Ensuring a Reliable Water Supply
Expanded Water Storage Reservoir

CATAWBA RIVER
WATER SUPPLY PROJECT
Today’s Presentation

- About CRWSP and what is driving this project
- Why expanded reservoir is critical to communities we serve
- Details about project design
- Environmental impact and mitigation plans
- How more water storage at CRWSP benefits river basin, downstream users
CRWSP is critical for water supply

- Only water supply for Lancaster County, SC
- Primary water supply for Union County, NC
- Supplies water for hospitals, schools, homes, and businesses
- Without CRWSP people of Lancaster and Union County will be without water
- Without a reservoir expansion CRWSP cannot reliably provide water to its customers
CRWSP is different from other water providers along the river

- CRWSP is a 50/50 joint venture between LCWSD and Union County
- Intake is in the river not in an impoundment
- Treatment facility relies solely on variable flows from the river
Before 2006-2007 Relicensing

- CRWSP permit requires adequate storage or water release agreement
- In low flows, withdrawals were based on:
  - Normal daily peak releases from Lake Wylie
  - Release agreement with Duke Energy
- Small existing reservoir on site provides short-term supply for water quality and equipment issues
- Existing reservoir was not intended as a drought buffer
Relicensing/New LIP – Game Changer

- Same permit withdrawal limits still in effect
- Past water release agreement with Duke Energy no longer guaranteed
- Daily releases more consistent
- Drought triggers require higher water conservation
- Stricter water use regulations

Additional storage is required
Expanded Reservoir is Critical

- During low flows, all customers out of water after 3-7 days, when current reservoir storage exhausted
- More water conservation and efficiency efforts alone can’t solve the problem
- Historical data shows extended periods of low river flow
Maximum Consecutive Days Per Year with Low Flow

- 1992: 9
- 1993: 16
- 1994: 12
- 1995: 5
- 1996: 5
- 1997: 8
- 1999: 9
- 2000: 20
- 2001: 21
- 2002: 26
- 2003: 3
- 2004: 3
- 2005: 13
- 2006: 7
- 2007: 49
- 2008: 31
- 2009: 20
- 2010: 4

Note: Missing Data (Jan-Sep)
# 287 Low Flow Days in 2007-2008

|          | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 |
|----------|---|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Oct-07   |   |   |   |   |   |   |   |   |   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| Nov-07   |   |   |   |   |   |   |   |   |   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| Dec-07   |   |   |   |   |   |   |   |   |   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| Jan-08   |   |   |   |   |   |   |   |   |   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| Feb-08   |   |   |   |   |   |   |   |   |   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| Mar-08   |   |   |   |   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| Apr-08   |   |   |   |   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| May-08   |   |   |   |   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| Jun-08   |   |   |   |   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| Jul-08   |   |   |   |   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| Aug-08   |   |   |   |   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
| Sep-08   |   |   |   |   | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  | X  |
Critical Period
November 2007 thru March 2008

Only 9 days of allowable withdrawal during critical five months
Historical record indicates 1.2 BG reservoir is needed.
Existing reservoir is not adequate

- Existing reservoir is about 100 million gallons
- Significantly less than demonstrated historical need
- Existing reservoir provides only 3 to 7 days of storage
- Existing reservoir is for operational contingencies and not for drought
- Expanded reservoir is planned as a drought buffer
Conservation alone can not eliminate need for additional storage

- Both LCWSD and Union County have restricted usage in accordance with LIP
- Both LCWSD and Union County continue to promote water conservation
- Peak and average uses have been reduced
- 2011 peak demands are 22% lower than in 2007
- Conservation/efficiency still encouraged

Conservation would need to reduce water use by 89% to eliminate storage need.
Reservoir Alternatives Analysis

- Alternatives evaluated based on reliability, environmental, and cost benefits
  - Alternative reservoir locations
  - Groundwater recharge
  - Available interconnections for finished water supply
- On-site reservoir provided best solution
- Reservoir dam positioned at best geological location
- Site topography offers
  - 1.09 BG total reservoir volume
  - 950 MG usable storage
Expanded reservoir is less than 3% of acreage of Fishing Creek Reservoir.
About the Expanded Reservoir

- 92-acre surface area
- Earthen dam with 90 ft impoundment depth - no impoundment in river
- 950 million gallon usable storage capacity
- Expanded river intake and pump station
- New reservoir pump station
View from Section 1

- Line of Sight from Adjacent River Bank
- Line of Sight from Location on River
- Tree Line
- River Bank
- Catawba River
- Creek
- Creek
- Dam Crest
Plant operations with new reservoir

- Initial fill depends on river flows
- Normally CRWSP will keep reservoir full
- All withdrawals within permitted limits
  - No change in S.C. withdrawal permit
  - No change in S.C. IBT
  - No change in N.C. grandfathered IBT
  - No change in treatment capacity
  - No increase in actual use
- Flexibility to withdraw during high/normal flows and store water for use during drier times
Environmental Assessment

- No endangered or threatened species found
- No significant cultural or historical resources found
- Reservoir project will impact some streams and wetlands on CRWSP property
Mitigation Plan Details

- CRWSP will make improvements in nearby areas, using Army Corps of Engineers guidelines
- Banks are primary mitigation tool: Using credits available from three banks in area
- Additional credits earned through a permittee-responsible site identified through in-depth review
  - Site reviewed by the U.S. Army Corps of Engineers
- Majority of credits will be from stream restoration work
- Final mitigation plans submitted to U.S. Army Corps after site negotiations are complete
Benefits of the Expanded Reservoir

- Ability to meet permit requirements, maintain safe and reliable water supply to the two counties with new LIP in place
  - Increase from 3-7 days to 26-55 days stored supply
- Improved river withdrawal flexibility
  - Fills when river flow is normal/high
  - Allows conservation of river withdrawals in droughts
- Conserving withdrawals during low flows lessens impact on downstream users and reduces strain on river
Formal Endorsements of Support

- S.C. Reps. Neal and Long
- S.C. Sen. Gregory
- Catawba-Wateree Water Management Group
- Lancaster City and County councils
- Kershaw Town Council
- Heath Springs Town Council
- Katawba Valley Land Trust
- Lancaster Chamber of Commerce
- Lancaster Economic Development Corp.
Committed to Good Stewardship

- We are a member of Catawba-Wateree Management group and CW-DMAG and implements LIP conservation protocols
- We believe expanded reservoir helps protect this valuable water resource and our customers