

John H. Kerr Dam and Reservoir Virginia and North Carolina (Section 216)

Wilmington District, Corps of Engineers

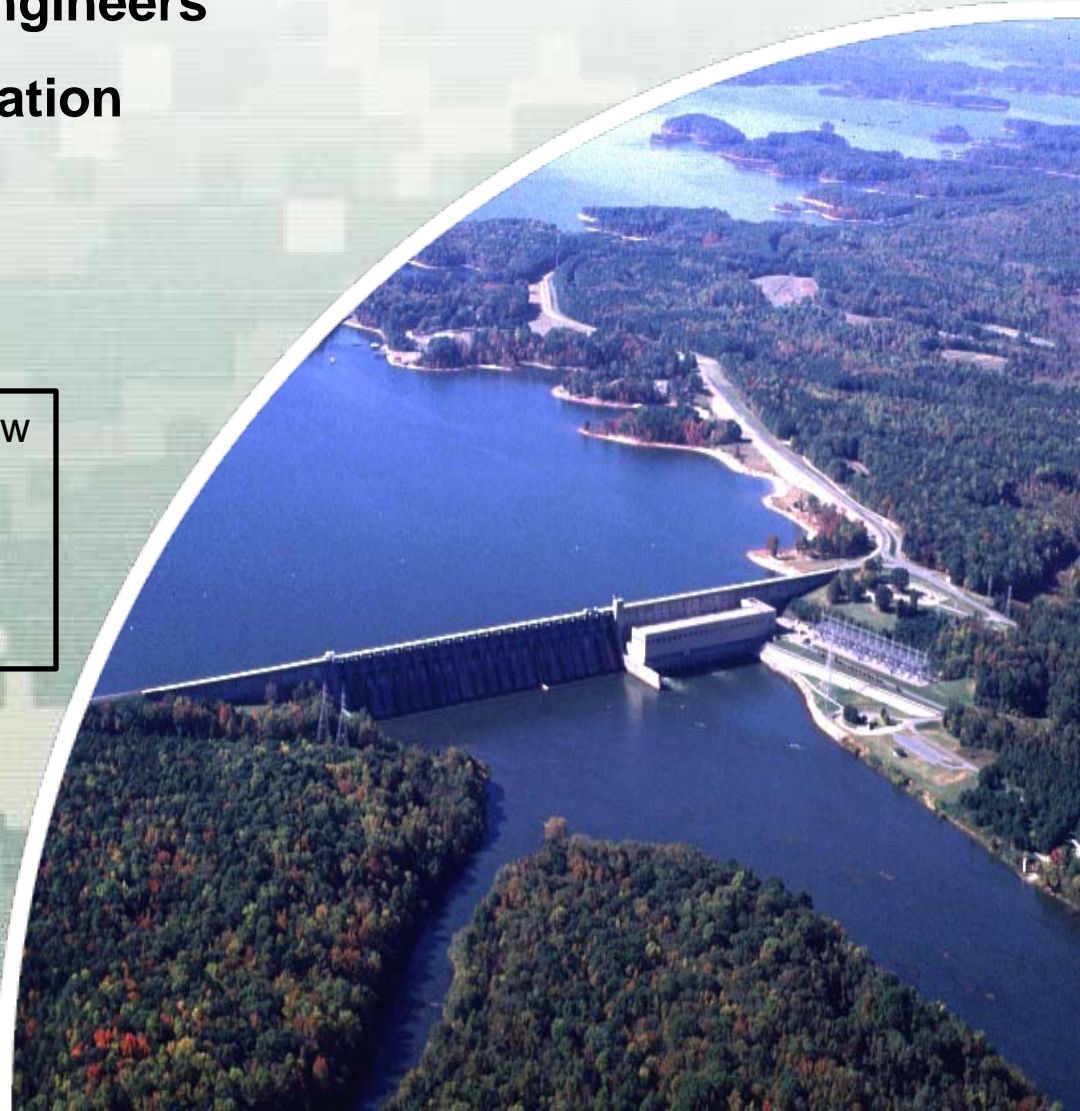
Stakeholder Update Presentation

January 24, 2014

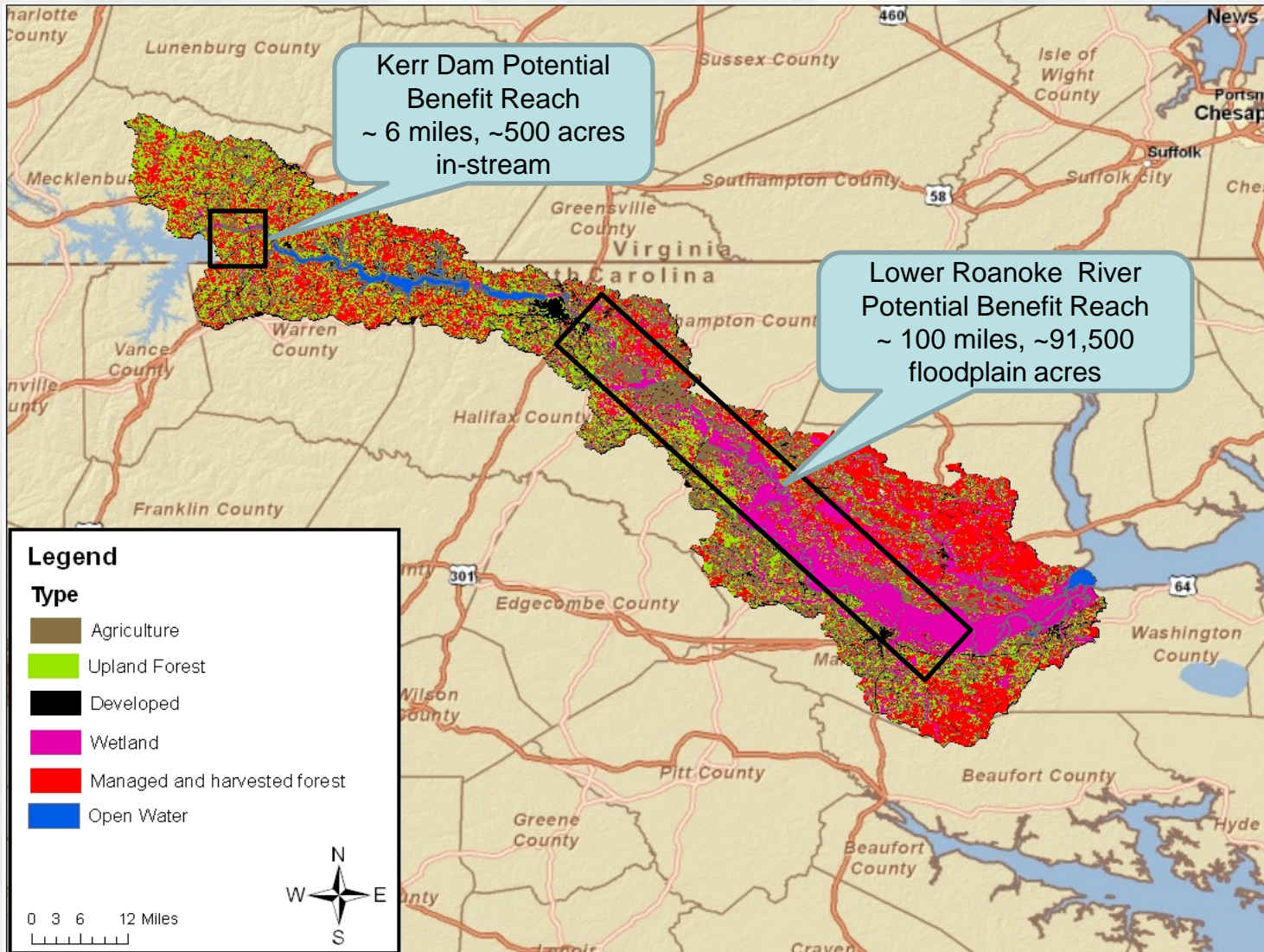
- Authorized under Section 216 of Public Law 91-611, the River and Harbor and Flood Control Act of 1970, as amended.
- Non-federal Sponsors are the State of NC and Commonwealth of VA



US Army Corps of Engineers
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Lower Roanoke River Basin Land Use and Benefit Reaches



Measures Initially Analyzed

13 measures initially considered – screened down to 5 for detailed analysis.

Improve Lower Roanoke River Ecosystem. Evaluated Entire Ecosystem (35,000 CFS Footprint) by Environmental Benefits Analysis Model

- 1 Modify reservoir guide curve (MGC_35K) and more frequent release of 35,000 cfs from January - June. (Note: MGC_35K was formerly known as 6B)
- 2 MGC_35K Year Round
- 3 Quasi Run-of-River (QRR): When Kerr Reservoir water level is above guide curve, weekly outflow \approx weekly inflow up to 35,000 cfs

Improve DO Downstream of Kerr Dam. (Project in VA, but VA Has Withdrawn from the Study.)

- 4 Inject oxygen into the hypolimnion upstream of the dam
- 5 Place a fabric weir upstream of the dam



Summary of Costs and Benefits for the Initial Array of Measures Being Evaluated

Benefits/Costs/Impacts	Fabric Weir	Reservoir O ²		MGC_35K	MGC_35K yr_rnd	QRR
		Injection				
Environmental Benefits (AAHU)	254	254		-288	-170	1,976
Acres affected	501	501		91,491	91,491	91,491
Recreation Reservoir vs. Existing	no change	no change		nearer guide curve	nearer guide curve	nearer guide curve
Flood Storage vs. Existing	no change	no change		better	better	better
Construction and O&M Cost						
Initial Construction Costs Only	~ \$10 million	> \$10 million		\$0	\$0	\$0
O&M	Low	High		\$0	\$0	\$0
Losses						
Hydropower (AA\$)	\$0	\$0		~ \$2.3 million (2.0%)	~\$2.9 million (2.5%)	~\$3.8 million (3.3%)
Agriculture Impact (AA\$)*	\$0	\$0		~\$50,000	~\$200,000	~\$250,000

* about 1,600 acres and 63 landowners



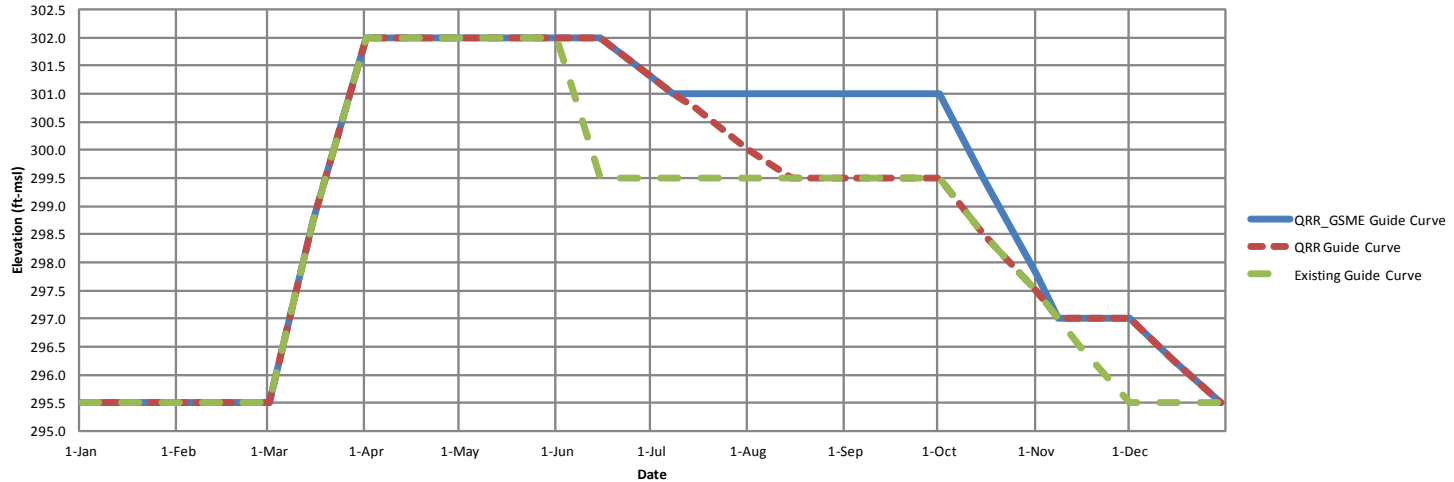
Why New Alternative?

- QRR only alternative with ecological benefit
 - However neither the State of North Carolina nor the Corps has the authority to acquire impacted agricultural land;
 - Therefore State of North Carolina does not support QRR unless agricultural impacts resolved.
- Develop a new alternative with wetter winter & springs and drier summers compared to existing conditions. Also have minimal impacts to agricultural land during growing season.
- New alternative : QRR_Growing Season Minimum Energy



QRR_Growing Season Minimum Energy

John H. Kerr Dam and Reservoir Existing Operations, Quasi-Run-of-River (QRR), and QRR with Growing Season Minimum Energy (QRR_GSME) Guide Curves



Existing Operations*		QRR Year-Round*	QRR with Growing Season Minimum Energy (QRR_GSME)*
Kerr Lake Level (ft-msl)	Roanoke Rapids Releases (cfs), year-round	Roanoke Rapids Releases (cfs), year-round	Roanoke Rapids Releases (cfs)
Below 300	Up to 8,000	Above Guide QRR Curve (GC): Outflow ~Inflow up to 35,000 cfs based on a weekly average inflow. Below GC: Minimum energy (equal or exceeds FERC minimum releases at Roanoke Rapids Dam). Above 320: Existing Operations.	December 1 through March 31: Above QRR_GSME Guide Curve (GC): Outflow ~Inflow up to 35,000 cfs based on a weekly average inflow. Below GC: Minimum energy (equal or exceeds FERC minimum releases at Roanoke Rapids Dam). Above 320: Existing Operations.
300-312	Up to 20,000		
312-315	Up to 25,000		
315-320	Up to 35,000		
320-321	85% of inflow or up to 35,000, whichever is higher		
Above 321	Inflow		QRR_GSME GC April 1 through November 30: Below guide curve: Minimum Energy Guide curve to 301.5: Up to 8,000 cfs 301.5-312: Up to 20,000 cfs Above 312: Existing Operations

*April 1-June 15, abide by fishery releases, if feasible



Summary of Costs and Benefits for the Initial Array of Measures Being Evaluated

Benefits/Costs/Impacts	Reservoir O ²		MGC_35K	MGC_35K_yr_rnd	QRR_GSME	QRR
	Fabric Weir	Injection				
Environmental Benefits (AAHU)	254	254	-288	-170	-572**	1,976
Acres affected	501	501	91,491	91,491	91,491	91,491
Recreation Reservoir vs. Existing	no change	no change	nearer guide curve	nearer guide curve	nearer guide curve	nearer guide curve
Flood Storage vs. Existing	no change	no change	better	better	less during summer	better
Construction and O&M Cost						
Initial Construction Costs Only	~ \$10 million	> \$10 million	\$0	\$0	\$0	\$0
O&M	Low	High	\$0	\$0	\$0	\$0
Losses						
Hydropower (AA\$)	\$0	\$0	~ \$2.3 million (2.0%)	~ \$2.9 million (2.5%)	~ \$3.5 million (3.0%)	~ \$3.8 million (3.3%)
Agriculture Impact (AA\$)*	\$0	\$0	~ \$50,000	~ \$200,000	Similar to Existing	~ \$250,000

* about 1,600 acres and 63 landowners.

** Greater impacts because area between 20 and 35k cfs discharge flooded less frequently than under existing operations



Final Measures and Alternatives

- MGC_35k, MGC_35k_yr_rnd and QRR_GSME not viable due to decrease in habitat units.
- QRR is a viable alternative since it has ecological benefits.
 - However neither the State of North Carolina nor the Corps has the authority to acquire impacted agricultural land;
 - Therefore State of North Carolina does not support QRR unless agricultural impacts resolved.



Path Forward Discussion

