



# Preliminary Reservoir Safe Yield Results

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# Reservoir Safe Yield

- Reservoir Safe Yield is defined as *the Surface Water Supply for a reservoir or system of reservoirs over the simulated hydrologic period of record.*
  - Based on the shallowest intake for an essential water use in a reservoir
  - Uses current reservoir operating rules
  - Based on **Current Scenario** demands.
  - Planning Framework also calls for calculation of the unallocated reservoir save yield (**Permitted & Registered Scenario**)
- Safe Yield determined for Lake Greenwood and Lake Murray

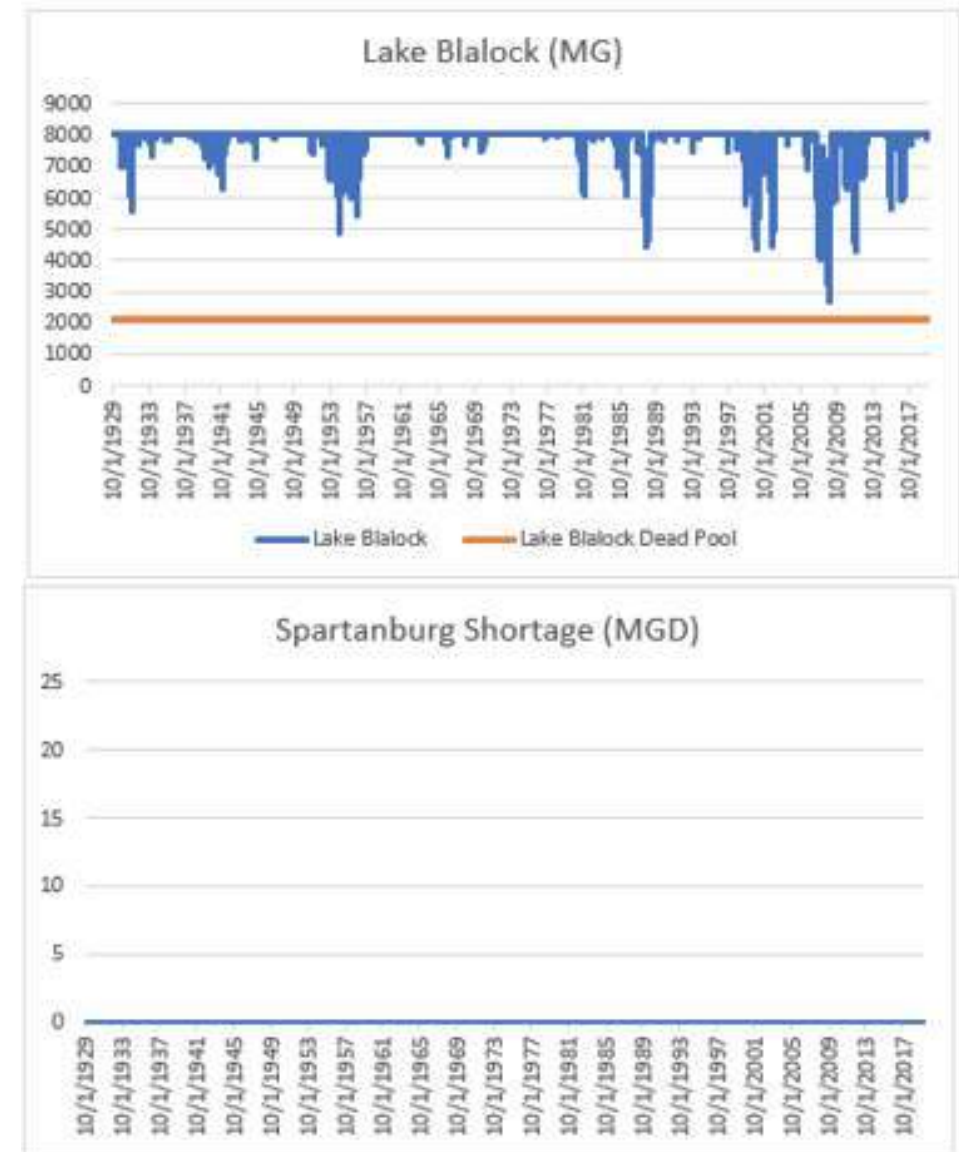
# Concepts and Purpose

- **Safe Yield** = Maximum annual average demand that can be sustained through the period of record without depleting available storage
- **Reservoir Balancing:** In some cases, we can adjust rules so that reservoirs in a system draw down together at the same relative rate to avoid water in one but not others (for example)
- **Demand Assumptions:** Current / Permitted and Registered / **2070 High Demand**
- **Purpose:** Determine the amount of water that is physically/hydrologically available at a reservoir
- **Note:** Reservoir Safe Yield is DIFFERENT than basin safe yield used by SCDHEC for withdrawal permitting
  - **Reservoir Safe Yield:** Hypothetical maximum withdrawal volume used for planning
  - **Basin Safe Yield:** Statistical availability of free-flowing water in a river, used for permit evaluation

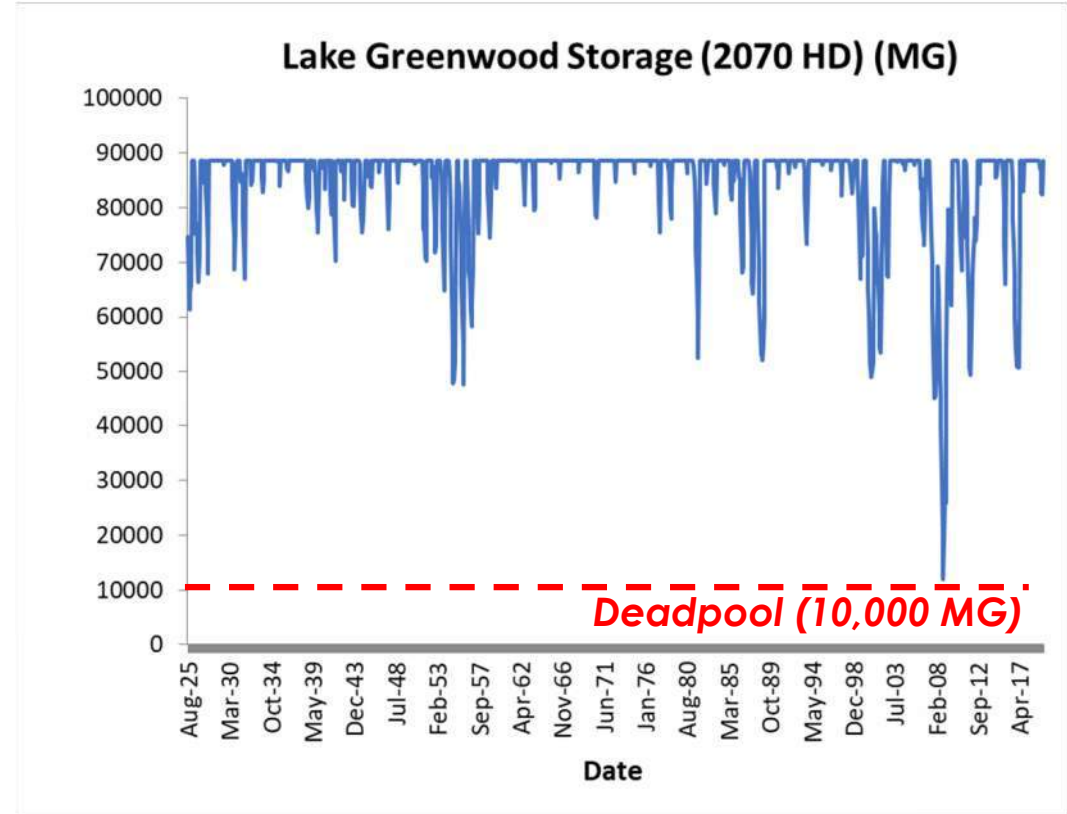
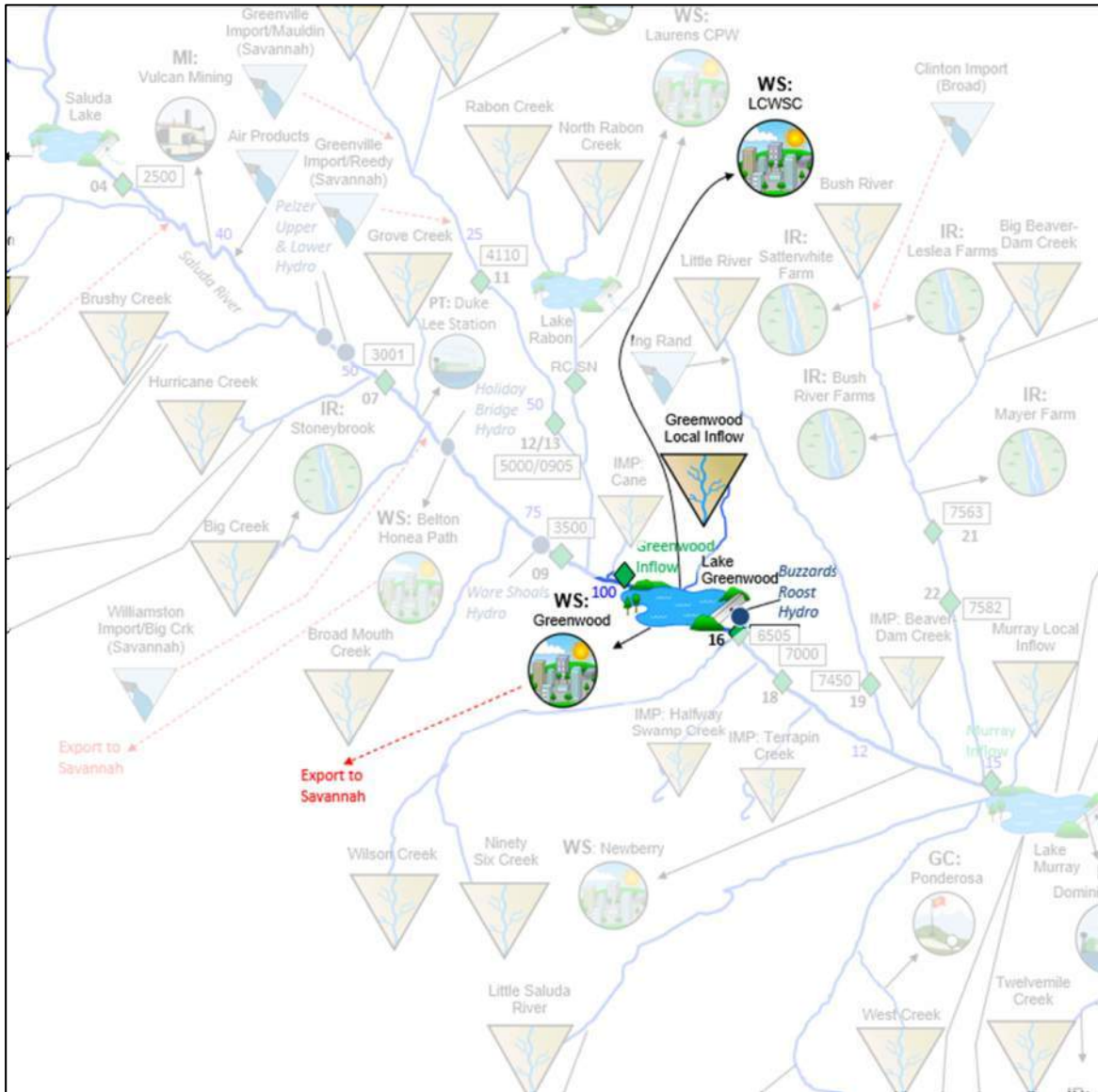
# Method

- Remove permit / intake / treatment constraints at the reservoir
- Suspend target elevation rules
- Maintain downstream release rules
- Apply appropriate demand scenarios upstream
- Consolidate withdrawals from the reservoir to a single hypothetical user at the reservoir
- Gradually increase continuous annual withdrawal (with seasonality) until:
  - lowest storage over period of record = dead pool / lowest allowable level
  - No Shortages

Example from Broad River Basin



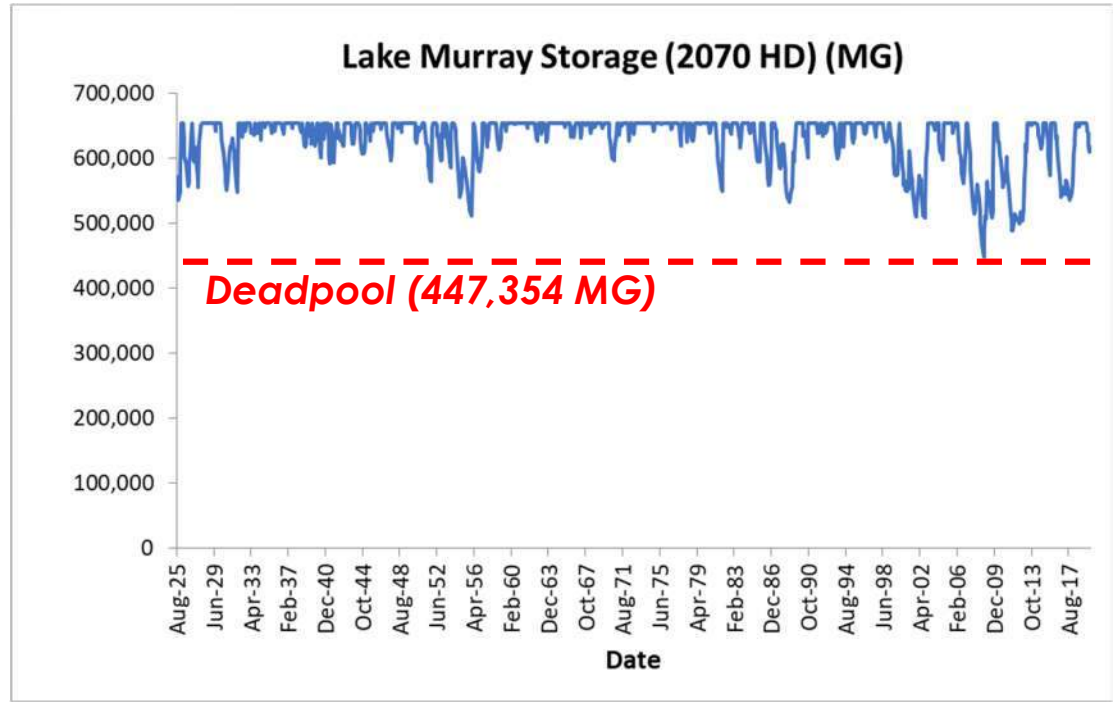
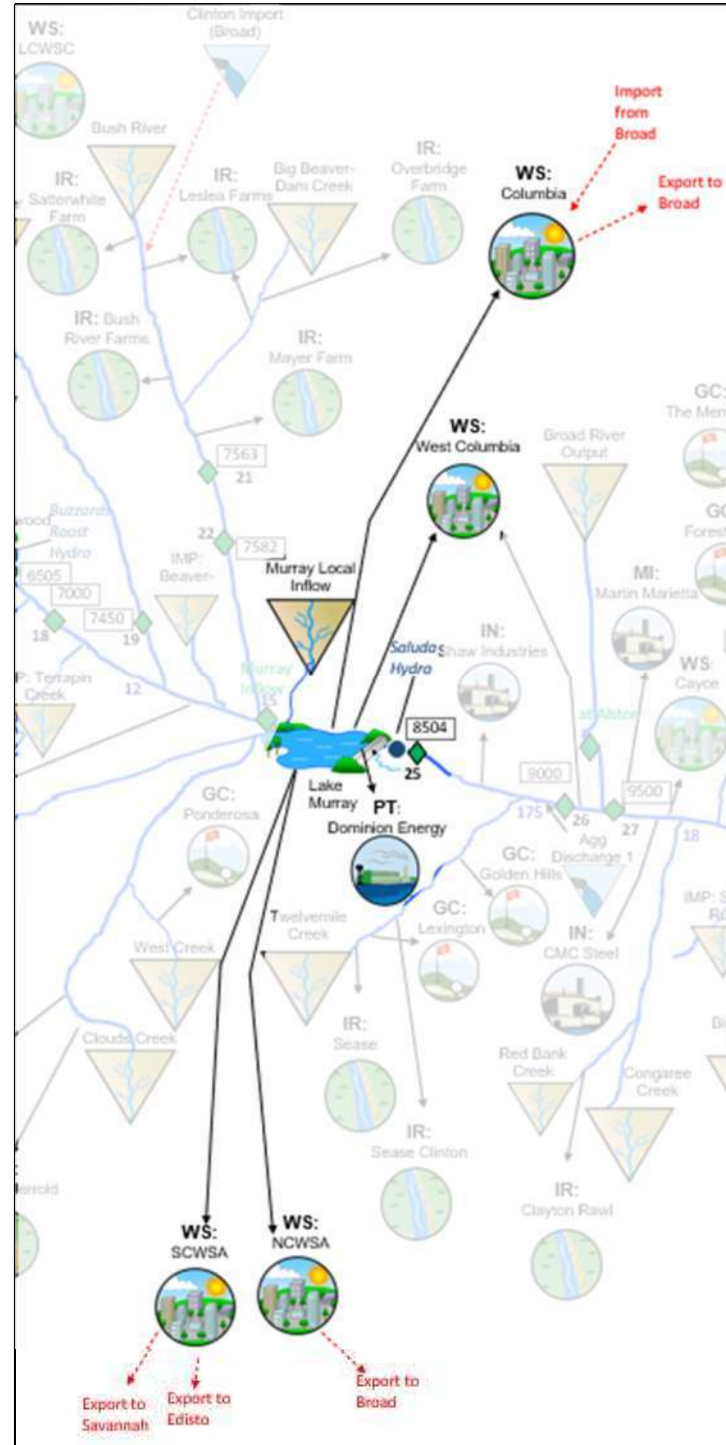
# Lake Greenwood Safe Yield



Summary of Scenario Demands and Safe Yield on Lake Greenwood (MGD) (for reference)

Scenario	Demands	Safe Yield
Current	12	293
2070 High	20	277
P&R	74	153

# Lake Murray Safe Yield



Summary of Scenario Demands and Safe Yield on Lake Murray (MGD) (for reference)

Scenario	Demands*	Safe Yield
Current	77	370
2070 High	140	359
P&R	187	173

\* Demand from Dominion's McMeekin Station is the net withdrawal from the lake.