Sustainable

Improves human life while carrying out a “Capacity to Support”

Implies Responsible Proactive Decision Making and Innovation to minimize Negative Impact

• Alternative Selection
• Design
• Organization
### Historical Perspective

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>Early 1970s</td>
<td>State observes groundwater issues in central coastal plain, including water level declines and large cone of depression.</td>
</tr>
</tbody>
</table>
| 1998 | State Division of Water Resources (DWR) cites water supply dangers in region. Central Coastal Plain Capacity Use Investigation Report describes:  
- Increasing potential for salt water encroachment  
- Evidence of aquifer dewatering  
- Reports of extreme loss of well yield |
| 2001 | State approves the Central Coastal Plain Capacity Use Area Rules (CCPCUAR). |
| 2002 | CCPCUAR becomes effective. |
2005  
Martin County Water Resources Master Plan documents pending water supply deficit. Potential alternatives include:

- Ground Water Aquifers
- Roanoke River
- CCPCUA Boundary Change

2007  
Martin County Regional Water and Sewer Authority (Martin County, Williamston, Robersonville) incorporated. Authority is created to deal with water deficit on a regional level.

2009  
Authority studies water supply alternatives. Preliminary Engineering Report (PER) and Environmental Assessment (EA) started.
<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
</table>
| 2009 | PER develops alternatives for 2 MGD supply. These include:  
• Castle Hayne WTP  
• Reverse Osmosis WTP (in Salty Zones of Cretaceous Aquifers)  
• Roanoke River WTP  
• Unconfined (?) Black Creek WTP + Castle Hayne WTP |
| 2009 | PER alternatives presented to Authority and member entities. Roanoke River WTP selected. |
| 2009 | USDA approves PER. |
| 2010 | USDA approves funding for the project. USDA funding includes up to $18.2M loan and $2.8M grant (12.4%). Other proposed funding sources: EDA, Rural Center. |
2010
Authority applies for $8.5M in funding from North Carolina Drinking Water Revolving Fund (DWSRF). State offers $3M, including $1.5M in disadvantaged community program (DCP). Project must be permit-ready.

2011
Project design and water pilot testing program started.

2012
Design submitted for permits. MCRWASA applied for DWSRF funding in the amount of $2.013M to offset EDA funds not acquired.

2013-2015
Pre-Qualifications for WTP Contractors Due Mid-February.
Project advertisement scheduled for March.
Receipt of bids scheduled for May.
Construction Complete Fall 2015
CCPCUAR

• Effective August 1, 2002
• Intent:
  • protect long term productivity of Cretaceous Aquifers
  • allow the use of ground water at a rate not exceeding the recharge rate
• Withdrawal reductions in 3 phases over 16 years.

<table>
<thead>
<tr>
<th>Zone</th>
<th>Phase 1 Reduction August 1, 2008</th>
<th>Phase 2 Reduction August 1, 2013</th>
<th>Phase 3 Reduction August 1, 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dewatering Zone</td>
<td>25% from base rate</td>
<td>50% from base rate</td>
<td>75% from base rate</td>
</tr>
<tr>
<td>Salt Water Encroachment Zone</td>
<td>25% from base rate</td>
<td>50% from base rate</td>
<td>75% from base rate</td>
</tr>
<tr>
<td>Declining Water Level Zone</td>
<td>10% from base rate</td>
<td>20% from base rate</td>
<td>30% from base rate</td>
</tr>
<tr>
<td>Permitting Only Zone</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>
# Aquifers In Martin County

<table>
<thead>
<tr>
<th>Well</th>
<th>Aquifers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robersonville</td>
<td>Upper Cape Fear</td>
</tr>
<tr>
<td>Martin Co. WSD 2</td>
<td>Black Creek</td>
</tr>
<tr>
<td></td>
<td>Upper Cape Fear</td>
</tr>
<tr>
<td>Hamilton #2</td>
<td>Upper Cape Fear</td>
</tr>
<tr>
<td>Hassell</td>
<td>Upper Cape Fear</td>
</tr>
</tbody>
</table>

![Graph showing aquifer locations in Martin County](image-url)
CCPCUA Cretaceous Aquifer Zones in Martin County

- 30% Reduction Required
- 75% Reduction Required
- No Reduction Required
## Water and Sewer Districts and Approved Base Rates

<table>
<thead>
<tr>
<th>District</th>
<th>Approved Base Rate (MGD)</th>
<th>Required Reduction</th>
<th>Future Permitted Withdrawal Rate (MGD)@2018 Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MCRWASA Entities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>WSD 1</td>
<td>0.224</td>
<td>30%</td>
<td>0.157</td>
</tr>
<tr>
<td>WSD 2</td>
<td>0.504</td>
<td>75%</td>
<td>0.126</td>
</tr>
<tr>
<td>WSD 3 &amp; 4</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
<tr>
<td>MCRWASA</td>
<td>0.490</td>
<td>30%</td>
<td>0.343</td>
</tr>
<tr>
<td>Williamston</td>
<td>1.08</td>
<td>75%</td>
<td>0.270</td>
</tr>
<tr>
<td>TOTAL</td>
<td>2.30</td>
<td>As Above</td>
<td>0.896</td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Robersonville</td>
<td>1.29</td>
<td>75%</td>
<td>0.321</td>
</tr>
</tbody>
</table>
Water Demands And Supplies
Aquifers
Surface Water - Roanoke River

Drainage Area – 9,070 sq mi
7Q10 - 1020 cfs
20% of 7Q10 – 145 mgd
Water Quality - Good
Project Alternatives

Option 1
Proposed Castle Hayne Aquifer Well Field, 2 MGD

Option 2
Proposed Cretaceous (salty) Aquifer Well Field, 2 MGD

Option 3
Proposed Roanoke River Raw Water Intake, 2 MGD

Option 4
Proposed Roanoke River RBI Well Intakes, 2 MGD

Option 5
Proposed Black Creek Aquifer Well Field, 1 MGD and Proposed Castle Hayne Aquifer Well Field, 1 MGD
MCRWASA Water Treatment Plant – Project Description

- Construction of a 2 million gallon/day water treatment plant on the Roanoke River
- Will provide water to Williamston and County Water District #2
- Penco Well (using CCPCUA water credits) will supply water to County Water District #1
- MCRWASA to provide “average daily demand” for Williamston and 2 county districts
Selected Alternative

- Take advantage of river as a resource
- Source water Capacity
  - Sustainable into Next generation
- Excellent Quality
- Surface Water – RBI
- Reliable WTP Process
- Wastewater Assimilative capacity
Project Cost / Funding

- Proposed expenditures:
  - Construction Cost .......... $22,424,698
  - Contingency ................ $1,121,235
  - Engineering Services ...... $2,183,714
  - Other ........................ $1,296,500
  - TOTAL ........................ $27,026,142

- Proposed funding:
  - USDA Loan .................. $18,170,000
  - USDA Grants ................ $6,803,142
  - DWSRF Loan/Grant .......... $2,013,000
  - Rural Center Grant ......... $40,000
  - TOTAL ........................ $27,026,142

- Note: DWSRF Loan of $402,600 and “Grant” of $1,610,400
# Updated Schedule

<table>
<thead>
<tr>
<th>PROJECT TASK</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pilot Testing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Design / Permitting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Easement / Property Acquisition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Submit All Items to USDA</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-Qualification of Contractors</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Bidding</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contract Award</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td></td>
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</tr>
</tbody>
</table>

### CCPCUAR

<table>
<thead>
<tr>
<th>Phase 1 Reductions (25% / 10%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
</tr>
<tr>
<td>2012</td>
</tr>
<tr>
<td>2013</td>
</tr>
<tr>
<td>2014</td>
</tr>
<tr>
<td>2015</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phase 2 Reductions (50% / 20%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
</tr>
<tr>
<td>2012</td>
</tr>
<tr>
<td>2013</td>
</tr>
<tr>
<td>2014</td>
</tr>
<tr>
<td>2015</td>
</tr>
</tbody>
</table>
Water Rates

Three Systems that have different retail Rates

WTP added $4.95/1000

Increased water rates average by $17 - $20 per month (Avg 3700 )
MCRWASA Water Treatment Plant Construction
MCRWASA Water Treatment Plant Construction
MCRWASA Water Treatment Plant Construction
MCRWASA Intake Site - Moratoc Park
MCRWASA Penco Well
Organizational

Establish Authority - Why?

- **Common purpose / issues** – Authority created to deal with aquifer water deficit on a regional level.
- **Northeastern NC** has a history of regional collaboration, due to scarce resources.
- **Gained efficiencies / economies of scale**
- **Shared resources**
Establish Authority - How?

- Incorporated in 2007
- By-laws created in 2008-09
Establish Authority - How? (continued)

- Multiple inter-local agreements, including agreements about:
  - Short-term loans (Authority borrowed from County)
  - Purchase agreement ("Take or Pay")
  - Acceptance of sewer flow
  - Temporary ORC services for certain infrastructure
  - Modification of member infrastructure (ammonia facilities)
Operations - Several staffing options were considered for the water treatment plant, including:

- Hiring internal staff,
- Contracting with one of the member organizations, and
- Contracting with an outside private contractor.
Operations - United Water selected to operate the plant

- Not a lot of surface treatment plants in NE North Carolina (small employee pool)
- Contracting with experienced company determined to be the most efficient, cost-effective way to operate the plant
- Company is experienced with treatment process, as well as opening plants
Organizational

Other Issues

- Dealing with permitting / funding timetables
- Leadership transitions
- Changing dynamics of partnership - loss of a partner
- Need for detailed, written agreements to govern all aspects of partnership
- Consensus can be difficult
Other Issues (continued)

- Managers in legislative role, as members of Authority Board of Directors
- Challenge of public information / education / relations
- Further collaboration? Utility merger?