

U.S. Army Corps of Engineers

Reservoir Management during Recent Droughts

Southeastern Lakes Management Conference

Winston-Salem, North Carolina

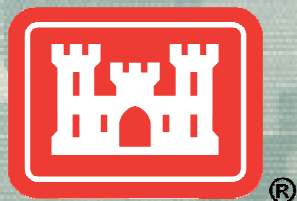
05 May 2010

Tony Young, P.E.

Chief, Water Management

Wilmington District

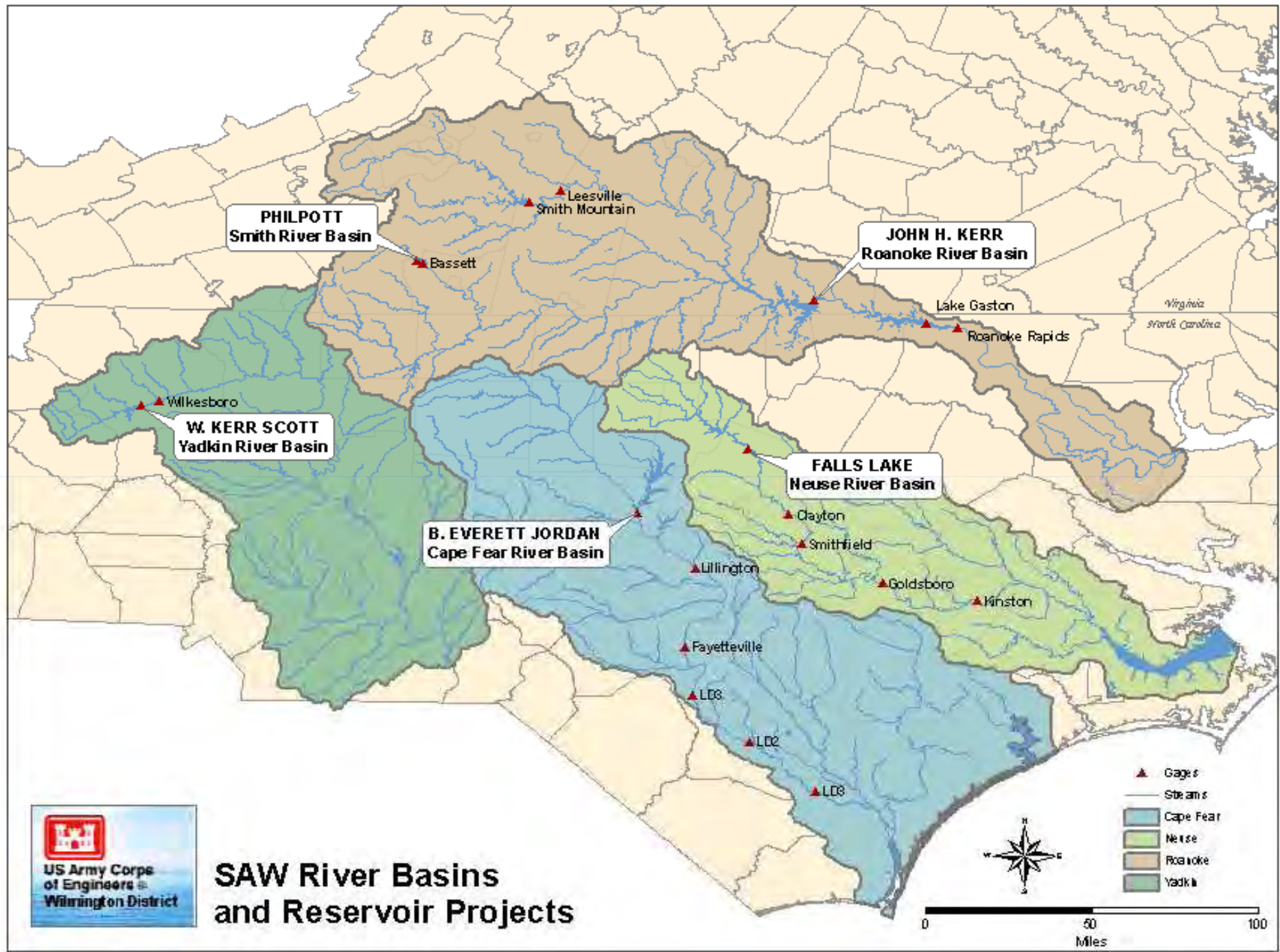
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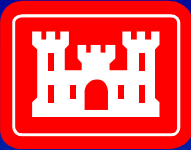
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SAW River Basins and Reservoir Projects

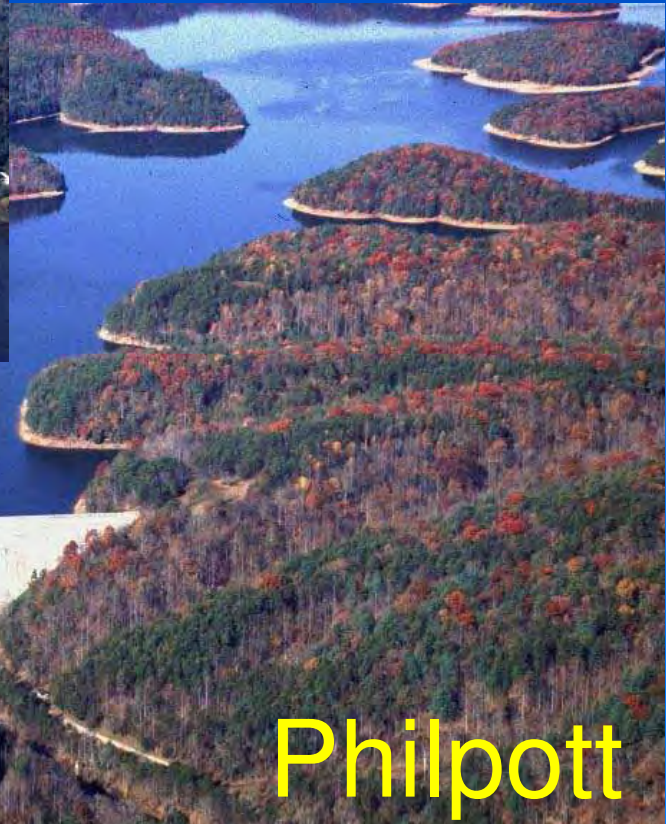


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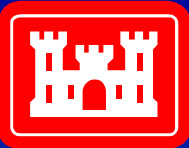
Hydropower Projects



John H Kerr



Philpott



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Non-Hydropower Projects



Jordan

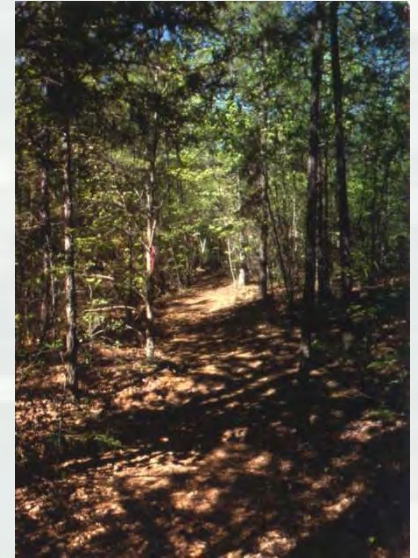


Falls



Scott

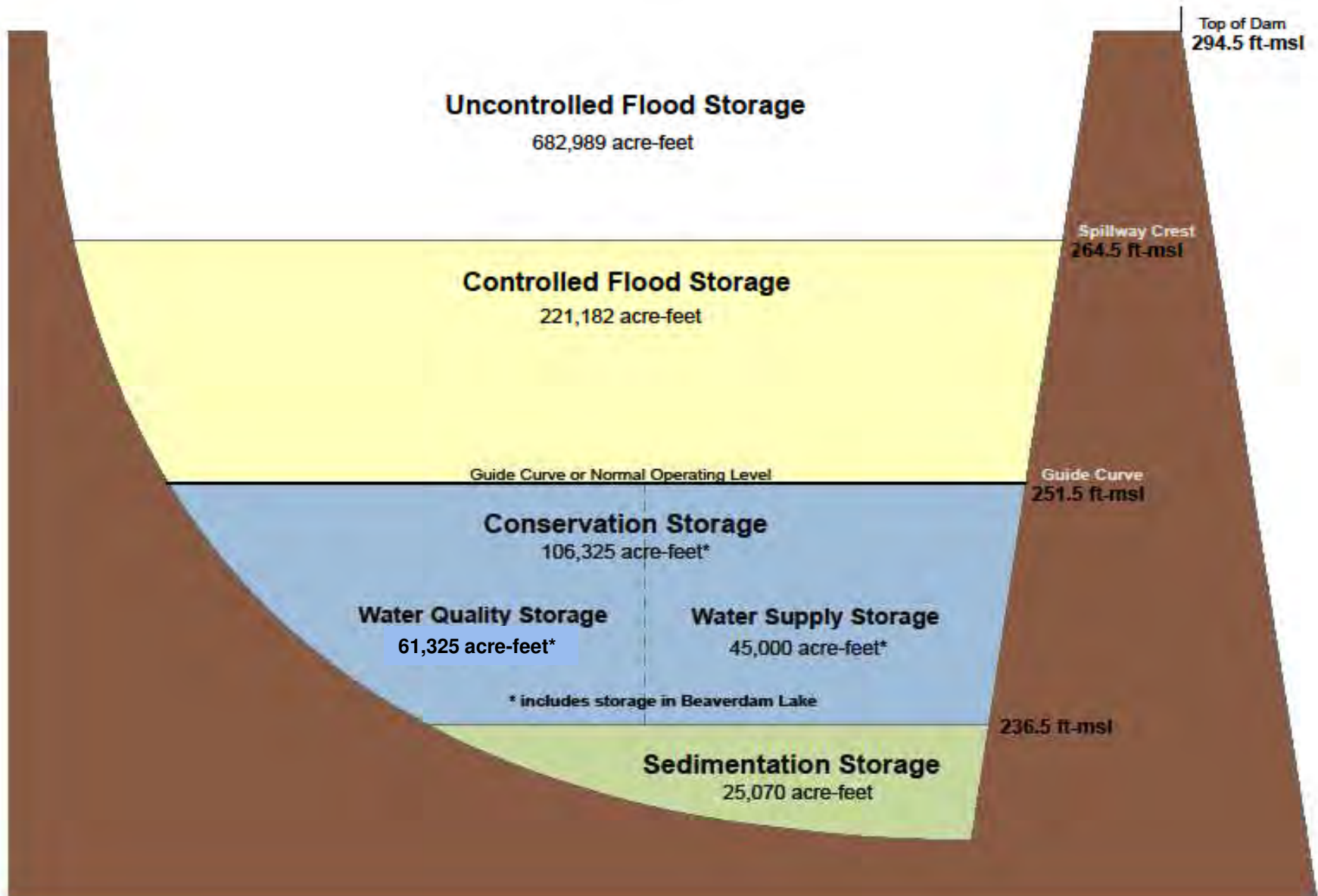
Multi-Purpose Projects



- 1 Water Supply
- 1 Water Quality and Low Flow Augmentation
- 1 Flood Control
- 1 Recreation
- 1 Fish and Wildlife Enhancement
- 1 Hydropower



Falls Lake Storage

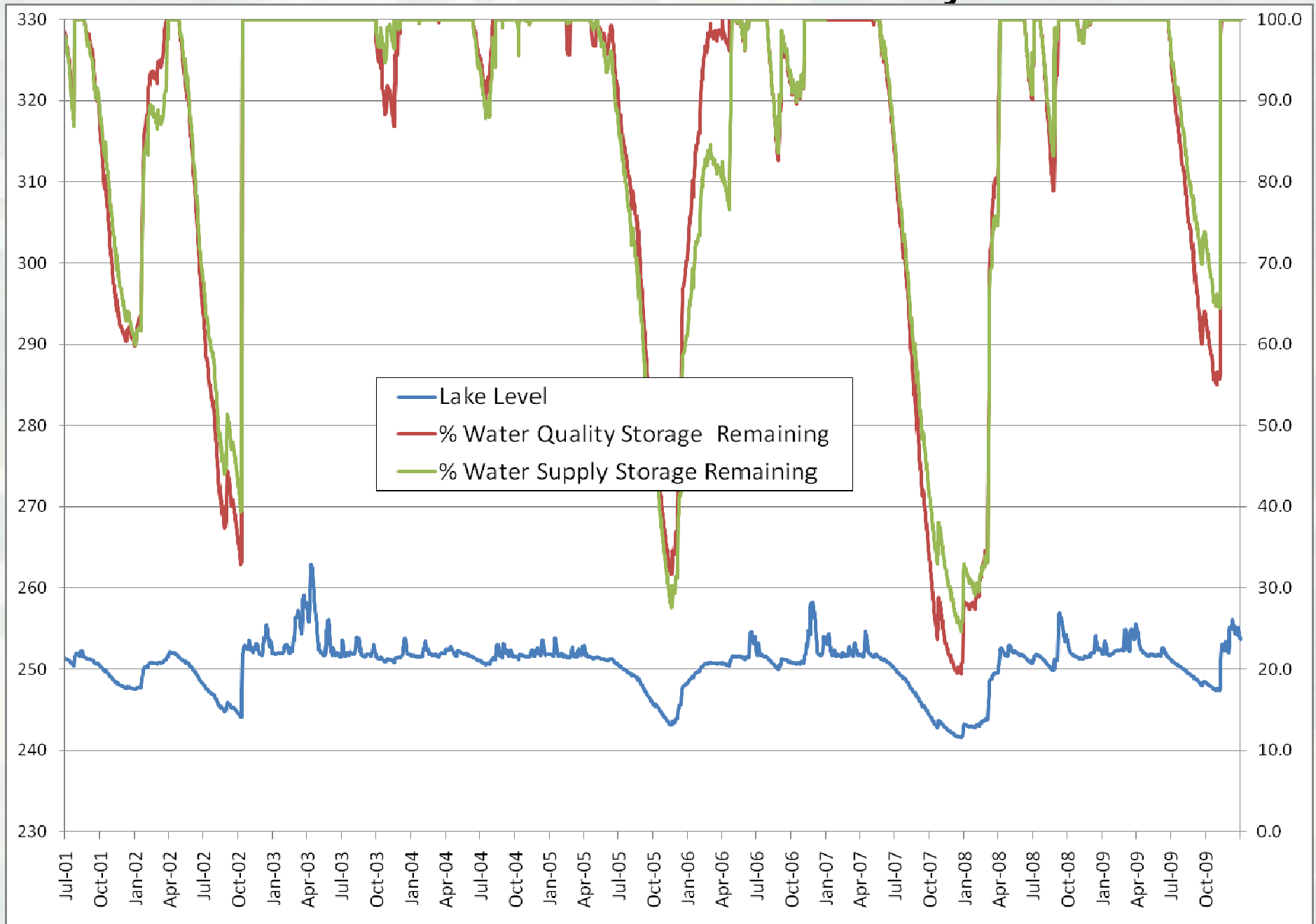


Falls Water Quality Releases (Low-Flow Operations)

Downstream Flow Targets		
Months	Immediately Downstream of Dam	Average Daily Target at Clayton
Nov – Mar	~50 to 62 cfs (12"x12" piggyback gate)	184 cfs
Apr – Oct	100 cfs (4" opening in 8.5' service gate)	254 cfs



Falls Performance since July 2001



Falls Lake (Nov 2005)

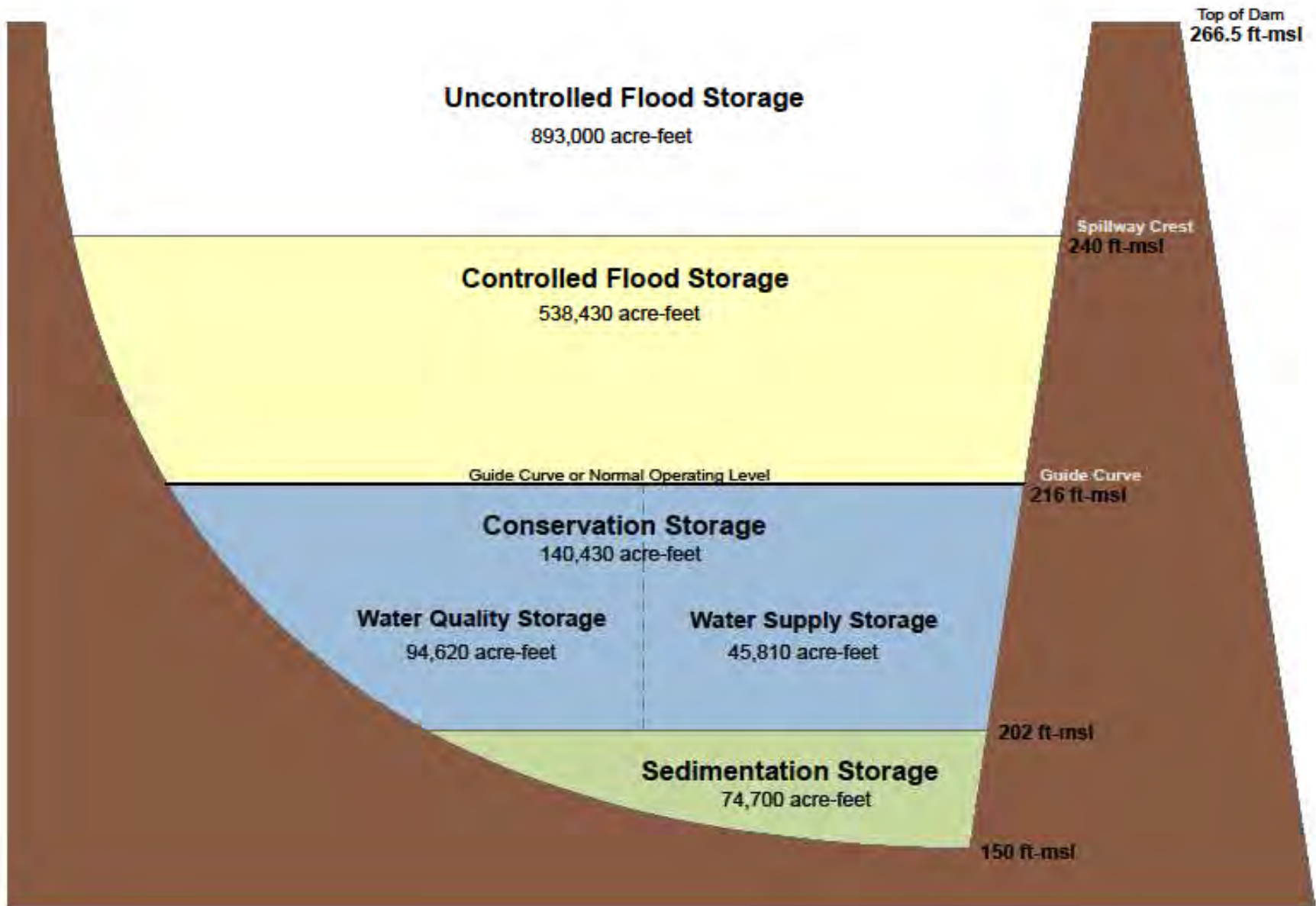


Lake level in this photo is approximately 244 (7.5 ft below GC), and 2.5 ft **higher** than the record low of about 241.5 on Christmas Day 2007.

A November 1, 2005, aerial photo shows the main channel of the Neuse River that emerged when the level of Falls Lake receded due to the drought. The I-85 bridge is near the top portion of the photo.

Staff Photo by Chuck Liddy

Jordan Lake Storage



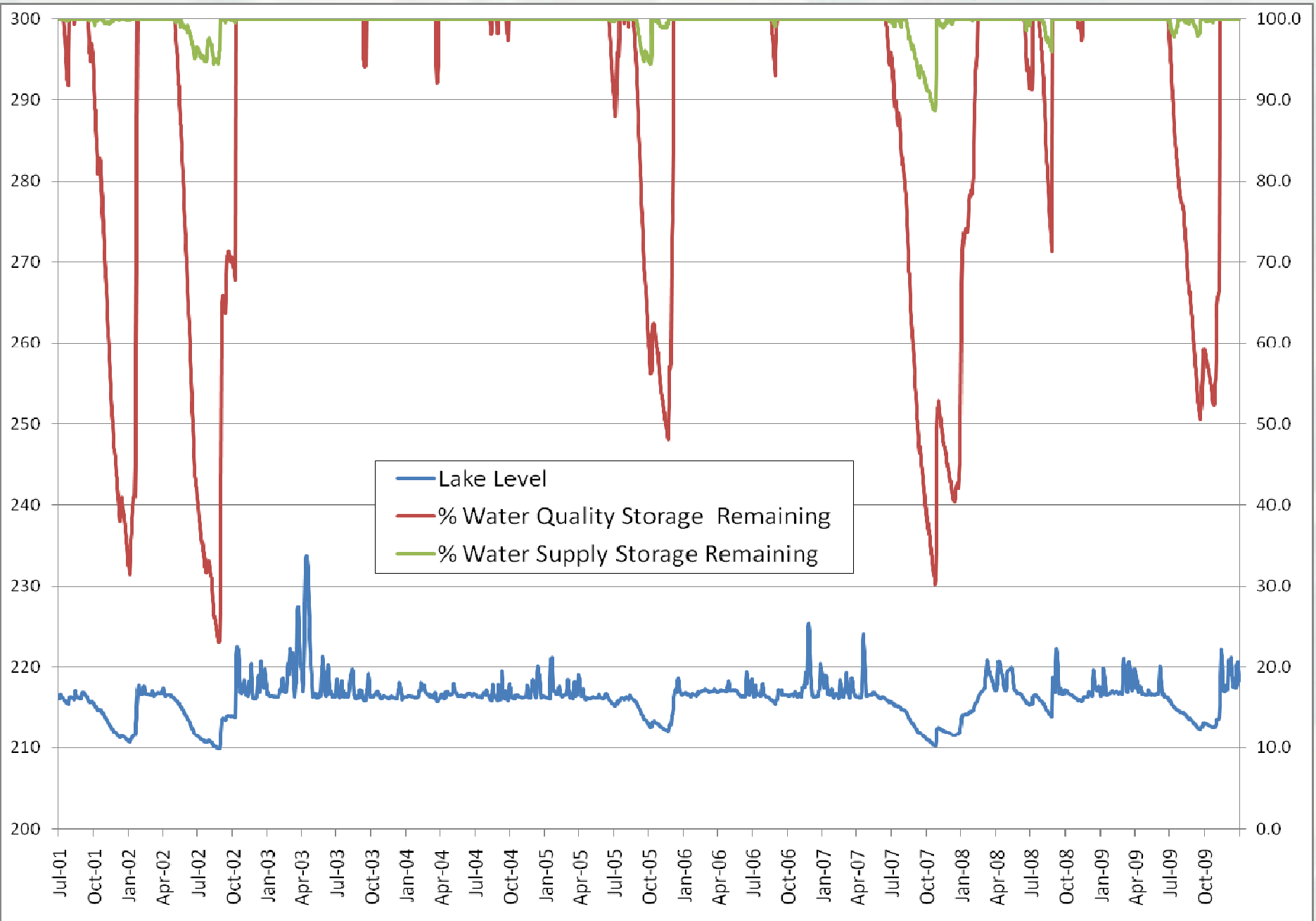
Jordan Water Quality Flow Targets

Two Downstream flow targets

- 40 cubic per second immediately downstream of Jordan Dam. This is the historic 7Q10 flow at this site.
- Average daily flow at the Lillington stream gage of 600 (+/- 50) cubic feet per second. The natural 7Q10 flow is 79 cubic feet per second



Jordan Performance since July 2001



Falls & Jordan Drought Management: Pre-2002

- **Original Drought Contingency Plans in place**
- **Not very proactive**
- **Over 75% storage depleted before aggressive measures kicked in**



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Falls & Jordan Drought Management: 2001-2008

- **Comprehensive Stakeholder Coordination**
 - **Started monthly meetings in Oct 2001 in response to the serious drought conditions in Roanoke Basin**
 - **Drought issues in the Cape Fear and Neuse River basins were quickly added**
 - **Started weekly conference calls in early 2002**
- **Deviation Requests through South Atlantic Division**



B. Everett Jordan

Low-Flow/Drought Release Schedule

Drought Level	Water Quality Storage Remaining (%)	Jordan Dam Minimum Release* (cfs)	Jordan Dam Maximum Release (cfs)	Lillington Daily Average Flow Target (cfs)
0	> 80	40+	600	600 +/- 50
1	60 – 80	40+	Lillington target	450 - 600 +/- 50
2	40 – 60	40+	Lillington target	300 - 450 +/- 50
3	20 – 40	40+	200+*	None*
4	0 – 20	40+	100-200+*	None*

* Water quality release plus any required downstream water supply releases.

** Lillington flow will be total of Jordan Dam release plus local inflow.



Water Management Stakeholders

- Virginia Dept. of Environmental Quality
- Virginia Dept. of Game and Inland Fisheries
- NC Div. of Water Resources
- NC Div. of Water Quality
- NC Wildlife Resources Commission
- US Fish and Wildlife Service
- National Weather Service
- US Geological Survey
- Dominion Power Company (formerly VPCO)
- Southeastern Power Administration (SEPA)



Water Mgmt Stakeholders (cont'd)

- **River Basin and Lake Associations**
- **River Keepers**
- **Numerous local governments and water systems (including Raleigh, Durham, Cary, Henderson, Fayetteville, Wilmington, Goldsboro, Vance Co, Harnett Co, and others)**
- **Private businesses such as marina operators on Kerr, Jordan and Falls Lakes**
- **Industries such as Weyerhaeuser, International Paper, Progress Energy, and Dominion Power**
- **Media**
- **Public**



Falls & Jordan Drought Management: 2007 to Present

- **Emergency measures pursued in late 2007 that included temporary use of available sediment pool storage (temporary lease agreement with state of NC)**
 - **Unprecedented in Corps; agreement still being finalized**
- **Experience in 2002 and 2007 droughts indicated DCPs could be improved to be more proactive**
 - **Updates nearly completed; incorporates measures taken during previous droughts and provides greater flexibility**
- **Weekly calls and F2F meetings as needed for any water management issues (flood ops, outages, etc.)**





<http://epec.saw.usace.army.mil>

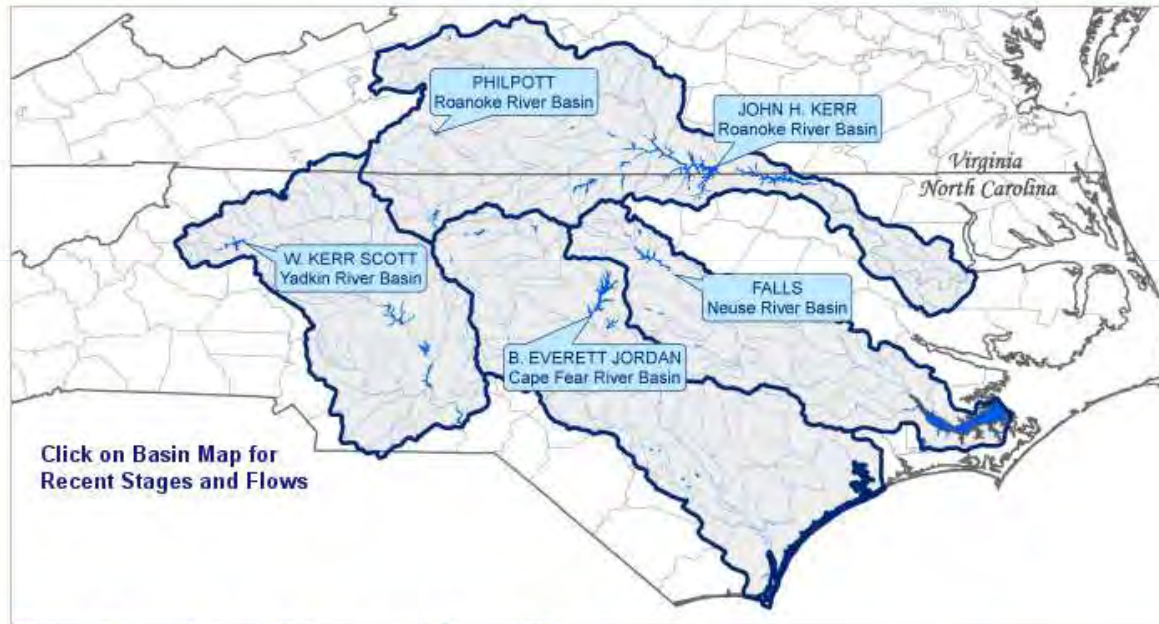


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Water Management

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Click on Reservoir Name Below to go to Project Webpage:

	John H. Kerr	Philpott	Falls	B. Everett Jordan	W. Kerr Scott
0800 Elevation (ft-msl)	303.49	974.56	251.82	216.74	1035.32
Guide Curve (ft-msl)	302.00	973.50	251.50	216.00	1030.00

Lake and Guide Curve Levels for the past 180 days

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