Georgia's
State Water Plan

Middle Ocmulgee Regional Water Council Meeting 1
Agenda – March 30, 2016

Objectives:

1) Plan Review and Revision Overview and Schedule
2) Review Updated Population Projections
3) Review Municipal & Industrial Water Forecast Updates
4) Review Current Agricultural Demand Estimate and Method for Updates

9:00–9:30 a.m.	Registration
9:30–9:45	Welcome and Introductions/Approve Agenda and Minutes from last Meeting
9:45-10:30	Regional Water Planning Overview/Schedule • *Brief review of Regional Water Planning Process* • *Schedule for 2016-2017* • *Review Vision and Goals* • *Review/Updates to MOA*
10:30 – 10:45	Break
10:45 – 11:30	Current Demand Estimates and Methodology for Agricultural Forecast Updates
11:30 - 12:00 p.m.	EPD: Available Section 319(h) grant funds
12:00 - 1:00	Lunch
1:00 - 1:15	Updated Population Projections
1:15 - 1:45	Municipal Water/Wastewater Forecast Updates
1:45 - 2:00	Industrial Water Forecast Review
2:00 - 2:15	Energy Forecast Updates
2:15 - 2:30	Break
2:30 - 3:00	Other Business • Metro District update • Appointment of Technical Subcommittee, if needed
3:00 - 3:15	Public Comments/Local Elected Official Comments
3:15 – 3:30	Wrap Up/Council Meeting 2 Preview/Council Meeting 1 Evaluation

Georgia's State Water Plan

Adopted Vision and Goals
Middle Ocmulgee Water Planning Region

Adopted Vision

as adopted by the Council 9.10.09

The Middle Ocmulgee Water Council will work so that our water resource, both surface and subsurface, is of exceptional quality and quantity for the well being and prosperity of all that will follow. Our plan will consider the resource's natural integrity, wise conservation, and prudent management for continuing economic development and enhanced quality of life for all the region's citizens.

Adopted Goals

as adopted by the Council 9.22.10

1. Maximize existing water supply sources to the extent practicable.
2. Support the protection of natural stream integrity and the recreation it provides.
3. Promote sufficient water supply for the region.
4. Promote efficient use of water.
5. Promote properly managed wastewater discharges and beneficial reuse.
6. Support the reduction of non-point source pollution by advocating better land management practices.
7. Support planning and management of water resources to maintain a healthy economy and ensure a high quality of life and to protect our natural resources.

Georgia's
State Water Plan

Regional Water Plan Review and Revision
Middle Ocmulgee Regional Water Planning Council
Council Meeting 1
March 30, 2016

www.georgiawaterplanning.org

Introduction

- Registration and Public Comment sign in

- Welcome from Chair Richardson
- Acknowledge Elected Officials
- Council and Contractor Introductions
- Review Minutes from Last Meeting
- Review and Approve Agenda

Elected Official Comments and Public Comments

- Sign up for public comments during morning registration period (to ensure enough time is allotted)
- Please limit comments to 3 minutes total
- Council encourages written submission of comments as well, to ensure meeting summaries accurately reflect comments

Introduction

Georgia EPD Contacts

- Ted Hendrickx – Point of Contact, Middle Ocmulgee
- Jennifer Welte – Project Manager for Review & Revision Process

- Dr. Elizabeth Booth – Surface Water Quality Resource Assessment
- Dr. Wei Zeng - Surface Water Quanity Resource Assessment
- Dr. Jim Kennedy – Groundwater Resource Assessment

Introduction

Planning Contractor – CDM Smith-Jacobs Team

- Primary Council Support – Michelle Vincent, Jacobs

- Overall Project Manager - Shayne Wood, CDM
- Technical Advisor - Rick Brown

Project Area Leads:

- Demand Forecasting – Bill Davis, CDM
- Water Availability Resource Assessments – Lee Wiseman, CDM
- Management Practices – Dale Jones, Jacobs

Georgia's

State Water Plan

Review and Revision (Round 2 Planning) Overview and Schedule

www.georgiawaterplanning.org

Review and Revision Overview and Schedule

THANK YOU to Interim Planning Contractors:

- Carl Vinson Institute of Government, University of Georgia
  - Altamaha; Coastal; Savannah-Upper Ogeechee; Suwannee-Satilla
- Middle Georgia Regional Commission
  - Upper Oconee; Middle Ocmulgee
- North Georgia Regional Commission
  - Coosa
- Georgia Water Planning and Policy Center
  - Middle Chattahoochee; Lower Flint-Ochlockonee; Upper Flint

Review and Revision Process will incorporate, as needed, the findings and conclusions that Council arrived at during the interim planning period

Georgia

Review and Revision Overview and Schedule

12 Month Process

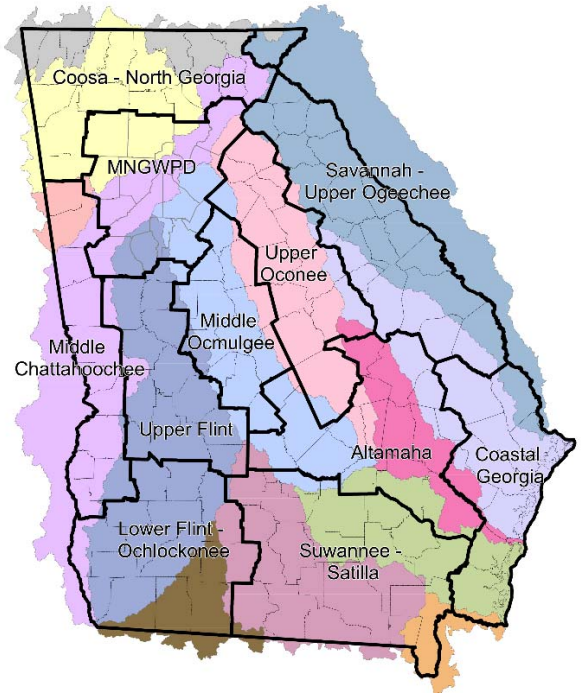
Meeting One
1st Quarter 2016
(Today)

Meeting Two
Joint Council Meeting
2nd Quarter 2016

Meeting Three
3rd Quarter 2016

Meeting Four
4th Quarter 2016
Draft Plan

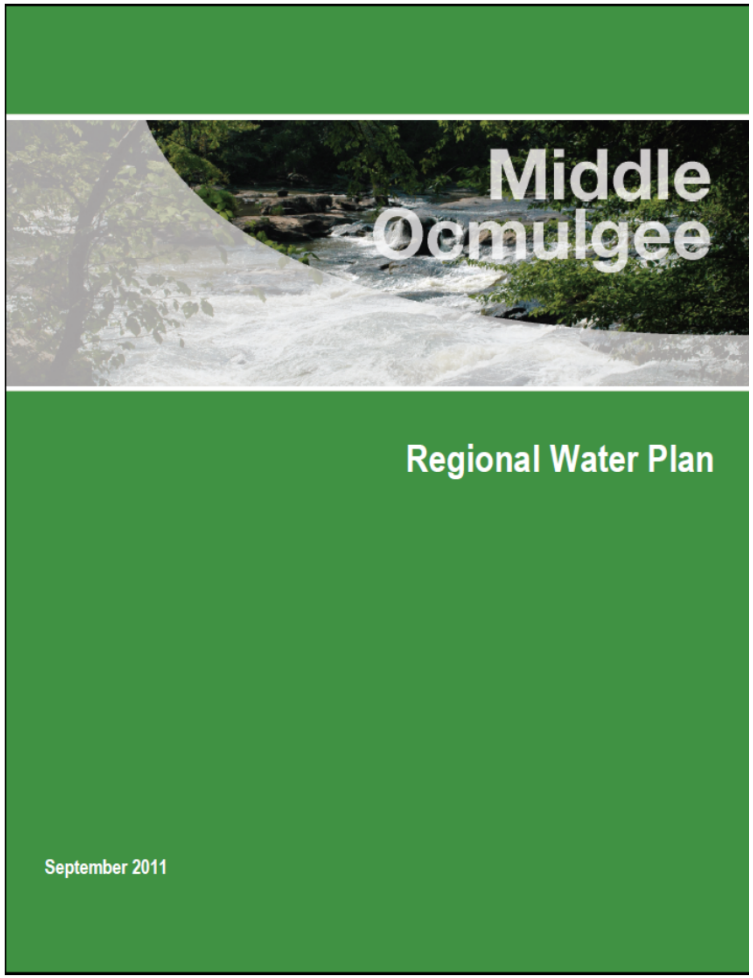
Meeting Five (Final)
1st Quarter 2017
Incorporate Comments



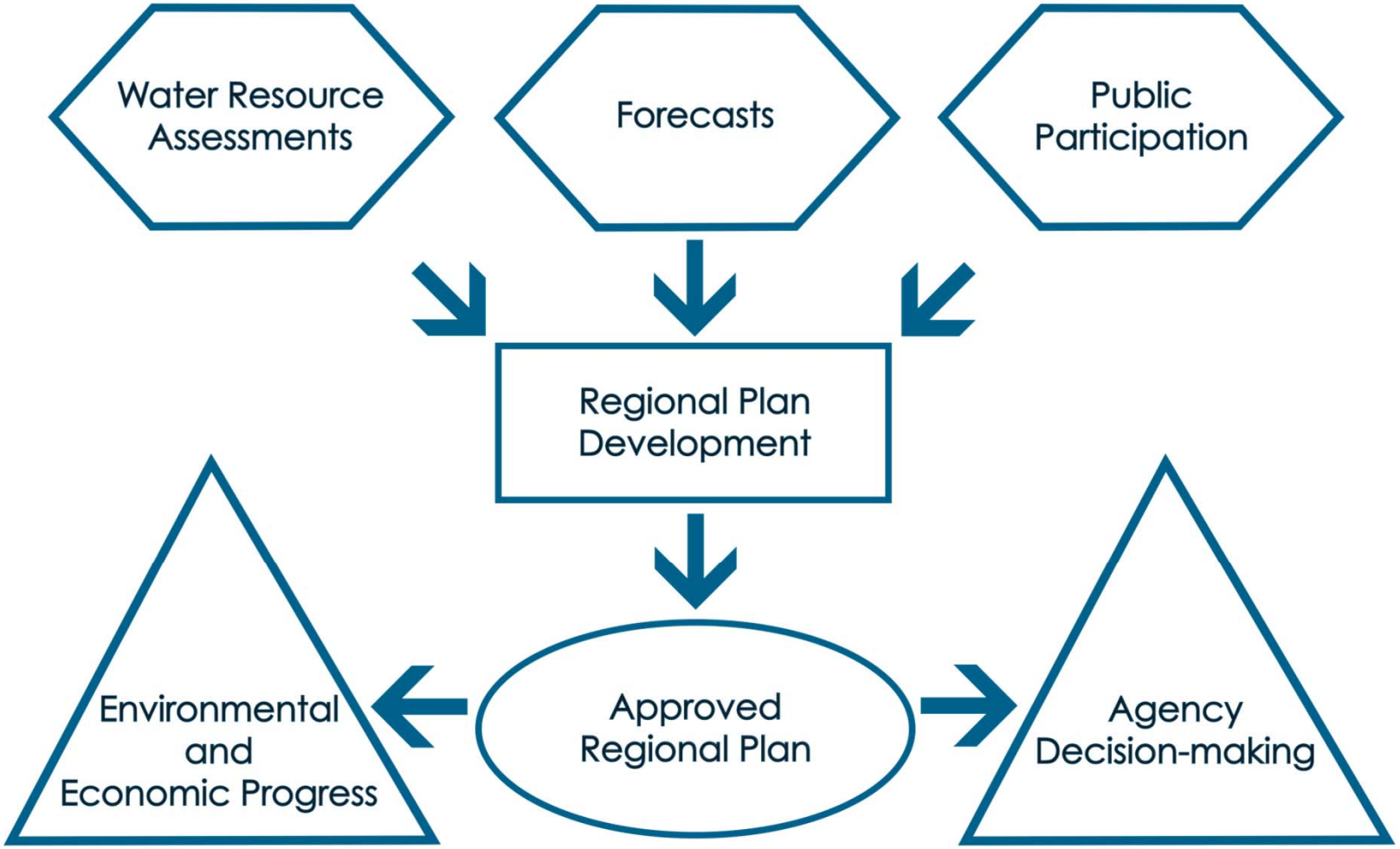
EPD adoption of revised Regional Water Plan by March 31, 2017

Review and Revision Overview and Schedule

- Councils will focus on:
  - Evaluating updated water demand and wastewater forecasts
  - Evaluating updated energy and agricultural forecasts
  - Reviewing existing Industrial forecasts
  - Evaluating updated Surface Water and Ground Water Availability Resource Assessments (**Quantity**); and updated Surface Water **Quality** Resource Assessment
  - Evaluating and refining Management Practices, if needed



Water Planning Process



Review and Revision Overview and Schedule

Revision Drafts to Regional Water Plans will be submitted in sections

Section 1	Section 2	Section 3
Due: April 2016	*Due: July 2016*	*Due: October 2016*
• M & I Forecasts • Energy Forecast	• Agricultural Forecast • Resource Assessment	• Forecast / Gap Updates • Management Practices

FINAL DRAFT – DECEMBER 2016

- 45-day comment period / concurrent review (EPD)
- **Feb 2017** Review and incorporate comments / changes (Council)
- **Feb 28, 2017** Council submits final plan to EPD

FINAL PLAN – EPD TO ADOPT MARCH 31, 2017

Georgia

2011 Regional Water Plans

How were the 2011 Plans used?

- Used by EPD to Guide Permitting Decisions
- Used by EPD and GEFA to inform funding decisions
- Facilitated improvement to Resource Assessment Methods
- Facilitated additional research and data gathering for agricultural water use

- Select Projects/Activities Associated with Water Planning
  - Priority grant funding (Section 319(h) nonpoint source grant)
  - Aquifer Storage and Recovery pilot project in Flint River Basin
  - Ground water to surface water pilot project in Flint River Basin
  - Cretaceous well feasibility study to address Salt Water Intrusion

Georgia

Georgia's

State Water Plan

Vision and Goals

www.georgiawaterplanning.org

Vision and Goals

- In Round 1, each Council went through an extensive visioning process to develop Vision and subsequent supporting Goals
  - Goals and Vision are required by State Water Plan, Section 14
  - Council Vision will guide and frame the selection of management practices

Vision and Goals

Middle Ocmulgee Adopted Vision

as adopted by the Council 9.10.09

The Middle Ocmulgee Water Council will work so that our water resource, both surface and subsurface, is of exceptional quality and quantity for the well being and prosperity of all that will follow. Our plan will consider the resource's natural integrity, wise conservation and prudent management for continuing economic development and enhanced quality of life for all the region's citizens.

Source: http://www.ohtmacon.com/

Vision and Goals

Middle Ocmulgee Adopted Goals

as adopted by the Council 9.22.10

Source: Georgia Outdoor Network

1. Maximize existing water supply sources to the extent practicable.
2. Support the protection of natural stream integrity and the recreation it provides.
3. Promote sufficient water supply for the region.
4. Promote efficient use of water.
5. Promote properly managed wastewater discharges and beneficial reuse.
6. Support the reduction of non-point source pollution by advocating better land management practices.
7. Support planning and management of water resources to maintain a healthy economy and ensure a high quality of life and to protect our natural resources.

Vision and Goals

Discussion:

- Have any new major water issues developed in the region?
- Has your vision for this region regarding water resources changed substantially over the last 5 years?
- Are there any emerging issues on the planning horizon that would warrant changing your goals for the region?
- If answers are substantively no, revisions to your Vision and Goals may not be necessary.

Georgia's

State Water Plan

Memorandum of Agreement
Operating Procedures
Meeting Rules
Public Involvement Plan

www.georgiawaterplanning.org

Council Responsibilities and Operations

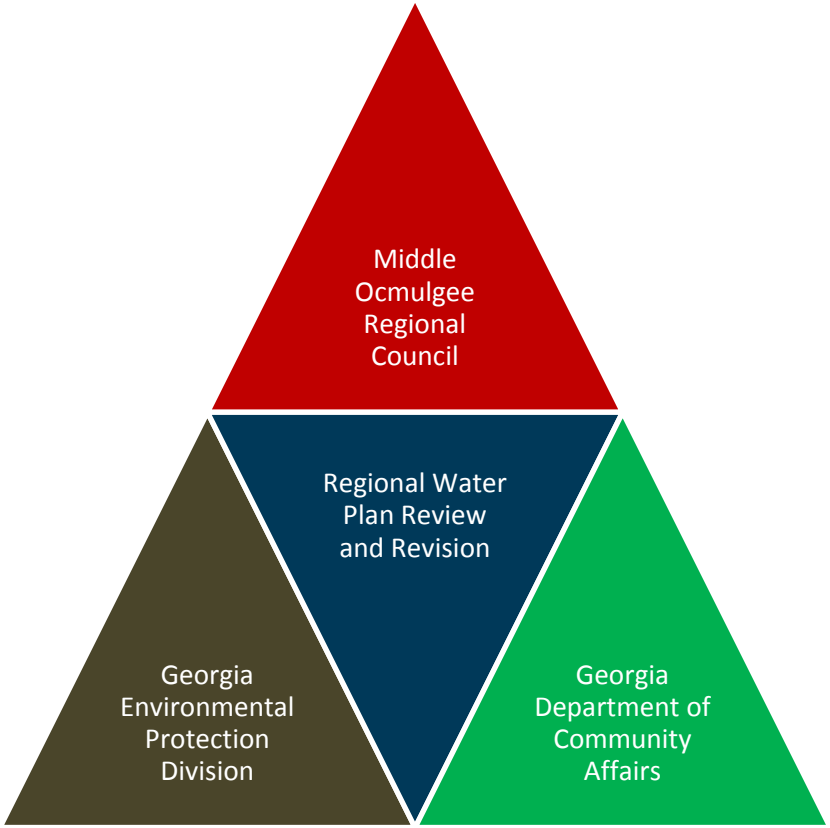
Documents to:

- Guide Council deliberations
- Provide common approaches across councils
- Support Council development of adoptable and implementable plan

1. Memorandum of Agreement (MOA)
   a. Operating Procedures
   b. Rules for Meetings
2. Public Involvement Plan

Memorandum of Agreement

- Defines Georgia EPD, Georgia Department of Community Affairs (DCA) and Water Planning Council responsibilities
- Establishes operating procedures, goals and objectives to govern actions and decisions for the Council



Memorandum of Agreement

Georgia's
State Water Plan

Middle Ocmulgee Regional
Water Planning Council

Council Responsibilities:

- Submit drafts and final recommended plan to Director
- Identify management practices for the plan using provided data
- Adopt and follow operating procedures and rules for meetings
- Provide regional forum for local governments (inside and outside region) and coordinate with other Regional Councils
- Conduct open meetings and receive public comments in accordance with adopted Public Involvement Plan

Georgia

Memorandum of Agreement

EPD Responsibilities:

- Provide a Planning Contractor to assist the Regional Council
- Provide technical and planning guidance
- Provide information on water quantity capacity and assimilative capacity, water use and forecasts, and status of the region's waters
- Coordinate planning across regions
- Provide public notice on the draft plan
- Review drafts of the plan and provide feedback
- Adopt final complete and consistent plan

Memorandum of Agreement

DCA Responsibilities:

- Provide information to identify inconsistencies between draft Plans and local and regional comprehensive plans
- Assist in developing a timeline for resolving inconsistencies
- Provide for Regional Council review and comment on local or regional comprehensive plans as they become due

Operating Procedures

- Decision Making
  - Councils aim for consensus, may vote for decisions
- Meetings and Governance
  - Meetings are open,
  - Noticed must be posted (Gov Delivery)
  - Meeting summaries recorded and distributed
- Amendments
  - Operating Procedures may be updated or altered for review and revision process, if necessary

Rules for Meetings

- Communications:
  - One person at a time, limit sidebars conversations
  - Stay on agenda items
  - Open-minded and seek a better understanding of different interests and perspectives and try to find common ground.
- Decision-making:
  - Discussion
  - Consensus: “Who can’t live with this agreement or course of action as modified to meet the all of the interests expressed so far?”
  - Modifications
  - Voting (if necessary) or additional study/modifications via subcommittee

Public Involvement Plan

- Maintains transparency of the planning process
- Seeks input from key stakeholders
- Establishes communications with neighboring councils

- Includes mechanisms for public comments

Public Involvement Plan

Procedural criteria

- Open meetings
- Public comment periods (Comments should pertain to topic(s) of meeting)
- 3 minutes per speaker
- Provisions for written comments

Meeting Announcements

- Posted on e-Gov Delivery system prior to meetings
- Agendas and meeting summaries will be distributed

Council Responsibilities and Operations

Questions and Discussion?

CURRENT AGRICULTURAL DEMAND ESTIMATES – METHODS FOR UPDATE

Middle Ocmulgee Regional Water Planning Council

March 30, 2016

Mark Masters, H2O Policy Center

Overview of Presentation

- Background
  - Who we are
  - How the estimates and forecasts will be used
- Methods
  - Round 1 Review
  - Round 2:
    - Animal agriculture and horticultural sector water demands
    - Current agricultural (crop) use estimates
    - Agricultural demand forecasts
- Results
  - Current demand – metered data
  - Forecasts

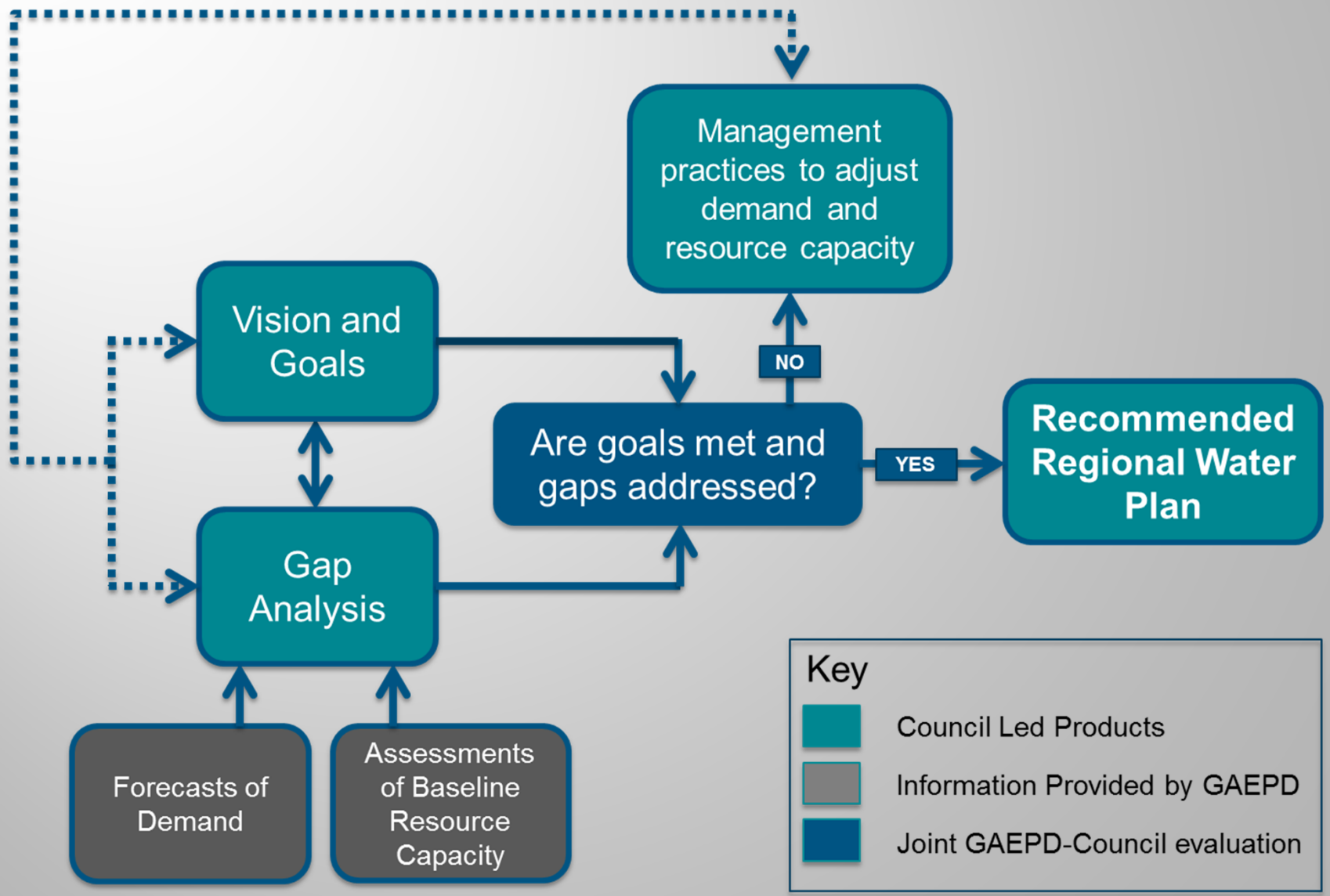
Project Team

- Albany State University – Georgia Water Planning and Policy Center (Lead)
- University of Georgia Agricultural and Applied Economics

GEORGIA Water PLANNING & POLICY CENTER ALBANY STATE UNIVERSITY

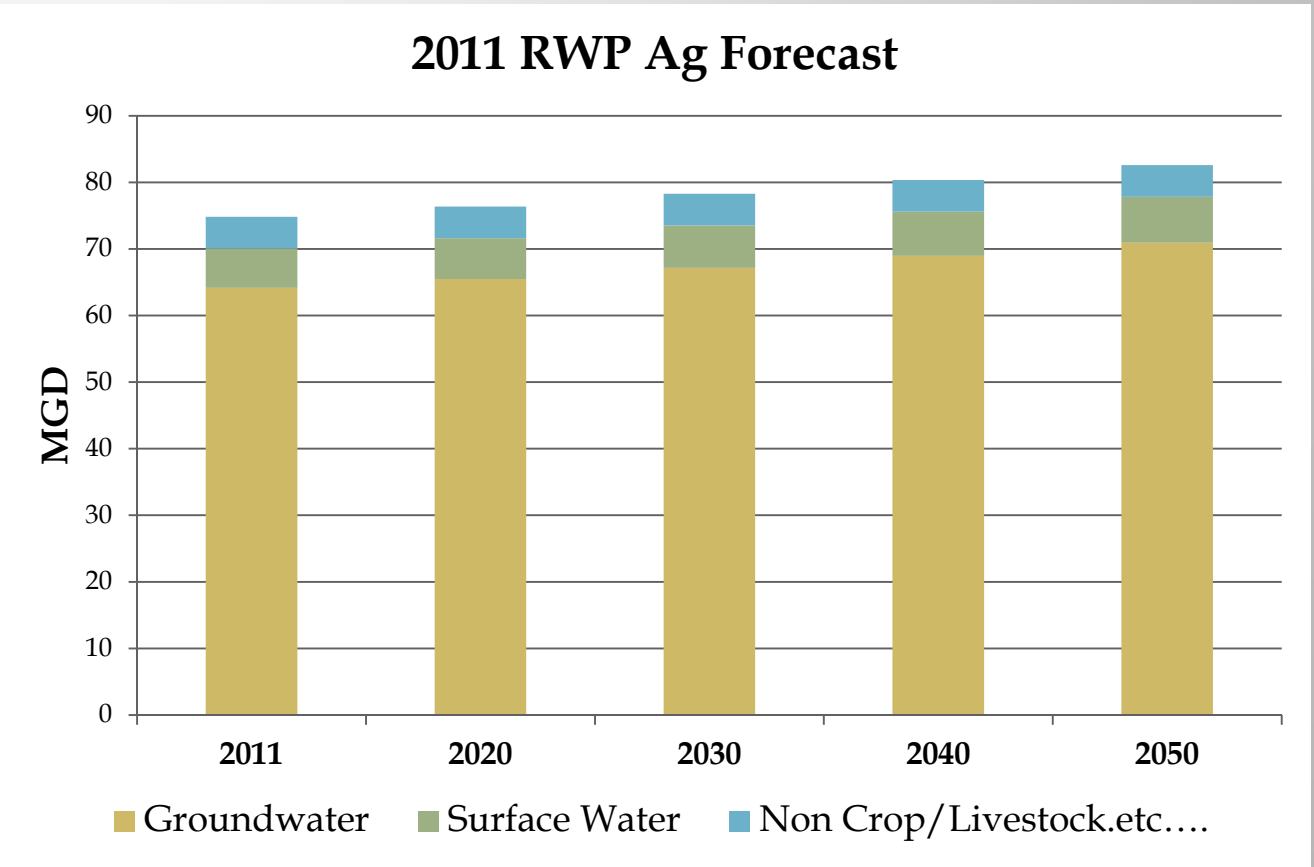
THE UNIVERSITY OF GEORGIA COLLEGE OF AGRICULTURAL & ENVIRONMENTAL SCIENCES

How the Results will be Used



Agricultural Water Demand Estimates: Round 1(2009-2010)

- Acreage – irrigated acres
- Water Use – what crops, and crop water use
- Other Ag Demand (livestock, nursery, golf course)



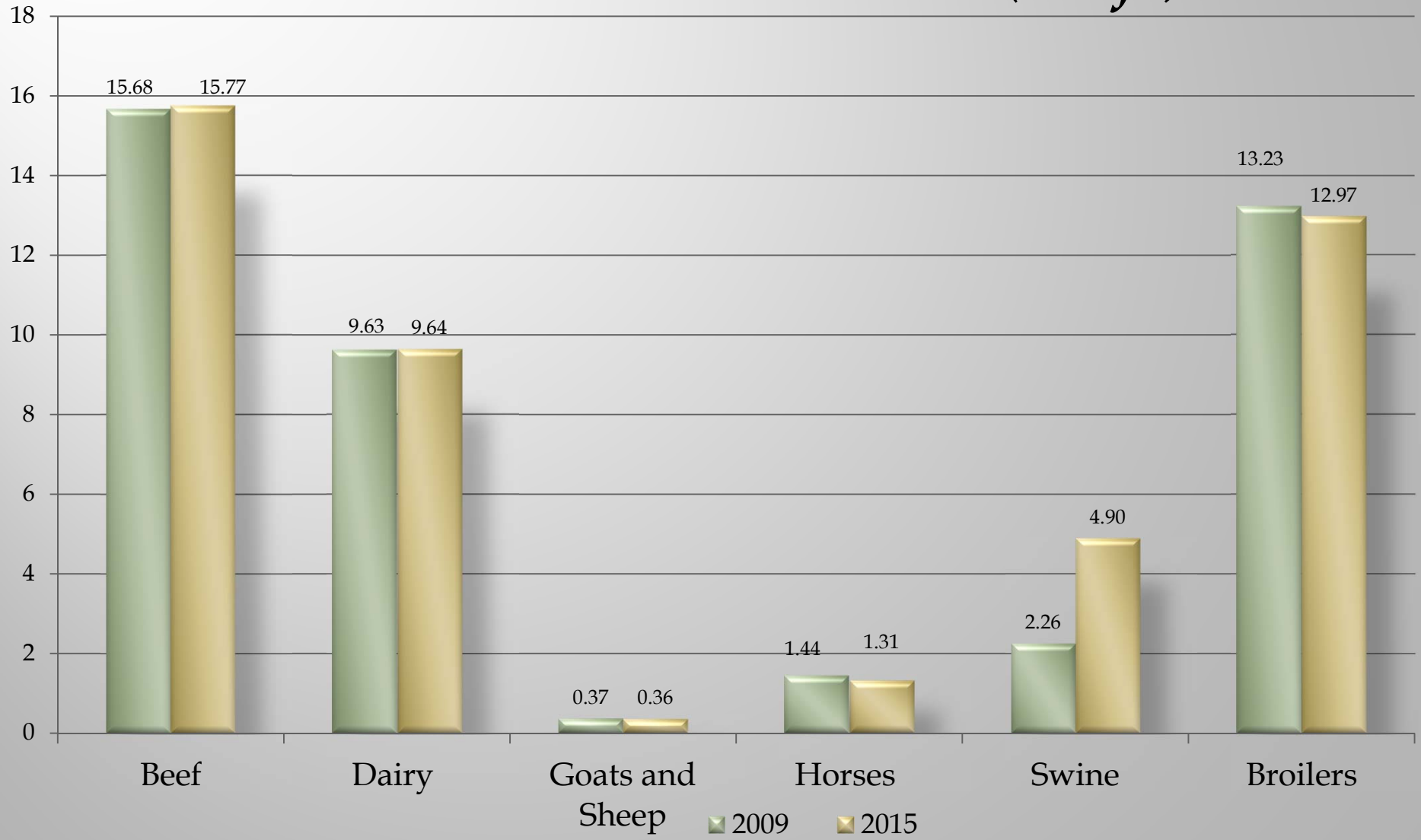
2015-2016 Ag Water Demand Update Components

- Animal Agriculture
- Horticultural Sector Water Use
- **Current** Agricultural Water Use Estimates
- Agricultural Water Demand **Forecasts**

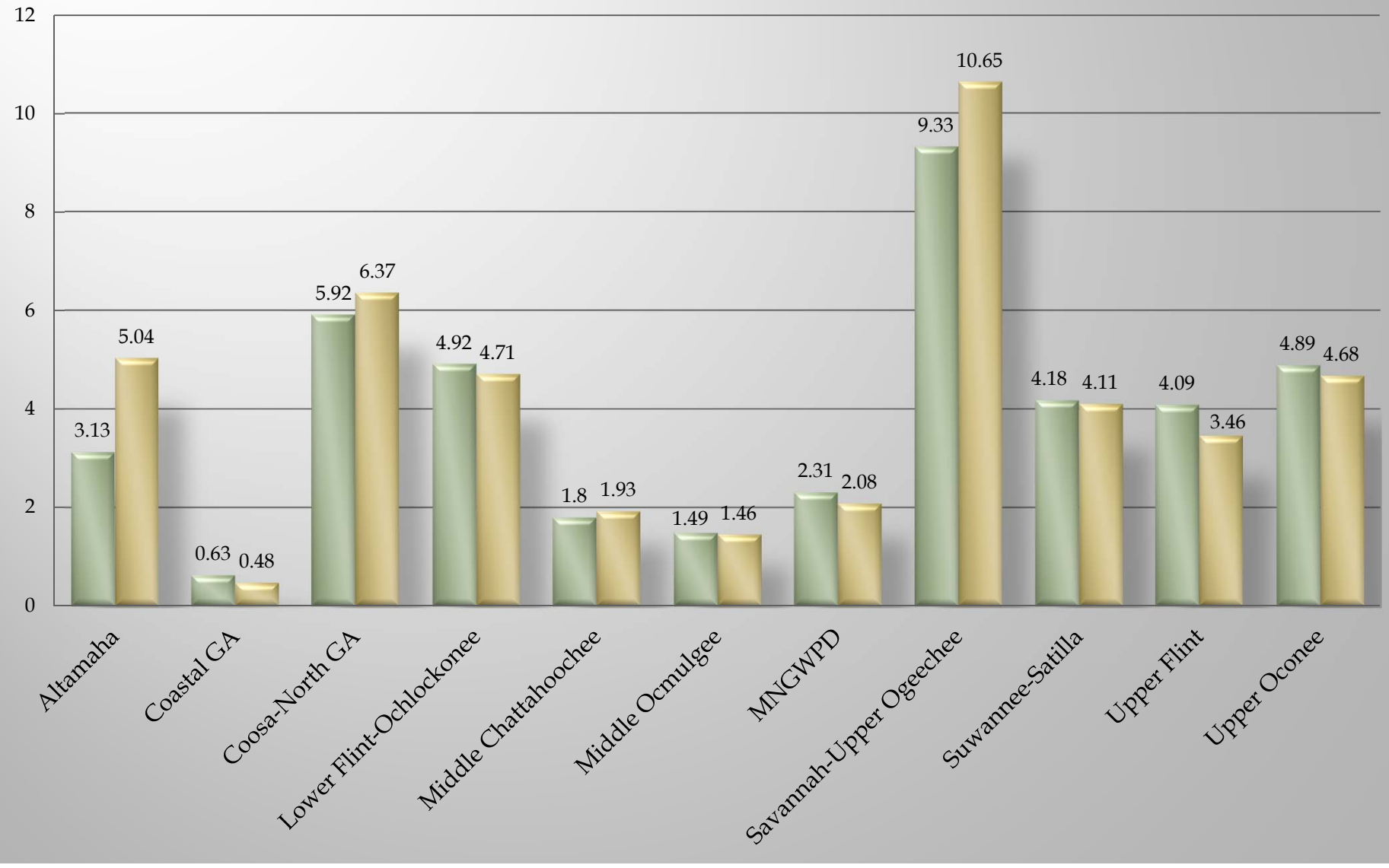
2015-16 Animal Agriculture and Horticultural Sector Water Use - Methods

- **Update current water use estimates based same methods used for 2009-2010 estimates**
- **Animal Agriculture**
  - Head per county x Water needs per head
  - Data sources: GA Farm Gate Survey, USDA NASS
- **Horticultural Sector**
  - Area per county (nursery/greenhouse) x Water needs per unit area
  - Data sources: GA Farm Gate Survey
- **Review by industry experts**

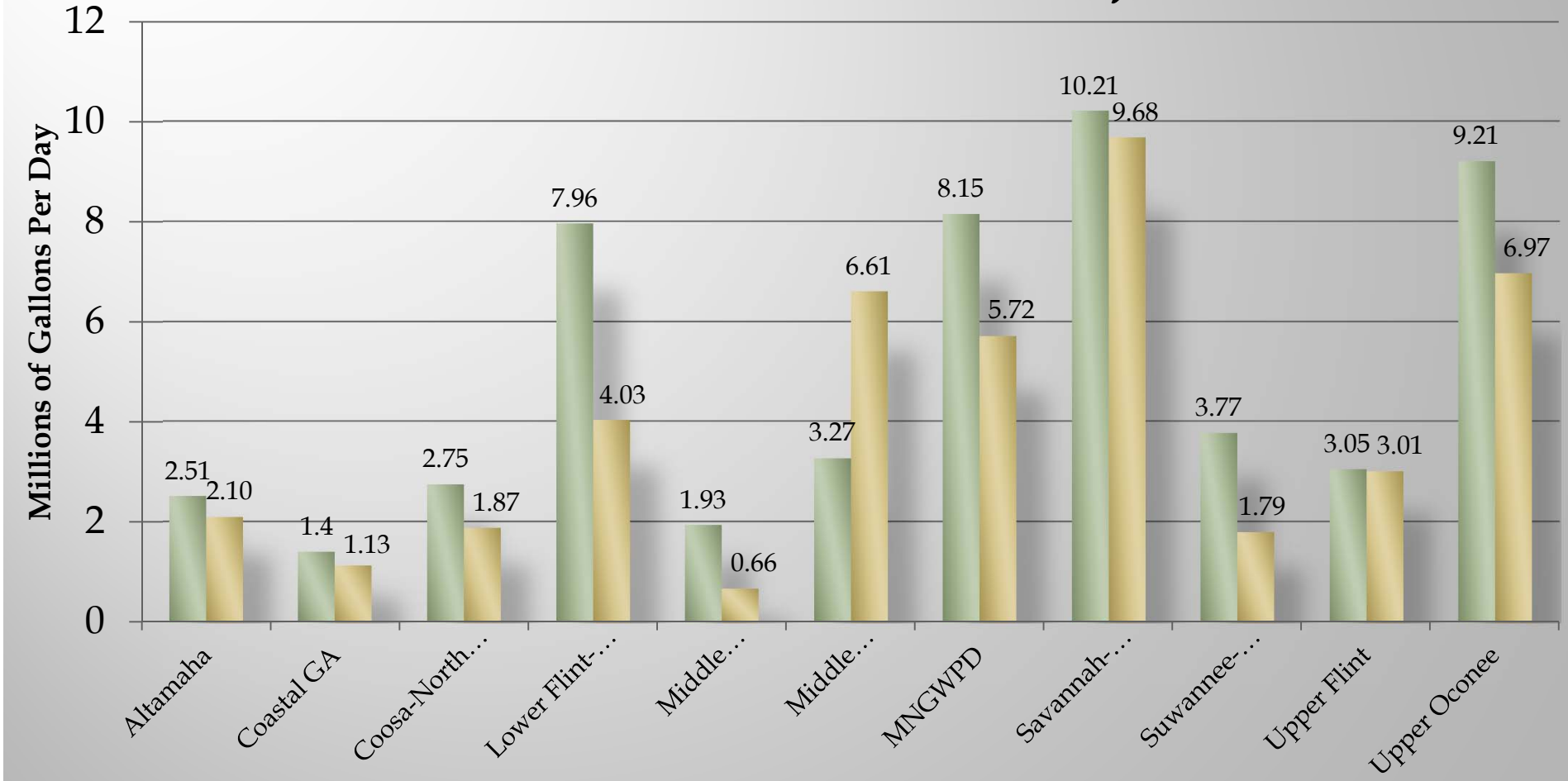
Animal Agriculture – Statewide Daily Water Use by Type of Animal Statewide Total: 45 MGD (*draft*)



Animal Agriculture - Daily Water Use by Water Planning Region
Statewide Total: 45 MGD (*draft*)



Daily Water Use by Horticultural Nurseries (Container, In-Ground, and Greenhouse), Millions of Gallons Per Day
Statewide Total: 43.56 MGD *(draft)*



2015-16 Current Agricultural Water Use Estimates - Methods

- **Wetted Acreage Mapping**
  - Detailed mapping
  - Desktop survey
  - Review source assumptions

- **Water Use**
  - Use of meter data for current demand (2010 – 2013)
  - Replication of 2009-10 methods with revised acres

2015-16 Current Agricultural Water Use Estimates - Methods

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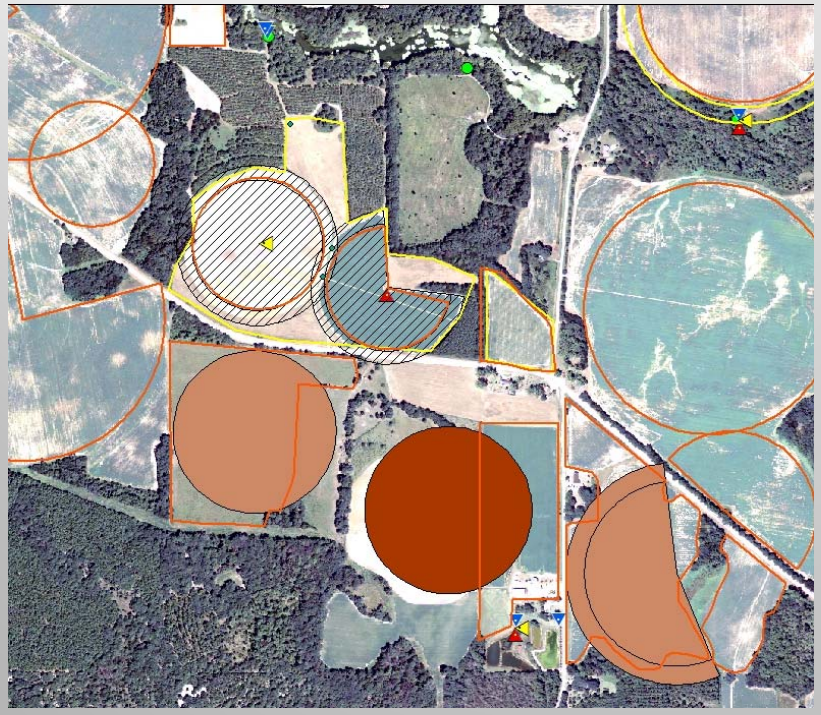
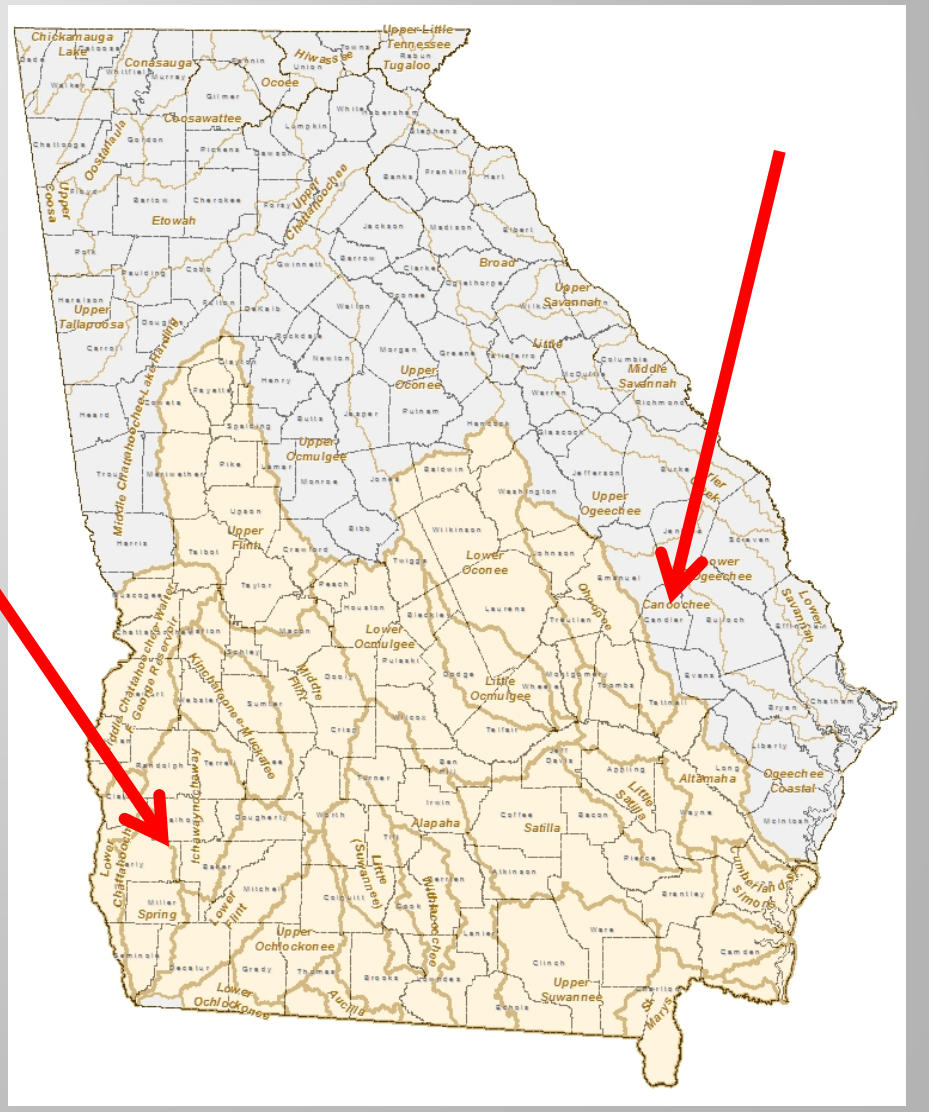
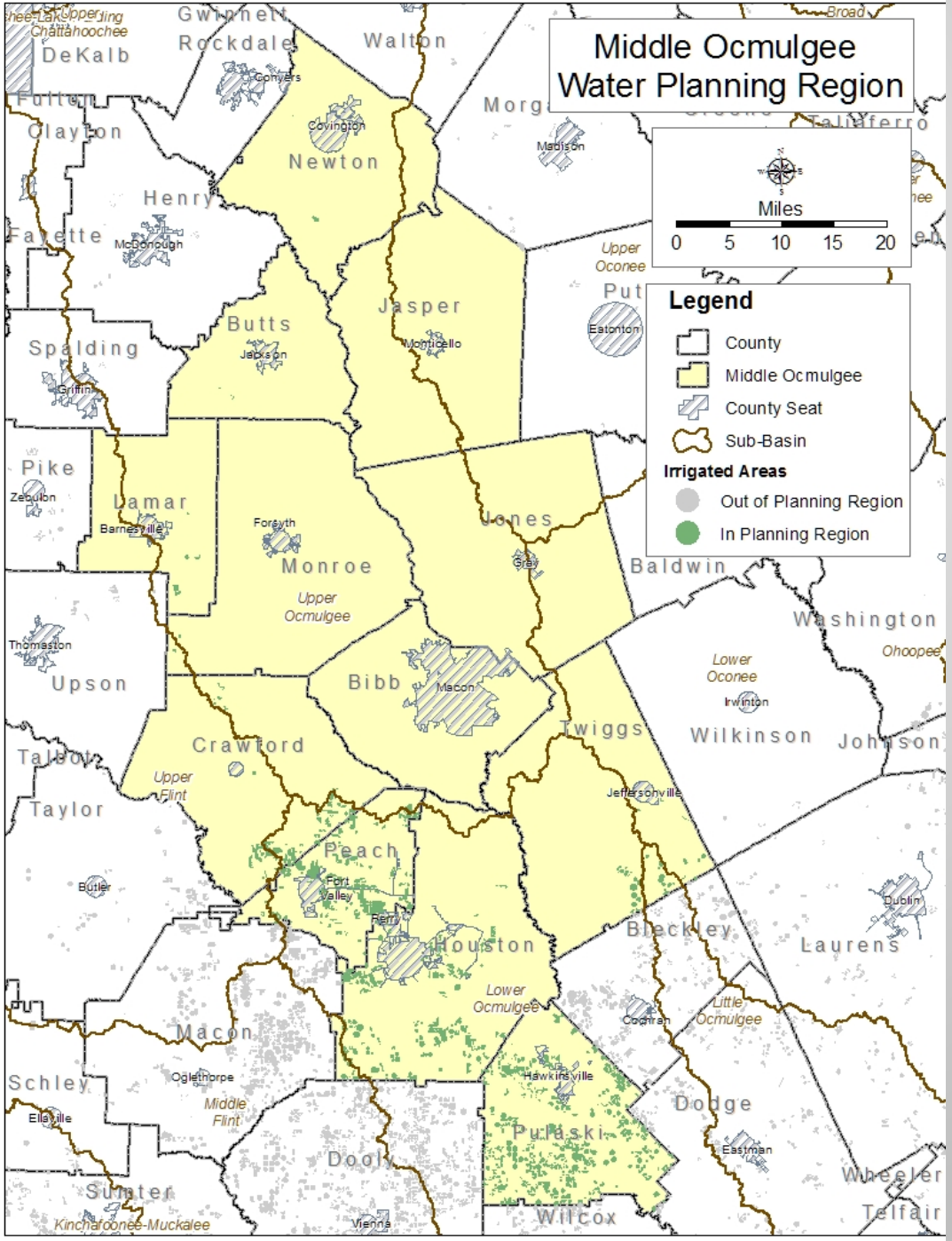






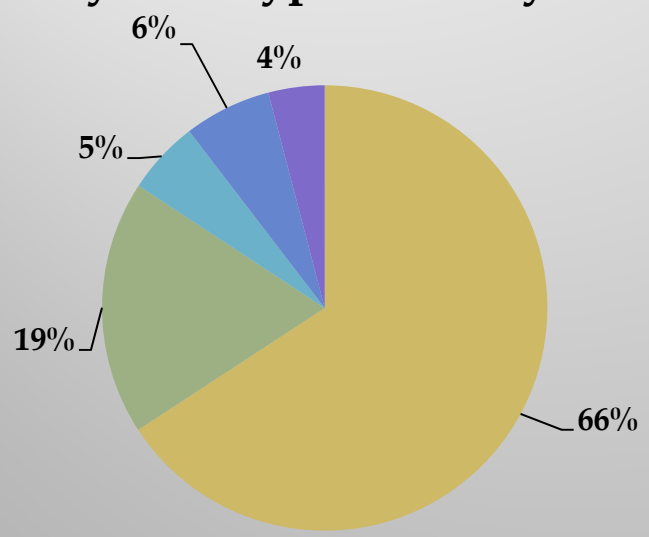
Irrigated Acres

County	2009	2014
BIBB	167	0
BUTTS	47	47
CRAWFORD	4,922	5,386
HOUSTON	10,957	14,649
JASPER	165	0
JONES	73	0
LAMAR	577	486
MONROE	148	116
NEWTON	212	212
PEACH	12,921	13,657
PULASKI	21,608	27,118
TWIGGS	2,175	2,765

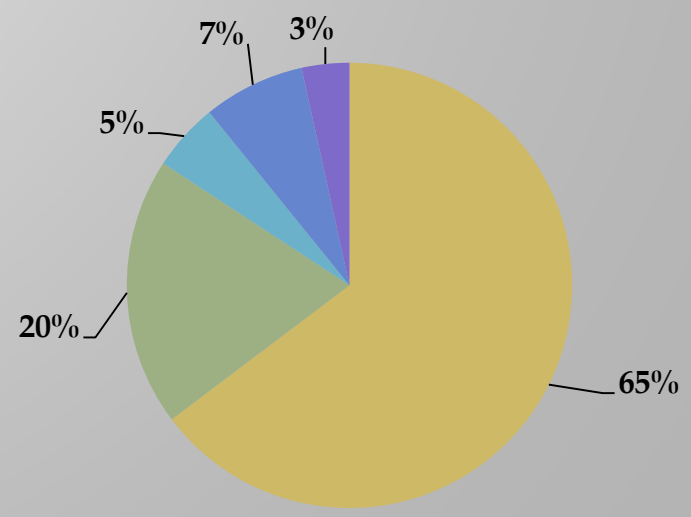
Middle Ocmulgee Georgia RWPC

	2009	2014	% Change
Total # of Fields	891	1,107	+ 24.2%
Total Acreage	53,972	64,437	+ 19.4%
Total GW Acreage	45,440	56,635	+ 24.6%
Total SW Acreage	8,532	7,802	- 8.6%
Total Center Pivots	509	727	+ 42.8%
Center Pivot Acreage	32,699	41,657	+ 27.4%

System Type - % of Systems



System Type - % of Acreage



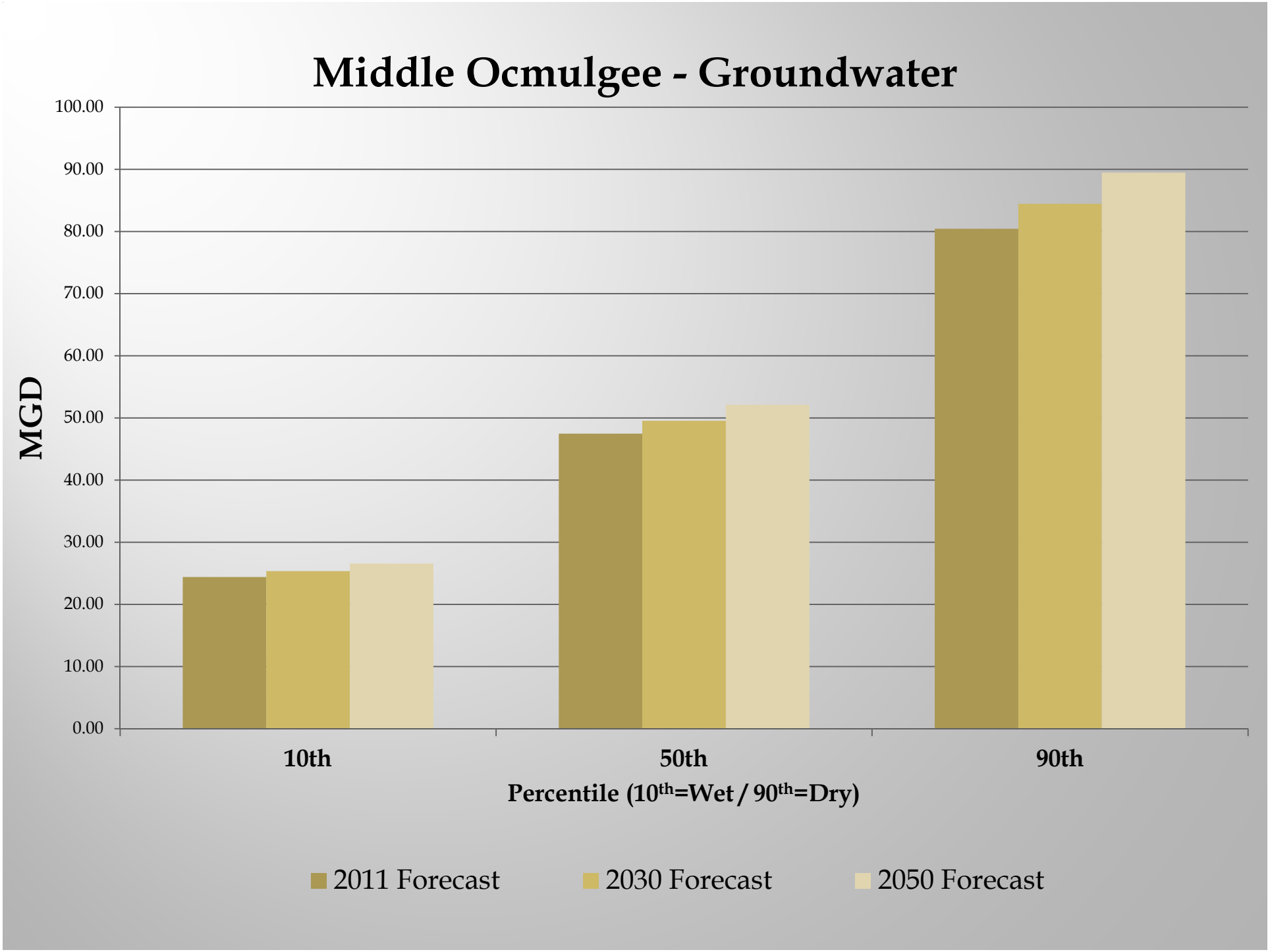
2015-16 Current Agricultural Water Use Estimates - Methods

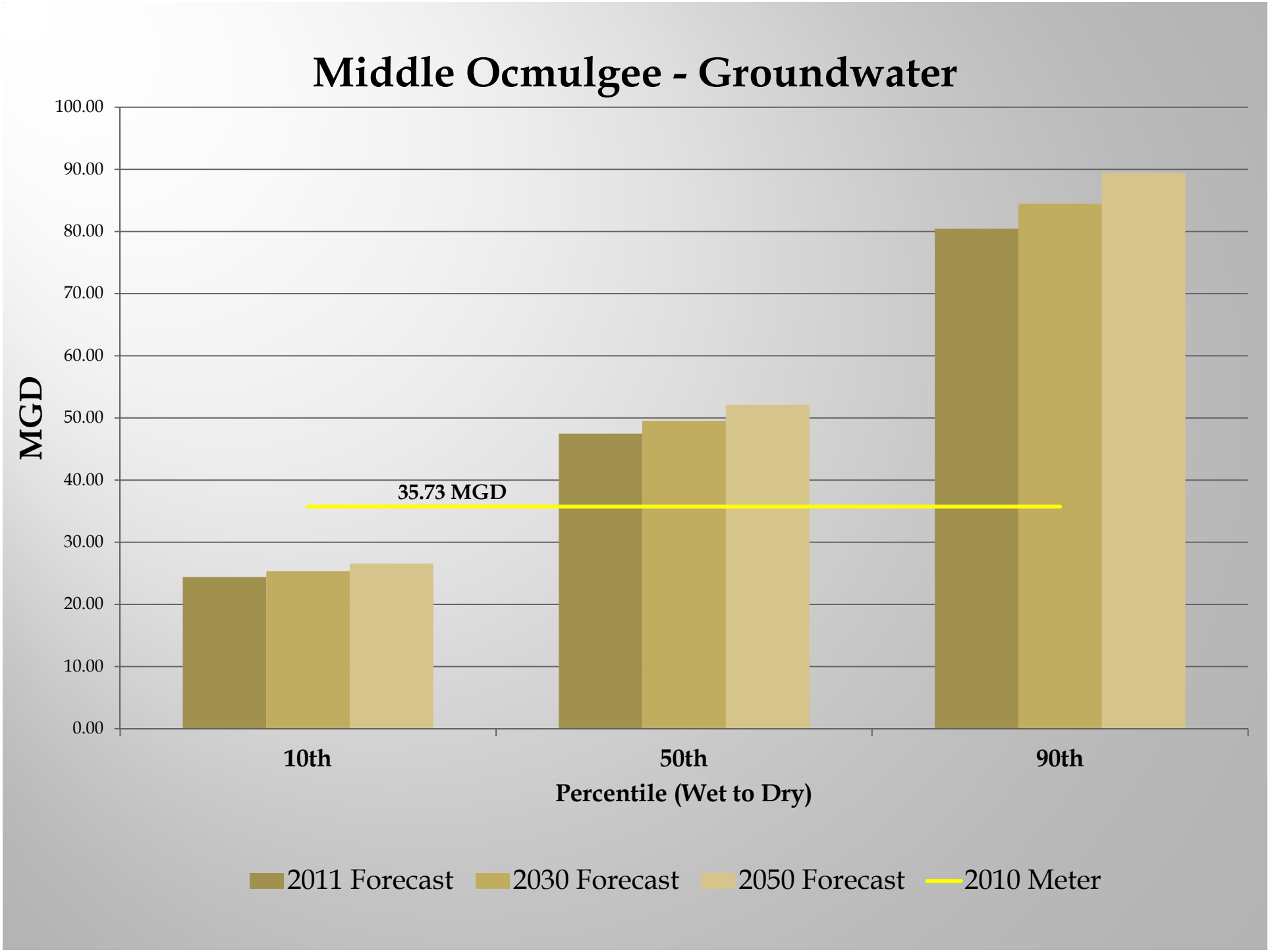
- **Wetted Acreage Mapping**
  - Detailed mapping
  - Desktop survey
  - Review source assumptions
- **Water Use**
  - Use of meter data for current demand (2010 – 2013)
  - Replication of 2009-10 methods with revised acres

Average Meter Application Rates (inches)				
	2010	**2011**	**2012**	**2013**
Groundwater	8.48	11.94	8.67	6.15
Surface Water	6.87	8.67	7.43	4.53

Results

Current Demand Estimate from Meter Data


Middle Ocmulgee - Groundwater
MGD
100.00
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
10th
50th
90th
Percentile (10th=Wet / 90th=Dry)
2011 Forecast
2030 Forecast
2050 Forecast


Middle Ocmulgee - Groundwater
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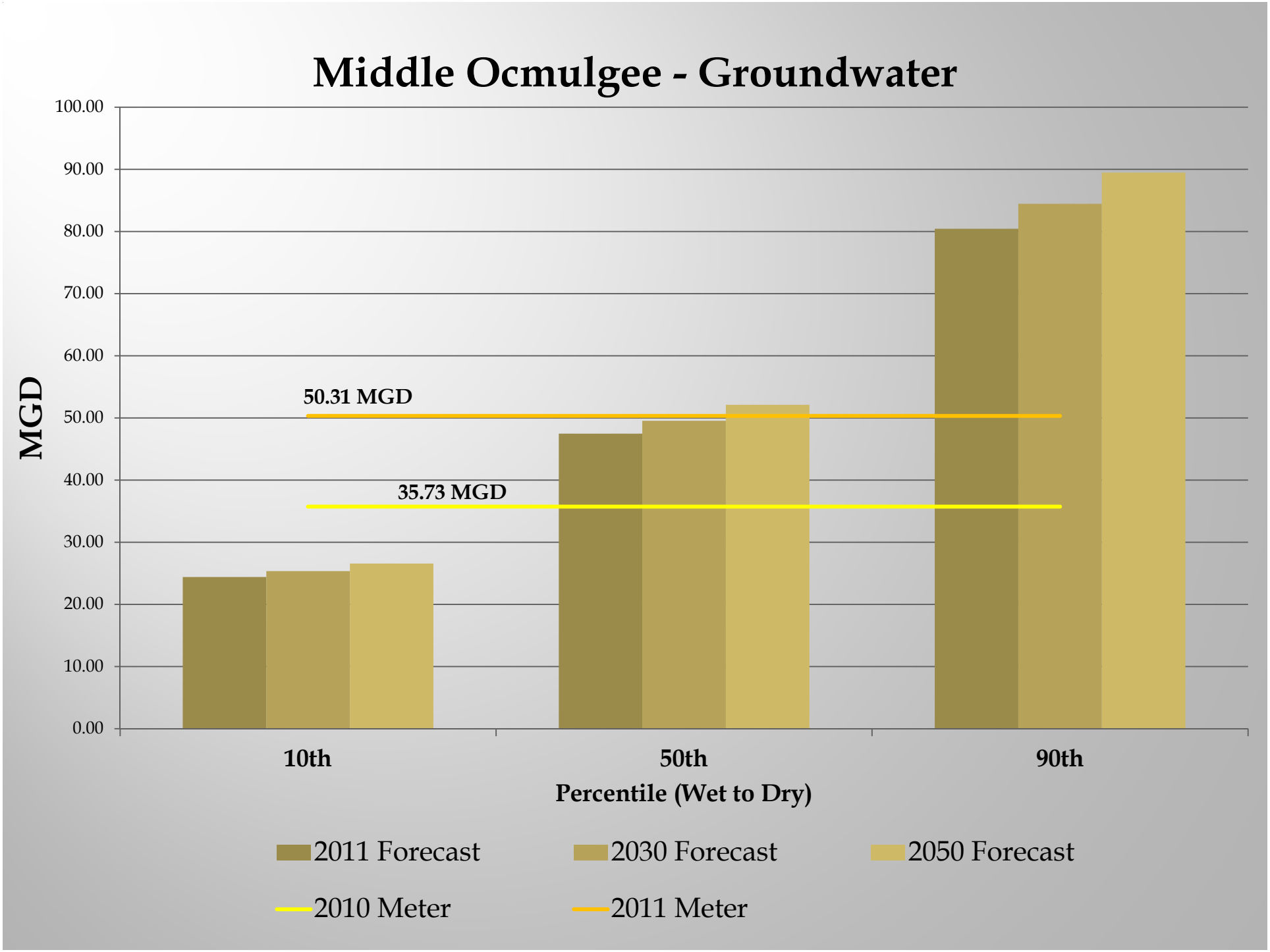
Percentile (Wet to Dry)
2011 Forecast
2030 Forecast
2050 Forecast
2010 Meter


Middle Ocmulgee - Groundwater
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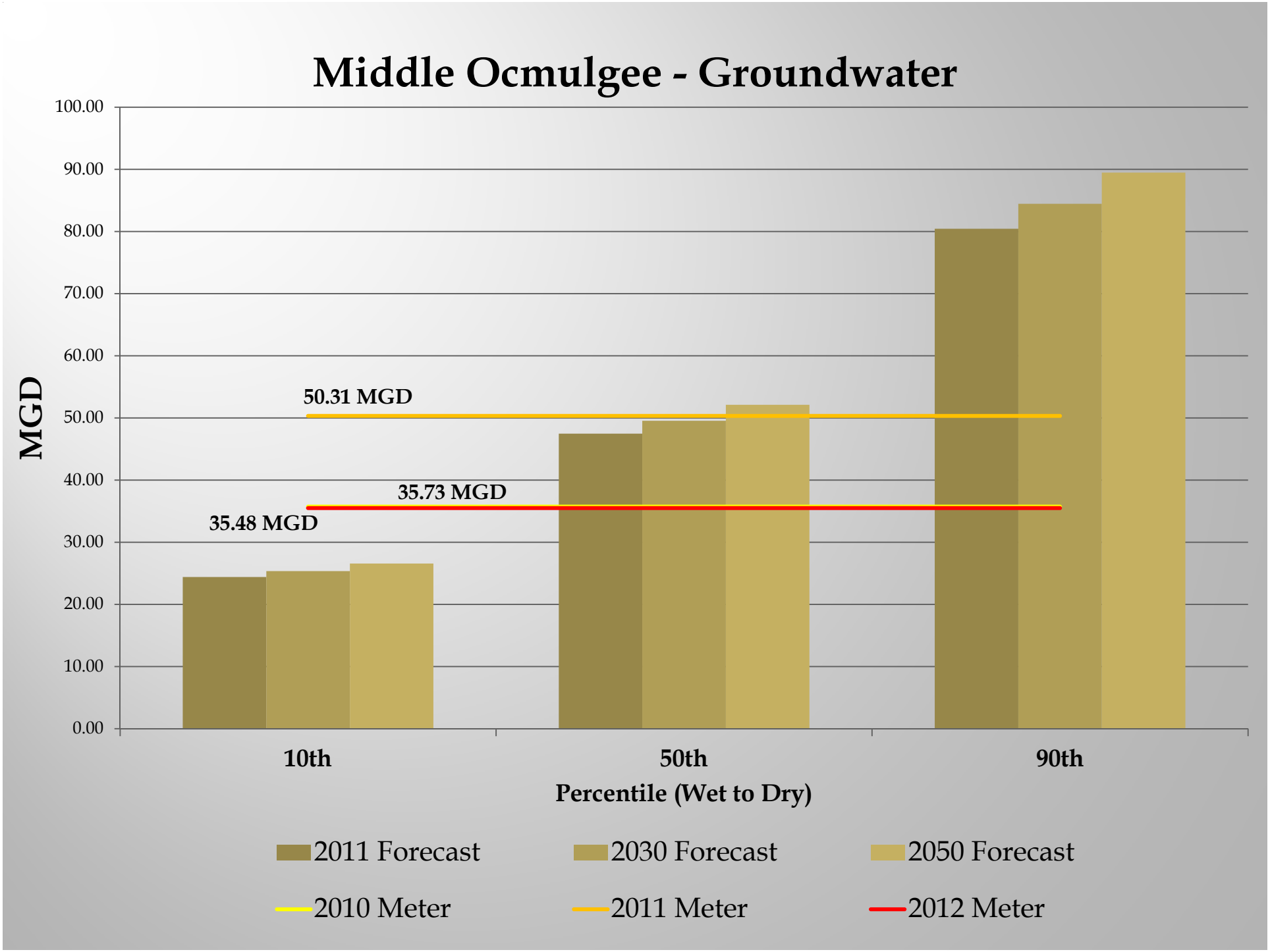
Percentile (Wet to Dry)
2011 Forecast
2030 Forecast
2050 Forecast
2010 Meter
2011 Meter


Middle Ocmulgee - Groundwater
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50.31 MGD
35.73 MGD
35.48 MGD
10th
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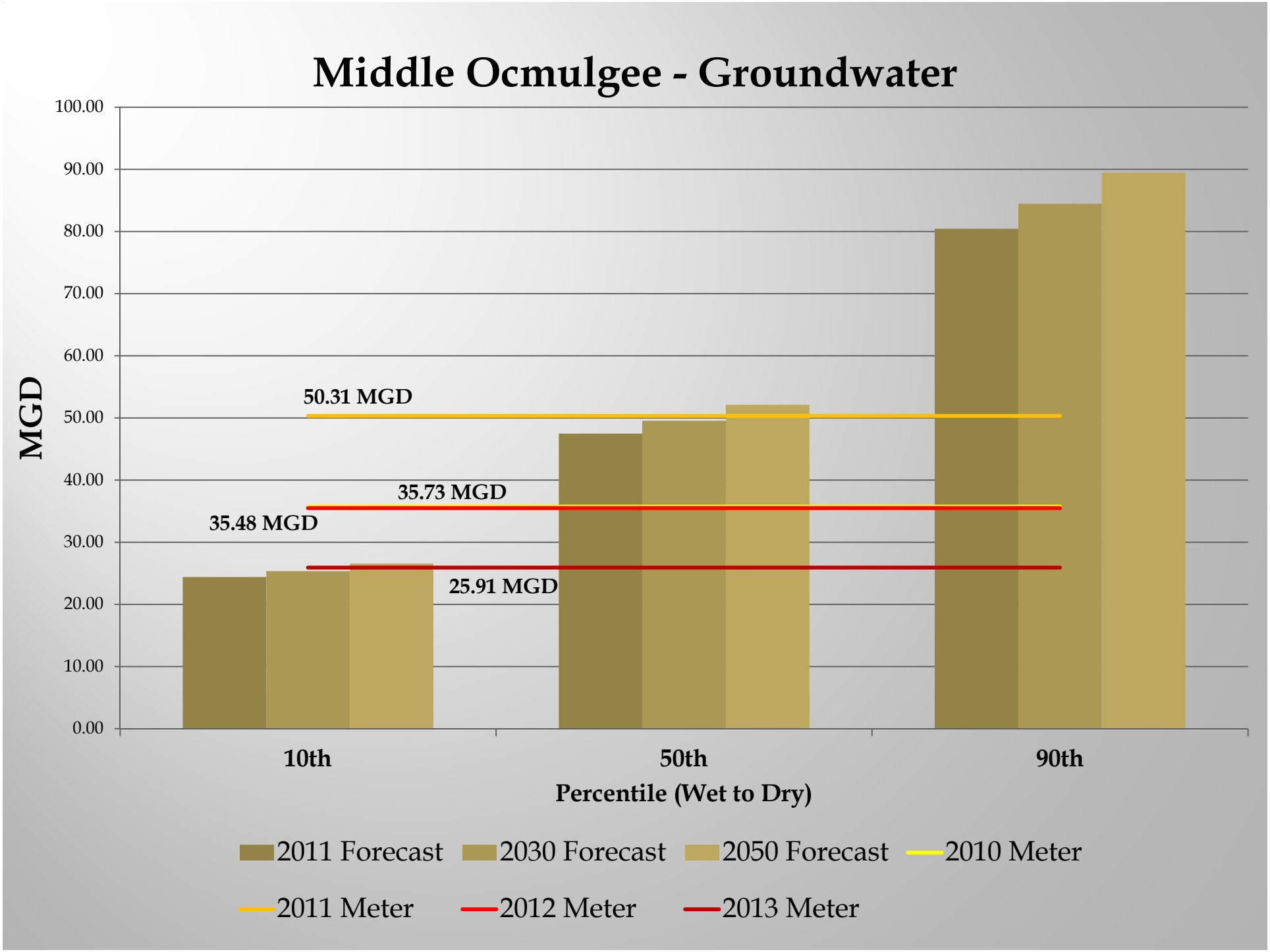
Percentile (Wet to Dry)
2011 Forecast
2030 Forecast
2050 Forecast
2010 Meter
2011 Meter
2012 Meter


Middle Ocmulgee - Groundwater
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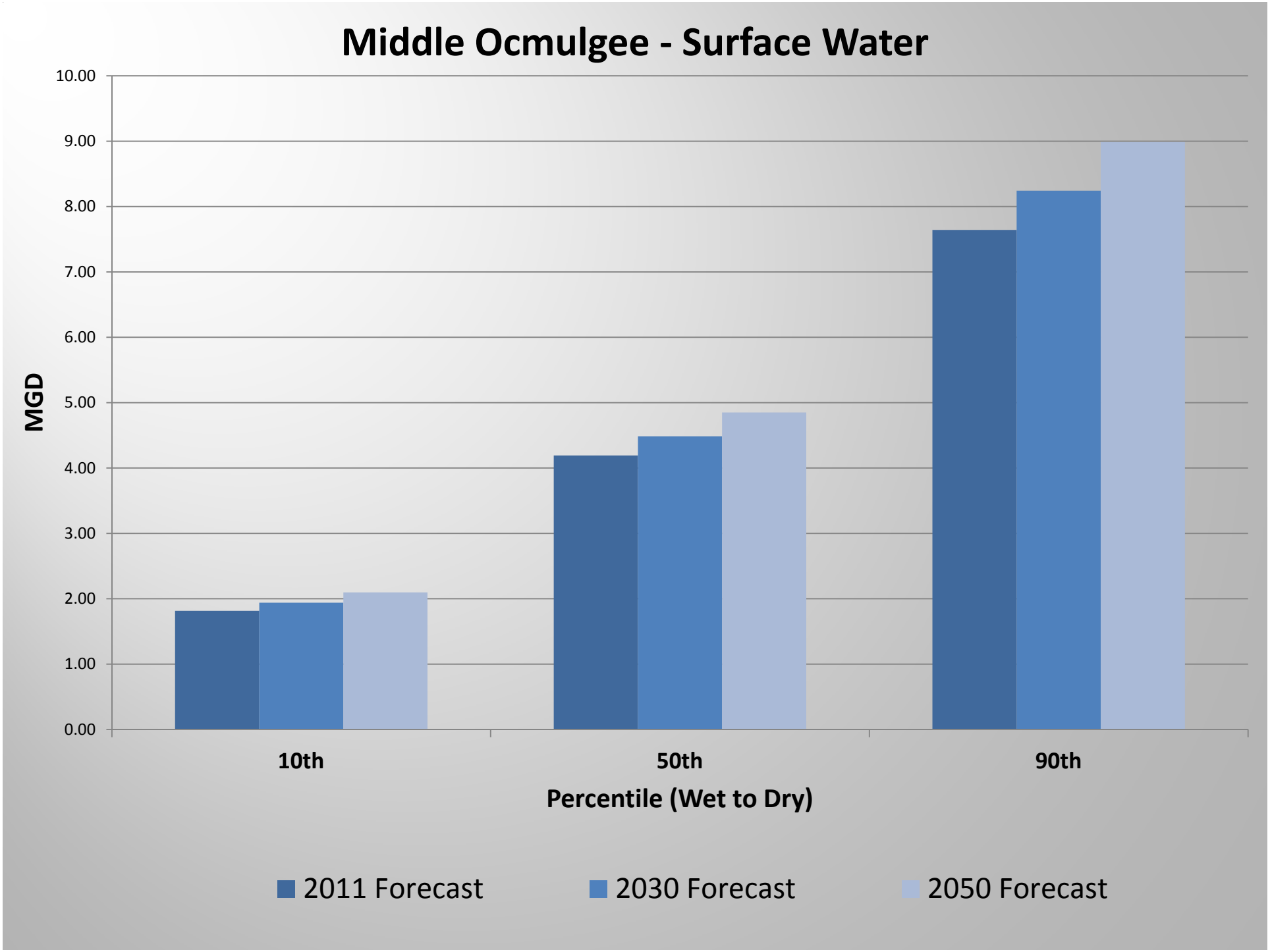
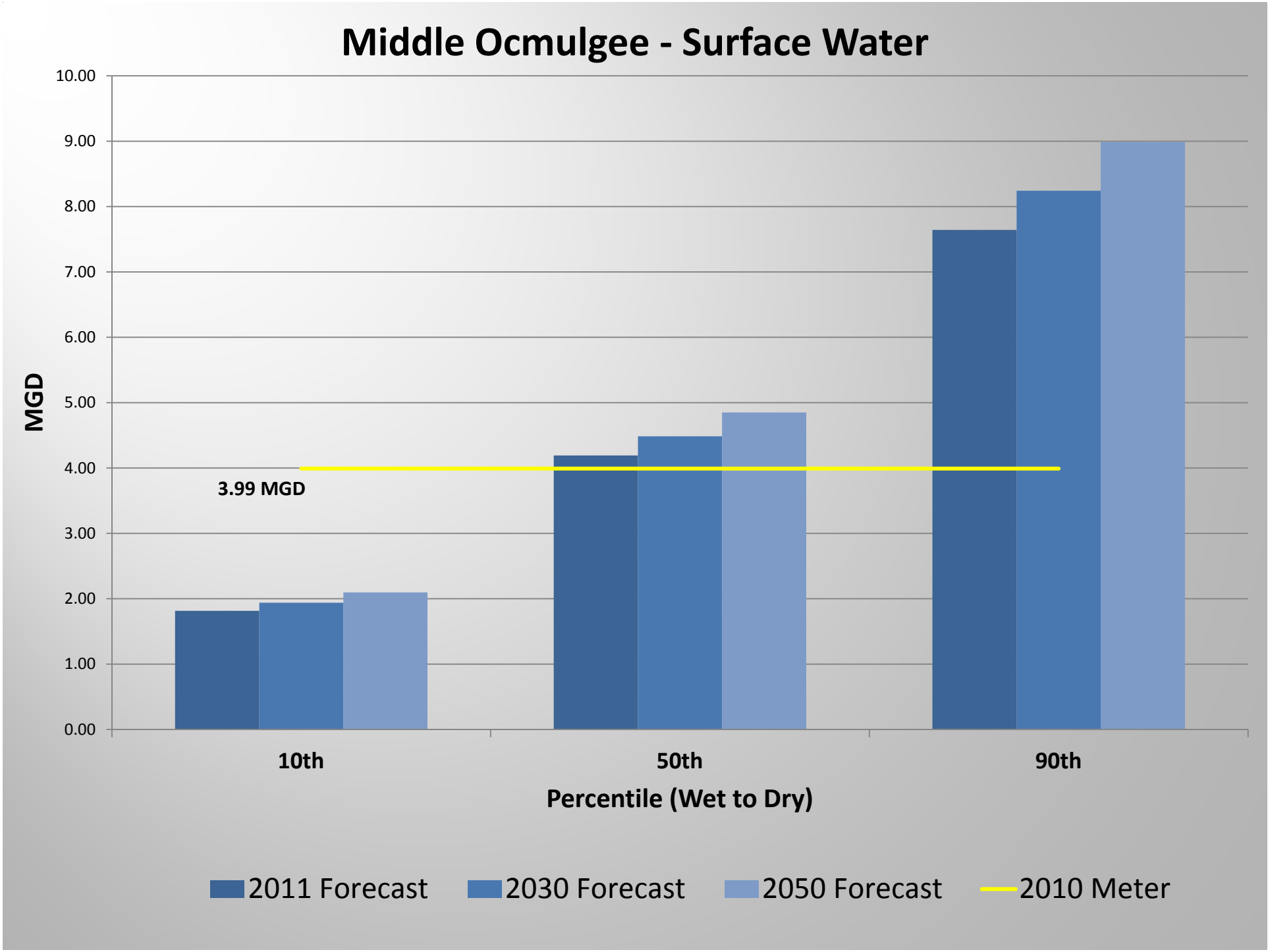
50.31 MGD
35.73 MGD
35.48 MGD
25.91 MGD
10th
50th
90th
Percentile (Wet to Dry)
2011 Forecast
2030 Forecast
2050 Forecast
2010 Meter
2011 Meter
2012 Meter
2013 Meter


Middle Ocmulgee - Surface Water
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
MGD
10th
50th
90th
Percentile (Wet to Dry)
2011 Forecast
2030 Forecast
2050 Forecast


Middle Ocmulgee - Surface Water
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
MGD
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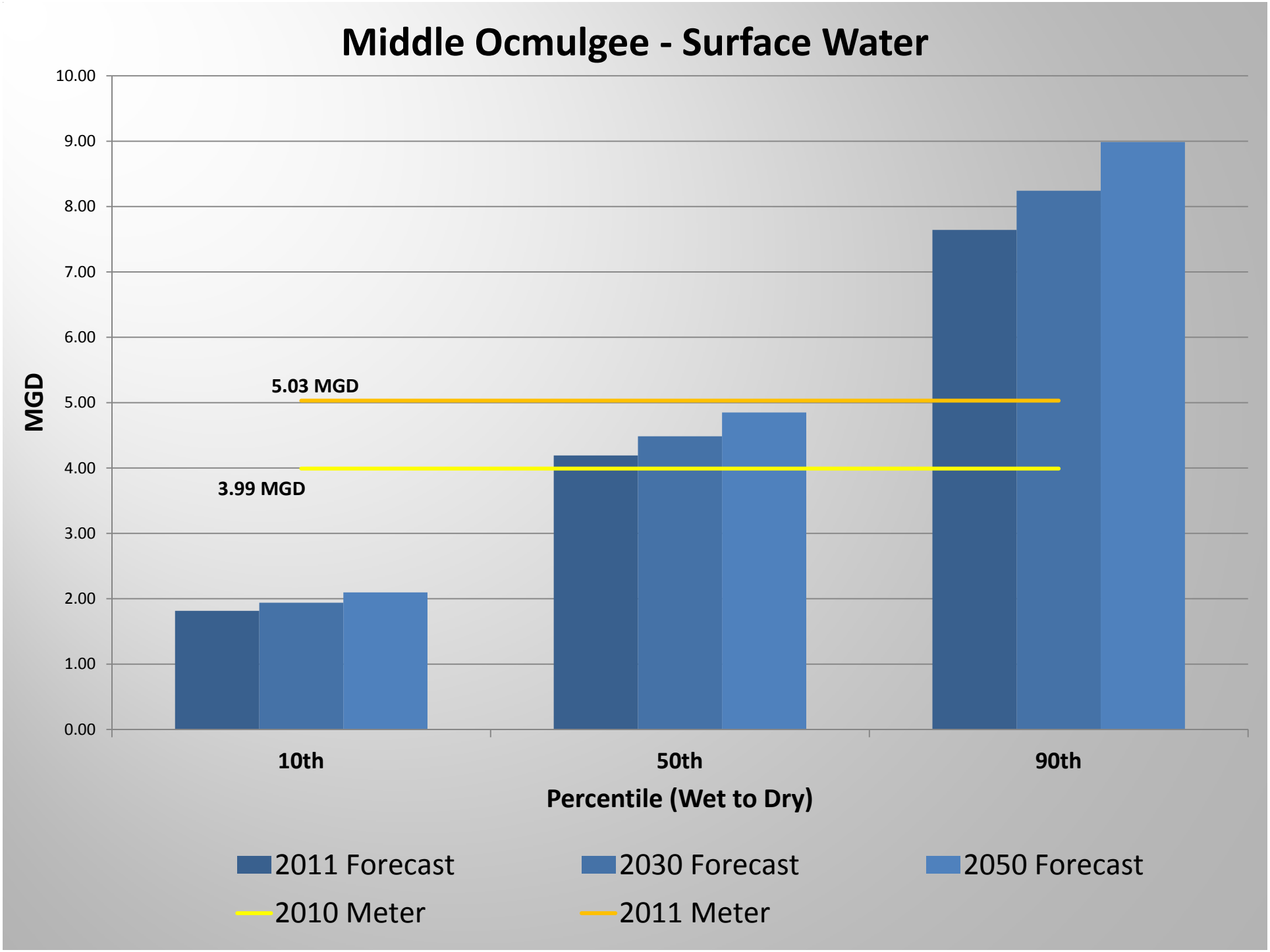
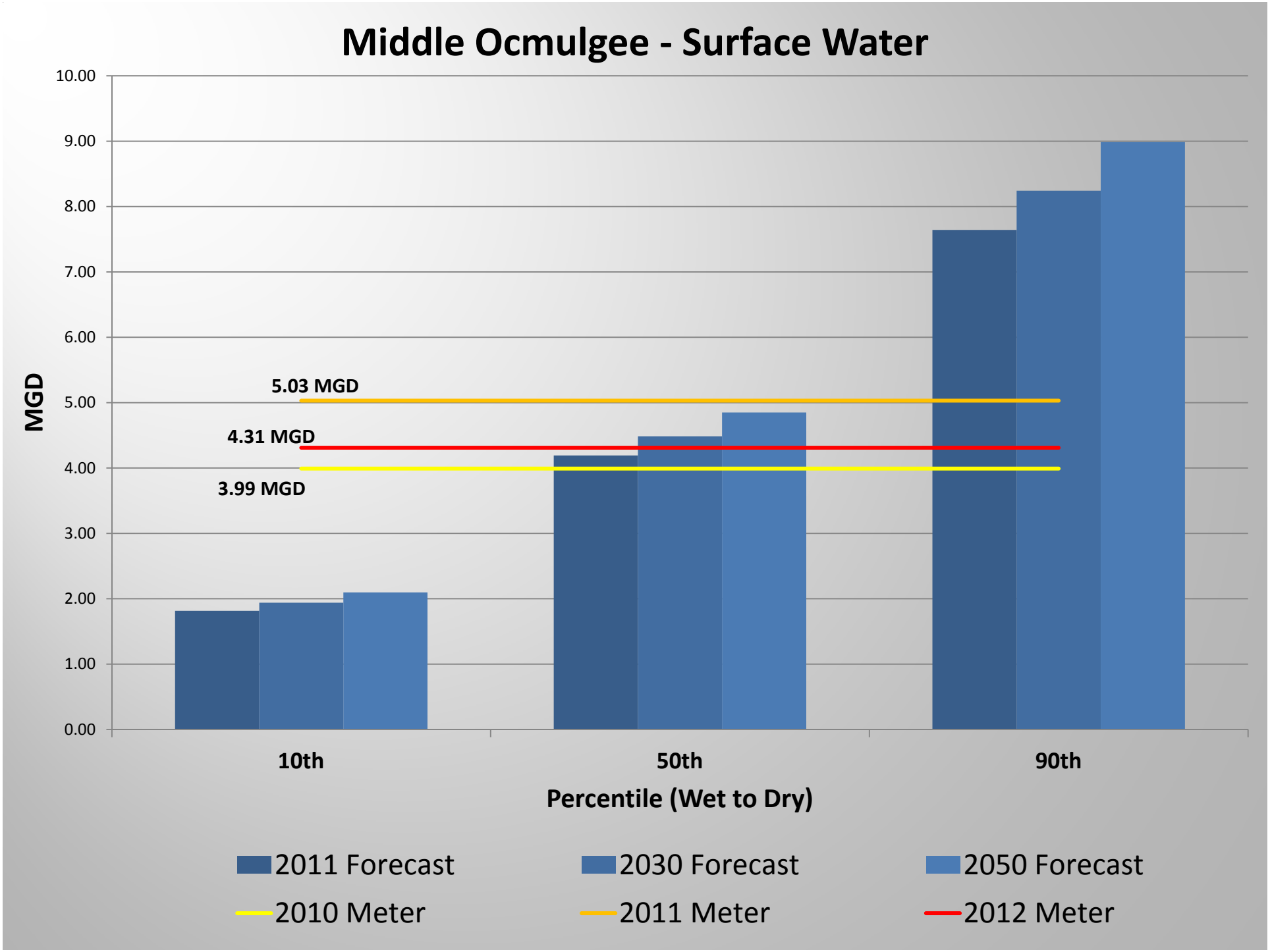
10th
50th
90th
Percentile (Wet to Dry)
2011 Forecast
2030 Forecast
2050 Forecast
2010 Meter


Middle Ocmulgee - Surface Water
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
MGD
5.03 MGD
3.99 MGD
10th
50th
90th
Percentile (Wet to Dry)
2011 Forecast
2030 Forecast
2050 Forecast
2010 Meter
2011 Meter


Middle Ocmulgee - Surface Water
10.00
9.00
8.00
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5.00
4.00
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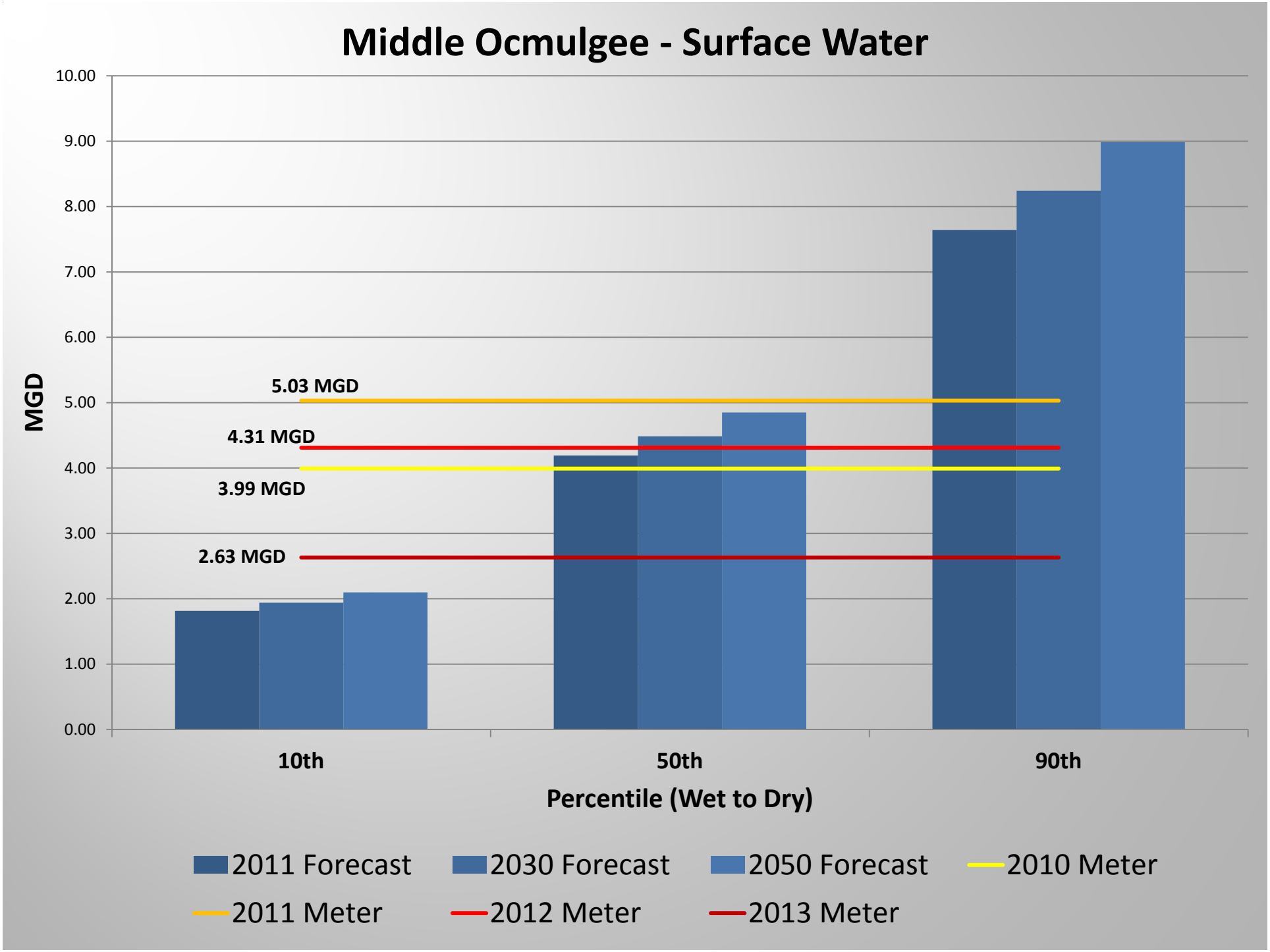
2.00
1.00
0.00
MGD
5.03 MGD
4.31 MGD
3.99 MGD
10th
50th
90th
Percentile (Wet to Dry)
2011 Forecast
2030 Forecast
2050 Forecast
2010 Meter
2011 Meter
2012 Meter


Middle Ocmulgee - Surface Water
MGD
10.00
9.00
8.00
7.00
6.00
5.00
4.00
3.00
2.00
1.00
0.00
5.03 MGD
4.31 MGD
3.99 MGD
2.63 MGD
10th
50th
90th
Percentile (Wet to Dry)
2011 Forecast
2030 Forecast
2050 Forecast
2010 Meter
2011 Meter
2012 Meter
2013 Meter

2015-16 Agricultural Water Demand Forecasts - Methods

- **Approach:** Look to past trends and consider foreseeable changes
- **Acreage**
- **Crop projections through 2050** - modeled based on multiple data sources:
  - USDA Projections, Southeast Model, Georgia Model, Data Trends
- **Crop water needs** - wet, normal, dry years
  - Review estimates used in 2009-2010 and revise if needed

Current and Forecast Agricultural Water Use

- Current and forecast use by basin, water planning region, drainage area (node), county and aquifer.
- Use in dry, normal and wet years
- Used to support resource assessment modeling and water planning council plan development
  - Forecasts will be available during second water planning council meetings of 2016

Section 319(h) NPS Grant Special Award: Regional Water Councils

March 2016

Georgia EPD, NonPoint Source Program Grants Unit

Special Award: Regional Water Councils

- Dedicated funding to develop or revise a 9-element Watershed Management Plan
- Council must recommend one applicant for funding
- Project must be in a Priority Watershed
- $35,000 Federal, $23,333 Match
- Complete by June 2018

Why a Watershed Management Plan?

- Address nonpoint sources of water pollution
- First step towards improving water quality
- Uses a stakeholder process
- Can leverage other watershed needs
- Is eligible for additional future funding

Related Management Practices in Middle Ocmulgee RWP

- WQ9 – Encourage TMDL Implementation
- WQ10 – Develop/Implement Watershed Assessment/Protection Plan Measures
- WQ11 – Implement Watershed Improvement Projects

What is in a WMP?

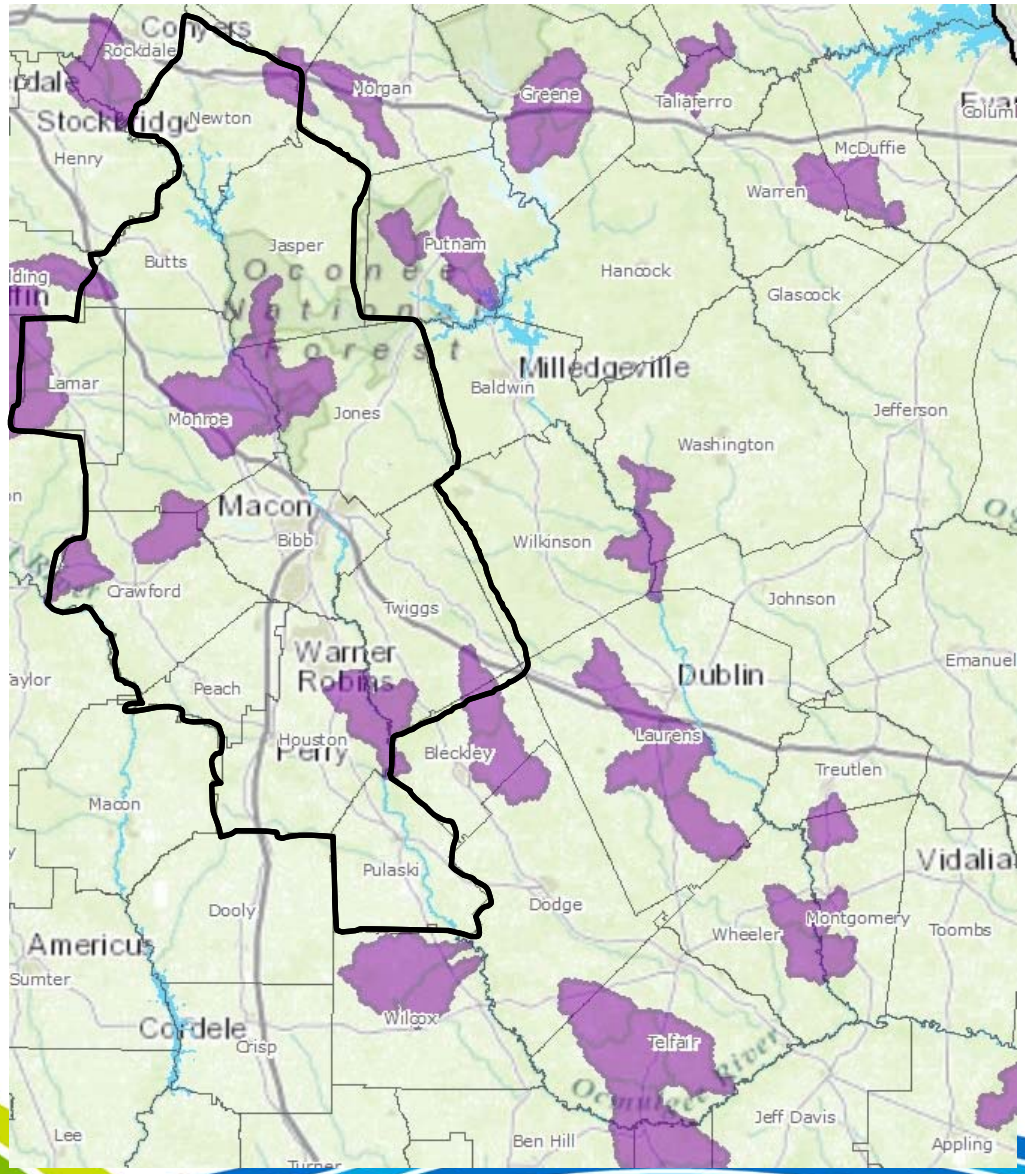
1. **Stream Selection:** Define scope of watershed planning efforts.
2. **Formation of Stakeholder Committee:** Identify & engage relevant stakeholders in watershed.
3. **Source Assessment:** Explain techniques & methods that will be applied to effectively detect & prioritize impairment sources.
4. **Characterization of Current Conditions:** Describe current water quality concerns & ongoing management practices in the watershed.

What is in a WMP?

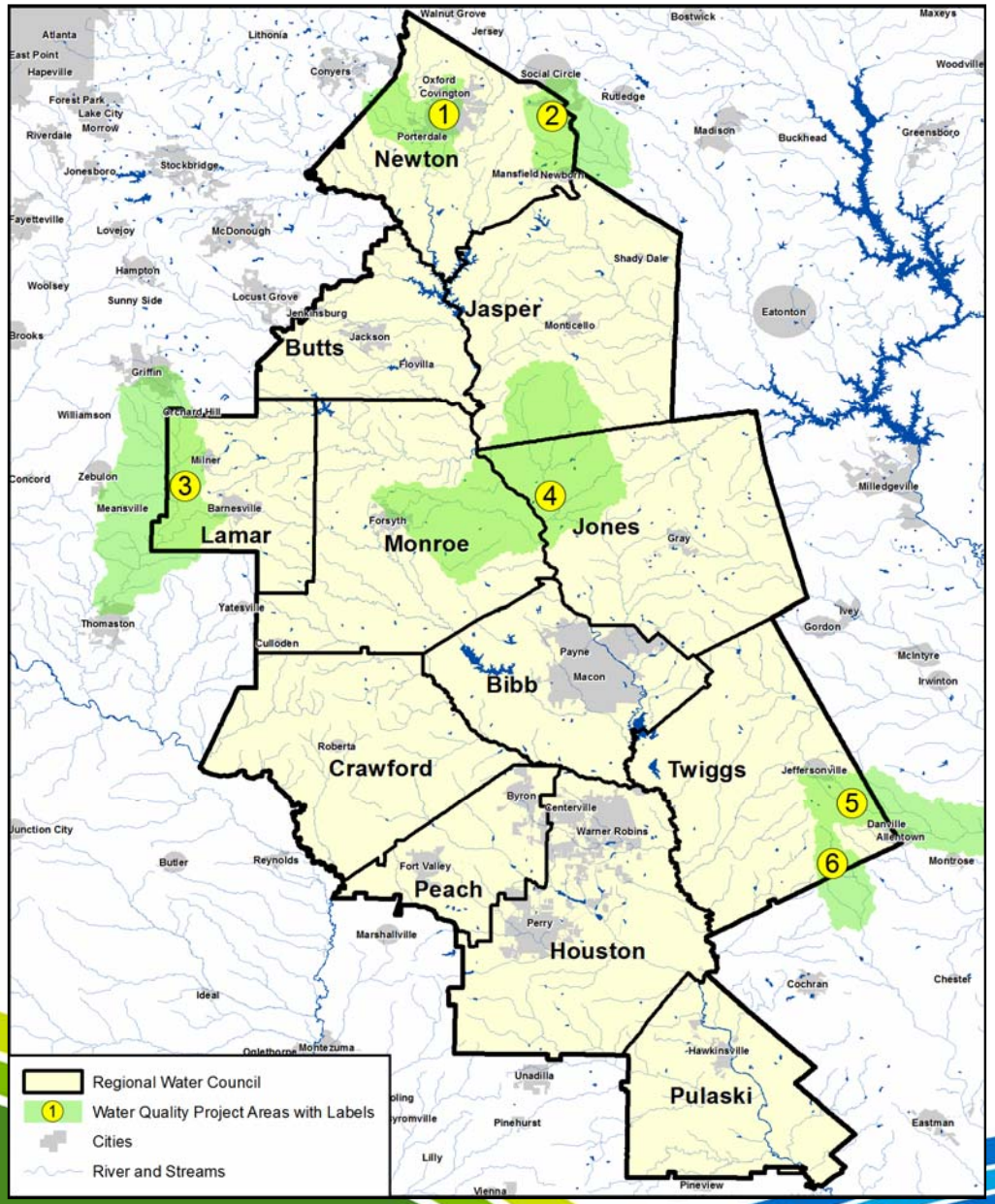
5. **Recommended Management Practices:** Classify solutions that best control water quality impairments.
6. **Working with Public:** Recommend strategies to engage the public & maximize plan implementation.
7. **Activity Schedule** & **Measures of Success:** Develop schedule of activities & measures of success for plan.
8. **Long-Term Monitoring:** Establish monitoring plan to collect & analyze water quality data.
9. **Implementation, Evaluation & Revision:** Propose tactics on moving forward with plan implementation.

Georgia

Middle Ocmulgee Priority Watersheds

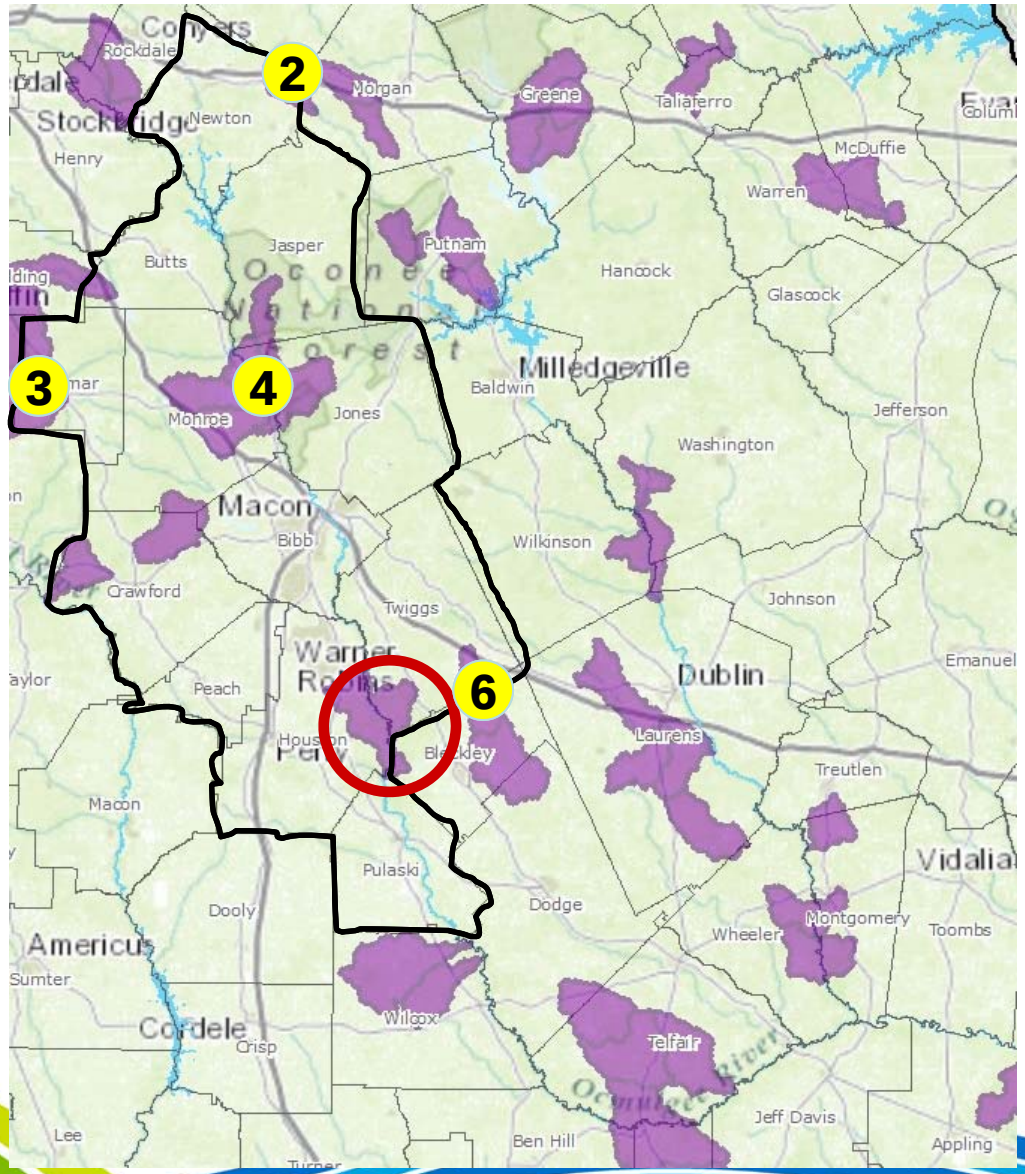


Funded EPD Water Quality Projects: 2010 - Current



- Dried Indian Creek 1
- Little River 2
- Potato Creek 3
- Rum Creek 4
- Turkey Creek 5
- Gum Swamp Creek 6

Middle Ocmulgee Priority Watersheds



Next Steps

- Council to recommend a watershed and subgrantee
- Subgrantees must be public entities or local governments
- Contact GAEPD with workplan
- GAEPD will provide assistance if needed
- Contract to start June 2016

Georgia's

State Water Plan

Updated Population Projections

www.georgiawaterplanning.org

Updated Population Projections

- State and County population projections are prepared by the Governor's Office of Planning and Budget (OPB). https://opb.georgia.gov/

- These projections are used throughout the State for multiple purposes: Transportation Planning, Education Funding Allocation, and other Publically Funded Projects.

- Updated population projections will be used in Regional Water Planning.

Updated Population Projections

Population Projections Calculations:

Future Population =

Base Year Population + Births - Deaths + Net Migration

While the population projection <u>model</u> has remained the same, the <u>data inputs</u> have changed based on new/updated information.

Updated Population Projections

Updated Data Inputs

Base Year Population

Census Bureau Vintage 2013 Population Estimates (Age x Sex)

Births

GA Dept. of Public Health Fertility Rates 2008-2012 (Age x Sex)

Deaths

GA Dept. of Public Health Survival Rates 2008-2012 (Age x Sex)

Net Migration

Census Bureau Annual Population Estimates & Change Components 1990-2014

- County Net Migration: 2006-2014

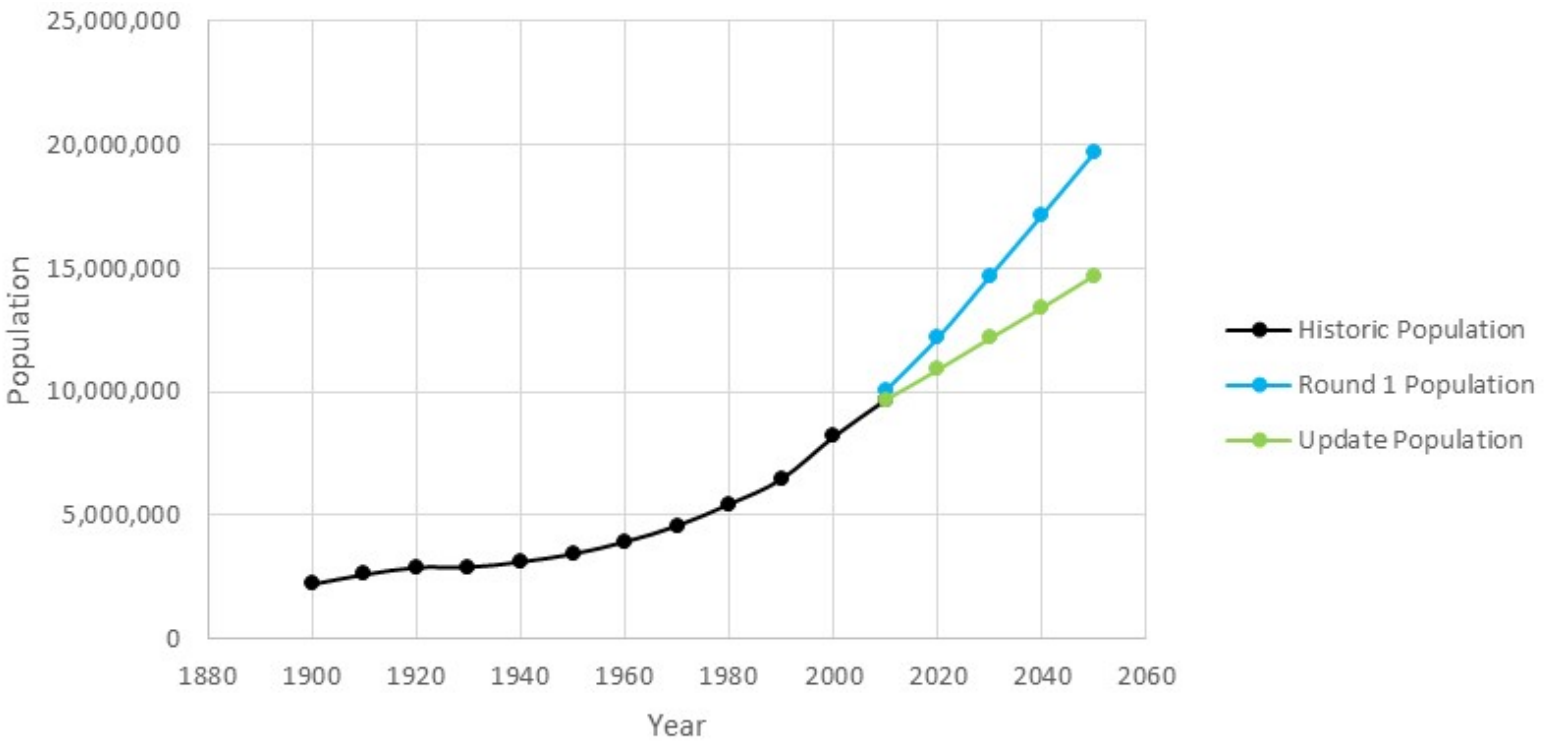
American Community Survey 2006-2010

Georgia

Georgia's Historic Population Growth and Projections

Overall projected growth of the state population is slower than estimated in Round 1 Projections

Statewide Annual Growth Rate
Round 1: 1.69% Update : 1.05%



Updated Population Projections

Georgia continues to grow, but current population projections are more in line with historic trends

Concentrated Growth 50% of Georgia's population growth from 2010-2013 occurred in Fulton, Gwinnett, and Cobb Counties

Migration Patterns In migration of people that are retirees and/or have associated low birth rates and tend to experience declining or flat population projections

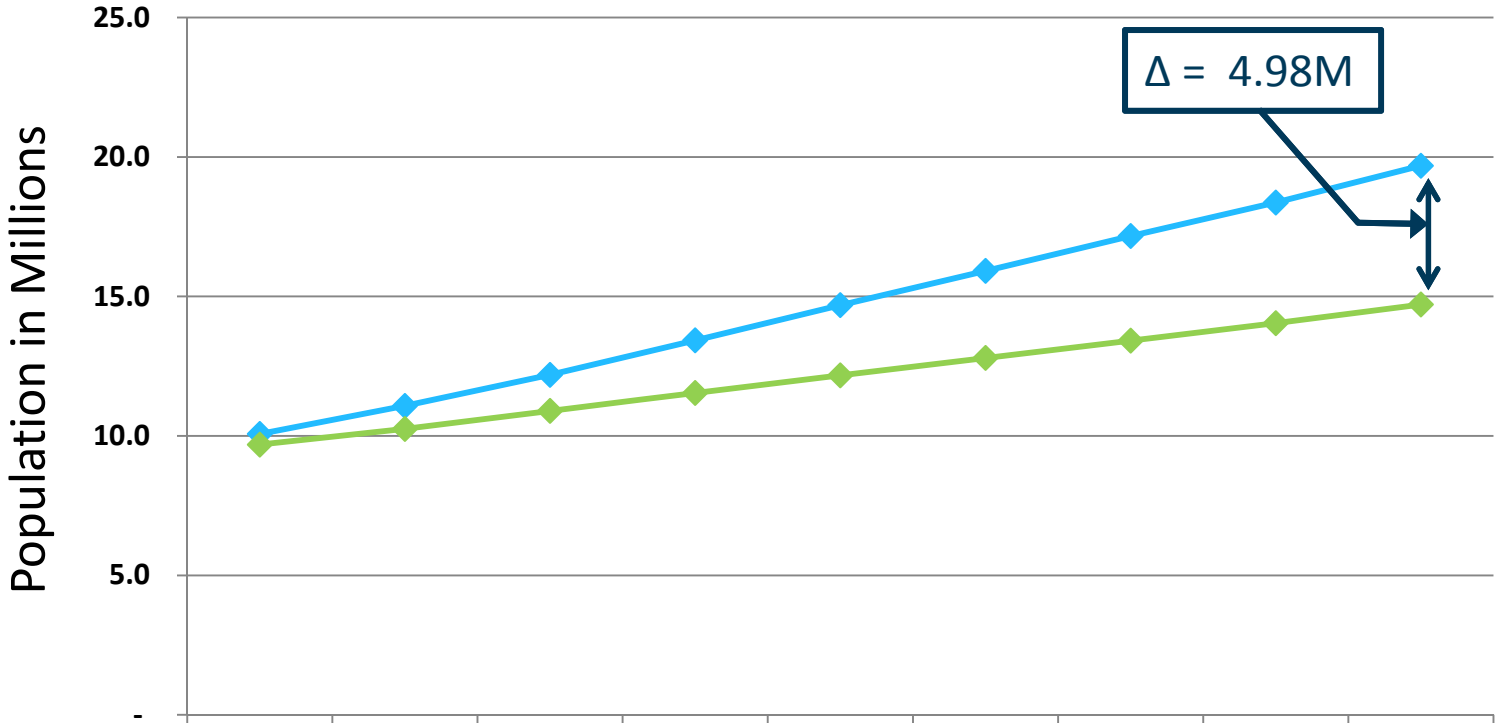
Rural Counties Since the 2010 Census, approximately half of Georgia's counties have experienced a decline in population and those are primarily rural counties

Georgia

Updated Population Projections

This update and future revisions are needed to appropriately plan for Georgia's water needs.

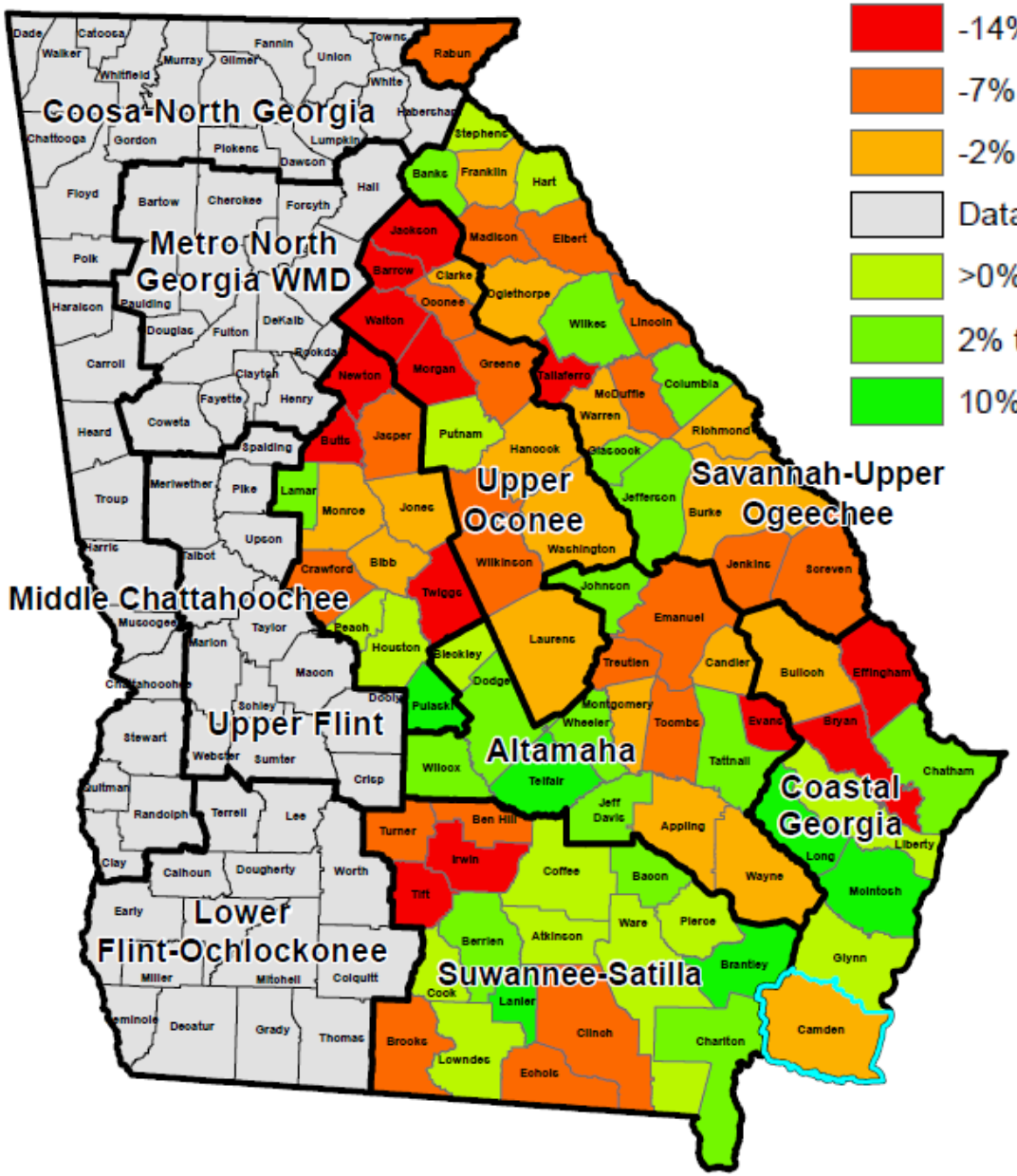
State Population Projections



	2010	2015	2020	2025	2030	2035	2040	2045	2050
Round 1	10.07	11.08	12.19	13.43	14.69	15.91	17.17	18.37	19.69
Update	9.69	10.25	10.90	11.54	12.17	12.80	13.41	14.04	14.71

Georgia

Georgia 2010 Population Projection Change



-14% to -7%

-7% to -2%

-2% to <0%

Data Unavailable

>0% to 2%

2% to 10%

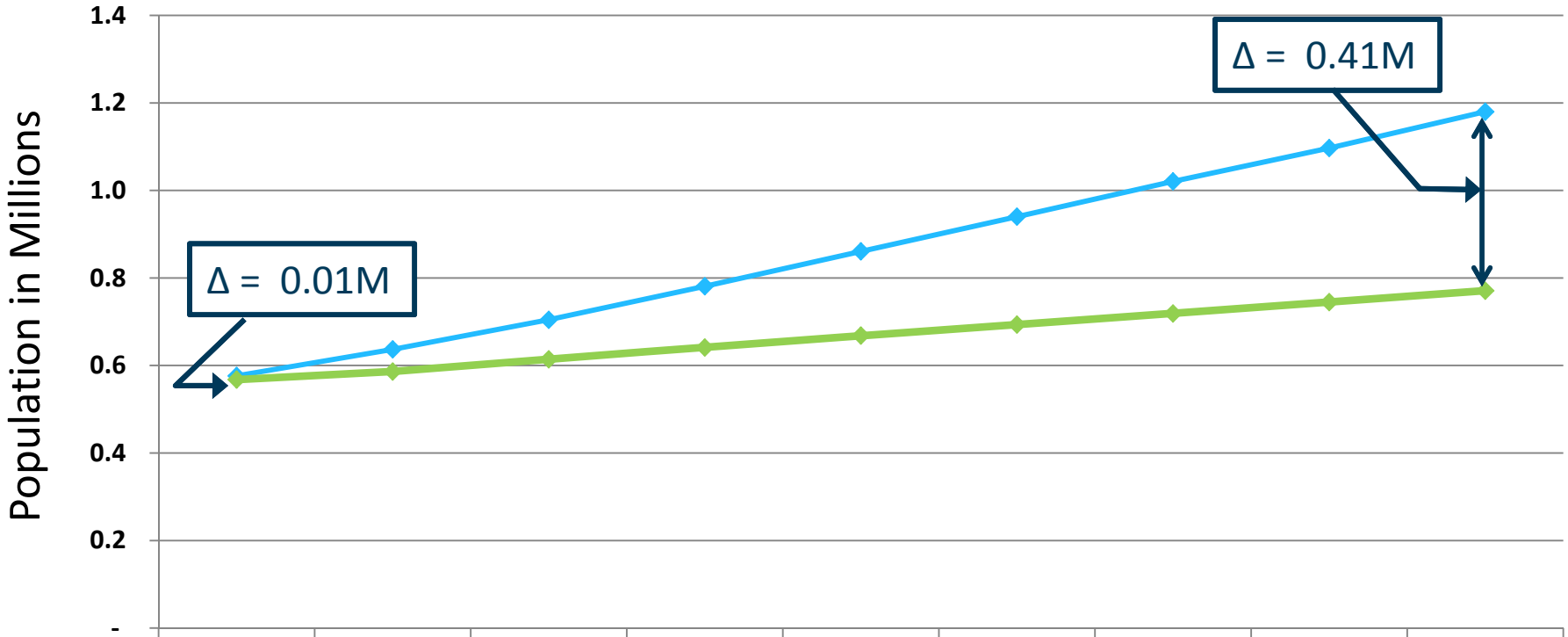
10% to 22%

Round 1 Projections >> 2010 Census

Round 1 Projections << 2010 Census

Georgia

Middle Ocmulgee Population Projections



	2010	2015	2020	2025	2030	2035	2040	2045	2050
Round 1	0.58	0.64	0.70	0.78	0.86	0.94	1.02	1.10	1.18
Update	0.57	0.59	0.61	0.64	0.67	0.69	0.72	0.74	0.77

Questions & Discussion

Round 1: Population Projections

Round 1 of RWP (re: 2000 census)

County	2010	2015	2020	2025	2030	2035	2040	2045	2050
Bibb	156,678	161,301	166,118	170,910	175,447	179,718	183,839	188,005	192,368
Butts	25,857	29,897	34,274	39,210	44,811	51,193	58,443	66,699	76,147
Crawford	12,924	14,282	15,594	16,948	18,257	19,451	20,683	21,937	23,264
Houston	137,958	149,875	162,609	176,199	189,897	203,134	216,985	231,450	246,718
Jasper	14,731	17,344	20,237	23,572	27,065	30,505	34,079	37,620	41,499
Jones	28,931	32,905	37,004	41,534	45,743	49,037	52,089	54,433	56,784
Lamar	17,621	19,473	21,392	23,474	25,727	28,176	30,832	33,714	36,859
Monroe	26,537	30,251	34,204	38,586	43,094	47,532	51,895	55,719	59,840
Newton	107,048	129,789	157,414	191,000	227,537	265,180	302,887	335,391	371,631
Peach	27,635	29,962	32,514	35,299	37,974	40,284	42,745	45,366	48,118
Pulaski	9,997	10,639	11,213	11,728	12,210	12,631	12,979	13,291	13,573
Twiggs	10,434	11,187	11,866	12,547	13,041	13,236	13,318	13,232	13,165
Total	**576,351**	**636,905**	**704,439**	**781,007**	**860,803**	**940,077**	**1,020,774**	**1,096,857**	**1,179,966**

Round 2: Population Projections

Round 2 of RWP

County	2010 Census	2015	2020	2025	2030	2035	2040	2045	2050
Bibb	155,547	155,778	158,072	159,289	160,506	160,516	160,526	159,825	159,124
Butts	23,655	23,718	24,600	25,337	26,073	26,554	27,034	27,458	27,881
Crawford	12,630	12,453	12,285	11,957	11,629	11,109	10,589	9,998	9,408
Houston	139,900	152,213	163,444	174,230	185,016	195,140	205,265	214,852	224,438
Jasper	13,900	13,759	14,144	14,454	14,764	14,929	15,093	15,277	15,460
Jones	28,669	29,024	30,141	31,112	32,084	32,673	33,262	33,761	34,259
Lamar	18,317	18,233	18,908	19,652	20,395	21,258	22,121	23,141	24,161
Monroe	26,424	27,516	28,888	30,306	31,725	33,071	34,417	35,935	37,452
Newton	99,958	106,470	116,855	128,475	140,095	153,004	165,913	180,616	195,320
Peach	27,695	27,214	27,611	27,850	28,090	28,287	28,484	28,611	28,738
Pulaski	12,010	11,475	11,304	11,104	10,903	10,655	10,406	10,227	10,049
Twiggs	9,023	8,337	7,953	7,455	6,957	6,364	5,771	5,222	4,672
Total	**567,728**	**586,189**	**614,206**	**641,222**	**668,237**	**693,559**	**718,881**	**744,922**	**770,963**

Georgia's

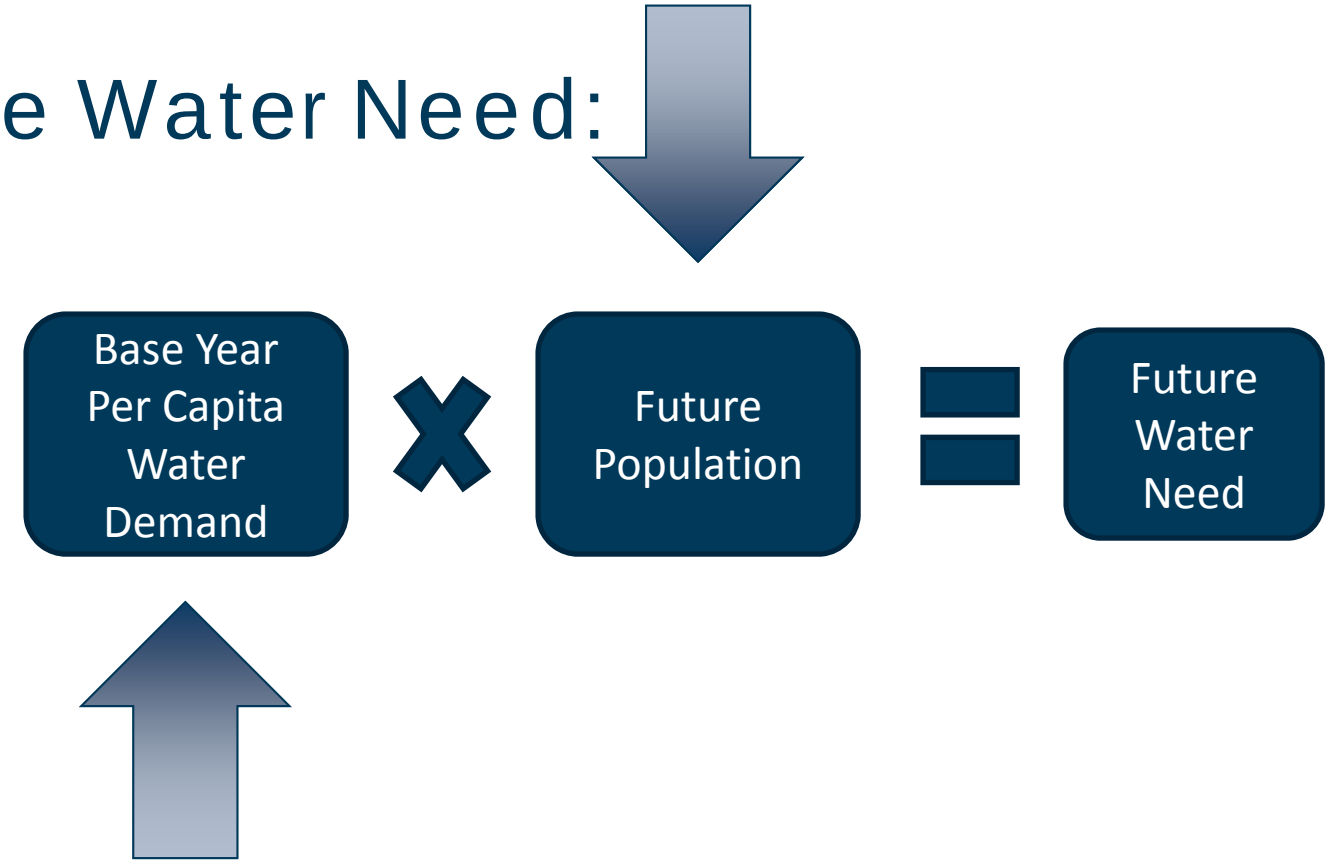
State Water Plan

Municipal Water Demand Forecast Update

www.georgiawaterplanning.org

Projecting Municipal Water Demand

Future Water Need:



Calculating Per Capita Demand: Round 1

- Municipal
  - public/private water systems
  - adjustment for wholesale and large industrial
  - Council feedback for region specific adjustment

- Self-Supply (i.e. private wells)
  - 75 gpcd demand (USGS)
  - Council feedback for region specific adjustment

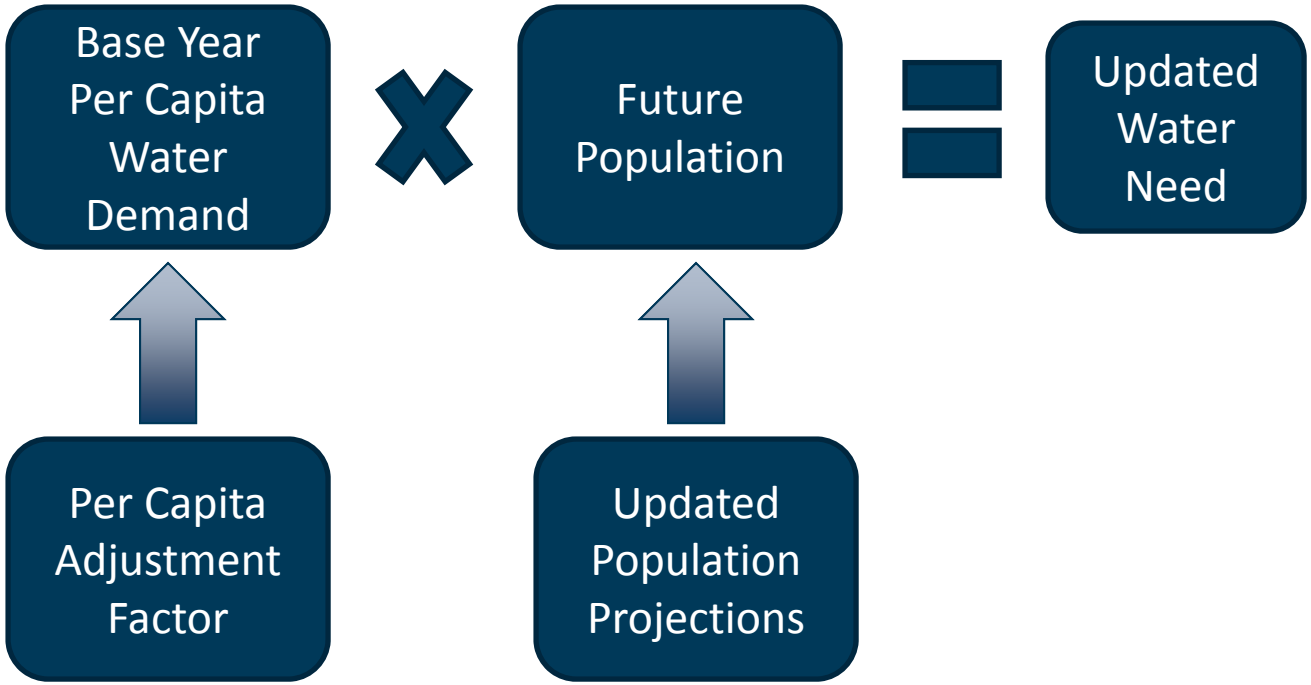
$$\frac{\text{Base Year Municipal Water Withdrawal} \pm \text{Adjustments for Wholesale and Large Industrial}}{\text{Publicly-Supplied Population}} = \text{Base Year Municipal Per Capita Water Demand}$$

Round 1 Methodology

- Estimated municipal water use and population served by municipalities in each county
- Calculated a weighted average (weighted by population served) for each county
- Reconciled the county average with USGS estimates
- Refined the county gpcd values given comments from regional councils

Projecting Municipal Water Demand

Updated Municipal Water Need with Adjustment Factor:



Round 2 Methodology: Adjustment to gpcd

- EPD collected municipal water use and population served by municipalities and water systems from 2010 to 2014 (5 years)
- The % change was calculated for each year interval (2010 to 2011, 2011 to 2012, 2012 to 2013, and 2013 to 2014), and the average of those was calculated as the ***per capita water use adjustment factor***
- The adjustment factor was applied to the Round 1 gpcd values

Round 2 Methodology

- New population projections
- Each county has the "municipal" water demand split between publicly-supplied (i.e., water provider) and self-supplied (i.e., private wells).
- The ratio of public-supplied to self-supplied water use in each county for Round 1 were maintained for Update

Middle Ocmulgee Municipal GPCD Change

County	Round 1 GPCD	Adjustment Factor	Adjusted GPCD	GPCD Δ
Bibb	177	-3.1%	171	-5.4
Butts	117	1.9%	120	2.2
Crawford	101	5.1%	107	5.2
Houston	168	-1.1%	166	-1.8
Jasper	138	0.4%	139	0.6
Jones	90	1.1%	91	1.0
Lamar	188	3.0%	193	5.6
Monroe	185	3.0%	191	5.6
Newton	121	1.1%	122	1.3
Peach	126	-1.2%	125	-1.5
Pulaski	140	4.2%	146	5.9
Twiggs	125	-0.3%	125	-0.4

Georgia

Per Capita Summary: Middle Ocmulgee Region

- Small relative change
- Less than 5% change across most counties
- 7 out of 12 counties have less than 5 GPCD change
- 5 Counties have chances greater than 5
- Round 1 Regional Average GPCD: 139.67
- Updated Regional Average GPCD: 141.33

Additional GPCD Analysis by EPD

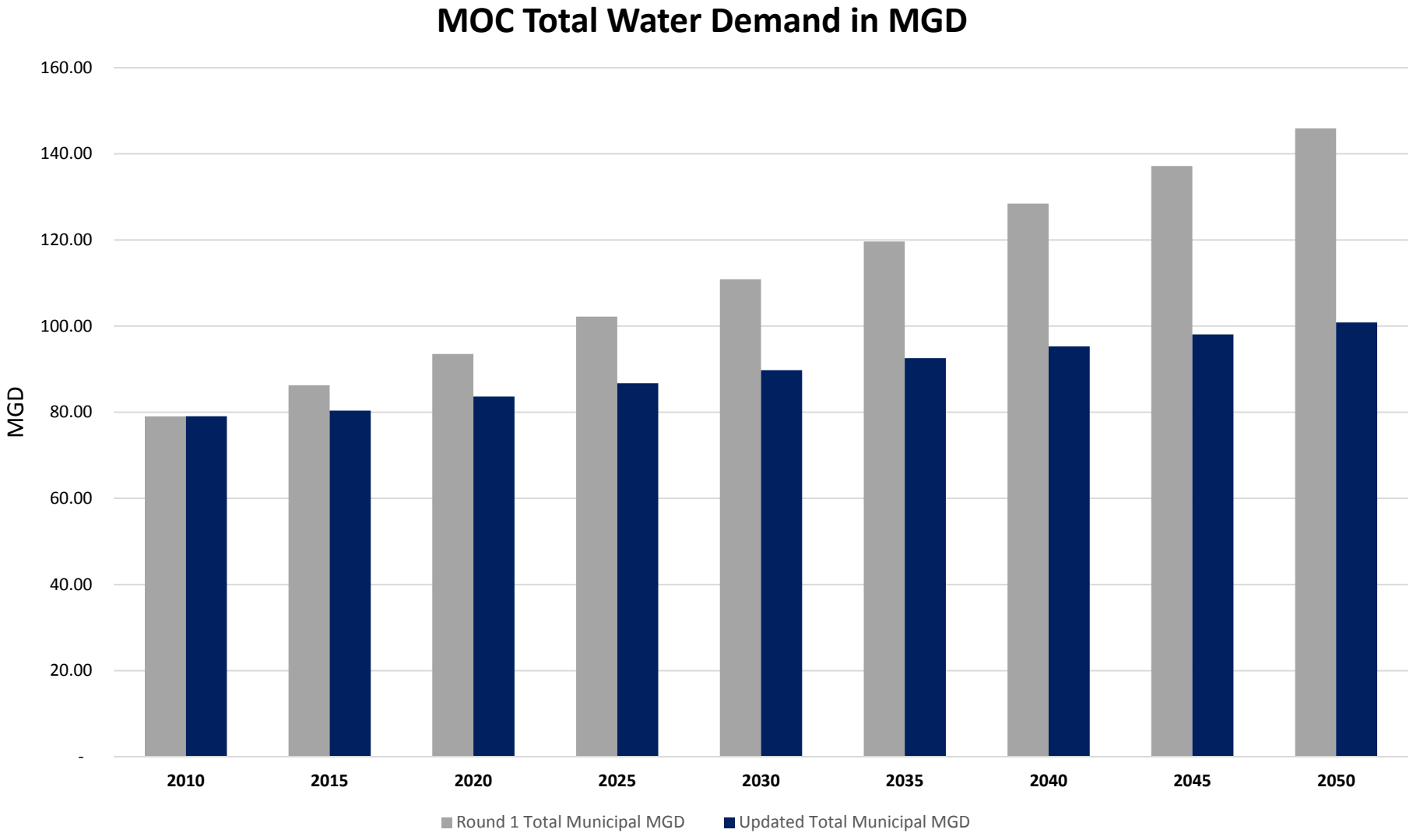
- EPD will continue to evaluate and refine the additional source of information
- Planning Considerations:
  - Regional and statewide planning are conducted at a different scale than that used in facility planning and permitting
  - Data requirements, local and site specific conditions are unique
- We will keep Council engaged and informed as this work progresses

Projecting Municipal Water Demand

Future Water Need:

Base Year Per Capita Water Demand **x** Future Population **=** Future Water Need

Water Forecast Update Results



Georgia's
State Water Plan

Municipal Wastewater Demand Forecast Update

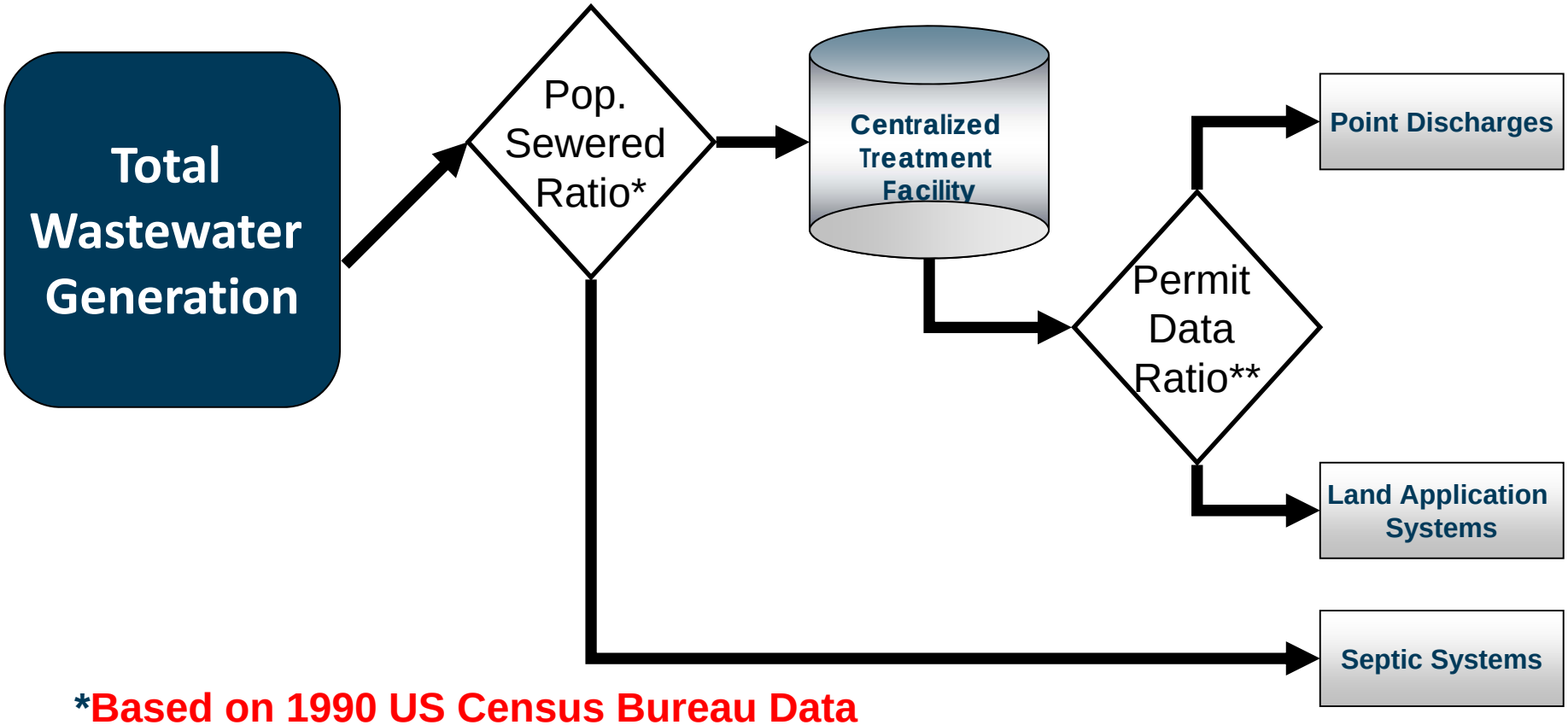
www.georgiawaterplanning.org

Municipal Wastewater Forecast: Round 1

Projected Municipal Water Use **x** Percent Average Indoor Water Use **x** * Infiltration/ Inflow (1 + % I/I) **=** Total Wastewater Generation

* Water Planning Region-specific values were determined with Regional Councils:
  - All sanitary sewer systems experience I&I
  - Inflow is stormwater entering at points of direct connection
  - Infiltration is groundwater entering through cracks and/or leaks
  - Average I&I percentage estimated for each water planning region based on input from water users

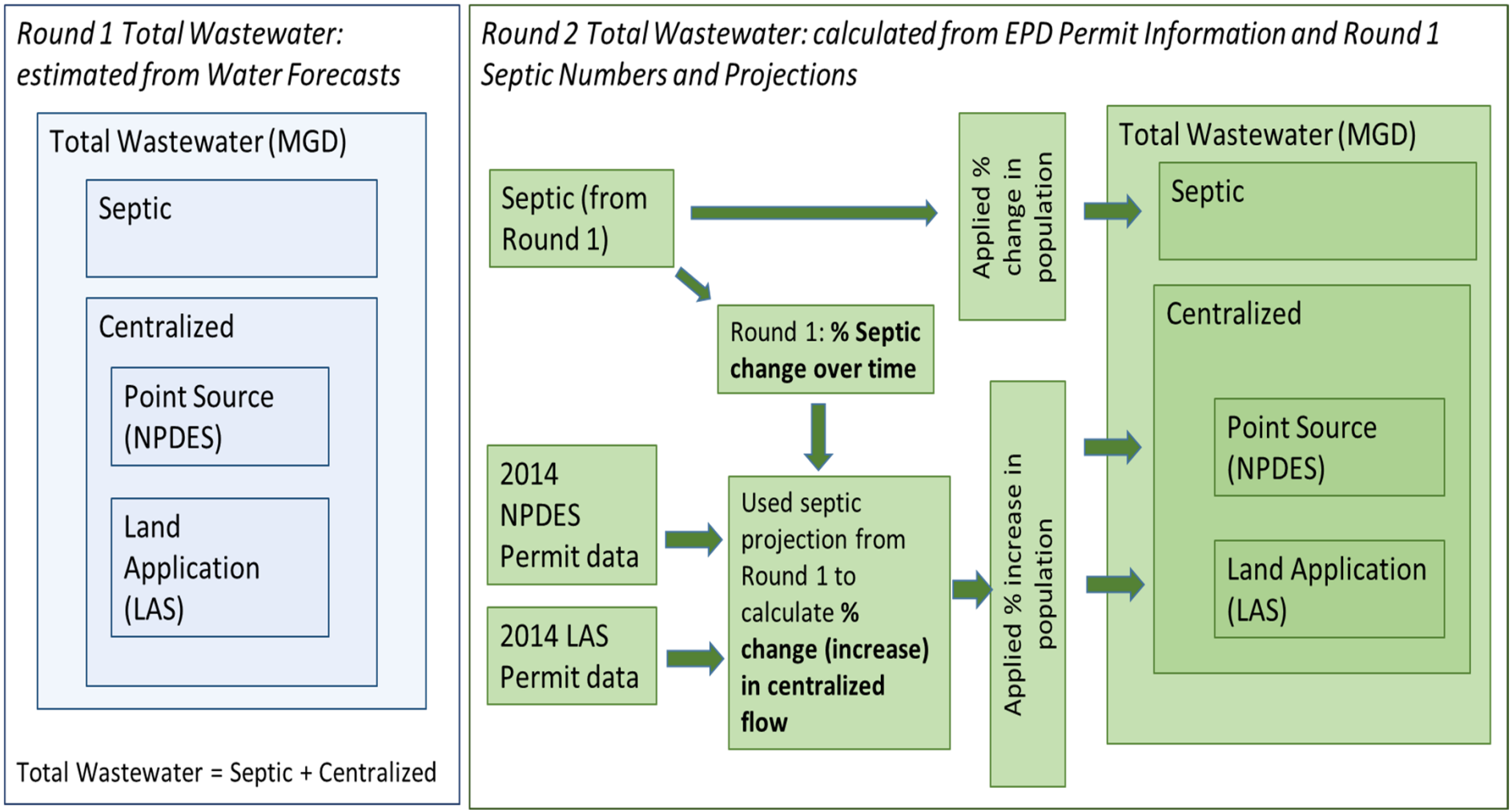
Municipal Wastewater Forecast: Round 1



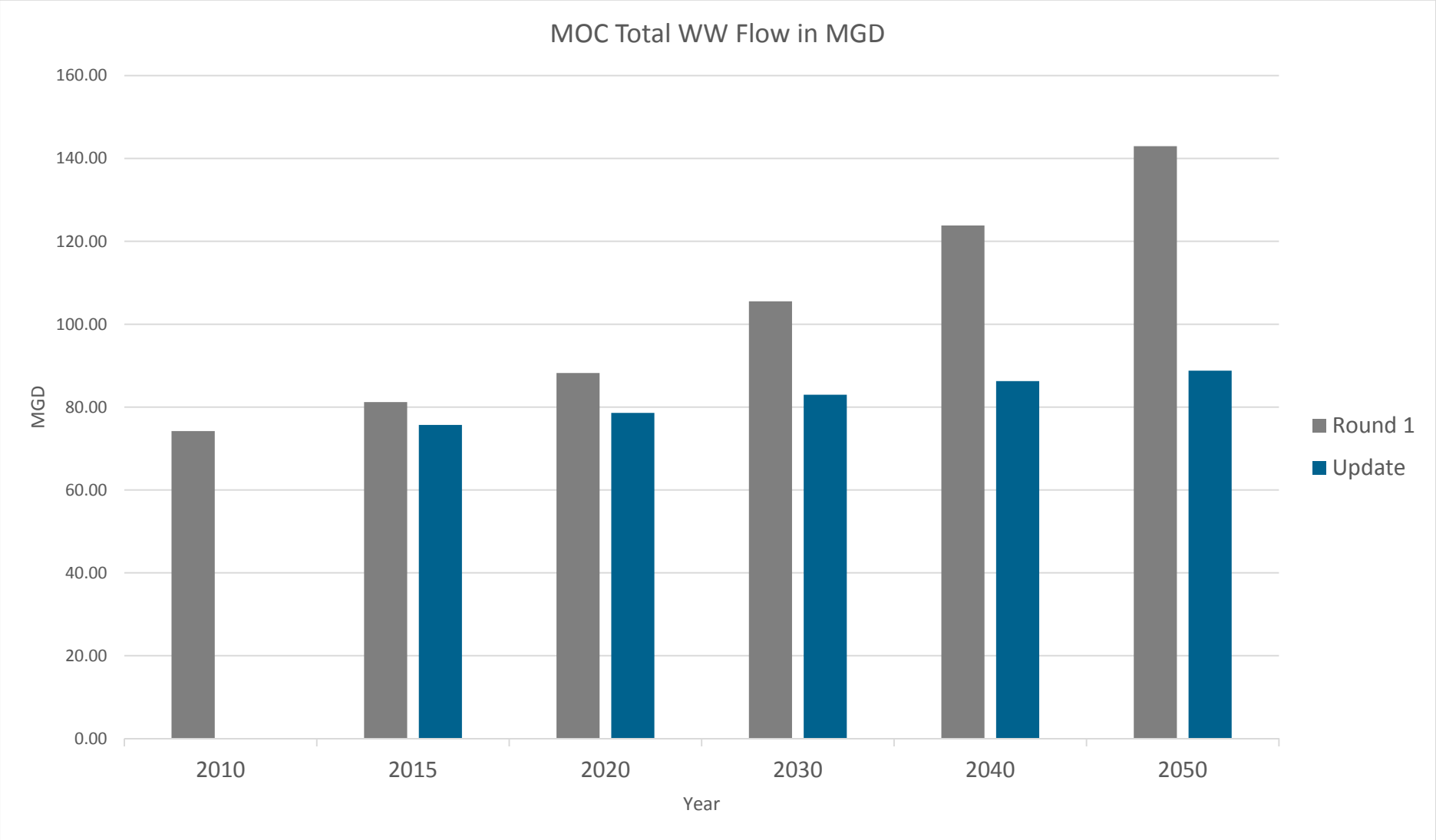
***Based on 1990 US Census Bureau Data**

****Based on Existing GA EPD Permit Data**

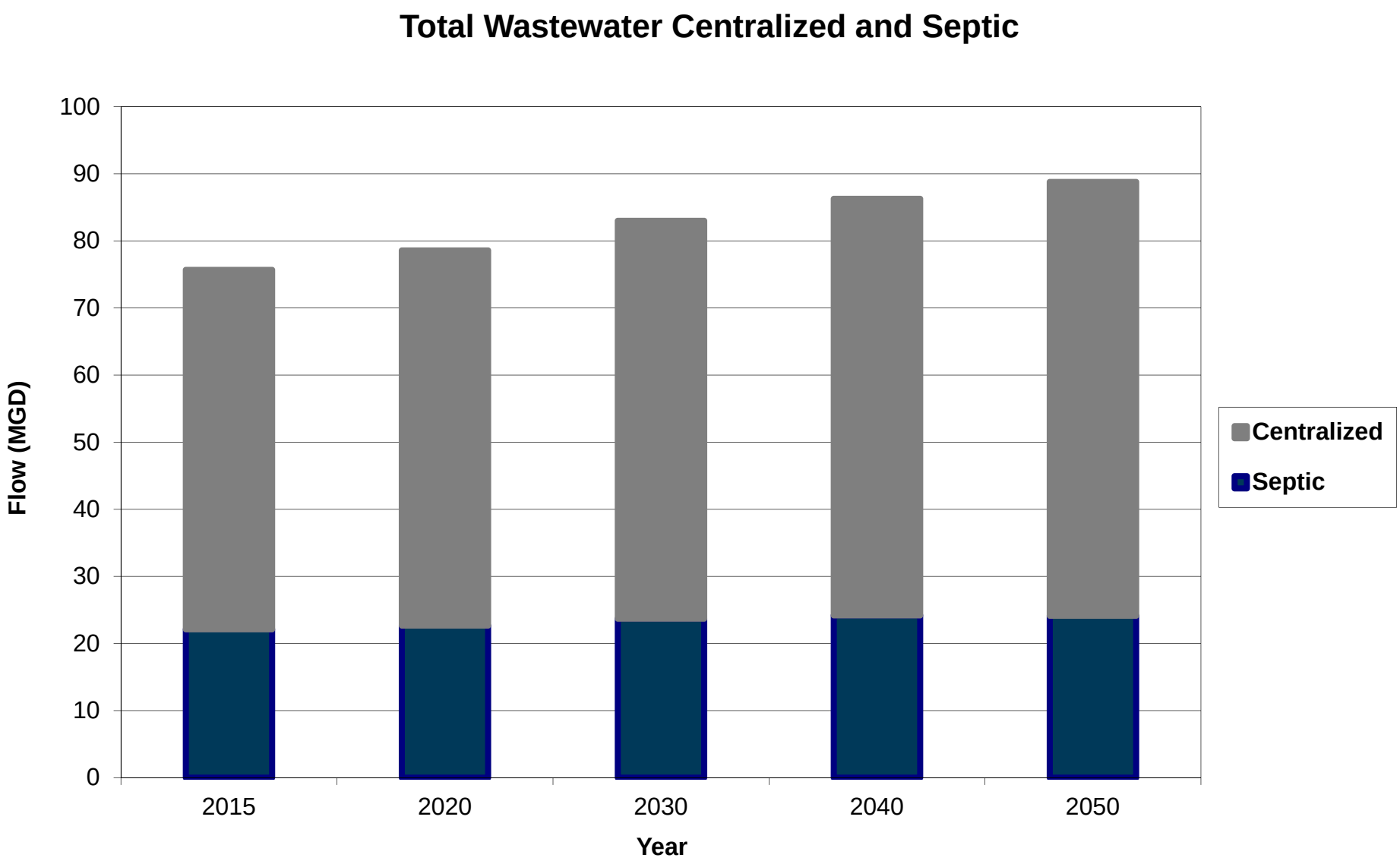
Municipal Wastewater Forecast: Round 2



Municipal Wastewater Forecast Update Results



*Includes corrected wastewater numbers for Houston and Butts Counties



*Includes corrected wastewater numbers for Houston and Butts Counties

Questions & Discussion

Georgia's

State Water Plan

Industrial Water and Wastewater Demand Forecast Review

www.georgiawaterplanning.org

Industrial Water Forecast

* Or Aquifer

- Water is needed for industrial processes, sanitation, cooling, and employee use
- Water use is linked to production; in absence of production data, water use is a function of employment
- Updated employment data are not available, therefore industrial forecasts are not being updated at this time

Industrial Water & Wastewater Demand

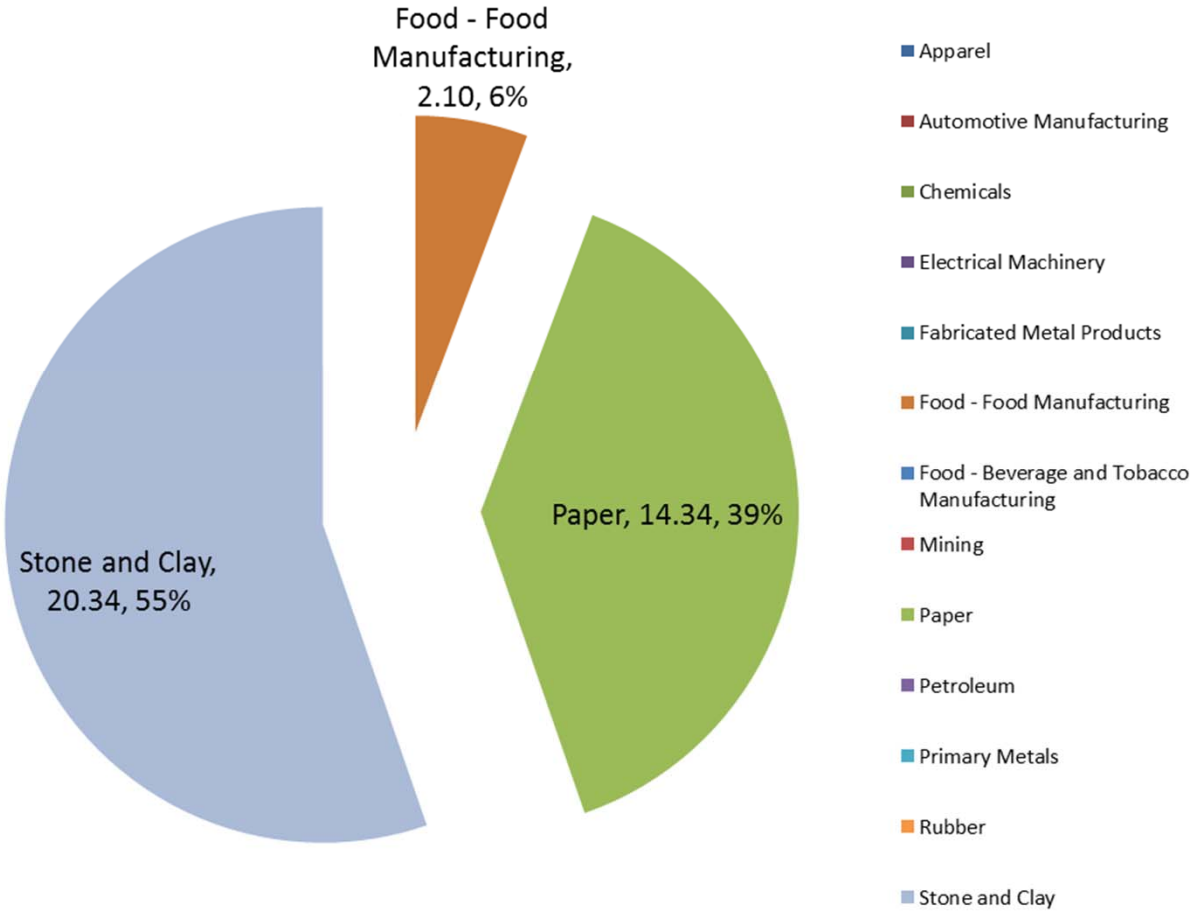
- EPD recommends maintaining Round 1 estimates of industrial water & wastewater forecasts
- Regional Councils are encouraged to review Round 1 projections
- Councils should identify any significant changes to the region that may influence projections

Major Water-Using Industries in Georgia

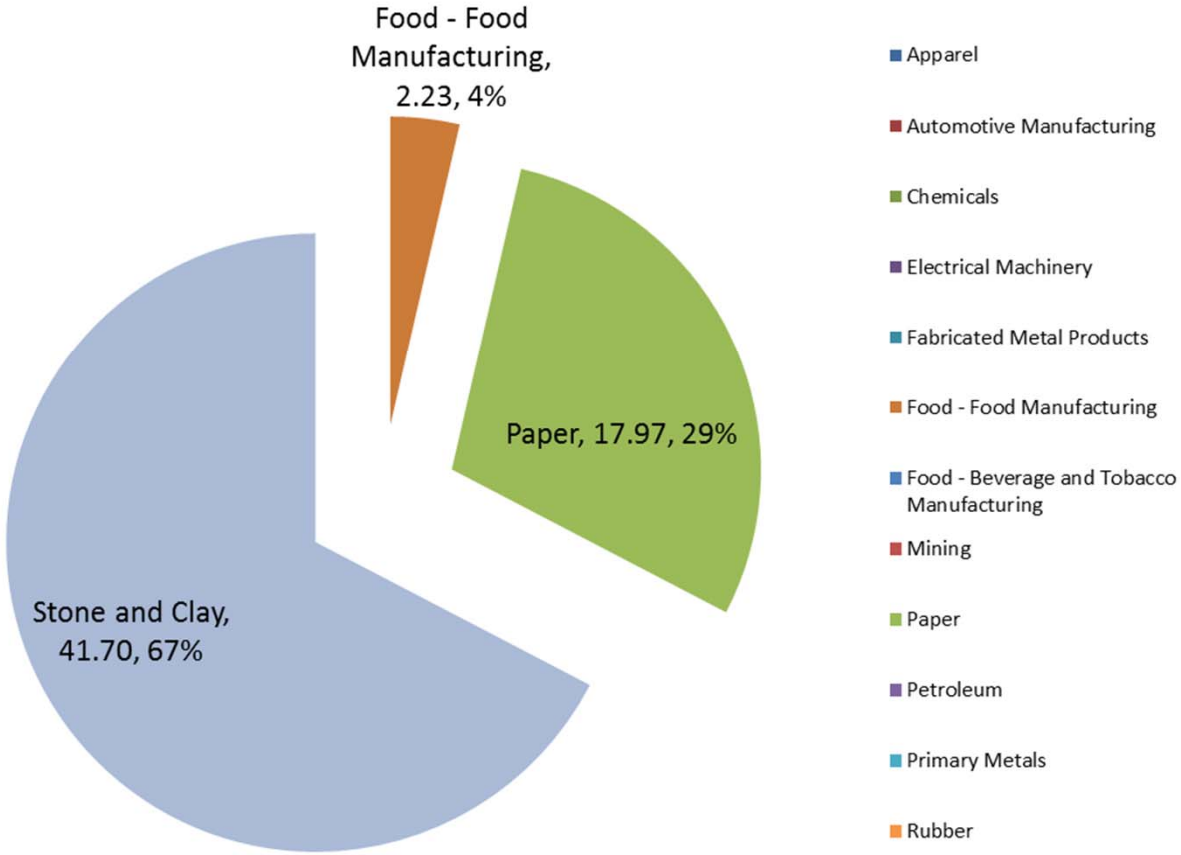
Industry	SIC Code	NAICS Code	Industry	SIC Code	NAICS Code
Apparel	23	315	Paper	26	322
Transportation Equipment	37	336	Petroleum and Coal Products	29	324
Chemicals	28	325	Primary Metals	33	331
Electrical Equipment	36	335	Plastic and Rubber	30	326
Fabricated Metal Products	34	332	Nonmetallic Mineral Products (includes Kaolin)	32	327
Food	20	311	Textile Mills	22	313
Beverage and Tobacco	20	312	Textile Product Mills (includes Carpet)	22	314
Mining	14	212	Automobile	37	336

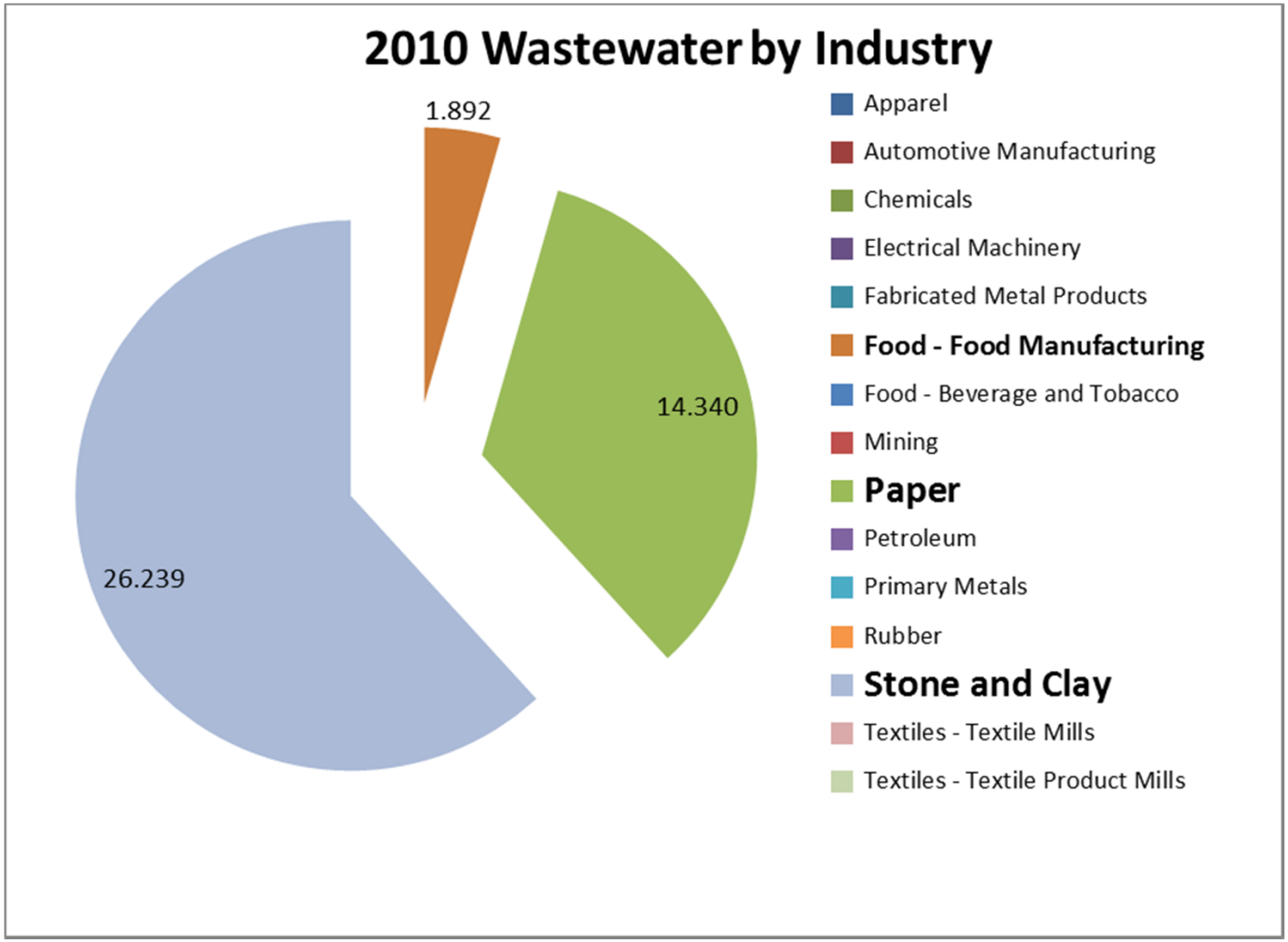
Georgia

Withdrawals by Industry (MGD) : Middle Ocmulgee 2010

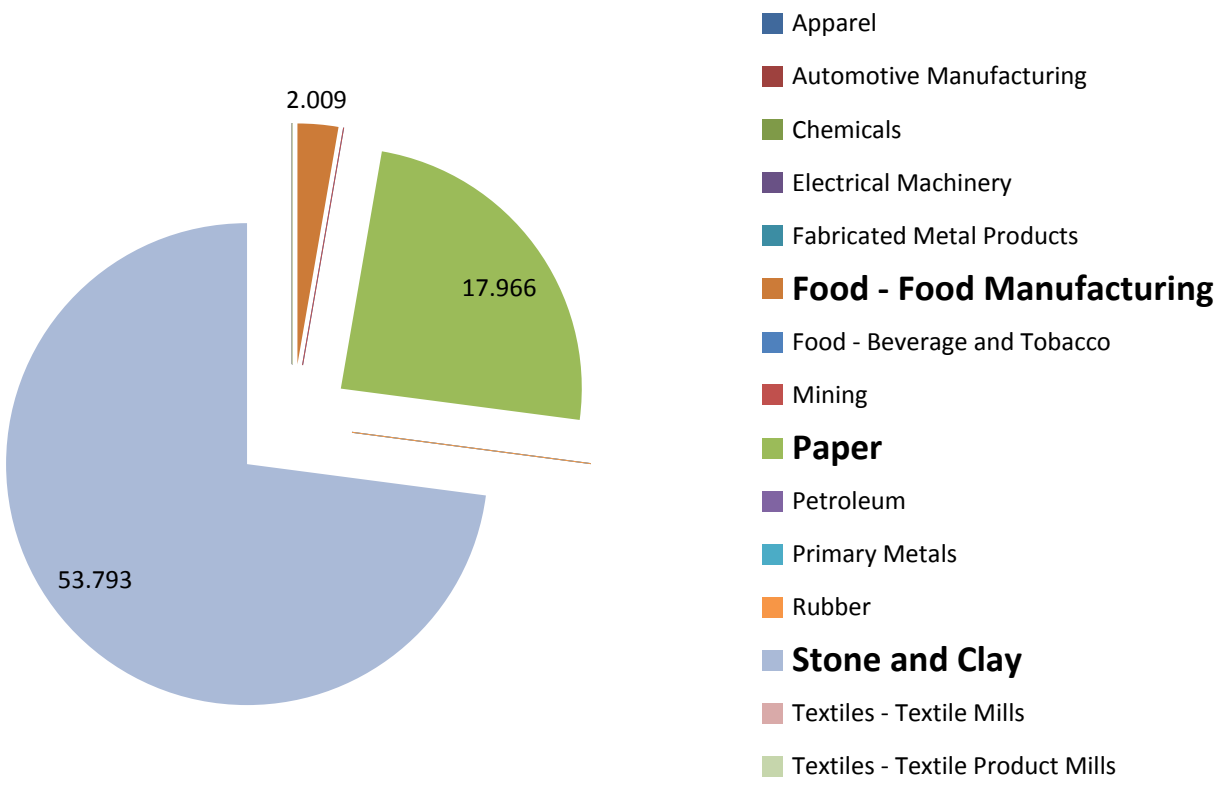


Withdrawals by Industry (MGD) : Middle Ocmulgee 2050



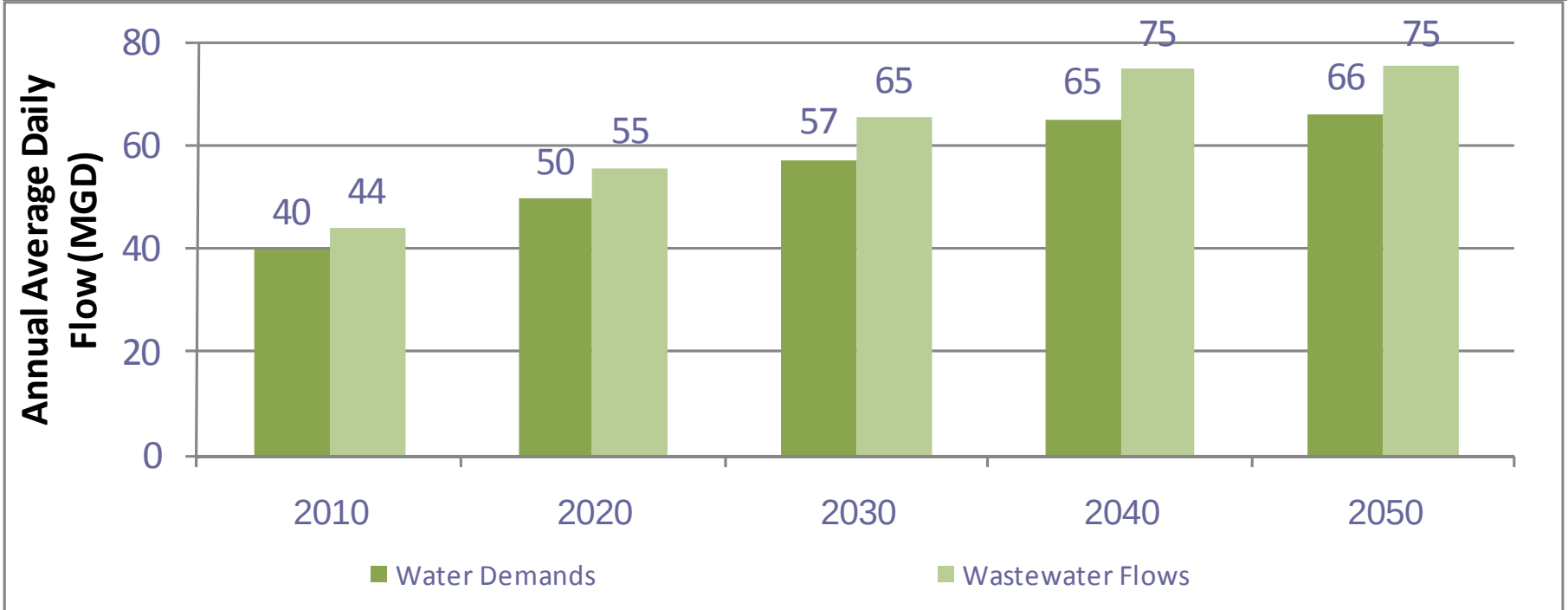

2010 Wastewater by Industry
1.892
14.340
26.239
Apparel
Automotive Manufacturing
Chemicals
Electrical Machinery
Fabricated Metal Products
Food - Food Manufacturing
Food - Beverage and Tobacco
Mining
Paper
Petroleum
Primary Metals
Rubber
Stone and Clay
Textiles - Textile Mills
Textiles - Textile Product Mills

2050 Wastewater by Industry (MGD)



Region Industrial Water Demand Forecast
Middle Ocmulgee

Figure 3: Industrial Water & Wastewater Forecast (AAD-MGD)



Source: JJG/Jacobs Municipal Water Demand Forecasts (July 2010)
Note: Includes public- and self-supplied industries. The projected wastewater quantity is higher than water demand because Georgia's stone and clay industry discharges approximately 29 percent more than it withdraws. Reusing captured stormwater is a common practice by the industry.

Figure 3: Middle Ocmulgee Regional Water Plan

Georgia

Georgia's

State Water Plan

Energy Forecast Updates

www.georgiawaterplanning.org

Energy Water Use Forecast Updates

Energy generation facilities contribute uniquely to the entire Statewide power portfolio

Each power facility has a unique water to power production signature

- Fuel Type (coal, natural gas, nuclear)
- Prime Mover (thermal energy into mechanical energy)
- Cooling Type (single pass vs. evaporative)

The relative contribution of each facility can change over time as facilities retire or are brought on-line

Energy water needs are forecasted based upon facility type and total power production (est. from population projections)

Baseline: Expected energy need based on regression analysis & new population projections

High Demand: Standard error from the regression analysis is used to estimate 95% upper limit

Georgia

Energy Water Use Forecast Updates

Energy Water Use Calculations are based upon:

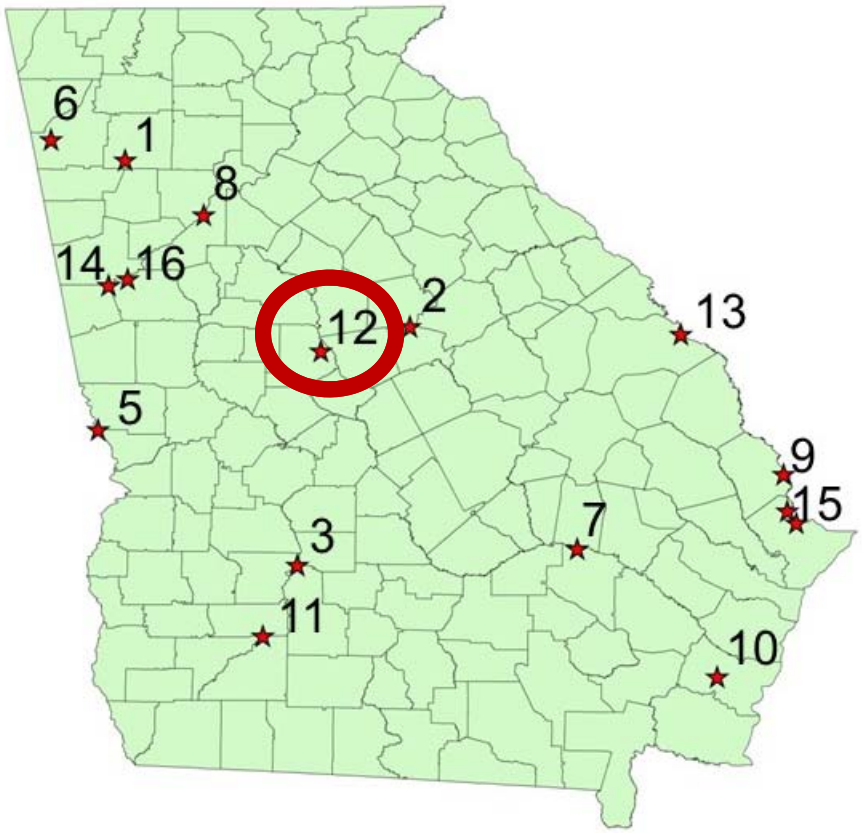
Energy Water Use (per generating unit) =

$$\frac{\text{Water Withdrawal Requirements [gal/MWh]} \times \text{Power Generation [MWh]}}{\text{Water Consumption Requirements [gal/MWh]} \quad \text{Power Generation [MWh]}}$$

While the energy water use calculations are still based upon the previous <u>relationship</u> between population and energy needs, the energy needs have changed based on <u>new population projections</u>.

Energy Water Use Forecast Updates

Thermoelectric Power Facilities in Georgia with Water Withdrawal Permits



Facility Name	County
1. Plant Bowen	Bartow
2. Plant Branch	Putnam
3. Crisp County Power Comm-Steam	Worth
4. Gum Power Plant LLC	Mitchell
5. H Allen Franklin[1]	Lee (Alabama)
6. Plant Hammond	Floyd
7. Plant Hatch	Appling
8. Plant Jack McDonough	Cobb
9. Plant McIntosh	Effingham
10. Plant McManus	Glynn
11. Plant Mitchell	Dougherty
12. Plant Scherer	Monroe
13. Voglte	Burke
14. Plant Wansley	Heard
15. Plant Wentworth (Kraft)	Chatham
16. Plant Yates	Coweta

[1] Plant is physically located in Alabama; water withdrawal permit from Georgia EPD

Energy Water Use Forecast Updates

Water and Power Results are not complete yet

Energy forecast still under development with input from the Energy Ad Hoc group

Assumptions:

- Hydropower generation is constant
- Small percentage of the energy needs will be met via renewable (wind & solar) energy

One major power generating facility in the Middle Ocmulgee Region (Plant Scherer in Monroe County)

One of the largest single generating stations in the United States

The plant withdraws from Lake Juliette, which receives water transferred by a pumping station from the nearby Ocmulgee River

Round 1 included a plant average withdrawal of approximately 59 MGD and returns of 25 MGD, effectively consuming an estimated 34 MGD of water on an annual average daily basis.

Questions & Discussion

Georgia's
State Water Plan

Other Business
Public Comments
Wrap Up
Next Meeting

Metro Water District Plan Update

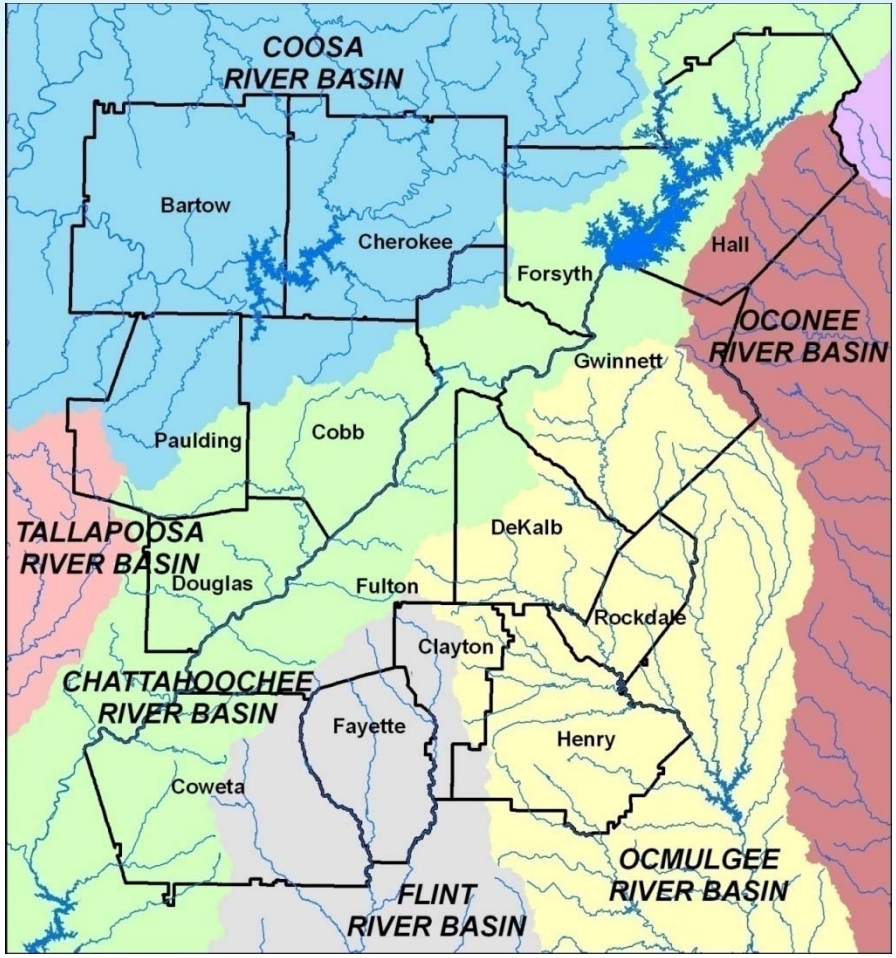
March/April 2017

Danny Johnson, Manager

October
Rock Quarry
Mary Waldrop of Powder Springs, GA

Metropolitan North Georgia Water Planning District

- Created in 2001 by state law
- 15 Counties
- 92 Cities
- 6 Major River Basins



Governing Structure

- 26 Board Members
  - 16 Elected Officials
    - 15 Counties + City of Atlanta
  - 10 Citizens Members
    - 6 from Governor
    - 2 from Lieutenant Governor
    - 2 from Speaker of the House

Stakeholder Involvement

Governing Board

6 Basin Advisory Councils

- Coosa
- Lake Lanier
- Oconee
- Ocmulgee
- Chattahoochee
- Flint

Technical Coordinating Committee

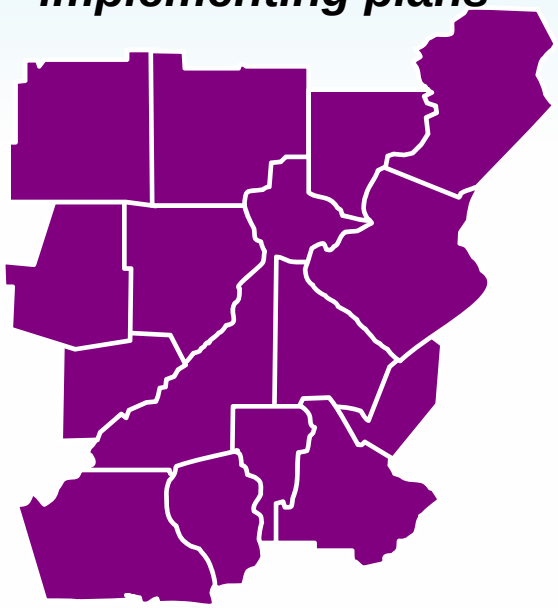
Sub-committees

- Water Supply-Water Conservation
- Wastewater
- Watershed
- Public Education

District, Local Governments & GA EPD Share Responsibilities

Water district develops regional plans

Local governments responsible for implementing plans



Original Plans Adopted – September 2003

Updated Plans Adopted – May 7, 2009

EPD Exercises Its Permitting Authority

- EPD shall not issue new or increase existing permits unless the local government is in compliance with the plans
  - "good faith" exception
- Local governments may become ineligible for state grants or loans for failure to comply
- Inclusion in the plan does not guarantee EPD will issue permit

June

End of Our Fishing Day

Dave Archbold of Peachtree City, GA

Integrated Water Resource Management Plan Update

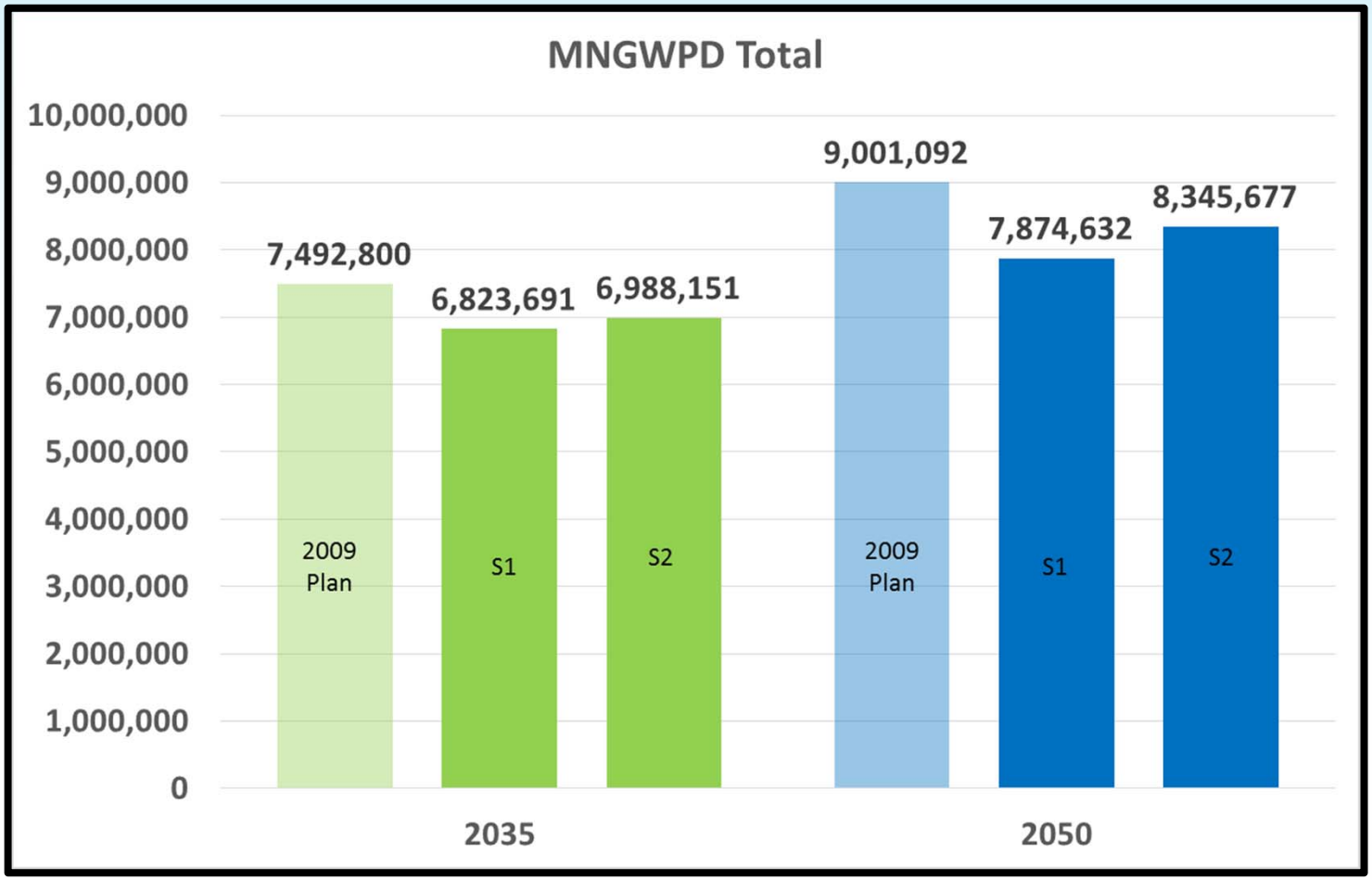
Well developed objectives will shape the 2017 plan update

- ✓ Using the 2009 plan as a **foundation**, build on or modify sections that need improvement while addressing new requirements and challenges as described in this scope of work.
- ✓ Update the plan **consistent** with Georgia Environmental Division (EPD) guidance, District Governing Board, TCC and BACs guidance and the scope of work detailed below.
- ✓ Advance the District's on-going approach to **integrated water planning.**
- ✓ **Update** the plan with the most current data and information covering a wide range of areas including management issues, plant capacities, demand forecasts, etc.

Metropolitan North Georgia Water Planning District

Water Demand Forecasting

Population Projections

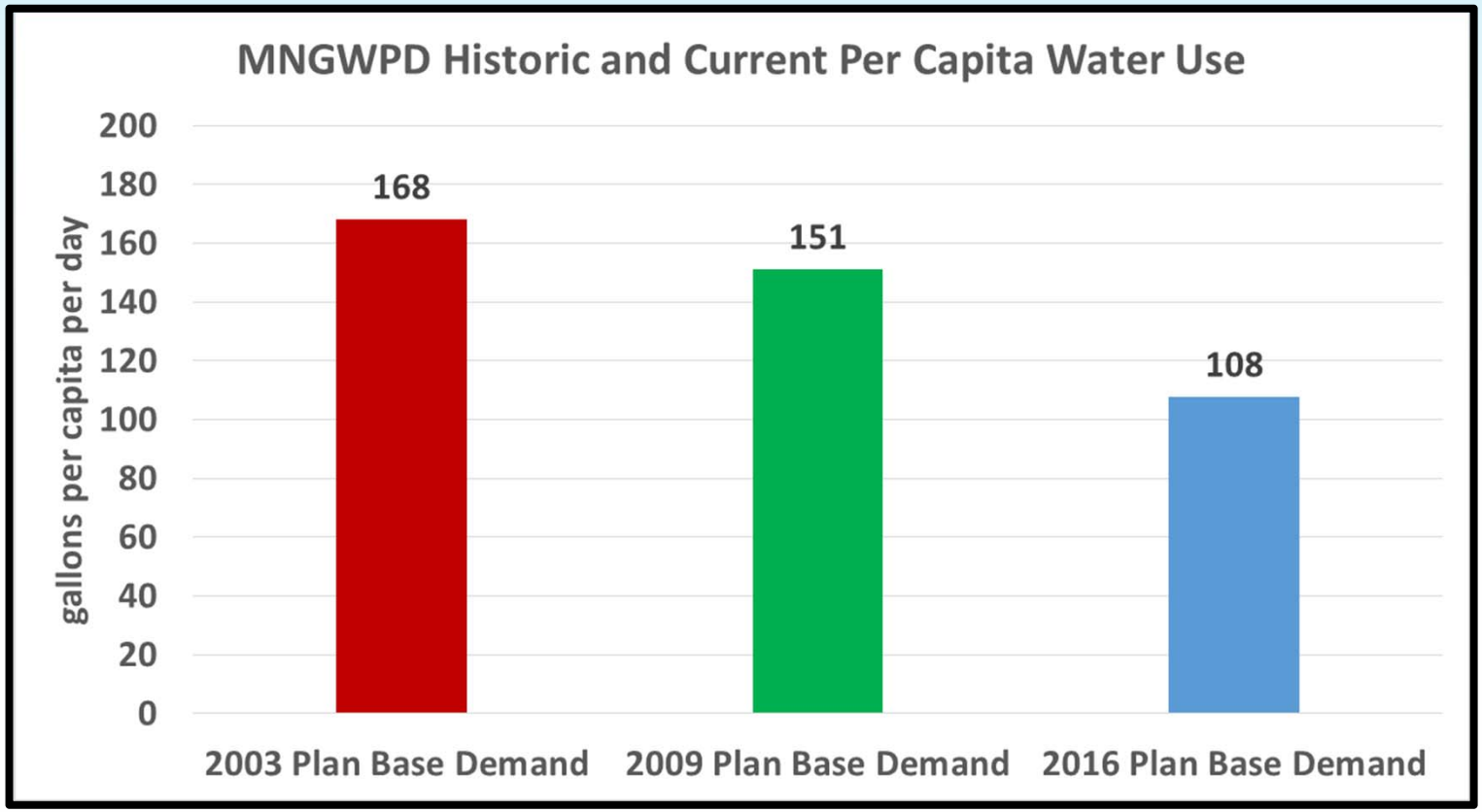


Key Forecast Inputs and Assumptions

Same water demand methodology as previous two plans

- Baseline water consumption calculation
- Water demand forecast with plumbing code impacts (toilets, urinals, showerheads, clothes washers)
- County-wide annual water demand forecasts to 2050

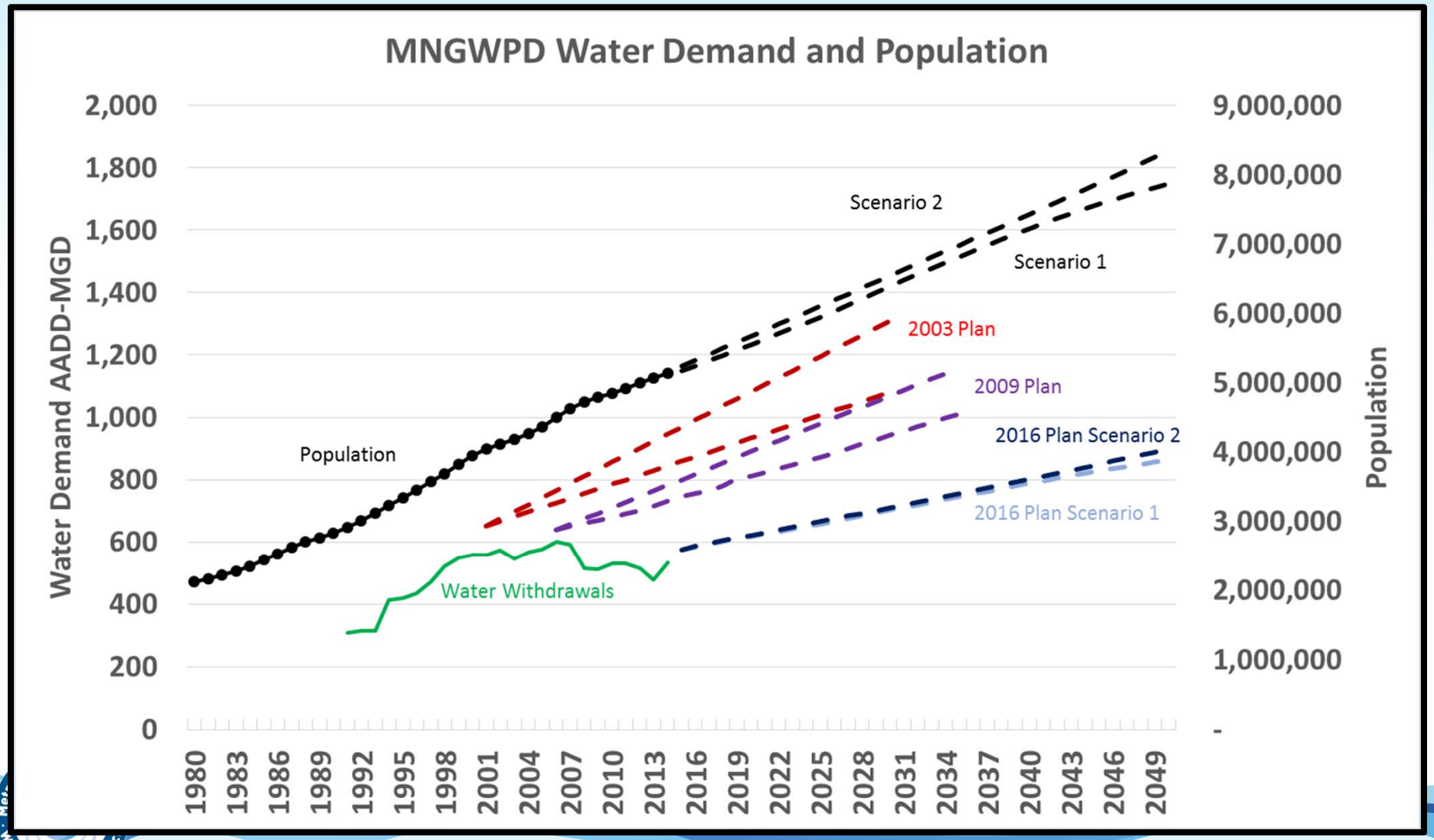
Per Capita Water Demand



Summary of 2050 Water Demand Forecasts (AAD-MGD)

County	Base Demand (2014)	2009 Plan - 2050 (extrapolated)	Scenario 1 2050 Baseline w/plumbing codes	Scenario 2 2050 Baseline w/plumbing codes
MNGWPD Total	560	1,202	862	898

Historical Forecast Comparison



Water Supply Water Conservation

- Water demand forecasts completed
- Updating
  - Existing water supplies and facilities
  - Facility Phasing Plans
- Water conservation action items
  - Conservation program expansion
  - New commercial conservation programs

November

Mallard Foggy Takeoff

John Bensley of Lawrenceville, GA

Wastewater Management

- Wastewater demand forecasts
- Updating
  - Existing water supplies and facilities
  - Facility Phasing Plans
- Wastewater action items
  - Improving reliability of infrastructure
  - Digital mapping requirements
  - Additional recommendations for septic management

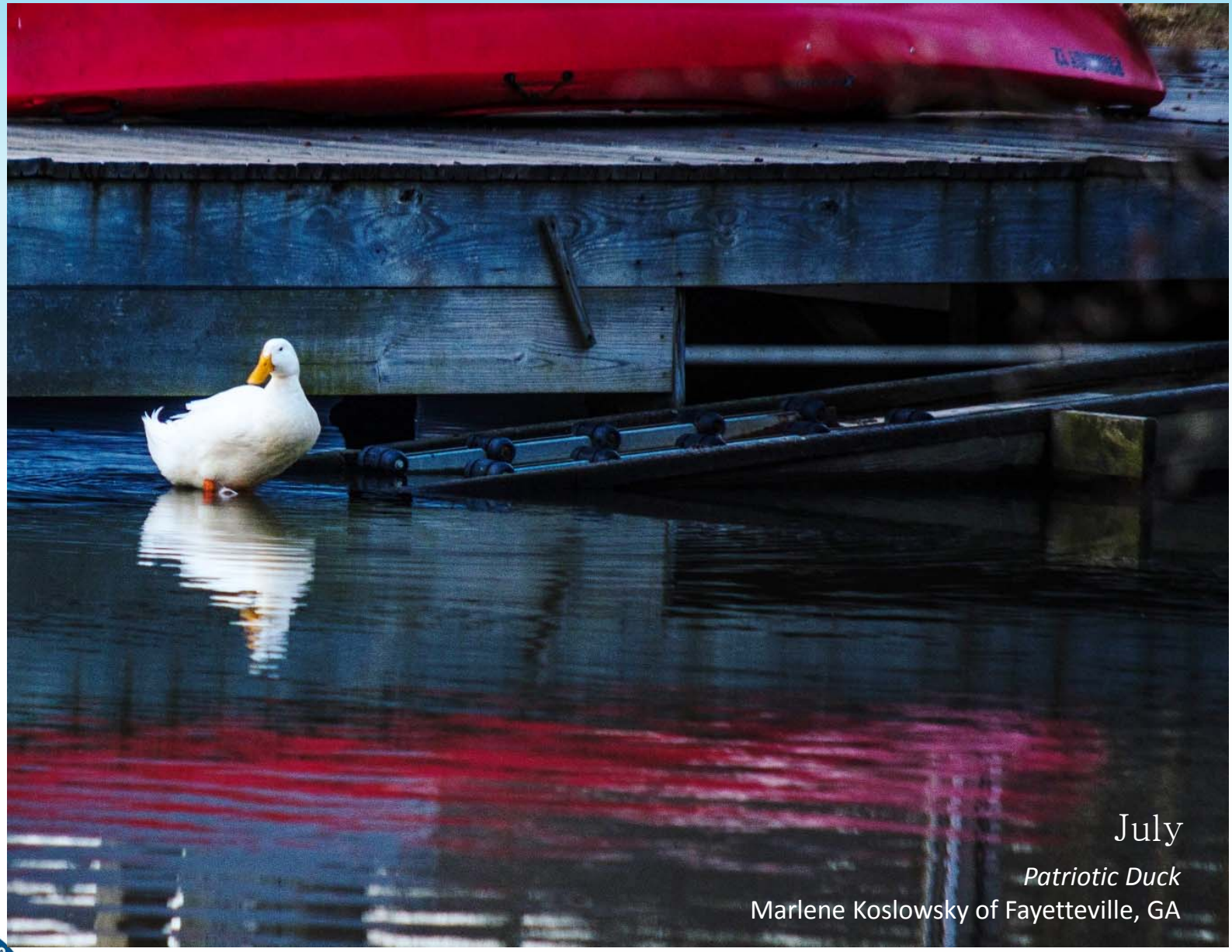
September and Grand Prize

Dragon Boat on Olympic Course

Terry Baker of Gainesville, GA

Watershed Management

- Updated river basin profiles
- Strategy development
  - Nonpoint Source (NPS) Pollution
  - Green Infrastructure
- Streamline monitoring elements to match State Watershed Protection Plan Requirements
- Development of materials/handouts to support local implementation of action items



July

Patriotic Duck

Marlene Koslowsky of Fayetteville, GA

Public Education and Outreach

- Best management practice case studies
- Integrated Public Education and Outreach Plan
  - Minimum Requirements Tables
  - Education Focus for Target Audiences Table

February
Early One Frosty Morn
Jon Heard of Cumming, GA

Development of Integrated Plan

- Draft plan ready this summer
- We welcome and want your reactions and feedback

Questions?

Additional Info

Public Education

- Minimum number of education activities required based on population
- Educational videos, brochures, press releases, and much, much more!
- Webpages:

  www.northgeorgiawater.org

  www.mydropcounts.org

H LINE!

LIFEGUARD
HILTON HEAD ISLAND, SC
I
Water!

981
967

Metropolitan North Georgia Water Planning District

High School Video Contests

- 2015 – Here's the Scoop on Pet Waste
- 2014 – FOG Clogs

<u>Winning Videos</u>

www.youtube.com/user/MNGWaterDistrict

Regional Toilet Rebate Program

As of May 1, 2015, toilet rebate programs in the District have rebated **over 100,000 toilets totaling over $8.8 million in credits!!! Total estimated savings 2.4 million gallons per day or 18 million full bathtubs each year!**

Water Supply & Water Conservation Management Plan

- 2009 Plan update included 12 specific water conservation measures
- In December 2010, seven additional conservation measures were added
  - 5 specific to Lanier/Chattahoochee water users
  - 2 added for all communities

Local Planning

- Develop or update water master plans
- Develop or update local emergency water plans
- Source water supply watershed protection
  - Identify water supply watersheds
  - Adopt Environmental Planning Criteria
  - Coordinate with local government on watershed protection
- Asset management
  - Map system assets
  - Develop asset management program
  - Coordinate asset management and leak detection programs

Wastewater Plan Solutions

- Requirements for:
  - System Mapping & Modeling
  - Capacity Certification
  - Inspection & Maintenance Programs
  - Grease Management
  - Training for inspection & maintenance staff

Major Components of the Watershed Management Plan

- Summary of major river basins, including successes and challenges
- Local watershed management measures
- Additional optional local management measures
- Recommendations for various state and regional agencies
- Education and Public Awareness Program

Technical Subcommittees

- Any existing Technical Subcommittees may establish new membership, if desired
- If needed, technical subcommittees may be appointed to continue to review key topics
- Input needed by April 15, 2016 to EPD
- Possible Technical subcommittee input?:
  - Per capita Demand
  - Water and Wastewater Demand Forecast
  - Industrial Demand Forecast
  - Energy and Agricultural Forecasts

Elected Official Comments and Public Comments

- Sign up for public comments during registration period (to ensure enough time is allotted)
- Please limit comments to 3 minutes total
- Council encourages written submission of comments as well, to ensure meeting summaries accurately reflect comments

Next Steps

- Next Council Meetings: 2 Joint Council Meetings
  - Delegates from MOC should attend Joint meeting 1: Coosa, Flint, and Chattahoochee Councils
  -
- Joint meeting 2 – Councils meet:
    - Coastal Georgia
    - Savannah-Upper Ogeechee
    - Upper Oconee
    - Middle Ocmulgee
    - Altamaha
    - Suwannee-Satilla
    - Delegates (Upper Flint, Lower Flint-Ochlocknee)

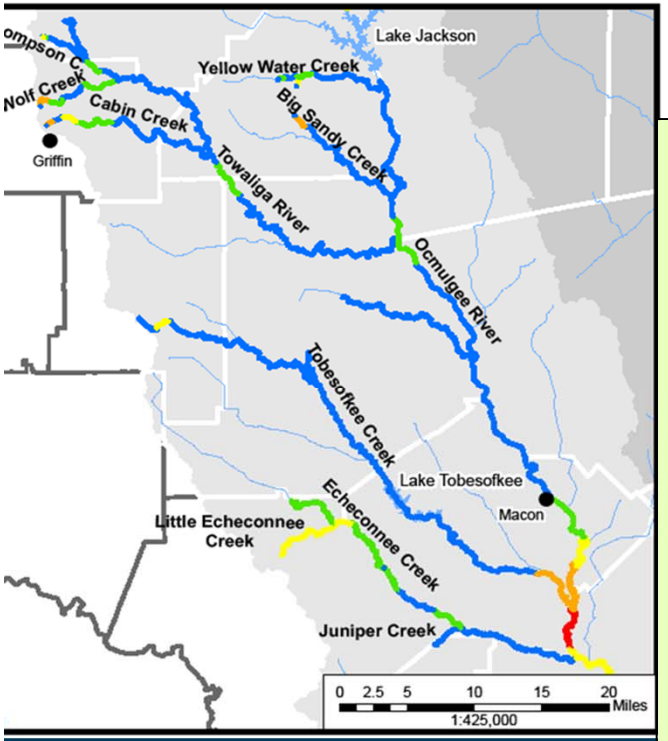
- Topics: Resource Assessments and Gap Analysis

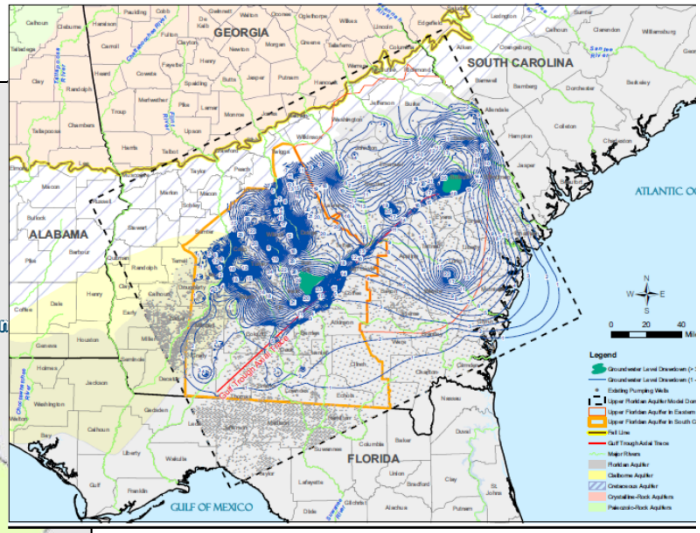
- Tentatively scheduled for June 23, 2016, Dublin, GA

Georgia

Next Steps

- Updates to Resource Assessments will focus on both surface water and groundwater and changes, if any, to the Gap Analysis conducted in Round 1





Next Steps

- Looking ahead to Council Meeting 3
- Topics:
  - Review and Refine Management Practices
  - Resource Assessment modeling scenarios
- To be scheduled: August/September 2016

Thank You!

Questions? Comments? Need More Information?

Michelle.Vincent@jacobs.com
Ted.Hendrickx@dnr.ga.gov

Council Meeting Evaluation: Please let us know what went well at this meeting, and any suggestions for next meeting.

Georgia