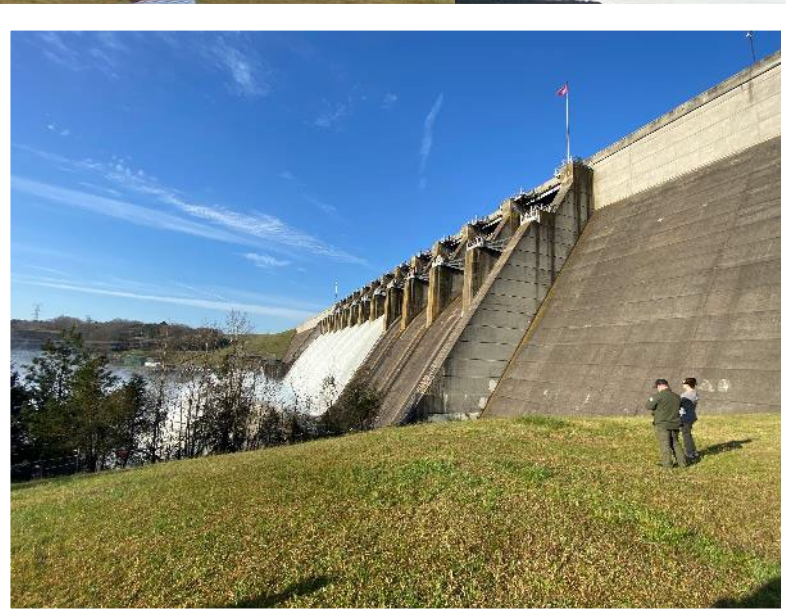
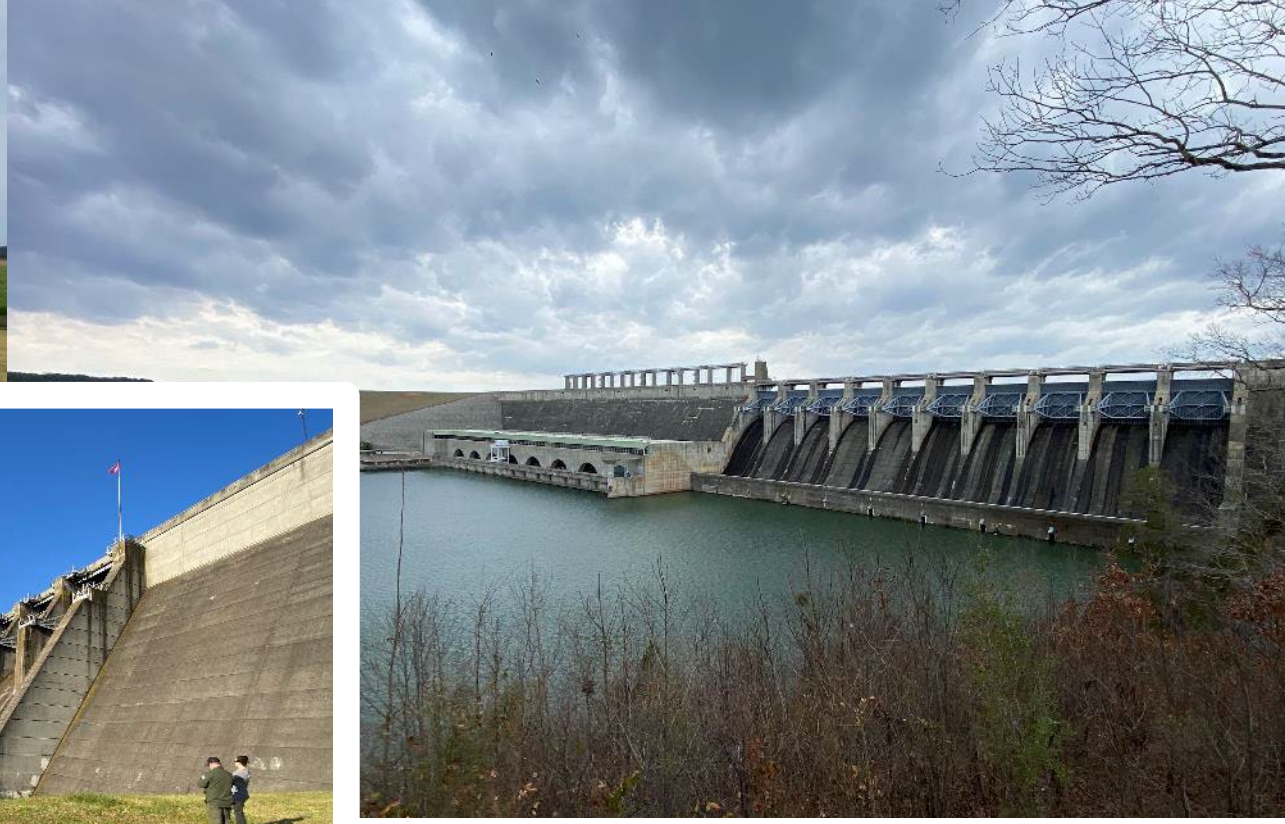




# Draft Upper Savannah River Basin Plan Public Meeting

April 21, 2025

# Draft Upper Savannah River Basin Plan – Public Meeting Agenda

| | |
|---|---|
| • Welcome and Introductions | 6:00 – 6:10 |
| • Overview of the Planning Process | 6:10 – 6:20 |
| • Draft Upper Savannah River Basin Plan Highlights | 6:20 – 7:20 |
| • Public Comments and Q&A with the RBC | 7:25 – 7:55 |
| • Submitting Comments of the Draft Plan | 7:55 – 8:00 |

# Welcome and Introductions

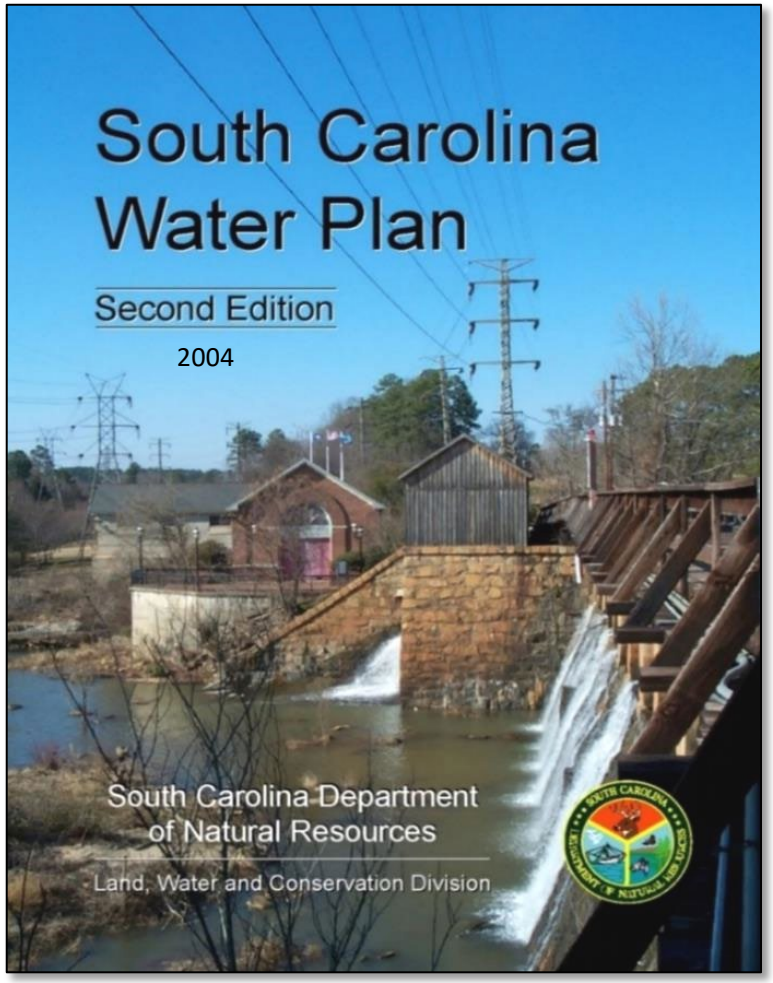
# Upper Savannah River Basin Council

| Name | Organization | Interest Category |
|---|---|---|
| Mack Beaty, IV | Beaty Farms | Agriculture, Forestry, and Irrigation |
| Daniel Milam | Milam Farms | |
| Jill Miller | SC Rural Water Association | At-Large |
| Dan Murph | Murph Investments, LLC | |
| Harold Shelley | Friends of the Savannah River Basin | |
| Tonya Winbush | Veterans of Foreign Wars/Adopt-A-Stream | |
| Alan Stuart | Duke Energy | Electric Power Utilities |
| Tonya Bonitatibus | Savannah Riverkeeper | Environmental Interests and Conservation Groups |
| John Hains | Friends of Lake Keowee Society | |
| Katie Hottel | Upstate Forever | |
| Cole Rogers | Delux Construction, Inc. | Industry and Economic Development |
| Mark Warner | McCormick and Abbeville Co. Economic Development | |
| Will Williams | Western SC Economic Development Partnership | |
| Jon Batson | Anderson County | Local Governments |
| Reagan Osbon | City of Westminster | |
| Cheryl Daniels | McCormick Commission of Public Works (CPW) | Water and Sewer Utilities |
| Jeff Phillips | Greenville Water | |
| Melisa Ramey | Seneca Light and Water | |
| Scott Willett | Anderson Regional Joint Water System (ARJWS) | |
| Billy Owens | Lake Hartwell Sail and Power Squadron | Water-Based Recreational |

**Cooperators and RBC Support Provided by:**


# Overview of the Planning Process

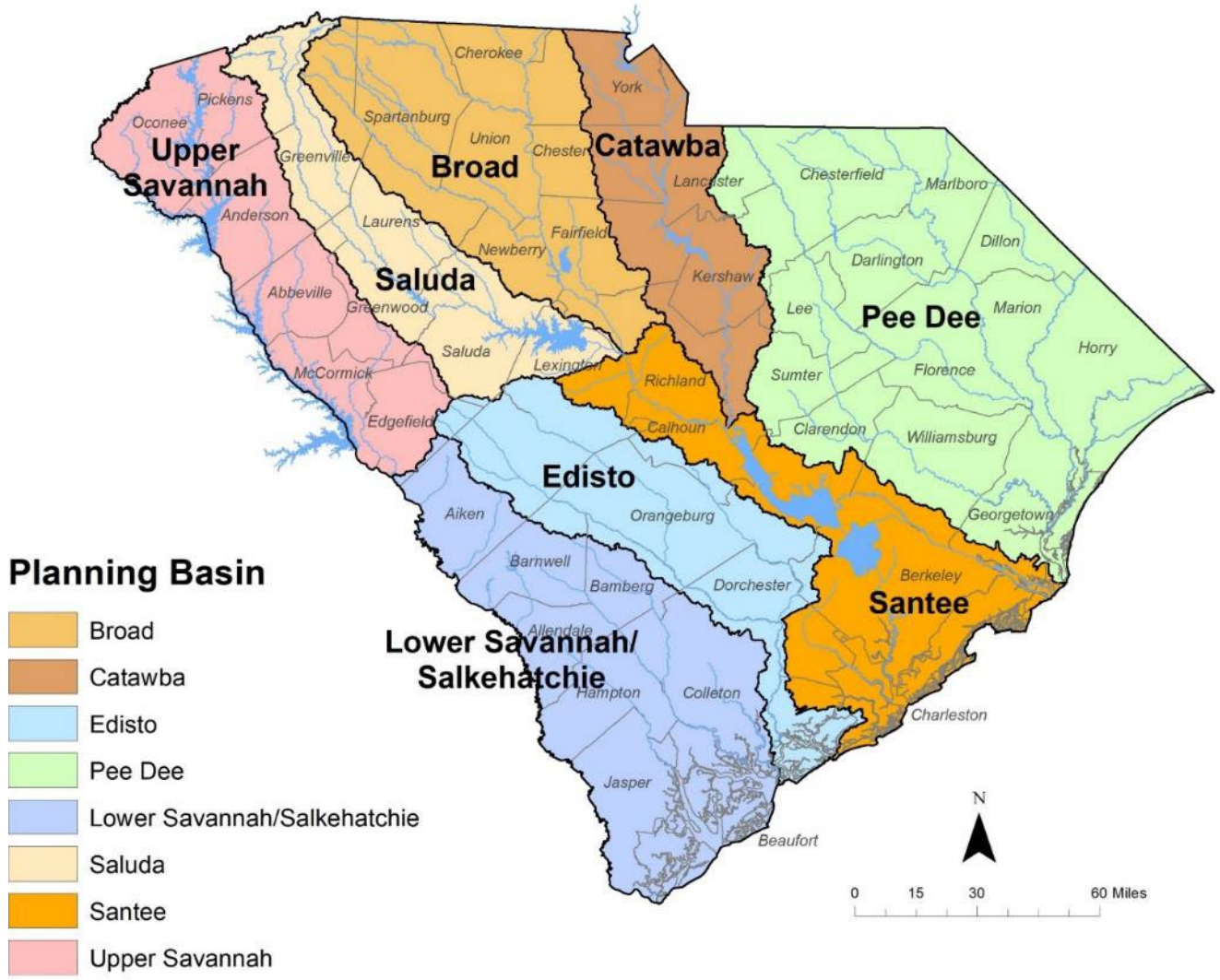
# History of State Water Planning



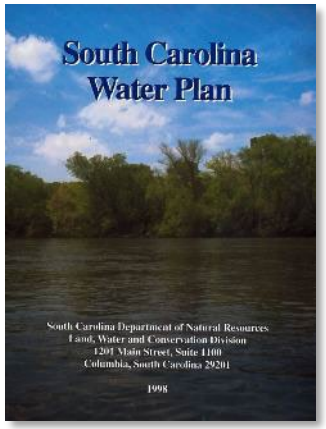

- Prior to July 1, 2024, state water planning was the responsibility of SCDNR:
  - SCDNR published the first edition of the State Water Plan in 1998.
  - In 2004, SCDNR published the second edition of the South Carolina Water Plan incorporating lessons learned from the drought of 1998-2002.
  - One recommendation was to develop a regional water plan for each major river basin in the State.
  - In 2014, SCDNR initiated the first steps to developing regional water plans, now formerly called River Basin Plans.
- ***Pursuant to Act 60 of 2023 and effective July 1, 2024, water planning responsibilities were transferred to SCDES.***

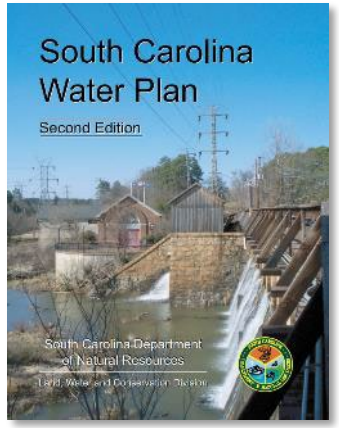
# South Carolina's Eight Planning Basins

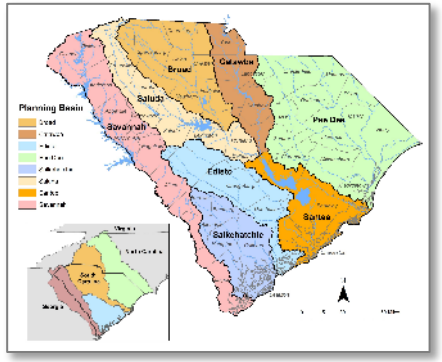
- River Basin Plans will be developed for the State's eight major river basins using a "bottom-up" approach where stakeholders in each basin lead the development of their basin plan.
- Collectively, the River Basin Plans will form the foundation of a new State Water Plan.

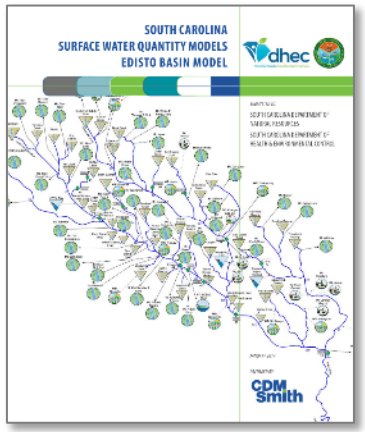


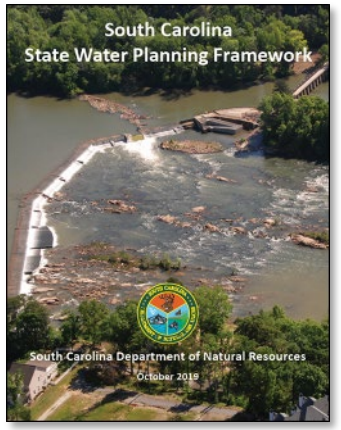
# South Carolina State Water Planning Timeline





**1998**
First State Water Plan

**2004**
Water Plan Second Ed.

**2014**
SCDNR begins process to develop regional water plans

**2017**
Surface water models (SWAM) completed for all eight basins

**March 2018**
Formation of the Planning Process Advisory Committee (PPAC)

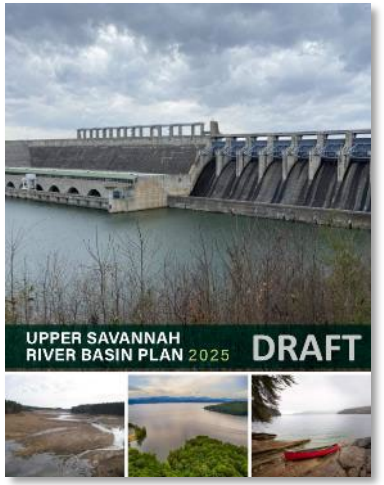
**Oct 2019**
State Water Planning Framework published

**June 2020**
First RBC is formed and begins the Planning Process

Other Supporting Activities

- Surface and Groundwater TACs Formed and Meet
- Coastal Plain Groundwater Model Updated
- Water Demand Methodology Developed

# South Carolina State Water Planning Timeline


**July 2023**
Upper Savannah RBC Convenes

**September 2024**
Gov. McMaster signs Executive Order

**October 2024**
First Meeting of WaterSC

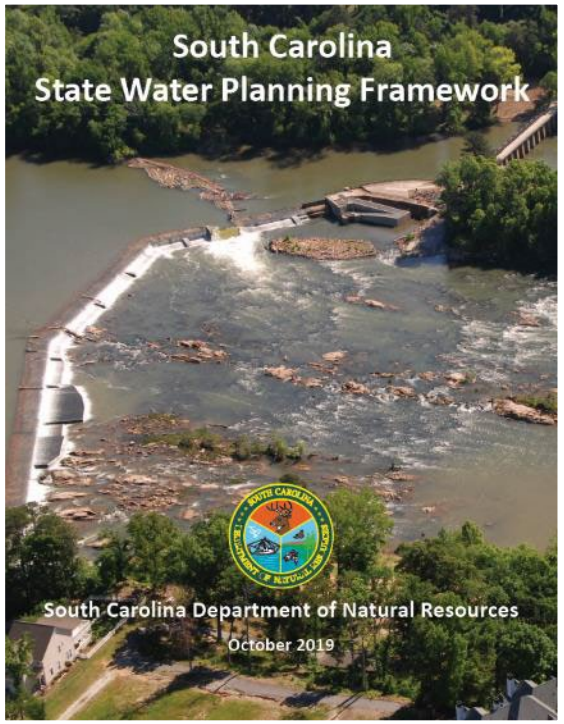
**January 2025**
Surface Water Study Legislative Committee Meets

**April 2025**
Draft Upper Savannah River Basin Plan

**January and April**
WaterSC Listening Sessions

# Planning Process Advisory Committee

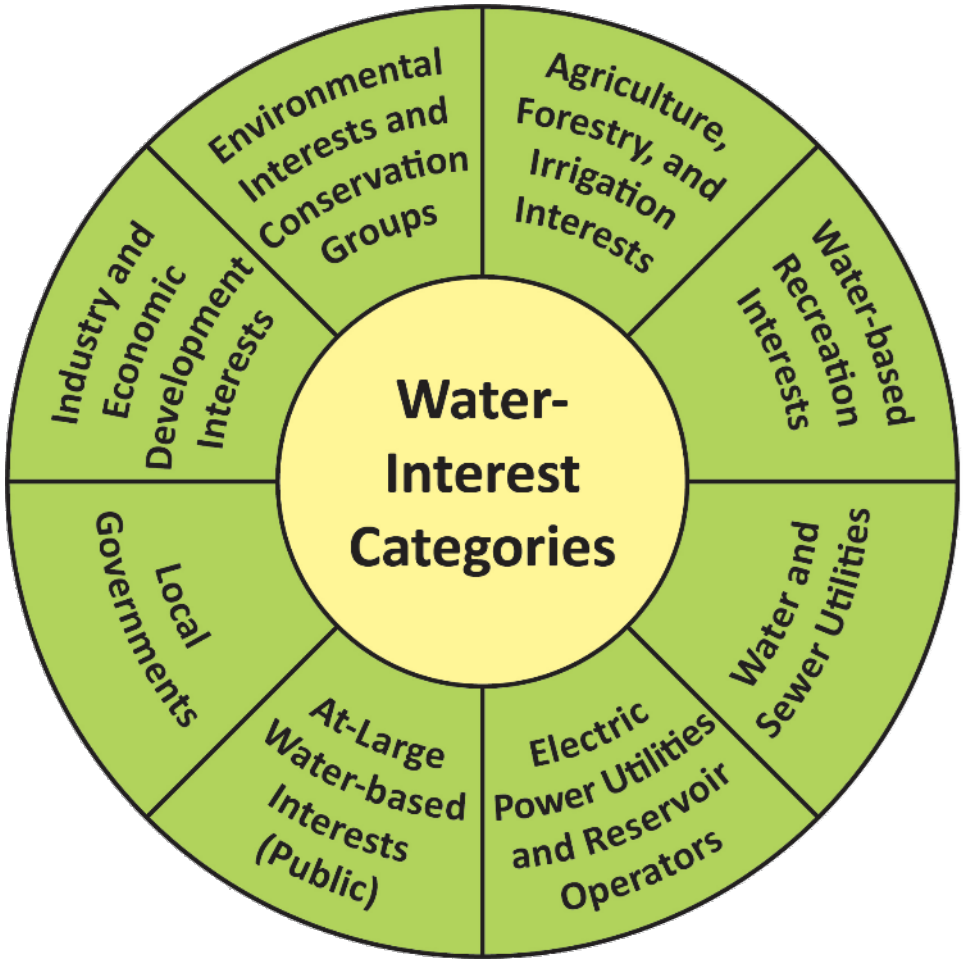
- Convened by SCDNR in March 2018.
- Purpose - develop a guidance document (Planning Framework) for developing River Basin Plans and for updating the State Water Plan.
- South Carolina State Water Planning Framework (Planning Framework) was published in October 2019 after an 18-month process.
- **New WaterSC committee has recently replaced the PPAC.**




Planning Framework is available for review and download at:
https://des.sc.gov/programs/bureau-water/hydrology/water-planning

# Planning Framework calls for the formation of a River Basin Council (RBC) in each planning basin

- **Stakeholder-led team** responsible for developing the River Basin Plan
- Up to **25** members representing **8 interest categories**
- Governed by a set of Bylaws
- **Consensus based** decision-making process
- Chair and Vice-Chair elected by RBC



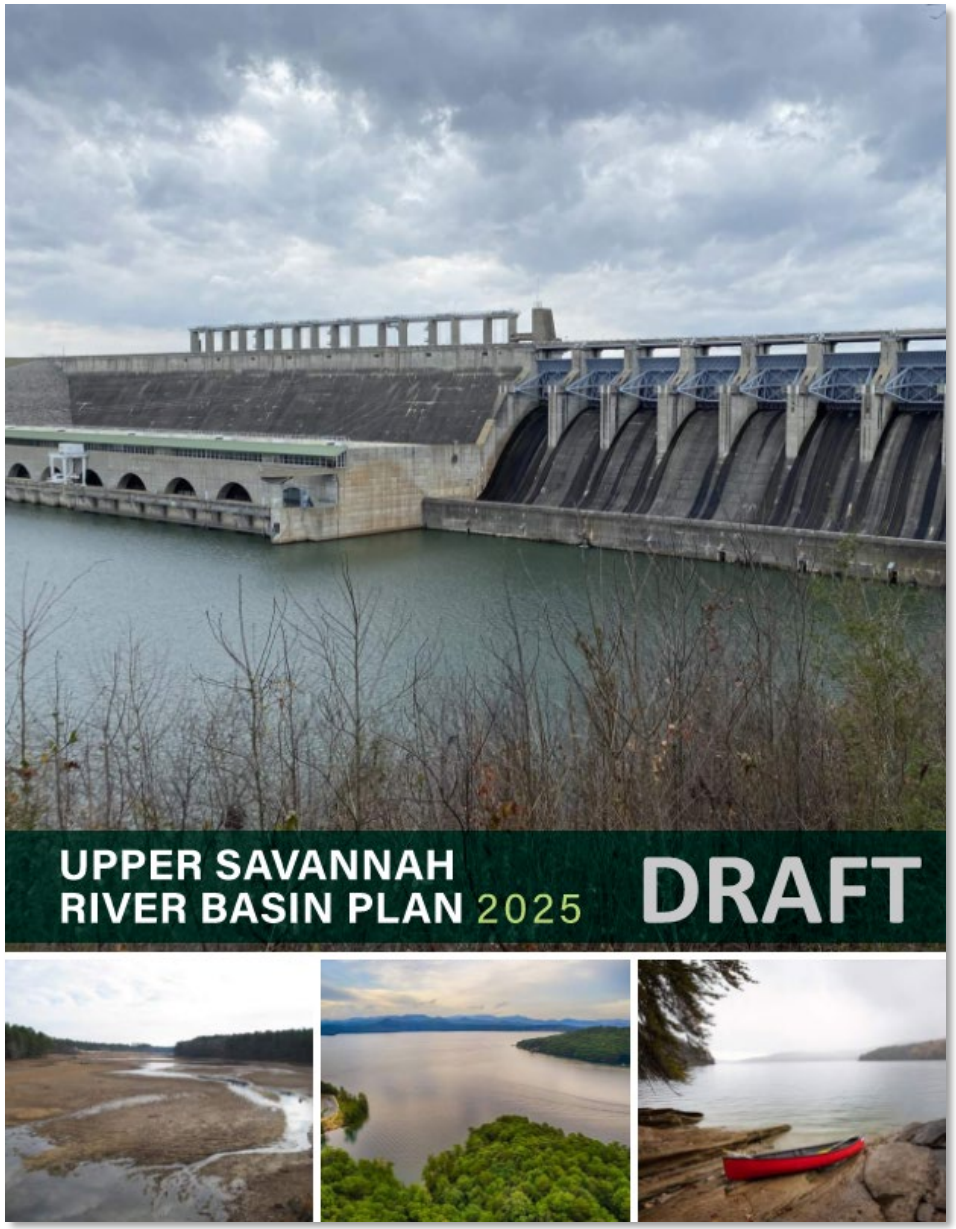
# What is a River Basin Plan?

## Key Outcomes

- Assesses **current** water supply and demand
- Identifies **future** water demand scenarios
- Identifies water management **strategies** to ensure supply meets or exceeds demand over the Planning Horizon

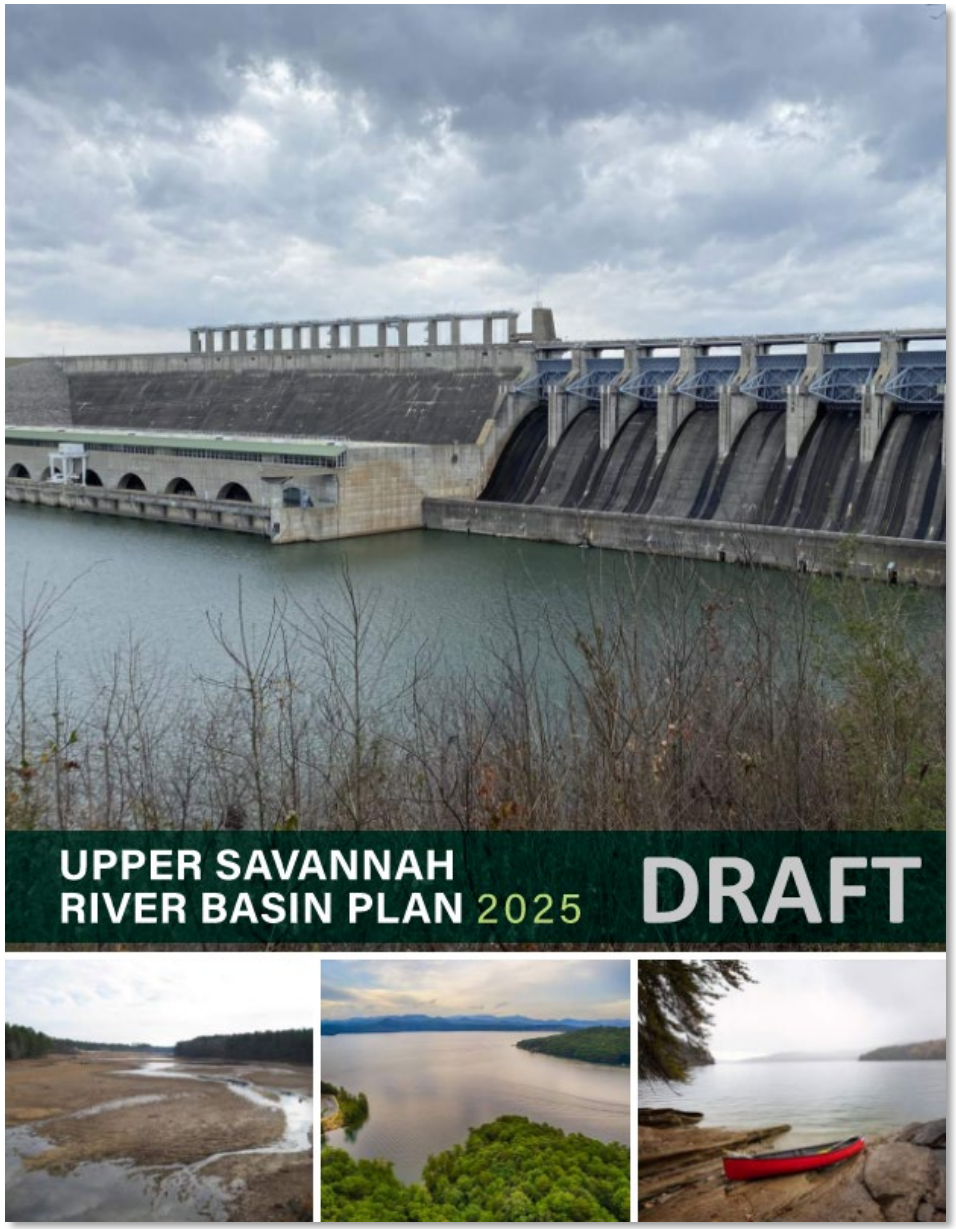
## Features

- **Stakeholder-developed**
- Covers a **50-year** Planning Horizon.
- Considers both **surface water** and **groundwater**
- Supported by hydrologic data, models, and water-demand projections.



The current focus of River Basin Plans is on water quantity, with emphasis on drought conditions.

Subsequent phases of planning evaluate water quality issues that are important in each river basin.



# The Four Phases of the Planning Process

| | |
|---|---|
| **Phase 1**<br>Understand Baseline | • Develop a vision statement and goals<br>• Learn about the basin's water resources and modeling tools<br>• Evaluate water demand projections |
| **Phase 2**<br>Assess Future Availability | • Evaluate current and future water availability issues<br>• Identify and quantify potential water shortages through year 2070 for several water demand scenarios |
| **Phase 3**<br>Develop Strategies | • Develop and evaluate water management strategies<br>• Recommend and prioritize strategies |
| **Phase 4**<br>Develop the Plan | • Develop legislative, policy, technical and planning process recommendations<br>• Prepare the River Basin Plan that includes an implementation plan, Identifies drought response initiatives, and considers public input |

# River Basin Planning Current Status

| Basin | Status | Completion Date |
|---|---|---|
| Edisto | Completed | June 2023 |
| Broad | Completed | February 2024 |
| Pee Dee | Completed | March 2025 |
| Saluda | March 2023 – present | July 2025 |
| Upper Savannah | July 2023 – present | May 2025 |
| Lower Savannah/ Salkehatchie | November 2023 – present | August 2025 |
| Catawba | CWWMG's Integrated Resource Plan 2020 – present | 2025 |
| Santee | December 2024 – present | Fall, 2025 |
| State Water Plan | October 2024 – present | December 2025 |

# Stakeholder Participation

## Edisto River Basin Council Field Trip


## PPAC Meeting

## Broad River Basin Council Meeting

## Pee Dee River Basin Council Meeting

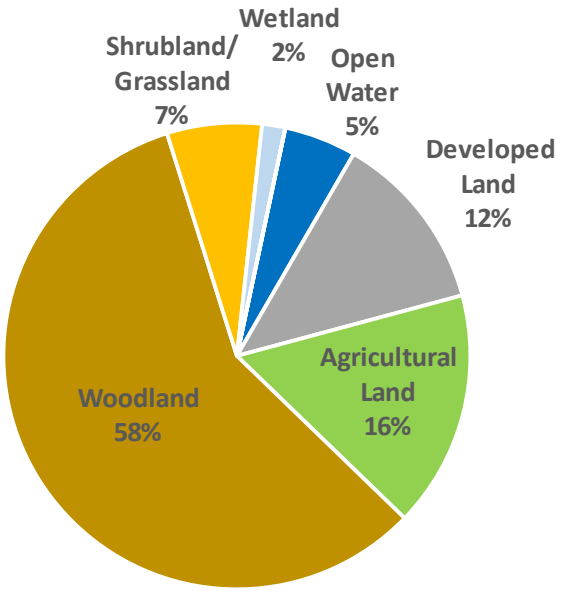
## Edisto Basin Water Demand Projection Stakeholder Meeting

## SWAM Model Stakeholder Meeting

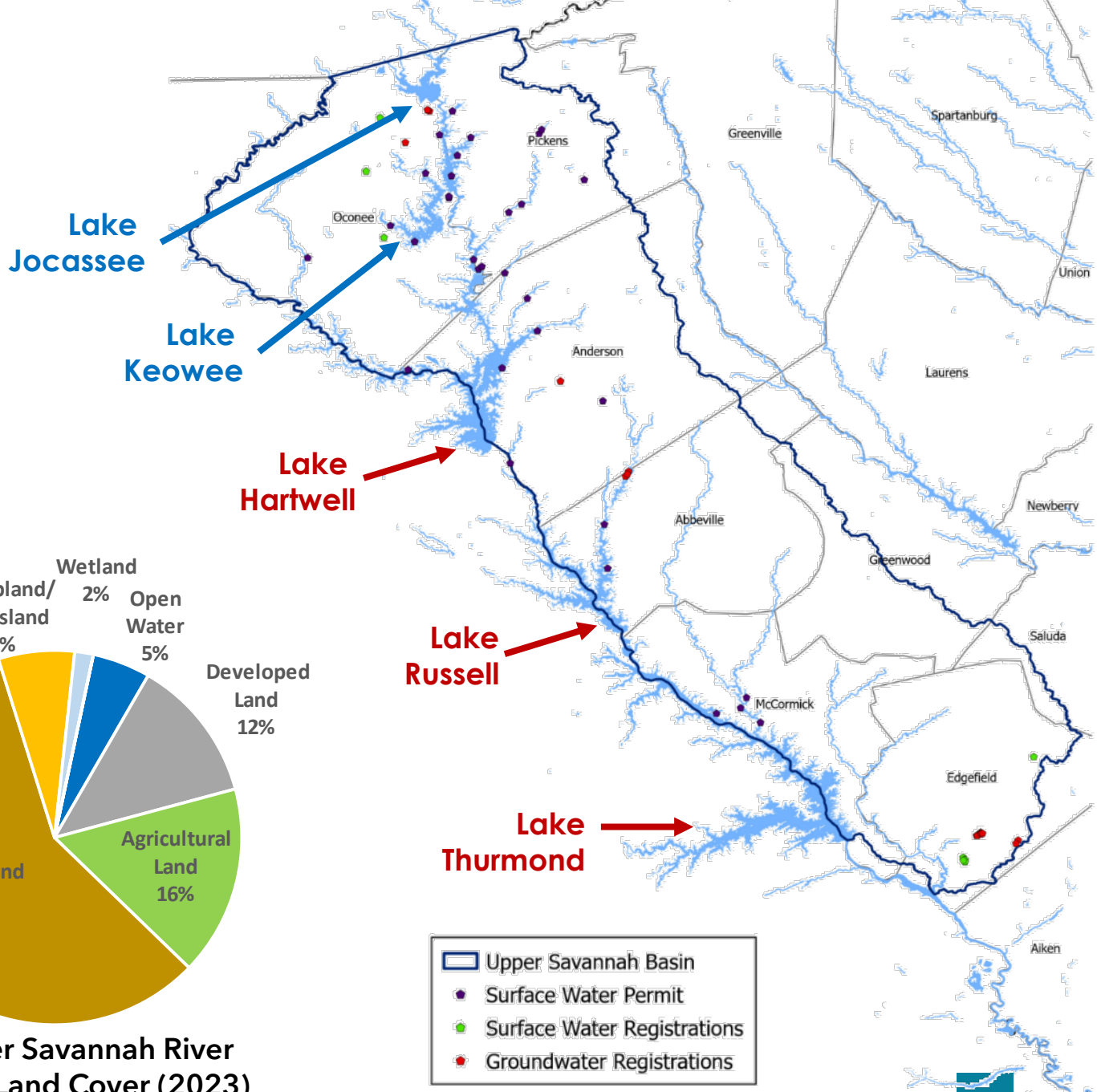
# Draft Upper Savannah River Basin Plan Highlights

# The Upper Savannah River Basin

- Covers 3,200 square miles in SC (10% of SC area)
- Includes major reservoirs managed by **Duke Energy** and the **US Army Corps of Engineers**
- Includes portions of 8 SC counties
- An important source of water for **energy production** and **public water supply**




Upper Savannah River Basin Land Cover (2023)



# Draft Upper Savannah River Basin Plan Highlights

## We Will Review:

- Current and projected water demands in the basin
- Results of current and future water availability assessment
- Extended drought scenario analysis
- Streamflow ecology relationships
- Recommended water management strategies
- Plan recommendations and implementation approach


# Upper Savannah RBC Vision Statement

***A resilient Upper Savannah River Basin that collaboratively, sustainably, and equitably manages and balances human and ecological needs.***

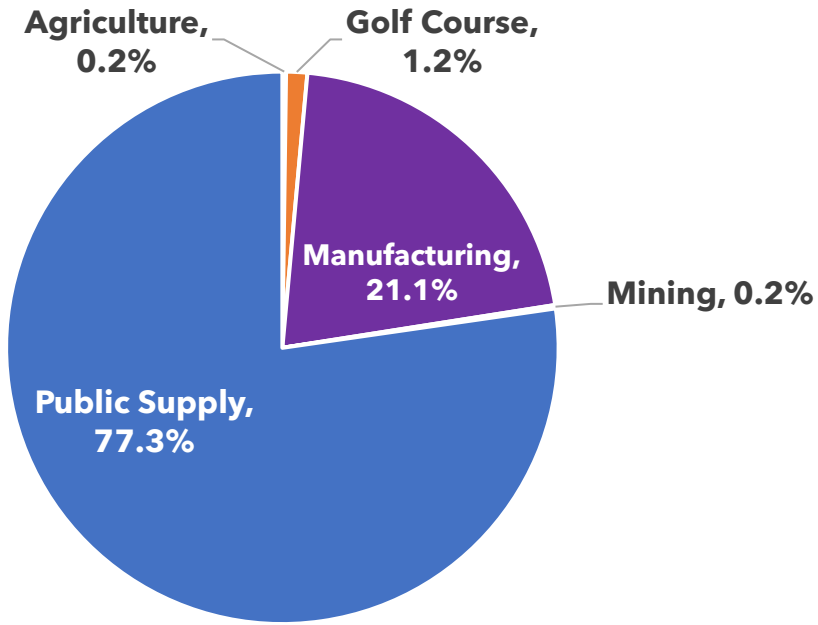
# Upper Savannah RBC Goals

1. Develop water use strategies, policies, & legislative recommendations for the Upper Savannah River Basin to ensure water resources are maintained & resilient & responsible land use.
2. Develop & implement an education & communication plan to promote the strategies, policies, & recommendations developed in the RBC plan
3. Enhance collaboration between all stakeholders and water interest groups

# Current Water Demands in the Basin

| Water Use Category | Groundwater (MGD) | Surface Water (MGD) | Total (MGD) |
|---|---|---|---|
| Thermoelectric | 0.0 | 2,848.5 | 2,848.5 |
| Public Supply | 0.09 | 59.3 | 59.3 |
| Manufacturing | 0.0 | 8.0 | 8.0 |
| Golf Course | 0.2 | 0.8 | 1.1 |
| Agriculture | 0.08 | 0.2 | 0.3 |
| Mining | 0.0 | 0.3 | 0.3 |
| **Total** | **0.4** | **2,917.0** | **2,917.4** |

*MGD is million gallons per day*




**This chart does not include thermoelectric water use, which is most non-consumptive and returned to surface water.**

# Current Water Demands in the Basin

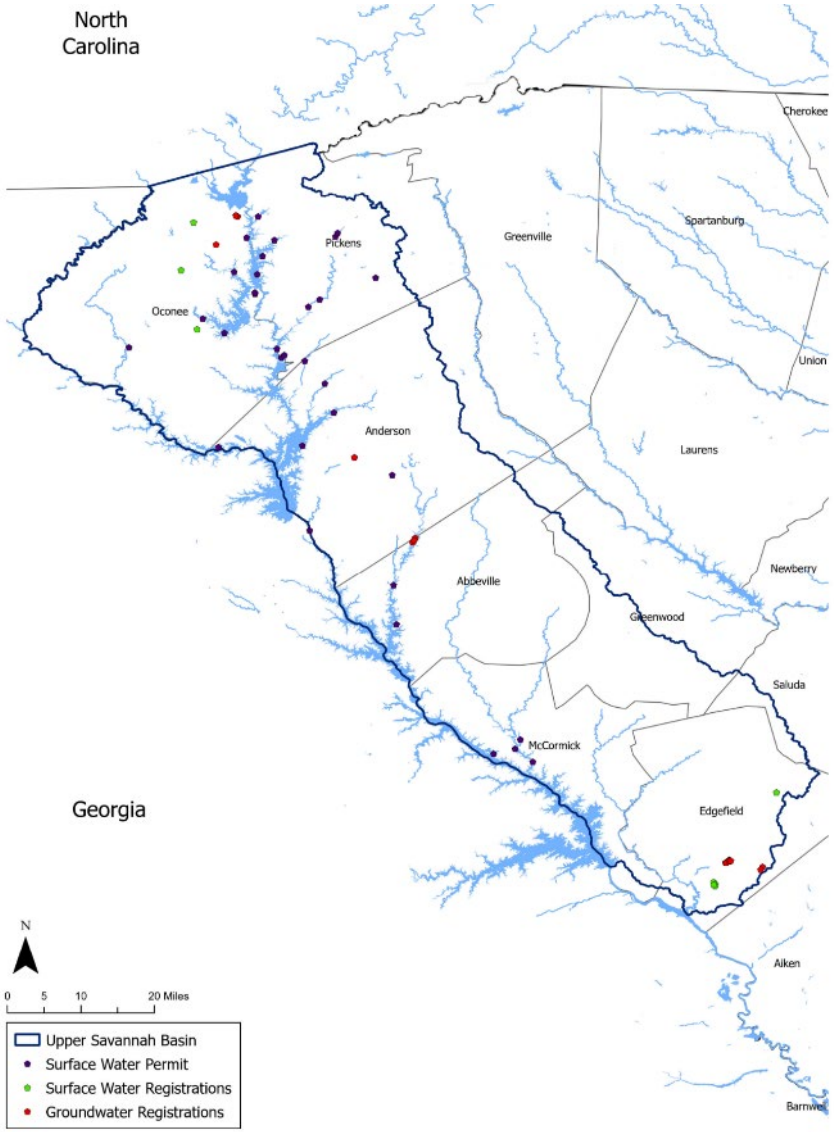
| Water Use Category | Total (MGD) |
|---|---|
| Thermoelectric[1] | 2,848.5 |
| Public Supply | 59.3 |
| Manufacturing | 8.0 |
| Golf Course | 1.1 |
| Agriculture | 0.3 |
| Mining | 0.3 |
| Total | **2,917.4** |

**Scale Example 1:**
An Olympic-sized swimming pool holds 0.66 million gallons. **Public Supply demand** in the basin would fill 90 pools in one day

**Scale Example 2:**
If the average flow rate of a garden hose is 15 gallons per minute, **agricultural demand** of 0.3 MGD is approximately the flow rate of 14 garden hoses in one day.

# Key Finding

# 84 Percent of the Permitted and Registered surface water is currently being used in the basin

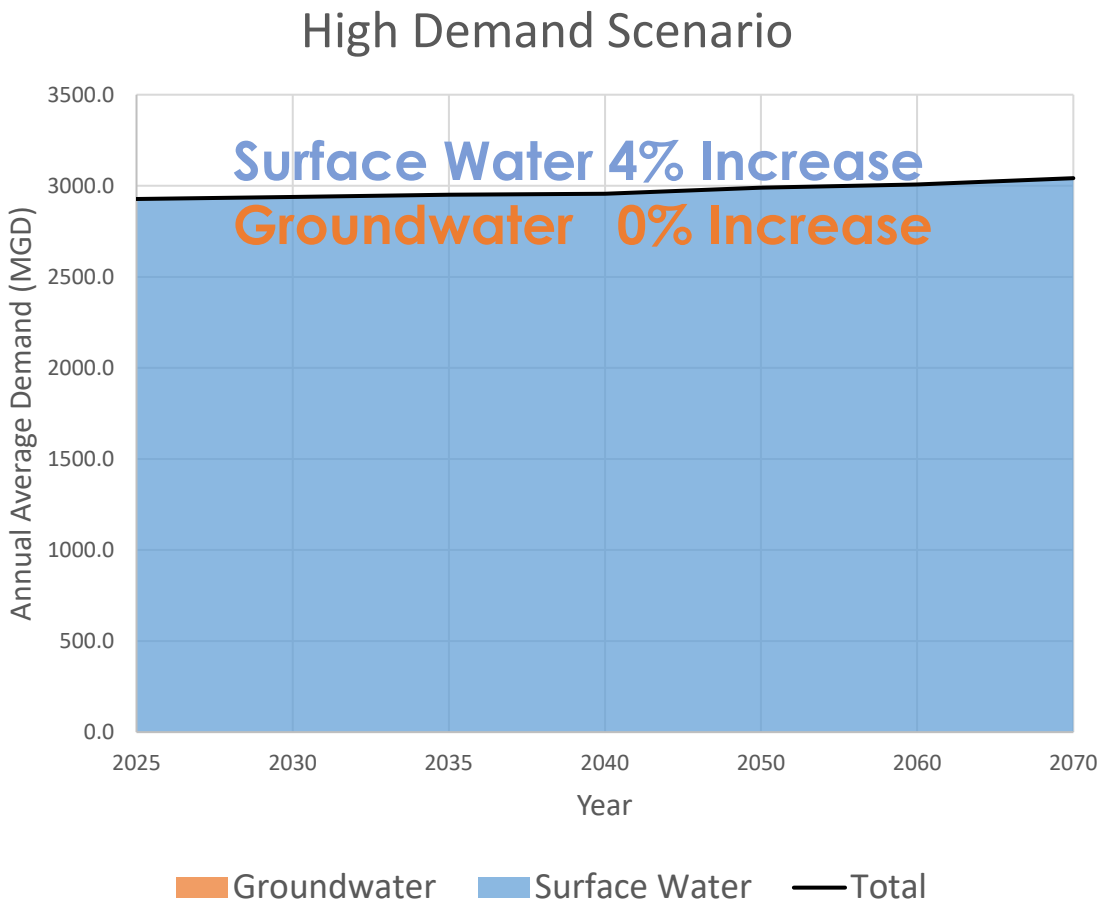



| | Surface Water (MGD) |
|---|---|
| Currently Used | 2,917 |
| Permitted and Registered Amount | 3,491 |
| Percent of Total Permitted and Registered Amount Currently in Use | 84% |

# Future Water Demand Scenarios for the Basin

**High Demand Scenario**
**demands increase 114 MGD from 2025 to 2070**

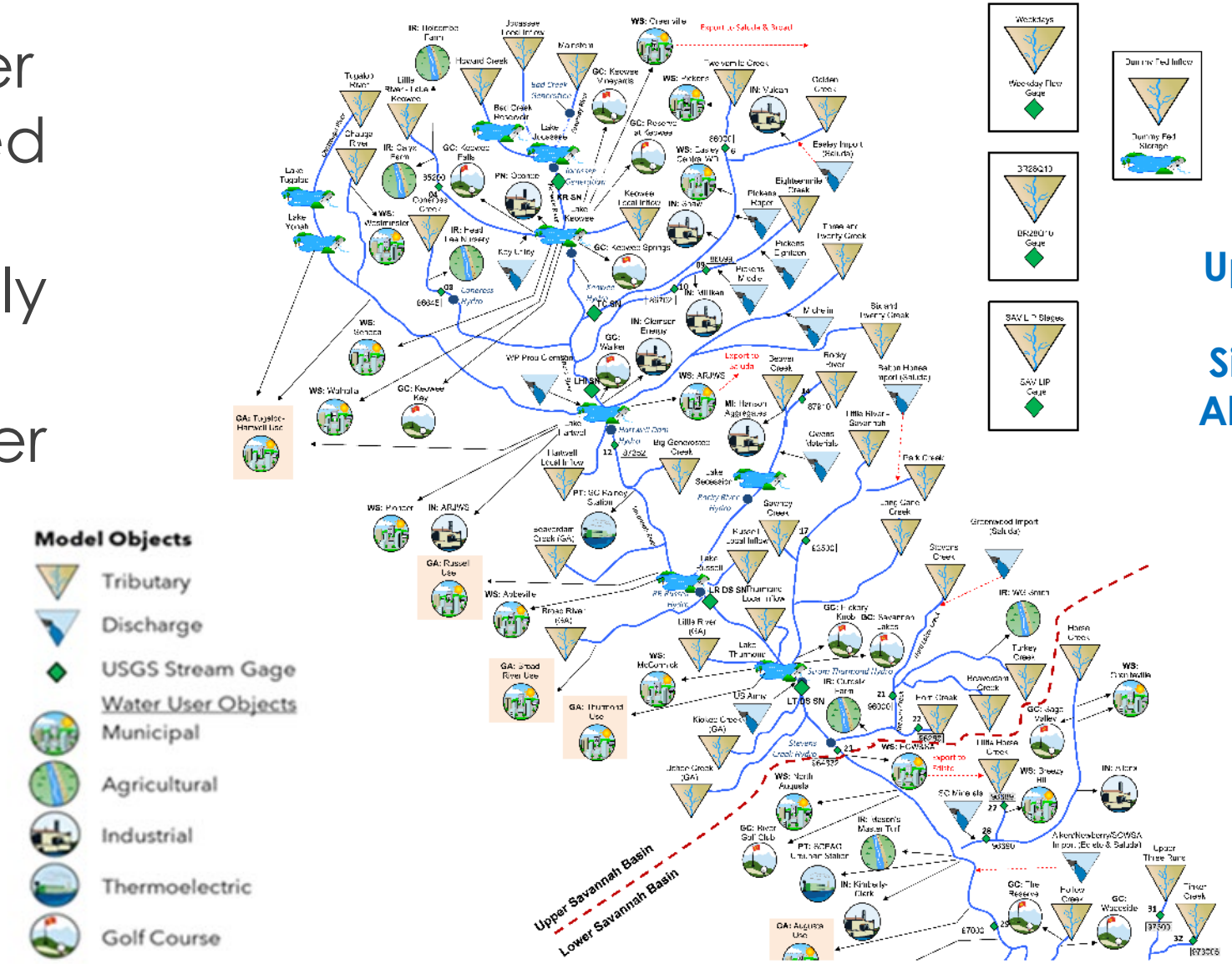
2070 surface water demands for this scenario are 87% of Permitted and Registered amounts




Note: Groundwater demands, projected at a constant average annual demand of 0.4 MGD are too small to be seen on this chart.

# Current and Future Water Availability Assessment

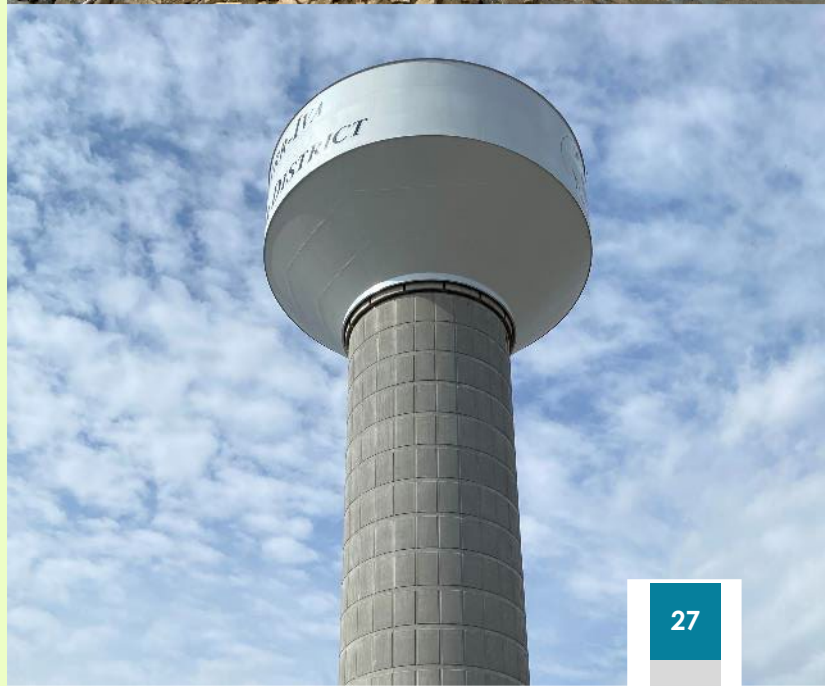
A surface water model was used to compare available supply to current and projected water demands




**Upper Savannah River Basin Simplified Water Allocation Model (SWAM)**

# Surface Water Key Findings

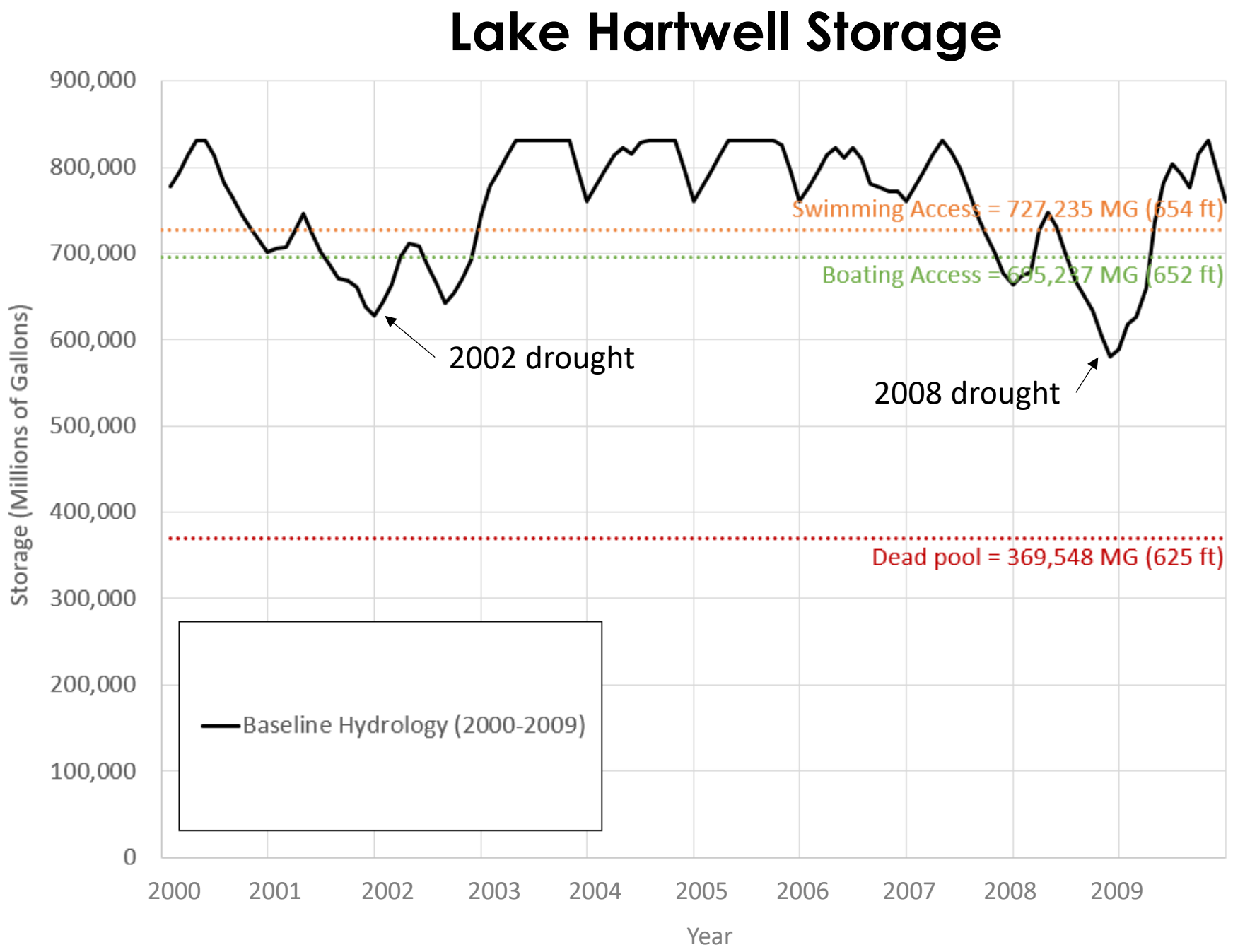
- Surface water resources of the Upper Savannah River basin are generally sufficient to meet current needs.
- Modeling suggests very low probability of shortages under moderate or high economic growth assumptions through 2070.
- Mean and median flows on the Savannah River above Augusta Canal are predicted to decrease by approximately 2 to 5 percent, based on 2070 demands under the High Demand Scenario.
- If all surface water users withdrew at their permitted or registered amount, there would not be enough water for all users.



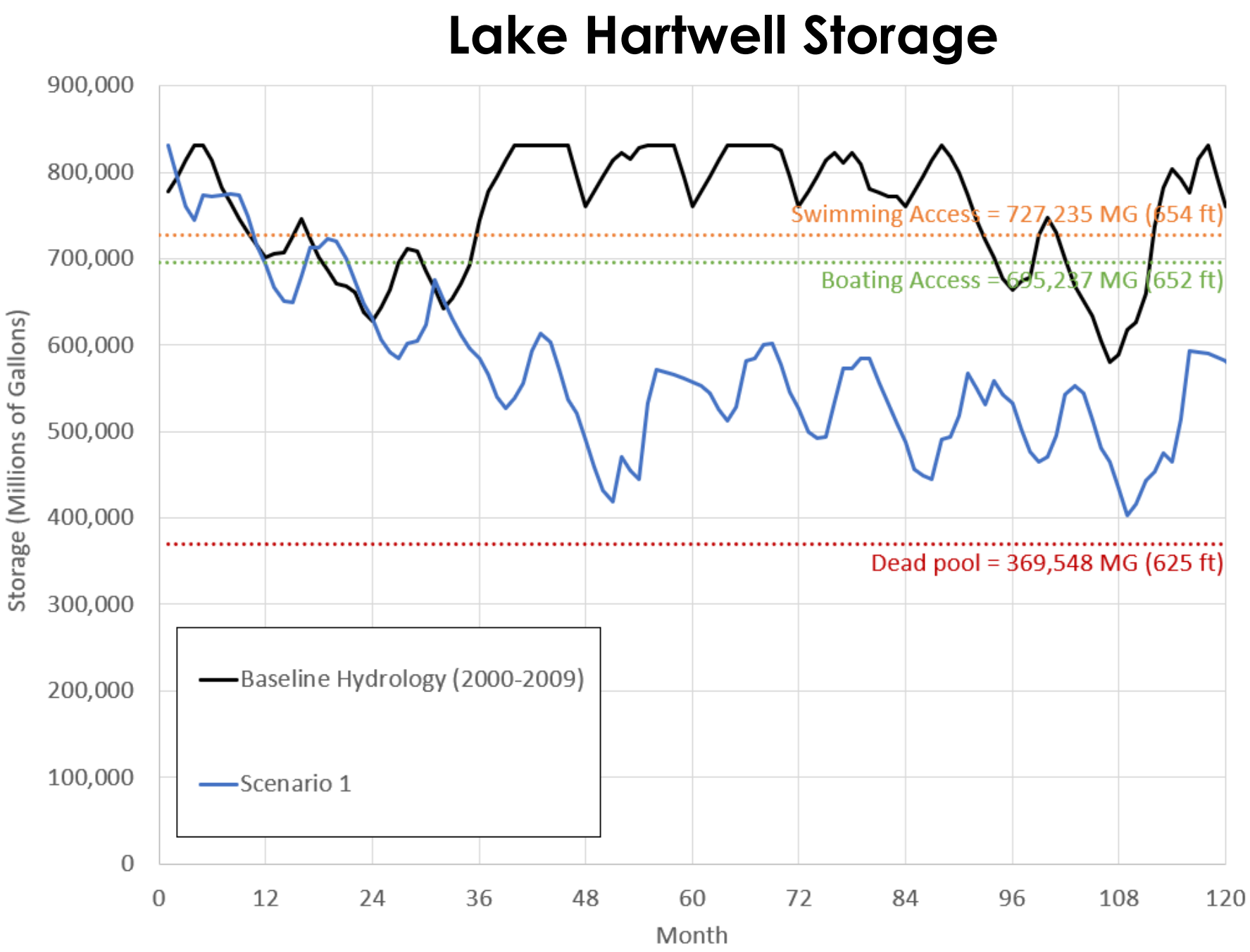
# Extended Drought Scenario Analysis

- **Objective:** Given the uncertainty about future climate conditions and to further evaluate water supply resiliency in the basin, the water quantity model was used to test additional, hypothetical hydrologic conditions using the 2070 High Demand Scenario water demands.
- Three extended drought scenarios tested:
  - **Scenario 1:** A repeating 5-year drought constructed by splicing together the five driest water years on record
  - **Scenario 2:** A repeating single-year drought corresponding to the second driest water year on record
  - **Scenario 3:** A repeating synthetic drought year constructed by splicing together the 12 driest calendar months on record

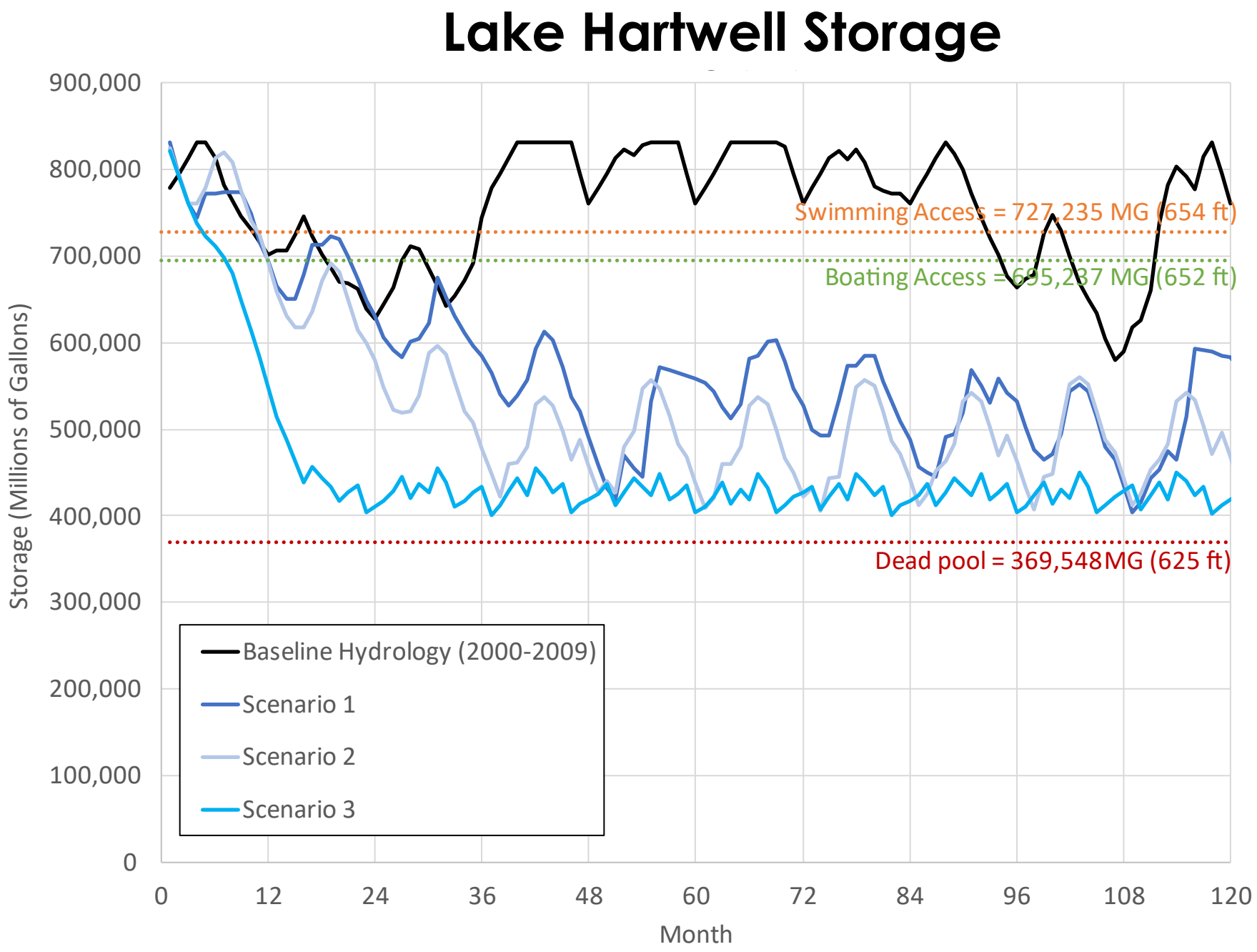
# Extended Drought Scenario Analysis



# Extended Drought Scenario Analysis

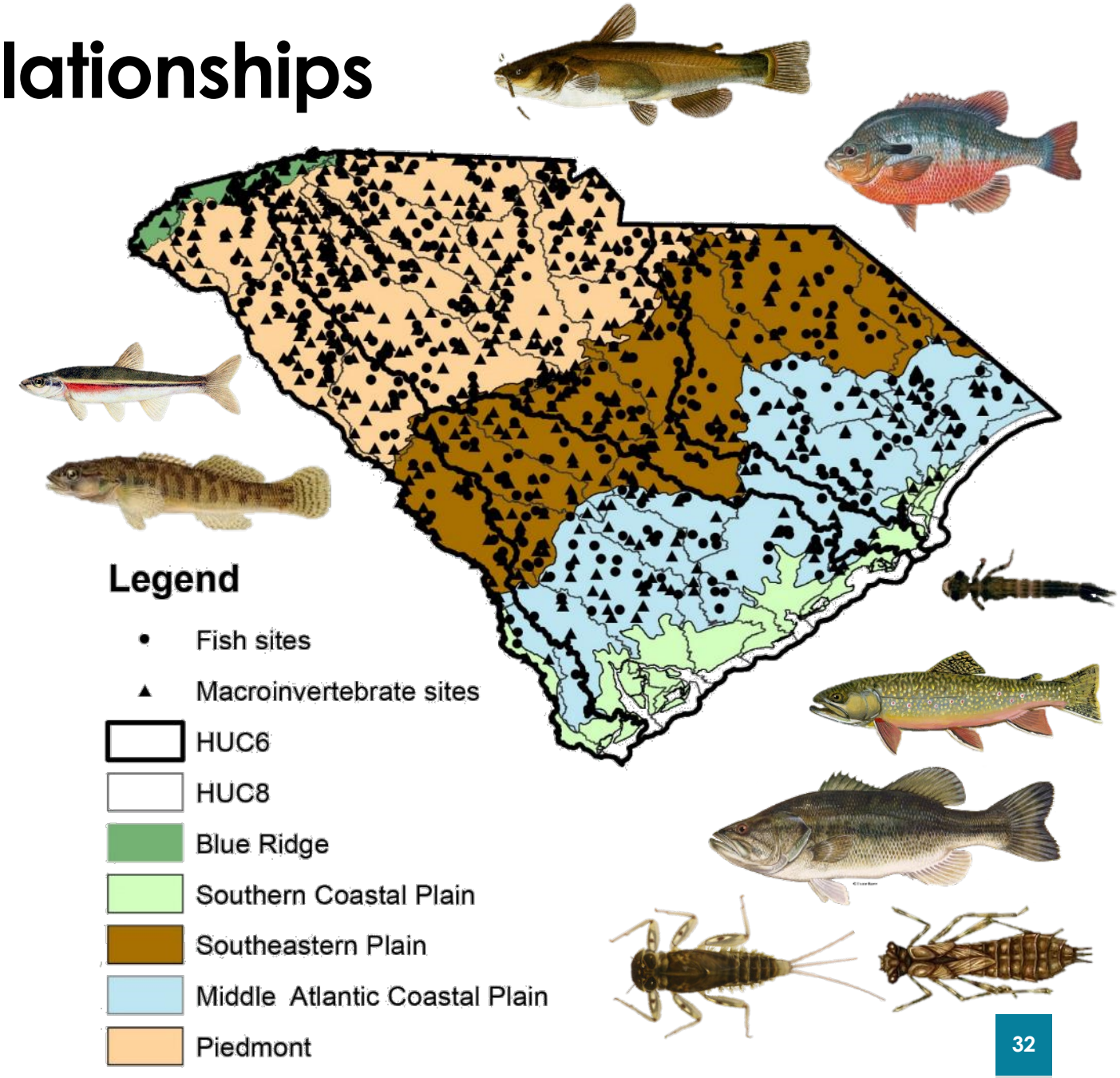


# Extended Drought Scenario Analysis



# Streamflow-Ecology Relationships

**Objective:** Identify relationships between river flow and aquatic habitat suitability to better inform water flow standards throughout the state and serve as a tool supporting informed decision making in the river basin planning process.



# Streamflow-Ecology Relationships

**Key Finding**

In areas where there was sufficient data to perform the analysis, model–simulated flow metrics for all scenarios result in **low risk for ecological integrity*.**

This includes "wadable" stream locations on **Twelvemile Creek**, **Eighteenmile Creek**, and **Stevens Creek**, where data was available to support the analysis.

** The analysis did not consider potential negative impacts that that increased development could have on flow regimes and the ecological integrity of streams and rivers in the basin.*

# Surface Water Management Strategies

## Portfolio of Demand Side Strategies




**Municipal Strategies (Examples)**

- Update, and implementation of drought management plans
- Public education about water conservation
- Conservation pricing structures
- Leak detection and water loss control programs
- Reclaimed water programs
- Residential water audits
- Landscape irrigation program and codes
- Water efficiency standards for new construction
- Time-of-day watering limits

**Agricultural Strategies (Examples)**

- Water audits and nozzle retrofits
- Irrigation scheduling
- Soil management
- Crop variety, type, and conversion
- Irrigation equipment changes
- Future Technologies

***Some of these strategies are already in practice throughout the basin.***

# Upper Savannah RBC Recommendations

## Example Technical and Program Recommendations

The state should request for and cost-share in the completion of **Phase 2 of the USACE Comprehensive Study and Drought Plan Update.**

While the RBC should maintain its focus on the assessment of water quantity, **future planning efforts should include evaluation of surface water quality,** including bacteria, nutrient loading, and sedimentation.

**The impacts of changing land use on streamflow characteristics** including the magnitude of flows, timing of flows, and flashiness should be further evaluated, as this may impact water supply availability.


# Upper Savannah RBC Recommendations

## Example Technical and Program Recommendations

The RBC encourages local governments and land managers to act to **reduce sediment loading to reservoirs.** This may include:

- Studies to better identify sources of sediment load to reservoirs.
- Incentivizing the establishment of riparian buffers, streambank restoration, and other practices that reduce sediment load to streams and reservoirs.
- Develop and incentivize green infrastructure/stormwater ordinances.
- Strengthen penalties for non-compliance of stormwater ordinances.
- Advocating for the development of local ordinances such as riparian buffers and tree ordinances for new development.

# Upper Savannah RBC Recommendations

## Example Policy, Legislative, and Regulatory Recommendations

**The South Carolina Surface Water Withdrawal, Permitting, Use, and Reporting Act should allow for reasonable use criteria to be applied to all new surface water withdrawals,** like those that currently exist for groundwater withdrawals.

**Increase coordination and planning with GAEPD** on Savannah River water resources issues.

**A grant program should be established to help support the implementation of the actions and strategies** identified in each RBC's River Basin Plan

**The South Carolina Legislature should authorize recurring funding for state water planning activities**, including river basin planning.

# Implementation Plan

**The RBC-developed implementation plan includes specific short-term (5-year) and long-term strategies and actions to address the following five objectives:**

1. Improve water use efficiency to conserve water resources
2. Communicate, coordinate, and promote findings and recommendations from the River Basin Plan
3. Improve technical understanding of water resource management issues
4. Protect water resources
5. Improve drought management
6. Promote engagement in water planning process

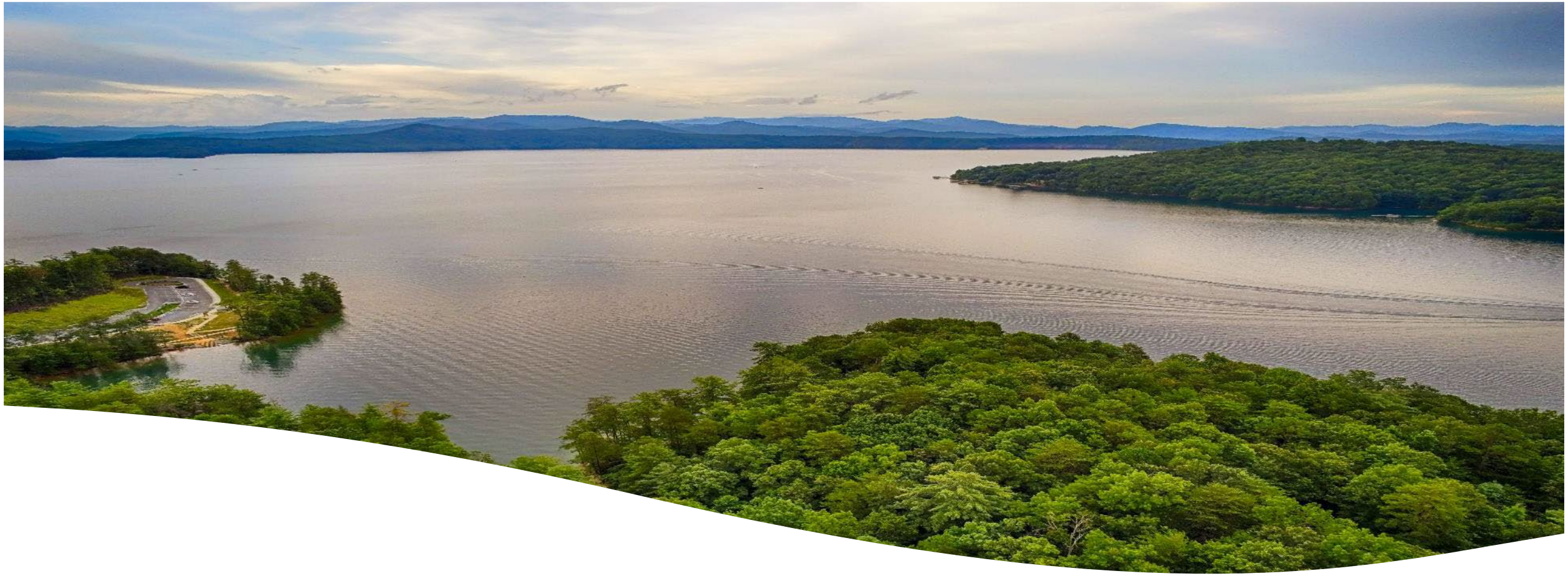
# Call to Action

## Implementation of the identified strategies and actions requires support from all who have a vested interest in water resources, including:

- **Water Users** – Public Water Suppliers, Power Companies, Industry, Agriculture, Golf Courses, Fishing and Recreational Users, and You!
- **State and Federal Agencies** – SCDES, SCDNR, USGS, SCOR, USACE, GAEPD, etc.
- **Conservation Groups** – The Natura Conservancy, Upstate Forever, and others.







# Submitting Comments on the Draft River Basin Plan

# The Draft Upper Savannah River Basin Plan, Executive Summary, and a 2-Page Summary Sheet are available at the SCDES Water Planning web page

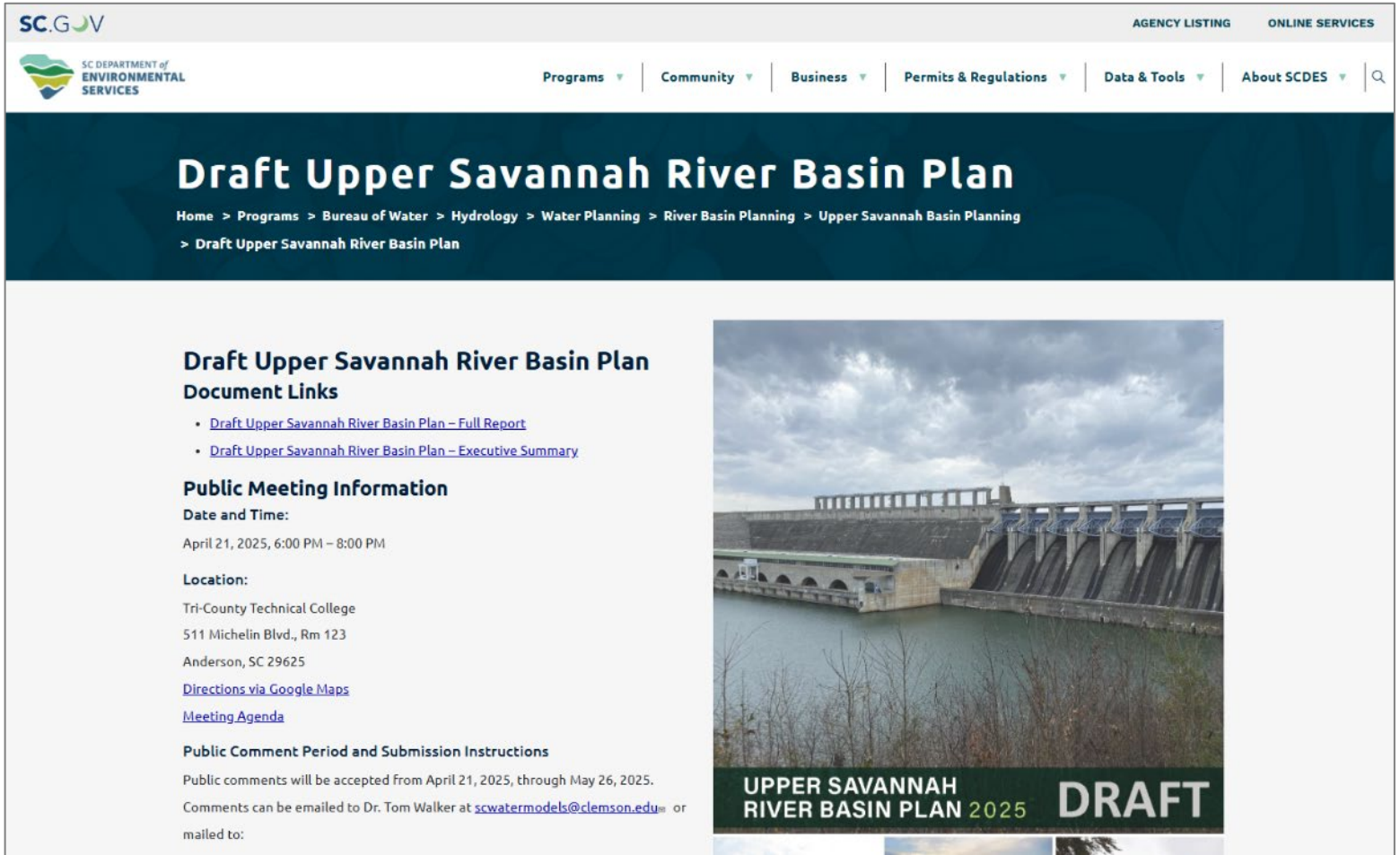
QR Code Link

Comments can be e-mailed to Dr. Tom Walker at:

scwatermodels@clemson.edu

Or mailed to:
SC Water Resources Center
Office 105-E
509 Westinghouse Road
Pendleton, SC 29670
Attn: Dr. Tom Walker

Comments must be received by: May 26th, 2025



# Public Comments and Q&A with the RBC

# Extra Slides (Not Used)

# Extended Drought Scenario Analysis

| Performance Measure | Baseline Hydrology (2000-2009) | Scenario 1 | Scenario 2 | Scenario 3 |
|---|---|---|---|---|
| **GA-Side and SC-Side Water Users** | | | | |
| Total basin annual mean shortage (MGD) | 0.12 | 2.4 | 37.5 | 68.8 |
| Percentage of water users experiencing shortage (%) | 7.5% | 20.0% | 32.5% | 32.5% |
| Average frequency of shortage (%) | 0.4% | 3.3% | 21.8% | 29.2% |

**Key Finding**

**Results show water user shortages,** as compared to baseline hydrology, for the constructed extended drought scenarios

In general, the simulations performed highlight **significant water supply vulnerabilities if historical observed drought conditions were to occur in the future with greater frequency and/or duration.**

# Example Implementation Strategy

| Strategy | | 5-Year Actions | Responsible Parties | Budget |
|---|---|---|---|---|
| **Objective 1. Improve water efficiency to conserve water resources.** | | | | |
| **A. Municipal Conservation** | Public Education of Water Conservation | 1. Identify **funding** opportunities (Years 1–5).<br><br>2. Establish a **baseline of residential per capita water use** (Year 1) by system.<br><br>3. Survey to understand the **extent of AMI/AMR use** amongst utilities (yrs 1-2).<br><br>4. Encourage water utilities to **conduct a water loss/leak detection audit using AWWA M36 Method**, establish a baseline, and continue to measure every 2-3 years (yrs 1-2).<br><br>5. Work with water utilities to determine **how water is being used and understand where conservation measures** may have the most impact (yrs 2-3).<br><br>6. **Implement outreach and education program** about recommended water management practices and funding opportunities (yrs 1-5)<br><br>7. **Individual water users to implement conservation practices** (yrs 3-5) | **RBC with support of SCDES and contractors** – Identify funding opportunities and develop information to distribute. Conduct surveys and analyze results.<br><br>**Municipal Withdrawers** — Implement appropriate strategies and seek funding from recommended sources, as necessary. | Costs of implementation will vary by municipality according to current program capabilities and financial means. Chapter 6.1.6 provides discussion of cost-benefit of individual strategies. Ongoing RBC meeting budgets include the cost of RBC support activities. |