



Georgia's State Water Plan

EPD Section 319(h) Georgia's
Nonpoint Source Implementation
Grant Funding

www.georgiawaterplanning.org



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



March 22, 2016

Mary Gazaway, Grants Unit

Georgia EPD, NonPoint Source Program

Special Award: RWC

- Dedicated funds to develop or revise a 9-element Watershed Management Plan
- Plan must target a Priority Watershed
- **Funds awarded to partner / subgrantee selected by Council**
- **Cost-Share 60%/40% Total = \$35,000 Federal / \$23,333 Match**
- Complete by June 2018



EXAMPLE IN-KIND MATCH SERVICES

✓ Salaries / Wages & Fringe Benefits	✓ Structural Designs
✓ Professional Fees	✓ Outreach Products & Events
✓ Labor	✓ Media Buys & Production
✓ Supplies & Materials	✓ Surveys
✓ Equipment (Leases or Purchases)	✓ Publications
✓ Office / Meeting Space Rent	✓ Audits & Appraisals
✓ Office Utilities	✓ Indirect Charges
✓ Volunteer Hours	✓ Public Land Conservation

**In-kind match value must not exceed fair market cost or rental rates.
Rates for volunteer services can be found on the following websites:**

<https://explorer.dol.state.ga.us/vosnet/Default.aspx>

www.bls.gov/bls/blswage.htm

www.independentsector.org/volunteer_time

Watershed Management Plan?

- Addresses nonpoint sources of water pollution
- First step towards improving water quality
- Builds stakeholder capacity and buy-in: water resource management & protection
- Can leverage other watershed activities
- Eligible for additional future funding to implement the Plan

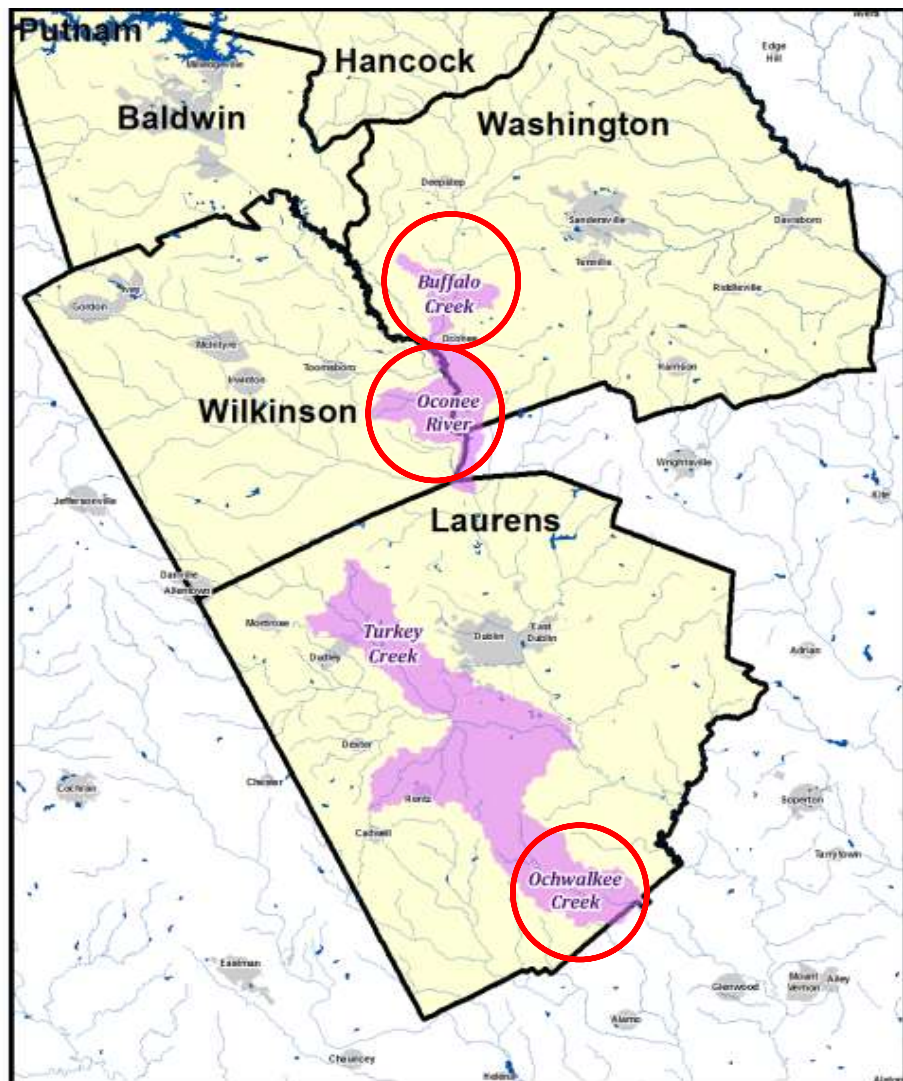


Next Steps

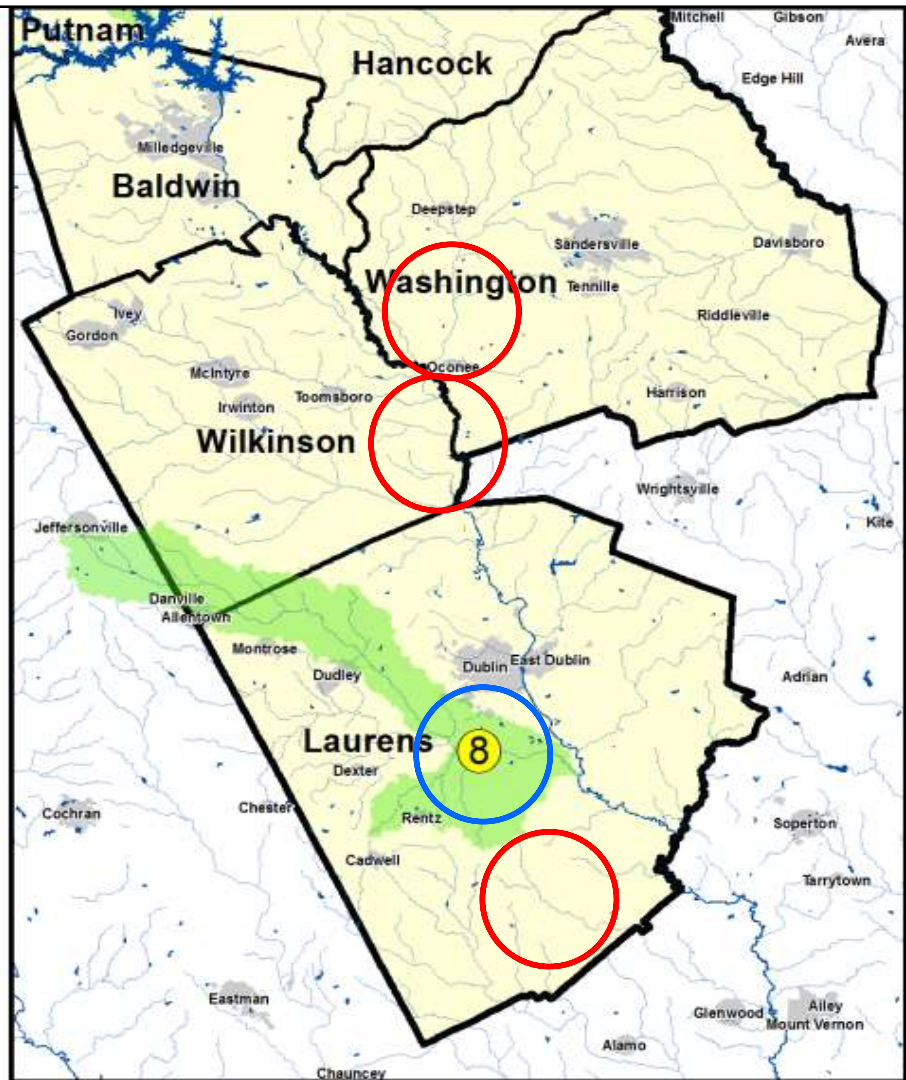
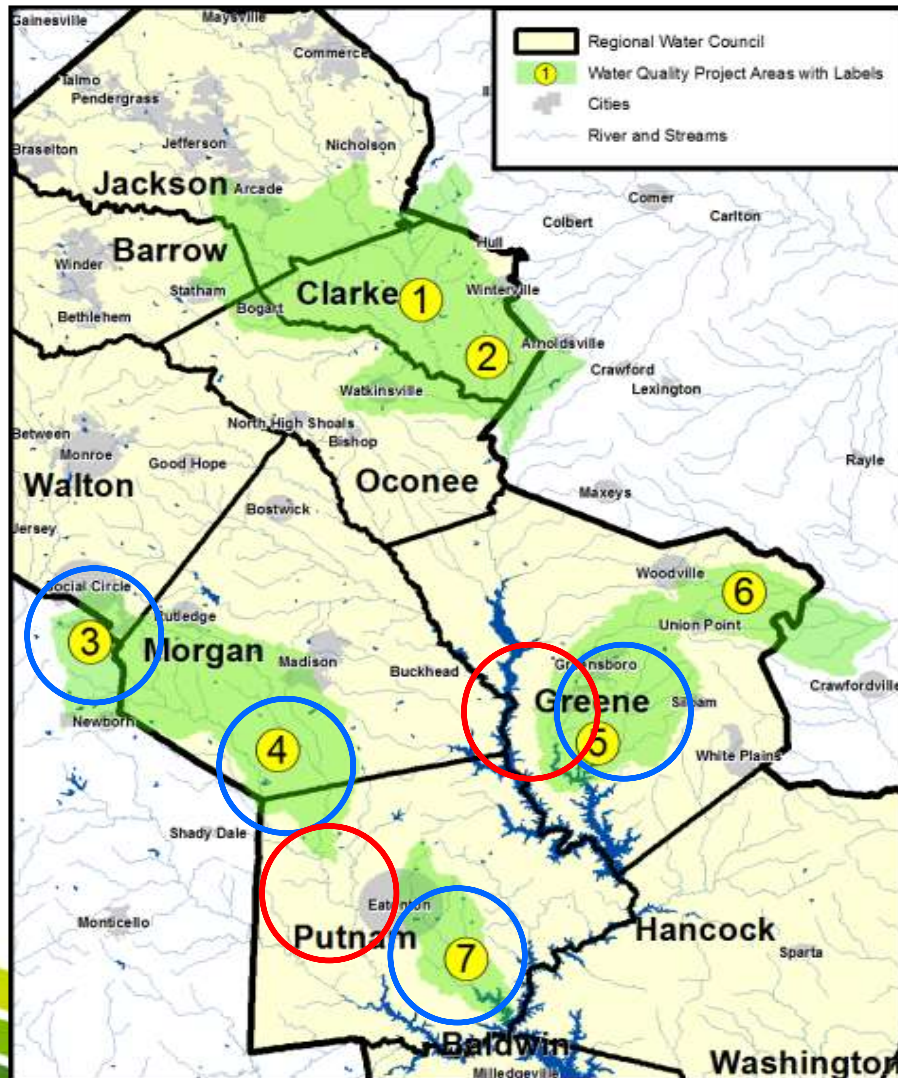
- Council targets priority watershed; selects partner as “subgrantee” to write the Plan
- **Subgrantees must be public entities or local governments**
- Submits proposed work plan to GAEPD
- GAEPD will provide assistance, if needed
- Negotiated contract to start June 2016



A map of the Oconee River watershed in Georgia, showing the counties of Putnam, Baldwin, Hancock, Washington, Wilkinson, and Laurens. The watershed area is highlighted in pink and includes Buffalo Creek, Oconee River, Turkey Creek, and Ochwalkee Creek, all of which are circled in red. The map also shows various towns and cities within the watershed, including Edge Hill, Damesboro, Robbinston, Harrison, Wigginsville, Jeffersonville, Dalton, Albany, Marietta, Dalton, East Dalton, Dublin, Dorchester, Chester, Hazlet, Caldwell, Eastman, Cheucuey, and Marietta. The Oconee River is the central feature, flowing from the north towards the south, with its tributaries branching out to the west and east.



EPD WQ Projects 2010-Current



Potential Partners in Priority Watersheds

- Regional Commissions:
 - Northeast Georgia RC
 - Middle Georgia RC
 - Central Savannah River Area RC
 - Heart of Georgia-Altamaha RC
- Resource Conservation & Development Councils
 - Oconee River RC&D Council
 - Pine Country RC&D Council



Elements of 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.



Elements of 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.





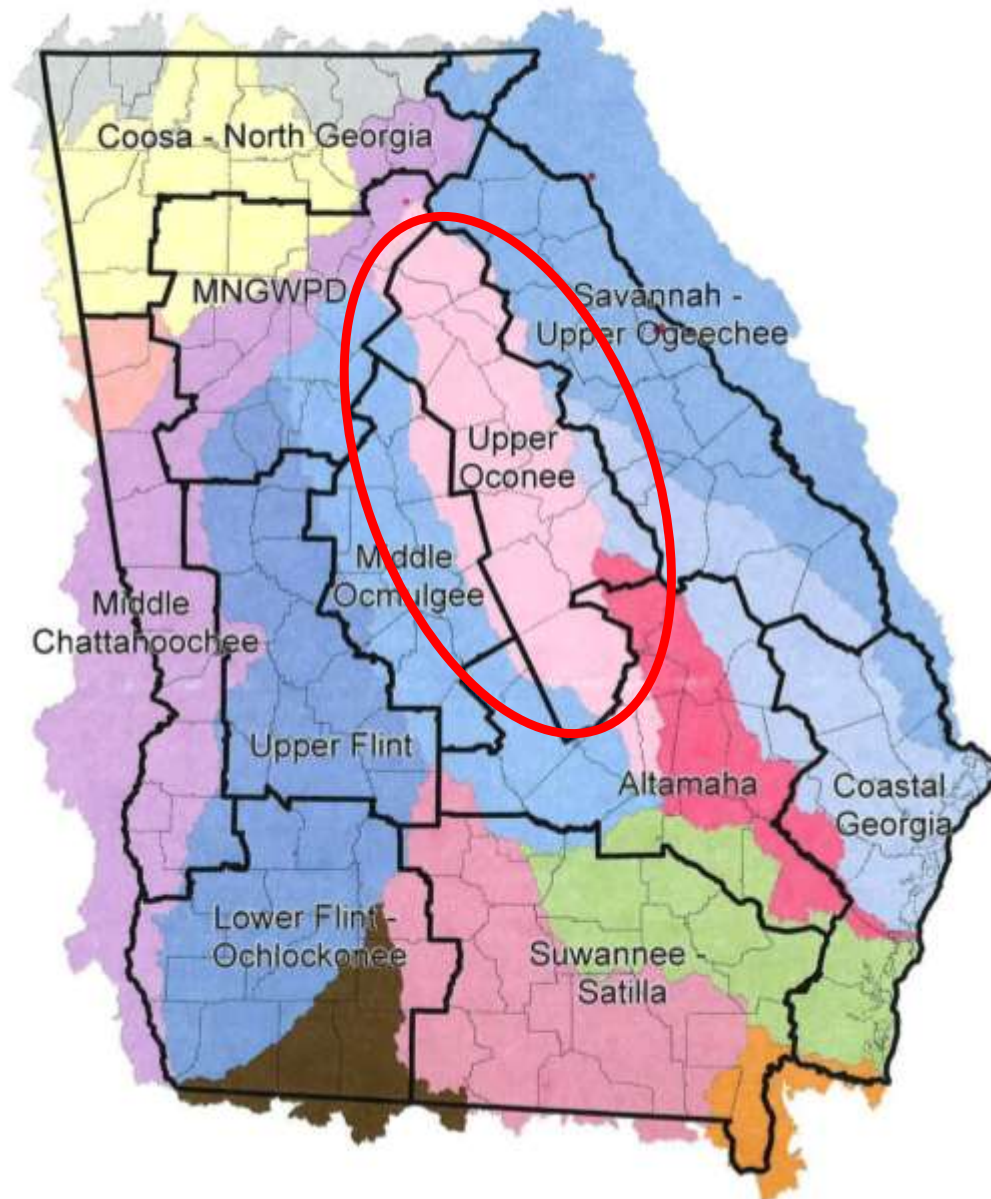
Questions?

Mary Gazaway

404-651-8522

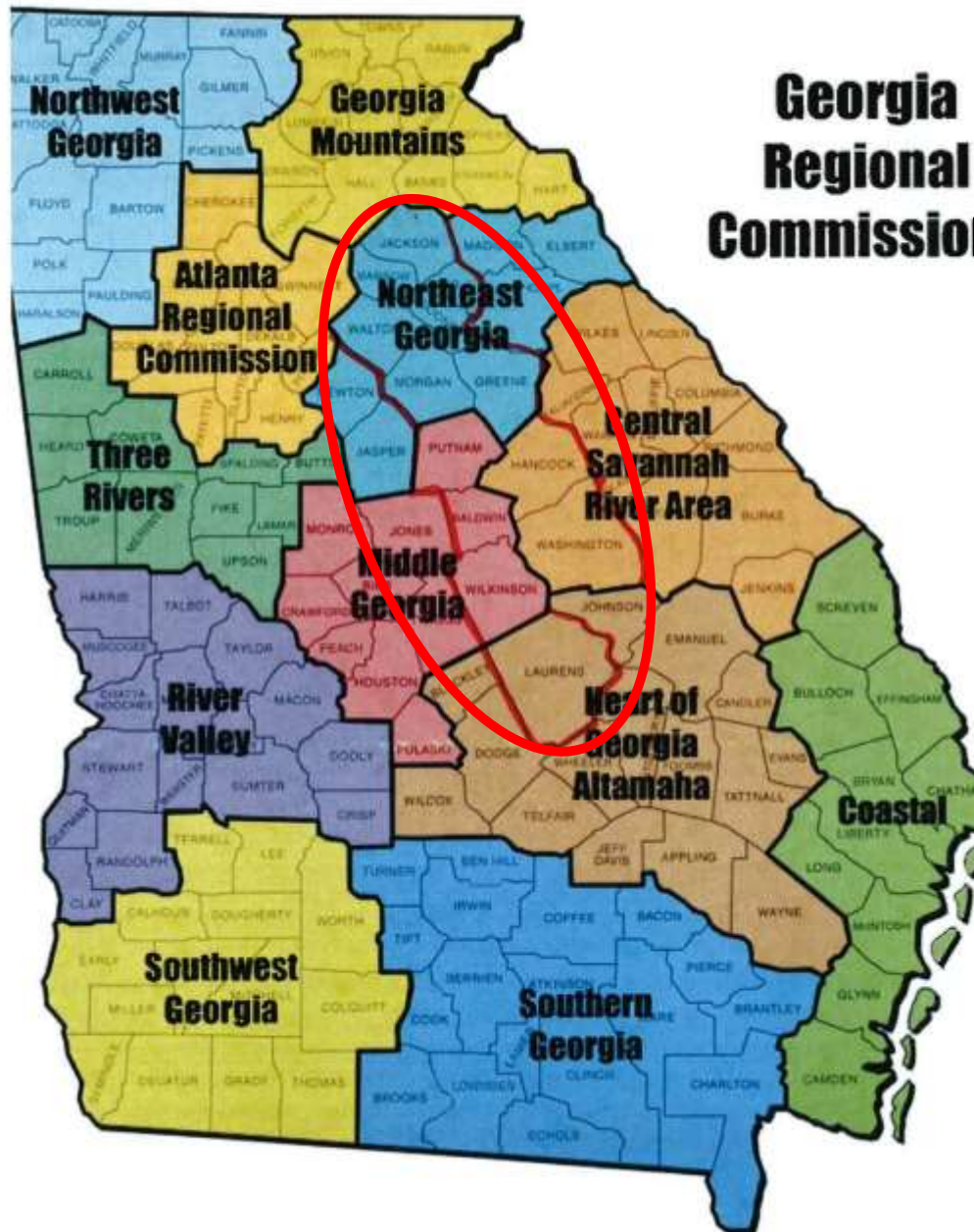
mary.gazaway@dnr.ga.gov

Water Planning Regions



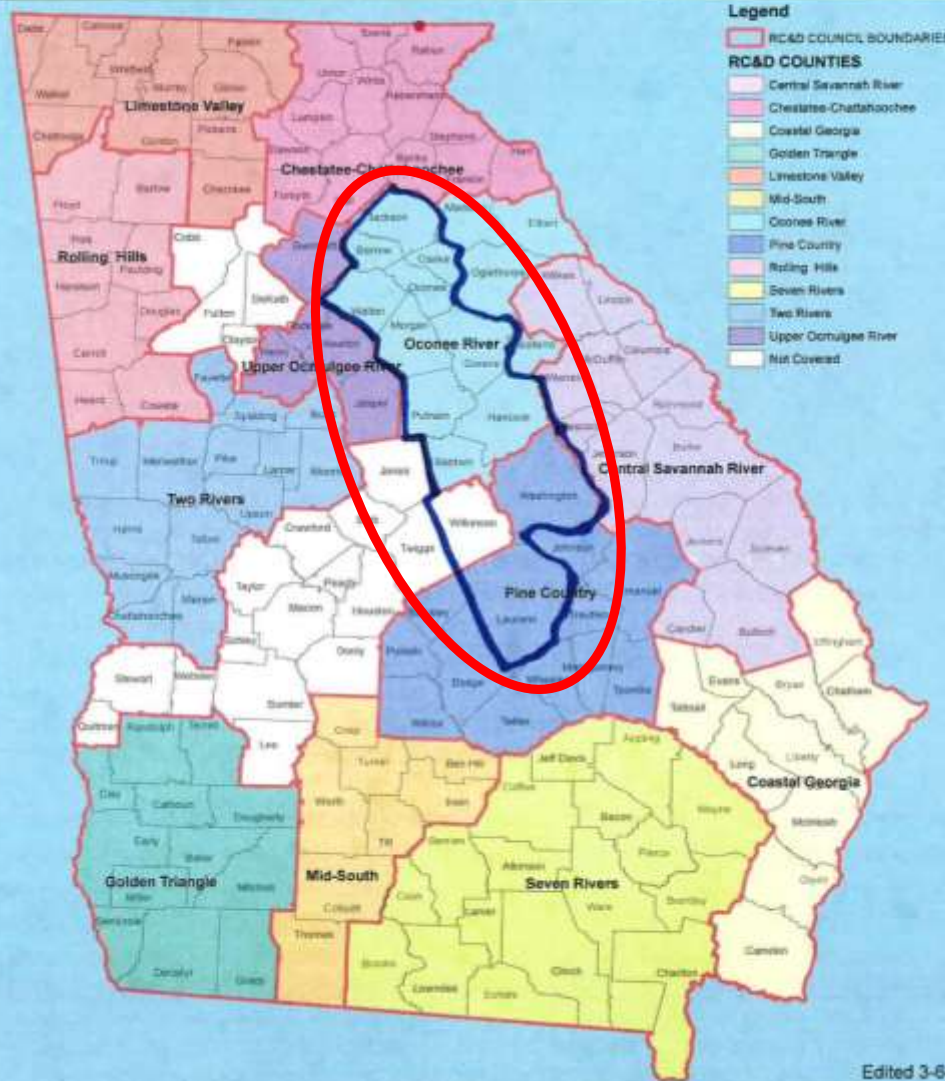
Georgia

Georgia Regional Commissions



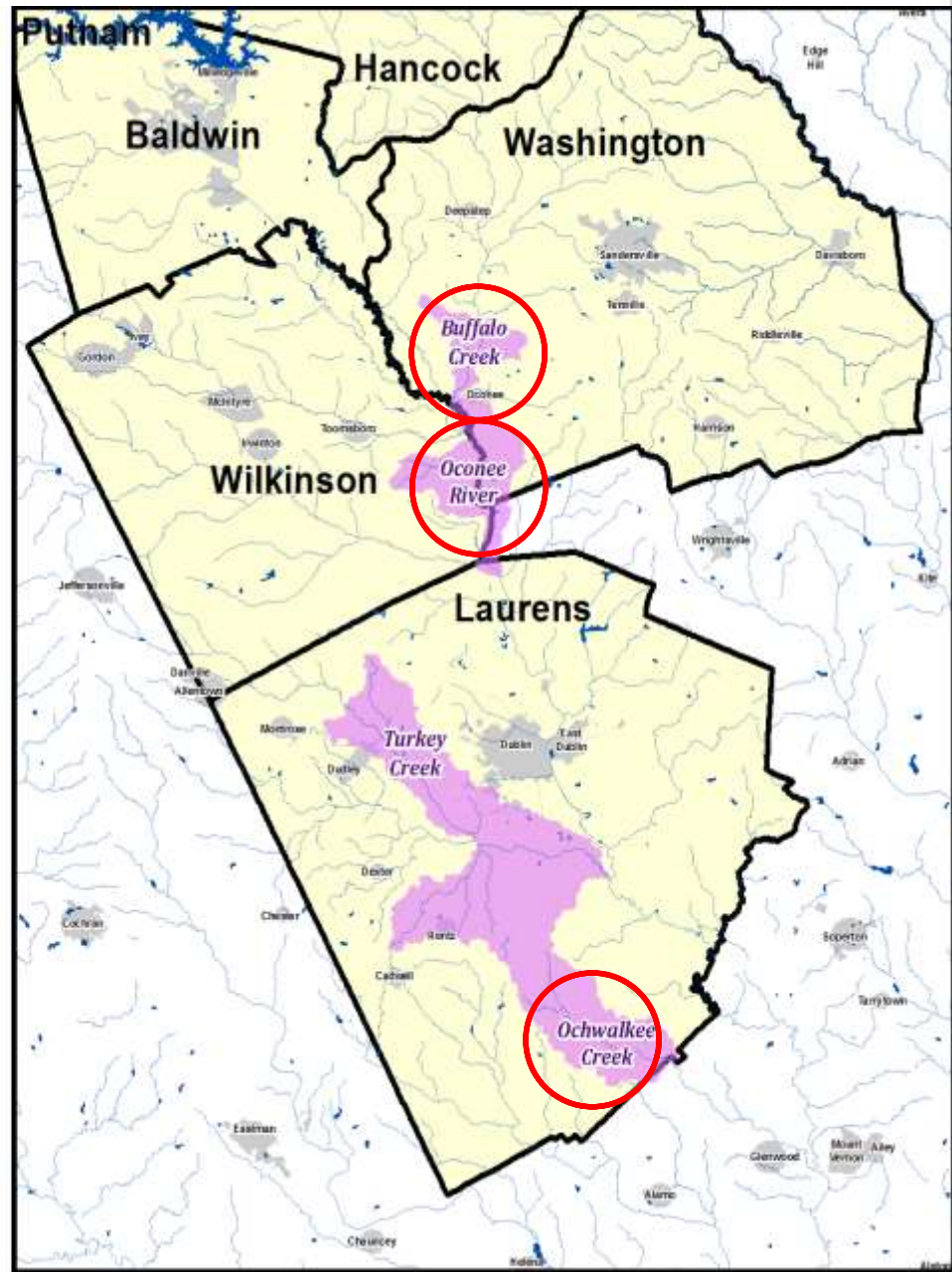
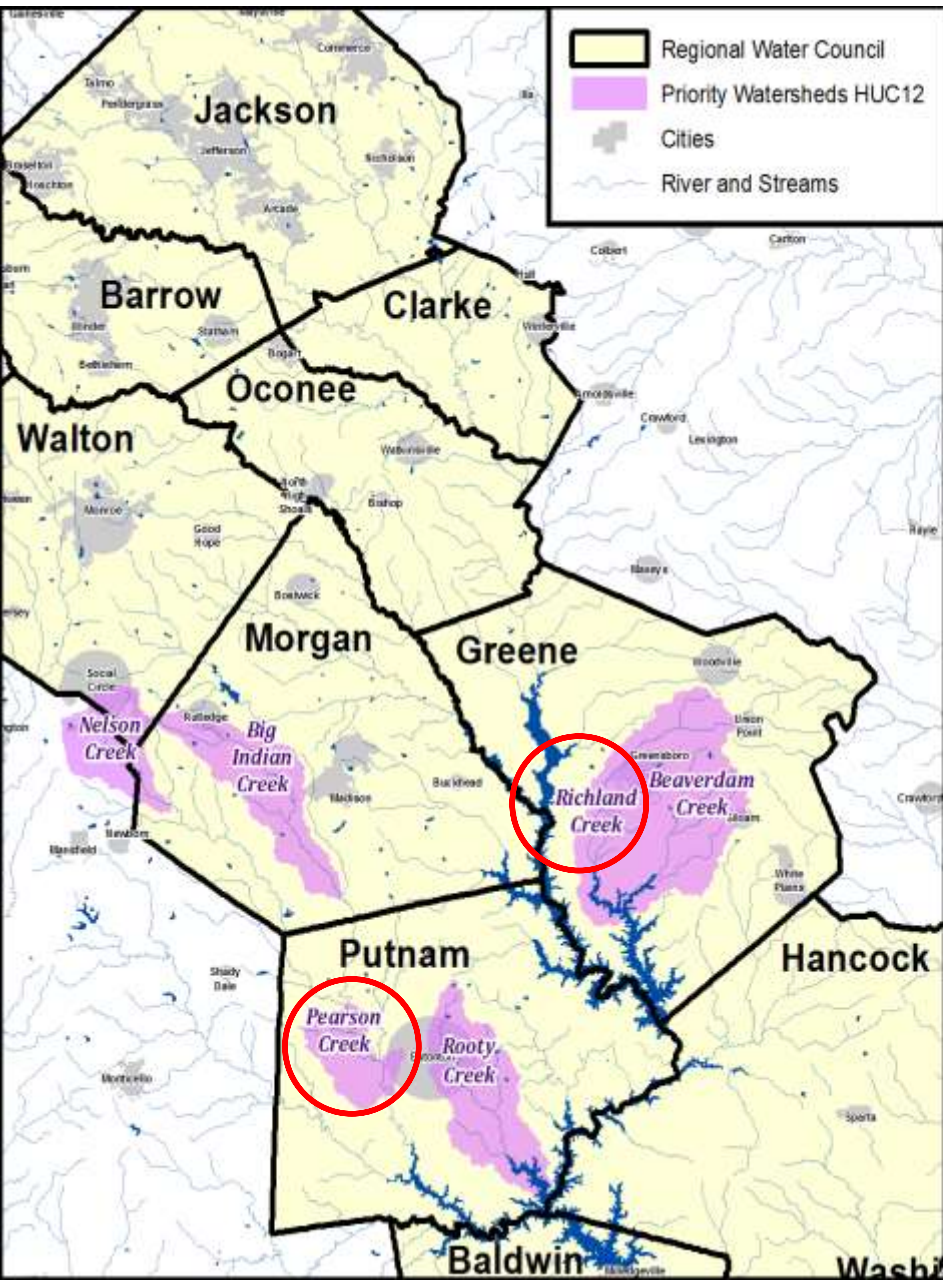
GEORGIA

Resource Conservation & Development (RC&D) Councils



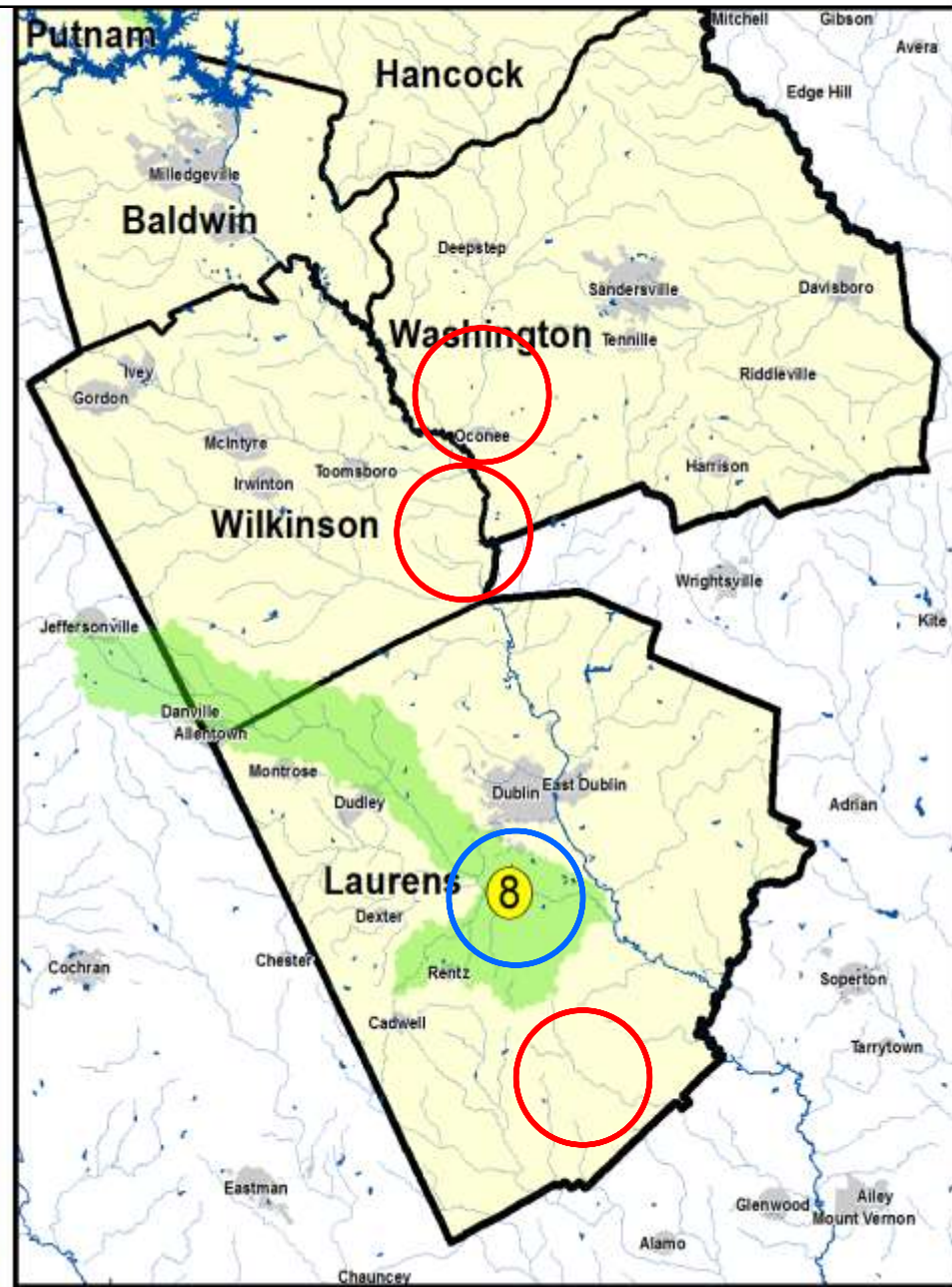
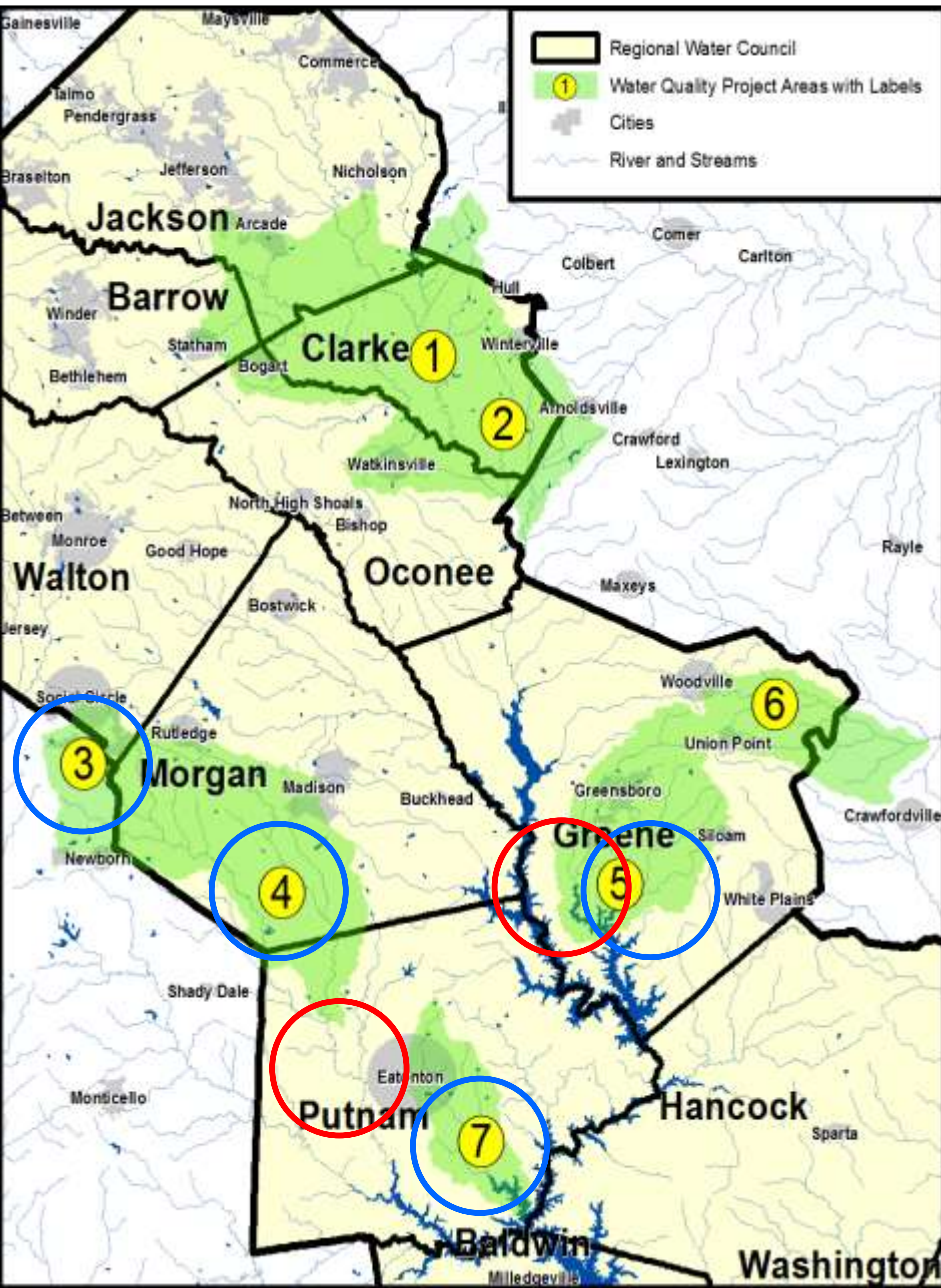
Edited 3-6-15

Priority Watersheds: UORWC



HUC12	Name	Watershed	County
030701011101	Town Creek-Richland Creek	Town Creek-Richland Creek	Greene
030701011102	Upper Beaverdam Creek	Upper Beaverdam Creek	Greene
030701011103	Lower Beaverdam Creek	Lower Beaverdam Creek	Greene
030701011104	Little Creek-Richland Creek	Little Creek-Richland Creek	Greene
030701011401	Nelson Creek-Little River	Nelson Creek-Little River	Newton
030701011405	Upper Big Indian Creek	Upper Big Indian Creek	Morgan
030701011406	Middle Big Indian Creek	Middle Big Indian Creek	Morgan
030701011502	Pearson Creek-Little River	Pearson Creek-Little River	Putnam
030701011802	Upper Rooty Creek	Upper Rooty Creek	Putnam
030701011803	Lower Rooty Creek	Lower Rooty Creek	Putnam
030701020407	Wheeler Creek-Buffalo Creek	Wheeler Creek-Buffalo Creek	Washington
030701020801	Oochee Creek-Oconee River	Oochee Creek-Oconee River	Wilkinson
030701021103	Horse Branch-Turkey Creek	Horse Branch-Turkey Creek	Laurens
030701021104	Bluewater Creek-Turkey Creek	Bluewater Creek-Turkey Creek	Laurens
030701021105	Reedy Creek-Turkey Creek	Reedy Creek-Turkey Creek	Laurens
030701021304	Upper Ochwalkee Creek	Upper Ochwalkee Creek	Laurens

EPD WQ Projects 2010-Current



**EPD Water Quality Projects
2010 – Current
Potential Partners**

Label	Waterbody Name	Project Title	Start Date	End Date	Contractor
1	North Oconee River	North Oconee River (Lilly Branch) Watershed Management Plan	12/30/2011	4/30/2013	UNIVERSITY OF GEORGIA
2	North Oconee River	Septic System Maintenance Education and Inventory Program Development in Athens-Clarke County	1/23/2012	3/31/2014	ATHENS-CLARKE COUNTY
3	Little River 030701011401	Revising the TMDL Implementation Plan for the Little River Watershed (Newton / Walton Co. HUC-12 030701011401)	2/2/2012	7/31/2014	NEWTON COUNTY
4	Big Indian Creek	Implementation of the Agricultural Components of the Big Indian Creek TMDL Plan	2/7/2011	9/30/2014	OCONEE RIVER RC&D COUNCIL
5	Beaverdam Creek	Revise and Implement TMDL Implementation Plans for the Beaverdam Creek (Greene County) HUC-10 Watershed	5/1/2015	4/30/2018	OCONEE RIVER RC&D COUNCIL
6	Little River 0306010501	Revision of TMDLIP into WMP and Reduction of Fecal Pollution in Little River	1/3/2012	9/30/2015	CENTRAL SAVANNAH RIVER RC&D
7	Rooty Creek	Rooty Creek TMDL Implementation Plan Revision	11/6/2013	9/30/2014	OCONEE RIVER RC&D COUNCIL
8	Turkey Creek	Developing a Comprehensive Watershed Management and Implementation Plan for the Turkey Creek Watershed	12/17/2012	9/30/2014	HEART OF GEORGIA-ALTAMAHA REGIONAL COMMISSION

Additional Potential Partners:

CENTRAL SAVANNAH RIVER AREA REGIONAL COMMISSION
MIDDLE GEORGIA REGIONAL COMMISSION
NORTHEAST GEORGIA REGIONAL COMMISSION
PINE COUNTRY RC&D COUNCIL

For more information contact:

Mary Gazaway, Grants Unit
EPD NonPoint Source Program
mary.gazaway@dnr.ga.gov

A stylized, light blue outline of the state of Georgia, positioned to the left of the main title text.

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

Energy Water Use Forecast Updates

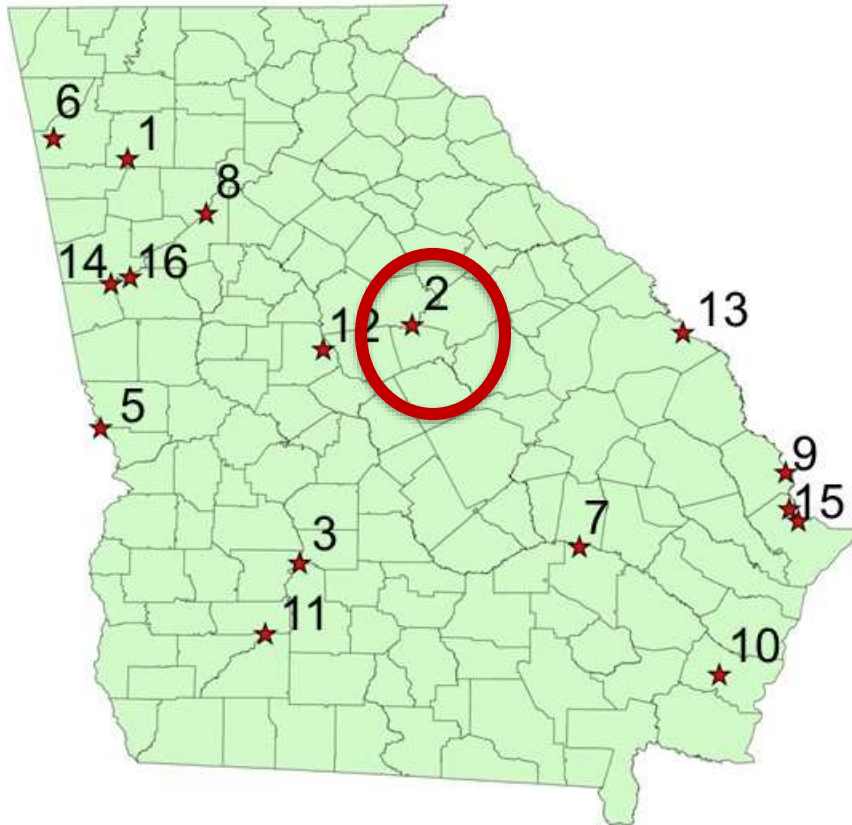
Energy Water Use Calculations are based upon:

$$\begin{array}{rcl} \text{Energy Water Use (per generating unit)} & = & \\ \text{Water Withdrawal Requirements} & & \text{Power Generation} \\ \text{[gal/MWh]} & \times & \text{[MWh]} \\ \hline \text{Water Consumption Requirements} & & \text{Power Generation} \\ \text{[gal/MWh]} & & \text{[MWh]} \end{array}$$

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

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 through renewable (wind & solar) energy

Four hydropower facilities in the region have negligible consumptive use

The decommissioning of Plant Branch will decrease both water withdrawals and consumption



Metro District Plan Updates

www.georgiawaterplanning.org



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

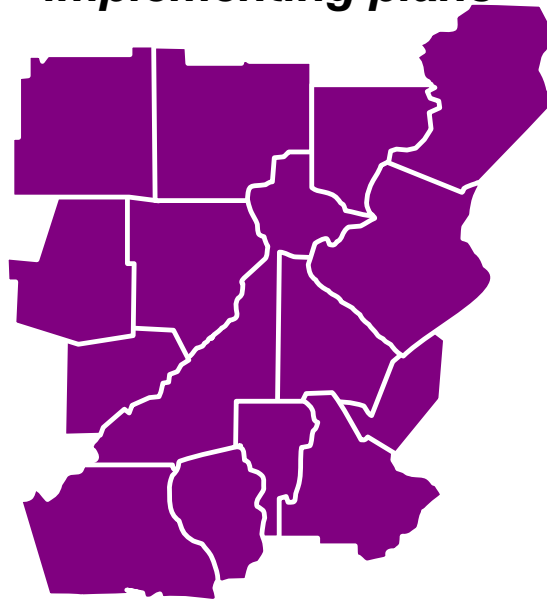


District, Local Governments & GA EPD Share Responsibilities

Water district develops regional plans



Local governments responsible for implementing plans



EPD approves plans and enforces implementation via permits



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

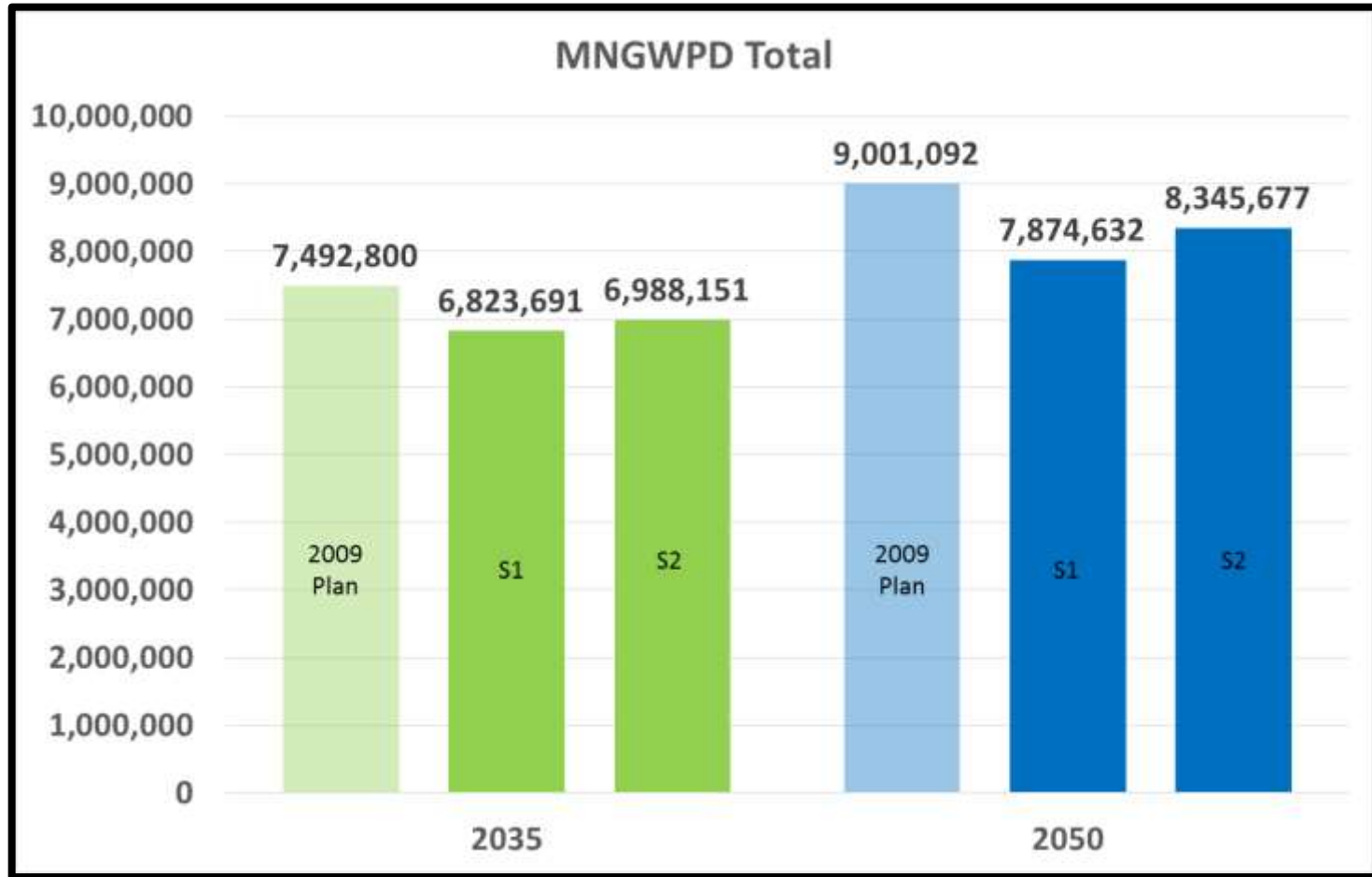
- ✓ Using the 2009 plan as a **foundation**, build on or modify sections that need improvement while addressing new requirements and challenges as described in this scope of work.
- ✓ Update the plan **consistent** with Georgia Environmental Division (EPD) guidance, District Governing Board, TCC and 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.



Water Demand Forecasting



Population Projections



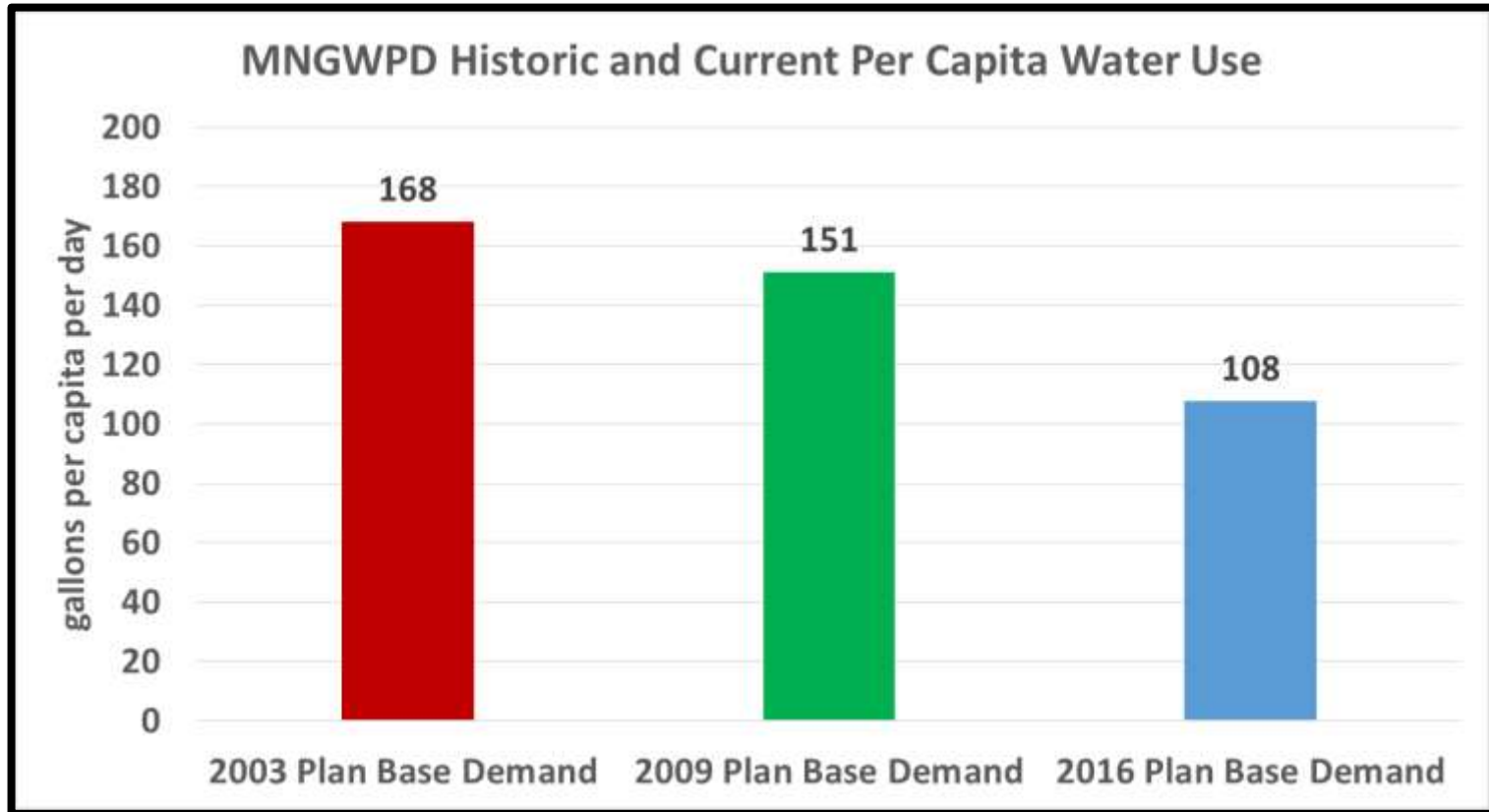
Key Forecast Inputs and Assumptions

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

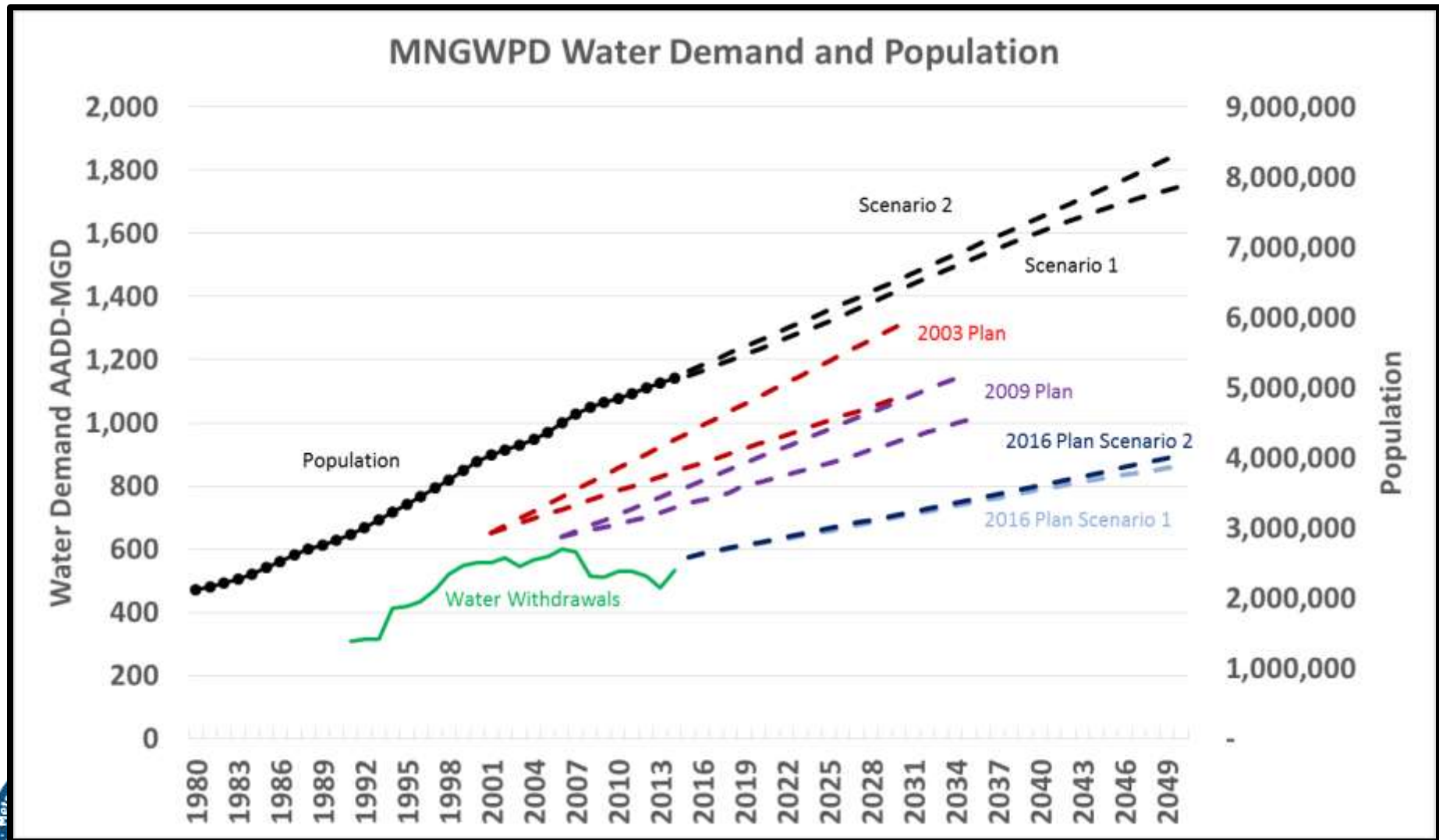


Summary of 2050 Water Demand Forecasts (AAD-MGD)

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

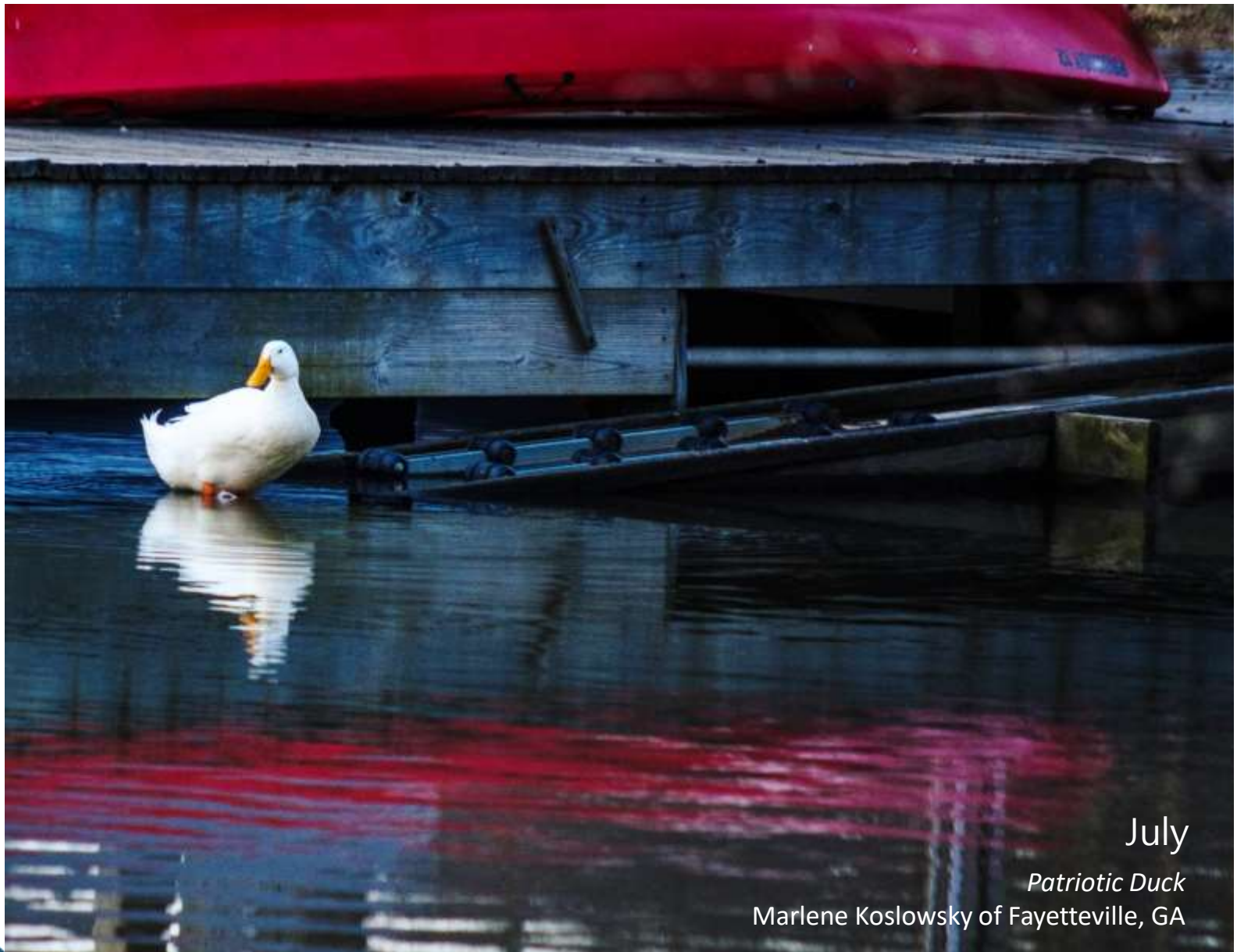
Dragon Boat on Olympic Course
Terry Baker of Gainesville, GA



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

**If you think picking up dog poop
is unpleasant, try swimming in it.**

Pet waste pollutes our rivers, lakes
and streams. Pick up after your pet.

For more information go to
www.cleanwatercampaign.com







High School Video Contests

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

Winning Videos

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!**





Georgia's State Water Plan

Current Agricultural Water
Demand Estimate and Method for
Updates

www.georgiawaterplanning.org

CURRENT AGRICULTURAL DEMAND ESTIMATES – METHODS FOR UPDATE

Upper Oconee Regional Water
Planning Council
March 22, 2016

XXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXXXXXXXXXXX

XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX

Overview of Presentation

▣ Background

- Who we are
- How the estimates and forecasts will be used

▣ Methods

- Animal agriculture and horticultural sector water demands
- Current agricultural use estimates
- Agricultural demand forecasts

▣ Results

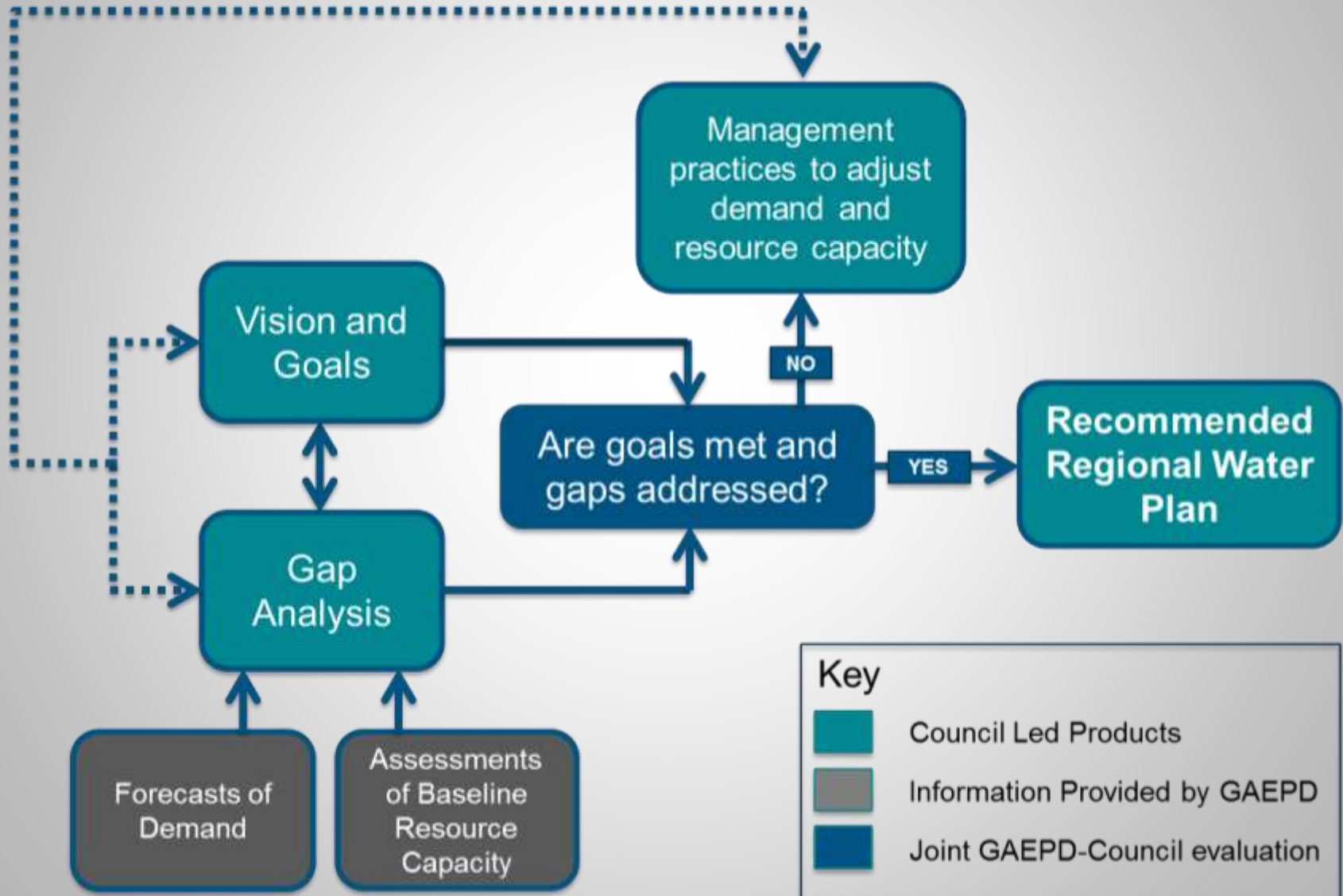
- Current use
- Forecasts

Project Team

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

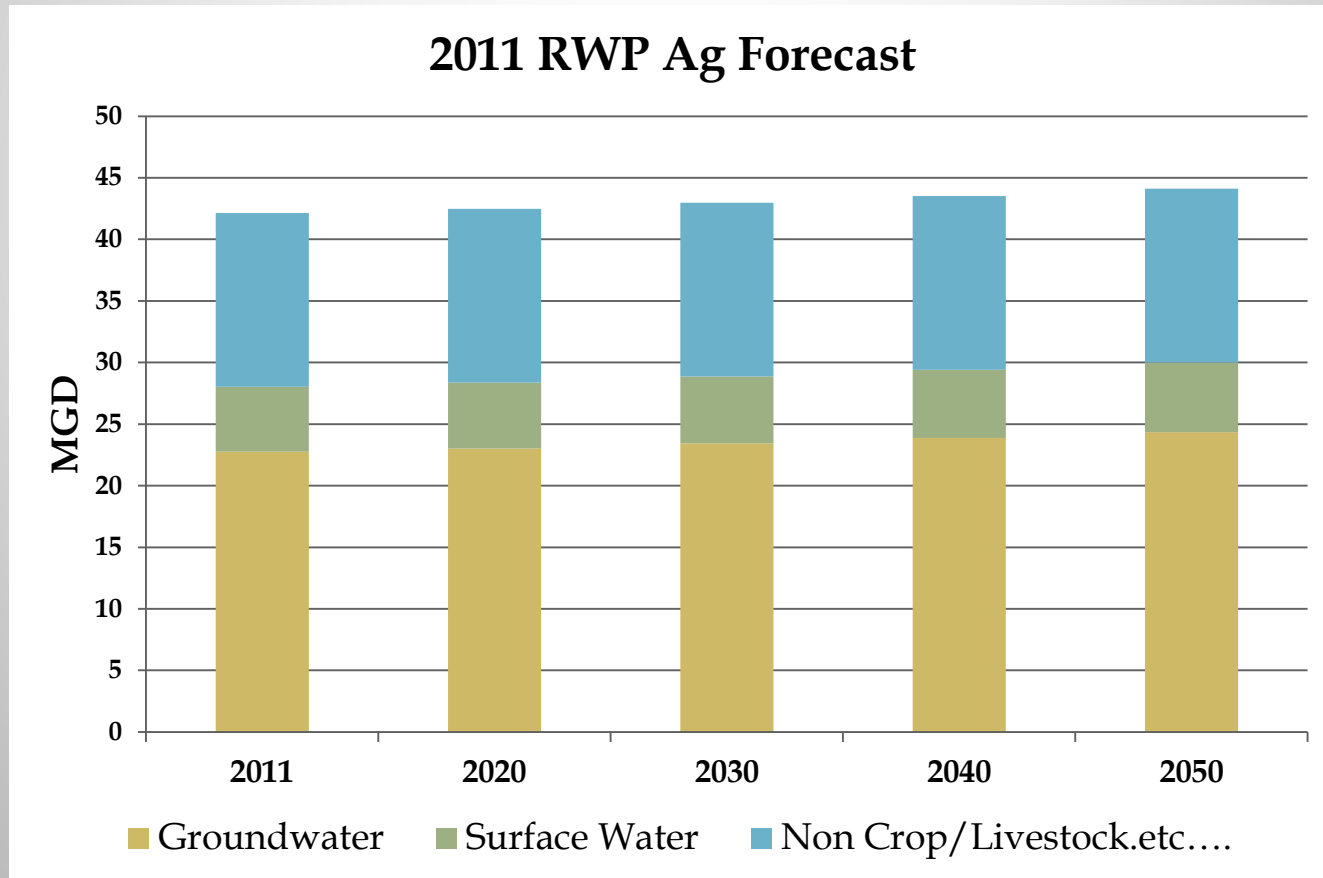


How the Results will be Used



Agricultural Water Demand Estimates: 2009-2010

- ▣ Acreage
- ▣ Water Use
- ▣ Other Ag Demand (livestock, nursery, golf course)



2015-2016 Ag Water Demand Update Components

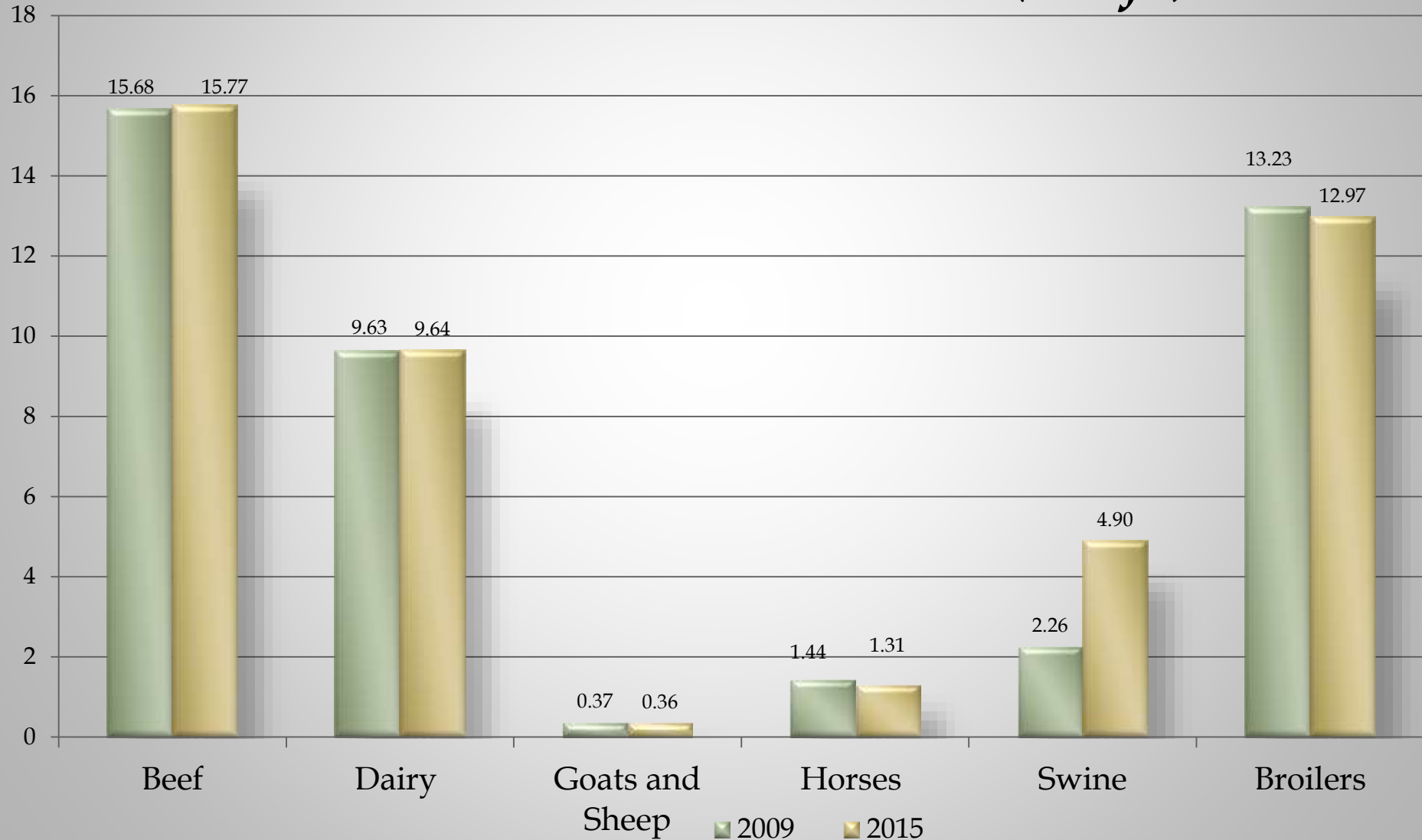
- ▣ Animal Agriculture and Horticultural Sector Water Use
- ▣ Current Agricultural Water Use Estimates
- ▣ Agricultural Water Demand Forecasts

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**

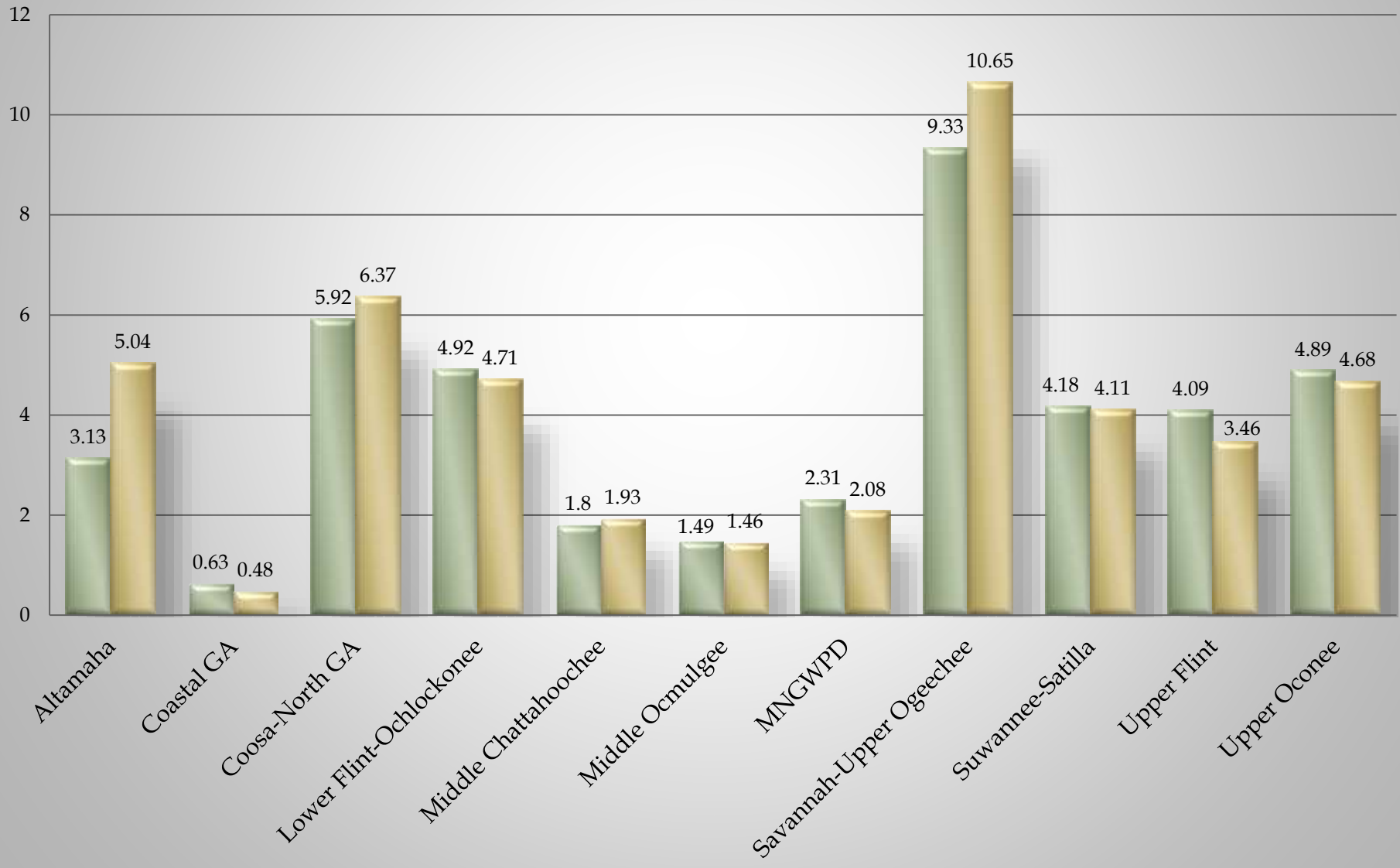
Animal Agriculture - Daily Water Use by Type of Animal

Statewide Total: 45 MGD (*draft*)



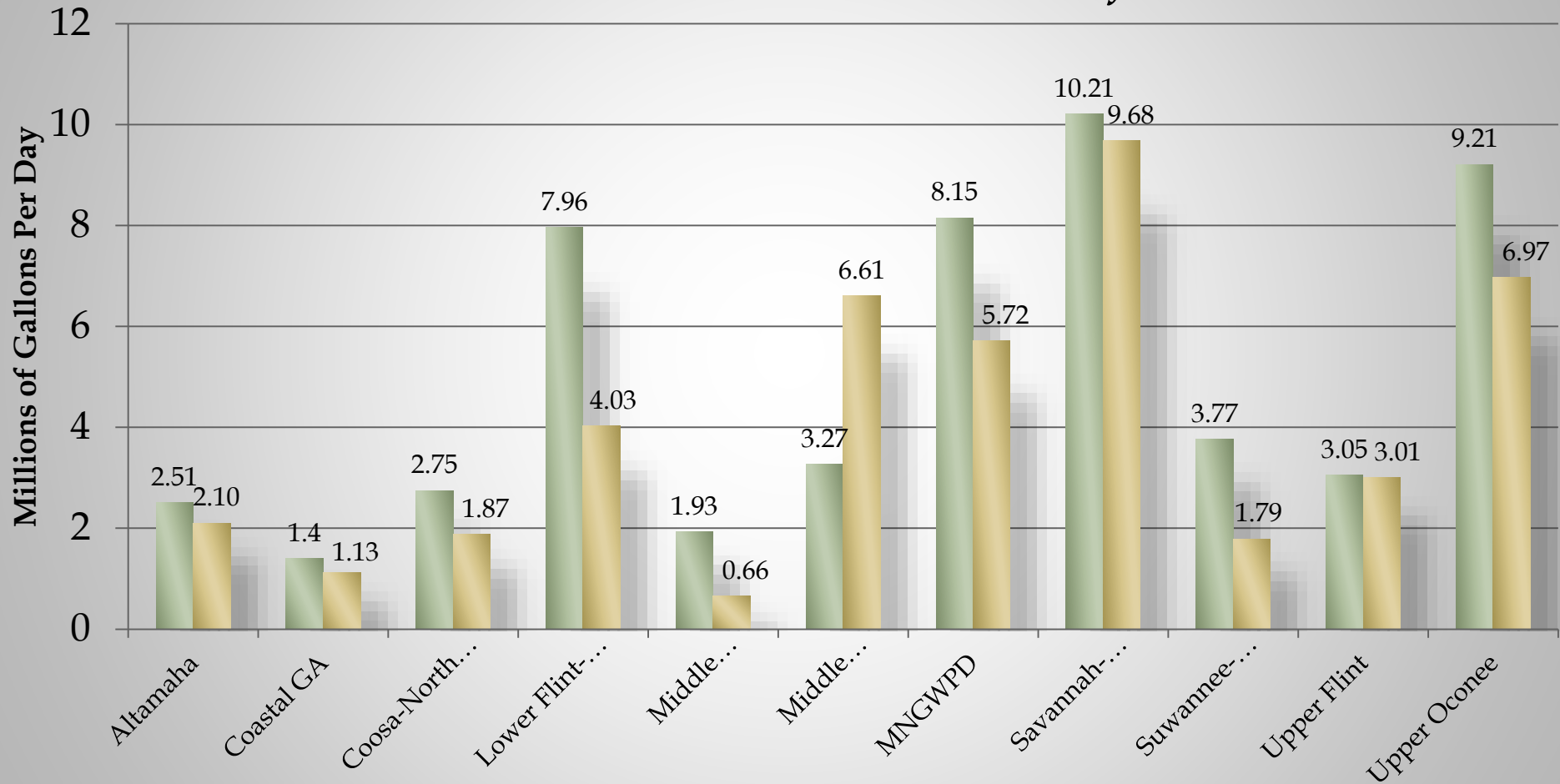
Animal Agriculture - Daily Water Use by Water Planning Region

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*)

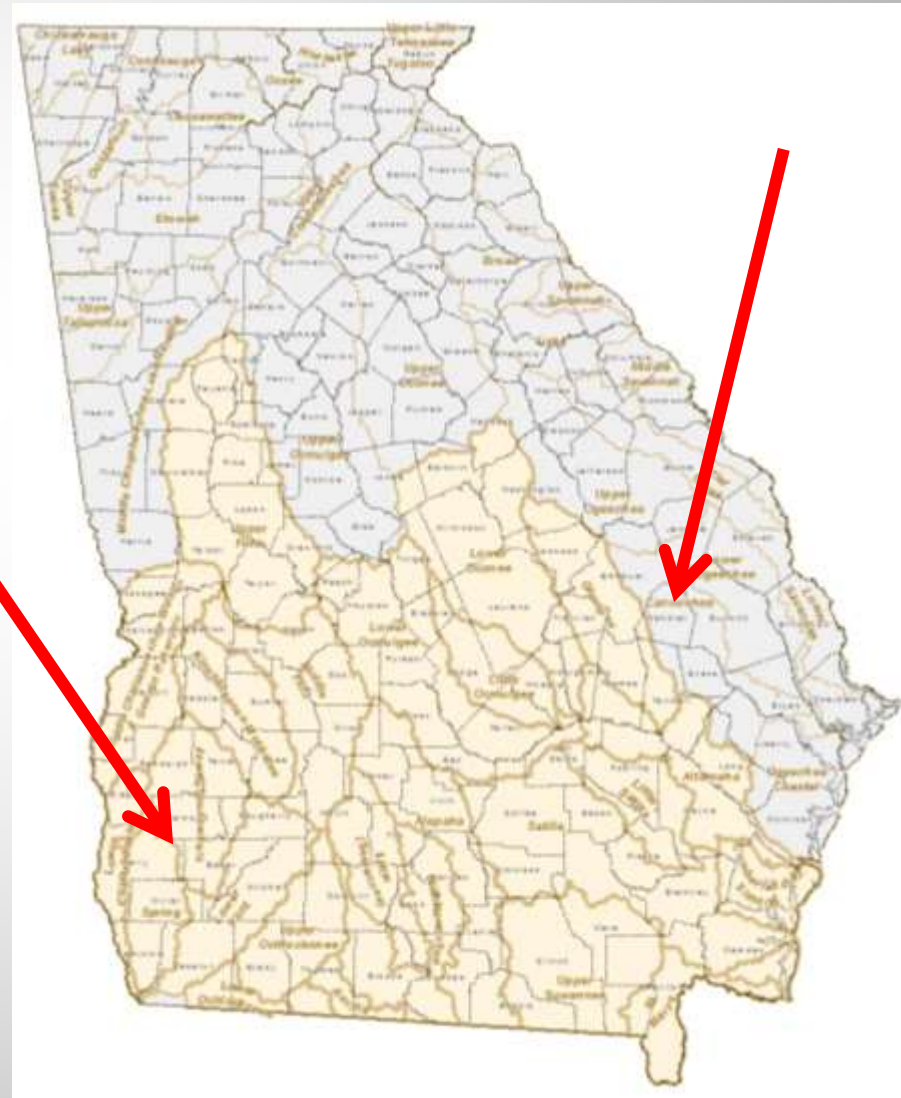
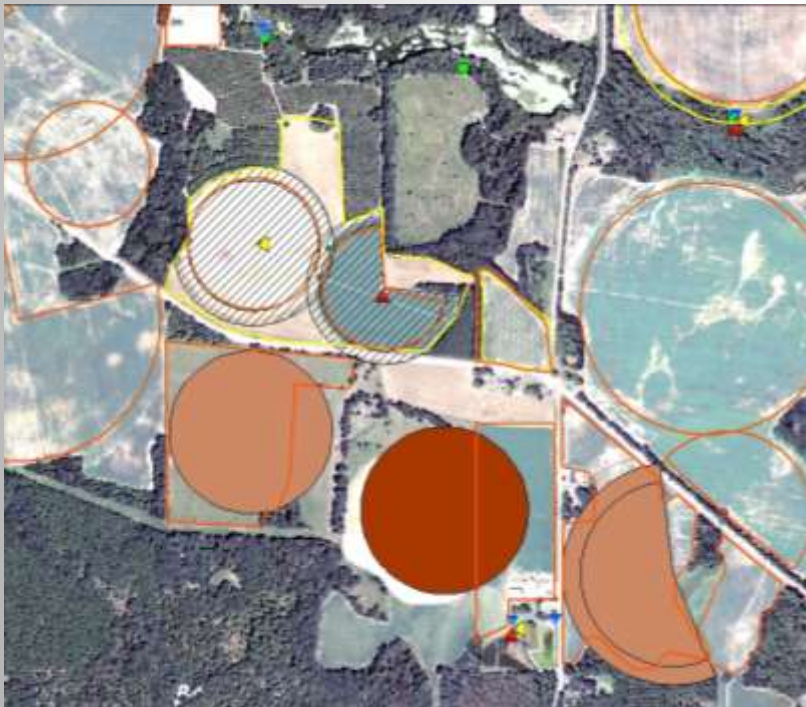


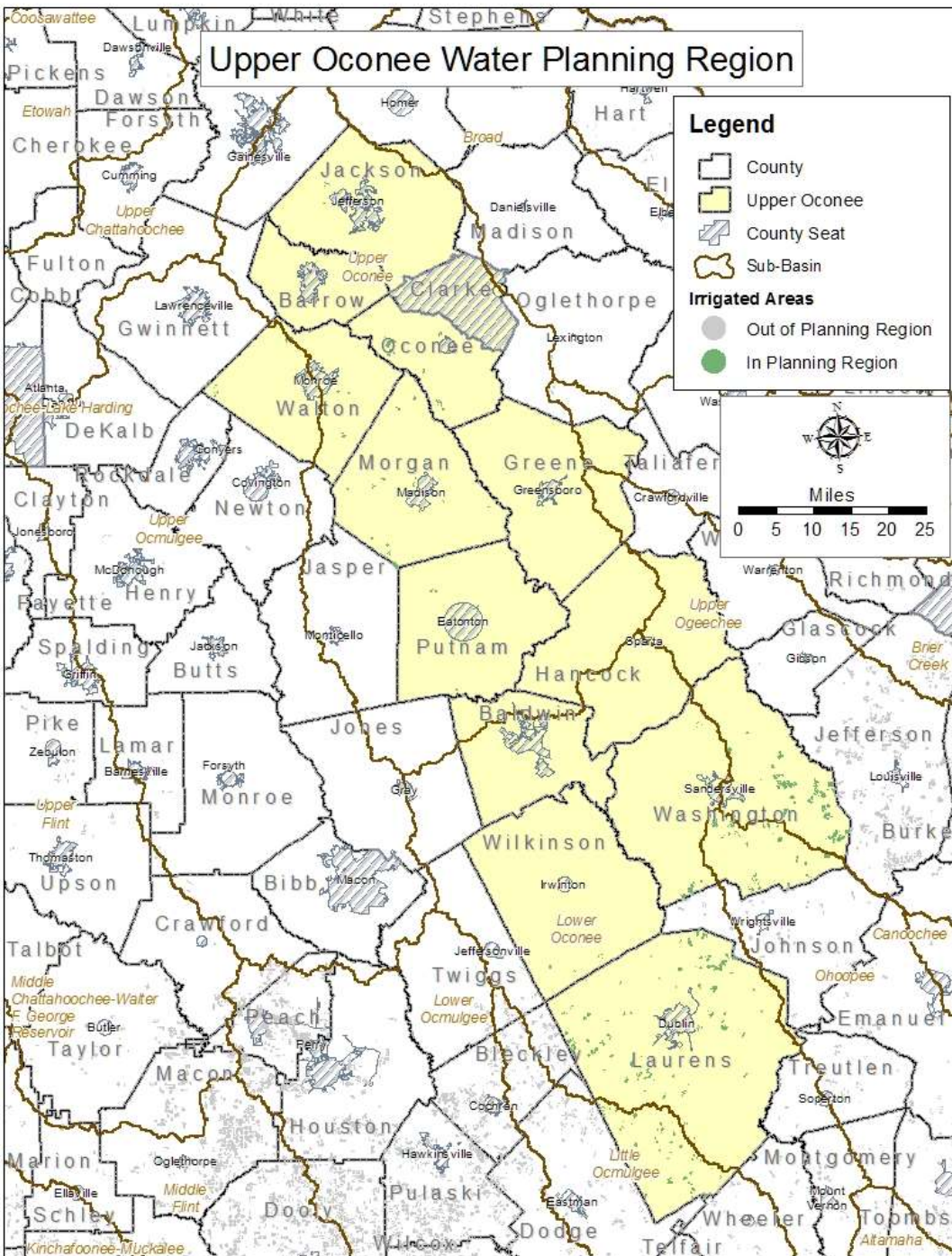
2015-16 Current Agricultural Water Use Estimates - Methods

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

2015-16 Current Agricultural Water Use Estimates - Methods

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





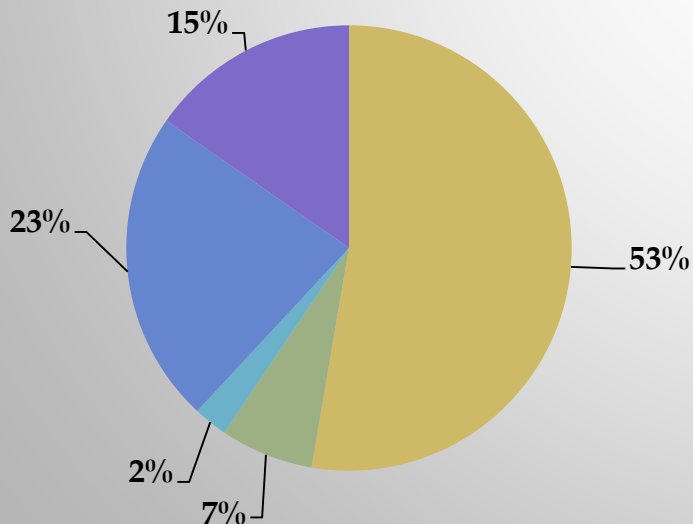
Irrigated Acres

County	2009	2014
Baldwin	0	0
Barrow	0	0
Clarke	106	114
Greene	55	0
Hancock	312	47
Jackson	114	113
Laurens	8,303	10684
Morgan	953	1272
Oconee	1,328	1304
Putnam	399	391
Walton	974	930
Washington	7,388	10875
Wilkinson	75	244

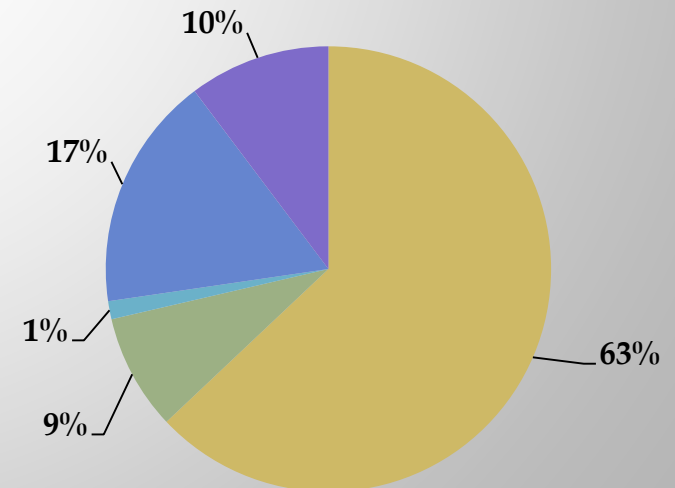
Upper Oconnee Georgia RWPC

	2009	2014	% Change
Total # of Fields	444	542	+ 22.1%
Total Acreage	20,007	26,113	+ 30.5%
Total GW Acreage	12,548	19,624	+ 56.4%
Total SW Acreage	7,459	6,489	- 13.0%
Total Center Pivots	234	368	+ 57.3%
Center Pivot Acreage	12,597	19,307	+ 53.3%

System Type - % of Systems



System Type - % of Acreage



■ Center Pivot
■ Drip
■ Solid Set
■ Solid Set/Drip
■ Traveler

2015-16 Current Agricultural Water Use Estimates - Methods

▣ Wetted Acreage Mapping

- ▣ Detailed mapping
- ▣ Desktop survey
- ▣ Review source assumptions

▣ Water Use

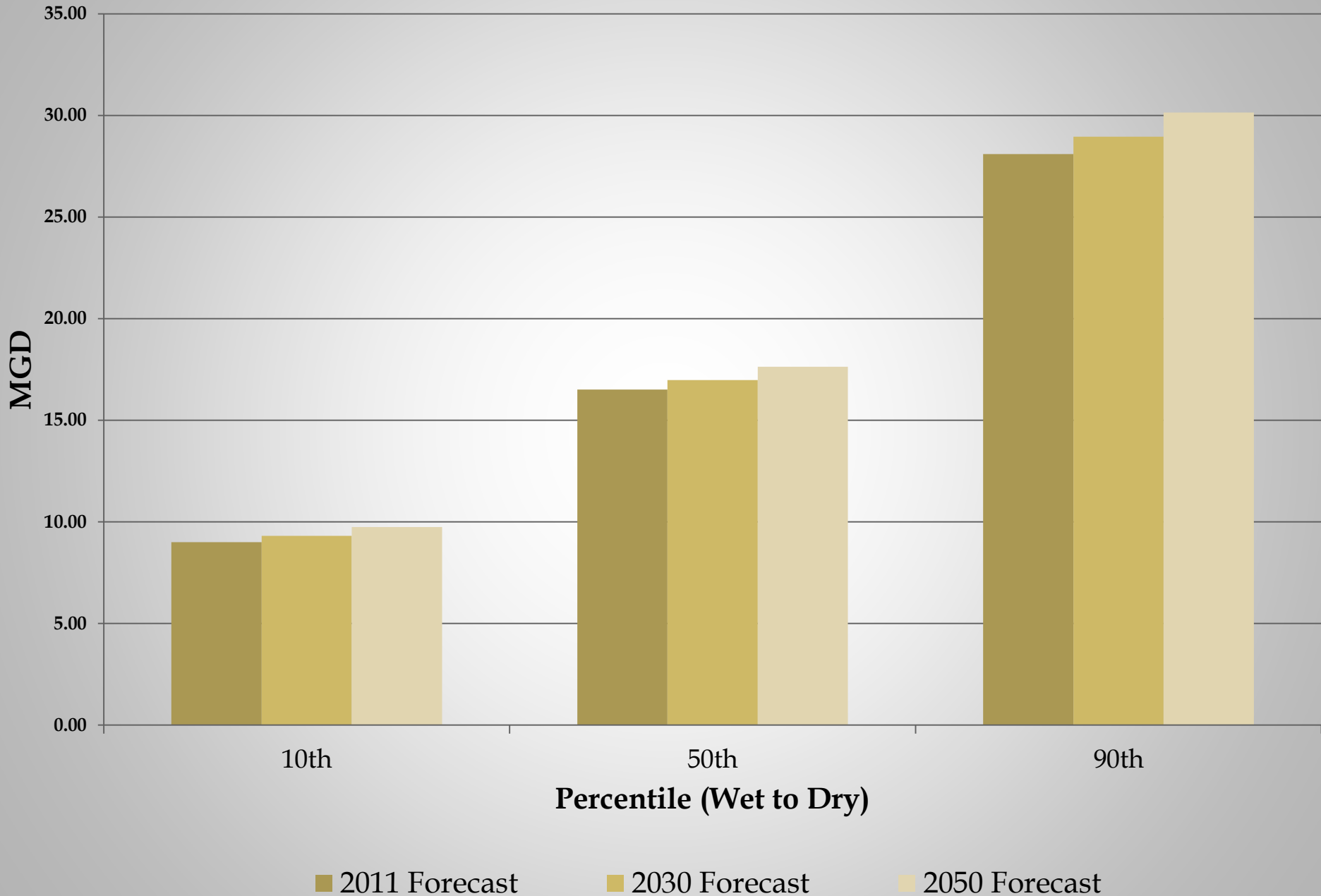
- ▣ Use of meter data for current demand (2010 – 2013)
- ▣ Replication of 2009-10 methods with revised acres

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

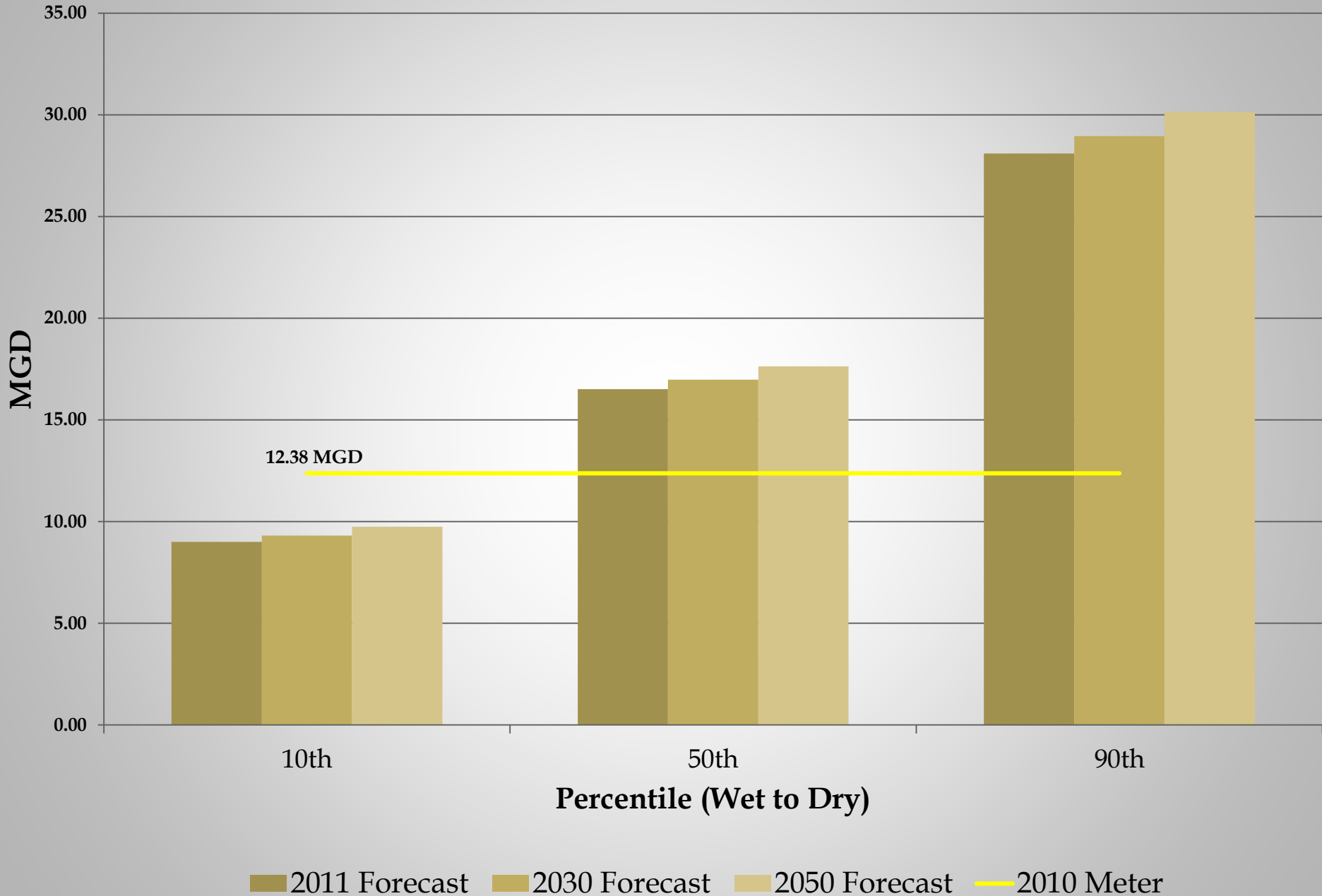
Results

**Current Demand Estimate
from Meter Data**

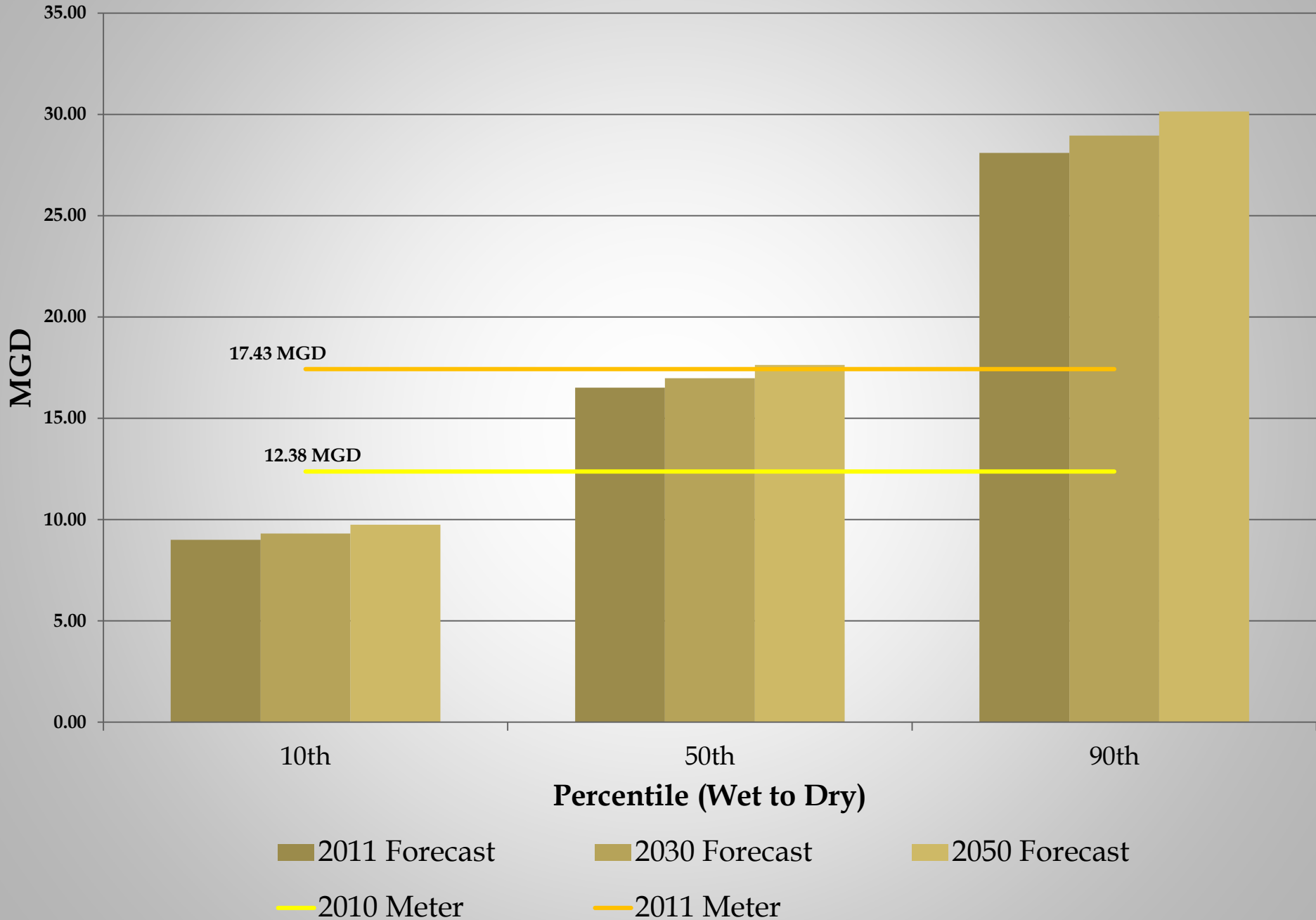
Upper Oconee - Groundwater



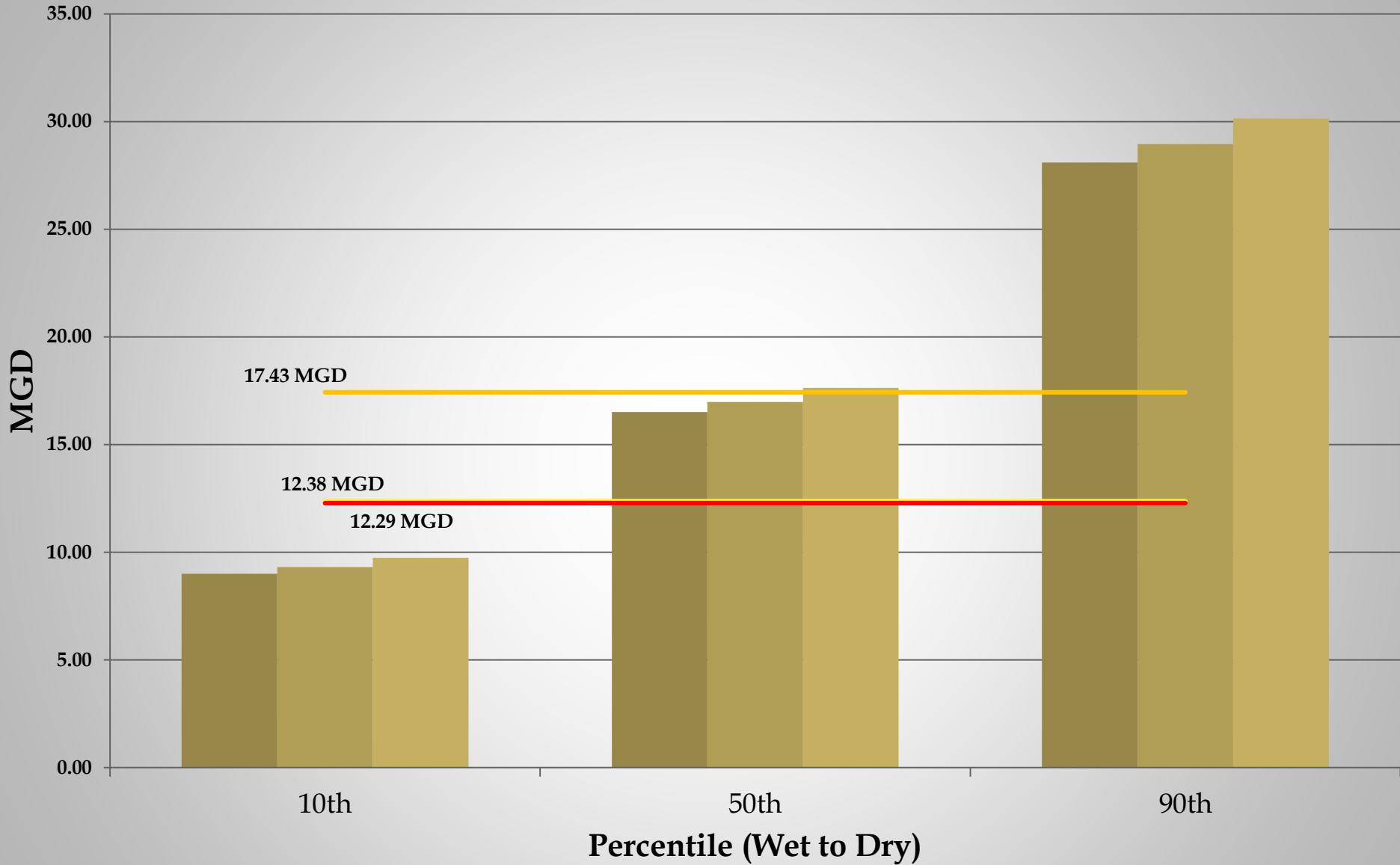
Upper Oconee - Groundwater



Upper Oconee - Groundwater



Upper Oconee - Groundwater



2011 Forecast

2030 Forecast

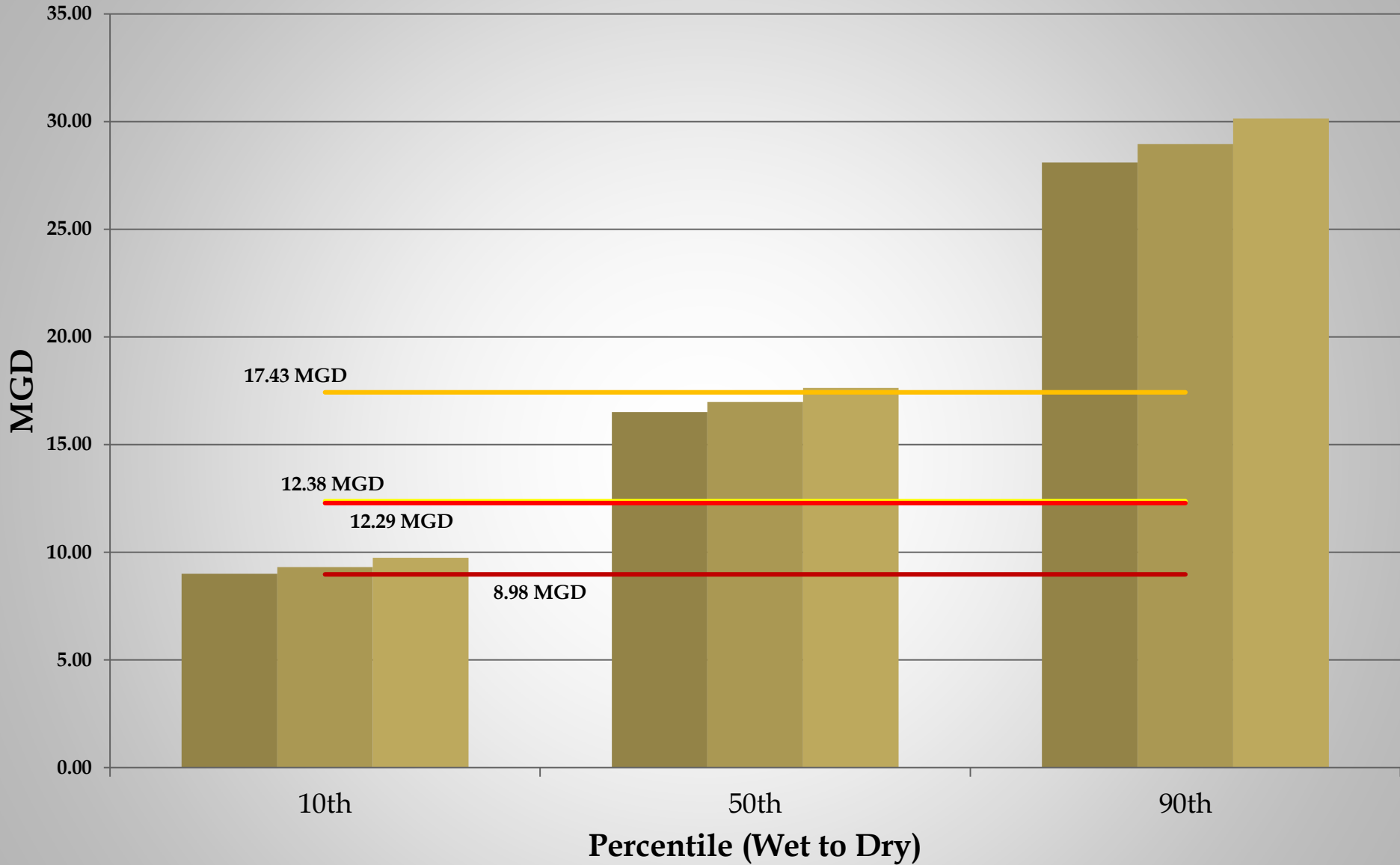
2050 Forecast

2010 Meter

2011 Meter

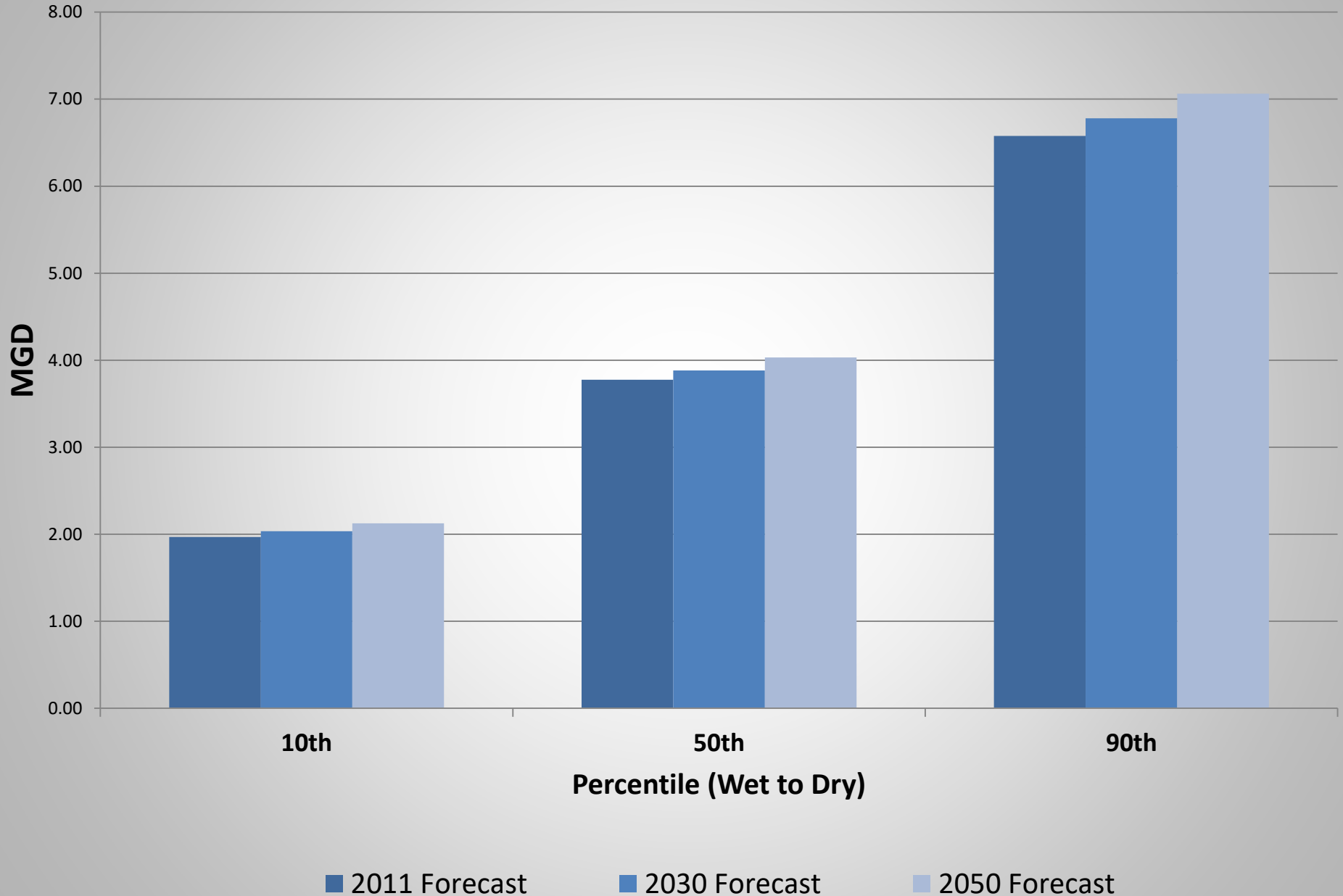
2012 Meter

Upper Oconee - Groundwater

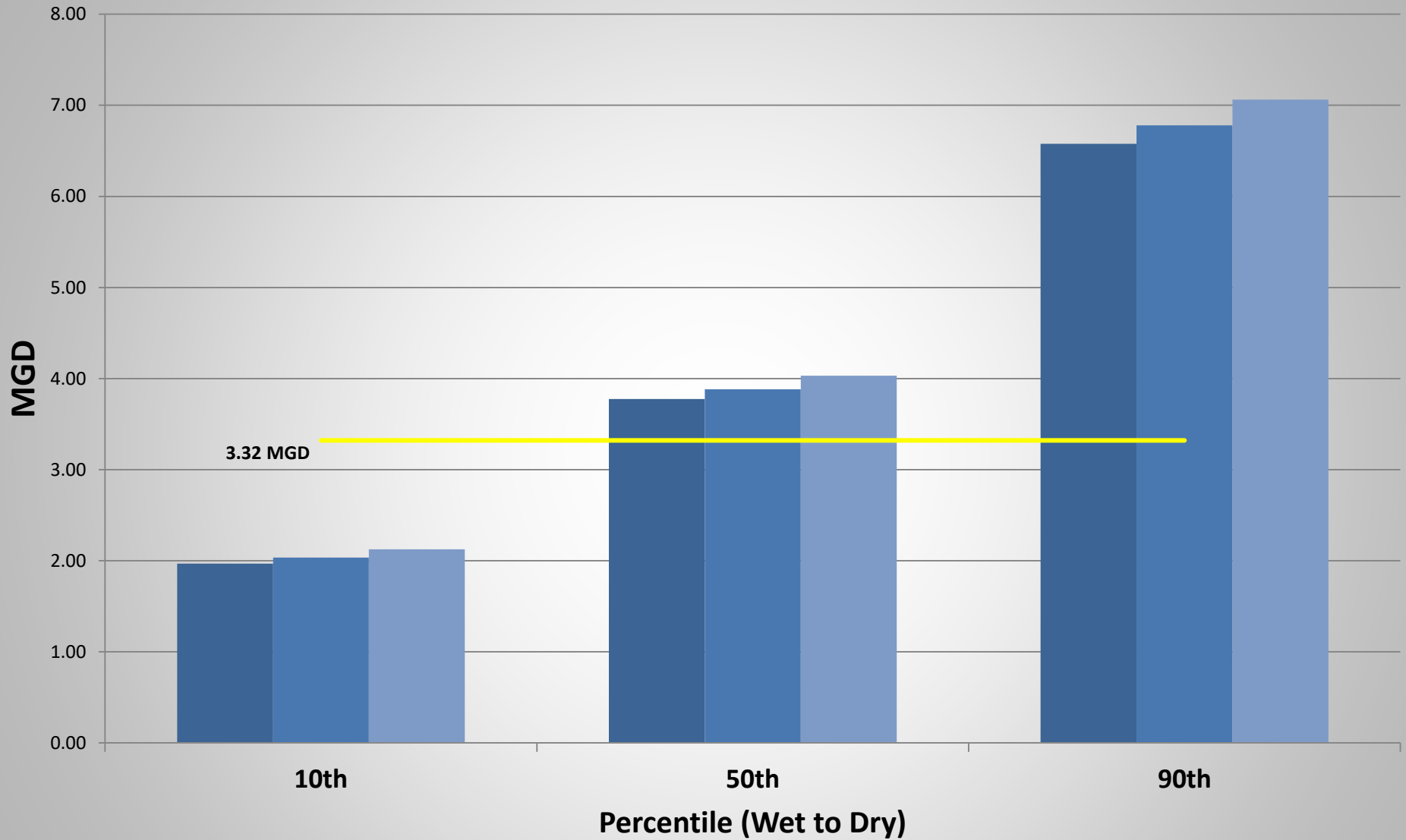


■ 2011 Forecast ■ 2030 Forecast ■ 2050 Forecast — 2010 Meter
— 2011 Meter — 2012 Meter — 2013 Meter

Upper Oconee - Surface Water

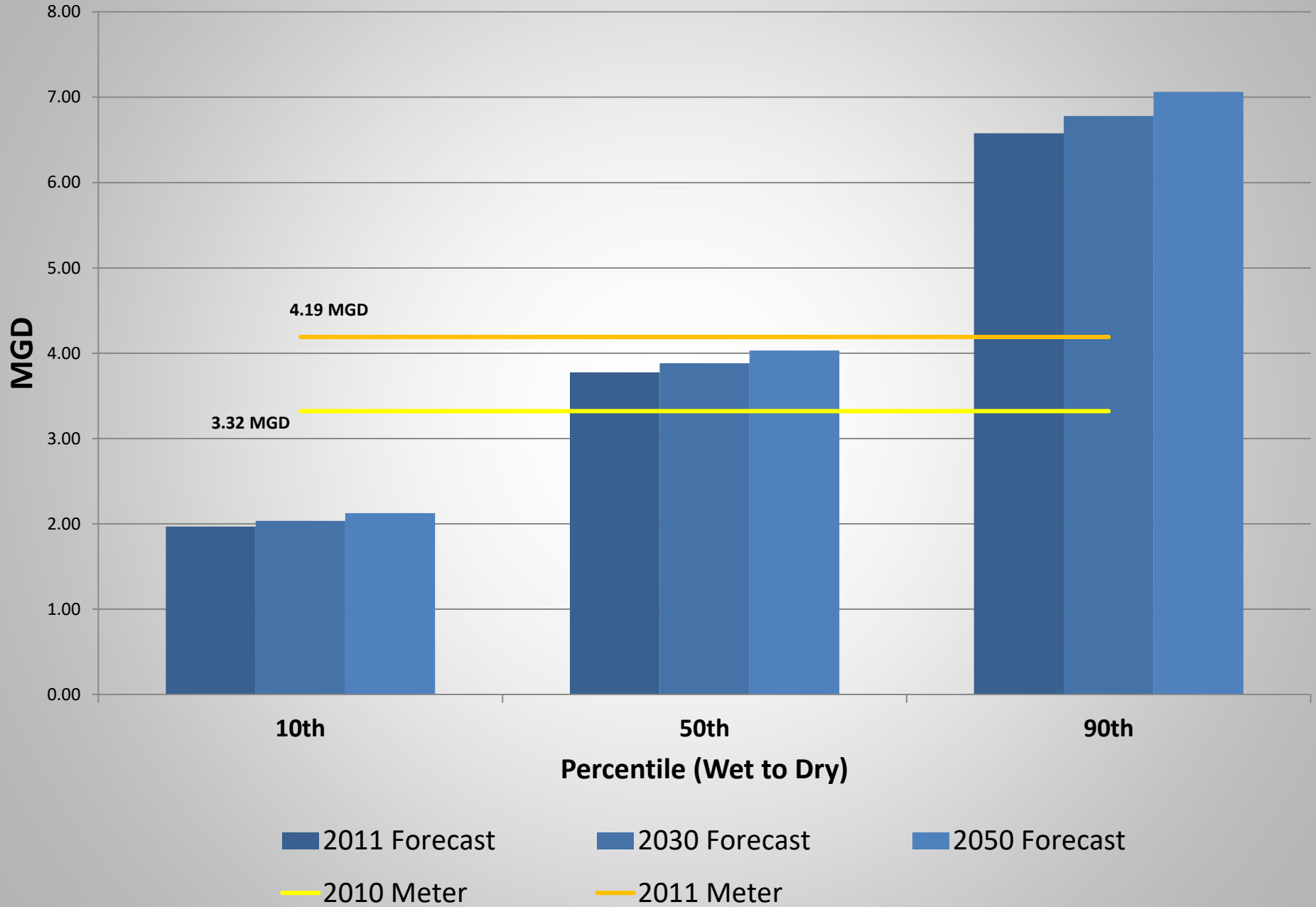


Upper Oconee - Surface Water

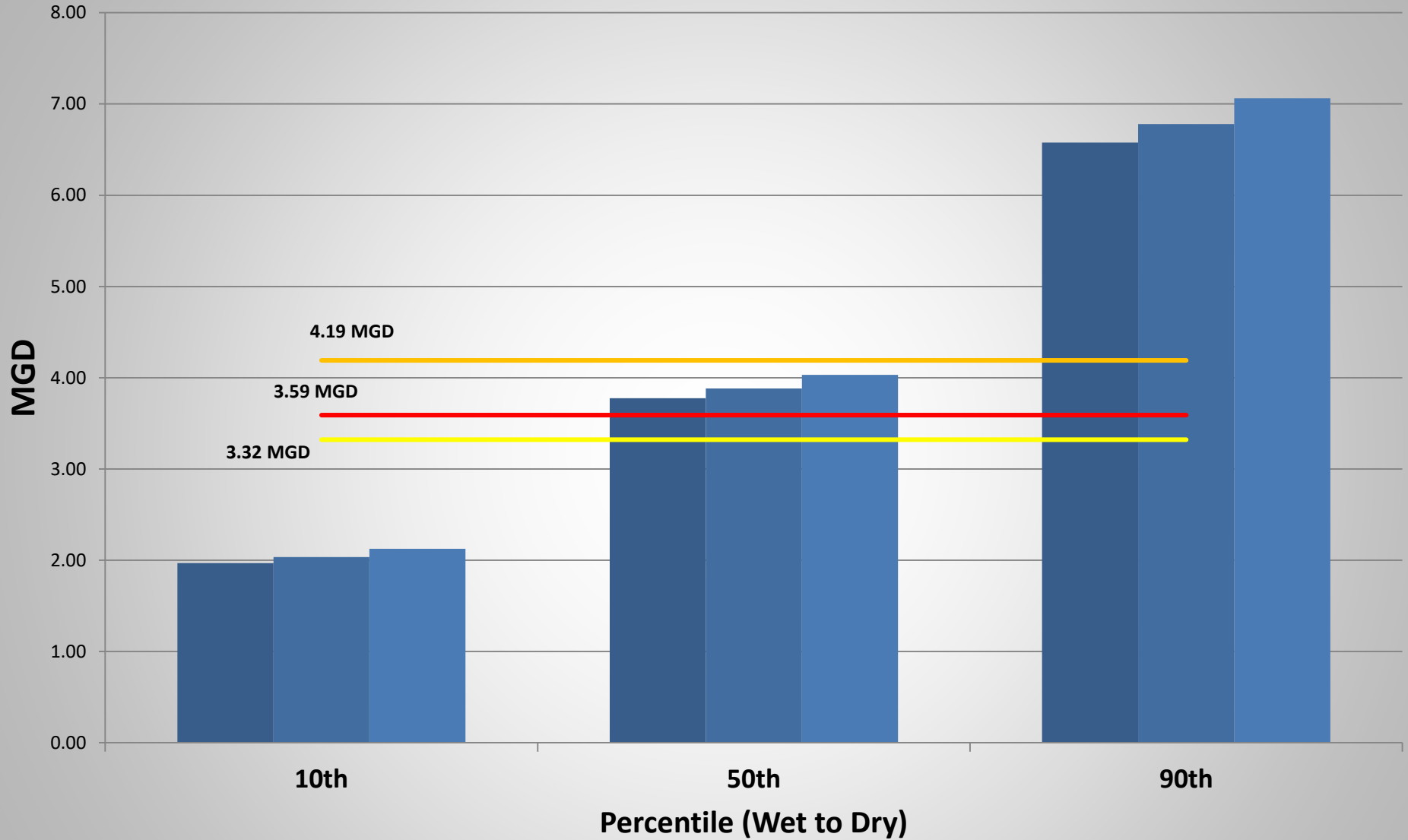


2011 Forecast 2030 Forecast 2050 Forecast 2010 Meter

Upper Oconee - Surface Water



Upper Oconee - Surface Water



2011 Forecast

2030 Forecast

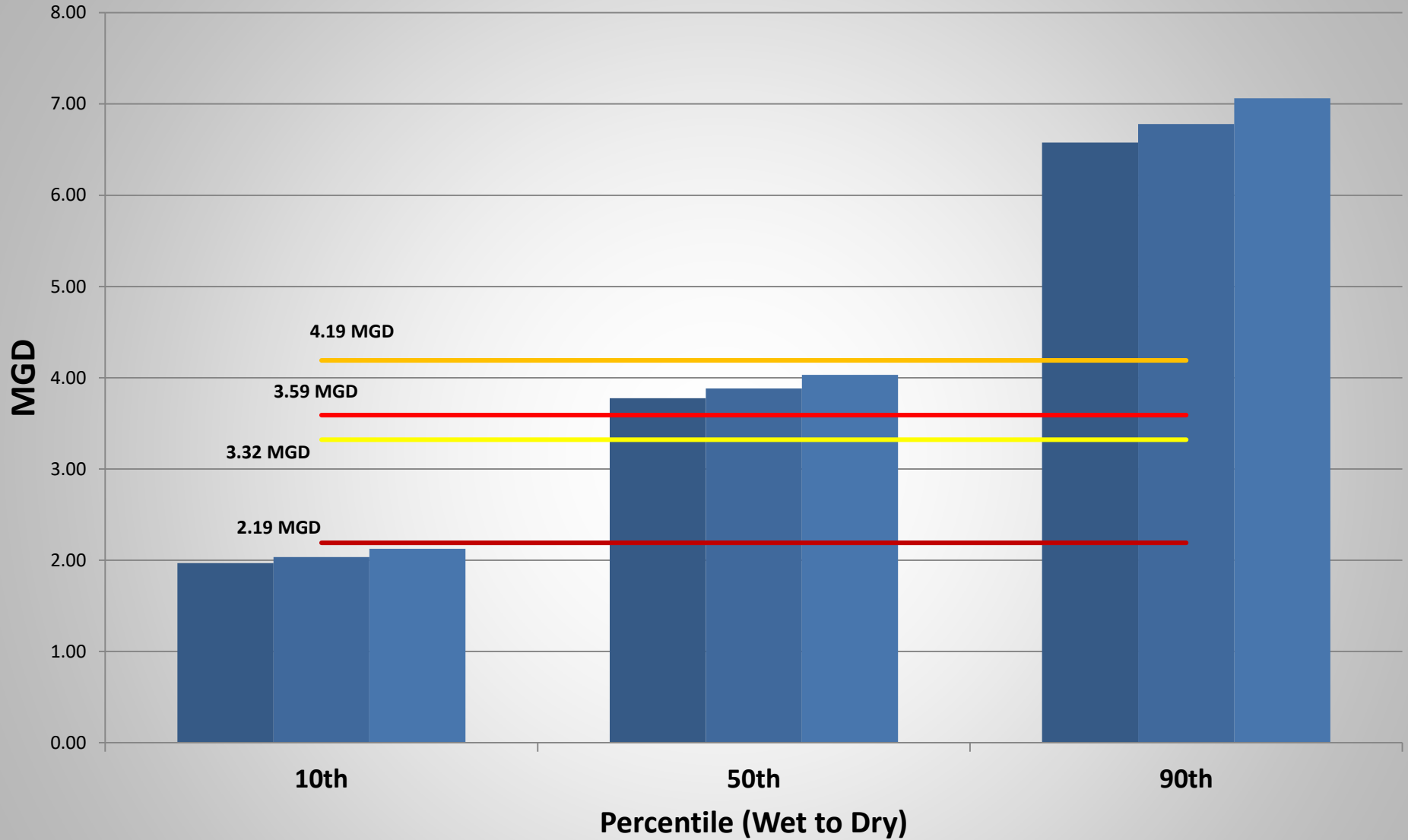
2050 Forecast

2010 Meter

2011 Meter

2012 Meter

Upper Oconee - Surface Water



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