simons	Glynn
Mark V. Smith	Savannah	Chatham
Larry M. Stuber	Savannah	Chatham
James Thomas	Hinesville	Liberty
Benjamin Thompson (Chair)	Statesboro	Bulloch
Bryan Thompson	Brunswick	Glynn
Horace Waller	Bloomington	Chatham
Marky Waters	Ludowici	Long
Roger A. Weaver	St. Marys	Camden
Rep. Cecily Hill (Ex-Officio)	-	-
Sen. Eric Johnson (Ex-Officio)	-	-

Coastal Council Representation



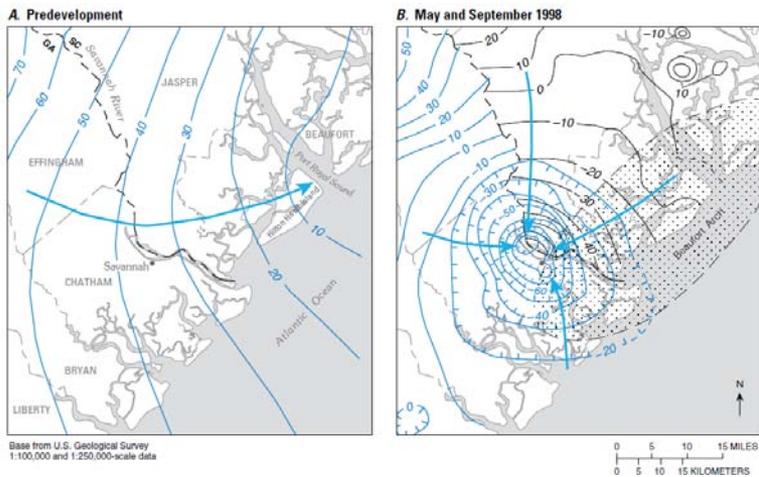
Coastal Population Increase

Population projected to double from 2010 through 2050, growing from approximately 630,000 to 1.3 million residents.



Coastal Council-Specific Challenges

Saltwater Intrusion



Savannah River Harbor TMDL





Resource Assessments-Major Findings

- **Groundwater:** Overall, groundwater supply is greater than demands. However, groundwater withdrawals in some areas can lead to saltwater intrusion.
- **Surface Water Quantity:** There are sufficient surface water supplies at some locations, but there are surface water shortfalls within the Altamaha and Ogeechee River Basin.
- **Surface Water Quality:** There are four reaches within the Ogeechee River Basin one reach within the Altamaha River Basin that may exceed dissolved oxygen assimilative capacity.

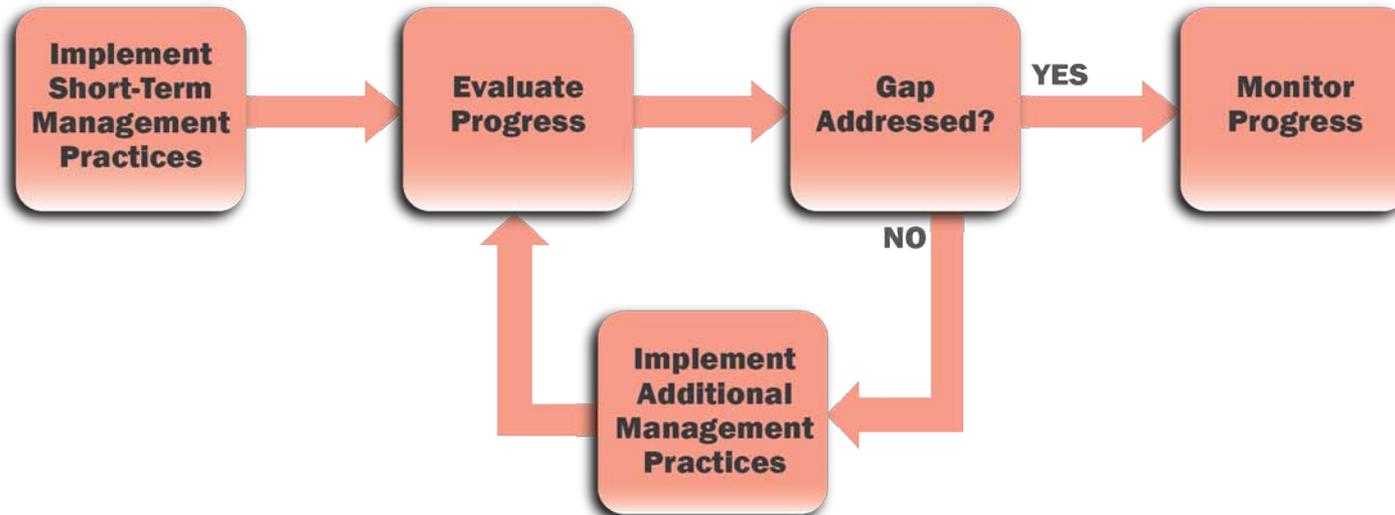
Management Practices

- Recommendations include:
 - Water conservation
 - Alternate sources of supply in areas where groundwater (Red and Yellow Zones) or surface water availability may be limited
 - Maximizing use of existing aquifer
 - Consideration of engineered solutions to address saltwater intrusion
 - Consideration of aquifer storage and recovery (ASR)
 - Improving/upgrading wastewater treatment
 - Addressing non-point sources of pollution
 - Refining planning information

6. Addressing Water Needs and Regional Goals REGIONAL WATER PLAN

Management Practice Number	Issue(s) to be Addressed by Action(s)	Description/Definition of Action	Relationship of Action or Issue to Vision and Goals (Section 1.4)	
Action Needed - Water Conservation (WC) Continued - Address current and future gaps and needs by efficient water use - Agricultural Tier 3 Conservation Practices¹				
WC-3 Audits	- Help meet current and future agricultural ground and surface water supply gaps/needs throughout the region - Help meet current and forecasted agricultural groundwater use in the Red and Yellow Zones - Help address surface water gap on Ogeechee River at Kings Ferry and Eden and Canoochee River at Claxton	Conduct irrigation audits	1,2,4	
WC-4 Metering		Meter irrigation systems	1,2,4	
WC-5 Inspections		Inspect pipes and plumbing to control water loss	1,2,4	
WC-6 Minimize High-Pressure Systems		Minimize or eliminate the use of high-pressure spray guns on fixed and traveler systems where feasible	1,2,4	
WC-7 Efficient Planting Methods		Utilize cropping and crop rotation methods that promote efficiency	1,2,4,5	
WC-8 Conservation Tillage		Practice conservation tillage	1,2,4	
Action Needed - Water Conservation (WC) Continued - Address current and future gaps and needs by efficient water use - Agricultural Tier 4 Conservation Practices¹				
WC-9 Control Loss		- Help meet current and future agricultural ground and surface water supply gaps/needs throughout the region	Control water loss	1,2,4
WC-10 End-Gun Shutoffs	- Help meet current and forecasted agricultural groundwater use in the Red and Yellow zones	Install end-gun shutoff with pivots	1,2,4	
WC-11 Low Pressure Systems	- Help address surface water gap on Ogeechee River at Kings Ferry and Eden and Canoochee River at Claxton	Install low pressure irrigation systems where feasible (soil-specific)	1,2,4	
WC-12 Application Efficiency Technologies		Encourage and improve use of soil moisture sensors, evapotranspiration sensors or crop water use model(s) to time cycles	1,2,5	

Management Practices





A Look at Common Themes



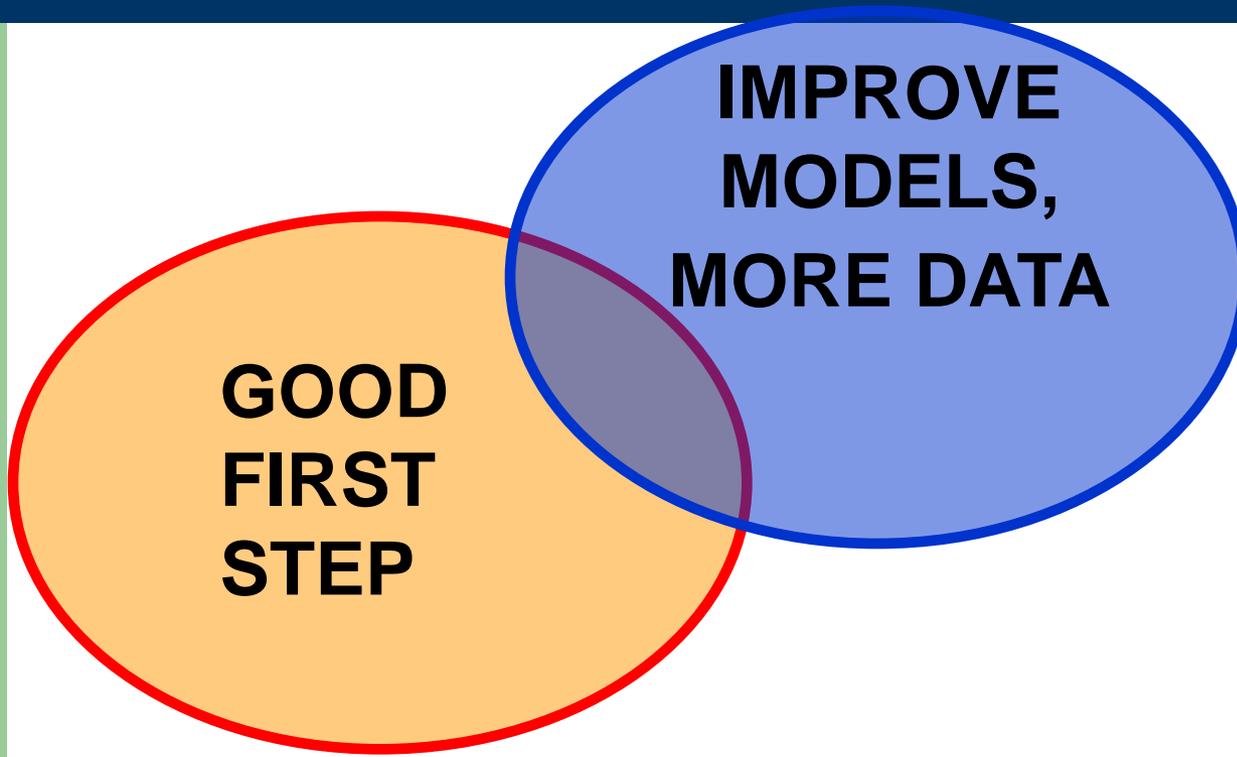


Common Themes

**GOOD
FIRST
STEP**



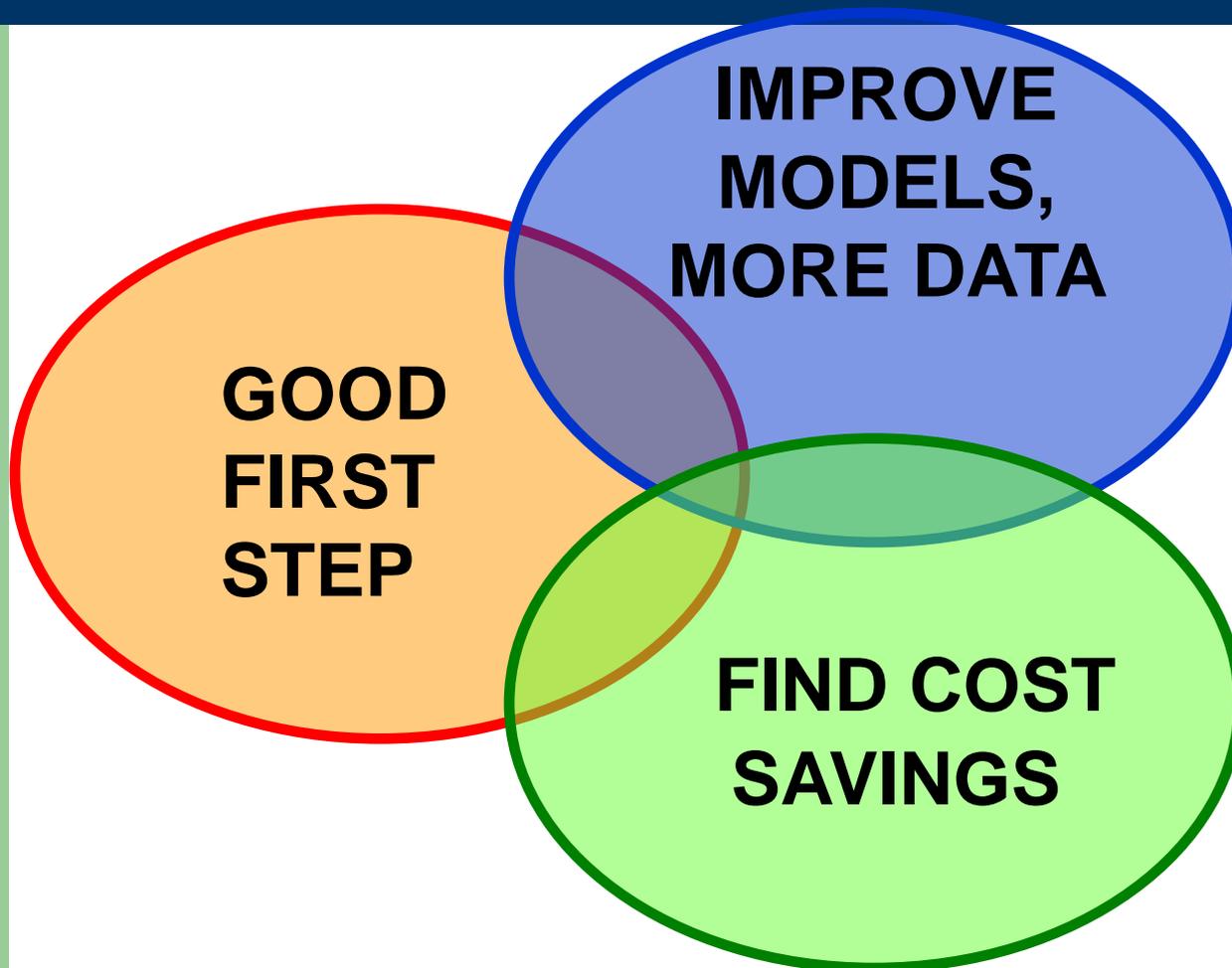
Common Themes



**GOOD
FIRST
STEP**

**IMPROVE
MODELS,
MORE DATA**

Common Themes

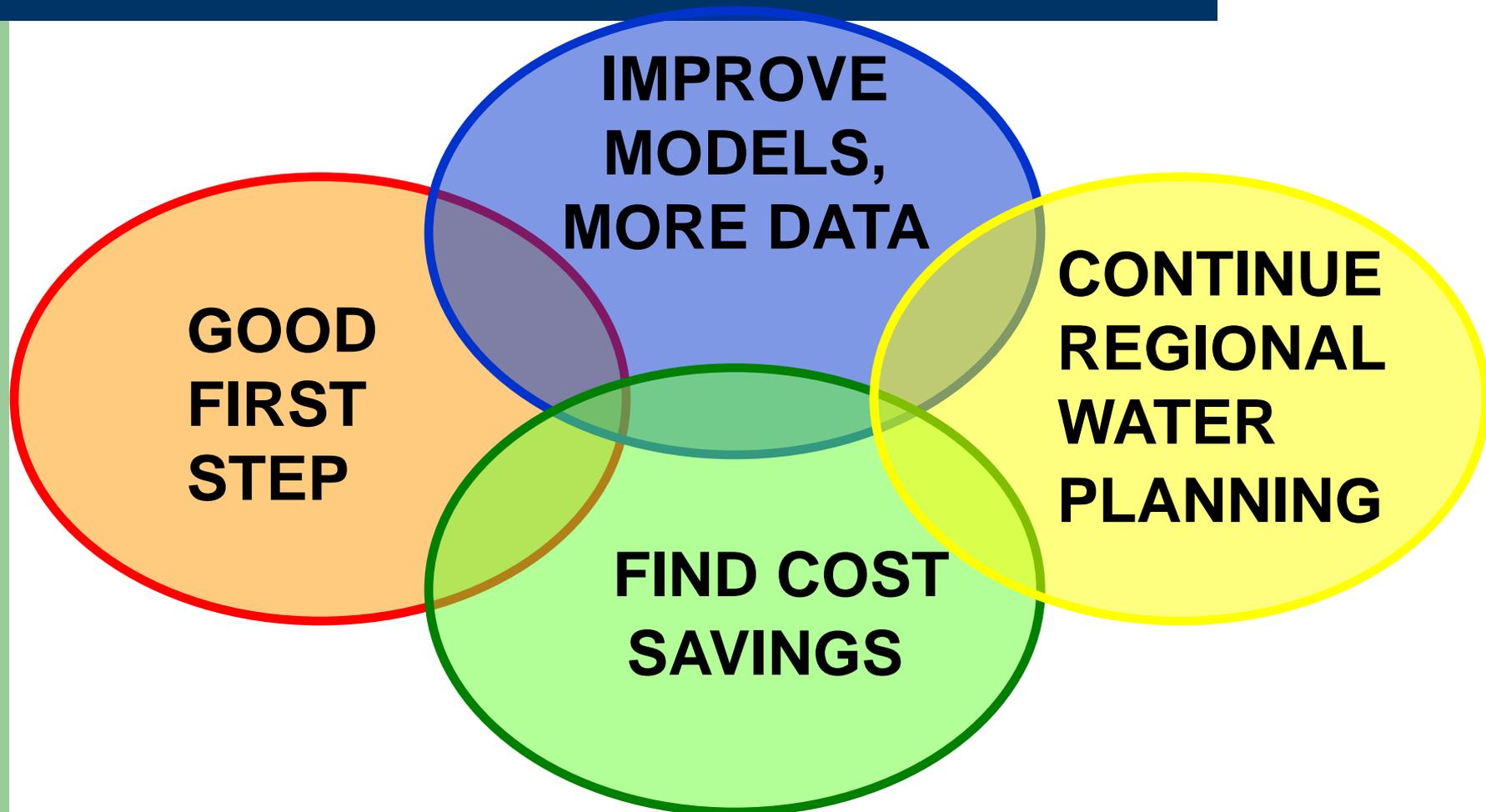


**GOOD
FIRST
STEP**

**IMPROVE
MODELS,
MORE DATA**

**FIND COST
SAVINGS**

Common Themes





Top 10 Lessons Learned (Involvement)

1. Involve stakeholders early and continuously
2. All water interests should have a seat at the table.
3. Process should be transparent so those at the table can see they are making a difference
4. Don't undervalue exercises like setting goals and vision
5. Develop a good working relationship with leadership, so expectations are consistent



Top 10 Lessons Learned (Process)

6. Think creatively about a budget
7. Optimize existing and planned projects
8. Don't underestimate the time needed to prepare information and materials
9. Developing information and models concurrent with planning is challenging
10. Inclusive planning can take time to reach consensus

For More Information...

All Regional Water Plans and supporting documentation can be found at

www.georgiawaterplanning.org

