



Wake County Sustainability Task Force News

Wake County Water Resources

At the June Wake County Sustainability Task Force Meeting we learned about water resource management efforts by Raleigh, Cary, and Wake County. Representatives of corresponding water management departments presented information about water supply sources, demand, conservation, and critical water resource issues. After presentations, the task force members were asked to identify issues that had not yet been discussed in the realm of water resources. We have summarized the presentations and question comment periods below. Each of the three presentations is available online at the project website. www.ncsu.edu/weco/wake

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Water Resources in Town of Cary, NC

Leila Goodwin, Water Resources Manager for the Town of Cary

Jordan Lake is the water supply for Cary, Apex, Morrisville, and RTP South (Wake County). Cary treats and delivers drinking water to these areas. The Army Corps of Engineers manages the lake for flood control, water supply, low flow augmentation, and recreation. Low flow augmentation involves making sure there is enough water in the river below the dam. The NC Environmental Management Commission controls allocations of water from the lake, and the NC Division of Water Resources manages these allocations. 39% of the available water is allocated for Cary, Apex, Morrisville, and RTP South. Of the 50,000 water accounts, 70% are residential and 30% are commercial – both by customer and volume.

Water conservation must be aimed at the residential sector to succeed. The water demand is seasonal. The water treatment plant is designed for the peak which occurs in summer. In 2007 the average was about 15 million gallons a day (mgd) and the peak was about 23 mgd. The projection for 2030 is for an average annual demand of about 30 mgd. This projection is from 2007 data and a new projection is currently underway. Cary has a tiered rate structure; meaning after a certain amount of water use each month, the customer must pay more per unit. The average per capita consumption is 97 gallons / day.

The three pronged conservation program includes regulations, education, and incentives. An example of one of these programs is the High Efficiency Toilet program. Cary tracked customer water consumption for those who installed an HET. See the chart below. (Factors beyond total water use, such as additional family members or other changes are not tracked.)

conservation + efficiency = reduction in use

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NEXT MEETING

Thursday, July 15

Wake County Commons Building

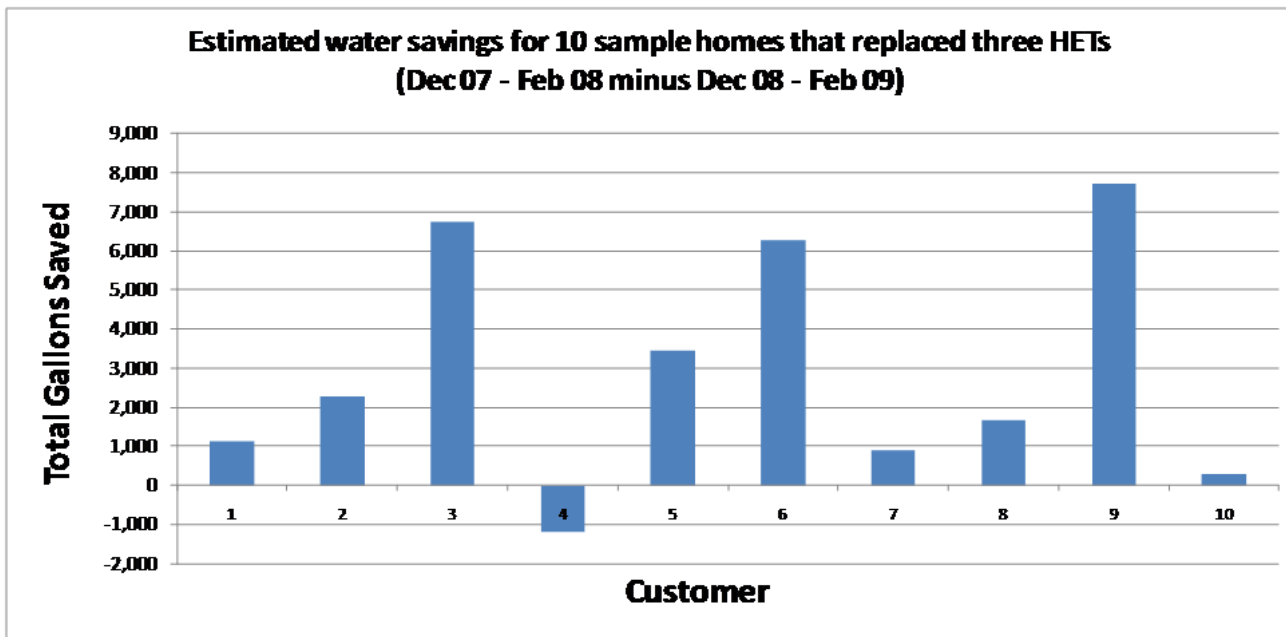
4011 Cary Drive
Raleigh, NC 27610

4:00– 6:00 p.m.

Meeting topic:

- Economics of natural resource

Cary - continued



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The **Jordan Lake Partnership** consists of 12 local governments or government agencies: Apex, Cary, Chatham County, Durham, Hillsborough, Holly Springs, Morrisville, Orange County, OWASA (Orange Water and Sewer Authority), Pittsboro, Raleigh, Wake County. Durham is the lead agency.

Goals of the Partnership:

- Sustainability, conservation, and efficiency
- Case study in cooperation and communication
- Provide a forum for collective interests and efforts
- Ensure regional/basin-wide ability to meet long term water supply needs

The Partnership does not:

- Make ANY policy decisions or
- Prepare individual applications for allocation

Critical Water Supply Issues for the Town of Cary include:

- irrigation
- increasing complexity due to competing objectives, public expectations, & regulations
- length of time to implement new projects: targets, people, rules change
- potential for future changes in streamflow
- long-range planning

The Town of Cary is planning for greater potential variability in the future, including a mutual aid policy for helping during drought times.

Comments in response to questions:

- Newer homes in Cary are using more irrigation.
- The Jordan Lake Partnership priority is currently to look at need and will turn to other things once that need is determined.
- The current allocation of Jordan Lake is 63% of the total allowance.
- Cary has incentives for using drought tolerant vegetation, such as its turf buyback program.
- Reuse water is available from 2 wastewater treatment plants to residential accounts nearby and to specific commercial accounts.
- If used sustainably, Jordan Lake should be an adequate water supply for a very long time.
- Cary has never raised prices enough to know what would happen if real market costs were allowed to operate. We do know that use is elastic and it does respond to tier rates.
- Water isn't priced to cover infrastructure costs and other ture costs of delivering clean water.

Water Resources in Raleigh, NC

Kenny Waldroup, Assistant Director, Raleigh Public Utilities Department

The City of Raleigh Utilities Service Area includes 7 communities consisting of 450,000 people: Raleigh, Garner, Knightdale, Rolesville, Wake Forest, Wendell, and Zebulon.

The average water use in Raleigh is 106 gallons/day/per capita. National indoor water use is 70 gallons/day/per capita. We do not have numbers for indoor versus outdoor use only, but have put a priority on obtaining those numbers.

National studies show that residential conservation and efficiency have the potential to reduce indoor per capita water use by about 35%, down to 45 gpd.

Falls Lake and Swift Creek (Lake Benson and Wheeler) are the existing water sources. The proposed Little River Reservoir is a future water source. Together they can provide a reliable 50 year yield of 93 mgd and record drought yield of 89 mgd. Alternatives to the Little River Reservoir must provide 13 mgd, the 50 year reliable yield of the proposed reservoir.

The 30 year plan for Raleigh is based on 3% growth/yr with no change in usage patterns.

A very big issue for the future is infrastructure degradation and upkeep - we currently have a water loss ratio less than 10%. \$120 million a year in capital improvements needed for water infrastructure replacement and 180 million a year is needed for wastewater infrastructure replacement.

Alternatives to the proposed Little River reservoir project include:

- A. Falls Lake: raising normal pool, dredging, reallocation of storage away from sediment pool and conservation pool. The full storage of the lake is subdivided into "pools" or storage units for sediment, flood control, and conservation. The conservation pool includes municipal water supply. [See diagram on next page]
- B. Expand Lake Benson and Wheeler (Swift Creek)
- C. Jordan Lake

- D. Kerr lake
- E. Middle Creek
- F. Buffalo Creek
- G. River intakes on the Neuse
- H. Offline Storage near proposed river intakes
- I. Development of groundwater supplies
- J. Purchase water
- K. Water conservation and efficiency
- L. Reuse
- M. Combination of above
- N. No action
- O. Other lakes, such as Harris and stormwater lakes

Ongoing efforts with the proposed Little River reservoir:

- In-stream flow studies to quantify the amount of water needed to support ecological integrity downstream of the proposed reservoir. (preliminary studies due Sept 2010)
- Mitigation acquisition – to acquire adequate wetlands and stream restoration credits required to build the reservoir
- Engineering alternatives analysis
- Draft environmental impact statement (due Sept 2010)

Comments in response to questions:

- Lake Raleigh (owned by NCSU) and Lake Johnson were not set aside for water supply and are probably no longer viable options, in addition to being very small sources.
- Raleigh does not expect new municipalities to join into the water supply system, especially due to inter basin transfer (IBT) issues. IBT is moving water from one river basin watershed to another.
- Higher density development could help with water use and efficiency, but is a function of both infrastructure and human habit (water use.)

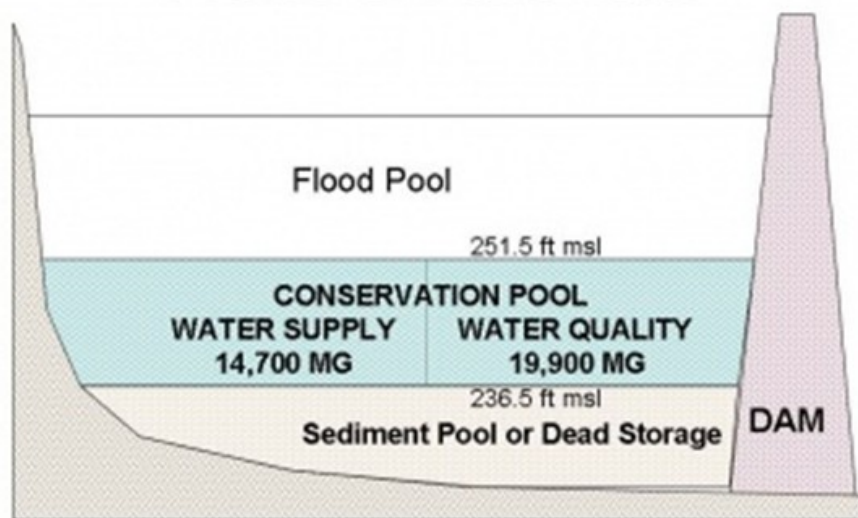
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Raleigh - *continued*

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- City residents can drill private wells, but an application and permit is required. Within some merger communities wells are either encouraged or prohibited.
- What about the complaint, "You're still increasing rates and we still have to conserve." During the recent record setting drought, Raleigh did not have the water to sell to its customers at the level they were use to using it, and had to ask for conservation. Raleigh needs revenue to run the system and revenue is driven by use. During the drought, a surcharge was suggested, but not supported politically, so the city cut expenditures to balance its budget. It has been suggested that Raleigh charge a flat rate to raise revenue for infrastructure maintenance, allowing for the water department to always have base revenue. Raleigh charges \$36.50 per month, compared to the market rate or "full cost pricing rate" which is closer to \$140, which includes infrastructure maintenance and replacement costs. Currently, Raleigh and other water/sewer system nationwide are not near the investment potential needed to maintain our system.
- The cost of replacing infrastructure is what brings us closest to real market costs. Society would need to accept using 37 gpd which is the amount of water per person that would allow us to not build a new reservoir, under drought conditions.
- Over time the water bill has not increased much, especially compared to other utilities. Consider how much people pay for cable, a luxury. Currently it could be 3x what we pay for water, a need.
- Infill developments take infrastructure improvements into account, but they are a small contribution to the system.

Profile of Falls Lake



The volume of both Jordan and Falls Lakes is divided into virtual sections, consisting of flood control storage, conservation storage, and sediment storage. Water supply and water quality (low flow augmentation) and are a part of the conservation storage section. This is a representation of Falls Lake. A similar representation can be made for Jordan Lake



Water Resources in Wake County, NC

Melinda Clark, Wake Country Watershed Manager

NC designates specific uses for water in an effort to identify, determine and monitor water quality. Some designated uses of waters include water supply, aquatic life, recreation, and fish consumption. The state conducts basinwide assessment of surface waters every 2 years, - using biological, physical and chemical data. Local governments also sample, adding to the available data. Surface waters not supporting their designated uses are put on the 303d list (the impaired list). This is a reference to section 303d in the US Clean Water Act. NC requires corrective action plans to address impairments, which may include Nutrient Management Strategies and Total Daily Maximum Loads. Both Falls and Jordan Lakes are on the 303d impaired list, as well as 124 miles of streams in Wake County as of 2008. The primary source of impairment is sediment and nutrients.

Wake County Watershed Management Programs and Services include: erosion and sedimentation control, septic tank systems, stormwater and floodplain management, -field investigations, water quality sampling, education and outreach. The purpose of our education program is to inform citizens and engage them in the stewardship of County resources.

The County is developing local watershed plans with the goal of comprehensive management and restoration strategies which includes an

inventory of projects to be implemented to improve water quality.

The County's first water quality report is due August 2010. The report uses 21 environmental indicators including chemical, biological and physical parameters to assess the health each watershed and to document trends.

Comments from Wake County staff in response to questions:

- The percentage of stream miles that are impaired is increasing, but some of that is due to more streams being assessed.
- Past county water recommendations are being summarized and will be sent out to the task force.
- In response to "Will we ever go to countywide sewer and eliminate septic tanks?" - County Land Use Plans prohibit the extension of public water and sewer service into Water Supply Watersheds, which are zoned low density.
- Upon completion of watershed studies, there is not necessarily money budgeted for implementation. The County will use the remediation projects and strategies identified in the plan to seek grants and collaborate with other agencies to leverage resources
- Sediment from urban stormwater runoff and development are the major contributors to impairment of water bodies.
- *Note: Groundwater users are not factored into Cary or Raleigh long range plans. A high percent of septic systems in the County are impaired, and not functioning properly.

What is missing from these conversations on water?

The task force was asked to answer the following question at their tables:

What is missing from these conversations on water? Members wrote their answers on flipcharts and presented them to the group.

What is missing from these conversations on water?

Table A

- Growth – accommodating growth, the changing nature of growth, how to execute policies on growth
- Water is not just a county issue – it's a regional issue

(Continued on page 6)

Watershed Education for Communities and Officials

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What is missing? - *continued*

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What is missing from these conversations on water?

Table B

- Codes that may restrict the use of reclaimed water, particularly for residential use. (Are commercial building codes more progressive?)

Table C

- We have no solutions for conflicting issues, such as the HOA rules requiring cool season grass, or green grass, yet best management practices say to use warm grass, or a drought has made the grass go dormant.
- We don't have a definition of sustainability
- We need to talk about more than just new development; we need to look at all development. New development is incorporating many stormwater controls already.
- What about maintenance of these stormwater controls?
- We need to take definitive steps to address maintenance of pipes in the ground. Where will the revenue come from?
- New development regulations should not allow potable water for irrigation
- We need education of existing development to decrease water use.
- The biggest bang for the buck is to decrease water use.

Table D

- Private Sector Representation
- Diverse Perspectives
- Social/Equity Concerns
- International Perspective
- Baseline
- Cost Benefit of not addressing vs. addressing concerns
- Relationships between Problems, Solutions, Parties

Table E

- Enforcement of existing regulations versus new regulations
- Cooperation and coordination among communities/water systems
- Stormwater utility fees and full cost pricing

Table F

- Funding for infrastructure
- How to address social/community value issues
- What is important to Cary vs. Apex vs. Raleigh, etc.