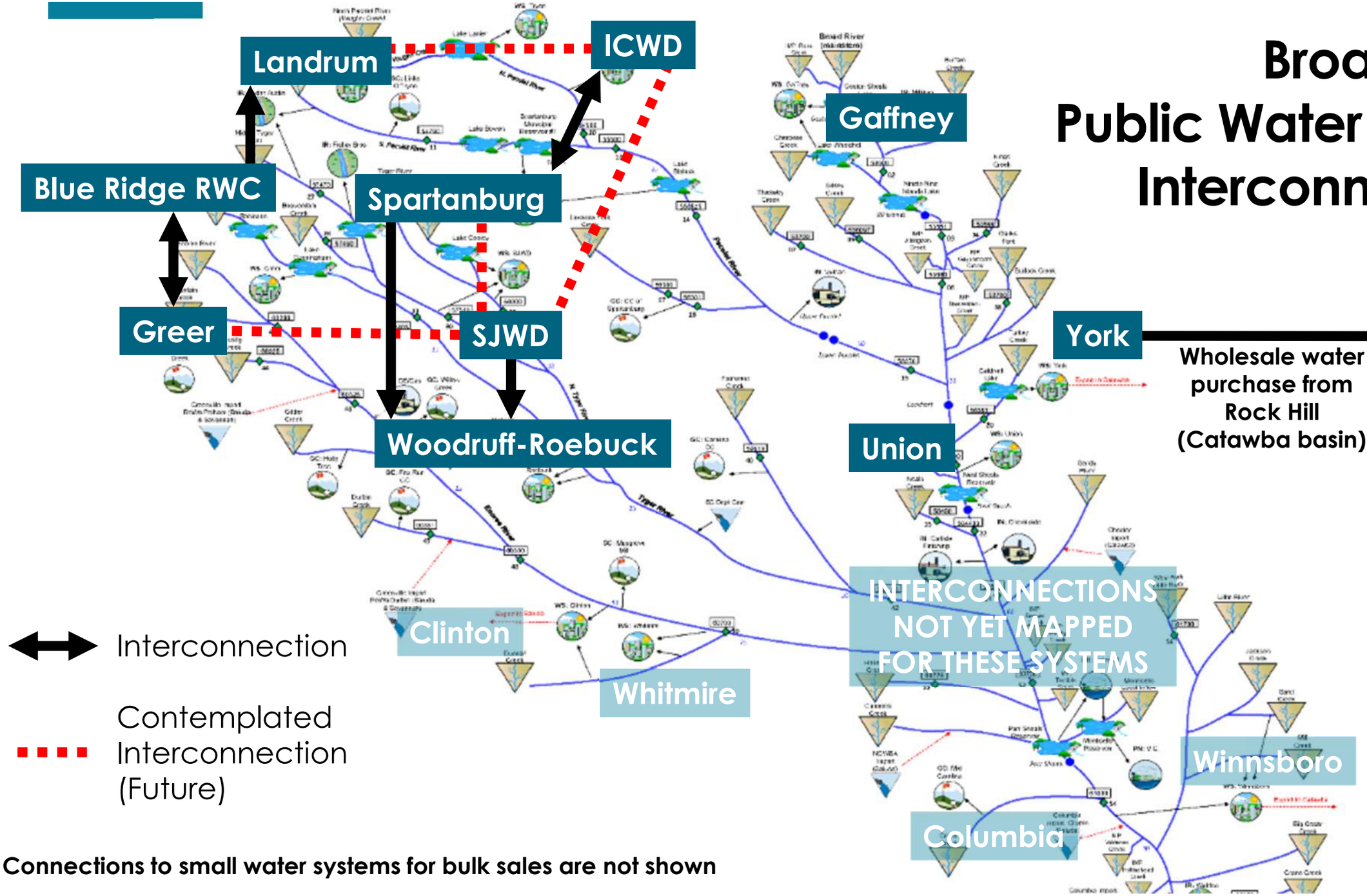
Supply-Side Water Management Strategy Discussion

Agenda Item 7

Existing Supply-Side Strategies in the Broad Basin

- Interconnections between systems, including for emergency
- Raise dams/increase existing reservoir storage (e.g., Greer)
- Maintenance and improvement of existing reservoir infrastructure
- Reservoir optimization (adjusting how reservoirs are operated)
- Conjunctive use

Broad Basin Public Water System Interconnections



York — Rock Hill

Wholesale water purchase from Rock Hill (Catawba basin)

Interconnection

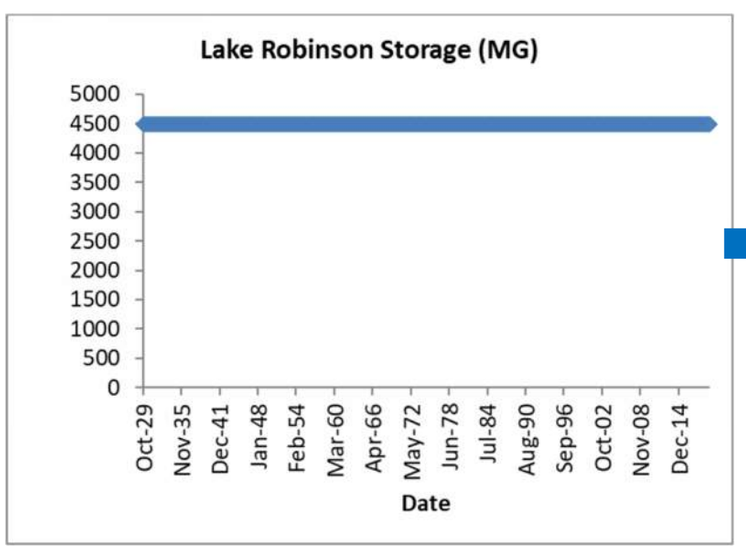
Contemplated Interconnection (Future)

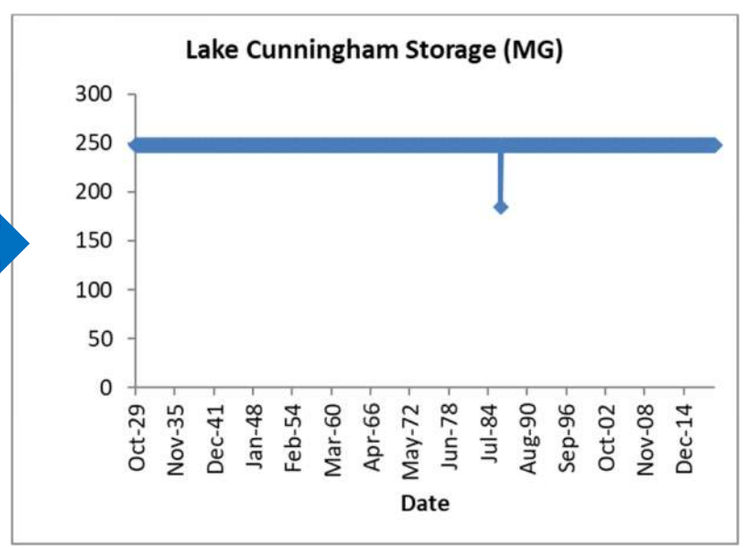
Connections to small water systems for bulk sales are not shown

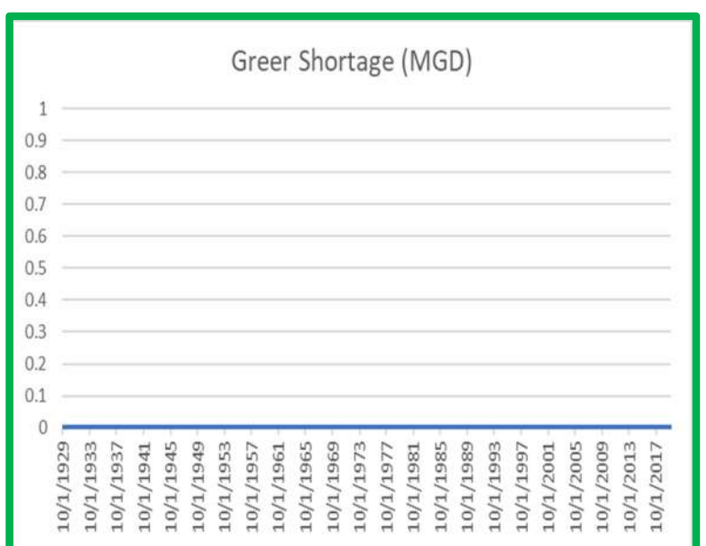
Reservoir Optimization

Example 1 – Greer CPW Current Use Scenario

- Average demand is **8.9 mgd**
- No reservoir operating or balancing rules in place in the model
- Greer CPW confirmed they generally have not needed to open the low-level valve to release more water from Robinson.
- Very little drawdown in Lake Cunningham and none in Lake Robinson. **No shortages**



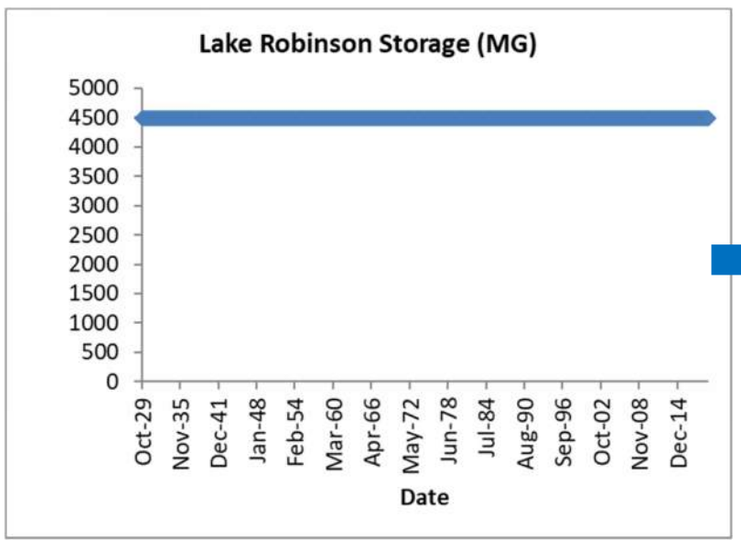


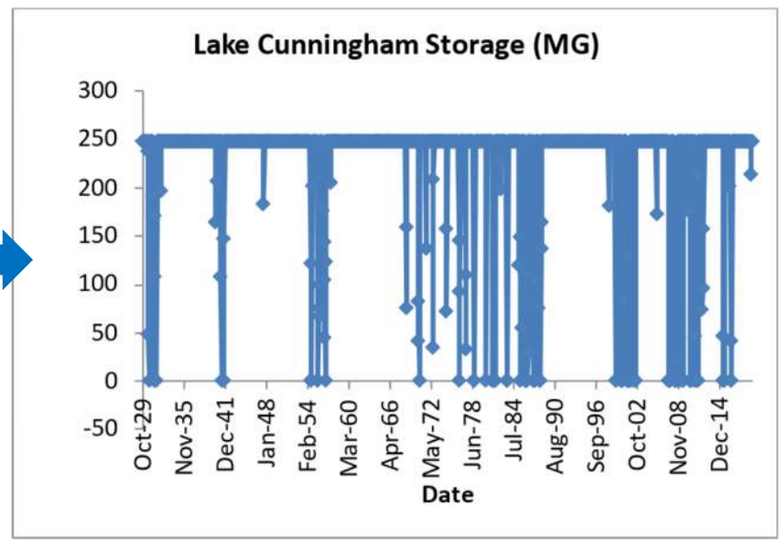


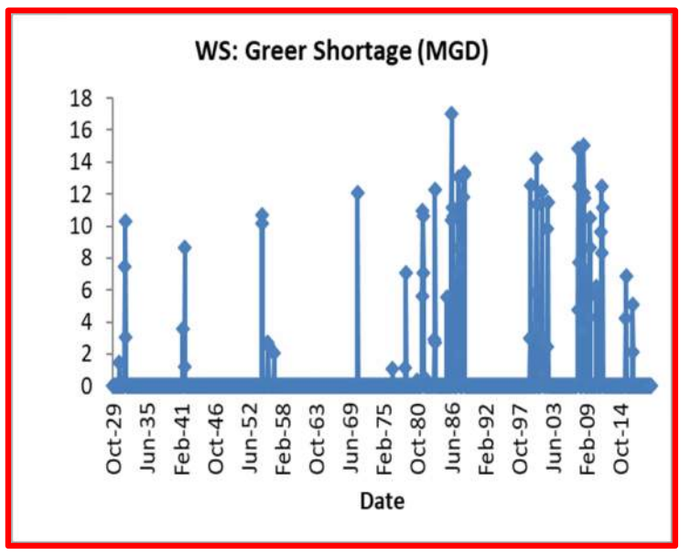
Reservoir Optimization

Example 1 – Greer CPW High Demand 2070 Scenario

- Average demand is **22.4 mgd**
- No reservoir operating or balancing rules in place in the model
- Cunningham draws down with no additional releases from Robinson and results in **water supply shortages**



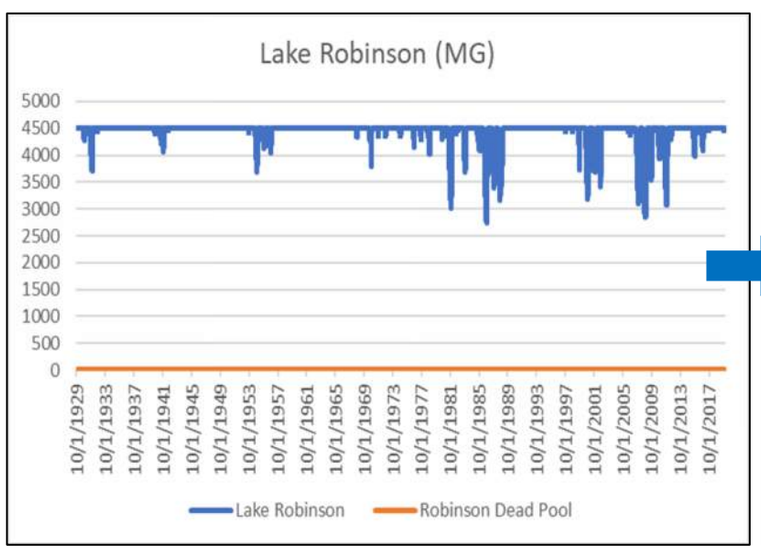


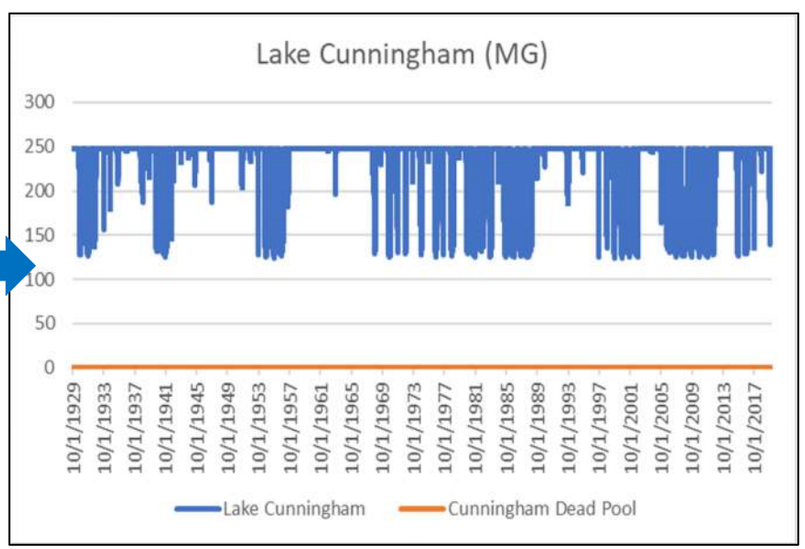


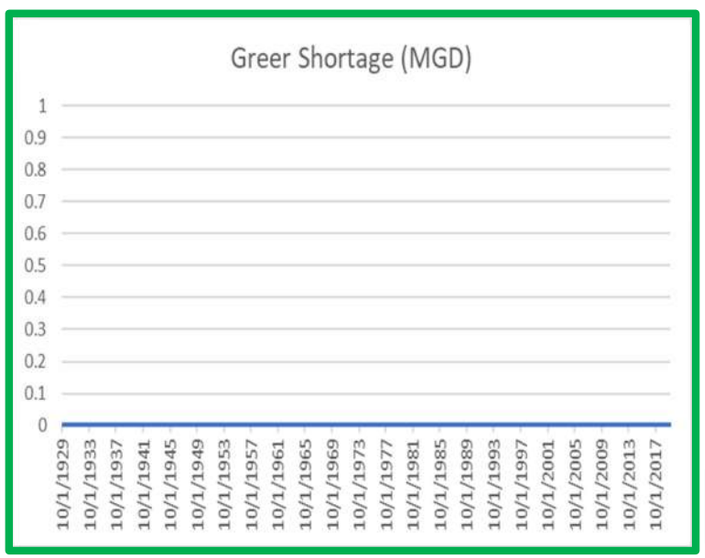
Reservoir Optimization

Example 1 – Greer CPW High Demand 2070 Scenario

- Average demand is **22.4 mgd**
- **Add an operating rule:** Lake Robinson releases 44 cfs when Lake Cunningham drops to 60% full
- Robinson releases enough water to keep Cunningham at least 60% full and results in **no water supply shortages**



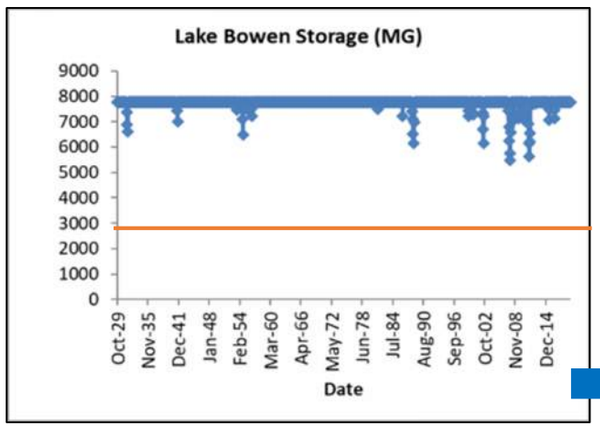


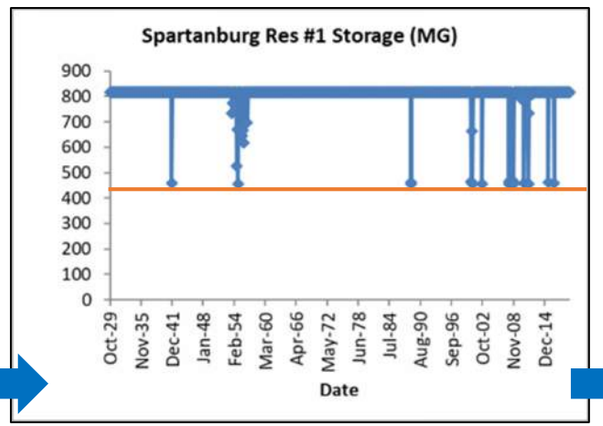


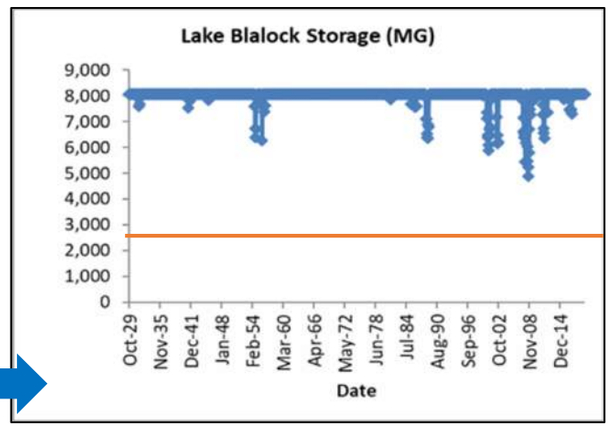
Reservoir Optimization

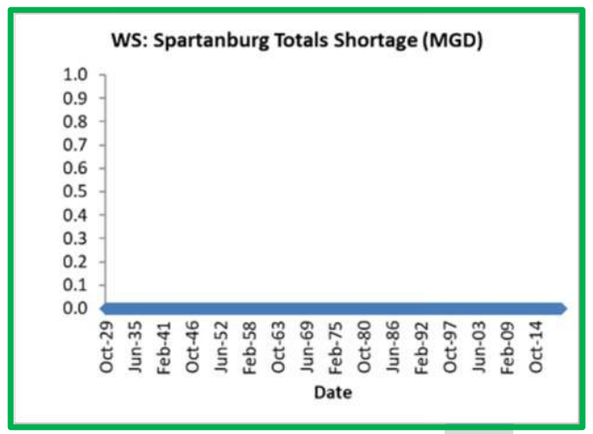
Example 2 – Spartanburg Water System Current Use Scenario

- Average demand is **26.2 mgd**
- Operating Rules:
  - Bowen releases between 5 and 45 cfs, depending on Res #1 elevations
  - Model currently withdraws from Res #1, then Blalock, then back to Res #1, although in practice, SWS doesn't currently withdraw from Blalock
  - Required minimum releases from Blalock
- **No water supply shortages**





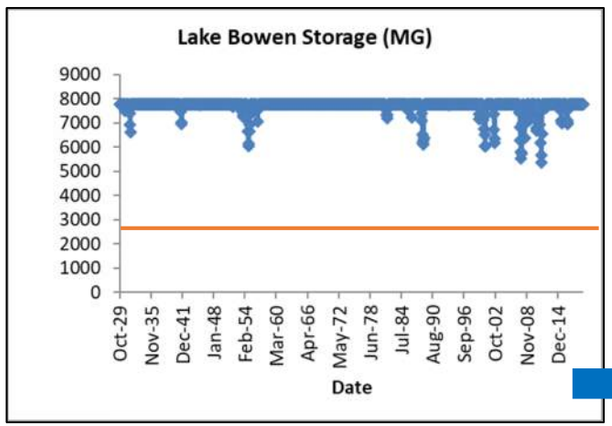


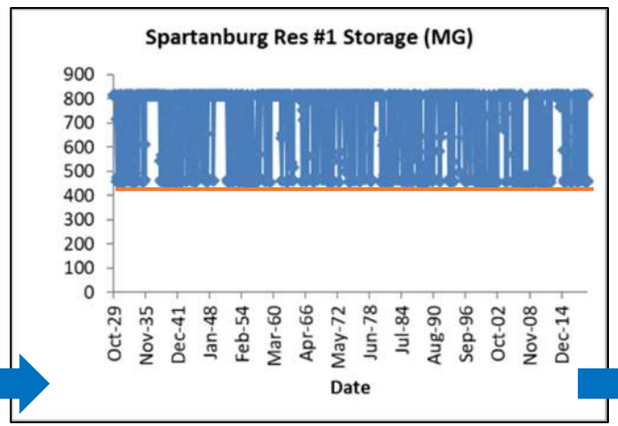


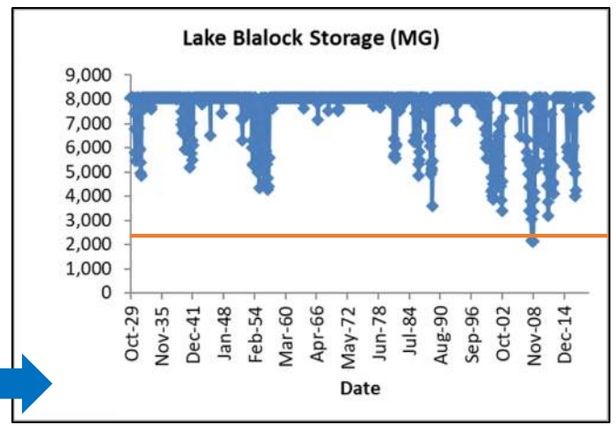
Reservoir Optimization

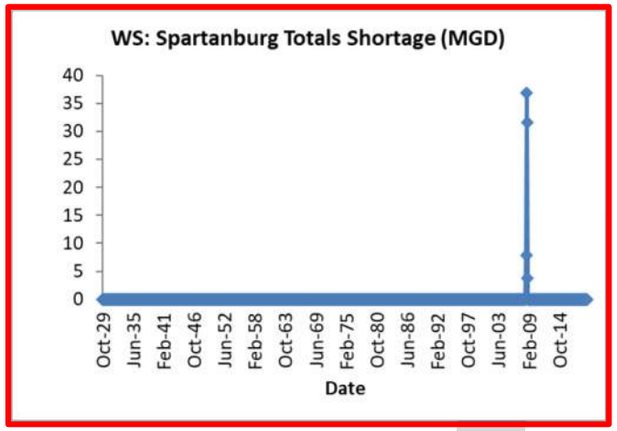
Example 2 – Spartanburg Water System High Demand 2070 Scenario

- Average demand is **62.1 mgd**
- Operating Rules:
  - Bowen releases between 5 and 45 cfs, depending on Res #1 elevations
  - Model currently withdraws from Res #1, then Blalock, then back to Res #1, although in practice, SWS doesn't currently withdraw from Blalock
  - Required minimum releases from Blalock
- A **shortage** appears although there is still available water to release in Lake Bowen





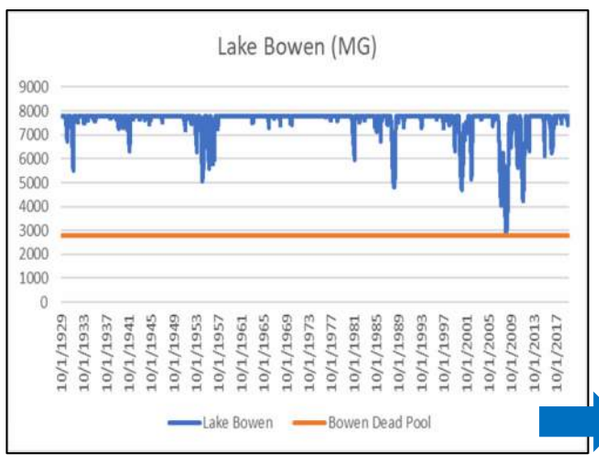


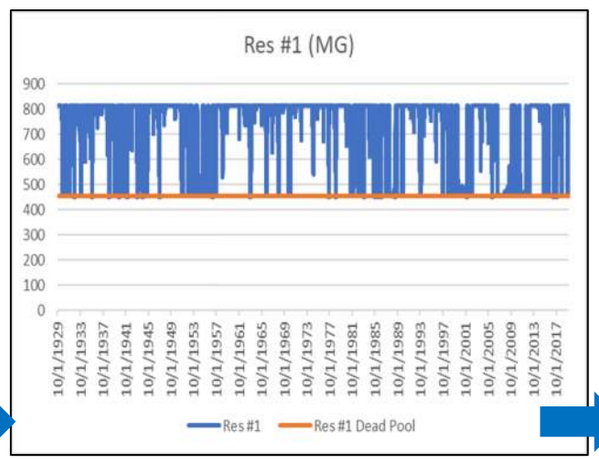


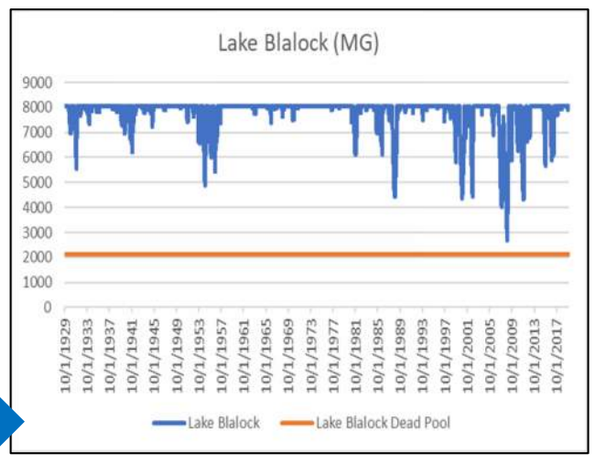
Reservoir Optimization

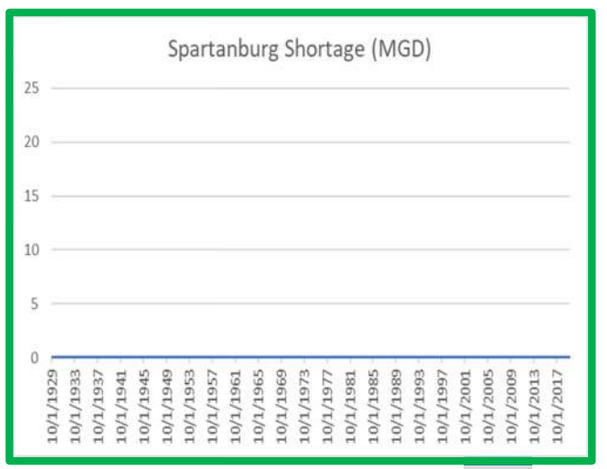
Example 2 – Spartanburg Water System High Demand 2070 Scenario

- Average demand is **62.1 mgd**
- Operating Rules:
  - Increase original Bowen releases by 5 to 10 cfs, depending on Res #1 elevations
  - Increase how much the model pulls from Res #1, before going to 2nd source, Blalock
  - Required minimum releases from Blalock (no change)
- Better balance of Bowen and Blalock results in **no water supply shortages**









Possible Supply-Side Strategies to Evaluate?

- Raise dams/increase existing reservoir storage (e.g. Gaffney)
- Reservoir optimization and balancing (e.g. SJWD)
- Identify additional surface water storage
- Identify additional surface water sources

Other Impacts to Evaluate?

- Sedimentation / loss of storage
- Increase loss to evaporation due to warming temperatures?

Water Management Strategies

Per the Planning Framework (page 59)**:**

- When evaluating current and future water availability, each RBC should take an **adaptive management approach** and **recognize the potential for changing hydrologic or socioeconomic conditions**, which may lead to new recommendations for water management. The two water demand projection scenarios [**Moderate** and **High Demand**] are designed, in part, to address this potential for varying conditions in a basin. **Changing conditions on the water supply side could include the occurrence of a more severe drought during the planning process, as compared to recent historic droughts included in the simulated period of record.**