Catawba-Wateree Water Supply Master Plan

Project Update from the Catawba-Wateree Water Management Group to the Catawba-Wateree River Basin Advisory Commission

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July 27, 2012

Catawba-Wateree Water Management Group

19 Members with Intakes in the 11 Reservoirs and Main Stem of the Catawba

CWWMG Members	
Belmont, NC	Lenoir, NC
Camden, SC	Lincoln County, NC
Catawba-River Water Supply Project	Longview, NC
Charlotte, NC	Lugoff-Elgin Water Authority, SC
Chester Metro, SC	Mooresville, NC
Duke Energy	Morganton, NC
Gastonia, NC	Mount Holly, NC
Granite Falls, NC	Rock Hill, SC
Hickory, NC	Statesville, NC
	Valdese, NC

Agenda

- Project Scope
- Project Schedule
- Stakeholder Advisory Team
- Project Funding Status
- Future Water Projections
- CHEOPS Modeling Update
- Safe Yield Research Project Integration

Catawba-Wateree Water Supply Master Plan

A Collaborative Process to Identify Water Supply Needs vs. Availability and Develop a Plan to 'Close the Gap'

Strategy	Description	Total Basin Change in Water Yield (mgd)
BL – 01	Baseline For Comparison to Yield Scenarios	-
CC – 01	Low Impact of Climate Change on Water Supply	74
CC - 02	High Impact of Climate Change on Water Supply	0
YS – 01	Lower Existing Intakes in the Upper Catawba Basin	159
YS – 02	Lower Existing Intakes in Middle Catawba Basin	0
YS – 03	Re-route Existing Effluent Flows Upstream	251+
YS – 04	Reduce Per Capita Water Demands for Public Water Supplies	*~20 year extension of sustainable demand*
YS – 05	Increase Off-Stream Storage in middle Catawba Basin	0
YS – 06	Raise target operating levels in reservoirs	137
YS – 07	Utilize inter-basin transfer during drought	0
YS – 08	Reduced impact of sedimentation in reservoirs	0

Project Scope

- Secure Funding Assistance
- Manage Stakeholder Process
- Update Future Water Demand Projections
- Develop Future Modeling Scenarios
- Review/Revise LIP (i.e. drought management plan)
- Identify Water Demand/Conservation Opportunities
- Identify Water Supply Regionalization Opportunities
- Other Tasks (public ed., regulatory, GIS integration, project ID, ERP)
- Water Supply Master Plan Development

Project Schedule Update

Month	Key Activities/ Decisions	Note
Jun – 12	Present Future Projections Identify Stakeholder Advisory Team (SAT)	
Jul – 12	Finalize/Consensus on Future Projections Auth. Phase II-B, Finalize Funding Plan Mobilize SAT Modeling Meeting(s) with NC/SC	
Aug – 12	SAT Meeting #1 Establish the New CHEOPS Base Model Review SY Determination Methodology CHEOPS Model Update for NC	SAT – role, overview, projections
Sep – 12	Modeling Scenarios, Sensitivities – Rd. 1 CHEOPS Model Update for NC Review LIP for Recomm. Rev. – Rd. 1	
Oct – 12	SAT Meeting #2 Demand/Conservation – Goals/Benefits Analysis of Rd. 1 - Scenarios Regionalization Discussions	SAT – modeling approach, scenarios
Nov – 12	Regionalization Discussions (2 wkshps) Analysis of Rd. 1 – Scenarios Public Awareness/Education - Analysis	
Dec – 12	Regionalization Discussion (2 wkshps) Presentation of Rd. 1 – Scenarios	

Project Schedule Update

Month	Key Activities/ Decisions	Note
Jan – 13	SAT Meeting #3 Modeling Scenarios, Sensitivities – Rd. 2 Analysis of Rd. 2 – Scenarios	SAT – Rd. 1 results
Feb – 13	Presentation of Rd. 2 – Scenarios Modeling Scenarios, Sensitivities – Rd. 3	
Mar – 13	SAT Meeting #4 GIS Development/Integration Review LIP for Recomm. Rev. – Rd. 2 Analysis of Rd. 3 Scenarios	SAT – Rd. 2 results, governance
Apr – 13	Water Quality Modeling – Discussion GIS Development/Integration ERP – Analysis/Discussion Analysis of Rd. 3 Scenarios	
May – 13	ERP – Analysis/Discussion Regulatory Issues – Analysis/Discussion	
Jun – 13	SAT Meeting #5 Overall Recommendations/Conclusions Draft Master Plan – Development	SAT – Rd. 3 results, final comments
Jul – 13	CW-WMG Review of Draft Master Plan	
Aug – 13	SAT Meeting #6 Master Plan – Final Completion	SAT – celebration

Stakeholder Advisory Team

- Purpose
  - Provide key input into key elements of Master Plan
  - Provide input into recommendations for governance and management of the Catawba-Wateree River Basin
- Advisory only
  - Not regulatory, nor oversight
  - No relationship to FERC relicensing
- Stakeholder Advisory Meetings
  - Six proposed

Stakeholder Advisory Team

Proposed Total ~ 21 (With Periodic Updates to Bi-State Commission)

Stakeholder Advisory - Proposed Team Members	
Local Government Organizations	**Resource Agencies**
Catawba Regional COG	NC-Division of Water Quality
Centralina COG	NC-Division of Water Resources
Western Piedmont COG	NC-Wildlife Resource Commission
Isothermal Regional COG	SC-Dept. of Health and Env. Control
Town of Newton	SC-Dept. of Natural Resources
Non-Governmental Agencies	**Water Industry/Others**
C-W Relicensing Coalition	Resolute Forest Products
Recreation Interests	Siemens Westinghouse
Carolina Canoe Club	South Carolina Electric & Gas
Lake Norman Marine Commission	International Paper
Lake Wylie Marine Commission	Nicholas Institute (Duke) – Bill Holman
Mt. Island Lake Marine Commission	UNC (SOG) – Richard Whisnant

Project Funding

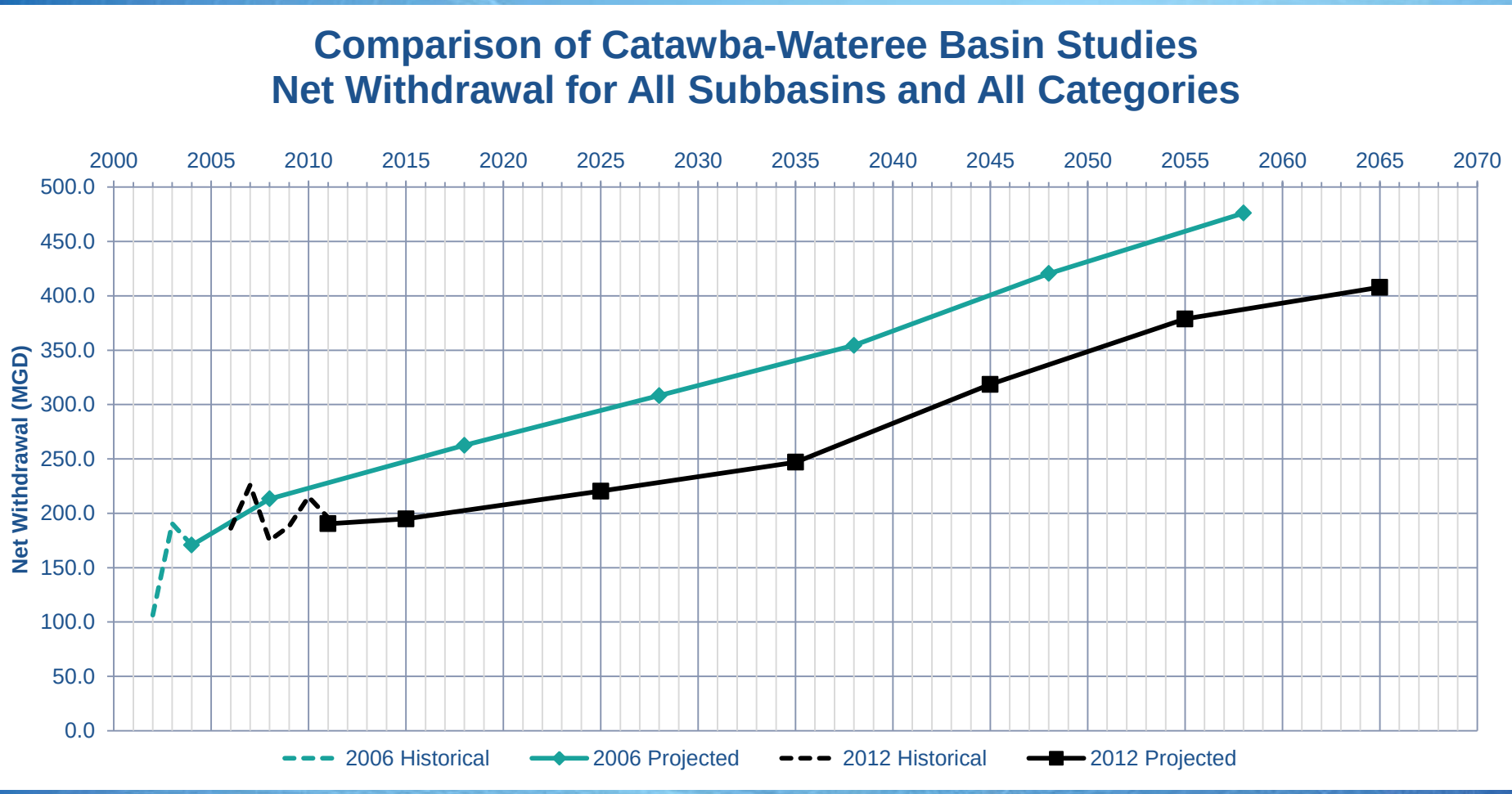
Current Status

Description	Amount	Notes
Phase II – A – Master Plan	$430,000	
Phase II – B – Master Plan	$764,088	
Subtotal	**$1,194,088**	
Funding Commitments/Request		
NC-DENR	$400,000	
South Carolina	$250,000	
Duke Energy Foundation	$200,000	
Bank of America	TBD	$100,000 requested, pending
PepsiCo. Foundation	TBD	$100,000 requested, pending
Wells Fargo	$ 0	
Coca Cola Foundation	$ 0	
	$850,000	**Current Funding Support**

Projections Summary – The Changing Face of Water Use in the C-W River Basin

C-W Basin - Net Withdrawal Total Basin

Comparison of Revised Projections to Previous Projections



Net Withdrawal – Total Public Water/WW

Comparison of Revised Projections to Previous Projections

Net Withdrawal - Power

Comparison of Revised Projections to Previous Projections

Net Withdrawal – Lake Norman

Comparison of Revised Projections to Previous Projections

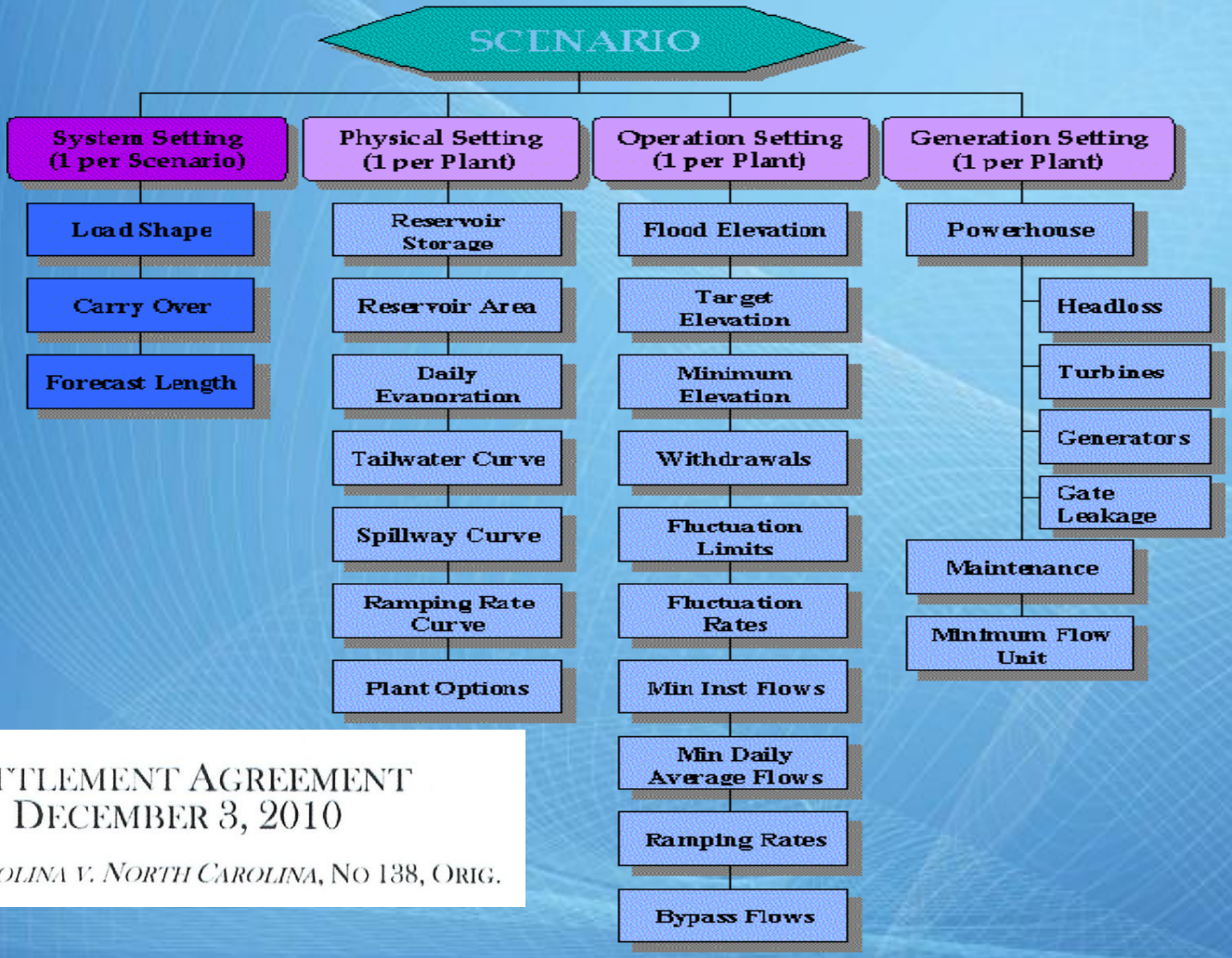
PWS – Withdrawal Projection Contingency

Seeks to Avoid Allocation Concern and Provides Flexibility

Entity	Base	…	2065	2065 (75%)	2065 (25%)
James – City A	5	…	10	3.75	1.25
Rhodhiss – City B	10	…	20	7.50	2.50
Hickory – City C	5	…	10	3.75	1.25
Lookout Shoals – Town of D	10	…	20	7.50	2.50
Norman – City E	5	…	10	3.75	1.25
Mt. Island Lake - Town of F	50	…	100	37.5	12.50
Wylie – City G	10	…	20	7.50	2.50
Fishing Creek Reservoir – City H	5	…	10	3.75	1.25
Wateree – Town of I	10	…	20	7.50	2.50
Total	**110**		**220**	**82.5**	**27.5**
					Cont.

CHEOPs Modeling for Master Plan

Existing Basin Model is Reservoir Focused



SETTLEMENT AGREEMENT
DECEMBER 3, 2010

SOUTH CAROLINA V. NORTH CAROLINA, NO 138, ORIG.

CHEOPs Modeling for Master Plan - Enhancements

Conformance with SL 2010-143 and NC-DENR Requirements

- Update to provide tools for individual user database – support server access
- Base model update to include existing known tributary w/r Nodes > 100,000-gpd
- Base model update to include tributary identified ecological flow points
- User tools to add Nodes, allocate inflow and w/r connectivity
- Update DSS support
- Update reporting to daily time step to reduce output file size

CHEOPS Modeling

- Inflow hydrology data set has been updated from 1929 through 2010
- Update base model core from VB to .Net to enhance run-time response
- Basin-Wide LIP included in existing Model in user defined table format
- Withdrawal and Returns are provided in user defined table format

CHEOPS Modeling Input to New Baseline

CRA – Mutual Gains Scenario

2002 DOR

2006 WSS Net Withdrawal Projections/SY

CRA – Mutual Gains Scenario

2007 DOR

C-W WSMP Net Withdrawal Projections/SY

1. LIP Lookup
2. LIP – Action Response Time (Duke)
3. LIP – Action Response Time (Others)
4. Climate Change Impacts
5. Recreation Flow Release Modification
6. Safe Yield Research Project – Opportunities

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50. Water Conservation Scenarios

- What is New Base vs. Alternative Scenario vs. Sensitivity

Strategy	Description	Total additional safe yield (mgd)	Financial impacts	Environmental impacts	Public impacts
BL – 01	Baseline operations	-	N/A	N/A	N/A
CC – 01	Low impact of climate change	0	N/A	N/A	N/A
CC – 02	High impact of climate change	-74	N/A	N/A	N/A
CC – 03	Climate change from model ensemble	-74	N/A	N/A	N/A
YS – 01	Lower existing critical intakes in the upper Catawba-Wateree Basin	87	○	○	◉
YS – 02	Lower existing critical intakes in the middle Catawba-Wateree Basin	0	◉	◉	◉
YS – 02A	Lower existing critical intakes in middle Catawba (Mtn. Island Lake)	0	○	○	◉
YS – 03	Re-route existing effluent flows to upstream reservoir(s)	141	●	●	○
YS – 03A	Re-route existing effluent flows during LIP Stage 3 or 4 only	141	◉	◉	○
YS – 04	Reduce per capita water demands for public water supplies	~30+ years	○	○	○
YS – 04A	Reduce per capita water demands for residential customers only	~20 years	○	○	○
YS – 05	Increase off-stream storage in middle Catawba-Wateree Basin	0	●	●	○
YS – 05A	Increase off-stream storage in middle Catawba (LIP Stage 3 or 4)	0	●	●	○
YS – 06	Raise target operating levels in reservoirs by 1’-0”	87	○	○	◉
YS – 07	Eliminate inter-basin transfers during drought conditions	0	●	○	●
YS – 08	Reduce impact of future sedimentation in reservoirs	0	◉	◉	○
YS – 09	Reduce future power water use in key reservoirs by relocating demand	~20 years	◉	○	◉

Research Summary and Key Findings

- Model code refinements
  - LIP sensitivity
  - Critical intake versus LIP minimums
  - Accessing upstream storage
  - Recreation release timing
  - LIP time to enforce
- Yield enhancement strategies work
- Combined strategies for bigger success
- Climate change has potential for impacts
- Collaborative solutions are necessary
- Consensus on defining failure

Safe Yield Research Project Findings in Relationship to Master Plan

- Water Yield Enhancement Strategies to Carry Forward
  - Lowering Existing Intakes in Upper Catawba and Other Locations
  - Re-route Existing Effluent Flows Upstream During Drought
  - Reduce Water Demands by Established %
  - Raise Target Operating Levels
  - Re-evaluate Location of Large Future Water Demands (e.g. Power)
- How Do Combinations of The Yield Enhancement Strategies and 'Updates' From the Previous Slide Impact Water Supply

Questions/Discussion