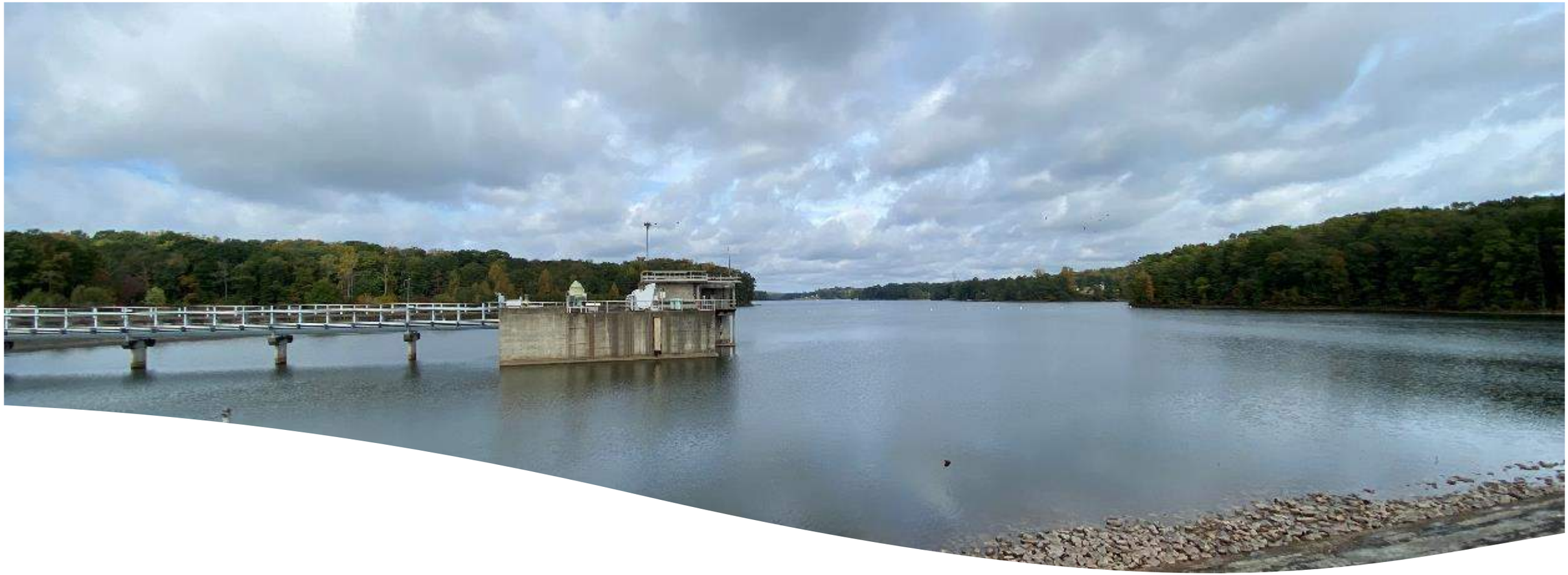
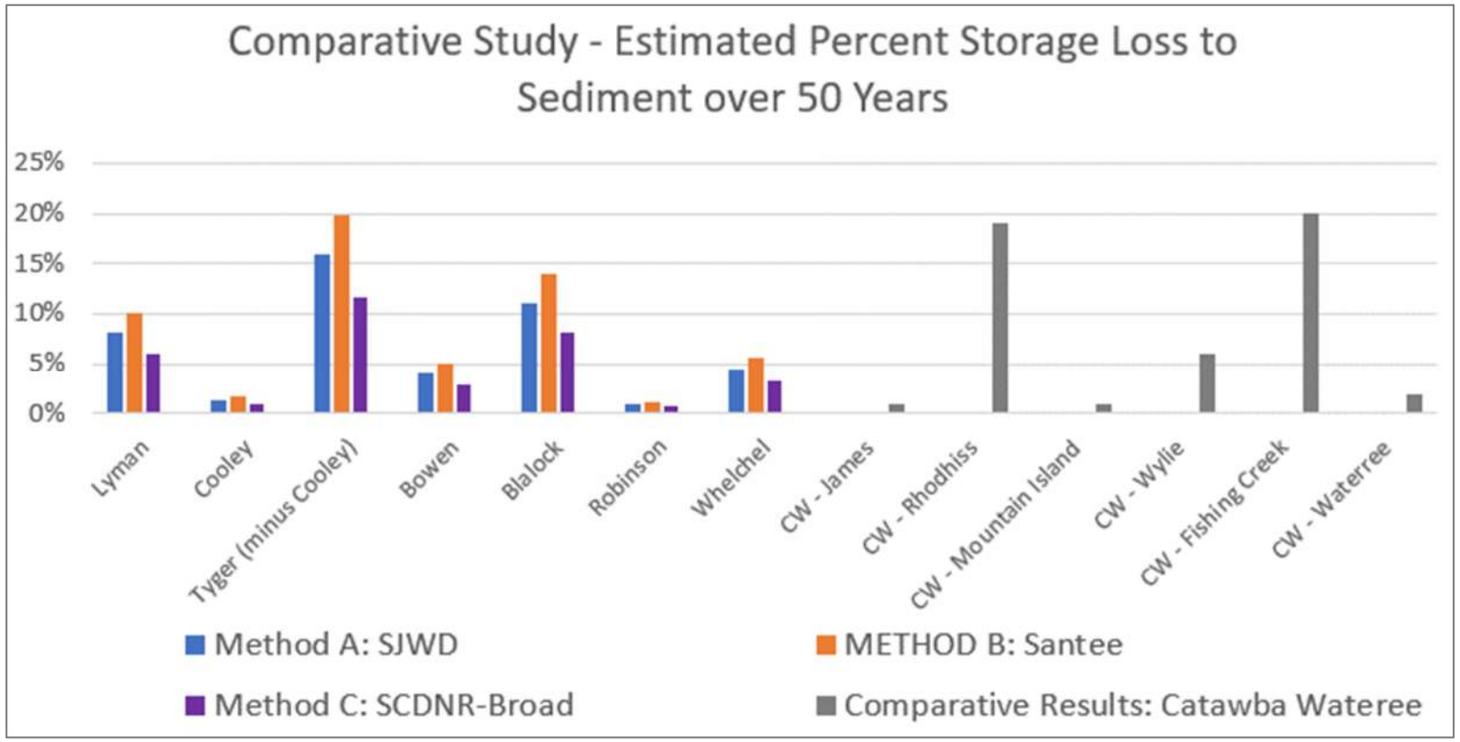


Reduction in Water Supply from Sedimentation and Increased Evaporation

Kirk Westphal, CDM Smith

Agenda Item 6

Estimated Potential Reservoir Sedimentation Analysis – 2070



Method A:

0.0028 in/year/mi^2

SJWD Water Resources Master Plan
GMC 2022

Method B: Santee River

168 tons/km^2/year

Quantifying the Lansdcape's Ecological Benefits - An Analysis of the Effect of Land Cover Change on Ecosystem Services. J. Carl Ureta, Lucas Clay, Marzieh Motallebi, and Joan Ureta
Land, 2021, 10,21. https://doi.org/10.3390/land10010021

Method C: SCDNR/USGS-Broad River

Up to 98 tons/km^2/year

Sediment Source Identification and Load Prediction in a Mixed Use Piedmont Watershed, South Carolina
Kerry McCarney-Castle, Tristan M. Childress, Christian R. Heaton
Journal of Environmental Management 185 (20217) 60-69

Sample results from SJWD Study:

Reservoir	Sediment Volume* (MG)	Sediment Volume (% Available Storage)	% of Available Storage if Dead Pool Utilized for Sediment	Notes
Lyman	111	8%	8%	116 MG already: Could fill by 2604 per GMC
Cooley	22	1%	0%	
Tyger**	60	16%	16%	65 MG already. Could fil by 2255 per GMC
Bowen	199	4%	0%	
Blalock	659	11%	0%	
Robinson	43	1%	1%	
Whelchel	36	4%	3%	

** Sedimentation rate of 0.0028 in/year from upstream watershed assumed based on SJWD Water Resources Master Plan, GMC 2022*
*** Upstream area of Cooley subtracted*

Comparison to Catawba Wateree Study

(Results extrapolated over 50 years)

Catawba-Wateree Water Management Group
Sedimentation Monitoring Study
Final Report
Catawba-Wateree Hydroelectric Project
Dec-15

Sensitivity to Evaporation from Reservoir Surfaces

- Only includes surface evaporation from reservoirs
- Does not include changes in precipitation
- Does not include basin-wide changes in evapotranspiration from land surfaces
- This is not a forecast or projection – consider it a "What If?"
  - Range of temperature changes: ~2 – 6.5 °F

Impacts to Streamflow