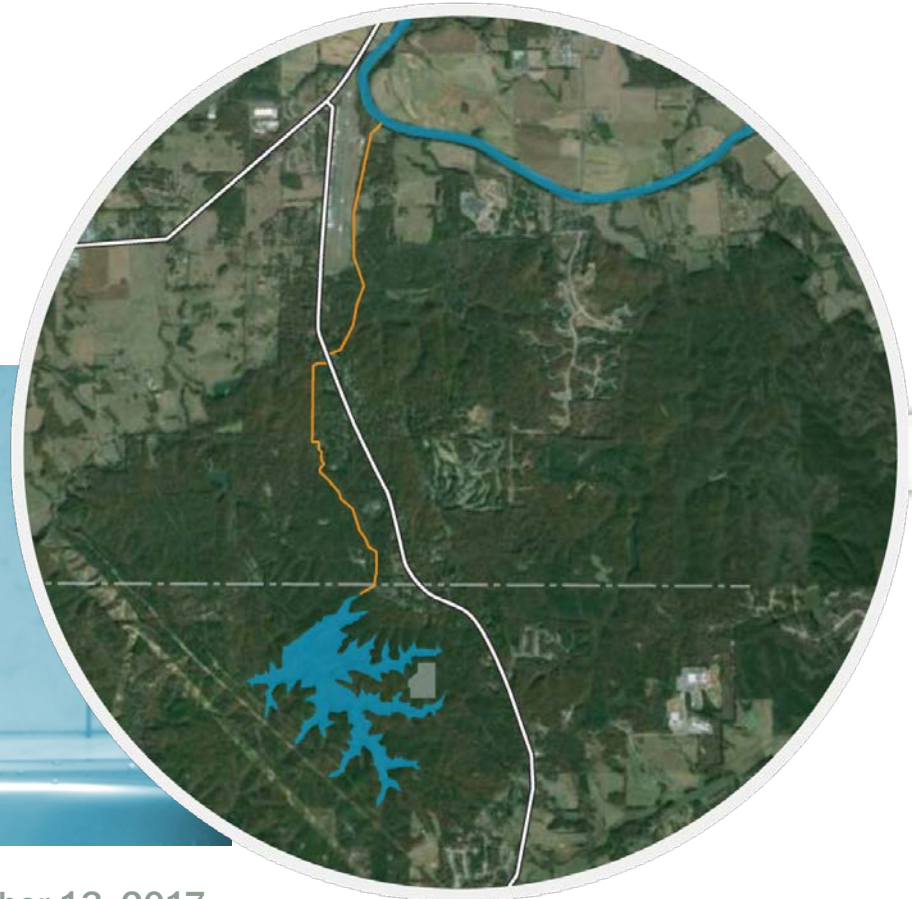


Developing an Off-Peak Pumped Storage Reservoir System as a Regional Water Supply Solution

Kelly Comstock, Brown and Caldwell
Laurie Ashmore, Paulding County

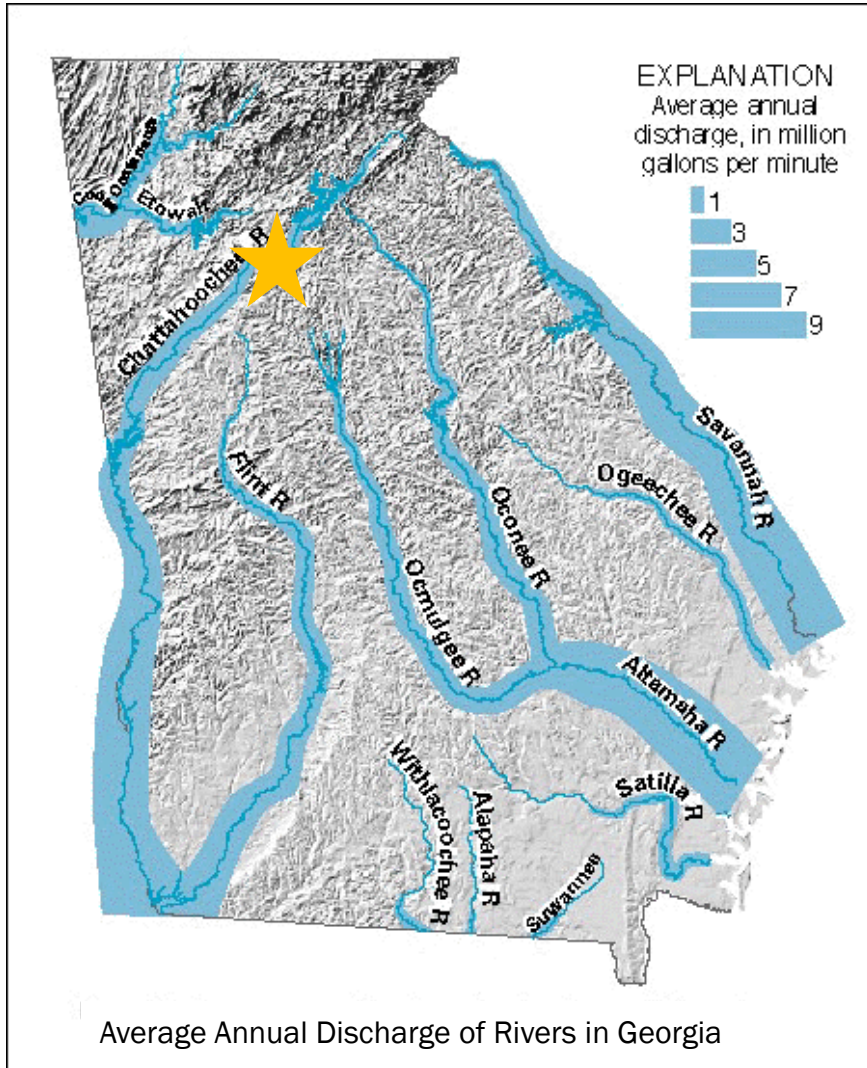




Presentation Outline

- Background on Atlanta Area Water Challenges
- Overview of Paulding County and the Richland Creek Water Supply Program
- Procurement Methodology
- Program Funding
- Construction Status and Current Schedule

Background on Atlanta Water Challenges

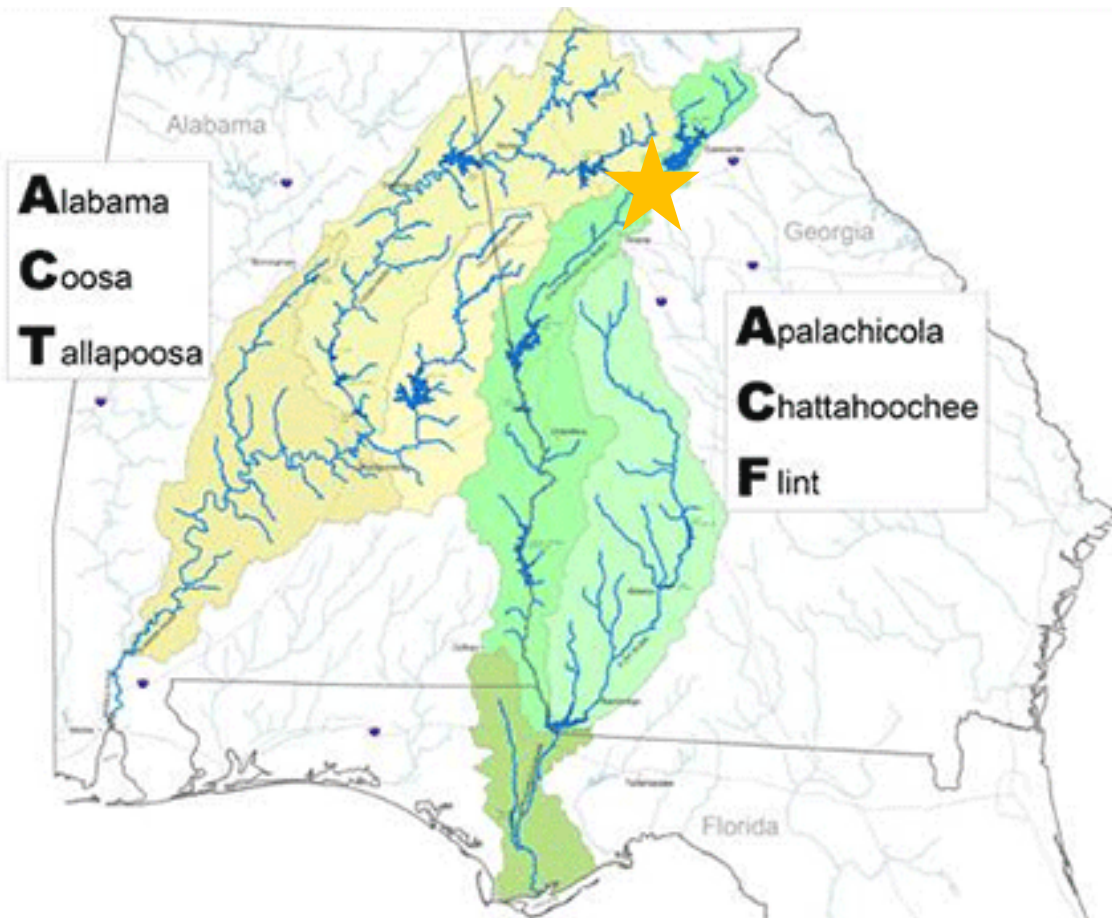


- Atlanta established as railroad hub
- Headwaters of six major river basins
- Two major reservoirs established by USACE for Power Generation





Background on Atlanta Water Challenges



- 20 year ACT/ACF battle between GA, AL, and FL
- ACF Litigation currently in the Supreme Court





Current ACT Dispute



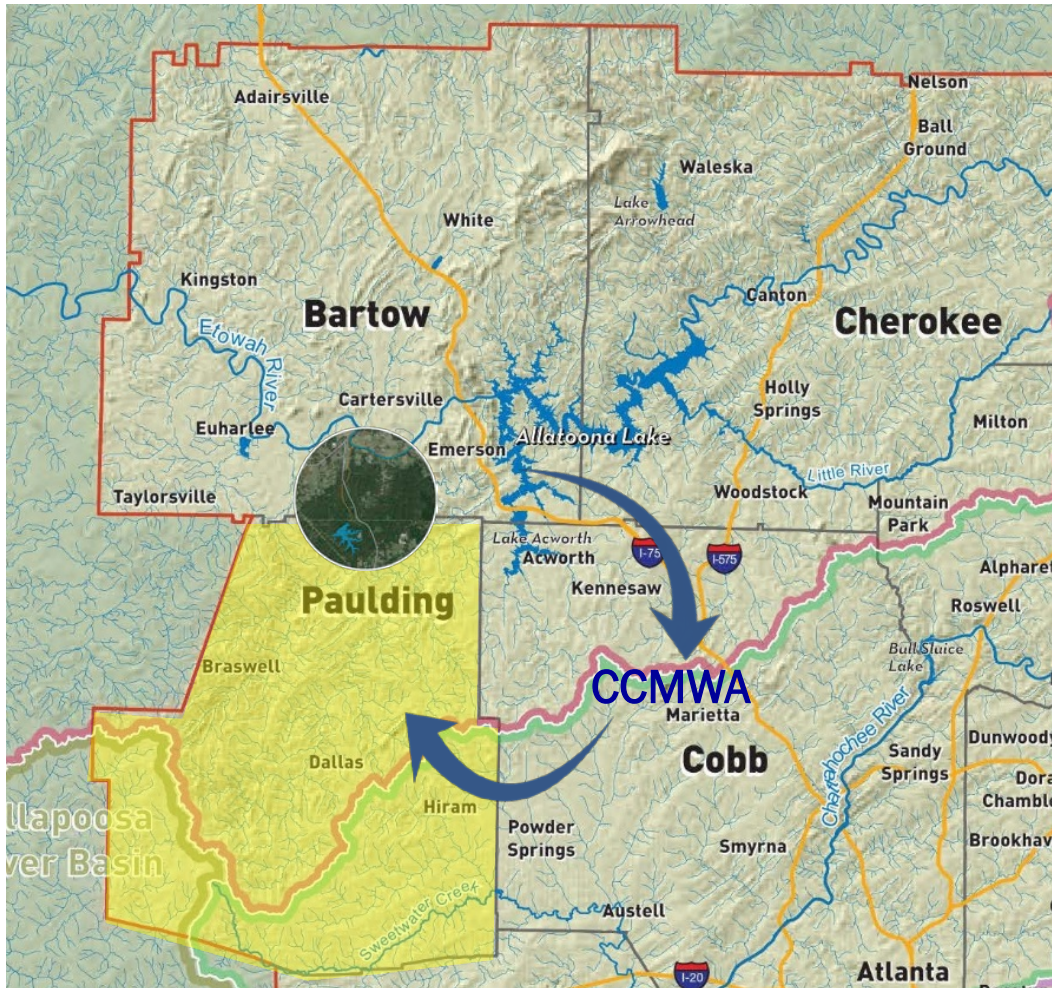
- DW Allocation requested of the Corps in 1981
- State of Georgia, ARC, and CCMWA v. Army Corps
- Water Control Manual finalized in May
- Alabama and Alabama Power v. Army Corps

Location of Paulding County and RCR



- Paulding County is located in the Metro Atlanta Region
- Primarily a residential community
- Population of 150,000
- Continued growth planned over the next 40 years

Location of Paulding County and RCR



- 43,000 customers
- 86 gpcd
- Current Average demand of 10 mgd
- Wholesale Customer of CCMWA
- Current Major Distribution Lines Run East / West from Cobb
- RCR Located on the Northern Edge of Paulding County

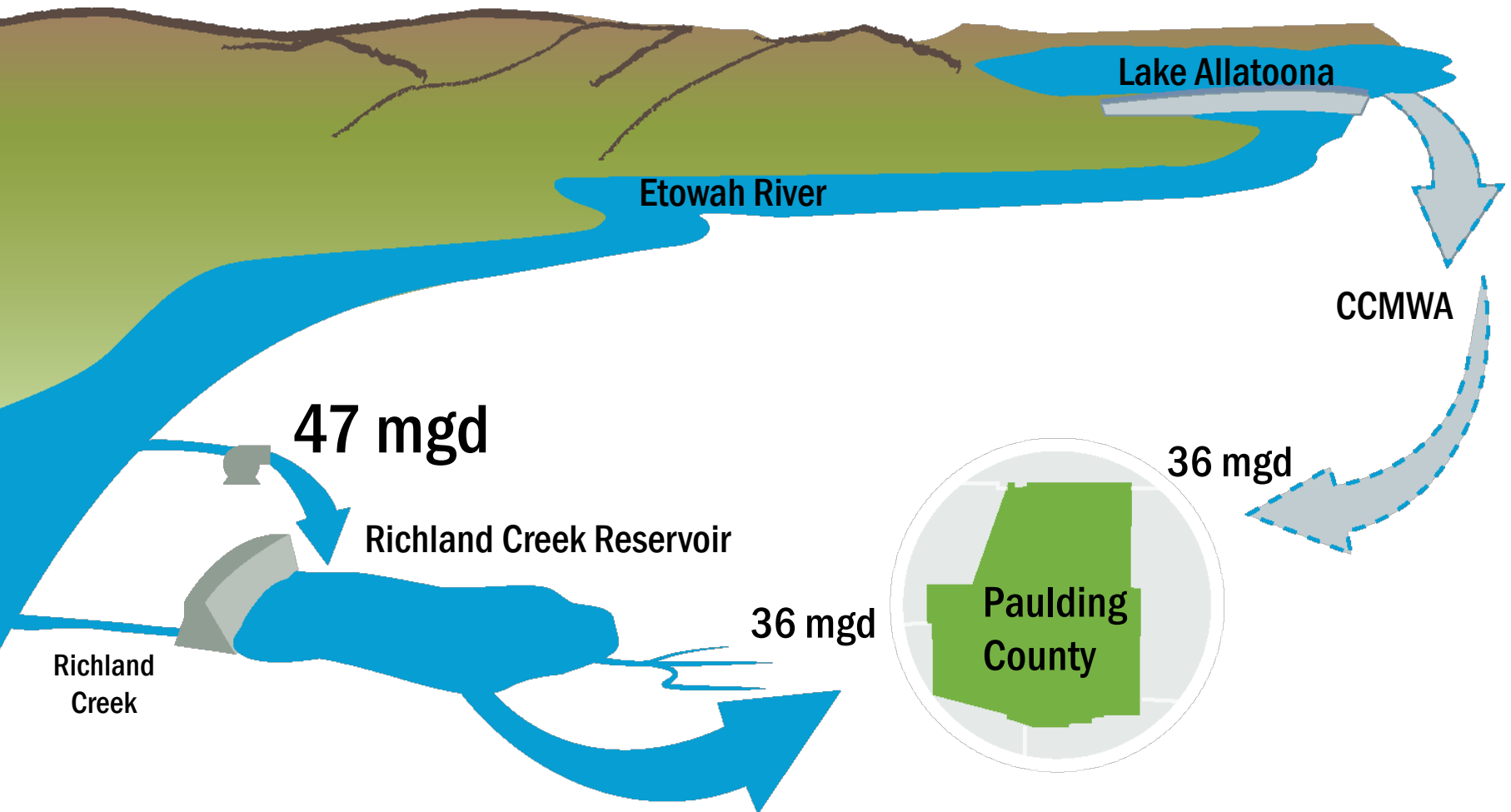


Richland Creek Water Supply Program

- New drinking water supply for Paulding County
- Off-Peak Pumped Storage Reservoir located downstream of the Allatoona Dam on the Etowah River.
- Initiated in 1999 – Paulding County citizens voted to pursue the program and purchase the land to develop the reservoir
- Provides rate stability and a long term drinking water supply for Paulding County.



Off-Line Pumped Storage Concept





Off-Peak Pumping Scenario Minimizes Downstream Impact

Minimum Flow Conditions

290 CFS

**During High Flows and
Power Generation**

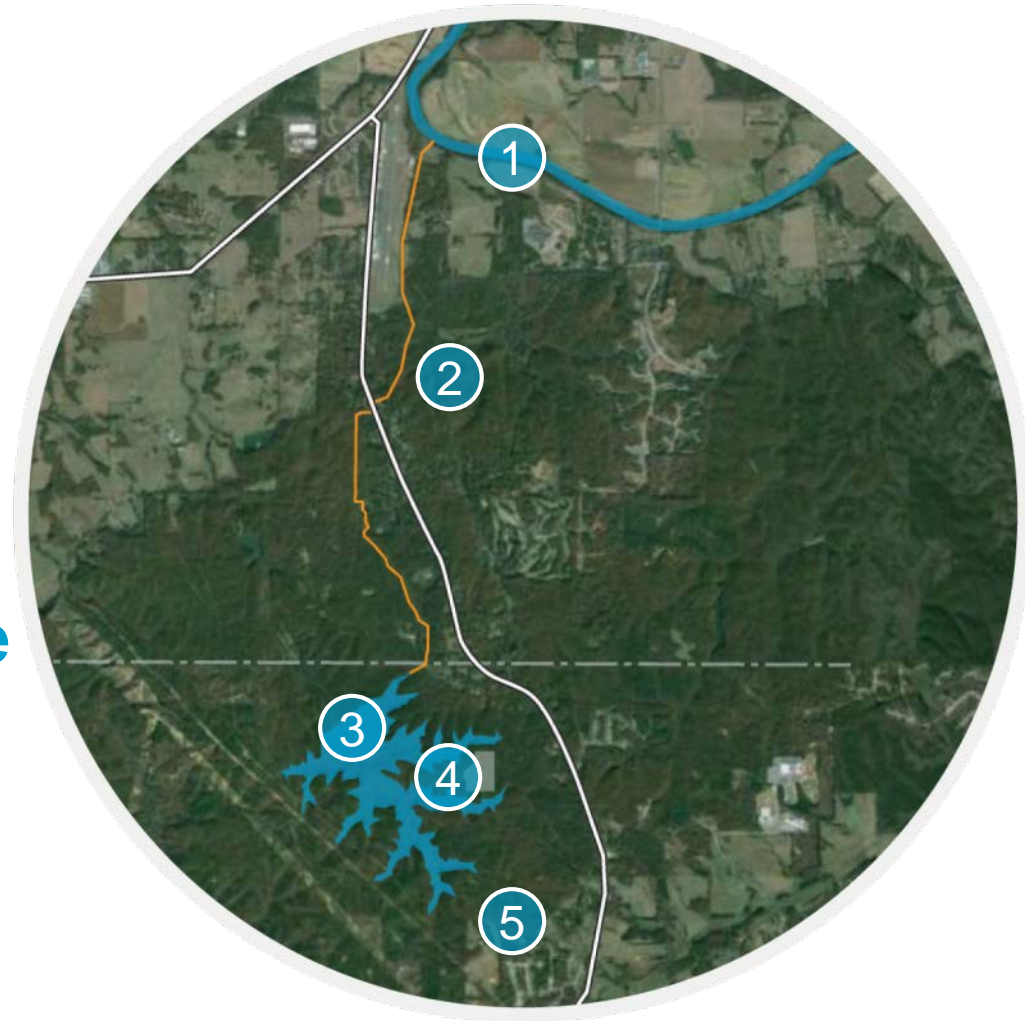
Up to 7000 CFS

87 CFS (47 mgd)



Richland Creek Water Supply Program Elements

1. River Intake and Pump Station
2. Raw Water Pipeline
3. Dam and Reservoir
4. Water Treatment Plant, Reservoir Intake and Pump Station
5. Distribution System Improvements





Team Members and Roles

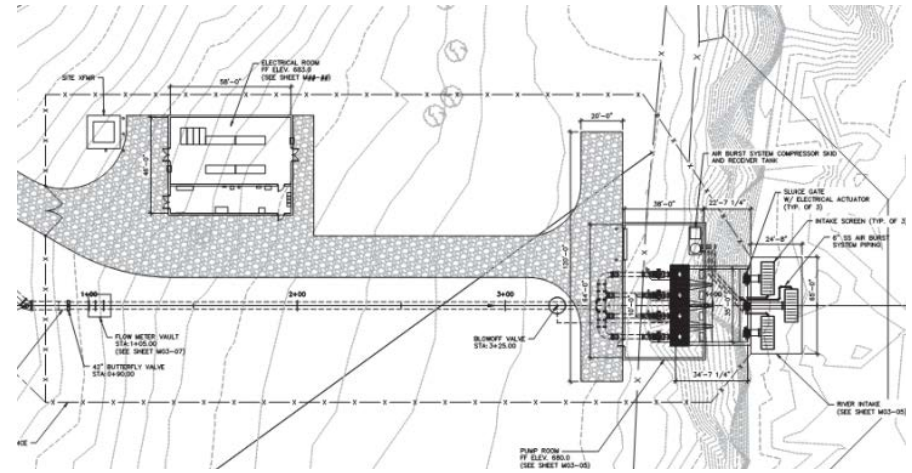
- Brown and Caldwell
Program Manager
- ARCADIS
Designer of Dam, WTP,
and Pump Stations
- PC Construction
CMAR Contractor for
WTP and Pump Stations
- Garney Construction /
Croy Engineering
Design-Build Team for
Raw Water Pipeline
- Brad Cole Construction
Reservoir Contractor
- Atkins
Designer of Finished
Water Pipeline





New Etowah River Intake and Pump Station

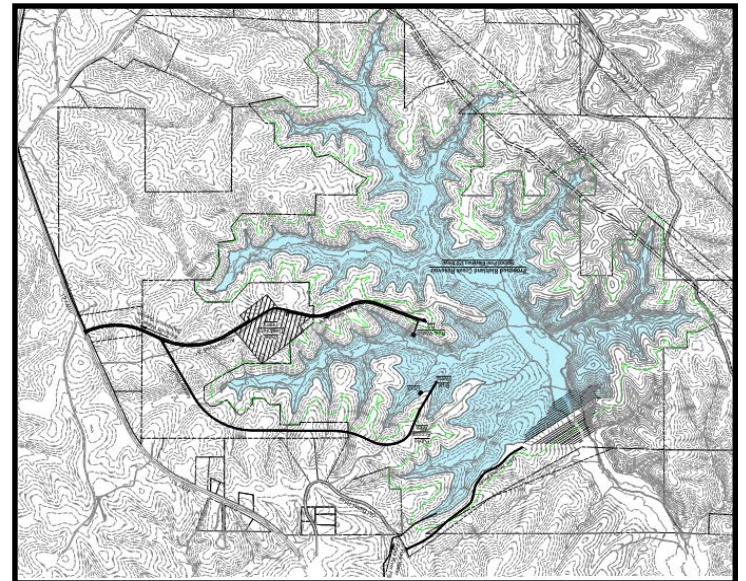
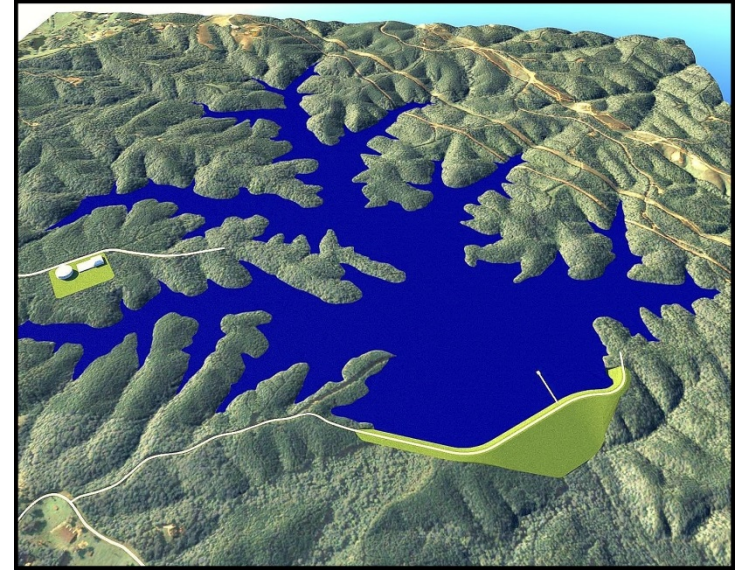
- New Intake and Pump Station
- 4 – 15 mgd raw water pumps
- Will pump in parallel to power releases
- Intake screens designed to prevent impact to Cherokee Darter populations





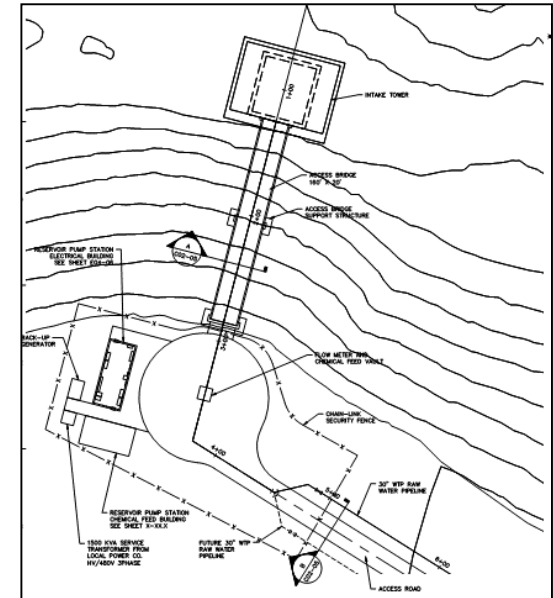
Richland Creek Reservoir

- 305 acre, 3.4 BG
- Passive recreation will be allowed
- Boat ramp and dock for public access
- Adjacent park
- 150 ft undisturbed buffer at reservoir



Reservoir Intake and Pump Station

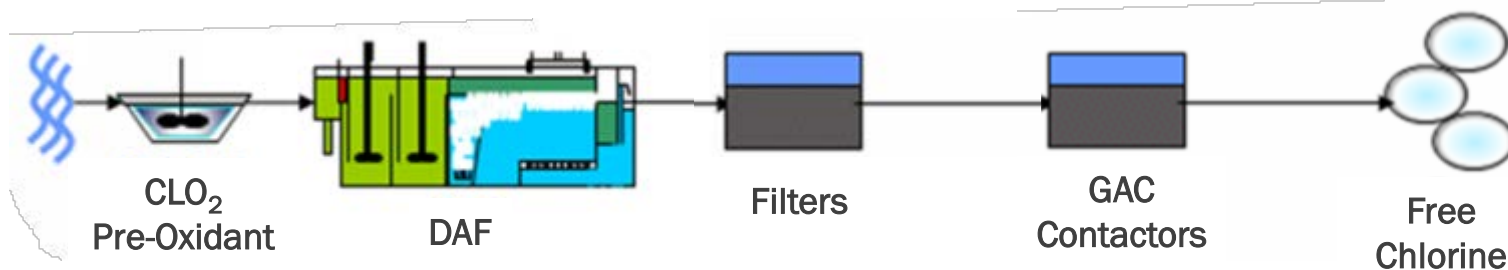
- Initially 4-6.8 mgd pumps
- Space for 4 future pumps
- Ability to withdraw from the reservoir at 3 different levels within the reservoir





New Water Treatment Plant

- Initial Sizing of 18 mgd
- Ultimately Sized for 36 mgd
- Coagulation, High Rate Dissolved Air Flotation (DAF), Filtration, Post Filter GAC Contactors





Water Treatment Plant Design Criteria

| Process | Design Criteria |
|------------------|----------------------------|
| Coagulant | Alum (15 – 30 mg/l) |
| DAF Recycle | 10% |
| DAF Loading Rate | 12 gpm/sf |
| Filter Media | 12" Sand 18" Anthracite |
| Filtration Rate | 5 gpm/sf |
| GAC EBCT | 15 min |



Distribution System Improvements

- RCR is located in North Paulding
- Distribution System improvements necessary to move water to South Paulding
- 1 Mile of 48" pipeline
- 12 Miles 36" pipeline
- Additional distribution system storage and pumping





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Public Outreach

Multi-faceted approach to engaging public

Website

Social media

Groundbreaking

Artwork and Mascot Competition

Community Meetings

Tours

BOC / Paulding County TV Updates



Program Website – RCRWater.com



RCR in the News
Richland Creek Reservoir Supply Program • May 2016

Water system staff pulls 260 lb of trash from stream

The Paulding County Water System staff participated in the May 2, 2016 Keep Paulding Beautiful Great American Cleanup, which included a stream cleanup as a segment of Sweetwater Creek. Paulding County's bars included 17 addresses and together they pulled 260 lb. of trash out of the stream.

The Richland Creek Reservoir (RCR) is a new 305-acre reservoir that, once completed, will supply up to 3 billion gallons of drinking water to existing and future populations in and around Paulding County.

Thank you for your interest in the Richland Creek Reservoir Program. We glad to help you understand through this article. For more information, please visit our website: www.rcrwater.com

To draw attention to the Inaugural Water Professionals Appreciation Day, on May 2, Paulding Water System held a Media Alert stream cleanup at Sweetwater Creek. Sweetwater staff and friends came out to participate in the stream cleanup. We collected over 260 pounds of trash, keeping it out of Sweetwater Creek. It was a great day!

For More Information:
Phone: 706-324-4226
Email: info@rcrwater.com
Website: www.rcrwater.com

Lauren Johnson, Water System Director



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Financial Model and Long-term Economic Benefits





Program Costs

| Project Element | Cost |
|--|----------------|
| Reservoir | \$ 70,300,000 |
| WTPs and Pump Stations | \$ 98,800,000 |
| Raw Water Pipeline | \$ 9,400,000 |
| Finished Water Pipeline and BPS | \$ 36,500,000 |
| Total Program | \$ 215,000,000 |

Costs shown include design /CM, construction, mitigation, and program management

Summary of GEFA Support and Other Financing

- Georgia Environmental Finance Authority (GEFA) providing \$82 million in support
 - \$15 million in State Direct Investment
 - \$2.8 million planning loan
 - \$64.9 million in design / construction loans

| GEFA Loan Number | Amount | Interest Rate | | | Term |
|------------------|---------------|---|--|--|----------|
| | | First 3 years after initiating Drawdown | 3 years after initiating drawdown until Project Completion | After the earlier of Project Completion or 10/1/21 | |
| WS12L13WR | \$ 29,100,000 | 0% | 1% | 1.82% | 40 Years |
| WS13L04WR | \$ 21,600,000 | 0% | 1% | 1.40% | 30 Years |
| WS14L03WR | \$ 6,000,000 | 0% | 0% | 2.03% | 40 Years |
| WS15L01WR | \$ 8,206,250 | 0% | 0% | 2.03% | 30 Years |

- Issued Revenue Bonds for Remainder (2.84% 30 yr bonds)



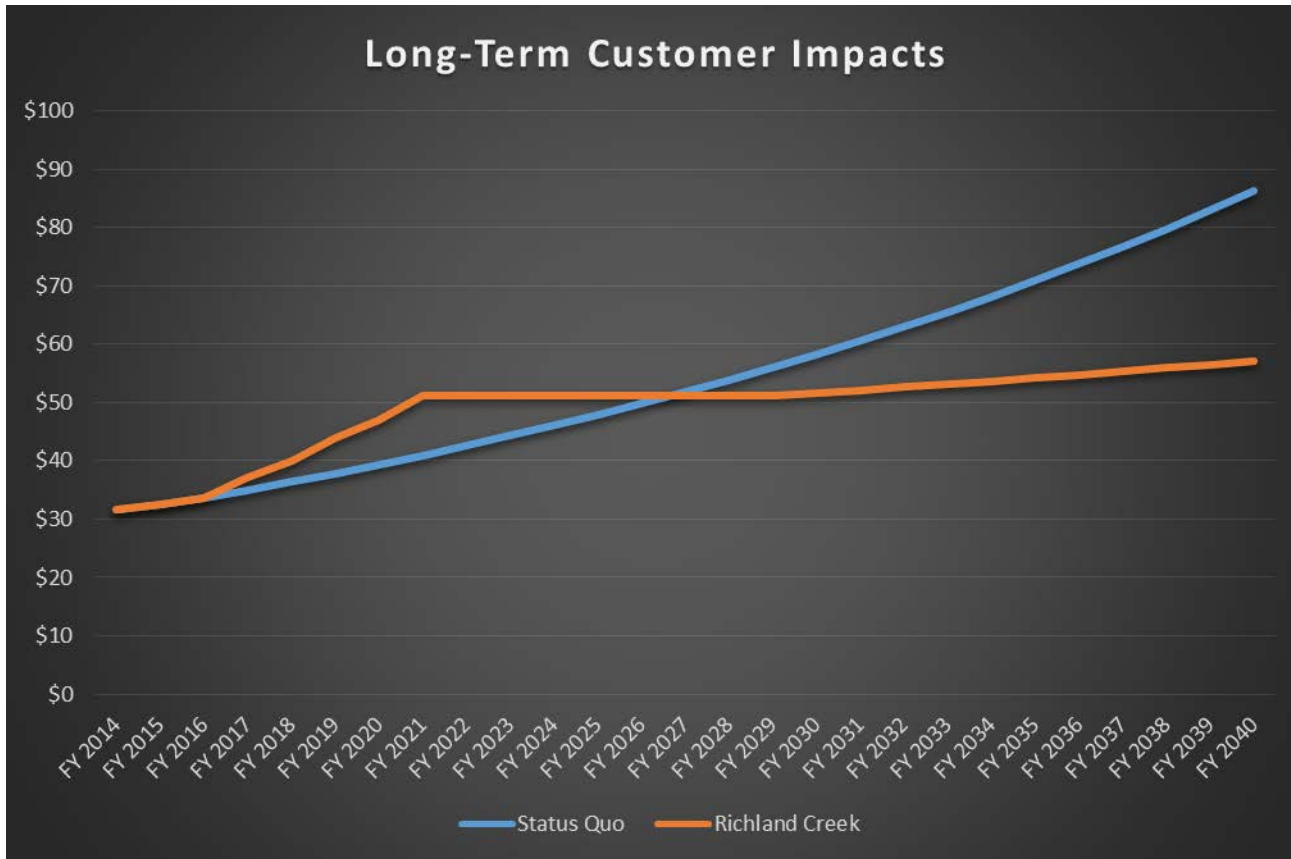
Rate Increase

- Needed rate increases to support Richland Creek Project Implementation
- 4.75% increase for 5 years above historical CCMWA Increase
- After Program, plan to quickly get off of CCMWA systems so no longer will pay the CCMWA increase

| Rate Increases | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---------------------|------|-------|-------|-------|-------|-------|
| Total Water | 4.0% | 8.75% | 8.75% | 8.75% | 8.75% | 8.75% |
| CCMWA Increase | 4.0% | 4.0% | 4.0% | 4.0% | 4.0% | 4.0% |
| Additional Increase | - | 4.75% | 4.75% | 4.75% | 4.75% | 4.75% |
| Sewer | 4.0% | 4.0% | 4.0% | 4.0% | 4.0% | 4.0% |



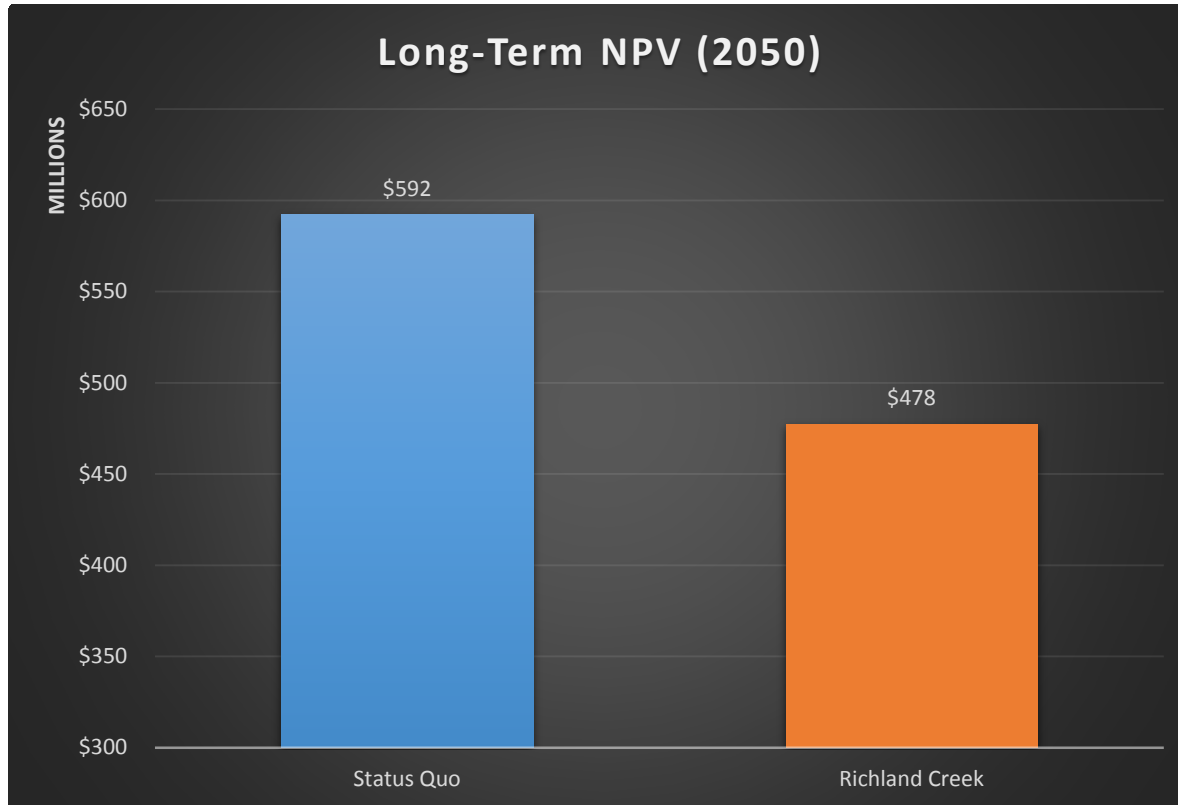
Long-Term Customer Impacts



Average monthly water bill for a customer using 4kgal per month



Long-Term County Savings



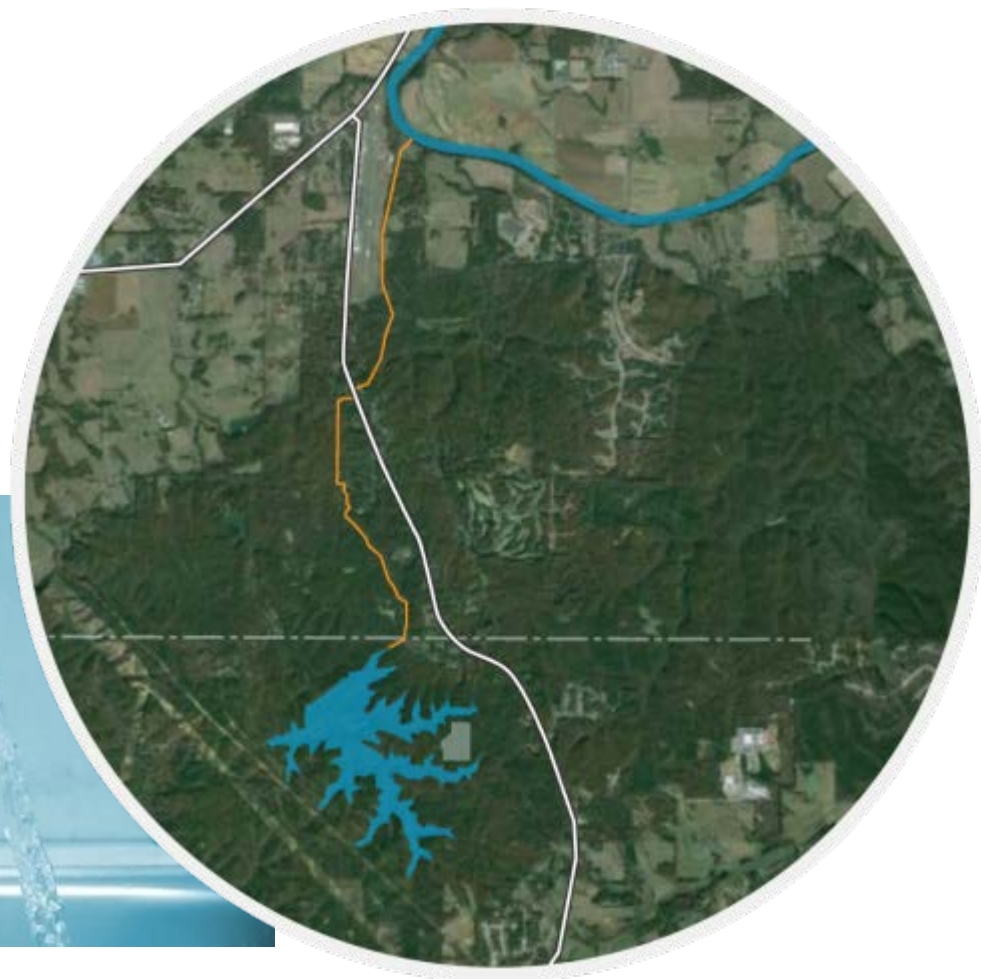
- Over \$100 Million in long term savings for the County
- Security of having your own water supply source



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Current Program Status





Aerial of Etowah River Intake Construction





Etowah River Intake Construction





Raw Water Pipeline - Complete





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Aerial of Dam Construction





Construction Update – Dam Grout Injection





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Construction Update – Reservoir Primary Outlet Structure





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Aerial of Reservoir Intake and Pump Station Construction





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Aerial of WTP Construction





Finished Water Pipeline Construction





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www.RCRwater.com

On Track for Completion in 2019





Summary

- Off-Peak Pumped Storage Reservoir System does not create downstream impact
- Project provides positive regional implications to ongoing water dispute
- Provides rate stability and a long term drinking water supply for Paulding County





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Questions?

WWW.RCRWater.com



Kelly Comstock

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