Greenville Utilities Commission,
Town of Farmville, Town of Winterville,
and Greene County
Proposed Interbasin Transfer

HEARING OFFICERS' REPORT

Environmental Management Commission

North Carolina
Department of Environment and Natural Resources
Division of Water Resources

November 2010

HEARING OFFICERS' RECOMMENDATIONS

The Environmental Management Commission held a Public Hearing on Greenville Utilities Commission's (GUC) Petition for an Interbasin Transfer Certificate (IBT) on November 5, 2009 at Pitt Community College in Winterville, North Carolina. The public record for that hearing was scheduled to close on December 4, 2009, however the Hearing Officers agreed to grant a one-time extension ending January 19, 2010. 37 people were in attendance for the Public Hearing on the IBT Petition. In total, 21 provided comments, either at the hearing (10 speakers) or during the public comment period.

Having reviewed and considered the comments received during the public review process and the requirements set forth in the North Carolina General Statutes, the Hearing Officers and the Division of Water Resources Director recommend that the Environmental Management Commission grant the Petitioners a 8.3 million gallon per day transfer from the Tar River Basin to the Contentnea Creek Basin and a 4.0 million gallon per day maximum transfer from the Tar River Basin to the Neuse River Basin with the following conditions:

1. If the Certificate Holders discontinue their cooperative service agreements with each other, the Division of Water Resources ("Division") shall specify the maximum amount of water each of the joint Certificate Holders may transfer individually. The total of these amounts shall not exceed a maximum of 8.3 million gallons on any calendar day from the Tar River Basin to the Contentnea Creek Basin and shall not exceed a maximum of 4.0 million gallons on any calendar day from the Tar River Basin to the Neuse River Basin. The allocations shall be based on projections of water use for 2030 compiled by the Division at the time it is notified of the discontinuance of the cooperative service agreement. The allocations shall take effect within 90 days of the Division issuing the allocations, or at such other reasonable time as the Division specifies. At that time, each condition of this Certificate shall apply to each Certificate Holder individually and the Division may require the Certificate Holders to make individual submissions of plans, reports, *etc.* as necessary.

2. This Certificate does not exempt the Certificate Holders or any other entity from compliance with any other requirements of law, including the Central Coastal Plain Capacity Use Area ("CCPCUA") Rules (15A NCAC 02E .0500).

3. If the Commission determines that the record on which this Certificate is based is substantially in error or if new information becomes available that clearly demonstrates that any Finding of Fact (including those regarding environmental, hydrologic, or water use impacts) pursuant to G.S. § 143-215.22I(f) was not or is no longer supported or is materially incomplete, the Commission may reopen and modify this Certificate to ensure continued compliance with G.S. ch. 143, art. 21, part 2A.

4. No individual unit of local government may receive surface water regulated under this Certificate unless the local government maintains, throughout its jurisdiction, requirements that are at least as stringent as the Division of Water Quality's Phase 2 post-construction stormwater controls or the post-construction stormwater controls of the Universal Stormwater Management Program ("USMP"), for all new development that disturbs more than one acre of land, including those projects that disturb less than one acre of land but are part of a common plan of development or sale that disturbs more than one acre of land.

5. Persons (including a unit of local government) subject to the CCPCUA Rules (15A NCAC 2E .0500) are required to reduce the volume and effects of withdrawals from ground waters through the

minimum conservation program requirements identified in 15A NCAC 2E .0502(d)(5)(A)-(C). In order to assure that conservation measures are used by the applicant to assure efficient use of water and avoid waste (in accordance with §143-215.22I(c)(3), no individual unit of local government or persons subject to the CCPCUA Rules (15A NCAC 2E .0500) may transfer water under this Certificate without first meeting the minimum conservation program requirements identified in 15A NCAC 2E .0502(d)(5)(A)-(C).

6. The Certificate Holders shall implement drought management measures that become more stringent as drought conditions increase in severity. These measures shall correspond to the most severe level of drought existing in the Tar River Basin. Prior to each Certificate Holder receiving any water under this Certificate, the Certificate Holder shall submit a Water Shortage Response Plan ("Plan") to the Division, for the Division's approval. Each Certificate Holder shall receive approval of the Plan from the Division, and shall have and maintain adequate authority and resources to implement and enforce the Plan. In order to be approved, the Plan must meet or exceed the requirements set forth in 15A NCAC 2E .0607 and be no less stringent than the Plan in Attachment A, which is incorporated herein. Any subsequent modifications to the Plan will be reviewed and approved by the Division. Adoption of the measures in Attachment A does not imply compliance with G.S. 143-355(l) or 15A NCAC 2E .0607.

   The Certificate Holders shall not transfer any water to any other unit of local government unless that unit of local government agrees to be bound by this condition in full.

7. The Certificate Holders shall report annually to the Division. The report shall detail water use over the calendar year by providing the following information:

   Interbasin Transfer Calculation

   GUC shall calculate daily and maximum-day interbasin transfers taking into account GUC's own metered water use for each billing cycle, with separate data provided for customers in the Tar River and Neuse River Basins. The calculation shall also take into account GUC's monthly average wastewater treatment plant discharge, and the daily bulk purchases from the Towns of Farmville, Winterville, and Greene County. GUC shall geocode (via the GUC GIS database) those water customers located in the Neuse River Basin so that the consumptive use for the GUC customers can be calculated. The consumptive use for Winterville, Farmville, and Greene County does not need to be calculated so long as the entire metered water use to these communities is the transfer to each of the respective Basins.

   Ground Water Use

   Farmville, Winterville, and Greene County shall submit their daily metered ground water use as reported to DWR's Ground Water Section for compliance with any CCPCUA permits. The documentation shall note the maximum-day water use by each system.

   Banked Water Summary

   Farmville, Winterville, and Greene County shall also provide a banked water summary. Each summary shall include the total volume of banked water available at the beginning and end of the calendar year, an accounting of any day during the year that banked water was used, and the total volume of banked water that was used during that day.

Compliance With Other Certificate Conditions

The Certificate Holders shall also provide a status report of compliance efforts for any other conditions required by this Certificate.

All annual reports shall be submitted by March 31st of the following calendar year. Following the submission of any reports under this Certificate, the Certificate Holders shall promptly provide to the Division any information requested by the Division that the Division concludes is needed to complete, correct or clarify the report. If the Certificate Holders believe that the Division's request does not conform to the reporting requirements, the parties shall confer promptly to resolve any differences.

When an annual report indicates that a daily transfer equaled or exceeded eighty (80%) percent of any transfer amount authorized by this Certificate, the Certificate Holders shall submit to the Division, by June 1 of the year in which such annual report was required, a detailed plan that specifies how the Certificate Holders intend to address future foreseeable water needs. So long as the Certificate Holders are required to have a local water supply plan, then the plan to address future foreseeable water needs shall be an amendment to the local water supply plan required by G.S. 143-355(l).

When an annual report indicates that a daily transfer equaled or exceeded ninety percent (90%) of any transfer amount authorized by this Certificate, then:

1. The Certificate Holders shall begin implementation of the plan submitted to the Division.
2. GUC shall immediately begin monthly reporting to the Division. Monthly reports shall be submitted within 45 days of the end of the month.

All reports submitted pursuant to this condition shall be signed by the Director of Public Utilities or person of similar position who shall affirm that, based on information collected during and belief formed after reasonable inquiry, the report is true, accurate and complete and that the Certificate Holder complied with the Certificate continuously throughout the year, except as specifically indicated in the report.

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Stan L. Crowe, Hearing Officer
Environmental Management Commission

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Stephen T. Smith, Chairman
Environmental Management Commission

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Kevin C. Martin, Hearing Officer
Environmental Management Commission

TABLE OF CONTENTS

Hearing Officer's Recommendations i
Table of Contents iv
Interbasin Transfer Certificate 1
Findings of Fact 2
(1) The necessity, reasonableness, and beneficial effects of the transfer 2
(2) Detrimental effects on the source river basin 4
(2a) The cumulative effect on the source major river basin of any water transfer or consumptive water use 6
(3) Detrimental effects on the receiving basin 6
(4) Reasonable alternatives to the proposed transfer 8
(5) Use of impounded storage 9
(6) Purposes and water storage allocations in a US Army Corps of Engineers multipurpose reservoir 9
(7) Any other facts or circumstances necessary to carry out the law 9

Decision 11

Attachment A – Minimum Criteria for Drought Management Plan 15

Attachment B - Staff Response to Comments 19
Appendix 1: Explanation of IBT Management Strategy, ARCADIS
Appendix 2: Memo from DWR Concerning Compliance with CCPCUA program Requirements
Appendix 3: Summary of Water Conservation Requirements per CCPCUA Rules, ARCADIS
Appendix 4: Environmental and Economic Impacts of Water Supply Alternatives, ARCADIS
Appendix 5: Summary of Mitigation for Secondary and Cumulative Impacts
Appendix 6: Explanation of Hydrologic Analysis and Results Interpretation, ARCADIS
Appendix 7: Record of Public Comments received on IBT Petition

Attachment C- Notice of public hearings ..... Attachment C 1
i. Appointment of hearing officers
ii. Copy of NC Register publication
iii. Letter to persons identified in G.S. 143-215.22(i)
iv. Affidavit of Publication for The Standard Laconic
v. Affidavit of Publication for Washington Daily News
vi. Affidavit of Publications for The Daily Reflector
vii. Affidavit of Publication for the News Observer

Attachment D – Regulations ..... Attachment D1
1. Central Coastal Plain Capacity Use Area Rules 15A NCAC 2E .0500
2. Session Law 2006-246 Section 9(c) Post-Construction Practices
3. Regulation of Surface Water Transfers NCGS §143-215.22I
4. North Carolina Administrative Code NCAC 15A NCAC 02E .0401

INTERBASIN TRANSFER CERTIFICATE

ENVIRONMENTAL MANAGEMENT COMMISSION

Certificate Authorizing the Greenville Utilities Commission, the Towns of Farmville and Winterville, and Greene County
To Transfer Surface Water
From the Tar River Basin to the Neuse River and Contentnea Creek Basins
Under the Provisions of G.S. 143-215.22I

In April, 2009 the Greenville Utilities Commission (GUC), along with the Towns of Farmville, Winterville, and Greene County petitioned the Environmental Management Commission (EMC) for a Certificate to transfer 8.3 million gallons per day (MGD) from the Tar River Basin to the Contentnea Creek Basin and 4.0 MGD from the Tar River Basin to the Neuse River Basin. As part of the same Petition, they requested an emergency transfer provision that would allow the transfer of up to a total of 9.3 MGD from the Tar River Basin to the Contentnea Creek Basin and up to 4.2 MGD from the Tar River Basin to the Neuse River Basin.

A Public Hearing on the proposed transfer was held at Pitt Community College in Winterville, NC on November 5, 2009 pursuant to G.S. 143-215.22I. A Hearing Officer's report was prepared in October of 2010 and mailed to members of the EMC. The EMC considered the Petitioners' request at its regular meeting on November 18, 2010.

According to G.S. 143-215.22I(g), the EMC shall issue a transfer Certificate only if the benefits of the proposed transfer outweigh the detriments of the proposed transfer, and the detriments have been or will be mitigated to a reasonable degree. The EMC may grant the Petition in whole or in part, or deny it, and may require mitigation measures to minimize detrimental effects. In making this determination, the EMC is required to specifically consider:

1. The necessity, reasonableness, and beneficial effects of the transfer
2. Detrimental effects on the source river basin
2a. The cumulative effect on the source major river basin of any water transfer or consumptive water use
3. Detrimental effects on the receiving basin
4. Reasonable alternatives to the proposed transfer
5. Use of impounded storage
6. Purposes and water storage allocations in a US Army Corps of Engineers multipurpose reservoir
7. Any other facts or circumstances necessary to carry out the law.

In addition, the Certificate must require a drought management plan describing the actions a Certificate Holder will take to protect the source Basin during drought conditions.

The Commission Finds:

The members of the EMC reviewed and considered the complete record, which included the Hearing Officers' report, staff recommendations, the applicants' Petition, the Final Environmental Assessment (EA), the public comments relating to the proposed interbasin transfer, and all of the criteria specified above. Based on that record, the Commission makes the following findings of fact.

FINDING OF FACT

Greenville Utilities Commission, Farmville, Winterville, and Greene County
Petition for an Interbasin Transfer Certificate

(1) Necessity, Reasonableness, and Benefits of the Requested Transfer Amount

In 2001, the North Carolina Environmental Management Commission (EMC) enacted the Central Coastal Plain Capacity Use Area (CCPCUA) rules. These regulations were developed to control ground water withdrawals in the Cretaceous Aquifers in response to decreasing ground water levels and saltwater intrusion. The CCPCUA rules require that ground water users in 15 counties reduce their consumption in three phases between 2008 and 2018. Phase 1 requires a 25% reduction from an approved base rate by 2008, Phase II requires a 50% reduction by 2013, and Phase III requires a 75% reduction by 2018. The Town of Farmville, Town of Winterville, and Greene County currently rely on the Cretaceous Aquifers for water supply and are affected by the CCPCUA rules. In order to comply with the required reductions, these communities plan to purchase potable water from the Greenville Utilities Commission.

The Greenville Utilities Commission (GUC) operates an existing surface water treatment plant (WTP) on the Tar River. This plant is capable of producing a maximum of 22.5 million gallons per day (MGD) of potable water. In 2009, Greenville's average daily water use was approximately 13 MGD. GUC's excess plant capacity is sufficient to provide the Towns of Farmville, Winterville, and Greene County with a replacement water supply through 2030. Therefore, these three communities have signed purchase agreements with GUC.

The Town of Farmville and the majority of Greene County are located in the Contentnea Creek Basin- a sub-basin to the Neuse Major River Basin. The Town of Winterville and the southwestern portion of Greene County are located in the Neuse River Basin. Since Greenville's WTP is in the Tar River Basin, GUC's sales to these communities constitute an interbasin transfer from the Tar River Basin to the Neuse River Basin and Contentnea Creek Basin.

To support the sale of water to these communities, GUC has requested an interbasin transfer certificate for the transfer of up to 8.3 MGD to the Contentnea Creek Basin and 4 MGD to the Neuse River Basin. This transfer request represents an estimated maximum-day transfer capacity to each basin through 2030. GUC does not have the ability to meet simultaneous, system-wide peak demands; therefore the purchasing systems will use banked ground water as an alternate source during times that peak demands exceed GUC's available capacity.

DWR supports this water banking concept where it is consistent with good management of the region's water resources and subject to prior review and approval of specific banking proposals. Many water systems throughout the Central Coastal Plain Capacity Use Area (CCPCUA) utilize water banking as a means of meeting their required reductions. Although all of the Petitioners are planning to bank ground water by reducing pump rates as much as possible during the early CCPCUA phases (banking will likely not be possible after 2015), there is no direct correlation between the amount of water that might be banked and the amount of the IBT request. The amount of water that might be banked by 2018 is an unforeseeable quantity. Similarly, it would be difficult to predict exactly when and how much banked water will be used. As a result, it is essential that the banked water remain as a "savings account" used by each community if and when supplemental water is required to meet peak demands. Therefore, the total volume of the anticipated water bank was not subtracted from the applicant's total IBT request.

A supplemental analysis of the amount of the request, an evaluation of the peaking factors used by the Petitioners in support of their request, and a discussion of the Petitioners' IBT management strategy is presented in the Staff Response to Comments, included as Attachment B to these findings. Based on these analyses, the Petitioners' IBT request for an 8.3 MGD maximum day transfer from the Tar River Basin to the Contentnea Creek Basin and 4.0 MGD from the Tar River Basin to the Neuse River Basin is consistent with the shortfall caused by the CCPCUA reductions.

GUC is also requesting an emergency transfer provision that would allow an additional 1 MGD transfer to the Contentnea Basin (up to 9.3 MGD total) and an additional 0.2 MGD to the Neuse Basin (up to 4.2 total). This provision would only apply during emergency events where ground water is not available to the purchasing communities (such as major mechanical/electrical failure). GUC requests that DWR notification be required to trigger the emergency transfer provision.

The Hearing Officers have chosen not to grant an emergency condition**.** G.S. §143-215.22L(q) specifically outlines the procedure by which water systems may request an emergency water transfer. Should the Petitioners need such a transfer, that request should be submitted to the Department in accordance with the applicable statutes.

> ***§143-215.22L(q)*** *Emergency Transfers. – In the case of water supply problems caused by drought, a pollution incident, temporary failure of a water plant, or any other temporary condition in which the public health, safety, or welfare requires a transfer of water, the Secretary of Environment and Natural Resources may grant approval for a temporary transfer. Prior to approving a temporary transfer, the Secretary shall consult with those parties listed in subdivision (3) of subsection (c) of this section that are likely to be affected by the proposed transfer. However, the Secretary shall not be required to satisfy the public notice requirements of this section or make written findings of fact and conclusions of law in approving a temporary transfer under this subsection. If the Secretary approves a temporary transfer under this subsection, the Secretary shall specify conditions to protect other water users. A temporary transfer shall not exceed six months in duration, but the approval may be renewed for a period of six months by the Secretary based on demonstrated need as set forth in this subsection.*

Based on the record the Commission finds the transfer of a maximum daily amount of 8.3 MGD from the Tar River Basin to the Contentnea Creek Basin and a maximum daily amount of 4.0 MGD from the Tar River Basin to the Neuse River Basin is necessary to provide a replacement water supply to Petitioners in the Central Coastal Plain Capacity Use Area. Surface water from the source basin is readily available in that the Greenville Utilities Commission has sufficient existing water treatment plant capacity to meet these systems' needs through 2030.

Based on the record, the Commission finds that the IBT Management Strategy will be an important factor in the ability of the Petitioners to meet demands while maintaining compliance with the Central Coastal Plain Capacity Use Area Rules (15A NCAC 2E .0500) and the conditions of this Certificate. Therefore this Certificate will include a Compliance and Monitoring Plan to ensure that the maximum daily transfer amounts are not exceeded and the Petitioners' IBT Management Strategy is followed in the manner set forth in the Petition.

The Commission also finds that G.S. §143-215.22L(q) specifically outlines the procedure by which water systems may request an emergency water transfer. Should GUC need such a transfer, that request should be

submitted to the Department in accordance with the applicable statutes. Therefore an emergency transfer provision will not be granted as a condition of this Certificate.

(2) Detrimental Effects on the Source Basin

The Greenville Utilities Commission performed a hydrologic analysis to evaluate the impact of the interbasin transfer on the Tar River Basin. This analysis included the development of a long-term flow record at Greenville, the generation of flow statistics to characterize the Tar River under both existing and future water use scenarios, and a spreadsheet-based hydrologic accounting model.

The hydrologic accounting model simulates water withdrawals and wastewater discharges to predict their effect on stream flow in the Tar River. The model accounts for all existing and projected withdrawals and discharges on the Tar River, in excess of 100,000 gallons per day, from the Rocky Mount Dam to the GUC WWTP discharge. The USGS flow record developed for the Greenville gage was used as the base flow record. Model simulations included the following scenarios:

1. Current flows with no IBT
2. Current flows with 2030 average day IBT
3. Current flows with 2030 maximum IBT withdrawal
4. Predicted 2030 flows with no IBT
5. Predicted 2030 flows with 2030 average day IBT
6. Predicted 2030 flows with 2030 maximum IBT withdrawal

The hydrologic analysis performed by GUC was evaluated by the Hearing Officers and DWR staff during the comment period for the Petition. A discussion of this analysis and its conclusions are included in the Staff Reponses to Comments, presented in Attachment B to these Findings. In summary, the model shows that the effects of the interbasin transfer are negligible at average stream flows and higher, with a slightly larger impact during low flows. Tidal influences were not simulated in the model.

Although each of the modeling analyses performed in support of the Petition indicate a difference between the IBT and non-IBT scenarios, it is reasonable to categorize these differences as insignificant for the following reasons:

1. The modeling analysis is conservative. DWR asked the applicant to include a number of very conservative assumptions so that a "worst case impact" could be identified. These assumptions include reducing GUC's wastewater discharges on the Tar River by the amount of the IBT. For many of the modeling scenarios, this change removed the entire volume of GUC's existing and projected wastewater discharge from the Tar River. The model also assumes a sustained maximum day transfer (as opposed to a predicted average day transfer with peaks approaching the max-day).

2. IBT and State Regulations require a drought management plan. GUC is required to have a Water Shortage Response Plan (WSRP) containing specific, identifiable triggers that would be put into effect in the event of drought. This plan is also required to be included in the Certificate. Therefore GUC (and the other Petitioners) would likely be under water restrictions during low flow events. GUC's WSRP triggers are tied to the stage of water at the intake location and the location of the salt water wedge.

3. The model did not take into account tidal effects. An important feature of the lower Tar River is that it is tidally influenced. Since salt water is heavier than freshwater, the salt water wedge creates a dam-like effect that pushes freshwater upstream during low flow periods. GUC closely monitors the salt water wedge since their WTP is not designed to treat saline water. GUC has also noted instances where net negative downstream flow has been recorded; however, there has been adequate water over the raw water intake. Due to the tidal influence, the Tar River channel is never depleted. This tidal buffering effect would also reduce the impact on aquatic life during critical periods.

4. The IBT request will be met with existing infrastructure. GUC has not requested an expansion of their WTP due to this request. They have sufficient capacity in their existing WTP to meet Farmville, Greene County, and Winterville's projected demands. The direct impact of their withdrawal was evaluated in the environmental documents developed (and approved) for the construction of the water treatment plant.

Due to the above-mentioned factors, and the fact that modeling results indicate that the IBT will have minimal impact on the existing stream flow; there are no expected impacts to the wastewater assimilation capacity of the Tar River Basin. Correspondingly, there are no anticipated impacts to water quality within the source basin.

The City of Rocky Mount provided detailed comments concerning the possibility that future studies, particularly DWR's Tar River Basin Model or the Tar River Basin Plan, might reveal additional impacts to the Tar River. In response, the Hearing Officers requested that Rocky Mount and GUC jointly recommend language for the special condition. While the parties were not able to come to a mutual conclusion, each entity individually recommended verbiage that was similar to reopeners previously used by the EMC in other IBT Certificates. The most significant difference is that Rocky Mount proposed that any decision by the Commission to grant or deny a request to reopen the certificate should be subject to administrative and judicial review according to Chapter 150B of the General Statutes. However, the Hearing Officers have determined that it would not appropriate for a condition of the Certificate to attempt to define any right a party may or may not have in challenging the EMC's decision. Therefore the Hearing Officers do not recommend that Rocky Mount's proposed language be used in the Certificate. Instead, the reopener language will be consistent with language used in other IBT Certificates.

This interbasin transfer will not spur significant growth in the source basin. Farmville, Winterville, and Greene County are not located in the Tar River Basin. Greenville is the only city in the Tar River Basin that receives water from GUC's WTP. This plant has sufficient capacity in its existing water and wastewater treatment plants to continue providing water to the City of Greenville, and doing so would not require an IBT Certificate. GUC's wastewater treatment plant will not be modified as a result of this IBT.

There are no construction activities proposed in association with this project. Therefore, no direct or indirect impacts to aquatic or terrestrial habitats are expected to occur from the proposed interbasin transfer. Similarly, indirect impacts to state and federally protected species are expected to be insignificant.

No direct or indirect impacts to hydroelectric power generation, navigation, or recreation are expected to occur within the Tar River Basin will occur as a result of the proposed transfer.

Based on the record and the results of the hydrologic evaluations that were performed, the Commission finds that the interbasin transfer is not likely to have a significant impact on the source basin. However, due to the

Commission's concerns that future studies may reveal additional impacts to the Tar River Basin, the Hearing Officers have recommended that the following reopener be added to the Certificate:

"If the Commission determines that the record on which this Certificate is based is substantially in error or if new information becomes available that clearly demonstrates that any Finding of Fact (including those regarding environmental, hydrologic, or water use impacts) pursuant to G.S. § 143-215.22I(f) was not or is no longer supported or is materially incomplete, the Commission may reopen and modify this Certificate to ensure continued compliance with G.S. ch. 143, art. 21, part 2A. "

The Commission finds that to protect the source basin during drought conditions and as authorized by G.S. § 143-215.22I(h), a drought management plan is required. The drought management plan will describe the actions that the Petitioners will take to protect the Tar River Basin during drought conditions.

2(a) Cumulative Effect on Source Basin of any Transfers or Consumptive Water Use Projected in Local Water Supply Plans

Data from local water supply plans, including current and projected water use, was used to develop input data sets for the hydrologic accounting model. The model accounted for all existing and proposed water withdrawals and discharges to the Tar River over 100,000 gallons per day. Based on the results of that model, there was no significant impact to the Tar River under the modeled scenarios.

Based on the record and as stated in (2) the Commission finds that the interbasin transfer is not likely to have a significant impact to the source basin. However, due to the Commission's concerns that future studies may reveal additional impacts to the Tar River Basin, the Hearing Officers have recommended that the following reopener be added to the Certificate:

"If the Commission determines that the record on which this Certificate is based is substantially in error or if new information becomes available that clearly demonstrates that any Finding of Fact (including those regarding environmental, hydrologic, or water use impacts) pursuant to G.S. § 143-215.22I(f) was not or is no longer supported or is materially incomplete, the Commission may reopen and modify this Certificate to ensure continued compliance with G.S. ch. 143, art. 21, part 2A. "

(3) Detrimental Effects on the Receiving Basins

Direct Impacts

Winterville's wastewater is treated by the Contentnea Metropolitan Sewerage District via the Contentnea Creek Wastewater Treatment Plant (WWTP). This plant is permitted to discharge 2.58 MGD of wastewater to an unnamed tributary to Contentnea Creek in the Neuse River Basin.

Farmville and the majority of Greene County are located in the Contentnea Creek Basin. Farmville operates a 3.5 MGD WWTP which discharges to this Basin. The majority of the wastewater treatment in Greene County is handled by on-site septic systems; however, there are three small centralized treatment systems: the Snow Hill WWTP permitted for 0.5 MGD, the Hookerton WWTP permitted for 0.06 MGD, and the Maury Sanitary Land District WWTP permitted for 0.225 MGD. All of these facilities discharge to the Contentnea Creek Basin.

Since none of these facilities will be requesting an expansion (or changes to existing permit limits) to accommodate additional flows generated by the IBT, the IBT is not predicted to cause direct impacts to the receiving basins.

There are no construction activities proposed in association with this project. Therefore, no significant direct impacts to aquatic or terrestrial habitats within the receiving basin are expected to occur as a result of the proposed transfer. No direct or indirect impacts to navigation, recreation, or flooding are predicted to occur as a result of this proposed project based on the minimal effect on stream flows.

Indirect Impacts

Indirect impacts are expected to be insignificant and would occur with any replacement water source. However, the following information is provided as a demonstration that any indirect impacts that might occur will be mitigated. Included in the Staff Reponses to Comment (Attachment B) is a detailed summary of all zoning ordinances, land use plans, and other mitigative measures that have been put in place or are under development by the Petitioners.

Green County is rural and largely agricultural. According to the NC State Demographics Unit, the County is expected to grow at a modest rate of approximately 1% per year between 2010 and 2030. The rural and agricultural nature of the County is not predicted to change once the IBT replaces ground water as a water supply; therefore indirect impacts to the receiving basin due to growth are expected to be insignificant.

The Town of Farmville has experienced limited growth in the last 15 years, adding 180 residents between 1990 and 2004. The Town does not consistently record yearly census data, nor have they conducted population projections for the near future. It is reasonable to assume that the Town will continue to grow at the historical growth rate of approximately 0.25% per year. Based on these projections, indirect impacts to the receiving basin due to growth are expected to be insignificant.

Winterville has experienced increased growth and development within the past 15 years. The Town's population more than doubled between 1990 and 2006 when the population increased at an average rate of 11% per year. Based on its close proximity to Greenville, growth in Winterville is expected to remain strong in the near future. Future projections estimate the Town's growth at 4.5-5.8% per year.

All communities in the Tar Pamlico and Neuse River Major Basins are subject to nutrient management strategies. Both the Tar Pamlico and Neuse Nutrient Strategies have requirements for wastewater discharges, agriculture, buffers, and stormwater. All of the requirements, except those involving the development of a stormwater program, are applicable on a basin-wide basis. However the stormwater program requirements only apply to those local governments of a certain size, density, or estimated impact. Pitt County (including Winterville) and Greenville are required to develop stormwater programs under the Tar Pamlico Nutrient Strategy. However Farmville and Greene County fall below the thresholds for development of a stormwater program under the Neuse Nutrient Strategy. Similarly, these governments do not fall under the stormwater Phase II program due to their population and rural nature.

Therefore, the Hearing Officers have determined that an appropriate mitigative measure, above what these communities are already required to do under the Tar Pamlico and Neuse Nutrient Management Strategies, is the implementation of Phase II post-construction stormwater controls. The intent of this measure is to control any unforeseeable impacts due to growth that may occur as a result of the transfer. As previously

stated, Pitt County (including Winterville) and Greenville are already required to develop stormwater programs consistent with the Tar Pamlico Nutrient Strategy. Therefore this Certificate requirement would primarily impact Greene County and Farmville. The Hearing Officers have determined that implementing post-construction stormwater controls in these systems would serve to put in effect the most impactful control measures while not being overly burdensome to a small, rural water system.

Based on the record, the evaluation of impacts discussed in the Staff Response to Comments (included in Attachment B), the existing Nutrient Management Strategies in effect in the Tar River and Neuse River Basins, and the overall modest level of growth expected in Pitt and Greene Counties, the Commission finds that the IBT will not cause significant detrimental effects to the Contentnea or Neuse River Basins. However the EMC has determined that it is reasonable to require the Petitioner to mitigate any minor impacts due to growth that might be expected.

The Certificate condition will read as follows:

"No unit of local government may receive surface water regulated under this Certificate unless the local government maintains, for all areas that may receive surface water regulated under this Certificate, requirements that are at least as stringent as the Division of Water Quality's Phase 2 post-construction stormwater controls or the post-construction stormwater controls of the Universal Stormwater Management Program (USMP), for all new development that disturbs more than one acre of land, including those projects that disturb less than one acre of land but are part of a common plan of development or sale that disturbs more than one acre of land."

(4) Alternatives to the Proposed Transfer

The Petitioner evaluated the following alternatives to the interbasin transfer:

1. Development of an independent surface water source on Contentnea Creek
2. Development of an independent ground water source
3. Purchase of finished water from the Neuse Regional Water and Sewer Authority (NRWASA)
4. Purchase of finished water from the City of Wilson
5. Purchase of finished water from the Greenville Utilities Commission

The analysis shows that all of the alternatives, with the exception of those requiring the development of additional ground water wells, would require an interbasin transfer certificate for at least one of the Petitioners (either Farmville, Winterville, or Greene County). However the ground water alternatives were not identified as a sustainable due to the potential for the EMC to designate additional Capacity Use Areas in the future.

The reservoir alternative has the greatest environmental and economic impact. It is also likely that the construction of a reservoir in Greene County would be infeasible due to technical, environmental, and permitting complications.

The option of returning water to the source basin was evaluated in the EA. This option was excluded as being technically infeasible. Wastewater service in the area is not as widespread as water service. There is no countywide, centralized wastewater treatment plant (WWTP) in Greene County. While there are three small WWTPs (Snow Hill WWTP, the Hookerton WWTP, and the Maury Sanitary Land District WWTP), residents in

unincorporated areas rely primarily on septic systems. Costs for the construction of a countywide collection and treatment system were estimated at over $150 million. In Pitt County, wastewater is treated at the Farmville WWTP, the Contentnea Creek WWTP, and the GUC WWTP. Wastewater from the Town of Winterville is currently treated at the Contentnea Creek WWTP. According to the 2008 EA, Winterville has had discussions with GUC concerning future wastewater service, but there are no immediate plans to proceed with this option. If this option were pursued in the future, it would return a portion of the transferred water to the Tar River Basin.

Of all the identified alternatives, the only viable options were identified as the purchase of finished water from NRWASA, Wilson, or GUC. All of these options would utilize existing water treatment plant capacity and have comparable environmental impacts. Also, as previously stated, all of the purchase alternatives would require that at least one Petitioner receive an interbasin transfer Certificate. Of these options, the purchase from GUC was identified as being the most economically practicable. A detailed summary of the alternatives, including economic and environmental impacts is included in the Staff Response to Comments.

Based on the record, the Commission finds that the selected alternative of purchasing water from Greenville Utilities Commission is the least environmentally damaging, the most cost effective, and the most technically feasible alternative for Farmville, Winterville, and Greene County.

(5) Impoundment Storage

This criteria is not applicable, as the Petitioners do not have an impoundment.

(6) Multipurpose Reservoir constructed by the United States Army Corps of Engineers

This criteria is not applicable, as the Petitioners do not use a reservoir.

(7) Other Considerations

Conservation is identified in the IBT statutes and the CCPCUA rules as an important component of both programs. NCGS §143-215.22I(c)(3) states that any Petition for an IBT must include a description of the conservation measures to be used by the applicant to assure efficient use of the water and avoidance of waste.

The CCPCUA rules, 15A NCAC 2E .0504, are more specific in that they require water systems in the capacity use area to develop a water conservation plan that includes the following elements. The rules require that each community develop a schedule of implementation for any requirement that has not yet been met:

1. Adoption of a water conservation-based rate structure, such as: flat rates, increasing block rates, seasonal rates, or quantity-based surcharges.
2. Implementation of a water loss reduction program if unaccounted for water is greater than 15%.
3. Adoption of a water conservation ordinance for irrigation, including such measures as: time-of day and day-of-week restrictions on lawn and ornamental irrigation, automatic irrigation system shut-off devices or other appropriate measures.
4. Implementation of a retrofit program that makes available indoor water conservation devices to customers (such as showerheads, toilet flappers, and faucet aerators).

5. Implementation of a public education program (such as water bill inserts, school and civic presentations, water treatment plant tours, public services announcements, or other appropriate measures).
6. Evaluation of the feasibility of water reuse as a means of conservation, where applicable.

The Hearing Officers concur with the public comments that the importance of conservation is critical and a requisite of a community requesting IBT water. The Staff Response to Comments includes a summary of the CCPCUA requirements and how those requirements have been met by each Petitioner. The Division of Water Resources has also agreed to begin requesting this information from all CCPCUA Permit holders beginning January 2011. Any permit holder whose conservation measures fail to meet the minimum program as described in 15A NCAC 2E .0502(d)(5)(A-C) will be required to adopt measures meeting these requirements or they will be issued an NOV. All water use conservation measures described in the CCPCUA rules will have to be adopted by the permit holder before their next permit renewal. Consequently, the minimum water conservation efforts recognized in the CCPCUA rules will be met as a condition of the permit.

The Hearing Officers have also recommended the addition of a special condition to the IBT Certificate that will not allow the Petitioners to transfer water until the minimum program requirements described in NCAC 2E .0502(d)(5)(A-C) has been met. The condition reads: "No person subject to the Central Coastal Plain Capacity Use Area Rules 15A NCAC 2E .0500 may transfer water under this Certificate without first meeting the minimum conservation program requirements identified in 15A NCAC 2E .0502(d)(5)(A-C) ."

Based on the record, the requirement outlined in NCGS §143-215.22I(c)(3), and the requirements of 15A NCAC 2E .0500, the Commission finds that it is reasonable to require each Petitioner subject to the Capacity Use Area Rules to meet the minimum conservation program requirements identified in 15A NCAC 2E .0502(d)(5)(A-C) before transferring water. The purpose of this requirement is to assure the efficient use of water and avoid waste.

DECISION

The Commission, on November 18, 2010, by duly made motions concludes that by a preponderance of the evidence based upon the Findings of Fact stated above that, with the limitations and conditions described herein, (1) the benefits of the proposed transfer outweigh the detriments of the proposed transfer, and (2) the detriments of the proposed transfer will be mitigated to a reasonable degree. Therefore, and by duly made motions, the Commission grants in part and denies in part the Petition of the Greenville Utilities Commission, the Town of Farmville, the Town of Winterville, and Greene County (collectively, "Certificate Holders") to transfer surface water from the Tar River Basin to the Neuse River Basin and Contentnea Creek Basin. The permitted transfer amount shall not exceed a maximum of 8.3 million gallons on any calendar day from the Tar River Basin to the Contentnea Creek Basin and shall not exceed a maximum of 4.0 million gallons on any calendar day from the Tar River Basin to the Neuse River Basin. These transfer amounts are independent of each other. This Certificate is effective immediately.

The Certificate is subject to the following conditions, imposed under the authority of G.S. § 143-215.22I:

I. COOPERATION OF CO-CERTIFICATE HOLDERS

If the Certificate Holders discontinue their cooperative service agreements with each other, the Division of Water Resources ("Division") shall specify the maximum amount of water each of the joint Certificate Holders may transfer individually. The total of these amounts shall not exceed a maximum of 8.3 million gallons on any calendar day from the Tar River Basin to the Contentnea Creek Basin and shall not exceed a maximum of 4.0 million gallons on any calendar day from the Tar River Basin to the Neuse River Basin. The allocations shall be based on projections of water use for 2030 compiled by the Division at the time it is notified of the discontinuance of the cooperative service agreement. The allocations shall take effect within 90 days of the Division issuing the allocations, or at such other reasonable time as the Division specifies. At that time, each condition of this Certificate shall apply to each Certificate Holder individually and the Division may require the Certificate Holders to make individual submissions of plans, reports, *etc.* as necessary.

II. COMPLIANCE WITH OTHER REGULATIONS

This Certificate does not exempt the Certificate Holders or any other entity from compliance with any other requirements of law, including the Central Coastal Plain Capacity Use Area ("CCPCUA") Rules (15A NCAC 02E .0500).

III. REOPENER

If the Commission determines that the record on which this Certificate is based is substantially in error or if new information becomes available that clearly demonstrates that any Finding of Fact (including those regarding environmental, hydrologic, or water use impacts) pursuant to G.S. § 143-215.22I(f) was not or is no longer supported or is materially incomplete, the Commission may reopen and modify this Certificate to ensure continued compliance with G.S. ch. 143, art. 21, part 2A.

IV. MITIGATION

No individual unit of local government may receive surface water regulated under this Certificate unless the local government maintains, throughout its jurisdiction, requirements that are at least as stringent as the

Division of Water Quality's Phase 2 post-construction stormwater controls or the post-construction stormwater controls of the Universal Stormwater Management Program ("USMP"), for all new development that disturbs more than one acre of land, including those projects that disturb less than one acre of land but are part of a common plan of development or sale that disturbs more than one acre of land.

V. CONSERVATION

Persons (including a unit of local government) subject to the CCPCUA Rules (15A NCAC 2E .0500) are required to reduce the volume and effects of withdrawals from ground waters through the minimum conservation program requirements identified in 15A NCAC 2E .0502(d)(5)(A)-(C). In order to assure that conservation measures are used by the applicant to assure efficient use of water and avoid waste (in accordance with §143-215.22I(c)(3), no individual unit of local government or persons subject to the CCPCUA Rules (15A NCAC 2E .0500) may transfer water under this Certificate without first meeting the minimum conservation program requirements identified in 15A NCAC 2E .0502(d)(5)(A)-(C).

VI. DROUGHT MANAGEMENT

The Certificate Holders shall implement drought management measures that become more stringent as drought conditions increase in severity. These measures shall correspond to the most severe level of drought existing in the Tar River Basin. Prior to each Certificate Holder receiving any water under this Certificate, the Certificate Holder shall submit a Water Shortage Response Plan ("Plan") to the Division, for the Division's approval. Each Certificate Holder shall receive approval of the Plan from the Division, and shall have and maintain adequate authority and resources to implement and enforce the Plan. In order to be approved, the Plan must meet or exceed the requirements set forth in 15A NCAC 2E .0607 and be no less stringent than the Plan in Attachment A, which is incorporated herein. Any subsequent modifications to the Plan will be reviewed and approved by the Division. Adoption of the measures in Attachment A does not imply compliance with G.S. 143-355(l) or 15A NCAC 2E .0607.

The Certificate Holders shall not transfer any water to any other unit of local government unless that unit of local government agrees to be bound by this condition in full.

VII. COMPLIANCE AND MONITORING PLAN

The Certificate Holders shall report annually to the Division. The report shall detail water use over the calendar year by providing the following information:

1. Interbasin Transfer Calculation

   GUC shall calculate daily and maximum-day interbasin transfers taking into account GUC's own metered water use for each billing cycle, with separate data provided for customers in the Tar River and Neuse River Basins. The calculation shall also take into account GUC's monthly average wastewater treatment plant discharge, and the daily bulk purchases from the Towns of Farmville, Winterville, and Greene County. GUC shall geocode (via the GUC GIS database) those water customers located in the Neuse River Basin so that the consumptive use for the GUC customers can be calculated. The consumptive use for Winterville, Farmville, and Greene County does not need to be calculated so long as the entire metered water use to these communities is the transfer to each of the respective Basins.

2. Ground Water Use

   Farmville, Winterville, and Greene County shall submit their daily metered ground water use as reported to DWR's Ground Water Section for compliance with any CCPCUA permits. The documentation shall note the maximum-day water use by each system.

3. Banked Water Summary

   Farmville, Winterville, and Greene County shall also provide a banked water summary. Each summary shall include the total volume of banked water available at the beginning and end of the calendar year, an accounting of any day during the year that banked water was used, and the total volume of banked water that was used during that day.

4. Compliance With Other Certificate Conditions

   The Certificate Holders shall also provide a status report of compliance efforts for any other conditions required by this Certificate.

All annual reports shall be submitted by March 31st of the following calendar year. Following the submission of any reports under this Certificate, the Certificate Holders shall promptly provide to the Division any information requested by the Division that the Division concludes is needed to complete, correct or clarify the report. If the Certificate Holders believe that the Division's request does not conform to the reporting requirements, the parties shall confer promptly to resolve any differences.

When an annual report indicates that a daily transfer equaled or exceeded eighty (80%) percent of any transfer amount authorized by this Certificate, the Certificate Holders shall submit to the Division, by June 1 of the year in which such annual report was required, a detailed plan that specifies how the Certificate Holders intend to address future foreseeable water needs. So long as the Certificate Holders are required to have a local water supply plan, then the plan to address future foreseeable water needs shall be an amendment to the local water supply plan required by G.S. 143-355(l).

When an annual report indicates that a daily transfer equaled or exceeded ninety percent (90%) of any transfer amount authorized by this Certificate, then:

1. The Certificate Holders shall begin implementation of the plan submitted to the Division.
2. GUC shall immediately begin monthly reporting to the Division. Monthly reports shall be submitted within 45 days of the end of the month.

All reports submitted pursuant to this condition shall be signed by the Director of Public Utilities or person of similar position who shall affirm that, based on information collected during and belief formed after reasonable inquiry, the report is true, accurate and complete and that the Certificate Holder complied with the Certificate continuously throughout the year, except as specifically indicated in the report.

NOTICE: The Certificate Holders may be jointly and severally responsible for compliance with certain terms, conditions and requirements stated herein, and therefore may be jointly and severally liable for penalties assessed to enforce such terms, conditions and requirements as provided in G.S. §143-215.6A.

This is the _____ day of _____, 2010.

_____
Stephen T. Smith, Chairman

- Attachment A -

MINIMUM CRITERIA FOR DROUGHT MANAGEMENT PLAN

Section A. The Water Shortage Response Plan ("Plan") shall include provisions that are at least as stringent as the following specific procedural and substantive provisions:

Stage 1 - Water Conservation Alert

A Stage 1 water emergency shall be declared in the event of an immediate water shortage or when any of the following conditions exist:

- There are three consecutive days when water demand exceeds 80% of the water production capacity.
- The average of the daily Tar River level measurements taken at the Water Treatment Plant Raw Water Pump Station is -1.0 feet Mean Sea Level or less.
- The location of the salt water interface in the Tar River is determined to be 10 miles or less from the Water Treatment Plant Raw Water Pump Station.

Water production capacity shall be defined as the maximum volume of water that meets state and federal standards that the water treatment process can produce during a twenty-four hour period. Water production capacity can vary depending on system component reliability and raw water conditions. The salt water interface shall be defined as the point where chloride levels in the Tar River are measured at 250 milligrams per liter just below the surface. During a declared Stage 1 water emergency the following voluntary water conservation practices shall be encouraged:

a) Inspect and repair all faulty and defective parts of faucets and toilets.
b) Use shower for bathing rather than bathtub and limit shower to no more than 5 minutes.
c) Do not leave faucets running while shaving, brushing teeth, rinsing or preparing food.
d) Limit the use of clothes washers and dishwashers and when used, operate fully loaded. Operate dishwashers after the peak demand hours of 6 to 10 p.m.
e) Limit lawn watering to that necessary for plant survival. Water lawns before the peak demand hours of 6 to 10 a.m.
f) Water shrubbery the minimum required. Water shrubbery before the peak demand hours of 6 to 10 a.m.
g) Limit vehicle washing.
h) Do not wash down outside areas such as sidewalks, driveways, patios, etc.
i) Install water saving showerheads and other devices.
j) Use disposable and biodegradable dishes where possible.
k) Install water saving devices in toilets such as early closing flappers.
l) Limit hours of water-cooled air conditioners.
m) Do not fill swimming or wading pools.

Stage 2 - Water Shortage Warning

A Stage 2 water emergency shall be declared in the event of an immediate water shortage or when any of the following conditions exist:

- There are two consecutive days when water demand exceeds 90% of the water production capacity.
- The average of the daily Tar River level measurements taken at the Water Treatment Plant Raw Water Pump Station is -1.5 feet Mean Sea Level or less.
- The location of the salt water interface in the Tar River is determined to be 7 miles or less from the Water Treatment Plant Raw Water Pump Station.

Water production capacity shall be defined as the maximum volume of water that meets state and federal standards that the water treatment process can produce during a twenty-four hour period. Water production capacity can vary depending on system component reliability and raw water conditions. The salt water interface shall be defined as the point where chloride levels in the Tar River are measured at 250 milligrams per liter just below the surface. During a declared Stage 2 water emergency the following activities shall be prohibited:

a) Watering lawns, grass, shrubbery, trees, flower and vegetable gardens except by hand held hose, container, or drip irrigation system. A person who regularly sells plants will be permitted to use water on their commercial stock. A golf course may water their greens. State, County and City licensed landscape contractors may water by hand held hose or drip irrigation any plants under a written warranty.
b) Filling swimming or wading pools, either newly constructed or previously drained. Make up water for pools in operation will be allowed.
c) Using water-cooled air conditioners or other equipment, in which cooling water is not recycled, unless there are health or safety concerns.
d) Washing any type of mobile equipment including cars, trucks, trailers, boats, or airplanes. Any persons involved in a business of washing motor vehicles may continue to operate.
e) Washing outside surfaces such as streets, driveways, service station aprons, parking lots, or patios.
f) Washing the exterior of office buildings, homes, or apartments.
g) Using water for any ornamental fountain, pool, pond, etc.
h) Serving drinking water in food establishments such as restaurants or cafeterias, unless requested to do so by a customer.
i) Using water from a public or private fire hydrant for any reason other than to suppress a fire or other public emergency or as authorized by the General Manager or his authorized representative.
j) Using water to control or compact dust.
k) Intentionally wasting water.
l) Commercial and industrial water customers shall achieve mandatory reductions in water usage through whatever means are available. A minimum reduction of 20% shall be the target, however a greater target reduction percentage may be required depending on the severity of the water emergency. Compliance with the reduction target shall be determined by the General Manager or his authorized representative. Variances to the target reduction

may be granted by the General Manager or his authorized representative to designated public health facilities.

Stage 3 – Water Shortage Danger

A Stage 3 water emergency shall be declared in the event of an immediate water shortage or when any of the following conditions exist:

- There is one day when water demand exceeds 100% of the water production capacity.
- The average of the daily Tar River level measurements taken at the Water Treatment Plant Raw Water Pump Station is -2.0 feet Mean Sea Level or less.
- The location of the salt water interface in the Tar River is determined to be 4 miles or less from the Water Treatment Plant Raw Water Pump Station.

Water production capacity shall be defined as the maximum volume of water that meets state and federal standards that the water treatment process can produce during a twenty-four hour period. Water production capacity can vary depending on system component reliability and raw water conditions. The salt water interface shall be defined as the point where chloride levels in the Tar River are measured at 250 milligrams per liter just below the surface. During a declared Stage 3 water emergency the following activities shall be prohibited, in addition to activities prohibited under Stage 2:

a) Watering lawns, grass, shrubbery, trees, and flowers.
b) Washing motor vehicles at commercial car wash establishments.
c) Watering any vegetable garden except by hand held hose, container, or drip irrigation.
d) Commercial and industrial water customers shall achieve mandatory reductions in water usage through whatever means are available. A minimum reduction of 50% shall be the target, however a greater target reduction percentage may be required depending on the severity of the water emergency. Compliance with the reduction target shall be determined by the General Manager or his authorized representative. Variances to the target reduction may be granted by the General Manager or his authorized representative to designated public health facilities.
e) In the event that the prohibition of the activities listed above is not sufficient to maintain an adequate supply of water for fire protection, all use of water for purposes other than maintenance of public health and safety shall be prohibited. Residential water use shall be limited to the amount necessary to sustain life through drinking, food preparation and personal hygiene.

The Certificate Holders may require that commercial and industrial water customers prepare plans detailing measures to be taken by them to achieve mandatory reductions in daily water usage during Stage 2 and Stage 3 emergencies. Such plans shall be completed within sixty (60) calendar days after receipt of notice to prepare them.

Any User who is found to have failed to comply with any of the mandatory restrictions may be fined up to five hundred dollars ($500) per day per violation. Enforcement of the mandatory restrictions and imposition of fines will be implemented according to the following schedule except in cases of gross noncompliance:

- First offense – Written warning
- Second offense – Fine up to two hundred dollars ($200)
- Third offense and further offenses – Fine up to five hundred dollars ($500)

Water service may be temporarily discontinued for failure to comply with the mandatory restrictions. All applicable penalty fees may be applied in the event of such service suspensions. In the event of continued noncompliance, removal of meter and service will be deemed proper and service will be discontinued and tap fees and deposits will be forfeited.

Section B. The Plan shall also include the following:

- The designation of a staff position or organizational unit responsible for the implementation of their Plan;
- Notification procedures that will be used to inform employees and water users about the implementation of the plan and required water conservation response measures;
- Specific measurements of available water supply, water demand and system conditions that will be used to determine the severity of water shortage conditions and to initiate water use reduction measures and the movement between various levels;
- Procedures that will be used to regulate compliance with the provisions of the plan;
- Procedures for affected parties to review and comment on the plan prior to final adoption;
- Procedures to receive and review applications for variances from specific requirements of the plan and the criteria that will be considered in the determination to issue a variance;
- An evaluation method to determine the actual water savings and the effectiveness of the Plan in meeting its stated objectives and reduction goals;
- Procedures for revising and updating the Plan to improve effectiveness based on the results of the evaluation method, and to adapt to new circumstances such as changes in the number or types of water sources.

-Attachment B-

STAFF RESPONSE TO COMMENTS

The Environmental Management Commission held a Public Hearing on Greenville Utilities Commission's (GUC) Petition for an Interbasin Transfer Certificate (IBT) on November 5, 2009. The public record for that hearing was scheduled to close on December 4, 2009, however the Hearing Officers agreed to grant a one-time extension ending January 19, 2010. This document includes a record of the comments that were submitted during that time, as well as responses from Division of Water Resources (DWR) staff. The Hearing Officers utilized the comments and staff response to make the recommended changes that are addressed in this document.

37 people were in attendance for the Public Hearing on the IBT Petition. In total, 21 provided comments, either at the hearing (10 speakers) or during the public comment period. The following individuals submitted comments. Each commenter was given a distinct ID number.

Table 1: Record of Public Comments Received on the IBT Petition

Commenter ID	Name	Affiliation	Method	Date
1	Barney Kane	Self	Email	12/4/2009
	Barney Kane	Self	Email	1/19/2010
2	Anne Bunnell	Self	Email	1/14/2010
3	John and Kathy Schermerhorn	Self	Email	10/27/2009
4	Heather Jacobs Deck	Pamlico-Tar Riverkeeper / SELC	Email	12/2/2009
	Heather Jacobs Deck	Pamlico-Tar Riverkeeper / SELC	Email	12/4/2009
	Heather Jacobs Deck	Pamlico-Tar Riverkeeper / SELC	Mail	12/4/2009
	Heather Jacobs Deck	Pamlico-Tar Riverkeeper / SELC	Email	1/19/2010
	Heather Jacobs Deck	Pamlico-Tar Riverkeeper / SELC	Verbal	11/5/2009
5	Douglas Jackson	Winterville	Mail	12/3/2009
	Terri Parker-Eakes	Winterville	Email	12/4/2009
6	Peter F. Varney	Rocky Mount	Mail	12/1/2009
	Glenn Dunn	Rocky Mount	Email	12/2/2009
	Kalika Guthrie	Rocky Mount	Email	1/19/2010
	Wayne Hollowell	Rocky Mount	Verbal	11/5/2009
7	Laura E. Williamson	Self	Email	1/13/2010
8	Wayne Caldwell	Self	Email	1/4/2010
9	Charles Schwartz	Self	Email	12/14/2009
10	Carolyn Reed	Self	Verbal/Written	11/5/2009
11	James Cooke, Jr.	Self	Mail	12/20/2009
12	Dave Schwartz	Self	Verbal/Written	11/5/2009
13	Alvin Woodlief, Jr.	Oxford	Mail	10/30/2009
14	Barry G. Parks	Wilson	Mail	12/8/2009
	Barry Parks	Wilson	Email	12/4/2009
15	Don Davenport	Greene County	Mail	11/18/2009
16	Bennie Heath	Greene County	Mail	12/3/2009
	Bennie Heath	Greene County	Verbal	11/5/2009
	Lisa Johnson	Greene County	Email	12/3/2009
17	Albert V. Lewis	Farmville/ Greene County	Mail	12/3/2009

	Robert Evans	Farmville	Verbal	11/5/2009
18	Randy Emory/ Ronald Elks	GUC	Email	1/15/2010
	David Briley	GUC	Verbal	11/5/2009
19	Byron Bateman	Self	Verbal	11/5/2009
20	Art Langrish	Sierra Club	Verbal	11/5/2009
21	John Craft	Town of La Grange	Verbal	11/5/2009

DWR staff reviewed the submissions and separated each comment into distinct sub-comments. Those sub-comments were then numbered. Those two ID numbers (the Commenter ID and the Sub-Comment ID) were then combined to yield a composite Comment ID #. The following figure provides an example of how public comments were captured.

Figure 1: Determination of Sub-Comments

The individual who submitted the following comment was assigned Commenter ID number 9. Within that submission, DWR staff was able to identify three distinct sub-comments. Those sub-comments were assigned Comment ID # 9.1, 9.2, and 9.3

Dear Ms. Ogallo,

Thank you for this opportunity to respond to the proposed draft petition for an interbasin transfer certificate.

I attended a recent public hearing on this matter at Pitt Community College in Greenville. After listening to the pros and cons of those who spoke, I was convinced that the citizens of Greenville should be deeply troubled about what is being proposed.

One of the major concerns that a number of individuals identified was that the proposed transfer appears to be a one-way flow of water from our area. In follow up comments, it was said that if the water must be given, then a return of the waste water should be made mandatory as a part of the agreement. 9.1

The folks in our region want to be good neighbors. In the event that an existing neighboring community was experiencing a lack of suitable drinking water, one would expect assistance to be forthcoming. However, if that neighboring community was expanding and using water in a manner not consistent with good conservation practices, then one would expect questions to be raised. 9.2

One can observe that new subdivisions are being built around Greenville. Some of these feature verdant lawns which undoubtedly are sustained and enhanced by frequent watering and fertilizers. Should scarce water be diverted from the Tar River so that new sub-divisions can create expansive lawns?

At a minimum, those communities requesting water should require their residents to use landscaping alternatives as a part of a larger conservation program. There are lawn substitutes for grass that tolerate light foot traffic and even moderate mowing. 9.3

Sincerely,

Throughout this staff response document, individual sub-comments are referenced by their assigned Comment ID #. The full text of all the comments received during the comment period, including a record of how those comments were characterized, is included for reference in Appendix 7.

TABLE OF CONTENTS

The staff response to comments has been organized into the following major topics. Within each topic is a list of the pertinent comments and a staff response.

I. Amount of Transfer
II. Conservation
III. Analysis of Alternatives
IV. Mitigation of Secondary and Cumulative Impacts
V. Impacts to the Tar River
VI. Direct Impacts to the Receiving Basin
VII. Construction of Temporary Dam Structure
VIII. Existing Financial Investment
IX. Impacts to Air Quality
X. Aquifer Storage and Recovery System
XI. Other Comments
XII. Recommendations to the Environmental Management Commission (EMC)

Appendix 1: Explanation of IBT Management Strategy, ARCADIS
Appendix 2: Memo from DWR Concerning Compliance with CCPCUA Program Requirements
Appendix 3: Summary of Water Conservation Requirements per CCPCUA Rules, ARCADIS
Appendix 4: Environmental and Economic Impacts of Water Supply Alternatives, ARCADIS
Appendix 5: Summary of Mitigation for Secondary and Cumulative Impacts
Appendix 6: Explanation of Hydrologic Analysis and Results Interpretation, ARCADIS
Appendix 7: Record of Public Comments received on IBT Petition

TOPIC I: AMOUNT OF TRANSFER

Several comments expressed concern that the amount of the requested transfer is higher than should be necessary to meet the needs of these communities. Comments point to such factors as the amount of the transfer request, the peaking factors used in the analysis, and the inclusion of an emergency transfer condition as being excessive.

Subtopic A: Necessity of Transfer Request

Comment ID #	Comment Text
14.2	In our opinion, Greenville is asking for a larger IBT than the minimum required. In fact they are requesting an amount large enough to supply as much as 93% of the maximum daily projected demand for a short term and 151% continuously of the average daily demand. CCPCUA rules only require up to a 75% reduction in the average daily demand of their permitted amount. Subtracting 75% from the Approved Base rate for Greene County, Farmville, and Snow Hill would only require 4.45 MGD from GUC to meet the demand for an average annual day and only 8.5 MGD for a maximum demand day, which is the day that GUC will only be transferring a minimal amount according to Table 2-3. We do not see the necessity for a request of 8.3 and 9.2 MGD respectively, and a total of as much as 13.4 MGD since GUC is also requesting to send 111% of the maximum daily demand to Winterville and 117% of the maximum daily demand for an emergency thru the year 2030. Even if you assume the unprecedented growth rates for Greene County, Farmville and Winterville are correct, this volume of transfer is unnecessary.
4.14	Along with our concerns regarding the inadequacies of the EA, we are especially concerned about the transfer amount requested by the applicant. The stated purpose of the IBT request in GUC's Petition is to aid the receiving communities' compliance with CCPCUA regulations, which require a 75% reduction in water withdrawals from the cretaceous aquifers phased over a 10-year period. The amount of ground water water withdrawal reductions that are required by the receiving communities are outline in Table 1. The total amount the communities need to replace this loss of ground water supply due to CCPCUA rules is 3.771 mgd. Therefore, the proposed IBT allows for significant growth over the time period evaluated and is incongruent with the project's stated objective of compliance with CCPCUA rules. The IBT certificate proposes an interbasin transfer of 8.3 mgd for the Towns of Farmville and Greene County Regional Water authority, as well as an additional 1.0 mgd for emergency conditions. The second certificate request proposes 4.0 mgd to the Town of Winterville with an additional 0.2 mgd for emergency conditions. The total transfer requested from the Tar River Basin to the Neuse River Basin is 12.3 with emergency conditions allowing up to 13.5 mgd. This amount is well in excess of the stated purpose of the IBT to aid the communities in compliance with the CCPCUA rules. The IBT does allow for significant growth; growth that would not be viable without the transfer of water via this IBT.

Staff Response

An important exercise in evaluating the amount of the transfer request is to examine the amount of water lost by the required Central Coastal Plain Capacity Use Area (CCPCUA) rule reductions. This is a complicated task for a number of reasons. First is that the allowable CCPCUA pump rate is a static volume that will not change as a community continues to experience established growth trends. The allowable ground water withdrawal in 2018 will be the same as the allowable withdrawal in 2050. Therefore, in determining how much water is "lost" due to the CCPCUA rules, a reference year must be chosen (i.e., X amount of water will be lost by Y date). However it is important to keep in mind that the reduction in available ground water will continue to restrict a community beyond any chosen date. A second complicating factor is that even during a year with a below average water use, a water system could reasonably experience (and must meet) a maximum day demand with a high peaking factor. So in answering the question of how much water is lost by the CCPCUA rules, it is important to consider that water systems must maintain the ability to meet a peak demand for short periods of time throughout a year. This is a critical issue to consider due to the fact that interbasin transfers are regulated based on a maximum day flow.

One way estimate the amount of water "lost" to the CCPCUA rules is to examine the amount of ground water that will no longer be available to meet average daily system demands by the time the necessary reductions have been made. The following table shows the Approved Base Rate (ABR) for each system, the allowable ground water withdrawal rate after each reduction, and the projected average daily shortfall for each community. All of the values are expressed in millions of gallons per day.

Table 2: Projected Average Daily Shortfall

		Farmville	Greene County	Winterville
	Approved Base Rate*	1.572	2.96	0.496
2008	Projected Average Daily Demand (ADD)	1.87	2.31	0.85
	Allowable Ground Water Withdrawal (after 25% CCPCUA Reduction)	1.179	2.22	0.372
	Projected Average Daily Shortfall	0.69	0.09	0.48
2013	Projected Average Daily Demand (ADD)	1.97	2.51	1.1
	Allowable Ground Water Withdrawal (after 50% CCPCUA Reduction)	0.786	1.48	0.248
	Projected Average Daily Shortfall	1.18	1.03	0.85
2018	Projected Average Daily Demand (ADD)	2.07	2.72	1.4
	Allowable Ground Water Withdrawal (after 75% CCPCUA Reduction)	0.393	0.74	0.124
	Projected Average Daily Shortfall	1.68	1.98	1.28

* 15A NCAC 2E .0504(1) defines the approved base rate as "the larger of a person's January 1, 1997 through December 31, 1997 or August 1, 1999 through July 31, 2000 annual water use rate from the Cretaceous aquifer system, or an adjusted water use rate determined through negotiation with the Division using documentation provided by the applicant."

As shown in Table 2, by the time the CCPCUA reductions are complete in 2018, the communities will be experiencing a combined average daily shortfall of 4.93 MGD (80% of 2030 average day demand). However, interbasin transfers are regulated as a maximum day flow. These average day demand shortfalls can be translated to a system wide maximum day demand shortfall by multiplying each system's ADD by its selected peaking factor and then subtracting the available ground water. This estimation provides a 2018 max-day shortfall of 9.5 MGD, which is 77% of the 2030 max-day IBT request.

Similarly, we can calculate the average and max-day shortfalls through 2030. Using the above methodology, we find that the projected average daily shortfall in 2030 is expected to be 6.3 MGD. On a max-day, this can be translated to 11.9 MGD. This is consistent with GUC's IBT request for 11.9 MGD to meet Farmville, Winterville and Greene County's demands through 2030, plus a small amount for GUC's own service area in the Neuse River Basin. As an aside, had GUC used historical maximum peaking factors to develop the IBT management strategy, the communities would have needed to request a transfer in excess of 17 MGD.

Based on this methodology, 77% of GUC's IBT request could be considered a total replacement of ground water through 2018. The remaining 23% could be considered for growth and peak management during the remaining 12 years of the project horizon.

The Hearing Officers recommend that no changes be made to the Petitioner's maximum day IBT request.

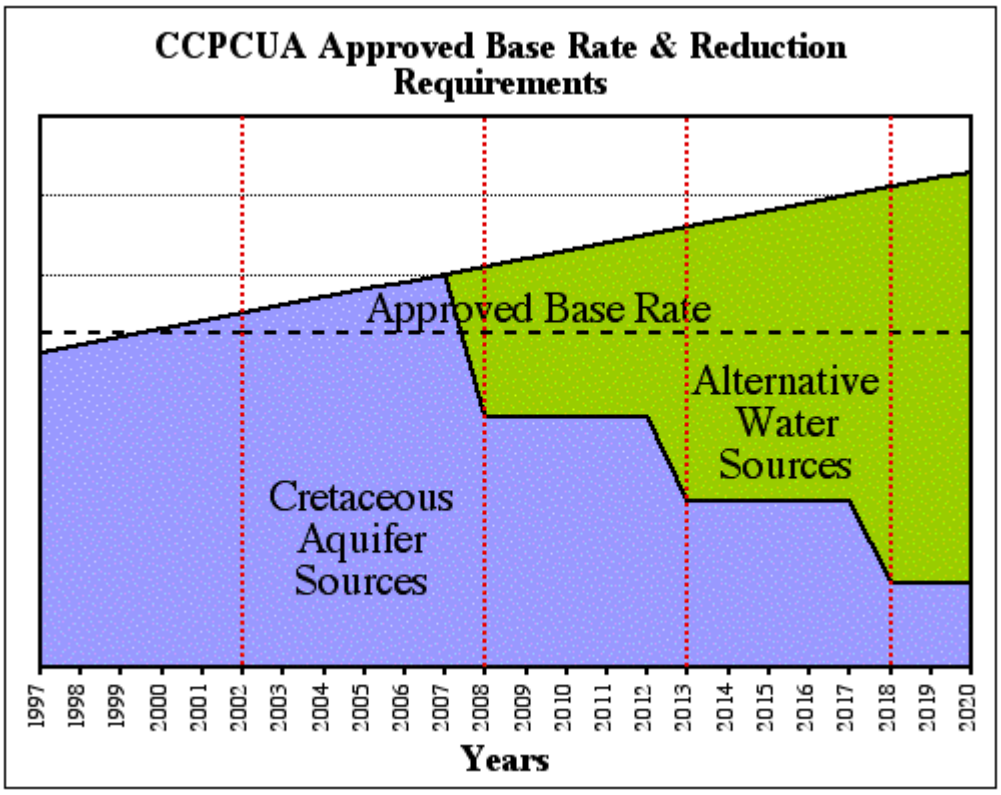
Subtopic B: Approved Base Rate (ABR)

Comment ID #	Comment Text
1.1	The Approved Base Rate (ABR) used by the NCDWR to determine historical use from the Cretaceous aquifer in the capacity use area is flawed. The ABR applied was determined based on historical use at a time when there were no conservation rates in place, pumping and treatment costs were low, and energy costs for water production were also low. Thus, these ABR's may be presumed to be based upon water use patterns that were excessive. There was little reason to limit use or apply conservation practices. A more realistic (much lower) ABR should have been used. It is therefore also true that the reductions proposed from the artificially high ABR do not reflect any serious conservation effort. Neither is there serious hardship caused in these capacity use areas by meeting the percent reductions required in the early years of the limitations. Reductions of twenty-five percent could be achieved quite simply. Reductions of fifty percent represent only a small challenge in conservation and in planned growth. The seventy-five percent reduction would likely require access to surface water from the Neuse if growth is to be facilitated. Similarly if these high ABRs are used the projections of future needs are dramatically higher than needed. Offsetting these projected "needs" with the proposed interbasin transfer would effectively support these former wasteful, luxury, water-use practices. My point is that these ABRs do not reflect the true base need. Rather they reflect luxury use patterns that do not warrant the support of the interbasin transfers proposed. To use these erroneous ABRs as the basis for projected future water "needs" only results in support of continued wasteful consumption. A more critical, conservation-motivated analysis is needed in which limits are properly considered and conservation is practiced. If such analysis were done there would be no basis for the proposed IBT.
1.12	... Apply conservation based water supply base requirements needs to the proposed areas. These should be much lower than the ABRs used in this proposal.

Staff Response

While it is correct that the ABR is based on historical data and certain reductions are achievable without undue hardship on the communities, it is important to keep in mind that the annual ground water withdrawal volume will have to decrease while the populations of the affected communities will continue to grow. Many of the measures being put in place (including the IBT) are not to supplement supplies during the first few phases of the reduction, but to ensure water supply during the later phases of the CCPCUA reductions. The following graphic illustrates the required CCPCUA reductions for a general water system.

Figure 2



As illustrated Figure 2, water systems that are subject to the CCPCUA rules are expected to rely upon alternate water sources to meet historical levels of water use. The above public comment states that "The seventy-five percent reduction would likely require access to surface water… if growth is to be facilitated", however that is not the case. CCPCUA communities would require alternate water sources **even if there were no growth**. The reduction in ground water is not expected to be made up through conservation alone.

As described in the previous section and in Table 1, the combined *average daily shortfall* for Farmville, Winterville, and Greene County is expected to be 4.93 MGD or 80% of 2018 average demand. Regardless of whether or not the initial ABR could have been adjusted to reflect more of a conservation-based rate, the final result is still a significant reduction. The majority of this reduction must be met with alternative water sources.

The Hearing Officers recommended no changes be made based on these comments.

Subtopic C: Selection of Peaking Factors

Comment ID #	Comment Text
1.3	The data used and the peaking factors applied in the Arcadis GUC Interbasin Management Strategy are probably flawed. For one thing there is no way that the Maximum Daily Demand for 1990 and 1995 for GUC could be "Not Available." The record keeping at GUC during those years was carefully documented and recorded. It is hard to imagine why the data are not presented here. I have too much faith in GUC to believe there was a selective motive for listing them as "NA" and yet these data are too important for Arcadis to overlook these values. This is puzzlement. NCDWR should ask for these values and consider them in the determining the proper peaking factors.
1.4	The peaking factors of 1.7 and 1.8 used for communities in the Capacity Use Areas (CCAs) contrast dramatically with the 1.5 factor found valid for GUC. Common sense would support the assumption that the peaking factor applied to Greenville should be used for the CCA communities as well. The GUC peaking factor is based upon a larger, more valid, data base and one that likely reflects the management of water resources that will be needed in the future. The more rural communities tend to have larger lots and less steady industrial water consumption. Thus these high peaking factors may be now be supported by the current use patterns. In the future use will require more conservation and less irrigation. MDDs will need to more closely approach ADDS as these communities grow and as water resources become more restricted. Use of these high values of 1.7 and 1.8 for peaking factors is not reasonable and endorses wasteful use.

Staff Response

As described in the Petition and Environmental Assessment (EA), ARCADIS examined a range of historical peaking factors for each community. Representative peaking factors were selected that are below the historic maximum for each community, while still being representative of the system characteristics. For Winterville, in particular, which experiences slightly higher peaking factors than the other water systems, ARCADIS selected a factor much lower than the historical maximum of 2.75. For this community, in particular, the peaking factor was selected based on the understanding that conservation (and a rigorous IBT Management Strategy) will be required to ensure that Winterville does not exceed its maximum daily transfer.

In Appendix 1, Explanation of IBT Management Strategy (ARCADIS) it is also pointed out that it is not atypical for smaller water systems such as Winterville, Farmville, and Greene County, to experience higher peaking factors than larger communities, such as Greenville. This is generally understood to be due to the fact that smaller communities have less buffering capacity in their distribution system (i.e. larger distribution main, elevated storage, etc.). Therefore the higher peaking factors should not be necessarily be attributed to wasteful use or extravagant irrigation.

The Hearing Officers recommended no changes be made based on these comments.

Subtopic D: IBT Management Strategy

Comment ID #	Comment Text
1.7	Greenville has had a remarkably flat water consumption pattern over the past 15 years. This may seem puzzling considering the growth in Greenville. It is likely attributed in part to several factors, including good management at the utility, changes in water use practices at local industries and other more minor practices. But there are limits to these benefits. It is probable, perhaps even certain, that Greenville's demand for water will return to the steep growth curves that were predicted by the consulting engineers in the mid 90's. If this is true Greenville will be using its current plant capacity in the very near future. If that is the case, there will be very little excess to commit to other basins.
4.15	All of the receiving communities have the option, and appear to be planning, to bank ground water by reducing their required 75% reduction prior to the 201 8 deadline. Using the figures in the EA, we have calculated that with maximum day demands minus the use of allocated ground water withdrawal and banked water (assuming equal distribution for 20 year starting in 201 8), the maximum transfer needs (to meet maximum day demands) is 11.3 mgd. This also assumes that per capita demand will not change over the time period. Aggressive water conservation activities that must accompany a transfer awarded could reduce demand upwards of 10% or more, thereby reducing the maximum day water demands of the receiving communities. At the moment, the Town of Winterville's per capita water use is the lowest of all the communities at 90 gpcd. Greenville's per capita use is currently at 120 gpcd.
18.1	The IBT Management Strategy was developed in 2007 as a significant component of the Environmental Assessment (EA). The IBT Management Strategy is a balanced, managed approach to the transfer of finished water to our neighboring communities. The Management Strategy takes into account the use of banked water, the sale of finished water during off-peak periods, and the reduction of ground water supply due to the CCPCUA Rule. The IBT Management Strategy was constructed to allow GUC and neighboring communities the greatest flexibility in the purchase of water as well as the curtailment of service during peak water demand or low flow in the Tar River.
14.3	At the same time GUC in Table 2-3 stated that they have enough water plant capacity, but only reflect a minimum withdrawal for the IBT transfer on these same days. Are we to assume that Greenville can run easily at 100% of the plant rated capacity without any issues and that the communities can reliably count on this minimum amount on the same day when their wells cannot produce this increased demand?
16.4	The purchase of water from GUC, is for water currently permitted for withdrawal from the Tar River. No additional Tar River withdrawal permits by GUC are to be requested or needed to meet the obligations of GUC to supply water to Greene County. The contractual agreement between GUC and Greene County is based upon a ninety percent availability factor. The contract gives GUC the right to interrupt or curtail the supply of water to Greene County up to ten percent of the time, or up to thirty-six (36) days per year. This arrangement allows GUC to curtail water to Greene County on days of peak demand during which time Greene County will utilize their remaining 25% well capacity to meet their demand. Under this agreement GUC will not need to increase its withdrawal permitting capacity from the Tar River not or in the future as related to selling water to Greene county

Staff Response

Concerns about the available quantity of water that will be available for sale to these communities, as well as concerns about how banked water will be managed, are addressed by GUC's IBT Management Strategy. This strategy was included in both the EA and the Petition; however, ARCADIS has developed a supplemental technical memorandum to further illustrate the main components. This memorandum is included in Appendix 1, titled "Explanation of IBT Management Strategy". In this analysis, ARCADIS states the following:

> Every community experiences minimum, average, and maximum day water demands throughout the year. From year to year, the highs and lows in water demand will usually vary with season. The perception is the maximum day demand occurs only in the hottest months of the year. This perception is not valid every year. Water systems will experience maximum day demands at any time during the year, including the coldest months.

To illustrate this concept, ARCADIS developed a diurnal curve based on 5 to 10 years of historical water use trends, and projected this curve onto the average expected annual water demand for each community. The result is a projected 2009 to 2030 water use trend for each water system. The purpose of these graphs is to illustrate the typical high, average, and low daily water demands that could typically be expected by each water system. At no time during the historic record do maximum day demands coincide for Greenville, Farmville, Winterville, or Greene County.

Figure 1 in Appendix 1 illustrates what happens when the projected bulk purchase curves for each community are "stacked" (e.g. added cumulatively) to show the total water treatment plant (WTP) demand though 2030. During times when the demand exceeds 22.5 MGD (the capacity of the WTP) GUC will curtail water sales and the communities will rely upon banked water to meet peak demands. The Purchase Agreement limits water curtailment to a maximum of 10% of the year. According to GUC's analysis, curtailment is not expected to occur before 2018.

The analysis also states:

- On an average day basis, Greenville Utilities will be able to sell water to each community entirely.
- Greenville Utilities will also be able to sell water to a community if that community is experiencing a maximum day. The maximum day for each community is not expected to occur on the same day (per the aforementioned explanation).
- However, if Greenville Utilities approaches a maximum day, the Water Purchase Agreements stipulate that Greenville Utilities reserves the right to curtail water, if it is anticipated that WTP capacity may be exceeded.

An important component of the IBT strategy is the management of banked water. DWR supports this water banking concept where it is consistent with good management of the region's water resources and subject to prior review and approval of specific banking proposals. Many water systems throughout the Central Coastal Plain Capacity Use Area (CCPCUA) utilize water banking as a means of meeting their required reductions. Although it is correct that all of the Petitioners are planning to bank ground water by reducing pump rates as much as possible during the early CCPCUA phases (banking will likely not be possible after 2015), there is no direct correlation between the amount of water that might be banked and the amount of the IBT request. The amount of water that might be banked by 2018 is an unforeseeable quantity. Similarly, it would be difficult to predict exactly when and how much banked water will be used. As a result, it is essential that the banked water remain as a "savings account" used by each community if and when supplemental water is required to meet peak demands. Therefore, the total volume of the anticipated water bank was not subtracted from the applicant's total IBT request.

The Hearing Officers recommended no changes be made based on these comments.

Subtopic E: Emergency Condition

Comment ID #	Comment Text
19.2	GUC is asking for an emergency condition, but during an emergency (drought) would be the time the River could least afford to lose the water

The Hearing Officers have chosen not to grant an emergency condition**.** G.S. §143-215.22L(q) specifically outlines the procedure by which water systems may request an emergency water transfer. Should GUC need such a transfer, that request should be submitted to the Department in accordance with the applicable statutes.

> *§143-215.22L(q) Emergency Transfers. – In the case of water supply problems caused by drought, a pollution incident, temporary failure of a water plant, or any other temporary condition in which the public health, safety, or welfare requires a transfer of water, the Secretary of Environment and Natural Resources may grant approval for a temporary transfer. Prior to approving a temporary transfer, the Secretary shall consult with those parties listed in subdivision (3) of subsection (c) of this section that are likely to be affected by the proposed transfer. However, the Secretary shall not be required to satisfy the public notice requirements of this section or make written findings of fact and conclusions of law in approving a temporary transfer under this subsection. If the Secretary approves a temporary transfer under this subsection, the Secretary shall specify conditions to protect other water users. A temporary transfer shall not exceed six months in duration, but the approval may be renewed for a period of six months by the Secretary based on demonstrated need as set forth in this subsection.*

TOPIC II: CONSERVATION

Many of the following comments express concern that conservation, explicitly stated as an important factor in both the IBT statutes and the Central Coastal Plain Capacity Use Area (CCPCUA) rules, was not properly addressed by the applicant in the EA or Petition. Some comments also state that specific conservation measures required by the CCPCUA rules have not been implemented by the Petitioners.

Comment ID #	Comment Text
4.12	Furthermore, all communities are required by the CCPCUA rules to adopt water conservation-based rate structures, implement conservation ordinances for irrigation, provide a retrofit program for homeowners as well as an educational program and provide information to the state regarding existing conservation measures and those to be implemented (NCAC 15A 2E 0.0502(d)(5)). Phone conversations with DWR staff reveal that such information has not been supplied by these communities. Such information is crucial for the EMC to be able to make a decision on the reasonableness of the IBT and whether or not conditions should be placed on the certificate if the Petition is granted. The changes in 2007 to the Regulation of Surface Water Transfers Act clearly reveal that the State is emphasizing the efficient use of water resources. The Petition and EA submitted by GUC provides none of this critical information.
1.13	… as a matter of principle NCDWR should require vigorous conservation rate structures and peak demand management in any area receiving an IBT. And the sword should cut both ways. The area supplying the water should be required to adopt the same vigorous conservation rates and peak demand management. The reason? Both would now be sharing the same water resources. It is thus absurd for a utility to supply water from a common resource and have disparate standard for allocation and use of that common resource. All users should abide by the same rules.
2.2	As the population of eastern North Carolina continues to grow a strain will be placed on all water resources. It seems logical to promote water conservation practices now. The reductions in the withdrawal from underground sources should first be attained by reducing water usage rather than by transferring water across miles.
3.3	Now is the time to address water waste as a condition of water transfer. There need to be enforceable building/plumbing permit requirements (as well as environmental considerations) that aggressively address the use and potential waste of our water resources for new homes, businesses, industries and their eventual upgrade improvements. These requirements should (must) be adopted and enforced by the local and county municipalities paid for by permit fees. Incorporating an ongoing and far reaching educational process on the importance of this resource and ways it must be protected and conserved must also be a part of this transfer agreement.
3.4	Additionally, a stepped fee schedule for all water users in GUC's region must be implemented to aid in the education and reduction of wasted water resources. A five level fee structure based on amount of water used starting with a reasonable baseline use and climbing through excessive use needs to be implemented. The monies generated by the excessive use fees will be accounted for and expended in areas of education, retrofitting of household and business fixtures with water conservation fixtures. This can be done through discount programs or out-right give-a-ways. This program in turn will reduce water waste and subsequently reduce water bills, putting at least a temporary smile on the end-users face.
4.11	Under the old rules, an applicant must provide information regarding the facilities to be used for the water transfer, the proposed uses of the water to be transferred, the water conservation measures to be used by the applicant and any other information deemed necessary by the Commission. The EA failed to provide any information (except the short paragraph below from GUC) regarding the source or receiving communities current and planned water conservation measures. The only information provided was related to drought management protocols. Useful data should include information on water rate structures, presence or plans for retrofit programs, feasibility of reclamation projects, ordinances or incentives for use of cisterns or other rain water harvesting practices, etc. 'Additionally, GUC

Comment ID #	Comment Text
	and its wholesale customers strongly encourage the use of water saving devices. GUC is a licensed member of the national "Water Use it Wisely" campaign. The Energy Services and Public Information Offices incorporate water conservation messages into all communications. This includes preparation of fact sheets, television and radio advertisements, print ads, and billboards to provide local citizens with water conservation tips."
4.25	We also urge the EMC to consider conditions that seek to increase the long-term water use efficiency by both the receiving and source river basin communities. The IBT Petition includes information on drought management response measures, but fails to include information on long-term efficiency measures. Conditions to address efficiency could include:- Implementation of regional planning to ensure the most efficient management of the shared water resources in both the source and receiving communities. - Requirements that GUC and other wastewater facilities in the receiving basins conduct a feasibility study and action plan for water reclamation/reuse projects.- Plan for and implement strong water conservation programs and activities with the goal of reducing customer water demand, including but not limited to:o Home fixture retrofit programs o Requiring or incentivizing water harvesting practices (i.e. cisterns) o Separate irrigation meters and pricing of irrigation water o Aggressive public educational campaigns
7.1	Withdrawals from underground sources should first be addressed by reducing local water usage rather than simply meeting demand by transporting water over long distances.
9.3	Should scarce water be diverted from the Tar River so that new sub-divisions can create expansive lawns? At a minimum, those communities requesting water should require their residents to use landscaping alternatives as a part of a larger conservation program. There are lawn substitutes for grass that tolerate light foot traffic and even moderate mowing.
20.5	Need for conservation
9.2	The folks in our region want to be good neighbors. In the event that an existing neighboring community was experiencing a lack of suitable drinking water, one would expect assistance to be forthcoming. However, if that neighboring community was expanding and using water in a manner not consistent with good conservation practices, then one would expect questions to be raised.

Staff Response

As previously stated, conservation is identified in both the IBT statutes and the CCPCUA rules as an important component of both programs. NCGS §143-215.22I(c)(3) states that any Petition for an IBT must include a description of the conservation measures to be used by the applicant to assure efficient use of the water and avoidance of waste.

The CCPCUA rules, 15A NCAC 2E .0504, are more specific in that they require water systems in the capacity use area to develop a water conservation plan that includes the following elements. The rules require that each community develop a schedule of implementation for any requirement that has not yet been met:

1. Adoption of a water conservation-based rate structure, such as: flat rates, increasing block rates, seasonal rates, or quantity-based surcharges.
2. Implementation of a water loss reduction program if unaccounted for water is greater than 15%.
3. Adoption of a water conservation ordinance for irrigation, including such measures as: time-of day and day-of-week restrictions on lawn and ornamental irrigation, automatic irrigation system shut-off devices or other appropriate measures.
4. Implementation of a retrofit program that makes available indoor water conservation devices to customers (such as showerheads, toilet flappers, and faucet aerators).
5. Implementation of a public education program (such as water bill inserts, school and civic presentations, water treatment plant tours, public services announcements, or other appropriate measures).
6. Evaluation of the feasibility of water reuse as a means of conservation, where applicable.

The Hearing Officers concur with the public comments that the importance of conservation is critical and a requisite of a community requesting IBT water. Therefore they requested the Petitioners to develop, Table 1, included in Appendix 3, which includes a summary of the CCPCUA requirements and how those requirements have been met by each Petitioner.

Moreover, the Division of Water Resources has also agreed to begin requesting this information from all CCPCUA Permit holders in January 2011. Any permit holder whose conservation measures fail to meet the minimum program as described in 15A NCAC 2E .0502(d)(5)(A-C) will be required to adopt measures meeting these requirements or they will be issued an NOV. All water use conservation measures described in the CCPCUA rules will have to be adopted by the permit holder before their next permit renewal. This means that the minimum water conservation efforts recognized in the CCPCUA rules will be met as a condition of the permit. A memo from the Division to the Hearing Officers detailing the above described efforts is included in Appendix 2.

Finally, the Hearing Officers have included the addition of a special condition to the IBT certificate that will not allow the Petitioners to transfer water until the minimum program requirements described in NCAC 2E .0502(d)(5)(A-C) has been met.

TOPIC III- ANALYSIS OF ALTERNATIVES

The hearing officers received a number of comments on alternatives to the proposed transfer. Comments ranged from general remarks on the sufficiency of the EA analysis, to specific opinions about the relative availability of other water purchase options.

Subtopic A: Economic and Environmental Impact of Alternatives

Comment ID #	Comment Text
4.3	While the EA does identify several alternatives to the proposed IBT, the discussion is woefully inadequate to the task set forth in the applicable statutes and regulations. The overview assigns a dollar amount to the financial cost associated with the construction of each alternative. However, there is no discussion, evaluation, or modeling of environmental impacts, the source basin.
16.5	Other alternative water supplies for Greene County are significantly more expensive. Failure of GUC to obtain an IBT certificate will result in extreme hardship for the residents of Greene County.
17.1	After many years of investigation and negotiation for an alternative water supply, Greenville Utilities Commission, Greene County and the Town of Farmville contracted for the transfer of water from Greenville Utilities Commission. The most economically, technically feasible alternative with the least impact on the citizens of Farmville and Greene County was to obtain their water supply from Greenville utilities Commission.
12.2	Because they will make money from selling Greenville's water to the communities of Winterville, Farmville, and Greene County, I do not find it unreasonable that they could use part of this money to build another pipeline. This parallel pipeline to the one drawing from our river would return the treated wastewater from these communities back to our river and to us, so our businesses, families, ECU, and visitors can continue prospering in Greenville
9.1	One of the major concerns that a number of individuals identified was that the proposed transfer appears to be a one-way flow of water from our area. In follow up comments, it was said that if the water must be given, then a return of the waste water should be made mandatory as a part of the agreement.
5.2	The Town of Winterville has explored several options as it prepares to meet the reductions imposed by the capacity use area rules. Winterville has no local source of surface water available to the Town and has therefore determined that the purchase of water from GUC is the most economical and technically feasible engineering alternative.

Staff Response

Although the Petitioner's Environmental Assessment (EA) did include an analysis for several water supply options, ARCADIS developed a supplemental evaluation to answer questions raised during the comment period. This analysis is included in Appendix 4. The alternatives include:

1. Development of an independent surface water source on Contentnea Creek
2. Development of an independent ground water source
3. Purchase of finished water from the Neuse Regional Water and Sewer Authority (NRWASA)
4. Purchase of finished water from the City of Wilson
5. Purchase of finished water from the Greenville Utilities Commission

All of the above alternatives had been previously identified in either the Environmental Assessment (ARCADIS, 2008), or the Preliminary Engineering Report – Alternative Water Supply Evaluation for Greene County and Farmville (McDavid and Associates, 2004). Appendix 4 provides estimated capital costs and expected usage rates for all alternatives, as well as a matrix of environmental impacts. The metrics evaluated for the environmental analysis include the following:

- ✓ Interbasin Transfer
- ✓ 100-Yr Floodplain
- ✓ Wetlands
- ✓ Stream Crossings
- ✓ 303(D) Listed Waters
- ✓ Forestland
- ✓ Anadromous Fish Spawning Areas
- ✓ Federal Or State Owned Lands
- ✓ State Or Municipal Parks
- ✓ High Quality/ Outstanding Resource Waters
- ✓ Hazardous Waste Facilities
- ✓ Historic National Register Districts/ Structures
- ✓ NPDES Sites
- ✓ Non-discharge systems
- ✓ Landfills
- ✓ Permitted Animal Operations
- ✓ Natural Heritage Occurrence Sites
- ✓ Significant Natural Heritage Areas
- ✓ Schools, Libraries, or Churches
- ✓ Land Managed for Conservation, Open Space, and Recreational Lands

The analysis shows that all of the alternatives, with the exception of those requiring the development of additional ground water wells, would require an interbasin transfer certificate for at least one of the Petitioners (either Farmville, Winterville, or Greene County). However the ground water alternatives were not identified as a sustainable due to the potential for the EMC to designate additional Capacity Use Areas in the future.

The reservoir alternative has the greatest environmental and economic impact. It is also likely that the construction of a reservoir in Greene County would not be feasible due to technical, environmental, and permitting complications.

The option of returning water to the source basin was evaluated in the EA. This option was excluded as being technically infeasible. Wastewater service in the area is not as widespread as water service. There is no countywide, centralized wastewater treatment plant (WWTP) in Greene County. While there are three small WWTPs (Snow Hill WWTP, the Hookerton WWTP, and the Maury Sanitary Land District WWTP), residents in unincorporated areas rely primarily on septic systems. Costs for the construction of a countywide collection and treatment system were estimated at over $150 million. In Pitt County, wastewater is treated at the Farmville WWTP, the Contentnea Creek WWTP, and the GUC WWTP. Wastewater from the Town of Winterville is currently treated at the Contentnea Creek WWTP. According to the 2008 EA, Winterville has had discussions with GUC concerning future wastewater service, but there are no immediate plans to proceed with this option. If this option were pursued in the future, it would return a portion of the transferred water to the Tar River Basin.

Of all the identified alternatives, the only viable options were identified as the purchase of finished water from either NRWASA, Wilson, or GUC. All of these options would utilize existing water treatment plant capacity and have comparable environmental impacts. Also, as previously stated, all of the purchase alternatives would require that at least one Petitioner receive an interbasin transfer certificate. Of these options, the purchase from GUC was identified as being the most economically practicable.

The Hearing Officers recommended no changes be made based on these comments.

Subtopic B: Feasibility of Water Purchase from Neuse Regional Water And Sewer Authority (NRWASA)

Comment ID #	Comment Text
1.2	Water is available from the Neuse for the communities in that basin. In fact if the proposed IBT were approved water lines from the Tar would pass by lines from the Neuse providing water to communities in what is partially a turf war for utility growth. Feigned statements of cooperation and redundancy mask these turf wars including lawsuits over the right to serve select communities (Bell Arthur Rural Water District vs. GUC, as an example). NC Water Supply Branch should not facilitate these battles. Let GUC stay within its own basin and mandated mission to provide for the needs of Greenville.
2.1	According to the map water from GUC and the Tar River is being piped to Snow Hill and water from Kinston and the Neuse River Basin is being piped to Eastern Pines. The map itself revealed the flaws in this plan. It doesn't take much to realize that it is inefficient to pipe water over long distances rather than shorter ones. There is an increased chance of loss by leakage and an increased need of additional purification for safety. This also makes economical sense.
4.5	For example, the alternative briefly mentioned in the EA for the receiving basins to purchase water from the Neuse Regional Water and Sewer Authority does not provide an analysis of cost, only that the costs would be "prohibitive."
7.2	Additionally it would appear that Greenville Utilities is willing to sell surface water cheaper than Neuse Regional WASA. This, if nothing else, is not a satisfactory reason for approving IBT.
8.1	The transfer of GUC water to Greene County does not make sense since the Neuse Regional WASA is in the best position to supply those needs and then there is no IBT.
8.2	Farmville should likewise get it's water from NR WASA.
8.3	NR WASA was created to supply these needs but apparently politics is playing out with the requesters familiarity with GUC and probably lower cost water.

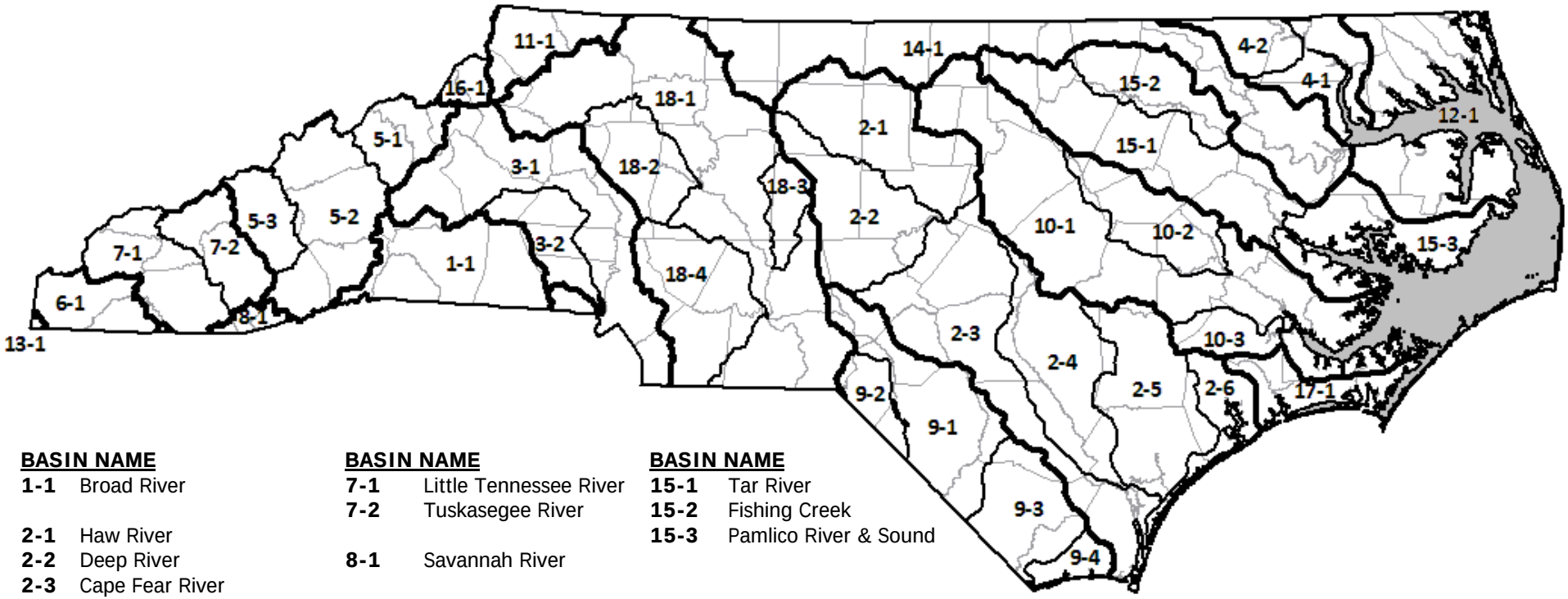
The Neuse Regional Water and Sewer Authority is a cooperative partnership of water and sewer service providers that was formed in 2000. Current members are the Town of Ayden, the Bell Arthur Water Corporation, the Deep Run Water Corporation, the Eastern Pines Water Corporation, the Town of Grifton, the City of Kinston, the North Lenoir Water Corporation, and the Town of Pink Hill. These systems have collectively constructed a water treatment plant and large distribution mains at the cost of $144 million dollars. The Authority's water source is located in the Neuse River Basin while the users are located throughout the Trent River, Neuse River, Contentnea Creek, and Tar River Basins. This water use constitutes an interbasin transfer; however NRWASA has not yet obtained an IBT certificate.

Many of those commenting have noted that the Neuse Regional Water and Sewer Authority (NRWASA) may also be in a position to provide water to the Petitioners. Some comments also state that a purchase by Farmville and Greene County from NRWASA would not create an interbasin transfer; however that is not the case. NCGS §143-215.22G defines the Contentnea Creek Basin as a unique sub-basin to the Neuse Major River Basin (Figure 3). An interbasin transfer certificate is required for any transfer between designated basins, even if one basin is a sub-basin to the other.

Greene County and Farmville first evaluated the purchase of water from NRWASA in a 2004 Preliminary Engineering Report titled, *Alternative Water Supply Evaluation for Greene County and Farmville* (McDavid and Associates). The alternative was also discussed in GUC's Environmental Assessment, the Petition, and the supplemental evaluation by ARCADIS that was developed during the public comment period (Appendix 4). In each of those reports the cost of required contractual commitments, necessary internal improvements, plus a proportional share of the $144 million facility resulted in a usage rate 3 times higher than GUC's. Given this relatively high economic cost and the fact that the environmental impacts of both options are comparable (as discussed in the previous section), the purchase from NRWASA was not chosen as the selected alternative.

Figure 3.

Designated Interbasin Transfer River Basins
As defined in G.S. §143-215.22G



BASIN NAME		BASIN NAME		BASIN NAME	
1-1	Broad River	**7-1**	Little Tennessee River	**15-1**	Tar River
		7-2	Tuskasegee River	**15-2**	Fishing Creek
2-1	Haw River			**15-3**	Pamlico River & Sound
2-2	Deep River	**8-1**	Savannah River		
2-3	Cape Fear River				
2-4	South River	**9-1**	Lumber River	**16-1**	Watauga River
2-5	Northeast Cape Fear River	**9-2**	Big Shoe Heel Creek		
2-6	New River	**9-3**	Waccamaw River	**17-1**	White Oak River
		9-4	Shallotte River		
3-1	Catawba River			**18-1**	Yadkin River
3-2	South Fork Catawba River	**10-1**	Neuse River	**18-2**	South Yadkin River
		10-2	Contentnea Creek	**18-3**	Uwharrie River
4-1	Chowan River	**10-3**	Trent River	**18-4**	Rocky River
4-2	Meherrin River				
		11-1	New River		
5-1	Nolichucky River				
5-2	French Broad River	**12-1**	Albemarle Sound		
5-3	Pigeon River				
		13-1	Ocoee River		
6-1	Hiwassee River				
		14-1	Roanoke River		

Subtopic C: Feasibility of Water Purchase from City of Wilson

Comment ID #	Comment Text
14.5	Section 5 of the IBT Petition "Alternatives to Proposed Transfer" never mentions the City of Wilson as a viable alternative for both Greene County and Farmville. Wilson had discussions in 2003 with both, had the water available at a reasonable cost, and is in the Neuse Basin.

Staff Response

Similar to the evaluation of a water purchase from NRWASA, the alternative of purchasing water from The City of Wilson was first evaluated in a 2004 Preliminary Engineering Report titled *Alternative Water Supply Evaluation for Greene County and Farmville* (McDavid and Associates). This alternative is further discussed in Appendix 4, Environmental and Economic Impacts of Water Supply Alternatives (ARCADIS).

Wilson's surface water source is in the Contentnea Creek Basin; therefore, this sale would not have required an interbasin transfer certificate for Farmville and Greene County. However, a certificate would have been required for the Town of Winterville.

One important factor in evaluating a purchase from Wilson is the fact that Wilson required a one time capacity charge based on $2.50 per gallon per day demand, estimated at $12.5 million for 5 MGD. This capacity charge is in addition to a usage rate comparable to existing Wilson customers (presently $4.52 per 1,000 gallons for residential users). Due to the high relative cost of this purchase alternative, comparable environmental impacts to a purchase from GUC, and the fact that this alternative would have also required an IBT certificate for Winterville, a purchase from Wilson was not chosen as the selected alternative. Further detail on this option is presented in Appendix 4.

The Hearing Officers recommended no changes be made based on these comments.

TOPIC IV: MITIGATION OF SECONDARY AND CUMULATIVE IMPACTS

The IBT statutes state that an applicant must establish and the Commission must conclude by a preponderance of the evidence that: (1) the benefits of the proposed transfer outweigh the detriments, and (2) the detriments have been or will be mitigated to a reasonable degree. The statutes also allow the Commission the ability to include any special conditions to ensure that detrimental impacts will be mitigated.

The Hearing Officers received the following public comments pertaining to this factor.

Comment ID #	Comment Text
4.7	The EA wholly dismisses the need for evaluation of secondary and cumulative impacts from growth since the IBT is designed to only replace the lost ground water resource due to the CCPCUA. The EA states that "significant growth in these areas is not a component of this project or a reason for developing the interbasin transfer request. " IBT Petition, pp 4-1. DWR questioned this dismissal of secondary and cumulative impacts associated with growth that is a direct result of the transfer of water in their comments on the draft EA (EA Response to Comments, pp: 2/12-2/13, February 1,2008). The comments stated: The document dismisses cumulative and secondary impacts associated with growth by repeatedly stating that the project is primarily a water replacement project and significant growth is not a component of this project or a reason for developing the IBT request. It is true that they are being forced to switch to surface water and that initially the volume of surface water matches the volume of ground water; however, over time the volume of water increases due to growth projections that the communities would have supported with an untapped volume of ground water. On page 4-2 it states that "these communities will be unable to compensate for the reduced ground water withdrawals for predicted growth to 2030': There appear to be pockets of significant growth and, without the additional water, this growth could not be supported. The Executive Summary states that growth is modest at 1 to 3 percent in some communities. However, : Section 2.2 gives growth rates of from 11 to 50 percent for Winterville, Greene County had a 25 percent growth rate from '90 to '06; although the overall growth rate of the county may be 1 percent, pockets of higher growth may occur, e.g. near the Global Transpark. The document does not provide the percent growth for Greenville, but from the numbers provided it could be 45 percent from '05 to '30. Comments to draft EA by DWR (on file with DWR) The applicant responded by saying that the growth would occur in these communities with or without the IBT, therefore assessing the environmental impacts is unnecessary. The communities are required to reduce their ground water withdrawal due to the CCPCUA rules. Without a new source of water, either from the Neuse River Basin or from GUC, the growth could not be sustained. The applicant dismisses all other alternatives as viable options, therefore growth would not occur if the IBT were to be denied. Therefore, the applicant must provide detailed information on the secondary and cumulative impacts associated with this growth.
4.2	SEPA requires the agency to include a review of methods "proposed to mitigate or avoid significant adverse environmental impacts" from the proposed transfer. 1 N.C. Admin. Code 25.0502 (3);. The EA fails to include any meaningful discussion of mitigation measures, instead providing a review of land use planning regulations and ordinances. Appropriate measures to mitigate, i.e., lessen, the environmental impacts would include, for example, returning treated wastewater to the source basin, implementing aggressive water conservation measures, or detailing measures that would be taken to protect aquatic life in the source basins during times of drought.
4.9	Another example of the inadequacy of the secondary and cumulative impacts review concerns threatened and endangered species. The EA states that threatened and endangered aquatic species are present in both the receiving and source basins but does not address the impacts. The EA must correct its review of cumulative and secondary impacts to include the impacts to these species from growth that would be induced by the IBT.
1.10	In Greene County the development and growth is exemplified by proposals such as "Cutter Creek." Cutter Creek is a sprawling golf course retirement community focused upon large, irrigated lots, and private vehicular transportation to Raleigh and Greenville for employment, cultural opportunities and health care. It exemplifies an unsustainable community dependent upon subsidies such as water supply from the Tar River Basin.
3.2	We're not opposed to controlled growth in general but there must be aggressive controls on how

Comment ID #	Comment Text
	much growth and how that associated water will be used.

Staff Response

Section 7 of GUC's Environmental Assessment is devoted to discussing mitigation. The above comments state that the mitigation discussion included in the EA is insufficient; however, all of the specific points mentioned in the comments are addressed in the EA. Comments note that an acceptable discussion of mitigation should include:

1. Returning treated wastewater to the source basin
2. Implementing aggressive water conservation measures
3. Detailing measures to protect aquatic life during drought

These measures, discussed in the EA and previous sections of this staff response, are summarized as follows:

Return of Wastewater
In discussing the alternative of returning wastewater to the source basin, the EA states that the wastewater collection system for the service area is decentralized (Section 4.4 of the EA). Although there are 3 small WWTPs in Greene County, most of the County's residents currently rely on septic systems. The EA estimates the cost of a centralized collection system, WWTP and discharge line to the Tar River Basin at over $150 million. The EA also estimates the cost to pump wastewater from the Farmville WWTP in the Contentnea Creek Basin to the Tar River Basin at $20 million. Town of Winterville has had discussions with GUC concerning future wastewater service, but there are no immediate plans to proceed with this option. Winterville's wastewater is currently discharged to the Contentnea Creek WWTP (Neuse River Basin).

Water Conservation
The CCPCUA rules require that communities implement very specific conservation measures. These measures include adoption of a conservation-based rate structure, adoption of a conservation ordinance for irrigation, implementation of a retrofit program for indoor conservation devices, and the implementation of a public education program. The rules also require water systems to evaluate the feasibility of water reuse as a means of conservation. As previously discussed, the hearing officers have included a special condition to the IBT certificate that full compliance with these requirements be met before the Petitioner may move water under the IBT certificate.

Water Use During Drought
Greenville Utilities Commission included its Water Shortage Response Plan (effective July 29, 2008) in the Environmental Assessment. The purpose of this plan is to define a set of triggers and actions to occur during droughts or other water shortages. The actions range from voluntary water conservation (during a Stage 1 alert) to requiring commercial and industrial customers to reduce water use by a minimum of 50% (during a Stage 3 Emergency).

Other mitigative measures that are discussed in the EA include:

- Existing land use planning and environmental resource protection initiatives
- Existing zoning ordinances
- Existing open space plans/initiatives
- Greenways and riparian buffers
- Existing greenway plans
- Existing erosion and sedimentation controls
- Existing stormwater controls programs and impervious surface limitations (including compliance with Phase I and II stormwater rules and the Tar Pamlico Stormwater Rule)
- Existing floodplain development regulations
- Existing water shortage response plan

In addition a, a drought management plan is required to be included as a component of the certificate.

As previously discussed in this staff report, approximately 77% of the IBT request could be considered a direct replacement of water lost due to the CCPCUA rule through 2018. Consequently, it could be interpreted that the remaining 23% is to sustain growth through 2030. The hearing officers have determined that it would be appropriate to require the Petitioners to adopt controls to mitigate unforseen impacts, due to this growth, before they may begin transferring water.

All communities in the Tar Pamlico and Neuse River Major Basins are subject to nutrient management strategies. Both the Tar Pamlico and Neuse Nutrient Strategies have requirements for wastewater discharges, agriculture, buffers, and stormwater management. All of the requirements, except those involving the development of a stormwater program, are applicable on a basin-wide basis. However, the stormwater program requirements only apply to those local governments of a certain size, density, or estimated impact. Both Pitt County and Greenville are required to develop stormwater programs under the Tar Pamlico Nutrient Strategy. Farmville and Greene County fall below the thresholds for development of a stormwater program under the Neuse Nutrient Strategy. Similarly, these governments do not fall under the stormwater phase II program due to their population and rural nature.

The Hearing Officers have determined that an appropriate mitigative measure, above what these communities are already required to do under the Tar Pamlico and Neuse Nutrient Management strategies, is the implementation of Phase II post-construction stormwater controls. The intent of this measure is to control any unforeseeable impacts due to growth that may occur as a result of the transfer. As previously stated, Pitt County (including Winterville) and Greenville are already required to develop stormwater programs consistent with the Tar Pamlico Nutrient Strategy. This certificate requirement would primarily impact Greene County and Farmville. The Hearing Officers have determined that implementing post-construction stormwater controls in these systems would serve to put in effect the most impactful control measures while not being overly burdensome to a small, rural water system. The certificate condition will read as follows:

No individual unit of local government may receive surface water regulated under this Certificate unless the local government maintains, throughout its jurisdiction, requirements that are at least as stringent as the Division of Water Quality's Phase 2 post-construction stormwater controls or the post-construction stormwater controls of the Universal Stormwater Management Program ("USMP"), for all new development that disturbs more than one acre of land, including those projects that disturb less than one acre of land but are part of a common plan of development or sale that disturbs more than one acre of land.

Appendix 5 to this staff response includes a memo detailing which of the above mitigative measure have already been implemented by each of the Petitioners.

TOPIC V: IMPACTS TO THE TAR RIVER

During the public comment period, a number of comments were submitted on the scope and results of the modeling analysis performed by the Petitioners for the EA. Additional comments focused on the potential impact to aquatic life.

Comment ID #	Comment Text
6.7	The flows at the Tarboro gage upon which the predicted flows at Greenville were based are not representative of those that will occur in the future. The analysis in the EA used the flows recorded at the USGS Tarboro River at Tarboro gage (Gage No. 02083500) from 1931 through 2007 (EA, Appendix B, page 1). The flows recorded at the gage reflect the cumulative impact of all the withdrawals and discharges upstream of the gage as well as the regulation resulting from the operation of the Rocky Mount's Tar River Reservoir. Although at this time it is not known definitively, we suspect that the operation of the reservoir has the largest impact on the gage readings. The Tar River Reservoir has been in operation since 1971. Thus, the gage record reflects essentially natural, i.e., unregulated, flows for the period from 1931 thru 1970, and regulated flows thereafter. This fact was acknowledged in the EA (Appendix B, page 22). The operating protocol for the reservoir has changed several times since 1971. Rather than including the reservoir in the hydrologic model explicitly and applying the current operating protocol consistently over the entire record, including the period prior to 1970, the analysis used the gage record "as is." The justification for this approach appears to be that because "Reservoirs such as Rocky Mount's often augment low flows in rivers because they store water from higher flow periods and release it over extended lower flow periods" (EA, Appendix B, page 22), the lower unaltered flows in the record prior to 1970 lead to a conservative result. That is, because there were flows in the record prior to 1970 that are lower than the current minimum flows, the substitution of the required minimum flows for the lower, unaltered, flows would result in even less impact than shown. However, the magnitude of flows alone does not prove this hypothesis. The timing, frequency, and duration of low flows are equally important, and they have not been considered. The currently-approved water shortage response plan for the Tar River Reservoir allows for discharges to be reduced incrementally to 60 cfs during the course of a drought. This policy has been invoked only three times since the mid-1990s. Thus, the statement in the EA that "the hydrologic model reflects the impacts of the Rocky Mount operating rules and minimum flows that have been in place over the past 36 years" (EA, Appendix B. page 22) is true for only a very small portion of the record used for the analysis. Also, flows recorded early in the early stages of the 2007108 event are not representative even though the current water shortage response plan was in place because the Tar River below Tar River Reservoir gage (Gage No. 02082506), upon which the release from the reservoir is based, was out of calibration. As a result, for a period of approximately a month, rather than releasing 60 cfs, as intended, the actual release was approximately twice that much. The reservoir releases, of course, are captured by the Tarboro gage. Thus: at least for a portion of the drought of record, the flows recorded at the Tarboro gage are higher than intended and not representative of system operations.
18.2	The hydrologic modeling effort used empirical flow data from WSGS gauging stations that spanned a 76 year period of record. The hydrologic analysis considered carefully the General Statute provision that all withdrawals and transfers in the source basin not be impacted to the degree existing uses would be impaired (at the time of the 18T Petition). To meet these requirements, fourteen modeling scenarios were developed: six modeling scenarios addressed the hydrologic effects upstream of GUC's raw water intake, and eight modeling scenarios addressed the hydrologic effects of the proposed transfer downstream of the GUC Wastewater Treatment Plant (WWTP). The scenarios included current and future (2030) water withdrawal conditions for no IBT, the average day IBT, the maximum day IBT, and a hypothetical scenario where twice the proposed transfer was effectively removed from the Tar River.
18.3	The City of Rocky Mount's operating rules were considered and are reflected in the hydrologic analysis. The analysis was based on actual flows at Tarboro, which reflect approximately 40 years of conditions prior to the existence of the Rocky Mount reservoir and 36 years of data

Comment ID #	Comment Text
	since reservoir operations. In addition, the analysis considered allowed modifications to the Rocky Mount's Drought Management Plan in 1993,1999,2002, and 2007.
18.4	The results of the hydrologic analysis were presented relative to the flow duration curves developed for the Tar River. The impact of each scenario was compared against river flows as low as 80 percent of the 7Q10 (87.2 cfs). The worst-case modeling (twice the proposed IBT amount) scenario revealed a 0.8 percent impact in 2030 compared to the 2030 scenario without an Interbasin transfer. For comparison, the maximum IBT scenario resulted in a 0.5 percent impact in 2030 compared to the 2030 scenario without an Interbasin transfer. The EA concluded that the hydrologic analysis calculations demonstrated that the requested IBT amount will have a negligible impact on the Tar River.
4.27	During the comment extension period, we also had time to further review the hydrologic study done by Entrix for GUC and to consult with a hydrologist about its validity. After further review, we are concerned about the validity of the 7Q10 value that was used in the analysis and whether or not this is a relevant statistic for the purposes of determining flow changes as a consequence of the IBT over a one year period. We would have liked to see how this value was derived.
4.28	Furthermore, it appears that the flow duration curves that GUC relied upon to determine no significant impact do not reveal the temporal nature of what is actually occurring in the river over the short-term. Low-flow values that may occur over a significant period of time (for example 1-2 month time period) would be masked by such a long-term analysis. It would be more helpful to see the minimum/maximum percent changes in flow over given periods, such as a one year period.
6.10	Flow duration curves are, at best, an incomplete metric of impact. Flow duration curves present the fraction of time that flows are above (or below) some value. They are prepared by sorting the flows and computing the percentile associated with each flow. Thus the lowest flow in the record is equal to or exceeded 100 percent of the time, the median flow is exceeded 50 percent of the time, etc. Flow duration curves can be prepared either for the whole year, in which case all flow data are included in the sort, or, as was done in the EA, for shorter periods, such as a month. To prepare the flow duration curve for July, for example, if there are 50 years in the record, there are 31- 50 values that go into the July flow duration curve. The problem arises because flow duration curves do not account for the temporal variability of flows. This is true even if the curves are prepared for a period shorter than one year. To continue the example from above, if there are 50 values of 20 cfs in the July data, and every other value is greater than 100 cfs, the same flow duration curve will result whether the 50 values of 20 cfs occur one in each year or all in two years. The potential impact to the stream of the two scenarios, however, could be very different. In order to fully assess the impact of altered streamflow regimes, one must also examine the frequency and duration of low flow periods. Looked at another way, based on the flow duration curves, the applicant concludes that flows will be lower than 109 cfs (the pre-IBT 7Q10) on average, 4.7 days per year without the IBT and 6.4 days with the maximum IBT (EA, Table 6-3, page 6-7). Again, this metric does not tell the whole story because the frequency, timing, and duration of the extra 127 days (1.7 extra days per year times 76 years) below 109 cfs are not reported. The impacts to the stream will likely be very different if all those days occur in one or two years versus being distributed over 20 years. These comments do not address the appropriateness of using comparisons of the 7Q10 with and without the IBT as a basis for determining impact. The 7410 is a relevant statistic for unregulated rivers. Where, as here, the river is regulated, the statistic is much less useful because the same number can result from very different flow sequences. For example, as noted above, the pre-IBT 7Q10 was determined to be 109 cfs. That is, the lowest weekly average flow in 10 years was 109 cfs. However, the 7Q10 would also be 109 cfs if flows of 109 cfs continued for three months. Dams, such as Rocky mount's with fixed minimum releases have exactly this type of effect.
6.6	The EA further explains the decision not to consider impacts on the Tar River Reservoir as follows: The hydrologic analysis and modeling assumed that interbasin transfers at Greenville would have no impact on operations of the Rocky Mount reservoir 70 river miles upstream. The only way that the IBT could affect upstream operations would be if there were to be an

Comment ID #	Comment Text
	approved change in Rocky Mount's permitted withdrawal and operating conditions. GUC has not made such a request and such as (sic) operational change has not been assumed in the hydrologic analysis and modeling." (EA Appendix C,page 10112.) However, Rocky Mount was extremely hard hit by the drought of 2007-08 and, as a result, is considering a modification to its water shortage response plan. For Rocky Mount, as for many municipalities in North Carolina, the drought of 2007108 was an unprecedented event. Whereas Rocky Mount had been able to negotiate the drought of 2002with relative ease, the event of 2007-08 was different. The Tar River Reservoir, Rocky Mount's sole source of water, dropped to10 percent of usable storage. To avert what appeared to be an impending crisis, in addition to activating the drought management plan1, emergency connections were made to Wilson and Tarboro. At times, and with the permission of the Division of Water Resources, releases from the reservoir were cut to 30 cfs, compared to a minimum of 60 cfs allowed in the approved water shortage response plan. An aerial reconnaissance of the Tar River upstream of the reservoir revealed previously unknown upstream withdrawals whose aggregate withdrawals exceeded the City's demand. Thus the storage in the reservoir was falling as if there were two cities the size of Rocky Mount withdrawing water. As a result of this experience, Rocky Mount intends to update its probability-based drought management plan. Thus, the "operational change" that was assumed in the EA not to be a possibility is exactly the type of change that Rocky Mount is, in fact, considering. This fact was apparently not known to GUC during preparation of the EA, possibly because Rocky Mount was not consulted.
6.8	Further, there is no information in the EA as to the timing, frequency, or duration of low flow occurrences prior to dam construction as compared to the timing, frequency, and duration, post dam construction, of the periods when the releases from the dam were 80 cfs. It is highly likely that the impacts to the aquatic environment from, for example, a 30 day period of flows of 20 cfs embedded in a four-month period in which flows were below 80 cfs are very different from those associated with a six-month period of a constant flow of 80 cfs.
6.9	Finally, the period of record analyzed (October I, 1931, through September 30,2007) did not include the lowest flow 7-day period in the record, which occurred in October 2007.
20.3	Concerned about climate change
10.1	I have owned riverfront property on the Tar River in Greenville, N.C. for the last ten years. Over those ten years I have witnessed extreme variation in the size and strength of the water flow in the Tar River. Frequently in the summer months I have observed the water flow dwindle quite dramatically. The river, which is sometimes as wide as a six lane highway, has dwindled on at least one occasion to the size of a creek I could have hopped over. I am not claiming expertise in these matters, but common sense tells me water should not be diverted from a river that regularly experiences such wide variations. What has happened before will undoubtedly happen again, and if water has been diverted when Greenville desperately needs it, then what? Will it have to be re-diverted back to the Tar when people in other areas have come to rely on it? Seems better to find other. more permanent solutions for Farmville, Winterville and Greene County
11.2	[This] region… recently experienced a reported river flow of only 50 million gallons per day downstream to Greenville. According to my information the summer use of water from the Tar River for Greenville alone can amount to 16 million gallons per day. The math is troubling for the health of communities that depend on the Tar River for their water and for the ecological health of the river system itself
12.1	I am deeply concerned that 10 years from now the above sea level portions of the Neuse, Tar, and Roanoke Rivers will only be navigable after a good rain because our public trust waters will be injected into pipelines and aquifers to be distributed by huge water systems
19.1	It's already hard to navigate the Tar River- concerned that it will get worse
20.1	Impact of the IBT may be low now but will increase in 50 years.
20.2	Salt levels in Tar are rising up to Greenville
3.1	We are not in favor of intra-regional water transfer agreements as they are permanently divisive. They tend to make enemies of neighbors and they, in this case, stifle the growth

Comment ID #	Comment Text
	potential for eastern Beaufort County by reducing the available water supply to this region.
4.4	In addition, the EA fails to evaluate the costs in terms of lost revenues to source basin water suppliers that may be expected to impose restrictions on water use for longer time periods as a result of the proposed transfer of water.
6.1	As a result of the drought of 2007/08, Rocky Mount intends to review and, if necessary, update its drought management plan. The review will be conducted following the completion of DWR's Tar River Hydrologic Model, which is anticipated in early 2011. If revised, Rocky Mount will seek approval of the updated plan from DWR. A revised drought management plan may result in a low-flow regime at Tarboro that is different from the one on which the IBT FONSI was based.
6.12	In conversation with our consultant, the GUC's consultants indicated that because some of the modeling scenarios requested by DWR essentially "double count" demand, this provides a safety factor that will assure no impact to Rocky Mount. While this assertion may be accurate, it cannot be established from the analysis in the EA. The best way to insure compliance with the statute is to use a basin-wide hydrologic model for the analysis AND to involve others in the basin in the decision-making. The updated Tar River Hydrologic Model will be such a basin wide model and will be developed in consultation with stakeholders throughout the basin. Thus, the model will form an agreed-upon basis upon which all parties can evaluate the impacts of the proposed IBT. Following its completion, Rocky Mount will know whether a modification to its water shortage response plan is, in fact, needed. In addition, Rocky Mount and other users in the basin, including those who represent environmental interests, will be able to accurately evaluate the impacts of the proposed IBT in the context of a basin-wide water supply plan.
6.2	Rocky Mount is concerned that the analysis done to support the FONSI is not adequate to determine whether there could be conflicts between its revised drought management plan and the IBT.
6.5	IBT statute requires that the applicant examine the present and reasonably foreseeable future detrimental effects on the source river basin. N.C.6.5. 53-21 5.221(0(2). The City of Rocky Mount is concerned that the GUC looked only at the potential impacts on an approximately mile reach of the Tar River below Greenville, as acknowledged in the Environmental Assessment, and not on the Tar River Reservoir.
18.6	The EA critically evaluated the current and future water uses in the Tar River Basin under the current hydrologic conditions. Furthermore, the proposed IBT was developed such that GUC has the flexibility to curtail water during peak demand and fully utilize the ground water resource (in the form of banked water) to the extent practicable. In effect, we have already placed operating conditions on ourselves to manage this proposed IBT in the best interest of our customers, our neighbors, and the environment. We strongly feel that the worst-case modeling scenario (effectively twice the proposed Interbasin transfer) fully addresses the ultimate impact to the Tar River as a result of this proposed transfer.
19.4	Concerned about impact on striped bass and mussels.
2.3	Humans are not the only species in these river basins. I value the wildlife in eastern North Carolina. The opportunity to paddle these rivers and creeks are activities that I cherish. Transferring water between basins may have unanticipated and negative impacts on native species decreasing their abilities to survive.
7.3	And lastly - adversely effecting water resources impacts more than humans. This area has a rich diversity that has evolved precisely because of the abundance of water. Removing water from the Tar River Basin can only serve to negatively impact surrounding flora and fauna.
11.1	The potential damage of this proposed transfer from the Tar- Pamlico River system includes wetlands, habitat, the intrusion of salt water upstream, and the loss of a viable water supply
20.4	Concerned about impact to wetlands
18.5	Even though the hydrologic modeling results demonstrated negligible impact on the Tar River, the tidal influence at our intake provides another opportunity to ameliorate the effect of low flow. The tidal influence results in a reverse flow direction during low flow periods. This phenomenon creates a reservoir effect that helps maintain water over our intake pipes. GUC is in a unique position whereby we have two opportunities to withdraw water from the river

Comment ID #	Comment Text
	where most other water treatment plants have only one opportunity. This tidal effect phenomenon is part of the reason why we feel confident that we can reliably provide water to neighboring communities who require regional solutions to solve critical water supply needs.
4.24	The first condition Rocky Mount proposed is that the certificate be revisited upon completion of the Tar River Hydrologic Model. PTRF and SELC strongly support this recommendation and suggest that the EMC incorporate similar language as was used in previous IBTs. In the CMU and Cary/Apex IBT certificates, the EMC included the condition below: "The Commission notes that future developments may prove the projections and predictions in the EIS to be incorrect and new information may become available that shows that there are substantial environmental impacts associated with this transfer. Therefore, to protect water quality and availability and associate benefits, modification of the terms and conditions of the certificate may be necessary at a later date." If the EMC moves forward with the GUC IBT, the final certificate should include similar language triggering a reopening of the certificate based on the Tar River Hydrologic Model.
6.11	The City of Rocky Mount requests that any IBT certificate issued to the GUC include a condition allowing the Certificate to be reopened following completion of the Tar River Hydrologic Modeling and Water Resource Plan if the results indicate that the approved IBT impinges upon Rocky Mount's ability to modify its water shortage response plan. Rocky Mount is concerned that, if approved, the demand to transfer water outside the basin could influence the decision to approve a requested change in the release protocol for the Tar River Reservoir. To guard against this possibility, in our comments dated December 1, 2009, Rocky Mount proposed several conditions that might be included in the IBT certificate. Upon further reflection, Rocky Mount now considers that a condition that would allow, upon the approval of the EMC, the certificate to be reopened following the completion of the Tar River Hydrologic Model would be the best option for protecting the interests of all users in the losing basin while still allowing GUC to address their immediate needs.

Staff Response

The Greenville Utilities Commission performed a hydrologic analysis to evaluate the impact of the interbasin transfer on the source river basin. This analysis included the development of a long-term flow record at Greenville, the generation of flow statistics to characterize the Tar River under both existing and future water use scenarios, and a spreadsheet-based hydrologic accounting model.

The hydrologic accounting model simulates water withdrawals and wastewater discharges to predict their effect on stream flow in the Tar River. The model accounts for all existing and projected withdrawals and discharges on the Tar River, over 100,000 gpd, from the Rocky Mount Dam to the GUC WWTP discharge. The USGS flow record developed for the Greenville gage was used as the base flow record. Model simulations included the following scenarios:

1. Current flows with no IBT.
2. Current flows with 2030 average day IBT.
3. Current flows with 2030 Maximum Withdrawal IBT.
4. Predicted 2030 flows with no IBT.
5. Predicted 2030 flows with 2030 average day IBT.
6. Predicted 2030 flows with 2030 Maximum Withdrawal IBT.

The results of the model show that the effects of the interbasin transfer are negligible at average stream flows and higher, with a slightly larger impact during low flows. Under the minimum flow of record, the stream flow becomes negative during both current and 2030 scenarios. A negative stream flow means that the tidal influence in the lower Tar River pushes freshwater upstream, creating a net upstream flow. Tidal influences were not simulated in the model.

The Division of Water Resources also requested that Greenville Utilities Commission incorporate several changes to their hydrologic accounting model in 2008 in order to evaluate an even more conservative transfer scenario. The first change was to reduce the flow record by the amount of GUC's historic 2002 withdrawals. Since the flow record would have already accounted for this withdrawal (the gage is downstream of GUC's intake), this change creates an even more conservative baseline where the effects of GUC's existing withdrawals are doubled. The second change requested by DWR was to reduce GUC's wastewater discharges on the Tar River by the amount of the IBT. For many of the modeling scenarios, this change removed the entire volume of GUC's existing and projected wastewater discharge from the Tar River flow. Under these more conservative modeling scenarios, the impact of the IBT was predicted to be below the 7Q10 at 1.8 percent of the time (6.4 days) under existing conditions and at 2.1 percent of the time (7.7 days) in 2030. These modeling results indicate that the IBT will have minimal impact on the existing stream flow. Therefore, there are no expected impacts to the wastewater assimilation capacity of the Tar River Basin. Correspondingly, there are no anticipated impacts to water quality within the source basin.

The results of the model, as presented in the Petitioner's Environmental Assessment, are summarized in the following Table.

Table 3: Summary of Flow Statistics

	Greenville Gaging Station (Downstream of WTP Intake and Upstream of WWTP Discharge)						Downstream of Greenville WWTP							
	Current Scenarios			Future 2030 Scenarios			Current Scenarios				Future 2030 Scenarios			
	No IBT	Avg IBT	Max IBT	No IBT	Avg IBT	Max IBT	No IBT	Avg IBT	Max IBT	2x Max IBT	No IBT	Avg IBT	Max IBT	2X Max IBT
Flow Statistics (cfs)														
Maximum	31,866	31,855	31,849	31,872	31,860	31,854	31,878	31,866	31,860	31,849	31,875	31,863	31,858	31,840
Minimum	24	11	4	20	7	-1	38	25	17	4	17	5	-3	-15
Average	2,524	2,513	2,505	2,525	2,513	2,505	2,537	2,526	2,518	2,506	2,529	2,518	2,509	2,492
Percentiles (cfs)														
95th	9,033	9,023	9,014	9,035	9,025	9,016	9,046	9,036	9,027	9,014	9,038	9,028	9,018	9,001
50th	11,398	1,387	1,381	1,397	1,384	1,375	1,410	1,398	1,393	1,381	1,403	1,390	1,380	1,365
5th	229	216	210	228	215	208	242	229	222	210	231	219	211	194
Percent of Time (per year)														
7Q10 (109 cfs)	1.3%	1.6%	1.8%	1.4%	1.6%	1.8%	1.0%	1.3%	1.5%	1.8%	1.3%	1.6%	1.7%	2.1%
80% of 7Q10 (87.2 cfs)	0.9%	1.1%	1.2%	0.9%	1.1%	1.3%	0.7%	0.9%	1.0%	1.2%	0.8%	1.1%	1.3%	1.6%
Average Number of Days Per Year														
7Q10 (109 cfs)	4.7	5.8	6.4	5	5.9	6.5	3.7	4.6	5.4	6.4	4.7	5.7	6.3	7.7
80% of 7Q10 (87.2 cfs)	3.3	3.9	4.5	3.3	4.1	4.9	2.5	3.2	3.6	4.5	3.1	3.8	4.6	5.8

Due to the large number of comments received on the hydrologic analysis, ARCADIS developed a memo titled Explanation of Hydrologic Analysis and Result Interpretation. This memo has been included in Appendix 6. The document performs two additional analyses on the results of the original hydrologic accounting model in order to provide further clarification.

The first is the application of a statistical analysis. ARCADIS took the flow data for each of the scenarios discussed above and evaluated them with a statistical test to determine whether there is a "statistically significant"

difference. The result is that there is no statistical difference between the scenario distributions. A full description of the analysis is included in Appendix 6.

Second, ARCADIS performed a frequency-duration analysis for two of the 2030 scenarios to represent stream flow with and without the IBT. To perform this analysis, the entire 76 year record was filtered for events where the flow was less than 300 cfs, 109 cfs (7Q10), and 27 cfs (25% of 7Q10). Those low flow days were then grouped into 25 low flow events where there were at least 40 days of flow less than 300 cfs occurring over a 60-day span. ARCADIS then put together a chart comparing the duration of those low flow events with and without the IBT. The results of the analysis are as follows:

Table 4: Change in Duration of Low Flow Events

Flow Statistic	Average Change in Duration	Maximum change in Duration of Event*
< 300 cfs	< 5 Days	Event #17 (July 8, 1988-October 19, 1988) changed from a total duration of 61 days without IBT to 71 days with maximum IBT withdrawal.
< 109 cfs (7Q10)	< 5 Days	Event #4 (August 10, 1943-December 24, 1943) changed from containing 20 days under threshold without IBT to 35 days under threshold with maximum IBT withdrawal. Event # 24 (July 26, 2005-October 21, 2005) changed from containing 7 days under threshold without IBT to 22 days under threshold with maximum IBT withdrawal.
< 27 cfs (25% of 7Q10)	< 3 Days	Event #10 (July 2, 1968-November 10, 1968) changed from containing 13 days under threshold without IBT to 33 days under threshold with maximum IBT withdrawal.

* Note that an event is defined as a period of time below 300 cfs. Within that event, this chart summarizes the time the stream flow might have dropped below the identified threshold. For example, within an event that historically lasted 96 days (without the IBT), the analysis might have predicted an additional 4 days below 300 cfs, 9 days below 109 cfs, and a change in 1 day below 27 cfs when factoring in the max-day IBT.

Although each of the modeling analyses that have been performed in support of the Petition indicate a difference between the IBT and non-IBT scenarios, it is reasonable to categorize these differences insignificant for the following reasons:

1. The modeling analysis is conservative. DWR asked the applicant to include a number of very conservative assumptions so that a "worst case impact" could be identified. These assumptions, as previously discussed, include reducing GUC's wastewater discharges on the Tar River by the amount of the IBT. For many of the modeling scenarios, this change removed the entire volume of GUC's existing and projected wastewater discharge from the Tar River. The model also assumes a sustained maximum day transfer (as opposed to a predicted average day transfer with peaks approaching the max-day).
2. IBT and State Regulations require a drought management plan. GUC is required to have a Water Shortage Response Plan (WSRP) containing specific, identifiable triggers that would be put into effect in the event of drought. Therefore GUC (and the other Petitioners) would likely be under water restrictions during low flow events. GUC's WSRP triggers are tied to the stage of water at the intake location and the location of the salt water wedge.
3. The model did not take into account tidal effects. An important feature of the lower Tar River is that it is tidally influenced. Since salt water is heavier than freshwater, the salt water wedge creates a dam-like effect that pushes freshwater upstream during low flow periods. GUC closely monitors the salt water wedge since their WTP is not designed to treat saline water. GUC has also noted instances where net negative downstream flow has been recorded; however, there has been adequate water over the raw water intake. Due to the tidal influence, the Tar River channel is never depleted. This tidal buffering effect would also reduce the impact on aquatic life during critical periods.
4. The IBT request will be met with existing infrastructure. GUC has not requested an expansion of their WTP due to this request. They have sufficient capacity in their existing WTP to meet Farmville, Greene County, and Winterville's demand. The direct impact of their withdrawal was previously evaluated in the environmental documents developed (and approved) for the construction of the water treatment plant.

The Hearing Officers have taken into account the number of comments on the modeling analysis. Based on concerns that future studies may reveal additional impacts to the Tar River Basin, and considering the uncertainty engendered by the duration of the certificate, the Hearing Officers have recommended a reopener.

The City of Rocky Mount provided detailed comments concerning the possibility that future studies, particularly DWR's Tar River Basin Model or the Tar River Basin Plan, might reveal additional impacts to the Tar River. In response, the hearing officers requested that Rocky Mount and GUC jointly recommend language for the special condition. While the parties were not able to come to a mutual conclusion, each entity individually recommended verbiage that was similar to reopeners previously used by the EMC in other IBT Certificates. The most significant difference is that Rocky Mount proposed that any decision by the Commission to grant or deny a request to reopen the certificate should be subject to administrative and judicial review according to Chapter 150B of the General Statutes. However, the Hearing Officers have determined that it would not be appropriate for a condition of the Certificate to attempt to define any right a party may or may not have in challenging the EMC's decision. Therefore the hearing officer's recommend that the reopener used in previous IBT certificates also be used here.

If the Commission determines that the record on which this Certificate is based is substantially in error or if new information becomes available, that clearly demonstrates that any Finding of Fact (including those regarding environmental, hydrologic, or water use impacts) pursuant to G.S. § 143-215.22I(f) was not or is no longer supported or is materially incomplete, the Commission may reopen and modify this Certificate to ensure continued compliance with G.S. ch. 143, art. 21, part 2A. "

TOPIC VI: DIRECT IMPACTS TO RECEIVING BASIN

The following comments express concerns about the potential of increased wastewater flows to impaired and nutrient sensitive streams in the Contentnea Creek and Neuse River Basins.

Comment ID #	Comment Text
14.1	The City of Wilson is concerned about the transfer due to the potential of greater wastewater flows to the Neuse Basin. Based on current Nitrogen allocations in the Neuse Basin, how will this area grow in water use without a similar growth in the sewer flows? Will all of this flow then be pumped back to the Tar River, or land applied, or sent to the Neuse? The City of Wilson is concerned that potential water quality problems in the Neuse and Contentnea Creek could further impact point sources upstream of the IBT transfer communities.
4.10	Finally, Contentnea Creek and Little Contentnea Creek are both impaired streams. All of the communities within the receiving basin that will experience greater wastewater flow due to the growth precipitated by this IBT discharge their wastewater into these impaired streams. The Towns of Hookerton and Snow Hill, and the Contentnea Creek wastewater plant have all been non-compliant with their NPDES permits within the past year. The EA should provide a compliance history of each of the wastewater facilities as well as the communities' ability to handle the increase flow. The EA does state that no wastewater facility will need to increase their permitted discharge amount, but if the facilities suffer from inflow and infiltration, or other maintenance problems, these issues would be exacerbated by the increased growth and flow due to the IBT and should be addressed in the IBT.

Staff Response

Winterville's wastewater is treated by the Contentnea Metropolitan Sewerage District via the Contentnea Creek WWTP. This plant is permitted to discharge 2.58 MGD of wastewater to an unnamed tributary to Contentnea Creek in the Neuse River Basin.

Farmville and the majority of Greene County are located in the Contentnea Creek Basin. Farmville operates a 3.5 MGD WWTP which discharges to this basin. The majority of the wastewater treatment in Greene County is handled by on-site septic systems; however, there are three small centralized treatment systems: the Snow Hill WWTP permitted for 0.5 MGD, the Hookerton WWTP permitted for 0.06 MGD, and the Maury Sanitary Land District WWTP permitted for 0.225 MGD. All of these facilities discharge to the Contentnea Creek Basin.

The Contentnea Creek WWTP and the Hookerton WWTP were under Special Orders by Consent in 2007 and 2008 for BOD, TSS and fecal coliform violations. Those SOCs resulted in infrastructure repairs. The Contentnea Creek WWTP has completed the repairs to its collection system. The Hookerton WWTP has begun the construction of an additional treatment unit. Although these WWTPs have had permit limit violations within the past year, at this time, neither is in significant non-compliance with their respective NPDES permit limits. Any future non-compliance with the NPDES permit would be handled by the Division of Water Quality in accordance with state and federal NPDES regulations.

Since none of these facilities will be requesting an expansion (or changes to existing permit limits) to accommodate additional flows generated by the IBT, the IBT is not expected to cause direct impacts to the receiving basins.

The Hearing Officers recommended no changes be made based on these comments.

TOPIC VII: CONSTRUCTION OF TEMPORARY DAM STRUCTURE

Comment ID #	Comment Text
4.13	The EA does not adequately consider the impacts combined with the Greenville Utilities Emergency Drought Management Planning Project on the Tar River. Additional evidence of the lack of thoroughness in the environmental review stems from the Petitioner's lack of discussion of their intention to construct a temporary dam across the Tar River in the vicinity of the Greenville Utilities Water Treatment Plant. The Petition states that "it is challenging to fully understand and quantify the flow characteristics for the Tar River at Greenville" and that "[c]urrent USGS techniques for low-flow analyses do not provide a means of account for tidal effect." Petition at 3-4. Despite these challenges, the applicant should have considered this related project in its analysis of the probable environmental impacts from the IBT.
4.29	It has also come to our attention that the Greenville Utilities Commission has completed a draft Environmental Assessment regarding future drought management planning with a preferred alternative for a temporary dam structure in times of low flow. This EA should be incorporated into the analysis of the IBT Petition and EA.

Staff Response

The Division has not reviewed or approved an EA for the development of a temporary dam structure on the Tar River.

The Hearing Officers have chosen to add a reopener clause to the Certificate. The reopener clause states that if any future information should become available concerning impacts to the Tar River as a result of the IBT, the EMC may reopen the certificate to include any additional restrictions or requirements that may be necessary to mitigate the effects.

TOPIC VIII: EXISTING FINANCIAL INVESTMENT

Several of the comments expressed concern that Greenville and Farmville had already begun constructing the necessary infrastructure to transfer water between basins. These comments were submitted by local governments, who were concerned that the significant investment not be wasted, as well as from concerned citizens who felt the investment should not bias the EMC's decision.

Comment ID #	Comment Text
16.1	After an extensive investigation of available alternative water supply sources, Greene County has entered into contract with GUC to obtain alternative water supply from GUC. In a joint arrangement with the Town of Farmville, Greene County has invested millions of dollars for the construction of a delivery system that will deliver up to 5 MGD to Farmville and Greene County.
17.2	Greene County and Farmville have expended a large sum of money to date to implement the delivery system of water from Greenville to Greene County and Farmville, all in an effort to comply with the 2002 Central Coastal Plain Capacity Use Area law deadlines of 2008,2013 and 2018. The project is nearing completion and scheduled to be activated in June, 2010.
4.16	Finally, the decisions by the source and receiving basin communities to invest millions of dollars of public monies for construction of infrastructure, partially completed, for the Tar River to Neuse River proposed IBT should in no way bias the decision of the EMC.
16.3	The unfunded mandate by the State reducing our dependency on ground water by 25% in 2008, 50% in 2013 and 75% in 2018, places Greene County under an extreme hardship. Every consideration by the Environmental Management Commission is requested to allow us to implement the least cost alternative solution, which is the proposed GUC alternative.

Staff Response

This infrastructure does represent a significant investment for Farmville and Greene County and the transmission lines would continue to be useful even if the EMC were to deny the IBT request. GUC would have the option to provide these systems with ground water or finished surface water in amounts below the IBT thresholds (GUC can move up to 2 MGD out of the Tar Basin without receiving an IBT certificate). In the future, the potential exists for the purchase of water from the planned Aquifer Storage and Recovery system.

The Hearing Officers recommended no changes be made based on these comments.

TOPIC IX: IMPACTS TO AIR QUALITY

Comment ID #	Comment Text
4.8	A similar lack of attention plagues the brief discussion of impacts to air quality. In 2009, the federal government changed the air quality standard for ozone, and in doing so designated 24 counties and parts of 17 others as not meeting this new standard. Pitt County was recommended as unclassifiable due to a lack of monitoring data. The EA states that DAQ adopted new ozone standards in 1997 and that DAQ has a monitoring site in Farmville that recorded no ozone exceedances in 2006. This is outdated information. The EA should include the new federal ozone standard and an assessment of any state of federal data available for Pitt County. Again, the EA dismissed the impact of growth on the potential for impacts to air quality: "No construction activities will occur relative to the proposed project; therefore, no direct impacts to air quality will occur. Indirect impacts to air quality within the service area from growth will be minimal. "EA pp 5-26. The region may be a non-attainment area for the new ozone standard. The proposed IBT would facilitate residential and industrial growth in the receiving basin. Although this growth and the associated increases in vehicular traffic and use of lawnmowers will lead to complicate the existing air quality problems, this impact is not discussed.

Staff Response

The Final Environmental Assessment (EA) for the Greenville Utilities Commission IBT was published in October 2008. In November 2008, the Department of Administration issued a cleared letter with the Finding of No Significant Impact (FONSI). The EA included an air quality impacts discussion using information publicly available in the fall of 2007. However, in response to the concerns raised in this comment, ARCADIS was able to provide the following information:

> *The EA stated that the monitoring site in Farmville did not report any ozone exceedance days in Pitt or Greene Counties based on the 8-hour ambient ozone standard of 0.08 parts per million (ppm). The 0.08 ppm ozone standard was adopted in 1997. The monitoring site in Farmville covers a larger region, including Greene County. In 2008, the Division of Air Quality (DAQ) revised the ozone standard to 0.075 ppm. DAQ is currently reviewing the 2008 standard for a possible revision to an ozone level between 0.060 and 0.070 ppm.*
>
> *Concurrent with the revision of the ozone standard, DAQ relocated the monitoring site from the Town of Farmville to the Pitt County Agricultural Center, approximately 14.5 miles from the original Farmville location. This relocation was completed in early 2008. Due to the distance between the two locations, DAQ recommended that classification of the area (attainment or non-attainment) be deferred until three years of continuous data from a single location became available. Therefore, Pitt and Greene Counties are currently designated as "unclassifiable".*

The Hearing Officers recommended no changes be made based on this comment.

TOPIC X: AQUIFER STORAGE AND RECOVERY (ASR)

Comment ID #	Comment Text
1.8	To meet the commitments in the proposed IBT, GUC would need to expand their current facilities and would be absolutely dependent upon the Aquifer Storage and Recovery (ASR) system functioning as designed. The ASR has not been tested. It is a pioneer system in NC. It has been a troubled project since inception, taking years longer to be in place than was planned. I would be unwilling to approve creating a dependency on this project.
18.7	our long range water supply planning effort includes the use of an innovative technology, aquifer storage and recovery (ASR), which will offset future maximum day water demand. The ASR system, the first in North Carolina, will be operational this spring and we are confident that this technology, coupled with our water conservation initiatives, will allow us to manage our water resources even more effectively.

Staff Response

The IBT will not create a dependency on the ASR. GUC's water sales for Farmville, Winterville, and Greene County will be managed as described in the IBT Management Strategy. This strategy does not include a discussion the ASR system. That system is being developed as part of a long-term planning effort to provide a future water supply. The IBT is primarily being requested to replace ground water that has been lost due to the Central Coastal Plain Capacity Use Area rules.

The Hearing Officers recommended no changes be made based on these comments.

TOPIC XI: OTHER COMMENTS

The following general comments have been noted by the hearing officers and are included here as part of the public record.

Comment ID #	Comment Text
1.11	I ask that the Division of Water Resources view this from the perspective of a better management scheme. I believe it would be much better to manage water resources conservatively within their natural basin.
1.14	… the newly developed and potential for future development of Neuse River supplies is adequate without the potential problems associated with InterbasinTransfers,
1.5	I think it reasonable for areas with limited resources to recognize those limits and plan not to exceed the limits available.
1.6	Stream flows and receiving streams will be impacted by the proposed IBT as will the natural characteristics of the waters affected. These effects and impacts are not necessary and are not even needed except possibly in the minds eye of municipal officials and self aggrandizing developers in the region.
1.9	Development in Farmville, Winterville, and Greene County promotes rural sprawl. Thus the proposed IBT promotes rural sprawl. It would be more efficient and conservative of water resources to develop within the Greenville Urban Area. While it may seem outside the purview of the division whose approval is needed, the agency can surely not be blind to this problem.
5.4	As in many other communities, the Town supports the desire of the Division of Water Resources for communities to seek a regional solution to issues such as water capacity. The town already has connection with Greenville Utilities and bell Arthur Water Corporation. As other communities tie in with the GUC system, these connections will provide the ability to provide water over a large portion of Pitt County and Greene county. This further enhances the region's ability to tie into other water systems in the region that could be a tremendous asset in the times of emergencies or water shortages.
5.5	This project is a true approach to a regional problem that will make eastern NC a stronger area of the state with increased potential. The City of Greenville is the "hub' of eastern NC with the ability to provide services on a regional scale. This ability is a real benefit to the region as a while as well as provide for economies o scale when future needs have to be addressed.
6.4	Please understand that Rocky Mount is not attempting to oppose the requested IBT but does believe that extension of the comment period and inclusion of the above conditions are necessary to ensure that Rocky Mount's future water needs are fairly protected.
10.2	In addition, I think the environmental impact from such a drastic measure is essentially unquantifiable before the action, and may be irreparable after. The Tar River ecosystems are so complex and finely balanced there is just no telling what the consequences will be. Disturbing the flow of river basins, which have evolved over millenniums, is a drastic and risky action that may end up causing more problems than it solves. I for one don't think it's worth the risk.
11.3	I believe this issue is much more than being selfish and not wanting to be a good neighbor and assist other areas with a limited water supply. Science suggests river systems are best managed within their own basins, which precludes siphoning water off to other basins. We all must now learn to live in harmony with nature and within the natural resources available to us, and that means limiting water hungry development where the water is not available to support it.
16.2	Based upon 2009 statistics from the NC Dept. Of Commerce, Greene County is one of the forty most distressed counties within NC, thus receiving a Tier 1 designation. Greene County has a population of 21,205 (2008 projection by Office of State Budget Management) and is solely dependent on agriculture. Greene County has only three incorporated towns, Snow Hill (Pop 1,618)' Walstonburg (Pop. 23 1) and Hookerton (Pop 485). The annual median household income for Greene County is $32,074 as compared to the Mean average of $39,184 (2000 census data). Twenty percent of the people in Greene County are classified as "Poverty". Greene County must have an economically feasible solution for water supply. The proposed purchase of water from GUC is the most economically and technically feasible solution available.
17.3	The proposed interbasin transfer will not result in significant direct or indirect environmental impacts. Failure by GUC to obtain an IBT Transfer Certificate will result in extreme hardship on the citizens of Greene County and the Town of Farmville
19.3	Feels the EA is good but it doesn't address everything.

Comment ID #	Comment Text
19.5	Bell Arthur is in the Neuse basin so the transfer there (from Neuse WASA) remains in the Neuse (not an IBT by NRWASA).
21.1	LaGrange purchases water from Farmville and thus relies on this water being made available.
21.2	Neuse WASA is transferring some water in the opposite direction to Bel Arthur (offset of impacts)

TOPIC XII: RECOMMENDATIONS TO THE EMC

The following comments are direct recommendations to the EMC on special conditions and proposed action regarding GUC's Petition for an interbasin transfer certificate. The hearing officers have reviewed these recommendations and they are provided here as a reference for the full EMC.

Comment ID #	Comment Text
4.1	Although the new requirements do not go into effect for interbasin transfers to supplement ground water supplies in the fifteen counties designated as the Central Coastal Plain Capacity Use Area under until January 201 1 (H.B. 820 (7)(b) (2007)), it would be shortsighted of the Environmental Management Commission not to consider the broad policy objectives stated in the amendments in looking at the proposed transfer. Our comments rely on the requirements set out in N.C. Gen. Stat. 143-21 5.221 but we urge the EMC to consider the spirit of the amendments in reviewing the GUC Petition.
4.17	Based on the previous comments, we urge the EMC to deny the request for the proposed IBT at this time. As noted above, the EMC does not have the necessary information to grant the certificate.
4.18	Given the significant environmental impacts of the proposal, we also encourage the EMC to reconsider the adequacy of the EA and the associated Finding of No Significant Impact.
4.19	SEPA requires the preparation of an environmental assessment, and, if warranted, an environmental impact statement ("EIS") for any transfer of surface water that requires the filing of a Petition pursuant to the Surface Water Transfer Act, N.C. Gen. Stat. 143-215.221; 113A-8.1. An EIS is required if the scope and environmental impact of a planned project is significant. N.C. Admin. Code 25.0501. The EA for the GUC IBT shows that there will be significant impacts and that an EIS was warranted. Therefore, the EMC should deny the Petition and require GUC to complete a full and comprehensive environmental review of this project and associated projects.
4.20	Again, we believe the EA and Petition do not provide enough relevant information on the secondary and cumulative impacts in both basins for the EMC to be able to make this decision. But, if the IBT is to be granted, we recommend the following: 1. The EMC should make the IBT a temporary certificate and provide enough time for the receiving basin communities to identify and make the necessary investments for Neuse Basin source water. The cross-connections currently being built to GUC could be used for emergency connections in the future.2. The EMC should require regional land-use planning to insure that as growth occurs is does not exceed the available water supply.3. The EMC should reduce total IBT amount to reflect the stated objectives of replacing cretaceous aquifer water source of approximately 4 mgd. 4. The EMC should require aggressive water conservation measures enacted by both source and receiving basins, including but not limited to: Home fixtures retrofit program, Ordinances for requiring (or incentivizing) cisterns or other rain water harvesting uses, Separate irrigation meters and higher pricing for irrigation, Comprehensive educational programming and written information 5. The EMC should require that GUC submit a plan and implement activities for reducing per capita residential water use by 10% over a 10-year time period. 6. The EMC should require that GUC submit a plan and implement for reducing per capita industrial water use by 5% over a 10-year period.7. The EMC should require that GUC conduct a feasibility study and create an action plan for water reclamation projects.8. The EMC should require that the receiving basin wastewater treatments plants remain in compliance with their NPDES permits 11 of 12 months of the year or face reduction in IBT amount.
4.21	The Surface Water Transfer Law requires the EMC to issue a certificate for the proposed transfer if- and only if - two conditions are met: the benefits of the proposed transfer must outweigh the detriments, and the detriments must be mitigated "to a reasonable degree." N.C. Gen. Stat. $ 143-215.22I(g). The EMC must find that these conditions are met "by a preponderance of the evidence," ie., a legal standard requiring that the evidence on which a decision rests be credible, and that the evidence, taken as a whole, shows that the facts sought-it to be proved is more probable than not. Given the numerous inadequacies, errors and oversights in the EA, this standard cannot be met. The EMC should exercise its authority to deny the Petition and certificate in accordance with N.C. Gen. Stat. $ 143-2 15.22I(h).
4.22	Based on our previous comments submitted in December, we continue to urge the EMC to deny the request for the proposed IBT at this time. The EMC does not have the necessary information to grant the certificate.
4.23	We have also had the opportunity to review comments from and confer with the City of Rocky Mount, and echo the concerns and problems the City raised in its comment letter. If the EMC moves forward with the Petition, we strongly encourage the state to consider the conditions proposed by the City of Rocky Mount.

Comment ID #	Comment Text
4.24	The first condition Rocky Mount proposed is that the certificate be revisited upon completion of the Tar River Hydrologic Model. PTRF and SELC strongly support this recommendation and suggest that the EMC incorporate similar language as was used in previous IBTs. In the CMU and Cary/Apex IBT certificates, the EMC included the condition below: "The Commission notes that future developments may prove the projections and predictions in the EIS to be incorrect and new information may become available that shows that there are substantial environmental impacts associated with this transfer. Therefore, to protect water quality and availability and associate benefits, modification of the terms and conditions of the certificate may be necessary at a later date." If the EMC moves forward with the GUC IBT, the final certificate should include similar language triggering a reopening of the certificate based on the Tar River Hydrologic Model.
4.26	An additional condition, similar to that included in the Cary/Apex IBT below, should be included to ensure that any drought management measures and other mitigation measures are properly enacted. The Cary/Apex IBT certificate included the following: "Prior to transferring water under this certificate, the holders of this certificate shall work with the Division of Water Resources to develop compliance and monitoring plan subject to approval by the Division. The plan shall include methodologies and reporting schedules for reporting the following information: maximum daily transfer amounts, compliance with permit conditions, progress on mitigation measures, drought management, and reporting. A copy of the approved plan shall be kept on file with the Division for public inspection. The Division of Water Resources shall have the authority to make modifications to the compliance and monitoring plan as necessary to assess compliance with the certificate. "
4.6	Furthermore, the applicant suggests that since an IBT certificate would be needed for a NRWSA transfer to Winterville since the transfer occurs from the Neuse River to the Contentnea Creek sub-basin, that this automatically negates this as a viable option. The 2007 changes to the SWTA clearly demonstrate that a transfer of water within a major river basin (i.e. Neuse to Contentnea sub-basin) is preferred over a transfer between major river basins.
5.1	The purpose of this letter is to inform you of the Town of Winterville's official support for Greenville Utilities Commission's Petition for an interbasin Transfer Certificate. The approval of this Petition is not only important to the Town of Winterville but to neighboring communities as well.
5.3	The Town believes that the EMC has an obligation to allow Winterville to replace its previously permitted water supply capacity with a high quality water that is readily available and accessible.
6.11	The City of Rocky Mount requests that any IBT certificate issued to the GUC include a condition allowing the Certificate to be reopened following completion of the Tar River Hydrologic Modeling and Water Resource Plan if the results indicate that the approved IBT impinges upon Rocky Mount's ability to modify its water shortage response plan. Rocky Mount is concerned that, if approved, the demand to transfer water outside the basin could influence the decision to approve a requested change in the release protocol for the Tar River Reservoir. To guard against this possibility, in our comments dated December 1, 2009, Rocky Mount proposed several conditions that might be included in the IBT certificate. Upon further reflection, Rocky Mount now considers that a condition that would allow, upon the approval of the EMC, the certificate to be reopened following the completion of the Tar River Hydrologic Model would be the best option for protecting the interests of all users in the losing basin while still allowing GUC to address their immediate needs.
6.3	Rocky Mount requests that the EMC consider including conditions in the IBT certificate that: 1. Acknowledge that Rocky Mount's drought management plan will be evaluated based on the normally applicable criteria and not its potential effect on the requested IBT. 2. Provide that if implementation of Rocky Mount's approved drought management plan causes flows at Greenville that result in unacceptable impacts (e.g., location of the salt front) or are insufficient to allow the permitted transfer, the systems that receive the transferred water will resume ground water pumping until such time as conditions allow resumption of the transfer. The ground water pumped as a result of these modified operations will be offset by additional transfers during periods of higher flow in the Tar River over a period of no longer than one year following the resumption of transfers so that there will be no net change in the amount of the ground water pumped over the long term.. 3. Provide that if at such time as Greenville applies for an increased withdrawal, there is insufficient water to meet in-basin needs, including those of Rocky Mount, the transfer will be reduced in order to accommodate in-basin needs.
7.4	I strongly urge that this proposed plan be thoroughly reviewed.
8.4	I support the use of GUC water to Winterville. This proposal would have minimal impact on the environment and would supply all parties with needed water.
13.1	The City of Oxford supports the request for an interbasin transfer by the Greenville Utility Commission.

Comment ID #	Comment Text
14.4	We support Rocky Mount's request to extend the comment period for 45 days to complete a revised drought management plan. This is particularly important due to the existing modest emergency interconnection capable of transferring 1.9 MGD installed by both communities after the drought of 2007-2008.
15.1	Greene County is strongly in favor of the Environmental Management Commission issuing the Interbasin Transfer Certificate to GUC without delay.
16.3	The unfunded mandate by the State reducing our dependency on ground water by 25% in 2008, 50% in 2013 and 75% in 2018, places Greene County under an extreme hardship. Every consideration by the Environmental Management Commission is requested to allow us to implement the least cost alternative solution, which is the proposed GUC alternative.
17.4	Request favorable consideration by the Environmental Management Commission in granting the Greenville Utilities Commission's request for an IBT Certificate permitting the delivery of water from Greenville Utilities Commission to Greene County and the Town of Farmville (Tar River Basin to Neuse River Basin)
18.8	We have implemented a regional water supply strategy that utilizes our unique geographical advantages. Our conjunctive use approach to water supply planning has positioned us to be a regional water provider. Our mission is to protect water resources and provide regional water supply solutions to our customers and to our neighbors in critical need. We sincerely hope that our regional approach may serve as a model for neighboring watersheds faced with similar water supply concerns.

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DENR, Division of Water Resources

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Environmental Management Commission

Copies:
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Tony Cannon, Greenville Utilities
Ron Elks, Greenville Utilities
Richard Wyche, ARCADIS

From:
Mary Sadler, Hazen and Sawyer

Date:
July 21, 2010

ARCADIS Project No.:
NC706015.0030

Subject:
Explanation of IBT Management Strategy
Hearing Officer's Report Request for Additional Information
Greenville Utilities Commission Interbasin Transfer Certification

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Introduction

In June 2010, the Hearing Officers requested more information on the premise behind the development of the Interbasin Transfer (IBT) Management Strategy for Greenville Utilities. The IBT Management Strategy was presented in detail in the Final Environmental Assessment (EA) and IBT Petition. This Technical Memorandum (TM) clarifies the significant elements of the IBT management strategy, such as average day demand versus maximum day demand, the use of banked water, the definition of average day and maximum day bulk sales, and the definition of the Approved Base Rate (ABR) relative to actual groundwater use. This TM references the water demand projections developed in the EA, and will not be repeated herein.

A key element of the IBT Management Strategy is the Water Purchase Agreements with Greenville Utilities. These water purchase contracts between Greenville Utilities and each community specify that Greenville Utilities reserves the right to curtail water if the Greenville Utilities water system is approaching a maximum day demand. The magnitude of the maximum day demand will determine whether or not Greenville Utilities has enough excess capacity to sell water. The Purchase Agreements limit water curtailment to a maximum of 10 percent of the year, or 36 days per year.

Definitions

Approved Base Rate (ABR) – The Central Coastal Plain Capacity Use Area (CCPCUA) rules specify the use of an ABR as the reference groundwater withdrawal rate for future reductions in groundwater. The ABR is based on a system's annual water use in calendar years 1997 or 1999. The total withdrawal for the selected year is converted into an annual average day value by dividing by 364 days. The new average annual ABR eliminates the maximum and minimum withdrawals that occurred during that year. The ABR for Winterville, Farmville, and Greene County are 0.496 million gallons per day (mgd), 1.572 mgd, and 2.96 mgd, respectively

Allowable Groundwater Pumping Rate – The allowable groundwater pumping rate is the ABR decreased by 25 percent in 2008, 25 percent in 2013, and 25 percent in 2018 for a total reduction in water withdrawal of 75 percent.

Maximum Day Demand – The maximum day demand flow rate, referred to as 'maximum day', is the largest water demand event occurring in a year rate. Maximum day demand projected out over a 20-year planning period is the capacity at which water systems are permitted (e.g. water treatment plant capacity and Interbasin transfers). Water systems must provide water to users during high demand events. The maximum day flow rate occurs once a year, but can be approached two or three times a year.

Peaking Factor – The peaking factor is the ratio of the maximum day demand to the annual average day demand. Peaking factors typically vary by community, but typically range from 1.4 to over 2.0.

Banked Water – Banked water is the volume of water that can be conserved by not pumping groundwater at the allowable pumping rate. If the projected demand can be met entirely or in part from another source of water, e.g. the purchase of finished water from Greenville Utilities, then that excess groundwater may be conserved, or "banked", for future use. Banked water will primarily be used when Greenville Utilities must curtail water to each community to satisfy the system demand for Greenville Utilities. Banked water may be pumped at a higher rate than the allowable pumping rate as long as the total volume of banked water is not exceeded.

Banking groundwater is specifically allowed by CCPCUA rules. All of the communities submitted a letter of intent to bank water to the Division of Water Resources (DWR) in 2003. DWR has approved banking for Farmville, Winterville, and Greene County. The approval included several provisions for calculating and reporting the banked amount.

Average Day Bulk Sale of Finished Water – The average day bulk sale of finished water is the projected water demand less the allowable groundwater pumping rate plus 50 percent of the allowable groundwater pumping rate. In other words, it was estimated that each community would buy 50 percent more water from Greenville Utilities on an average day to meet projected demand in order to reduce the groundwater withdrawal. This strategy allows groundwater to be stored, or banked, for future use.

Maximum Day Bulk Sale of Finished Water – The maximum day bulk sale is the projected water demand multiplied by the peaking factor less the allowable groundwater pumping rate. The maximum day bulk sale effectively reduces the overall IBT amount by using groundwater to help meet demand.

Interbasin Transfer – The Interbasin transfer was calculated on an average day and a maximum day basis. The General Statutes specify that the regulated IBT amount be based on a maximum day, consistent with permit requirements of water treatment systems across the state. The IBT projections factor in consumptive use for each community and the return of water to the source basin, if applicable. The average day IBT projections are based on the average day bulk sale of finished water. The maximum day IBT projections are based on the maximum day bulk sale of finished water.

Normalizing Historic Water Demand

Every community experiences minimum, average, and maximum day water demands throughout the year. From year to year, the highs and lows in water demand will usually vary with season. The perception is the maximum day demand occurs only in the hottest months of the year. This perception is not valid every year. Water systems will experience maximum day demands at any time during the year, including the coldest months.

In order to illustrate this point, a historic diurnal curve was created for each community. Five to ten years of daily water production records were compiled for each community. For each day, a factor was calculated to represent the demand on that day relative to the annual average for that year. The highest calculated factor will correspond to the maximum day for that year. Likewise, the lowest calculated factor will correspond to the minimum demand day that year. The calculated factors essentially normalize the historic diurnal curve such that a demand pattern is created for each community over the period of record. Maximum and minimum days do not occur on the same day at any time during the historic record for Greenville Utilities, Farmville, Winterville, or Greene County.

The normalized pattern can be used to create a diurnal demand curve for future projections. The normalized pattern should only be applied to average day projections (e.g. average day bulk sales or average day water demands) since the maximum and minimum days are produced using the normalized diurnal pattern.

Greenville Utilities Sale of Finished Water

Greenville Utilities will sell excess finished water to each community up to the permitted 22.5 mgd water treatment plant (WTP) capacity. Currently, the annual average for Greenville Utilities has hovered around 10 mgd for the last several years. On an average day basis, Greenville Utilities will be able to sell water to each community entirely. Greenville Utilities will also be able to sell water to a community if that community is experiencing a maximum day. The maximum day for each community is not expected to occur on the same day (per the aforementioned explanation). However, if Greenville Utilities approaches a maximum day, the Water Purchase Agreements stipulate that Greenville Utilities reserves the right to curtail water, if necessary, to all of the communities if it is anticipated that WTP capacity may be exceeded.

To illustrate this concept, the diurnal pattern was applied to the average day bulk purchase for each community, including Greenville Utilities. Each community's diurnal bulk sale curve was added consecutively to the projected demand diurnal curve for Greenville Utilities. Figure 1 provides an illustration of this concept. Greenville Utilities will be able to provide finished water to each community until 2030. Figure 1 also illustrates that if the combined community rate exceeds the 22.5 mgd WTP capacity, the use of banked water will be essential for meeting demand, as Greenville Utilities will be required to curtail water.

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Explanation of IBT Management Strategy

Figures 2, 3, and 4 were created for Farmville, Greene County, and Winterville, respectively, to illustrate the IBT Management Strategy for each individual community. Each figure provides an illustration of the projected average day bulk sale and water demand applied to the diurnal pattern to create projected sale and demand curves to 2030. The allowable groundwater pumping rate and ABR are also indicated on each figure. Furthermore, the historic minimum, maximum, and selected peaking factors are also plotted with respect to the ABR. The IBT projections, with and without groundwater use, are also represented on each figure.

There are several important points to note, as follows:

1. The ABR multiplied by the peaking factor is a translation of the ABR to a historic maximum day flow. The ABR is an annual volume that has been normalized to an annual average. The ABR does not take into account historic peaking factors. Each community has historically pumped a wide range of peaking factors compared to the ABR.
2. The selected peaking factor used to project maximum day bulk sales and the 2030 IBT amount represents a decline from historic use. The selected peaking factor for Farmville is 1.7, a reduction from a maximum historic peaking factor of 2.4. The selected peaking factor for Greene County is 1.75, a reduction from a historic maximum of 1.98. Winterville's historic maximum peaking factor was as high as 2.75, with a selected peaking factor of 1.8.
3. It should be pointed out that smaller water systems tend to exhibit slightly higher peaking factors than larger utilities. Smaller systems have less buffering in the distribution system (e.g., elevated storage, large distribution mains, etc.). The selected peaking factors were chosen specifically for each system based on historic data; however, the peaking factors were also selected with the understanding that Interbasin transfers require a rigorous evaluation of water conservation in the form of reduced use, with one example being a reduction in the peaking factor used to determine maximum day.
4. One primary question that has arisen in the public comment period is how much water is being replaced by the CCPCUA rules. Prior to the CCPCUA rules, each system could have reasonably experienced, and met, a maximum day demand with a high peaking factor for short periods of time. Water systems must provide water to users during high demand events. The ABR eliminated the ability of each community to provide the maximum day flow to customers.
    a. For Farmville, essentially all of the transferred water will replace the groundwater removed by the CCPCUA rules. The bulk water projections applied to the diurnal pattern show that Farmville will not begin to exceed the ABR x the selected peaking factor until approximately 2023. If the historic maximum day peaking factor is used compared in lieu of the selected peaking factor, then the water transferred would be considered a total replacement.
    b. For Greene County, all of the transferred water will replace the groundwater removed by the CCPCUA rules. The bulk sale projections do not approach the ABR x the selected peaking factor until approximately 2028.
    c. For Winterville, the 1999 ABR was extremely low compared to the growth the town has experienced between 2000 and 2008. The IBT calculations for

Winterville used a peaking factor that is below the minimum historic peaking factor and significantly lower than the historic maximum peaking factor. Even though the transferred water can not necessarily be considered a replacement due to the CCPCUA rules, the peaking factor Winterville must adhere to is significantly lower than the historic peak. Consistent with other capacity use communities, the ability to meet a maximum day demand via a peaking factor is how the Winterville system was operating for years prior to the CCPCUA rules.

5. Banked water will be used in those instances where Greenville Utilities must curtail water.
6. The IBT calculations are based on a reduction in peaking factor from historic use. Additionally, the maximum day bulk sale effectively reduces the overall IBT amount by using groundwater to help meet demand.

Conclusions

The IBT Management Strategy was developed to provide a sustainable water supply solution for Greene County, Farmville, and Winterville. The CCPCUA rules eliminated the ability of these communities to provide the maximum day water demand that is required of water systems. Additionally, the IBT Management Strategy uses each community's allowable groundwater pumping capacity to help meet water demands for the maximum day demand, effectively reducing the total amount of the transfer.

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Figure 1: Explanation of Wholesale Finished Water from Greenville Utilities to Greene County, the Town of Winterville, and the Town of Farmville

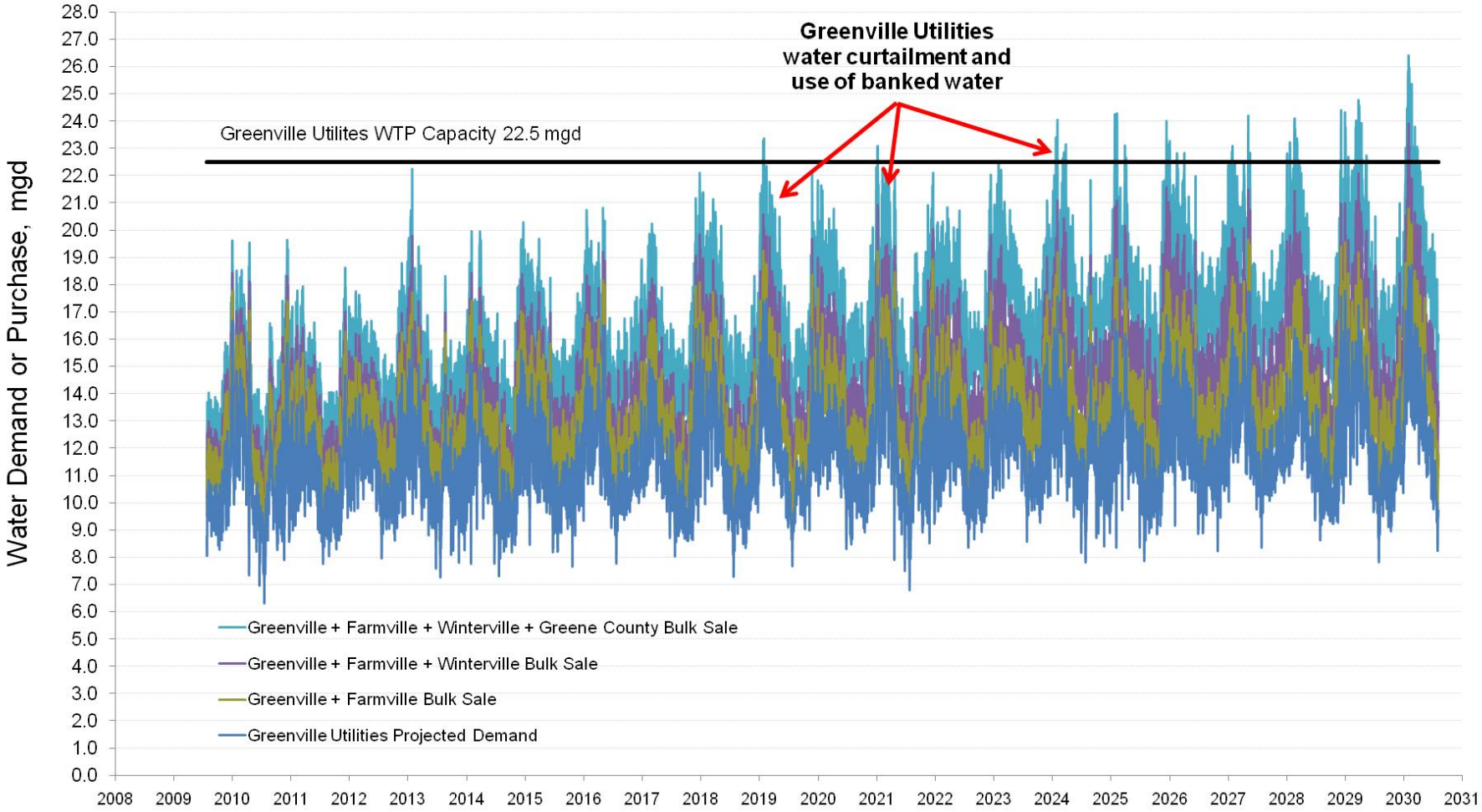

Figure 2: Town of Farmville

Interbasin Transfer Management Strategy - Projected Demand, Bulk Purchase, Interbasin Transfer, and ABR

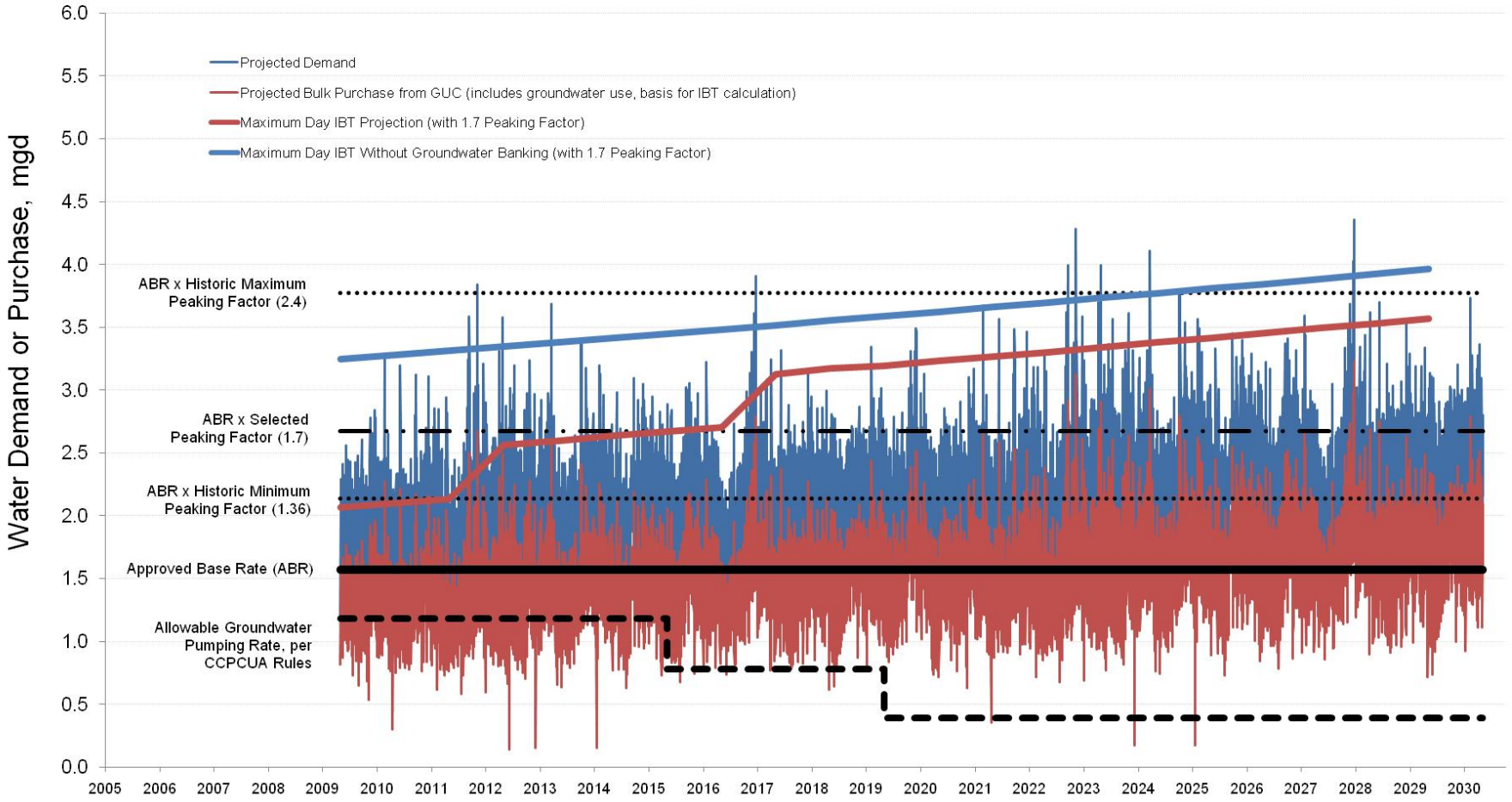

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Figure 3: Greene County

Interbasin Transfer Management Strategy - Projected Demand, Bulk Purchase, Interbasin Transfer, and ABR

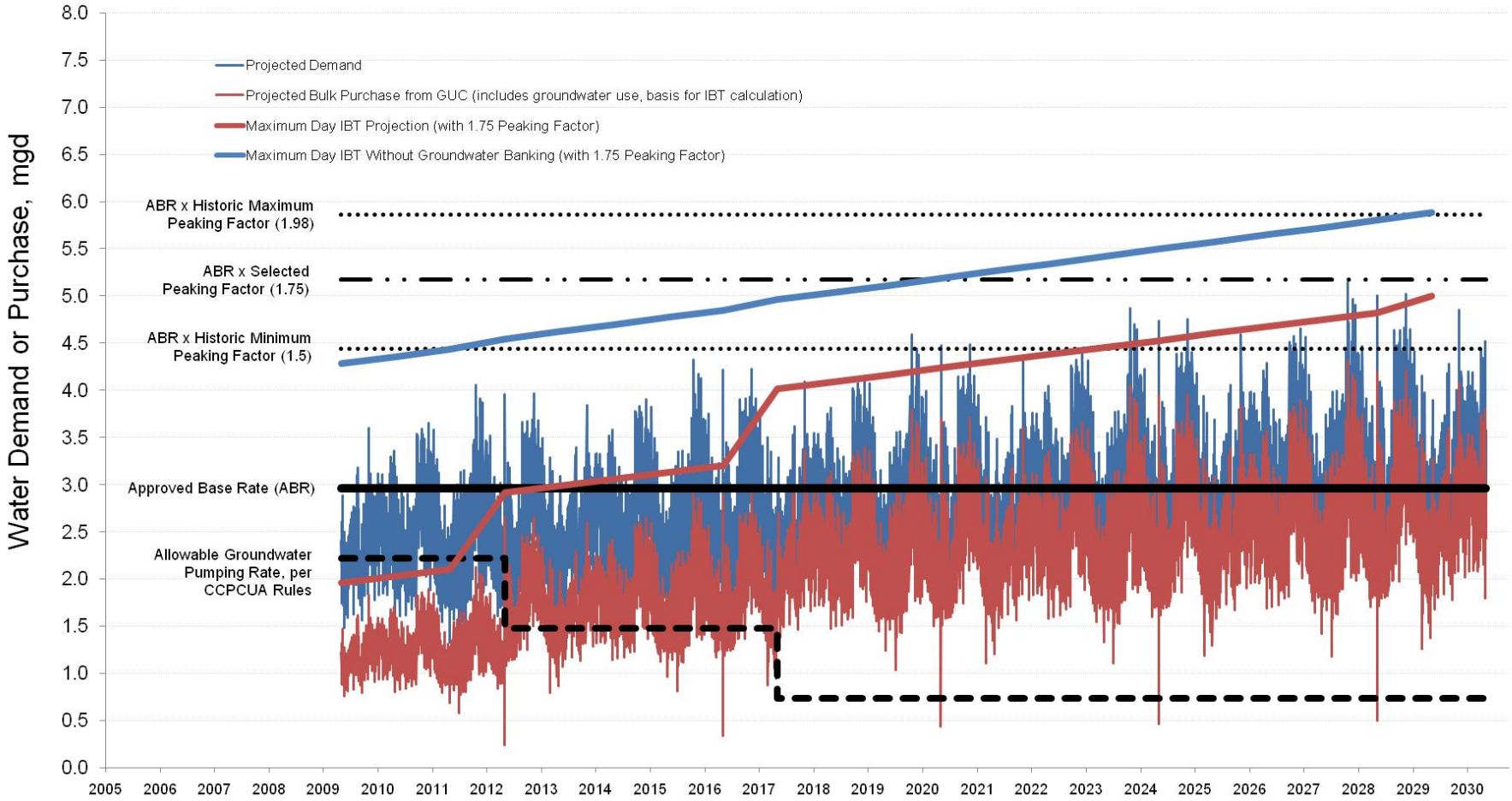

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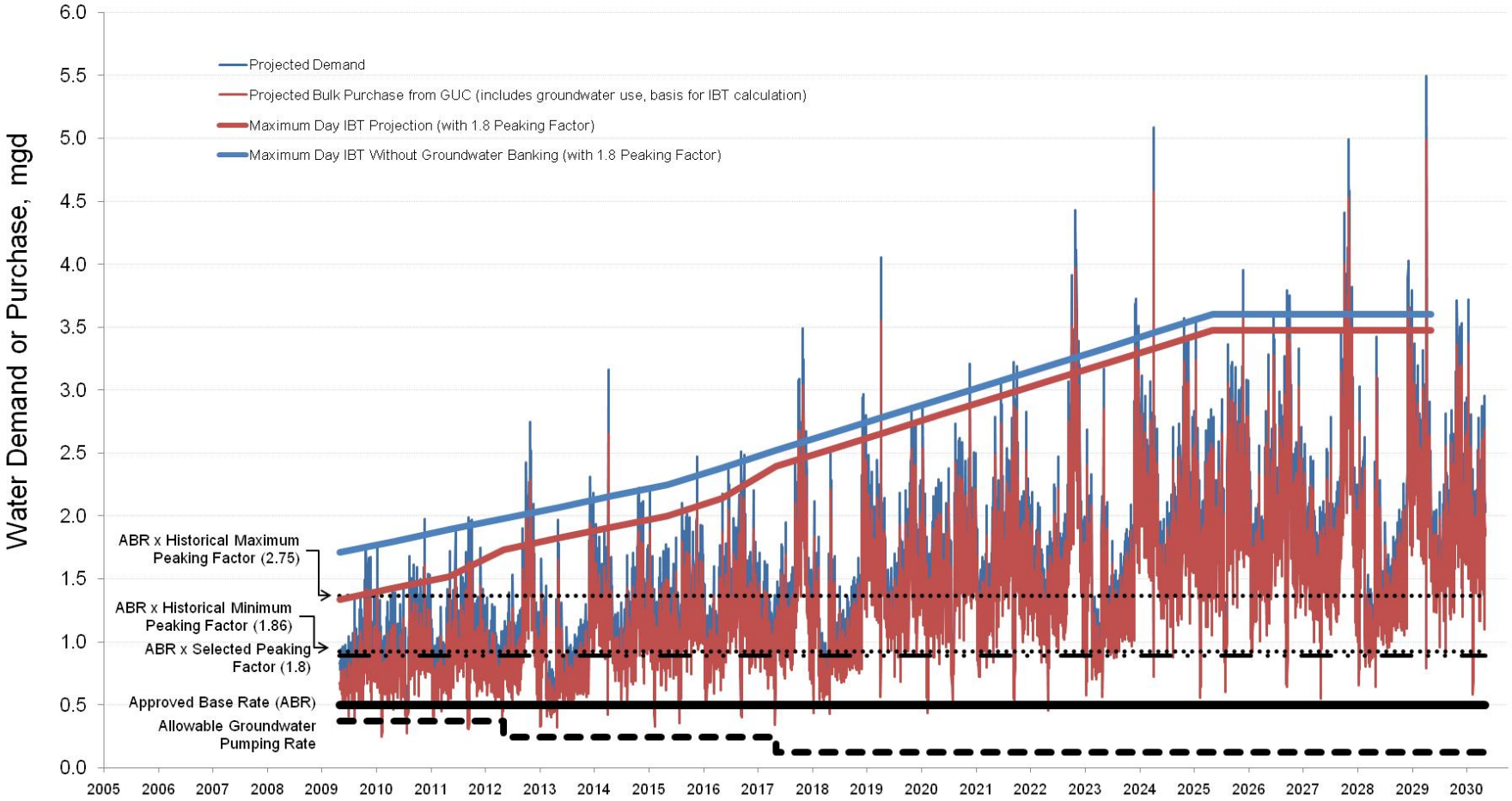
Figure 4: Town of Winterville

Interbasin Transfer Management Strategy - Projected Demand, Bulk Purchase, Interbasin Transfer, and ABR



NCDENR

North Carolina Department of Environment and Natural Resources
Division of Water Resources

Beverly Eaves Perdue
Governor

Thomas A. Reeder
Director

Dee Freeman
Secretary

September 8, 2010

To: Kevin Martin
Stan Crowe

From: Tom Reeder, Director
Division of Water Resources

Subject: Additional information to consider for the Greenville Utilities Commission IBT Certificate

The Central Coastal Plain Capacity Use Area rules require that permitted ground water users meet certain conservation measures as described in 15A NCAC 2C .0502(d)(5)(A-C). Conservation measures depend on the type of water user. Until now, our staff has only asked for a description of those measures adopted or planned by the water user during the CCPCUA permit application process.

Beginning in January 2011, letters will be mailed to each CCPCUA permit holder requiring them to fill in a water conservation form which will allow them to update the description of their current conservation measures and any measures that are in planning stages. These forms must be returned within 60 days. Any permit holder whose conservation measures fail to meet the minimum program as described in 15A NCAC 2C .0502(d)(5)(A-C) will be required to adopt measures that do meet the minimum program requirements, or they will be issued a Notice of Violation. If issued a NOV, the permit holder will be required to adopt new conservation measures or revise their plan in order to come into compliance.

If a permit holder does not respond within 60 days of the initial request, a Notice of Violation will be issued and that permit holder will be required to submit their water conservation form in order to come into compliance.

All water use conservation measures described in the CCPCUA rules will have to be adopted by the permit holder before their next permit renewal. Which means that the minimum water conservation efforts recognized in the CCPCUA rules will be met as a condition in their next permit.

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Environmental Management Commission

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Randy Emory, Greenville Utilities
Tony Cannon, Greenville Utilities
Ron Elks, Greenville Utilities
Richard Wyche, ARCADIS

From:
Mary Sadler, Hazen and Sawyer

Date:
July 27, 2010

ARCADIS Project No.:
NC706015.0030

Subject:
Summary of Water Conservation Requirements per CCPCUA Rules
Hearing Officer's Report Request for Additional Information
Greenville Utilities Commission Interbasin Transfer Certification

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In June, the Hearing Officer's requested more information on the status of the water conservation measures contained in the Central Coastal Plain Capacity Use Area (CCPCUA) Rules for the Town of Farmville, the Town of Winterville, Greene County, and Greenville Utilities. The six water conservation points specified in the CCPCUA Rules are as follows:

1. Adoption of water-conservation based rate structure (flat, increasing block, etc.).
2. Implementation of water loss reduction program if unaccounted for water is greater than 15%.
3. Adoption of a water conservation ordinance for irrigation.
4. Implementation of a retrofit program that makes available indoor water conservation devices to customers.
5. Implementation of a public education program.
6. Evaluation of the feasibility of water reuse as a means of conservation.

Table 1 provides a matrix table for each community with respect to their progress on each of the six CCPCUA water conservation requirements. Documentation is provided in the referenced attachments, if applicable. Table 1 also provides an implementation schedule for any outstanding items.

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Table 1: Summary of Water Conservation Measures per CCPCUA Rules for Greenville Utilities, Farmville, Greene County, and Winterville

	Water Conservation Measure	Greenville Utilities	Town of Farmville	Greene County	Town of Winterville
1.	Adoption of water-conservation based rate structure (flat, increasing block, etc.).	• Greenville Utilities has a flat rate structure with an increasing monthly base rate per meter size. • See Attachment GUC1.	• In 2008, the Town adopted a water rate structure that specifies a flat rate for the first 2,000 gallons, an increasing rate up to 3,000 gallons, a decline in rate up to 4,000 gallons, and an increase in rate over 5,000 gallons. • See Attachment F1.	• In 2007, the County adopted a flat rate structure for residential customers. • See Attachment GC1.	• The Town is considering an increasing rate structure that will have a higher cost for higher consumption rates. • Schedule for implementation expected July 2011 (start of 2011-2012 fiscal year). • See Attachment W1.
2.	Implementation of water loss reduction program if unaccounted for water is greater than 15%.	• Greenville Utilities performed a Water Audit in 2009. The Audit reported a total water loss of 8.7%. Therefore, a water loss reduction program is not needed. • See Attachment GUC2.	• The Town's unbilled water percentage is 7.4%. Therefore, a water loss reduction program is not needed. • See Attachment F2.	• PENDING	• The Town's unbilled water percentage is 4%. Therefore, a water loss reduction program is not needed. • See Attachment W2.
3.	Adoption of a water conservation ordinance for irrigation.	• PENDING	• PENDING	• PENDING	• The Town does have irrigation meters. • The Town expects that an irrigation ordinance will be in place by June 30, 2011.
4.	Implementation of a retrofit program that makes available indoor water conservation devices to customers	• PENDING	• The County passed a resolution that applies credits towards a water bills for the installation of standard fixtures for low flow fixtures. • See Attachment F4.	• The County passed a resolution that applies credits towards a water bills for the installation of standard fixtures for low flow fixtures. • See Attachment GC4.	• The Town is considering elements of water conservation retrofit programs around the country. • Winterville also provides energy audits for residents upon request. • Work is underway for a more comprehensive retrofit program. The Town expects a retrofit program to be

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Table 1: Summary of Water Conservation Measures per CCPCUA Rules for Greenville Utilities, Farmville, Greene County, and Winterville

	Water Conservation Measure	Greenville Utilities	Town of Farmville	Greene County	Town of Winterville
					complete by July 2012. • See Attachment W4.
5.	Implementation of a public education program.	• Greenville Utilities has an extensive public education program: brochures, billboards, radio announcements, website links, etc. Greenville Utilities is also a member of the "Water, Use It Wisely" campaign. • Greenville Utilities is also extremely proactive is getting the message out during triggered Stage 1, 2, and 3 water conservation requirements during drought. • See Attachment GUC5.	• The Town has given water conservation presentations since 1999. • See Attachment F5.	• Conservation information is displayed on monthly billing statements. Information is also available as posters on the Water Department bulletin board. • Greene County adopted the North Carolina Plumbing Code in 1999. • See Attachment GC5.	• The Town implements a public information brochure "*Water Conservation Starts at Home.*" This brochure is mailed to individual households twice per year and made available at the Town Hall, Police Station, Planning Office, and Library. • The Town has developed a *Winterville Utility Conservation Program Proposal*. It is expected that elements of this Program will be implemented by July 2012. • See Attachment W5.
6.	Evaluation of the feasibility of water reuse as a means of conservation.	• Greenville Utilities Commissioned a *Reclaimed Water Feasibility Analysis* in 1999. The analysis recommended a reuse demonstration project at two locations. The Report also provided cost estimates for implementing reuse alternatives. GUC has not implemented any reuse projects at this time. • See Attachment GUC6.	• A 2005 study was completed that included a discussion of water reuse for Farmville and Greene County. The report indicated that Farmville completed a reuse project in 2003 to pump reclaimed effluent to a local golf course for irrigation. • See Attachment F6.	• A 2005 study was completed that included a discussion of water reuse for Farmville and Greene County. The report identified potential reuse customer; however, the existing waste treatment facilities in Greene County would require significant upgrades to achieve reuse quality water. • See Attachment GC6.	• The Town has implemented to industrial reuse projects in recent years. The first is the Winterville Machine Works Company that uses reclaimed water as well as internal recycling. The second facility, now closed, was the Fullerton plant that used reclaimed water in the industrial cooling process. • See Attachment W6.

GREENVILLE UTILITIES

Attachment GUC1

GREENVILLE UTILITIES COMMISSION

SEWER RATE SCHEDULE S-1
IN-CITY & OUT-OF-CITY

I. APPLICABILITY

This rate schedule is applicable to all customers served under Water Rate Schedules W-1 and W-2. The applicable sections of the Greenville Utilities Commission Sanitary Use Regulations, including latest amendments, shall apply to all customers connected to the Commission's sanitary sewer system.

II. AVAILABILITY

Sewer service will only be available to customers being served under Water Rate Schedules W-1 and W-2 and customers being provided sewer service under Sewer Rate Schedule S-5, except as specifically approved by the Commission. Where a customer is not served under these Rate Schedules special billing will be made for sewer service.

Except in areas where it is obvious that water customers are not connected to the sewer, the Commission will assume water customers have sewer connections and will bill both Sewer Base Facilities Charge and Sewer Volume Charge noted below.

This rate schedule is not applicable where sewer mains are not available, and no sewer charges will be made.

III. Monthly Sewer Charge

The monthly sewer charge shall be the sum of the (a) Sewer Base Facilities Charge (b) Sewer Volume Charge (c) Waste Surcharge (d) Pretreatment Analysis Charges, where applicable.

1. Base Facilities Charge: The monthly Base Facilities Charge for each metered service, regardless of volume discharge, shall consist of a meter charge based on the size of the customer's meter.

Sewer Rate Schedule S-1
IN-CITY & OUT-OF-CITY

(a) Meter Charge

Meter Size	Monthly Charge	Meter Size	Monthly Charge
3/4"	$8.97	4"	$161.73
1"	$14.60	6"	$336.20
1-1/2"	$27.47	8"	$483.33
2"	$43.55	10"	$778.40
3"	$95.00	12"	$1,153.07

(b) Sewer Volume Charge

The Sewer Volume Charge shall be based on 93.5% of the monthly water usage by customer class (1) Residential (2) Commercial/Industrial. Where the customer has provided a wastewater metering facility in accordance with the Commission's Sanitary Sewer Use Regulations, the Volume Charge shall be based on 100% of the monthly metered wastewater discharged into the Commission's sanitary sewer system. Monthly volume charges per water meter shall be as follows:

(1) Residential - $2.75 per ccf or
$3.67 per thousand gallons

(2) Commercial - $3.05 per ccf or
$4.07 per thousand gallons

(3) Industrial - $3.05 per ccf or
$4.07 per thousand gallons

(4) Monthly volume charges for a wastewater metering facility shall be as follows:

$3.35 per ccf or
$4.48 per thousand gallons

(c) Maximum Residential Charge

The maximum charge for individually metered single family residences/residential units for sewer service will be the applicable Base Facilities charge plus the volume charge for 25,000 gallons of water usage.

Sewer Rate Schedule S-1
IN-CITY & OUT-OF-CITY

(d) Waste Surcharges

In accordance with the Greenville Utilities Commission's Sanitary Use Regulations, all persons discharging waste into the sanitary sewer system, other than domestic waste shall, when applicable, pay a monthly Waste Surcharge, as specified in the Waste Surcharge Schedule S-2. The Surcharge shall be in addition to the monthly rates and charges stated in (a) and (b) above.

IV. MINIMUM MONTHLY CHARGE

The minimum monthly charge shall be the Sewer Base Facilities Charge.

V. SWIMMING POOL SERVICE

Private swimming pools shall be connected to separate water meters and pool wastewater discharged into the sanitary sewer system. For swimming pools, the monthly Sewer Charge shall be the Sewer Base Facilities Charge stated in Section III (a) above, plus the Sewer Volume Charge stated in Section III (b) above.

VI. LAWN SPRINKLING SERVICE

There shall be no Sewer Charge applied to water billed through separate water meters connected to lawn sprinklers, where none of the metered waste flows into the Commission's sanitary sewer system.

VII. SEWER SERVICE MAINTENANCE

Individual sewer service taps will be provided and maintained up to customer's property line. Any stoppage or maintenance beyond this point shall be the responsibility of the customer. The Commission will not be responsible for damages by flooding, or other causes, in or on the customer's property.

All storm water shall be diverted into storm drainage system and not into sanitary sewers.

VIII. PAYMENTS

Bills are due when rendered, and subject to a 1% penalty if not paid by the due date. For additional information, refer to Utility Regulations, Part D, Customer Service Policy.

IX. TERMS OF CONTRACT

Open Order

Effective July 1, 2009
Supersedes Schedule dated May 1, 2008

GREENVILLE UTILITIES

Attachment GUC2

Greenville Utilities

Greenville Utilities
IWA/AWWA Standard Water Audit

CAVANAUGH

1-Page Summary Report for Board of Commissioners

WATER AUDIT PURPOSE

1. Determine true **Water Loss,** in **gallons** and **dollars,** and identify **where** it is occurring. *Account for every drop*
2. Develop **Key Performance Indicators (KPIs)** for the Water System, starting with the **benchmark year (FY08-09)** and provide GUC with a single tool to track all KPIs on a monthly basis.
3. Develop **Recommendations & Cost Estimates** to:
   a. Control **Water Loss**
   b. Increase **Water Revenues**
   c. Improve **Data Confidence**

WATER AUDIT TERMINOLOGY

- ◊ **Data Confidence** = How *reliable* is our data? AWWA Standard provides a means to quantify this.
- ◊ **System Input** = [Water Produced and Purchased] - [Water Exported]; adjusted for known errors
- ◊ **Water Loss** = System Input - Authorized Consumption [Water Loss = Real + Apparent]
- ◊ **Apparent Loss** = Paper Loss (meter inaccuracy, theft)
- ◊ **Real Loss** = Leakage (mains, services, or overflows at tanks)
- ◊ **Unavoidable Real Loss** = How much *should* our system be leaking? AWWA Standard provides a means to quantify this.
- ◊ **Recoverable Real Loss** = [Real Loss] - [Unavoidable Real Loss]; this is the Leakage we should target to recover.
- ◊ **Leakage Index** = [Real Loss] / [Unavoidable Real Loss]; we strive to get this number as close to 1 as possible.
- ◊ **Loss Valuation** = How much is our Water Loss *worth*? Moreover, how much *should* we invest in Water Loss Control?

EXCERPT OF WATER AUDIT FINDINGS

*Key Performance Indicators**	*Quantity*	*Unit*	*% of System Input*
Data Confidence	82	out of 100	
System Input	3,976	MG / yr	100 %
(Total) Water Loss	344	MG / yr	8.7 %
Apparent Loss	82	MG / yr	2.1 %
Real Loss	261	MG / yr	6.6 %
Unavoidable Real Loss	204	MG / yr	5.1 %
Recoverable Real Loss	57	MG / yr	1.5 %
Leakage Index	**1.3**	unitless	

CONCLUSIONS

- ◊ Key Performance Indicators are very strong for the Greenville Utilities (GUC) Water System. GUC has the best Data Confidence score and Leakage Index of any of the 20+ systems for which Cavanaugh has performed a Water Audit in the Carolinas, ranging from very small systems to systems over twice the size of GUC.
- ◊ GUC already has many of the AWWA-recommended best-management practices for water systems in place, such as Uni-Directional Flushing, AMR conversion, Systematic Meter Testing & Replacement Program, and sophisticated billing quality-control procedures.
- ◊ Recommendations from the Water Audit are primarily focused on enhancement of current practices, and many of the recommendations can be implemented at no cost.
- ◊ The primary opportunity for new program improvement is in Active Leak Detection.
- ◊ GUC's position as a leader in the water-utility industry is reinforced by the results of this IWA/AWWA Standard Water Audit.

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www.cavanaughsolutions.com

Greenville Utilities Commission
IWA/AWWA Standard Water Audit

Executive Summary

Findings:

Greenville Utilities Commission			
WATER SYSTEM KEY PERFORMANCE INDICATORS			
Annual System Input Volume	3976.37	MG / year	**Data Confidence: (out of 100)** 82
Financial Indicators			
Non-revenue water as percent by volume:	10.9%		
Non-revenue water as percent by cost:	22.6%		
Annual cost of Apparent Loss:	$221,291		
Annual cost of Real Loss:	$107,304		
Annual cost of Recoverable Real Loss:	$23,498		
Operational Efficiency Indicators			
Total Water Loss	343.98	MG / year	8.7% %
Real Loss	261.72	MG / year	6.6% %
Apparent Loss	82.26	MG / year	2.1% %
Unbilled Consumption	88.54	MG / year	2.2% %
Unavoidable Real Loss	204.40	MG / year	5.1% %
Recoverable Real Loss	57.31	MG / year	1.5% %
Infrastructure Leakage Index (ILI) [Real Losses/URL]:	1.28		

Recommendations:

Recommendations for Improving Data Confidence	**Cost Estimate ($)**
DC-1_Enhancement of Monthly Water Data Tracking	N/C
DC-2_Enhancement of Hydrant Flow Procedures	N/C
Recommendations for Controlling Apparent Loss	
AL-1_Tracking of Authorized Consumption by Fire Departments	N/C
AL-2_Flow Monitoring of Select Industrial/Commercial/Institutional (ICI) Accounts	100 / meter
AL-3_Ongoing Enhancement of Theft Control and Awareness	N/C
AL-4_Tracking of Meter Testing Dates	N/C
Recommendations for Controlling Real Loss	
RL-1_WTP Valve Inspection	N/C
RL-2_Initiate Asset Management Program	N/C
RL-3_Active Leak Detection (LD) Program	10-15,000 (Annual)
RL-4_Enhancement of Leak Repair Documentation	N/C
RL-5_Pressure Management Study	7,200

GREENVILLE UTILITIES

Attachment GUC5

5-27-08

Drought Communications Summary

September 2007

- To date, the drought that has plagued other areas of the state has not caused GUC to restrict water usage. In 2001, Public Information prepared a communications plan to address five stages, from normal water conditions to a Stage 3 Water Shortage Danger (attachment 1). Our plan designates an appropriate level of communications for each stage.

  In normal conditions, we encourage advise customers to adopt responsible water conservation habits that will become part of their lifestyle.

  Currently, we have developed/implemented communications for the Normal/At Risk stage. The communication goal for that stage is to (1) increase communications, and (2) increase the public's awareness of a potential problem and to prepare them for emergency measures should implementation be necessary. Therefore, our communications are focusing on the water conservation tips that are listed in the Stage 1: Water Conservation Alert stage. Key messages are as follows:

  1. GUC is monitoring drought conditions closely.
  2. Because of geographic location and adequate capacity, we have not had a problem thus far in meeting customer demand.
  3. However, we encourage customers to use water wisely because it makes good sense from both an environmental and economic standpoint to do so.

- COMMUNICATIONS:

  Resource/Fact Sheet

  - Created a Resource Sheet for internal use in developing other communications. Fact sheet distributed to Board, 9/11/07.

  News Release

  - Distributed to WITN-7, WNCT-9, WCTI-12 and Daily Reflector, 9/13/07.

  GTV Video Segment (CityScene)

  - Shot CityScene segment featuring Barrett Lasater and Andy Yakim at the Water Treatment Plant, 9/17/07. Focus is on GUC's water supply/capacity and water conservation tips.

  GTV Slides

  - Prepared water tips slides to run on GTV until further notice.

Print Ads

- Developed a series of print ads with the Water Use It Wisely logo and water conservation tips to run in October.

Website Sections

- Water conservation information on our website has been modified to reflect the current situation. The News Release has been posted, with links to the following resources:
    - Water-Saving Tips
    - GUC's Water Emergency Management Plan
    - Water Use It Wisely: www.wateruseitwisely.com
    - Drought Monitor: http://www.ncdrought.org/index.php
    - N.C. Division of Water Resources: http://www.ncwater.org

GUC's Water Emergency Management Plan

- While we have GUC's Emergency Management Plan available on the website in the Regulations section, we have also updated and printed a supply of color handouts for use as necessary.

Connections

- A drought article has been included in the fall/winter issue of Connections, our customer newsletter, which will be mailed to all customers in early October.

Spotlight

- A drought article has been included in the September issue of Spotlight, and Manager's Corner focuses on GUC's situation.

Brochures

- We have an adequate inventory of water conservation brochures (in our storeroom) available for use as necessary.

October 2007 – Costs: $4,040

In response to Governor Easley's statewide initiative to cut water consumption by 50%, GUC revised its drought message and increased communications.

Previously, our key message was to use the water you need, but not more than you need. That message was revised to align with the statewide initiative by encouraging customers to voluntarily reduce consumption by 50% and follow the Governor's top 10 water conservation tips.

1. Stop watering lawns and shrubbery at homes and businesses; do not wash down homes, driveways or sidewalks; do not wash cars; and restaurants should ONLY serve water when patrons ask.

2. Check your plumbing to be sure it is not wasteful.

3. Check for leaks and repair them. In a typical home, leaks amount to about 15 percent of all household indoor water use.

4. Use indoor water wisely. Turn off water while shampooing, shaving and brushing your teeth to reduce the time water is running. Use the shower rather than the bathtub for bathing and limit your shower to no more than 5 minutes.

5. Take time to locate your main water shut-off valve and the water meter in your yard. Knowing where the main shut-off is can potentially prevent the loss of thousands of gallons of water.

6. Use dry cleanup methods to reduce both indoor and outdoor water use. Instead of hosing off your driveway and patio, use a broom to sweep away debris.

7. Take advantage of free water. Catch rainwater from your gutters and use it to water your flowers and vegetables. Collect water from the bath/shower while waiting for it to heat up; use for watering plants.

8. Use appliances wisely. Run washing machines and dishwashers only with full loads to maximize efficiency.

9. Avoid washing vehicles. If washing is absolutely necessary, use a commercial carwash that recycles water.

10. Avoid using sink disposals for food scraps.

Current drought communications with revised messages include the following:

- News Release "GUC Urges Customers to Cut Water Usage, 10/23
- Updated print ads running in Daily Reflector, Minority Voice and Daily Drum
- Radio spots running on WNCT AM and FM
- TV spot, to run on GTV, Channel 7 & 9 in Nov.
- Update GTV slides
- Update website
- Fact Sheet – Energy Services distribution
- November message on GUC bill
- Billboards in three locations, begin display 11/6/07
- Spotlight – article/Manager's Corner, October issue

Daily Reflector - $3,040.42

- Water conservation, 10/7, 10, 14, 17, 21, 24, 28, 29, 31; 18"/ea. 162", ($2,039.22)
- Governor's ad (water conservation), 10/26, 28, 40" x 2 (80"), $1,001.20

M Voice - $250

- Water conservation, 10/26, (18"), $250

Daily Drum - $750

- Water conservation, 10/8, 15, 22; 18"/ea. ($250/ea. X 3 = $750).

November 2007- $9,962

- On November 13, 2007, the NC Drought Management Advisory Council listed 28 counties in the worst drought category as exceptional, with Pitt County being listed as severe. Unfortunately the month of November only yielded about one-quarter of an inch of rainfall and the drought conditions have worsened significantly. Over the past five years November rainfall has averaged four inches locally. Currently 71 counties are listed in exceptional drought condition including Pitt County. With no significant rainfall predicted in the near future, these drought conditions will persist and are likely to worsen.

  PI continued drought communications including print ads, radio spots, billboards, GTV slides and website. In addition, we produced a 30-second water conservation spot, featuring Ron Elks, to run beginning 11/4 on WNCT-9, WITN-7 and GTV, as well as our website.

Daily Reflector - $1,328.02

- Water conservation – shower, 11/4, 2 x 9 (18"), $237.05
- Water conservation – vehicles, 11/7, 2 x 9 (18"), $213.48
- Water conservation – repair, 11/11, 2 x 9 (18"), $237.05
- Water conservation – dishes, 11/14, 2 x 9 (18"), $213.48
- Water conservation – toilet, 11/18, 2 x 9 (18"), $213.48
- Water conservation – appliances, 11/18, 2 x 9 (18"), $213.48

Minority Voice - $741

- Water conservation, 11/2, 9, 16, (18" x 3 = 54"), $247 x 3 = $741

Daily Drum - $200

- Water conservation, 11/2, 18", $200

TV - $2,790

- Produced a 30-second water conservation spot to run throughout November on WNCT-9, WITN-7 and GTV. Production costs: $550
  - WNCT-9, ENCT-TV, $1,240
  - WITN-7, through 11/25, $1,000

Radio - $600

- WNCT FM – water conservation spots, $300

- WNCT AM – water conservation spots, $300

Billboards – $2,418

- Billboards in three locations, begin display 11/6/07
  28-day contract, $468 production; $1,950 flight; Total: $2,418.

Brochures, Giveaway items – Park & Co. - $1,885.50

- 1,050 tattoos - $199.50
- 3 x 3 post its (500) $598.00
- Super soaker sponge (250) $2.14/ea. $551.00
- 100 3" tall rubber ducks w/ sunglasses $325.00
- Plastic bags - $212.50

December 2007- Costs: $5,464

In keeping with the worsening drought and Governor Mike Easley's call to cut water use by half, Greenville Utilities enacted the first stage of its Water Emergency Management Plan, effective December 11, 2007. GUC's Water Emergency Management Plan includes three stages of water use restrictions ranging from voluntary to mandatory. Stage 1 advises voluntary water restrictions; stages 2 and 3 enforce mandatory restrictions. Communications have been modified as follows:

- Issued news release, Channel 7, 9, 12, Daily Reflector
- Billboard contract extended through January. Three billboards are displayed near Ironwood on NC 43, at the fairgrounds on US 264 and on US 264 Alt. near Frog Level.
- Revised print ads to reflect Stage 1 tips. Run the seven ads through December.
- GTV slides modified to reflect Stage 1 tips
- Modified radio spots, run through December on three stations
- Updated website
- Ron Elks appeared on Talk of the Town, 12/13/07
- Water Resources held a meeting with Key Accounts on December 21 at the Operations Center to provide additional information on the drought, status of the local water supply, potential for changes in water quality and the provisions of the Water Emergency Management Plan.

Daily Reflector - $1,640

- 01 Shower - Wednesday, 12/19, 2 x 9 (18") $213.48
- 02 Carwash - Saturday, 12/22, (18") $213.48
- 03 Lawn - Sunday, 12/23, (18"). $237.06
- 04 Family - Sunday, 12/26, (18"), "$213.48
- 05 Toilet - Friday, 12/28, (18"), $213.48
- 06 Repair - Saturday, 12/29, (18"), $213.48
- 07 Washing machine - Sunday, 12/20, (18"), $237.06

Carolina Today/Daily Drum - $423

- Water conservation, 12/17, 24; 18" x 2 = (36"), $211.50, 211.50

M Voice - $383.40

- Water conservation, 12/14, 21; 18" x 2 = 36"), $191.70, $191.70

Radio: Water Conservation Spots -$600

- WOOW - $200.00
- WMGV-FM, $200.00
- WNCT-FM, $200.00

Billboard: $2,418

- Extended billboard contract through January. Three billboards were displayed near Ironwood on NC 43, at the fairgrounds on US 264 and on US 264 Alt. near Frog Level. Cost: 28-day contract, $468 production; $1,950 flight; total: $2,418.

January 2008 - Costs: $2,601

- Although local conditions have improved, Pitt County is still in the grip of a prolonged drought, with no end in sight. In December, we welcomed 4.6 inches of rainfall, and river levels have returned to normal for this time of year. The NC Drought Management Council has downgraded Pitt County from the exceptional (most severe) to the extreme drought category. While this is good news, conditions can change quickly. Therefore, we will remain in the Stage 1: Water Conservation Alert that was declared in December until weather conditions are more favorable.

  We continue to encourage customers to voluntarily conserve as much water as possible. In addition to considerable media coverage, current communications include the following:

  - Billboards – Since November, we have had three billboards located near Ironwood on NC 43, at the fairgrounds on US 264 and on US 264 Alt. near Frog Level. Our billboard contract has been extended through March 2. Public Information has developed three new billboards which will be located at Ironwood, PCC/Chico's and the Fairgrounds. Cost: $2,601.
  - GTV CityScene – GUC has partnered with the City of Greenville to produce video segments for GTV, Cable channel 9. New segments, featuring Barrett Lasater and Andy Yakim, began running January 9th.
  - Print ads/Radio spots – Seven different ads/spots provide simple ways to use less water.
  - GTV slides – A sequence of slides featuring Stage 1 water conservation tips runs daily on GTV.
  - Bill message – For the next several months, our bill message will encourage water conservation. *Pitt County is currently in an Extreme Drought. GUC has issued a Water Conservation Alert that advises voluntary water restrictions. We urge all Pitt County residents to reduce their water usage. Visit www.guc.com for simple water-saving tips that can make a big difference.*

- Website – Our website,www.guc.com, includes water-saving tips and links to additional resources.
- Added a list of communications to date, along with a slide of examples to Barrett's drought update to the Board, 1/15 meeting. Also gave each Commissioner a bag of water conservation giveaway items.

February 2008- Costs: $1,090.92

Our Stage 1 Water Conservation Alert that was declared in December is still in effect and will continue until weather conditions are more favorable. We would need near average rainfall (between 3-5 inches per month) over the next several months in order to maintain an adequate water supply.

We continue to encourage customers to voluntarily conserve, and have billboards at Ironwood on NC 43, at the fairgrounds on US 264 and on US 264 Alt. near Frog Level. Contract ends March 2 ($2,601).

Our bill message was changed 2/21/08 to read:
GUC's service area is currently in an Exceptional Drought. Please do your part to reduce water usage. There are many simple and easy ways to save water. Find out more at www.guc.com.

GUC has slides on GTV, a website section, and the following drought-related ads ran in the Daily Reflector in February for a total of $1,090.92:

- 2/7/2008, washing machine, 18" - $213.48
- 2/10/2008, shower 18", $237.06
- 2/13/2008, Lawn, 18" - $237.06
- 2/17/2008, Car Wash, 18" - $213.48
- 2/20/2008, Family, 18", - $213.48
- 2/27/2008, Repairs, 18", - $213.48

The drought has also been a hot topic on the local speakers' circuit. In January and February, Plants Manager Barrett Lasater made presentations to the Golden K Kiwanis Club, ECU Honors Biology Club, Evening Rotary Club, and the Chamber of Commerce Power Luncheon. Ron Elks, General Manager/CEO, presented updates on the drought and our Aquifer Storage and Recovery project to the Home Builders Association and the Pitt County Board of Realtors. As a result, our message reached a combined audience of approximately 700 people.

March 2008- Costs: $7,300

March showers dropped 3.86 inches of rain on Greenville for the month, only two-tenths of an inch below average for the period. With eastern North Carolina still suffering a serious drought, water conservation remains critical. And need many more months of normal or above-normal rainfall to help restore rivers, streams and groundwater levels.

GUC remains in Stage 1 Water Conservation Alert and continues to encourage customers to conserve water.

In March, our bill message was revised to reflect current conditions: "Pitt County is still experiencing drought conditions. Please visit www.guc.com for simple ways to reduce your water usage."

We have extended the billboard contract for an additional three months (March-May) for $7,300. We're moving the billboards around, to rotate them in the existing locations. New contract began in March.

April 2008

No change

May 2008

Due to improved weather conditions, in May the Greenville Utilities Board of Commissioners approved lifting the Stage 1 Water Conservation Alert that had been in effect since December 11, 2007. The N.C. Drought Management Advisory Council changed the Pitt County classification from moderate drought to abnormally dry. There has been near or above average rainfall during the past few months, and river levels are normal for this time of year.

Currently, 42 North Carolina counties are coming out of the drought; of those, all or part of 16 counties are under normal conditions, according to N.C. Drought Management Advisory Council data. Pitt County is one of those.

Greenville Utilities continues to encourage customers to use water wisely, however. It is a good practice for customers to monitor water usage and use only what they need, year round. It makes good sense from both an environmental and economic standpoint to do so.

>>> Randy Emory 5/1/2008 10:10 AM >>>
Considering that we may come out of Stage I, Barrett and I think we should not renew this contract.

>>> Sue Hatch 4/28/2008 11:52 AM >>>
Since November 2007, we have had "water use it wisely" billboards in three locations (Ironwood on NC 43, at the fairgrounds on US 264 and on US 264 Alt. near Frog Level). Our current contract with Fairway Advertising is up in May, and they have contacted us about a renewal. What is our drought status, and how do you feel about entering into a new contract? The total amount we've spent on billboards to date is $13,680. The history is as follows.

We started out with a 28-day contract ($2,418), then extended it through January (additional $2,418). That contract was extended through March ($2,418), followed by a three-month contract from March through May ($6,426).

County is no longer suffering a drought
The Daily Reflector
Thursday, May 29, 2008

Pitt County is no longer under drought conditions, according to data released May 22 by the N.C. Drought Management Advisory Council.

Pitt is one of 24 counties no longer experiencing drought conditions. The counties stretch east from Vance, Franklin and Nash to the coast and north from Craven County to the Virginia line.

Drought council records indicate 22 counties still have abnormally dry conditions and 54 are experiencing moderate to extreme drought conditions.

Stream flow, rainfall and groundwater levels are used to determine drought conditions, said Woody Yonts with the drought council.

Greenville Utilities measured .68-inch of rain at its Mumford Road dispatch center by 6 p.m. Wednesday.

The National Weather Service predicts today will be mostly sunny, with a high near 77.

The weather service is predicting a 30 percent chance of rain Saturday night and Sunday.

GOV. EASLEY WARNS THAT DROUGHT IS NOT OVER

Reminds Citizens That Worsening Drought Conditions Mean Conservation Still Important

RALEIGH – Gov. Mike Easley today said worsening drought conditions in western North Carolina should be a warning to citizens that the state has not fully recovered from the drought. He also advised citizens to continue using water wisely since a hot, dry summer is likely.

"Rain has been plentiful in the eastern part of the state, but parts of the piedmont and western North Carolina have received only half their normal rainfall," said Easley. "We learned a lot about conserving water during the past year, and we need to continue working together to make sure we have adequate water resources today and in the future."

The federal drought map released today showed 28 counties are in extreme drought, 18 are in a severe drought, nine are in a moderate drought, 21 are abnormally dry and 24 eastern North Carolina counties are not in a drought. Conditions worsened from severe to extreme drought in 13 counties: Avery, Cabarrus, Davidson, Davie, Haywood, Madison, Mitchell, Rowan, Union, Watauga, Wilkes, Yadkin and Yancey. The drought deteriorated from moderate to severe in eight counties: Alleghany, Anson, Ashe, Guilford, Moore, Richmond, Stokes and Surry. Cumberland County moved from abnormally dry to moderate drought.

As of today, 4.95 million residents of North Carolina are under voluntary or mandatory water use restrictions, which is about 73 percent of the population that receive water from systems tracked by the state.

The Drought Management Advisory Council met earlier today in Raleigh. In addition to reporting on the latest rainfall totals, state climatologists also noted that weather forecast models are uncertain about rain for the near future; meaning the state could face another hot, dry summer. The Council also heard reports from state and local agencies that projects to conduct water audits and establish water supply connections between drought-vulnerable towns and those communities with water to share are continuing as scheduled.

For more information on drought conditions in North Carolina or to learn how to conserve water, go to www.SaveWaterNC.org.

September 2008

Published: Sep 11, 2008 09:54 AM Modified: Sep 11, 2008 11:39 AM
Triangle drought ends, new figures show
By Lorenzo Perez, Staff Writer
Comment on this story

The drought is over in the Triangle, according to the latest map released this morning by the U.S. Drought Monitor.
The new state drought map, which takes into account last weekend's heavy rainfall and other data submitted by 7 a.m. Tuesday, no longer classifies Wake, Orange, Durham, Johnston and Chatham counties as "moderate drought" areas. Under the updated map, those counties and 17 others in North Carolina are now classified as "abnormally dry," a less severe category.

Nearly 6 1/2 inches of rain has fallen at Raleigh-Durham International Airport so far this month, about 5 inches more than normal.

The number of North Carolina counties listed as moderate drought areas has decreased from 45 last week to 29 today, while the number of abnormally dry counties has increased from 8 to 22.

lorenzo.perez@newsobserver.com or (919) 829-4643

9-12-09
Rainfall eases area's drought

By Tom Marine
The Daily Reflector

Part of Pitt County is now out of the drought, due in part to the rainfall from Tropical Storm Hanna last weekend, said William Schmitz, climatologist at the Southeast Regional Climate Center for the National Oceanic and Atmospheric Administration.

Based on the latest drafts covering the drought status, Schmitz said the southwest third of the county appears to be completely out of drought conditions, while the northeastern portion remains abnormally dry. He said no part of the county is listed as having D-1 - moderate drought - conditions.

Wednesday's weather brought almost a quarter inch of rain to the area, according to the National Weather Service. By 6 p.m. the service was reporting .22 inches had fallen in the area. That brought the total for September to 1.74 inches, which is just shy of the average for the whole month: 1.77 inches.

Weather Service stats show that, last year, September saw less than a half-inch of rain, and that the record for this month was set in 1979, when 8.88 inches fell.

By last week, most of Pitt County was still experiencing a moderate drought, according to the U.S. Drought Monitor. However, the updated maps that will account for the recent rainfall are scheduled to be released this morning.

"Due to Hanna, (Pitt County) saw some improvements," Schmitz said. "Pitt County was right on the boundary between the moderate rainfall and light rainfall of the storm."

Schmitz said even though the county was on the lighter side of the storm, it still apparently received enough rain to affect its drought status.

Hal Austin, meteorologist at the National Weather Service office in Newport, said Tropical Storm Hanna brought about 1.5 inches of rain to Pitt County last weekend.

"For a tropical system, the amount of rainfall was pretty low because Hanna moved through pretty quickly," Austin said.

As for the rest of the week, Austin said the forecast calls for a likely chance of showers through the end of the week. He said it is not unusual to see afternoon showers at this time of year, since it is still summertime.

State Climatologist Ryan Boyles said the recent rainfall will bring short-term drought relief, such as saturating the soil, but it may not help with the long-term issues. He said the biggest impact will be seen in vegetation, but not in other problems, including the ground water supply.

"The key here is that regular rainfall will help us with the ground water supply," Ryan said. "We don't need another tropical storm to do that."

Contact Tom Marine at tmarine@coxnc.com and 329-9567.

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GUC Media Coverage: Drought

- 7/4/07, Daily Reflector, Scott Batchelor, "Area Dry, But Water Supplies are Ok."
- 7/14/07, Daily Reflector, Brock Letchworth, "Pitt, Surrounding Counties in Moderate Drought."
- 8/24/07, WNCT – 9, Seth Browning, "Experts Give Creative Tips On How To Save Money and Water."
- 9/22/07, Daily Reflector, Scott Batchelor, "Greenville Utilities Looking at Providing Water to Edgecombe.
- 10/17/07, WITN-7, Audrey Washington, "Water Conservation"
- 10/17/07, Daily Reflector editorial, "Good Habits -Voluntary Conservation Needed for Drought"
- 10/24/07, Daily Reflector, "GUC Seeks Voluntary Water Cuts"
- 10/25/07, Daily Reflector, Jimmy Ryals, "Rain Falls; Drought Stays"
- 11/9/07/07, DR, Scott Batchelor, "City Council Rejects Commercial Zoning Request," (ref. Barrett Lasater's 11/8/07 drought presentation to City Council.
- 11/27/07, WITN-7, Audrey Washington, EDA Grant.
- 11/27/07, DR, Mike Grizzard, "GUC to receive $700,000 for New Aquifer Facility" (11/28/07).
- 11/28/07, WNCT-9, Parul Joshi, EDA Grant
- 12/2/07, N & O, Jerry Allegood, "Greenville digs deep for water solution/Greenville to store millions of gallons of water underground"
- 12/2/07, Associated Press, "Greenville to store millions of gallons of water underground."
- 12/11/07, WITN – 7, Christina Vitale, drought update

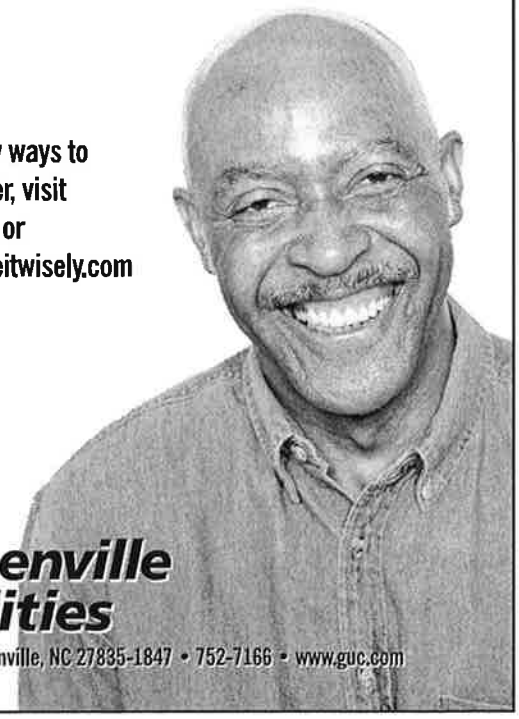
- 12/12/07, DR, Ginger Livingston, "GUC implements Stage 1 water conservation
- 12/12/07, WNCT, Phillip Jones, Water Restrictions In Place In Greenville; Conservation Urged Across East
- 12/12/07, WITN-7 Lynette Taylor, follow-up to drought release
- 12/13/2007, "Talk of the Town" interview with Ron Elks – drought/ASR
- 12/14/07, DR, "Winterville calls for voluntary water restrictions (ref. GUC)
- 2/13/08, WITN-7, Audrey Washington, "How You Can Help With the Drought (Andy Yakim/Barrett Lasater)
- 2/18/08, DR "Chamber Luncheon To Look At Impact of Drought on Business, Industry"
- 2/19/08, WNCT – 9, "Drought Dilemma on Minds of Folks in the East"
- 2/20/08, DR, "Chamber Luncheon Addresses Dry Weather"
- 2/21/08, DR, Editorial – "Water Woes: Supply, Demand in Need of Consideration"
- 4/12/08, DR, River Rises, Drought Eases
- 4/30/08, DR, Ginger Livingston, Rainfall Numbers Are Usually Partly Cloudy
- 5/5/08, DR Editorial: "Be Aware - Limit Water Usage, Even If Drought Ends"
- 5/21/08, DR: Ginger Livingston, "42 Counties Coming Out of Drought"
- 5/21/08, WCTI-12, "Rain Lifts ENC Counties Out of Drought
- 5/29/08, DR, "County Is No Longer Suffering Drought"

WATER USE IT WISELY®

There are a number of ways to save water, and they all start with you.

Use the shower rather than the bathtub for bathing and limit your shower to no more than five minutes. You can save up to one thousand gallons a month.

Turn off the water when brushing your teeth, shampooing, shaving or preparing food and save four gallons a minute—200 gallons a week for a family of four.



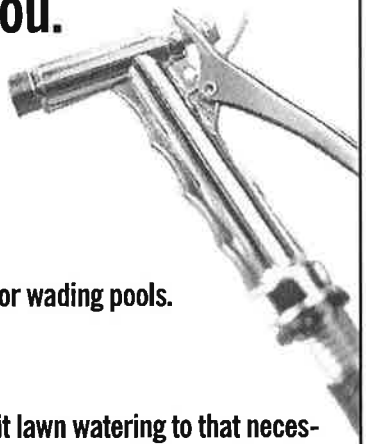
For more easy ways to conserve water, visit www.guc.com or www.wateruseitwisely.com

Greenville Utilities

PO Box 1847 • Greenville, NC 27835-1847 • 752-7166 • www.guc.com

WATER USE IT WISELY®

There are a number of ways to save water, and they all start with you.



Limit vehicle washing and use a commercial carwash that recycles water.

Do not fill swimming or wading pools.

Limit lawn watering to that necessary for plant survival and water shrubbery the minimum required. Water before the peak demand hours of 6 to 10 a.m.

For more easy ways to conserve water, visit www.guc.com or www.wateruseitwisely.com

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WATER USE IT WISELY®

There are a number of ways to save water, and they all start with you.

Check all washing machine hose connections for leaks. Fixing a leak can save 500 gallons each month.

Don't use a hose to clean sidewalks and driveways. Use a broom and save up to 80 gallons of water every time.

For more easy ways to conserve water, visit www.guc.com or wateruseitwisely.com.

Greenville Utilities

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Greenville Utilities operates a water supply and distribution system that serves the City of Greenville and a large portion of Pitt County's residents. Our primary supply comes from surface water, the Tar River. Additionally, eight area deep wells supplement our surface water supply.

The Water Treatment Plant (WTP) currently has the capacity to treat 22.5 million gallons per day (mgd) and treats an average of 10.9 mgd. While we have adequate capacity, any water system is potentially vulnerable to events such as drought, major water main breaks, etc. It is essential to be prepared for emergencies that can place unusually high demands on the system.

Greenville Utilities has a Water Emergency Management Plan in place that designates three stages of emergencies. If any of the emergency stages are declared, we will notify customers immediately through the local media (TV, newspaper, radio), Greenville TV (GTV) and GUC's weather channel (cable 64). Information will also be posted on our website, www.guc.com.

The following information is presented to familiarize you with the various stages of the Emergency Management Plan.

Stage 1: Water Conservation Alert

A Stage 1 water emergency may be declared in the event of an immediate water shortage or when any of the following conditions exist:

- There are three consecutive days when water demand exceeds 80% of the water production capacity.
- The average of the daily Tar River level measurements taken at the Water Treatment Plant Raw Water Pump Station is -1.0 feet Mean Sea Level or less.
- The location of the salt water interface in the Tar River is determined to be 10 miles or less from the Water Treatment Plant Raw Water Pump Station.

Water production capacity shall be defined as the maximum volume of water that meets state and federal standards that the water treatment process can produce during a twenty-four hour period. Water production capacity can vary depending on system component reliability and raw water conditions. The salt water interface shall be defined as the point where chloride levels in the Tar River are measured at 250 milligrams per liter just below the surface. During a declared Stage 1 water emergency the following **voluntary** water conservation practices shall be encouraged:

- Inspect and repair all faulty and defective parts of faucets and toilets.
- Use shower for bathing rather than bathtub and limit shower to no more than 5 minutes.
- Do not leave faucets running while shaving, brushing teeth, rinsing or preparing food.
- Limit the use of clothes washers and dishwashers and when used, operate fully loaded. Operate dishwashers after the peak demand hours of 6 to 10 p.m.
- Limit lawn watering to that necessary for plant survival. Water lawns before the peak demand hours of 6 to 10 a.m.
- Water shrubbery the minimum required. Water shrubbery before the peak demand hours of 6 to 10 a.m.
- Limit vehicle washing.
- Do not wash down outside areas such as sidewalks, driveways, patios, etc.
- Install water saving showerheads and other devices.
- Use disposable and biodegradable dishes where possible.
- Install water saving devices in toilets such as early closing flappers.
- Limit hours of water-cooled air conditioners.
- Do not fill swimming or wading pools.

Stage 2 : Water Shortage Warning

A Stage 2 water emergency may be declared in the event of an immediate water shortage or when any of the following conditions exist:

- There are two consecutive days when water demand exceeds 90% of the water production capacity.
- The average of the daily Tar River level measurements taken at the Water Treatment Plant Raw Water Pump Station is -1.5 feet Mean Sea Level or less.
- The location of the salt water interface in the Tar River is determined to be 7 miles or less from the Water Treatment Plant Raw Water Pump Station.

Water production capacity shall be defined as the maximum volume of water that meets state and federal standards that the water treatment process can produce during a twenty-four hour period. Water production capacity can vary depending on system component reliability and raw water conditions. The salt water interface shall be defined as the point where chloride levels in the Tar River are measured at 250 milligrams per liter just below the surface. During a declared Stage 2 water emergency the following activities shall be **prohibited**:

- Watering lawns, grass, shrubbery, trees, flower and vegetable gardens except by hand held hose, container, or drip irrigation system. A person who regularly sells plants will be permitted to use water on their commercial stock. A golf course may water their greens. State, County and City licensed landscape contractors may water by hand held hose or drip irrigation any plants under a written warranty.
- Filling swimming or wading pools, either newly constructed or previously drained. Make up water for pools in operation will be allowed.
- Using water-cooled air conditioners or other equipment, in which cooling water is not recycled, unless there are health or safety concerns.
- Washing any type of mobile equipment including cars, trucks, trailers, boats, or airplanes. Any persons involved in a business of washing motor vehicles may continue to operate.
- Washing outside surfaces such as streets, driveways, service station aprons, parking lots, or patios.
- Washing the exterior of office buildings, homes, or apartments.
- Using water for any ornamental fountain, pool, pond, etc.
- Serving drinking water in food establishments such as restaurants or cafeterias, unless requested to do so by a customer.
- Using water from a public or private fire hydrant for any reason other than to suppress a fire or other public emergency or as authorized by the General Manager or his authorized representative.
- Using water to control or compact dust.
- Intentionally wasting water.
- Commercial and industrial water customers shall achieve mandatory reductions in water usage through whatever means are available. A minimum reduction of 20% shall be the target, however a greater target reduction percentage may be required depending on the severity of the water emergency. Compliance with the reduction target shall be determined by the General Manager or his authorized representative. Variances to the target reduction may be granted by the General Manager or his authorized representative to designated public health facilities.

Stage 3: Water Shortage Danger

A Stage 3 water emergency may be declared in the event of an immediate water shortage or when any of the following conditions exist:

- There is one day when water demand exceeds 100% of the water production capacity.
- The average of the daily Tar River level measurements taken at the Water Treatment Plant Raw Water Pump Station is -2.0 feet Mean Sea Level or less.
- The location of the salt water interface in the Tar River is determined to be 4 miles or less from the Water Treatment Plant Raw Water Pump Station.

Water production capacity shall be defined as the maximum volume of water that meets state and federal standards that the water treatment process can produce during a twenty-four hour period. Water production capacity can vary depending on system component reliability and raw water conditions. The salt water interface shall be defined as the point where chloride levels in the Tar River are measured at 250 milligrams per liter just below the surface. During a declared Stage 3 water emergency the following activities shall be **prohibited**, in addition to activities prohibited under Stage 2:

- Watering lawns, grass, shrubbery, trees, and flowers.
- Washing motor vehicles at commercial car wash establishments.
- Watering any vegetable garden except by hand held hose, container, or drip irrigation.
- Commercial and industrial water customers shall achieve mandatory reductions in water usage through whatever means are available. A minimum reduction of 50% shall be the target; however, a greater target reduction percentage may be required depending on the severity of the water emergency. Compliance with the reduction target shall be determined by the General Manager or his authorized representative. Variances to the target reduction may be granted by the General Manager or his authorized representative to designated public health facilities.
- In the event that the prohibition of the activities listed above is not sufficient to maintain an adequate supply of water for fire protection, all use of water for purposes other than maintenance of public health and safety shall be prohibited. Residential water use shall be limited to the amount necessary to sustain life through drinking, food preparation and personal hygiene.

GREENVILLE UTILITIES

Attachment GUC6

RECLAIMED WATER FEASIBILITY ANALYSIS, CDM, 1999

Executive Summary

Background

The Greenville Utilities Commission (GUC) water and wastewater services are currently provided by one water treatment plant and one wastewater treatment plant. The existing 15 million gallon per day (mgd) GUC Water Treatment Plant (WTP) is currently undergoing an expansion to 22.5 mgd by the year 2001. The source of water for the GUC WTP is the Tar River, upstream of downtown Greenville. The 17.5-mgd GUC Wastewater Treatment Plant (WWTP) treats sanitary sewage flow from the Greenville area before effluent discharge into the Tar River, downstream of downtown Greenville.

The Tar-Pamlico River Basin has been declared Nutrient Sensitive Waters (NSW) by the Environmental Management Commission. Under the NSW Implementation Strategy, limitations on the annual discharge of total nitrogen and total phosphorus are in place for the WWTP. As annual flows increase, the WWTP is approaching its allocated limit on nutrient discharge. If the GUC does not exceed the allocated limit, it is able to sell a portion of its allocated units of nutrient discharge at the current exchange rate of $29/kg.

The Greenville Utilities Commission has decided to investigate the feasibility of incorporating a reclaimed water program into their total water management plan, which currently includes conservation education, a conservation rate, and optimization of well usage. The purpose of a reclaimed water program is to ease the demands on the soon to be expanded GUC WTP, to reduce nutrient loadings on the Tar-Pamlico River due to WWTP discharges, and to provide highly treated reclaimed water to the customers of GUC for nonpotable uses.

The purpose of this study is to determine the feasibility of implementing a reclaimed water system and to lay out a proposed plan for implementing such a program. Key steps include evaluating GUC's existing systems and facilities, evaluating GUC's customer water use patterns, and incorporating the State of North Carolina regulatory requirements for a reclaimed water system. A historical performance evaluation of the facility has determined that high quality water can be delivered to a reclaimed water system by the GUC WWTP. Water usage records from 1997 have been used to determine the potential reclaimed water demand as it relates to quantity, seasonal and diurnal usage patterns, and location of demands.

Reclaimed Water Supply and Demand

Potential customers for reclaimed water include users with large nonpotable water demands, such as industrial and commercial customers using potable water for cooling water make-up and process

water. Additional potential reclaimed water customers are those customers with a large irrigation demand. The anticipated demands for cooling water make-up and for irrigation are seasonal in nature, with maximum demands occurring during summer months. During the peak season, the demand for reclaimed water can be more than double the average monthly demand. Analysis in Section 4.4 determined the irrigation water usage for GUC customers to be 2.55 mgd during peak months, which equates to an annual average irrigation usage of 1.2 mgd.

The supply of reclaimed water is the effluent from the GUC WWTP. In contrast to the demand curve which peaks in the summer, the flow at the wastewater plant is at a minimum during the summer months. Consequently in the absence of seasonal storage, only a certain percentage of wastewater treatment plant effluent flow can be committed to a reclaimed water program (on an annual average basis). From analysis performed in Section 5.2, the limit to the supply of reclaimed water from the GUC WWTP is 3.3 mgd without providing seasonal storage.

Recommendations

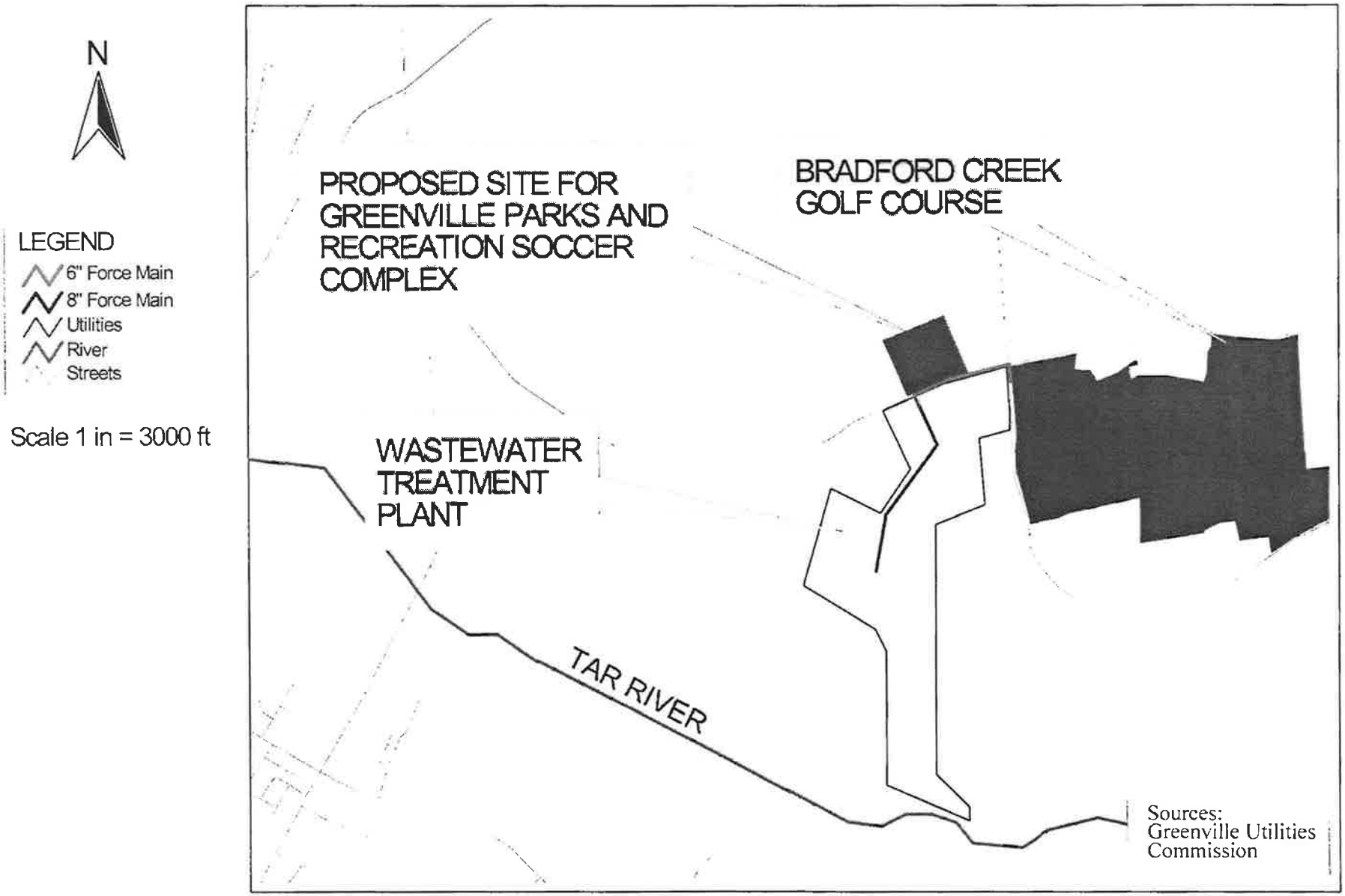
As a part of the project, four alternatives for implementing a reclaimed water program were developed. These alternatives included a demonstration project, two alternatives for a reclaimed water program serving the East Carolina University Main Campus, and a reclaimed water program that could supplement the existing industrial park non-potable distribution system.

The evaluation of these alternatives focused on determining the volume of reclaimed water demand, the capital cost to construct a system to deliver reclaimed water, and an analysis of benefits gained from a water reuse program. To compare all alternatives on an equal platform, the unit cost of reclaimed water was determined on a $/ 1000 gallons basis. The unit cost was developed by taking the present worth of capital costs and subtracting the present worth of benefits (avoided nutrient discharge, deferred water treatment plant expansion, and avoided pumping costs) to obtain a present worth cost of project. The amortized annual cost of the project was divided by the estimated average annual flow to determine the unit cost. Section 6 discusses the cost evaluation of each alternative.

Demonstration Project

It is recommended a demonstration project be implemented to provide nonpotable water to Bradford Creek Golf Course and to the proposed Greenville Parks and Recreation Soccer Complex. **Figure E-1** shows the proposed layout of transmission piping for the demonstration project. The irrigation water demand at the golf course is estimated to be 200,000 gpd on average, and the irrigation water demand of the soccer complex is estimated to be 40,000 gpd on average. The demonstration project provides the opportunity to implement a small project with public visibility. The project will demonstrate to the community the benefits and feasibility of a reclaimed water system.

Along with the initial improvements to the GUC Wastewater Treatment Plant, the reclaimed water demonstration project requires approximately one mile of transmission pipe from the wet well at the plant past a customer connection at the soccer fields and terminating at the golf course irrigation pond. The estimated capital cost to implement the recommended program is $496,000.



CDM Camp Dresser & McKee

c:/my documents/guc reuse/basemap.apr

Figure E-1
Potential Demonstration Program

The benefits of implementing the reclaimed water program include reduced demand on the GUC WTP and reduced nutrient loadings to the Tar River by diverting a portion of GUC WWTP effluent. Reduced demand on the WTP results in savings through both deferred plant expansion and reduced operations and maintenance costs at the plant. A reduction in nutrient loading from the WWTP effluent will result in savings at the rate of $29/kg nutrient, especially as the GUC WWTP is able to sell these units of nutrient discharge.

The unit cost of reclaimed water for the demonstration project is a breakeven cost ($0.00 per 1000 gallons) when accounting for benefits gained by the GUC. Depending on meter type, customers currently pay $1.41 - $2.90 per 1,000 gallons for potable water.

Alternative Projects

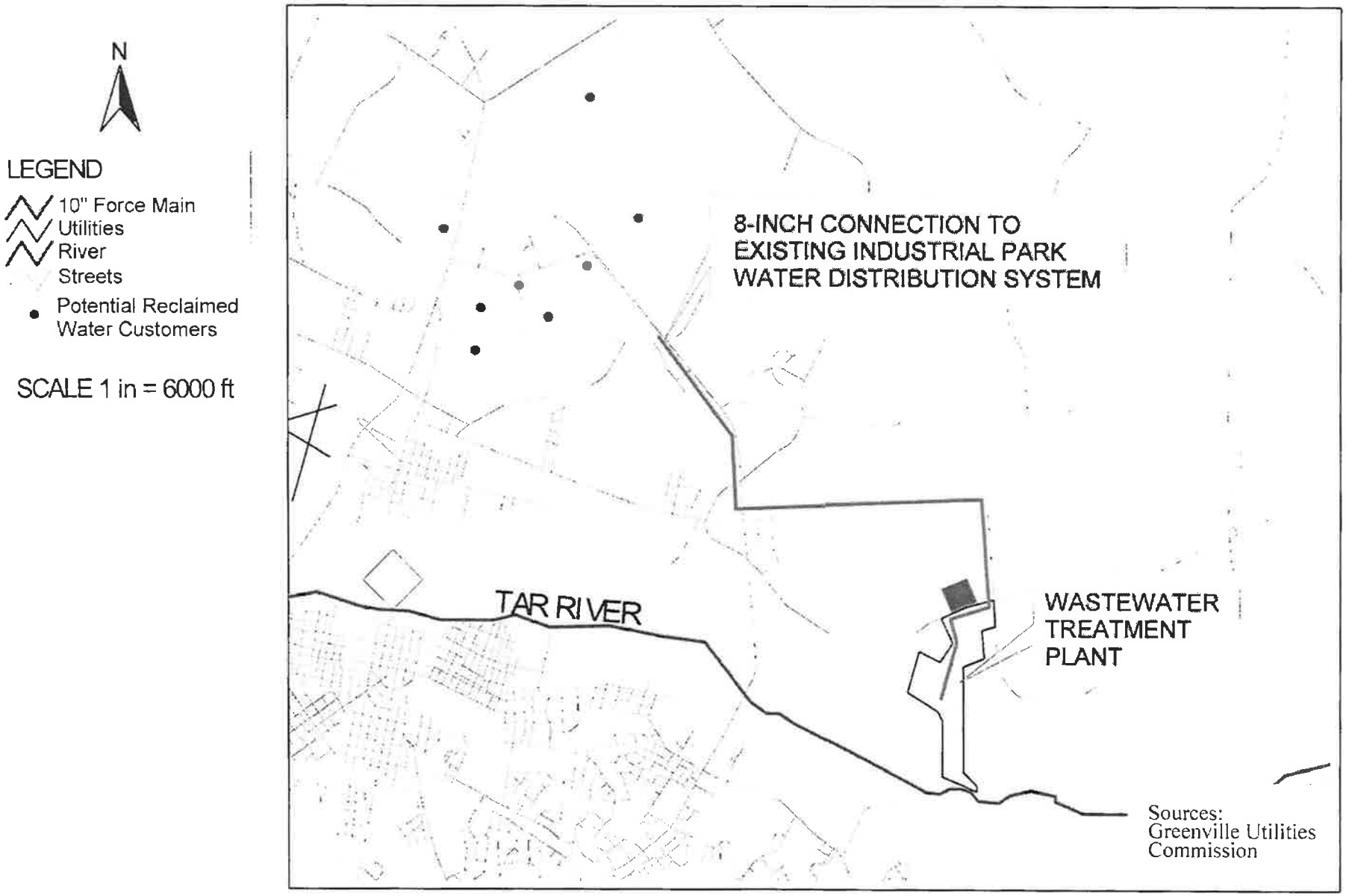
Delivery of reclaimed water to customers in the Pitt-Greenville Industrial Park is another feasible alternative. **Figure E-2** shows the proposed layout for transmission piping to the industrial park. The success of such a project is dependent on establishing a reliable customer base. Based on the phone surveys, many industrial park customers are not opposed to using reclaimed water to meet their nonpotable water demands. The driving factor is economics and investments with short payback periods. The unit cost of providing reclaimed water system to industrial park customers is $0.50 per 1000 gallons. The low cost of providing reclaimed water to industrial park customers might result in a billing rate which would produce these favorable economics.

Evaluation of a reclaimed water system to provide East Carolina University's Main Campus with nonpotable water was not as promising. The unit cost of providing reclaimed water to ECU ranged from $4.21 - $4.47 per 1000 gallons. The large capital cost of providing water of acceptable quality to the campus does not produce a feasible alternative. However, as water becomes a more valuable resource in the future, the economics of a reclaimed water system could change.

Public Education

The role of public participation cannot be taken lightly when implementing a reclaimed water program. Since the proposed demonstration project is a soccer field with high levels of human exposure, an effort to promote reclaimed water as a valuable resource is required. Lack of public education can damage the viability of the reclaimed water project. It is recommended that a public education program proceed concurrently with the demonstration project.

The education process begins at the staff level. A knowledgable staff will be able to address issues and concerns as the process moves through the GUC Board of Directors. A presentation to the Board based on the results of this study will be included at this level. We further recommend providing facts on water reclamation to all potential reclaimed water customers. Additionally, providing tours of the wastewater treatment plant and of sites currently taking advantage of the benefits of reclaimed water is a potential pathway to improving public knowledge of this resource.



CDM Camp Dresser & McKee

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Figure E-2
Northside Reclaimed Water Program

Benefits of a Reclaimed Water System

This report has presented the results of the feasiblity study for a reclaimed water program by the Greenville Utilities Commission. Implementation of a reclaimed water system will provide the following benefits to the GUC:

- Reduce the demands on the GUC Water Treatment Plant during the summer months when peak demands are highest. This will prolong the life of the facility and could delay future capacity expansions.
- Reduce the effluent discharged into the Tar River during the summer months. This will reduce the nutrient discharges and decrease future costs of nutrient discharge allocations under the Tar River Basin Association of Dischargers.
- Provide highly treated reclaimed water to the customers of GUC for non-potable use.

TOWN OF FARMVILLE

Attachment F1

RESOLUTION (2008) 270
AFFIRMING RESIDENTIAL WATER AND SANITARY SEWER RATES
PHASE 1B AND 1C ALTERNATIVE WATER SUPPLY PROJECT
REGIONAL SUPPLEMENTAL GRANT APPLICATION
NC RURAL ECONOMIC DEVELOPMENT CENTER PROJECT: 2008-303-40101-112
TOWN OF FARMVILLE

WHEREAS, the North Carolina Rural Economic Development Center, Inc. has awarded a $500,000 supplemental grant to the Town of Farmville to support construction of a regional alternative water supply project, and

WHEREAS, Rural Center grant eligibility is based on a municipality's average residential water and sewer rates exceeding 1.5% of the municipality's median household income based on 5,000 gallons of water consumption,

NOW THEREFORE BE IT RESOLVED BY THE BOARD OF COMMISSIONERS OF THE TOWN OF FARMVILLE:

That the following rate structures are currently used by the Town of Farmville for providing residential water and sanitary sewer service to customers inside the Town's corporate limits (for consumption of 5,000 gallons):

Residential Water (In-Town) Rate:

Base Charge:	$8.28 Flat Fee
First 2,000 Gallons:	$1.72 Minimum
Next 1,000 Gallons:	$3.86 per 1,000 gallons
Next 2,000 Gallons:	$0.86 per 1,000 gallons
All over 5,000 Gallons:	$1.00 per 1,000 gallons

Residential Sanitary Sewer (In-Town) Rate:

Base Charge:	$29.46 Flat Fee
First 3,000 Gallons:	$8.37 Minimum
All over 3,000 Gallons:	$3.04 per 1,000 gallons

Adopted this the 5th day of August, 2008 in Farmville, North Carolina.

Robert L. Evans, Mayor
Town of Farmville

(SEAL)

ATTEST:

Amy B. Johnson, Town Clerk

TOWN OF FARMVILLE

Attachment F2

North Carolina Department of Environment and Natural Resources

Division of Water Resources

Central Coastal Plain Capacity Use Area Permit Data for Town of Farmville

Permit holder	Town of Farmville	Application Received	05/27/2008
Permit number	CU3096	Application Complete	05/27/2008
Permit status	Active	Application Public Notice	05/29/2008
County	Pitt	Draft Permit Public Notice	06/19/2008
Type of Use	Public Supply	Issue Date	07/15/2008
Cretaceous Water Bank	Yes	Expiration Date	08/31/2013
Bank Start Date	08/01/2005	Date First Issued	11/08/2004

Withdrawals Subject to .0503 Reductions 574,138,650 Aquifer: Kbc, Kucf No. of Wells: 11

Approved Base Rate (in GPY):

Future Permitted Annual Withdrawal Rates (in GPY)

August 1, 2008 through July 31, 2013	430,603,988
August 1, 2013 through July 31, 2018	287,069,325
August 1, 2018	143,534,663

Abbreviation	Aquifer
S	Surficial
Tu	Upper Tertiary
Ty	Yorktown
Tch	Castle Hayne
Tb	Beaufort
Kpd	Peedee
Kbc	Black Creek
Kucf	Upper Cape Fear
Klcf	Lower Cape Fear
Br	Basement Rock

North Carolina Aquifer Information
Ground Water Management Section web site

This permittee has filed a Local Water Supply Plan. Click here to review their plan. Access any Local Water Supply Plan here.

Water Withdrawal Statistics for Town of Farmville (CU3096)
Wells Subject to .0503 Reductions
August 1 through July 31 Years

Year	Year Total (gallons)	Average Day (gallons/day)	Maximum Day (gallons/day)	# of Days
8-1-1996 thru 7-31-1997	328,299,300	1,548,582	3,018,800	212
8-1-1997 thru 7-31-1998	245,839,350	1,606,793	2,879,400	153
8-1-2001 thru 7-31-2002	359,052,584	1,693,644	3,052,244	212
8-1-2002 thru 7-31-2003	**640,031,237**	1,753,510	3,375,623	365
8-1-2003 thru 7-31-2004	**621,172,090**	1,697,192	2,623,616	366
8-1-2004 thru 7-31-2005	**613,663,732**	1,681,270	2,741,700	365

8-1-2005 thru 7-31-2006	554,954,400	1,520,423	2,721,300	365
8-1-2006 thru 7-31-2007	338,952,500	928,637	1,702,900	365
8-1-2007 thru 7-31-2008	289,483,880	790,940	1,579,700	366
8-1-2008 thru 7-31-2009	294,207,212	806,047	2,538,270	365
8-1-2009 thru 7-31-2010	221,855,842	809,693	1,884,400	274

Town of Farmville (CU3096) Well Information

#	Source	Land Surface Elevation (feet)	Diameter (inches)	Pump Capacity (gallons per minute)	Pump Depth (feet)	Top Screen Depth (feet)	Bottom Screen Depth (feet)	Well Depth (feet)	Aquifer (s)	Type	.0503 Reduction Well?	Status	.0503 Zone	Production (P) or Monitoring (M) Well
1	CA WELL	83.00	10	200	**260**	215	304	304	Kucf	Well	yes	Existing	25	P
2	CHINQUAPIN	78.00	8	350	**250**	184	345	345	Kucf	Well	yes	Existing	25	P
3	DALE WELL	55.00	10	350	249	260	300	300	Kucf	Well	yes	Existing	25	P
4	GHOST HOLLOW	75.00	10	350	**220**	184	250	250	Kucf	Well	yes	Existing	25	P
5	LANGS CRSRDS	81.00	10	350	248	258	334	334	Kucf	Well	yes	Existing	25	P
6	LEWIS STORE	87.00	8	300	190	205	251	251	Kucf	Well	yes	Existing	25	P
7	LINCOLN PARK	82.00	10	200	**205**	192	338	338	Kbc, Kucf	Well	yes	Existing	25	P
8	MARLBORO	81.00	10	300	**210**	204	334	334	Kbc, Kucf	Well	yes	Existing	25	P
9	MIDDLE SWAMP	68.00	10	350	238	248	297	297	Kucf	Well	yes	Existing	25	P
10	WELL 17	82.00	10	190	202	224	288	288	Kucf	Well	yes	Existing	25	P
11	WELL 258	83.00	8	360	180	190	246	246	Kucf	Well	yes	Existing	25	P

pump below top of screen; pump below top of screen and top of aquifer; pump below top of aquifer

Return to the Central Coastal Plain Capacity Use Area Web Page

NC Division of Water Resources, DENR - 1611 Mail Service Center - Raleigh, NC 27699-1611
Phone: (919)733-4064 - Fax: (919)733-3558

Last Modified: 06.16.2010

TOWN OF FARMVILLE REVENUE ANALYSIS BY RATE STEP 2.06 DATE 07/02/2010 TIME 08:56:28 PAGE 0001

FOR THE BILLING MONTHS OF JULY 2009 THRU JUNE 2010

RATE STEP	USAGE	---TOTAL---	PERCENT	NUMBER	PERCENT	--GENERATED--	PERCENT	-REVENUE-	PERCENT	-REVENUE-	PERCENT	MIN BILLS	EST BILLS
SERVICE WA WATER						RATE FOU TOWN OF FOUNTAIN WATER							
0-	596	0		0		.00							
597-	9999999999	18,237	100.00%	1	100.00%	25,903.22	100.00%						
		18,237	100.00%	1	100.00%	25,903.22	100.00%					0	0
SERVICE WA WATER						RATE IRO OUTSIDE YARD IRRIGATION							
0-	2	15	2.56%	7	53.85%	730.72	34.30%						
3-	3	0		0		.00							
4-	5	18	3.08%	1	7.69%	122.38	5.74%						
6-	9999999999	552	94.36%	5	38.46%	1,276.72	59.94%						
		585	100.00%	13	100.00%	2,129.82	100.00%					0	0
SERVICE WA WATER						RATE IRR YARD IRRIGATION WATER MTR							
0-	2	136	2.46%	126	57.80%	18,000.75	56.92%						
3-	3	87	1.57%	7	3.21%	736.60	2.32%						
4-	5	146	2.64%	7	3.21%	886.96	2.80%						
6-	9999999999	5,161	93.33%	78	35.78%	11,999.90	37.94%						
		5,530	100.00%	218	100.00%	31,624.21	100.00%					0	0
SERVICE WA WATER						RATE MW1 MUNICIPAL WATER							
0-	1	21	.62%	19	37.25%	2,081.28	21.82%						
2-	2	60	1.77%	4	7.84%	491.36	5.15%						
3-	3	54	1.59%	5	9.80%	375.24	3.93%						
4-	5	108	3.18%	7	13.73%	544.66	5.71%						
6-	9999999999	3,152	92.84%	16	31.37%	6,042.02	63.36%						
		3,395	100.00%	51	100.00%	9,534.56	100.00%					0	0
SERVICE WA WATER						RATE NWA NO WATER SERVICES- IF CHARGE							
0-	1	4	4.94%	120	96.00%	13,501.44	98.43%						
2-	2	2	2.47%	1	.80%	17.36	.12%						
3-	3	0		0		.00							
4-	5	5	6.17%	1	.80%	24.44	.17%						
6-	9999999999	70	86.42%	3	2.40%	172.76	1.25%						
		81	100.00%	125	100.00%	13,716.00	100.00%					0	0
SERVICE WA WATER						RATE TOL TOWN OF LA GRANGE-2500000GAL@ $2/1000GAL							
0-	9999999999	0		1	100.00%	187,085.00	100.00%						
		0	100.00%	1	100.00%	187,085.00	100.00%					0	0
SERVICE WA WATER						RATE W01 INSIDE WATER							
0-	1	2,709	2.78%	729	18.46%	74,874.48	14.66%						
2-	2	7,194	7.39%	602	15.24%	60,924.66	11.93%						
3-	3	11,370	11.68%	605	15.32%	80,097.66	15.69%						
4-	5	25,140	25.82%	1,011	25.60%	130,314.24	25.52%						
6-	9999999999	50,971	52.34%	1,002	25.37%	164,235.38	32.17%						

TOWN OF FARMVILLE REVENUE ANALYSIS BY RATE STEP 2.06 DATE 07/02/2010 TIME 08:56:28 PAGE 0002

FOR THE BILLING MONTHS OF JULY 2009 THRU JUNE 2010

RATE STEP	USAGE		USERS		REVENUE		SALES TAX		FUEL ADJUSTMENT		MIN BILLS	EST BILLS
	TOTAL	PERCENT	NUMBER	PERCENT	GENERATED	PERCENT	REVENUE	PERCENT	REVENUE	PERCENT		
	97,384	100.00%	3,949	100.00%	510,446.42	100.00%					0	2
SERVICE WA WATER					RATE W02 OUTSIDE WATER							
0- 2	3,644	6.21%	547	34.14%	74,865.20	22.03%						
3- 3	5,259	8.97%	272	16.98%	50,315.74	14.80%						
4- 5	11,529	19.66%	438	27.34%	79,392.22	23.36%						
6-9999999999	38,221	65.16%	345	21.54%	135,251.86	39.80%						
	58,653	100.00%	1,602	100.00%	339,825.02	100.00%					0	9
SERVICE WA WATER					RATE W03 GREEN COUNTY WATER							
0-9999999999	0		2	100.00%	.00							
	0	100.00%	2	100.00%	.00	100.00%					24	0
SERVICE WA WATER					RATE WAC WAC WATER-NEW CONSTRUCTION							
0- 1	11	2.03%	20	74.07%	18.92	2.30%						
2- 2	8	1.48%	3	11.11%	6.88	.83%						
3- 3	12	2.22%	2	7.41%	24.32	2.96%						
4- 5	4	.74%	1	3.70%	7.44	.90%						
6-9999999999	506	93.53%	1	3.70%	761.60	92.97%						
	541	100.00%	27	100.00%	819.16	100.00%					99	0
SERVICE WA WATER					RATE WAI WATER							
0- 2	8	.42%	1	20.00%	138.88	3.92%						
3- 3	0		0		.00							
4- 5	0		0		.00							
6-9999999999	1,883	99.58%	4	80.00%	3,401.66	96.07%						
	1,891	100.00%	5	100.00%	3,540.54	100.00%					0	0
SERVICE WA WATER					RATE WAM MASTER WATER METER							
0- 2	16	100.00%	1	100.00%	2,656.20	100.00%						
3- 3	0		0		.00							
4- 5	0		0		.00							
6-9999999999	0		0		.00							
	16	100.00%	1	100.00%	2,656.20	100.00%					0	0
SERVICE WA WATER					RATE WCH COMM HOUSING MASTER WATER							
0- 11	2	100.00%	1	100.00%	175.48	100.00%						
12- 22	0		0		.00							
23- 33	0		0		.00							
34- 55	0		0		.00							
56-9999999999	0		0		.00							
	2	100.00%	1	100.00%	175.48	100.00%					0	0
SERVICE WA WATER					RATE WDW DOGWOOD APARTMENTS MASTER WATER							
0- 27	0		0		.00							

TOWN OF FARMVILLE REVENUE ANALYSIS BY RATE STEP 2.06 DATE 07/02/2010 TIME 08:56:28 PAGE 0003

FOR THE BILLING MONTHS OF JULY 2009 THRU JUNE 2010

RATE STEP	USAGE	------ USAGE ------ TOTAL	PERCENT	-----USERS----- NUMBER	PERCENT	--------REVENUE-------- GENERATED	PERCENT	----SALES TAX---- REVENUE	PERCENT	-FUEL ADJUSTMENT- REVENUE	PERCENT	MIN BILLS	EST BILLS
28-	54	483	100.00%	1	100.00%	5,425.92	100.00%						
55-	81	0		0		.00							
82-	135	0		0		.00							
136-	9999999999	0		0		.00							
		483	100.00%	1	100.00%	5,425.92	100.00%					0	0

SERVICE WA WATER RATE WFV FOREST VILLAGE MASTER WATER

0-	41	0		0		.00							
42-	82	75	5.82%	1	33.33%	711.76	7.58%						
83-	123	1,037	80.51%	1	33.33%	8,063.72	85.88%						
124-	205	176	13.66%	1	33.33%	613.84	6.53%						
206-	9999999999	0		0		.00							
		1,288	100.00%	3	100.00%	9,389.32	100.00%					0	0

SERVICE WA WATER RATE WHL HIGHLAND MHP MASTER

0-	60	0		0		.00							
61-	90	0		0		.00							
91-	150	1,308	87.49%	1	50.00%	7,948.38	90.60%						
151-	9999999999	187	12.51%	1	50.00%	824.66	9.39%						
		1,495	100.00%	2	100.00%	8,773.04	100.00%					0	0

SERVICE WA WATER RATE WLL WLL LAND LORD REQUEST

0-	1	72	12.72%	66	74.16%	3,919.24	71.03%						
2-	2	52	9.19%	9	10.11%	364.80	6.61%						
3-	3	42	7.42%	4	4.49%	249.30	4.51%						
4-	5	65	11.48%	3	3.37%	313.36	5.67%						
6-	9999999999	335	59.19%	7	7.87%	670.34	12.15%						
		566	100.00%	89	100.00%	5,517.04	100.00%					80	0

SERVICE WA WATER RATE WLO LANDLORD WATER OUTSIDE CITY LIMITS

0-	2	0		2	100.00%	.00							
3-	3	0		0		.00							
4-	5	0		0		.00							
6-	9999999999	0		0		.00							
		0	100.00%	2	100.00%	.00	100.00%					11	0

SERVICE WA WATER RATE WNR NON-RESIDENTIAL CUSTOMERS

0-	1	526	.79%	235	47.28%	21,837.48	15.14%						
2-	2	638	.96%	52	10.46%	5,361.20	3.71%						
3-	3	618	.93%	37	7.44%	4,332.84	3.00%						
4-	5	1,053	1.58%	36	7.24%	5,466.14	3.79%						
6-	9999999999	63,701	95.74%	137	27.57%	107,191.56	74.34%						
		66,536	100.00%	497	100.00%	144,189.22	100.00%					0	1

SERVICE WA WATER RATE WON OUTSIDE NON-RESIDENTIAL

0-	2	211	1.49%	49	46.67%	7,482.08	21.60%						

TOWN OF FARMVILLE REVENUE ANALYSIS BY RATE STEP 2.06 DATE 07/02/2010 TIME 08:56:28 PAGE 0004

FOR THE BILLING MONTHS OF JULY 2009 THRU JUNE 2010

RATE STEP	USAGE	------ USAGE ------ ---TOTAL---	PERCENT	-----USERS----- NUMBER	PERCENT	-------REVENUE------- --GENERATED--	PERCENT	----SALES TAX---- -REVENUE-	PERCENT	-FUEL ADJUSTMENT- -REVENUE-	PERCENT	MIN BILLS	EST BILLS
3-	3	129	.91%	10	9.52%	1,227.02	3.54%						
4-	5	286	2.02%	17	16.19%	1,958.18	5.65%						
6-	9999999999	13,561	95.59%	29	27.62%	23,962.70	69.19%						
		14,187	100.00%	105	100.00%	34,629.98	100.00%					0	0
SERVICE WA WATER						RATE WTW MASTER TANGLEWOOD							
0-	27	27	3.50%	0		84.36-	1.39%						
28-	54	198	25.68%	1	25.00%	1,926.96	31.81%						
55-	81	408	52.92%	1	25.00%	2,999.54	49.53%						
82-	135	192	24.90%	1	25.00%	1,213.68	20.04%						
136-	9999999999	0		1	25.00%	.00							
		771	100.00%	4	100.00%	6,055.82	100.00%					0	0
SERVICE WA WATER						RATE WWH WOODLAND HILLS MASTER							
0-	66	452	62.69%	1	50.00%	7,289.04	72.35%						
67-	99	269	37.31%	1	50.00%	2,784.70	27.64%						
100-	165	0		0		.00							
166-	9999999999	0		0		.00							
		721	100.00%	2	100.00%	10,073.74	100.00%					0	0
WATER	TOTALS	272,362		6,701		1,351,509.71						0	0

x 1000

= 272,362,000 gallons billed

294,207,212 gallons pumped

7.4% water lost

TOWN OF FARMVILLE REVENUE ANALYSIS BY RATE STEP 2.06 DATE 07/02/2010 TIME 08:56:28 PAGE 0005

FOR THE BILLING MONTHS OF JULY 2009 THRU JUNE 2010

RATE STEP	USAGE TOTAL	USAGE PERCENT	USERS NUMBER	USERS PERCENT	REVENUE GENERATED	REVENUE PERCENT	SALES TAX REVENUE	SALES TAX PERCENT	FUEL ADJUSTMENT REVENUE	FUEL ADJUSTMENT PERCENT	MIN BILLS	EST BILLS
TOTAL OF ALL SERVICES					1,351,509.71							

RECORDS READ	RECORDS PROCESSED
22	22

TOWN OF FARMVILLE

Attachment F4

RESOLUTION BY BOARD OF COMMISSIONERS
TOWN OF FARMVILLE

WHEREAS, the Town of Farmville desires to establish a Water Conservative Incentive Program to include incentives for the replacement of existing standard faucets, shower heads and toilets with low flow faucets, shower heads and toilets, and

WHEREAS, the Town of Farmville desires that all new homes and new commercial establishments install and use low flow faucets, shower heads and toilets,

NOW THEREFORE BE IT RESOLVED BY THE TOWN OF FARMVILLE BOARD OF COMMISSIONERS:

That the Town Board hereby authorizes the following schedule of credits to be applied against water bills for the replacement of standard faucets, shower heads and toilets with low flow faucets, shower heads and toilets:

Item	Credit
Replacement of Faucet	$1.00 per fixture
Replacement of Shower Head	$3.00 per fixture
Replacement of Toilet	$10.00 per fixture

Credits shall apply to utility bills after evidence satisfactory to the Town has been provided and the Town's representative has inspected the replacement fixture(s).

That the Town Board hereby directs that all new homes and new commercial establishments install low flow faucets, shower heads and toilets and that standard faucets, shower heads, and toilets not be allowed in new homes and new commercial establishments.

Adopted this the 15th day of May, 1999 by a vote of 5 to 0 in Farmville, North Carolina.

Robert L. Evans, Mayor

CERTIFICATE OF RECORDING OFFICER

This is to certify that the above Resolution is a true and correct copy of the Resolution adopted by the Town Board of Commissioners providing a Water Conservation Incentive Program for the replacement of existing plumbing fixtures with low flow fixtures , at its meeting of May 15, 1999.

Michelle Creech Dawson, Town Clerk

TOWN OF FARMVILLE

Attachment F5

FARMVILLE ROTARY CLUB

P.O. Box 42
Farmville, NC 27828

August 23, 1999

Mr. Albert V. Lewis, Jr., Town Engineer
Town of Farmville
P.O. Box 86
Farmville, NC 27828

Dear Mr. Lewis:

On behalf of the Farmville Rotary, thank you for your presentation on water quality and conservation. The Town's continuous efforts to promote conservation are a positive benefit to our community. We highly support the Town's efforts.

Your participation in our program is greatly appreciated. We look forward to future updates on behalf of the Town's promotional efforts.

Sincerely,

FARMVILLE ROTARY CLUB

Bill Bass

Bill Bass
President

KIWANIS CLUB OF FARMVILLE, N.C.

KIWANIS CLUB
P.O. BOX 763
FARMVILLE, N.C.

BRAD FLOWERS, PRESIDENT
HARRY ALBRITTON, SECRETARY
BILL FLOWERS,TREASURER

TOWN OF FARMVILLE
MAIN STREET
FARMVILLE, N.C. 27828

APRIL 12, 1999

DEAR MR HICKS:

ON BEHALF OF THE FARMVILLE KIWANIS CLUB PLEASE ACCEPT THIS MEMO AS OUR THANKS FOR THE VERY INFORMATIVE PROGRAM ON MARCH 29, 1999. WATER CONSERVATION SHOULD BE DISCUSSED MORE OFTEN AND WE SHOULD NEVER TAKE FOR GRANTED THIS GIFT FROM GOD AND IT'S SUSTAINING POWER.

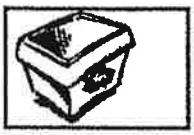
WE THANK YOU AND THE TOWN FOR ALL THAT YOU DO WITH REGARDS TO CONSERVATION AND LOOK FORWARD TO ANOTHER UPDATE IN THE NEAR FUTURE.

SINCERELY,

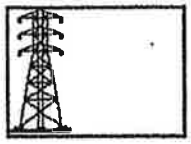
Bill Flowers

BILL FLOWERS
ON BEHALF OF THE FARMVILLE KIWANIS

November, 1994



TOWN OF FARMVILLE UTILITY NEWSLETTER



WE ALL LIKE HOT SHOWERS

but just think ...

Between 15 and 30% of the energy your water heater uses goes to keeping a tank of water hot.

For every 10 degrees you lower the water temperature, you can save 6% of you water heating energy.

If just 10,000 households lowered the temperature of their hot water heater by 10 degrees, we would avoid spewing about 3 million pounds of C02 into the atmosphere.

As long as you have hot water for your shower, you probably don't think too much about your water heater. This one appliance, however, consumes about 20% of the energy used in America. Energy costs for heating water can be as great as those for heating or cooling a house. An average family of four in North Carolina will spend about $400 annually for electric water heating. Those bills can be cut in half by using conservation measures and water heating alternatives.

A simple no-cost way to cut hot water bills is to lower the temperature setting on the water heater to 120 degrees. The lower setting will save energy, reduce the risk of injury from scalding, and still provide plenty of hot water. Some dishwashers require 140 degrees water, so be sure to select units with booster heaters that can raise 120 degrees water to desired levels.

Put your hand on your water heater. If it feels warm, install an insulating blanket around it (available at hardware stores). The jackets are easy to install, cost less than $15, and will usually pay for themselves in only a few months. When installing the jacket, do not cover the temperature pressure relief valve or drain valve on the tank. For gas hot water heaters, make certain that the insulation does not block the air inlet to the burner and is clear of the flue vent at the top of the tank.

If your water heater is in an unheated area like a basement or garage, a water heater blanket can save from 5 to 10% of the energy you've been using. The colder an area it's in, the greater the heat loss.

Insulate the hot water pipes leaving the tank (for at least the first five feet- keep insulation three inches away from gas flues), wherever they are accessible. Foam sleeves or adhesive-backed foam tape are available at hardware stores.

Low-flow showerheads, which release water at the rate of 2-3 gallons per minute instead of the usual 5 gallons per minute, save both energy and water. Well designed fixtures will reduce only the quantity of water and not the force at which it is delivered. They reduce the flow rate per shower up to 50%. Aerators on sink faucets also save on hot water bills. Water-saving fixtures are now available in a wide variety of styles. Of course, hot water conservation fixtures not only save on energy, but also on water bills.

When you try some of these easy, energy-saving ideas and see how much you save on your energy bill, you'll want to try more ways to rack up even bigger savings. Call the Farmville Utilities Office at 753-3021.

One of the quickest ways to save, is to allow the Town to install a load management switch on you hot water heater. This allows the Town to cycle hot water heaters off during period of load management and most homeowners or renters are not even aware when it is off. Each person with a load management switch is given a $2.00 per month credit on their electric bill.

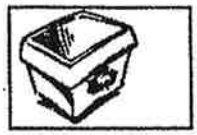
As the Town continues to face continuing increases of our wholesale power costs, we encourage all of our citizens to look for ways to save energy. Not only does it save you money, but it saves the Town money. Savings to the Town results in lower electric costs for all of our customers.

If you think you might be interested in a load management switch for your hot water heater, please call the Utilities Department at 753-3021. Someone from that office will be happy to answer your questions about load management or any concerns that you may have. You do not have to own your home to be eligible for a load management switch.

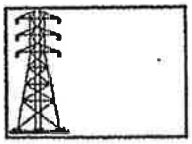
PUBLIC POWER:

YOUR HOMETOWN CONNECTION

September, 1995



TOWN OF FARMVILLE UTILITY NEWSLETTER



continued...

* Use utilities wisely. Turn off lights and appliances when you're not using them.

* Avoid extremes in thermostat temperature settings for your air conditioning and heating units as well as for your water heater.

* Install surge protectors on your computer equipment to ensure their protection.

IT'S CURRENT TO CONSERVE WATER

* Install a shower flow controller. It reduces the flow of water without diminishing the shower spray.

* Take showers instead of baths to save water.

* Repair leaky faucets. One drip per second wastes about 6,000 gallons of water a year.

* Water your lawn early in the morning or in the evening when there is less evaporation.

* Run only full loads in the washing machine and dishwasher.

* Don't leave the water running while you brush your teeth or shave.

TOWN BOARD SCHEDULES PUBLIC HEARING TO DISCUSS THE FORMATION OF A LOCAL HISTORIC DISTRICT

On October 3, 1995, the Farmville Board of Commissioners will hold a public hearing to discuss the possibility of forming a local historic district and an advisory commission.

The public hearing will be in the Courtroom on the second floor of the Municipal Building beginning at 7:30 p.m.

At the hearing the benefits of having a local district will be examined as well as what role an advisory commission would have in handling preservation issues.

If established, the Historic Advisory Commission would establish rules and guidelines for the renovations of historic properties within the district. Homeowners, business owners and property owners within the district should be receiving notification of the meeting by mail.

Everyone who is interested in this hearing is invited and encouraged to attend. If you cannot attend the meeting, or if you have any questions, or if you need any additional information, please call Mike Harvey with the Farmville Downtown Partnership at 753-8184.

NEW RULES FOR USE OF COMMUNITY CENTER ADOPTED

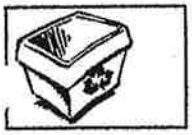
At the August 1, 1995 meeting of the Board of Commissioners, new rules and fees were adopted for use of the Community Center.

Previously when the center was rented, a Town employee was in the building when it was occupied. Now the person renting the building will be given a key to open and close the facility. Employees previously assigned to the Center have been transferred to other departments needing additional staff.

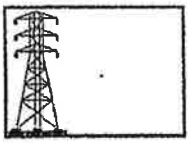
Reservations may now be made 12 months in advance on a first-come, first-serve basis at the Town Finance Office.

To insure the building is properly maintained, the damage deposit fee was increased to $100.00. The fee is refundable within two weeks after the activity if the facility is left in acceptable condition and all equipment is left undamaged.

A copy of the Operating and Rental Policies are available in the Finance Office at 200 North Main Street. If you have any questions, or if you need any additional information, you may call the Finance Office at 753-5116



TOWN OF FARMVILLE
UTILITY NEWSLETTER



BE WATER WISE

Everyone wants to help conserve valuable resources. And water is one of the most valuable there is. We couldn't live without it.

But what can an individual or a single family - do to help? The answer is in the following five simple suggestions. Follow them and you will be water-wise, not wasteful.

1. Check every faucet in your home for leaks. Just a slow drip can waste 15 to 20 gallons a day. Fix it and save almost 6,000 gallons a year.

2. Put a bit of food coloring in each toilet tank. Without flushing, watch for a few minutes to see if the color shows up in the bowl. It's not uncommon to lose up to 100 gallons a day from one of these otherwise invisible toilet leaks. And that's more than 30,000 gallons per year.

3. Don't' shower too long or fill the tub too full. Five minutes for showering and about five inches in the tub is plenty.

4. Try to use automatic dish and clothes washing machines with full loads only. Even when the machines feature short cycles, are being more efficient with your water when there are enough dirty things for a full load.

5. Most importantly, water your lawn and garden with good sense. Do it early or late, not in midday heat. Avoid windy days. See that water goes where it should, not on sidewalks or driveways. Stick a spade in the ground now and then to see that water is getting down deep. A good soaking encourages good root systems. But remember this: a single lawn sprinkler spraying five gallons per minute uses 50% more water in just one hour than a combination of ten toilet flushes, two 5-minute showers, two dishwasher loads and a full load of clothes. So be sensible. Check with a local lawn/garden expert for best results, and check local watering regulations.

U.S. Water Consumer Information

What's Happening/Hot Industry Topics/Consumer Tips

you know?

- It is estimated that toilets that "run" can leak as much as a half-gallon of water per minute.
- A drip leaking at the rate of one drip per second can add $25-$30 per year and a 5 drips per second (which amount to a slight steady stream) can add more than $124.00 per year.
- If your meter moves when all water using devices and taps in the home are off, you have a leak. *Be sure that your washing machine, dishwasher, ice maker, humidifier, and any other water-using devices are off prior to inspecting the meter for movement.* Check your meter weekly to catch new leaks before they add up to a large water/sewer bill.
- It is estimated that as many as 20% of the toilets in use leak. To check a toilet for a leak, shut off the fill valve and watch the water level in the tank. If the level drops, you are witnessing how much water leaks when the valve is open.
- Two toilets with slow leaks of just 8 ounces per minute each can add as much as $130.00 per quarter to your water and sewer bill.
- An irrigation system with only 10 sprinkler heads flowing 2.5 gallons per minute each for just 1 hour per day uses over 18,000 cubic feet of water in three months.

Tax Time: Don't panic!!
Don't let time run out!!
See the AARP representative

NOTICE: BASIC TAX ASSISTANCE

The *Farmville Public Library* will have a representative from AARP on site to provide free basic tax assistance for low income and senior citizens on Fridays from 9am-1pm starting on 2/12/99 through 4/09/99. Please call the Library at 753-3355 for more information.

*****

GOOD NEIGHBOR POLICY

(From the Mayor's Office)

Remember >> If you have a "special" neighbor you would like to recognize, fill out the form which was included in the February Utility Newsletter and submit to the Town Office.

March, 1999

TOWN OF FARMVILLE

Attachment F6

SECTION 5 - WATER DEMAND PROJECTIONS AND REUSE DISCUSSION

The most critical component to evaluating alternative water supply source options is a projection of long-term demand. Although CCPCUA rules establish a base rate for withdrawal of water from declining cretaceous aquifers, planning for future needs should incorporate the ability to implement alternative water supply capable of serving 100% of projected needs. Demand projections help quantify future water supply needs. Projected needs help determine if potential water supply sources are capable of delivering the necessary volume of water.

Table 5 computes equivalent users for all impacted water systems based upon recent billing data. Equivalent users are calculated based upon the average monthly residential water use for each system. Converting non-residential customers to equivalent residential users allows a better projection of long-term demand needs to account for increases in commercial water use. Greene County water use has been updated to reflect construction of a new 1,000+ bed prison facility expected to be operational in 2006. Water use data for the new prison is based on projections provided by the Department of Correction.

Water demand differs from actual water withdrawal due to incidental losses attributed to water leaks, flushing activities, emergency service needs, new construction, etc. Water losses can be calculated by comparing water sold to water withdrawn from supply wells. A generally accepted benchmark for water loss is ten percent (10%) of demand (water sales). Existing water systems may have a greater amount of loss at this time. Each water system needs to develop leak detection programs to help minimize water losses. Table 6 projects water demand needs for the Year 2010, Year 2020, and Year 2030 based upon county population projections developed by the North Carolina Department of Commerce (demographic statistics).

TABLE 5.
EQUIVALENT USER CALCULATION

Water System	Active Customers	Average Annual Use (Gal/Year)	Average Monthly Use (Gal/Month)	Average Daily Use (GPD/User)	Equivalent Users
Town of Farmville					
- Residential	2,718	183,266,172	15,272,181	185	2,718
- Non-Residential	519	368,077,776	30,673,148	1,943	5,459
- Town of Fountain	1	30,226,992	2,518,916	82,814	448
Greene County					
- Residential	3,577	249,075,900	20,756,325	191	3,577
- Non-Residential	14	9,962,200	830,183	1,950	143
- Greene Correctional	1	15,178,500	1,264,875	41,585	218
- Eastern Correctional	1	14,676,000	1,223,000	40,208	211
- New Greene Co. prison	1	81,856,725	6,821,394	224,265	1,176
Town of Snow Hill					
- Residential	1,038	58,415,100	4,867,925	154	1,038
- Non-Residential	26	15,826,600	1,318,883	1,668	281
- Industrial	6	5,943,200	495,267	2,714	106
- Institutional	19	7,470,900	622,575	1,077	133
South Greene Water Corp.					
- Residential	998	66,853,900	5,571,158	184	998
- Non-Residential	20	7,763,200	646,933	1,063	116
Town of Walstonburg					
- Residential	122	6,061,900	505,158	136	122
- Non-Residential	15	266,900	22,242	49	5
Town of Hookerton					
- Residential	258	13,168,913	1,097,409	140	258
- Non-Residential	18	970,263	80,855	148	19
Maury Sanitary District					
- Residential	255	22,179,000	1,848,250	238	255
Ormondsville Water Corp.					
- Residential	122	8,385,600	698,800	188	122
Alpha Water Corporation					
- Residential	85	4,460,900	371,742	144	85
Lizzie Water Corporation					
- Residential	28	2,520,000	210,000	247	28
Jason Shaw Water Corp.					
- Residential	250	14,622,900	1,218,575	160	250
- Non-Residential	2	269,000	22,417	368	5
PITT COUNTY TOTAL	3,238	581,570,940	48,464,245		6,625
GREENE COUNTY TOTAL	6,856	605,927,601	50,493,967		9,145
TOTALS	***10,094***	***1,187,498,541***	***98,958,212***		***17,770***

Notes:

(1) Farmville data based on 2002 billing

(2) Greene County water systems (except Lizzie) data based on 2003 billing records.

(3) Lizzie Water Corporation data based on 2002 billing records.

TABLE 6
WATER DEMAND PROJECTIONS

	2002/2003 Water Demand Statistics				2010 Projections		2020 Projections		2030 Projections	
Water System	Equivalent Users	Average Monthly Demand (Gal/Month)	Monthly Water Losses (10% Use)	Total Daily Demand (GPD)	Equivalent Users	Total Daily Demand (GPD)	Equivalent Users	Total Daily Demand (GPD)	Equivalent Users	Total Daily Demand (GPD)
Town of Farmville	8,177	45,945,329	4,594,533	1,661,585	8,990	1,826,898	10,208	2,074,384	11,398.02	2,316,125
Town of Fountain	448	2,518,916	251,892	91,095	493	100,158	560	113,726	624.89	126,980
Greene County	5,324	30,895,777	3,089,578	1,117,327	5,991	1,257,140	6,993	1,467,462	8,001.47	1,679,122
Town of Snow Hill	1,558	7,304,650	730,465	264,168	1,752	297,224	2,046	346,950	2,340.75	396,993
Town of Hookerton	277	1,178,265	117,826	42,611	312	47,943	364	55,964	416.29	64,036
Town of Walstonburg	127	527,400	52,740	19,073	143	21,460	167	25,050	191.41	28,663
South Greene Water Corp.	1,114	6,218,092	621,809	224,873	1,253	253,012	1,463	295,342	1,673.96	337,941
Maury Sanitary District	255	1,848,250	184,825	66,841	287	75,205	335	87,787	383.21	100,449
Ormondsville Water Corp.	122	698,800	69,880	25,272	137	28,434	160	33,191	183.34	37,978
Arba Water Corporation	85	371,742	37,174	13,444	96	15,126	112	17,657	127.74	20,203
Lizzie Water Corporation	28	210,000	21,000	7,595	32	8,545	37	9,974	42.08	11,413
Jason-Shine Water Corporation	255	1,240,992	124,099	44,880	286	50,496	334	58,944	382.61	67,445
TOTALS	***17,770***			***3,578,763***	***19,772***	***3,981,641***	***22,779***	***4,586,432***	***25,766***	***5,187,348***

Projected potable water needs based on NC Department of Commerce data far exceed anticipated available water supply from existing wells operated by Greene County, Snow Hill, and Farmville. In support of consideration for developing alternative water supply sources, reuse of wastewater represents an option to reduce future potable water demand needs. Wastewater reuse is commonly referred to as wastewater in which pathogenic organisms have been destroyed by chemical, physical, or biological means, allowing the treated effluent to be used for non-potable water needs. In more common terms, reuse may be described as treated sewage that is safe to the human touch.

Reuse has been implemented with great success in water deficient areas. Primarily used for irrigation to supplement natural precipitation in order to increase the yield of crops, reuse quality standards are typically more restrictive as compared to wastewater disposal requirements. In North Carolina, the Division of Water Quality is the agency responsible for permitting and monitoring reuse facilities. Where the protection of the public health is the top priority, a wastewater treatment plant must produce a higher quality of effluent in order to gain approval to implement reuse. The Division of Water Quality requires all essential treatment units at a wastewater treatment plant to be provided in duplicate and effluent must meet increased quality standards for total suspended solids and fecal coliform.

In general, the following is a brief summary of opportunities for the implementation of wastewater reuse:

1. Crop Irrigation

   Short-term droughts are common during the growing seasons in eastern North Carolina. Reuse serves as a constant source for irrigation activities. Eliminating the effects of a drought, reuse can lead to increased crop production and reduced risk of crop failure.

2. Landscape Irrigation

   Open (public) access areas such as golf courses, parks, playgrounds, school yards, and residences represent large water demand needs often met with potable water provided through service meters. Due to the large demands represented by landscape needs, some communities within North Carolina have built reuse systems where customers actually purchase treated sewage for irrigation needs.

3. Ornamental

Municipal-owned decorative fountains and ponds are often viewed as marketing tools that can attract residential and commercial growth. The opportunity to use reclaimed water (wastewater reuse) offers a low-cost supply source.

4. Groundwater Recharge

Although not currently in use in North Carolina, other States have approved reuse projects where highly treated effluent is injected into the groundwater aquifers to protect underground freshwater from saltwater intrusion. Additionally, reuse has been injected into groundwater aquifers to support aquifer storage and recovery (ASR) programs.

Concerns regarding implementation of reuse include public education, cross connection control, certified operators, sampling and testing, and signage. Where the protection of the public health must remain the top priority, implementation of wastewater reuse requires a substantial financial commitment on behalf of the participating local government.

Among the water system owners identified in this report, four (4) presently operate wastewater treatment facilities. Table 7 lists existing wastewater treatment facilities:

TABLE 7
EXISTING WASTEWATER TREATMENT FACILITIES

Facility	NPDES Permit	Permitted Capacity (MGD)
Town of Farmville	NC 0029572	3.500
Town of Hookerton	NC 0025712	0.060
Maury Sanitary District	NC 0061492	0.225
Town of Snow Hill	NC 0020842	0.500

The following paragraphs summarize the ability of each facility identified in Table 7 to provide wastewater effluent capable of meeting reuse standards.

Town of Farmville

Farmville's existing wastewater treatment plant was constructed in the 1970's. The existing plant consists of an influent pump station with barscreen, grit removal chamber, primary and secondary aeration basin, primary and secondary clarifier, pressure filters, chlorine contact tank, aerobic sludge digesters and sludge drying beds. Farmville initiated a reuse project in 2003 consisting of pumping effluent to a local golf course where it is stored in a pond and used for irrigation needs. Table 8 summarizes effluent quality standards required by the Division of Water Quality for Farmville's reuse project.

TABLE 8
FARMVILLE REUSE EFFLUENT QUALITY STANDARDS

Parameter	Monthly Average	Daily (Instantaneous) Maximum
BOD_5	10 mg/l	15 mg/l
NH_3 as N	4 mg/l	6 mg/l
TSS	5 mg/l	10 mg/l
Fecal Coliform	14 per 100 ml	25 per 100 ml
Turbidity		10 NTU

Farmville's treatment plant could not meet the required monitoring standards for reuse. The reuse project included the installation of a pre-packaged tertiary filter. The reuse facility began operation in July 2004 with a permitted flow of 120,000 gallons per day.

Town of Hookerton

Hookerton's original wastewater treatment facility consisted of a 3 cell waste stabilization lagoon with effluent flow measuring and recording. Effluent is discharged into the Contentnea Creek. The Town was placed under a Special Order By Consent on March 31, 1999 due to violations in permitted effluent limits and operational problems with a portion of sewer collection line located within Town (behind Town Hall). The Town is currently in the process of constructing an Aquatic Plant System where duckweed is used to support wastewater treatment by enhancing bacteria growth and providing a natural method for the absorption and filtration of solids. The new treatment facility should be operational by the end of 2004. The perceived benefit of an aquatic plant system is reduced operation and maintenance. The primary limitation of an aquatic plant system is the inability to meet stringent limits on quality standards for nitrogen and phosphorous. It is unknown if the Town's wastewater treatment facility will be capable of producing effluent capable of meeting reuse standards.

Maury Sanitary District

The Maury Sanitary District completed a substantial upgrade to its treatment plant in the 1990's. The current facility consists of a mechanical barscreen, oxidation ditch, clarifier, and lagoon (used for flow equalization). Duplex facilities are not provided such that the basic requirement for wastewater to meet reuse standards cannot be achieved.

Town of Snow Hill

Snow Hill completed an upgrade and expansion of its wastewater treatment plant in 2001. The wastewater treatment plant presently consists of mechanical screening, aerated grit removal, dual oxidation ditch, dual clarifiers, dual aerobic digesters, dual sludge holding tanks, and dual chlorination/dechlorination/post aeration/flow measuring facilities. Table 9 summarizes effluent limitations identified in the Town's NPDES Permit.

TABLE 9
SNOW HILL WWTP NPDES EFFLUENT LIMITATION STANDARDS

Parameter	Monthly Average	Weekly Average
BOD_5 (April 1 – Oct. 31)	15.0 mg/l	22.5 mg/l
BOD_5 (Nov. 1 – March 31)	30.0 mg/l	45.0 mg/l
TSS	30.0 mg/l	45 mg/l
NH_3 as N (April 1 – Oct. 31)	4.0 mg/l	No limit
NH_3 as N (Nov. 1 – March 31)	8.0 mg/l	No limit
Fecal Coliform	200 per 100 ml	400 per 100 ml
Turbidity	No limit	No limit

Comparing Table 9 to the reuse standards placed on Farmville (Table 8), Snow Hill's wastewater treatment plant will require additional upgrades in order to meet effluent limits necessary for reuse classification.

Based on existing wastewater treatment facilities in the project area, the Farmville and Snow Hill wastewater treatment plants meet the minimum requirements for meeting Division of Water Quality reuse standards. Developing reuse as a method of reducing potable water demand requires identifying current water users who can benefit from using recycled wastewater. Based on current customer water uses within Greene County and Farmville, the largest volume non-potable water needs may be identified as follows:

1. Greene Central High School (athletic field irrigation).
2. Farmville Country Club (golf course irrigation).
3. Farmville Central High School (athletic field irrigation).

Each of these users has seasonal irrigation needs that can be met with reclaimed water. Irrigation at public schools must be carefully planned and well promoted. Public perception of spraying high quality effluent in areas of probable human contact can be negative.

Farmville recognized the benefit of providing reuse to the country club as a method of reducing potable water demand and has constructed a 120,000 gallon per day facility. Activated in July 2004, insufficient historic data exists to determine the effect of providing reuse to the country club in reducing potable water demand within Farmville.

Greene County and Farmville need to continue to monitor potential prospects for further implementation of reuse as a method of reducing potable water demand. Recognizing that the benefit of reduced potable water demand as a result of reuse opportunities is not presently available within the Greene County and Farmville planning area, water demand projections shown in Table 6 serve as an accurate representation of future demands. Projections in Table 6 may be used to evaluate and implement long-term water supply alternatives.

GREENE COUNTY

Attachment GC1

BUDGET ORDINANCE 2010-2011 FISCAL YEAR

BE IT ORDAINED by the Board of County Commissioners of Greene County, North Carolina, in session June 25, 2010 that for the expenditures of the County Government, its activities, and institutions for the fiscal year beginning July 1, 2010 and ending June 30, 2011, the amounts in the following sections are hereby adopted for the budget of the departments, agencies, or activities as indicated by title and to provide for payment of said amounts the following revenues or so much thereof as may be needed are hereby appropriated:

SECTION 1. GENERAL FUND That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES

General	
Taxes and Licenses	10,410,909
Miscellaneous General Revenues	170,286
Charges for Services	1,397,507
Program Specific – Operating Grants	
Social Services Programs	2,925,024
Public Health Programs	1,230,811
Other	1,459,286
Fund Balance Appropriated	- 0 -
General Fund Revenue Total	17,593,823

	EXPENDITURES	AMOUNT
411	Governing Body	85,090
412	General Government	550,477
413	TOP Grant	69,248
415	Administration	361,011
416	Tax	479,037
417	Court System	13,800
418	Elections	239,965
419	Register of Deeds	205,094
420	Building Inspections	175,575
431	Sheriff	1,834,485
432	Jail	776,007
436	Criminal Justice Partnership	81,000
441	Emergency Management	203,458
442	Medical Examiner	4,500
443	EMS	1,232,769
461	Public Buildings	357,942
475	Forestry	62,090
491	Economic Development	143,801
492	GTP Revolving Loans	187,951
493	Juvenile Restitution	46,548
494	SOS Grant	-0-
495	Cooperative Extension	150,706
496	Soil Conservation Service	156,266
501	Veteran's Service	26,165
502	DJJDP Youth Programs	34,530
504	Greene County Schools	2,698,202
505	LCC-Greene County	245,000
506	Public Library	131,000
507	Mental Health	63,018
511	Recreation	272,780
521	Social Services	4,225,976
541	Public Health	1,916,187
580	Senior Services	248,296
990	Transfers to Other Funds	315,849
	General Fund Budget Total	
		17,593,823

SECTION 2. FINES/FORFEITURES FUND That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES	
Fines Received	120,000
EXPENDITURES	
Fines Transmitted	120,000

SECTION 3. EMERGENCY TELEPHONE FUND That for the fiscal year there is hereby budgeted and appropriated the following based on a wireline surcharge of $.70 per phone line:

REVENUES	
Telephone Surcharge	-0-
Wireless Surcharge	250,000
	250,000
EXPENDITURES	
Emergency Telephone Expenditures	
Operating	-0-
Wireless Telephone Expenditures	
Operating	188,085
Reserve	61,915
	250,000

SECTION 4. AUTOMATION ENHANCEMENT AND PRESERVATION FUND That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES	
Transfer from General Fund	6,300
EXPENDITURES	
Reserve	6,300

SECTION 5. REVALUATION FUND That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES	
Transfer from General Fund	40,000
Interest	5,000
	45,000

EXPENDITURES	
Reserve	45,000

SECTION 6. SCHOOL CAPITAL FINANCE That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES	
Transfer from General Fund	130,666
EXPENDITURES	
Capital Outlay	-0-
Debt Service	130,666
	130,666

SECTION 7. ALTERNATIVE WATER SUPPLY FUND That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES	
Transfer from Water	470,000
Interest Earned	-0-
	-0-
EXPENDITURES	
Reserve	470,000

SECTION 8. WATER CAPITAL That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES	
Transfer from Water Operating	50,000
EXPENDITURES	
Reserve	50,000

SECTION 9. GREENE COUNTY REGIONAL WATER & SEWER SYSTEM That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUE	
Customer Charges	
Miscellaneous	8,000
Fund Balance Appropriated	3,065,230
Interest	5,000
	3,078,230

EXPENDITURES	
Operating	2,554,723
Transfers	523,507

	3,078,230

SECTION 10. SOLID WASTE FUND That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES	
Penalties and Interest	-0-
Fees	576,148
Miscellaneous	200
White Goods Fees	-0-
Sale of White Goods	10,000
Solid Waste Disposal Tax	6,000
Interest	-0-
Recycling	2,000
Scrap Tire Fees	20,000
	614,348
EXPENDITURES	
Landfill Expenditures	244,656
Collection Site Expenditures	329,692
Closure Expenditures	5,000
White Goods Operating	15,000
Scrap Tire Operating	20,000
	614,348

SECTION 11. TRANSPORTATION FUND That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES	
Operating Grants	427,907
Fare	5,050
Other	
	432,957
EXPENDITURES	
Operating	424,957
Capital Outlay	8,000
	432,957

SECTION 12. RAINBOW FIRE DISTRICT FUND That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES	
Fire Tax	50,000
EXPENDITURES	

Contracted Fire Protection	50,000

SECTION 13. BULL HEAD FIRE DISTRICT FUND That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES	
Fire Tax	42,300
EXPENDITURES	
Contracted Fire Protection	42,300

SECTION 14. MAURY FIRE DISTRICT FUND That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES	
Fire Tax	64,000
EXPENDITURES	
Contracted Fire Protection	64,000

SECTION 15. ARBA FIRE DISTRICT FUND That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES	
Fire Tax	43,000
EXPENDITURES	
Contracted Fire Protection	43,000

SECTION 16. SHINE FIRE DISTRICT FUND That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES	
Fire Tax	58,200
EXPENDITURES	
Contracted Fire Protection	58,200

SECTION 17. LITTLE CREEK FIRE DISTRICT FUND That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES	
Fire Tax	29,205

EXPENDITURES	
Contracted Fire Protection	29,205

SECTION 18. CONTENTNEA FIRE DISTRICT FUND That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES	
Fire Tax	70,500
EXPENDITURES	
Contracted Fire Protection	70,500

SECTION 19. FORT RUN FIRE DISTRICT FUND That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES	
Fire Tax	46,925
EXPENDITURES	
Contracted Fire Protection	46,925

SECTION 20. JASON FIRE DISTRICT FUND That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES	
Fire Tax	42,241
EXPENDIUTURES	
Contracted Fire Protection	42,241

SECTION 21. CASTORIA FIRE DISTRICT FUND That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES	
Fire Tax	53,427
EXPENDITURES	
Contracted Fire Protection	53,427

SECTION 22. SPEIGHT'S BRIDGE FIRE DISTRICT FUND That for the fiscal year there is hereby budgeted and appropriated the following:

REVENUES	
Fire Tax	50,680

EXPENDITURES	
Contracted Fire Protection	50,680

SECTION 23. TAX LEVY That there are hereby levied the following taxes per $100 valuation on property listed for ad valorem taxation as of January 1, 2010 for the purpose of raising the revenues listed for the corresponding funds set out in other sections of this Ordinance:

FUND	RATE PER $100 VALUATION	LEVY
General	.756	7,778,016
Rainbow Fire District	.0420	50,000
Bull Head Fire District	.085	42,300
Maury Fire District	.077	64,000
Arba Fire District	.051	43,000
Shine Fire District	.078	58,200
Little Creek Fire District	.095	29,205
Contentnea Fire District	.052	70,500
Fort Run Fire District	.12	46,925
Jason Fire District	.08	42,241
Castoria Fire District	.0735	53,427
Speight's Bridge Fire District	.062	50,680

SECTION 24. SOLID WASTE FEES That there is hereby imposed a Household Solid Waste Fee in Greene County. The Solid Waste Fee is composed of an availability fee of $37.00 per residential unit, which is applied uniformly throughout the County, including incorporated municipalities. The Solid Waste Fee is also composed of a user fee in the amount of $37.00 per residential unit per year, which is applied only to the unincorporated areas of Greene County and to those incorporated municipalities in Greene County that do not provide a system of municipal solid waste collection. Solid Waste Fees were originally set forth and more particularly described in an ordinance approved by the Board of County Commissioners dated July 6, 1993. The tipping fee at the Greene County Landfill will be $46.00 per ton effective July 1, 2010.

SECTION 25. GREENE COUNTY INSPECTION FEES That there is hereby imposed the following fee schedule for inspections in Greene County:

Permit Type	Residential	Commercial
Building	$.10/tsf	$.12/tsf
Insulation	$.015/tsf	$.02/tsf
Plumbing	$6.00/fixture	$8/fixture
*Sewage & Water Taps	$30	$30
Mechanical	$.04/tsf	$.06/tsf
*Unit Replacement	$30.00	$30.00

Electrical *Temporary Service Pole *Temporary Power *Mobile Home/Off. Trailer *Swimming Pool *Mechanical Replacement *Individual Motors & Fixtures *Livestock Production Buildings *Bulk Barns	$.04/tsf + service 0-200 amps $35.00 201-400 amps $55.00 401-600 amps $75.00 601-800 amps $95.00 801-1,000 amps $115.00 1,001-1,200 amps $135.00 $35.00 $35.00 $35.00 $35.00 $15.00 1-10 = $10.00 after 10 $5.00 each $.02/tsf + service $10.00	$.06/tsf + service 0-200 amps $35.00 201-400 amps $55.00 401-600 amps $75.00 601-800 amps $95.00 801-1,000 amps $115.00 1,001-1,200 amps $135.00 $35.00 $35.00 $35.00 $35.00 $15.00 1-10 = $10.00 after 10 $5.00 each $.02/tsf + service $10.00
Renovation	$2.50/$1,000 of contract	$3.00/$1,000 of contract
Demolition	$50.00	$75.00
Mobile Home ***Single Wide** ***Double Wide**	(includes set-up& plumbing) $150.00 $200.00	
Modular Units/House Moving	$200.00	$200.00
Gas Line	$10.00 first line $5.00 each additional line	$10.00 first line $5.00 each additional line
Signs & Billboards		$30.00
Change of Occupancy	$50.00	$50.00
Fire Protection ***Sprinkler System** ***UST Installation** ***UST Removal** ***Above Ground Tank Installation** ***Fire Suppresion System**	$75.00 + 2.00 ea. Add'l head $75.00 $100.00 $75.00 $30.00	$75.00 + 2.00 ea. Add'l head $75.00 $100.00 $75.00 $30.00
Pool	$30.00	$30.00
Office Trailer		$70.00
Warehouses & Storage Units ***Unheated & Unlighted**		$3.00/$1000 of contract
Refrigeration		$30.00
Miscellaneous Fees ***Zoning & Consulting** ***Inspections not otherwise listed** ***Asbestos Insp.** ***Homeowner's Recovery Fund**	$35.00 per hour $30.00 $100.00 plus samples $10.00	$35.00 per hour $30.00 $100.00 plus samples $10.00

Re-inspection Fee	$25.00	$25.00
Failure to Obtain Permit	$50.00	$50.00
Minimum Building Permit Fee	$30.00	$30.00

SECTION 26. HEALTH DEPARTMENT LOCAL FEES That there is hereby imposed the following fee schedule for the Health Department in Greene County:

Type of Fee	Fee Amount
Environmental Health	
Lot Evaluation (Single Family Dwelling or <480 gal/day)	$200
Lot Evaluation (Flow >480 gal/day, additional $100)	$300
Re-Evaluation	$200
Existing Septic Tank Inspection	$50
Septic Tank Repair Permit	$50
Re-Visit	$25
Well Permit	$200
Swimming Pool Permit	$50
Tattoo Establishment Permit	$150
Water Sample – All Bacteriological, Inorganic or Nitrate	$80 $40 each
TFE (Temporary Food Establishment) Fee	$75
Plan Review (Pool, Restaurant, etc.)	$100
Animal Control	
Adoptions (Cats & Dogs)	$20
Rabies Vaccinations	$6
Owner Redemption	$25
*Owned Animal Pickup	$35/animal
**Boarding Fee	$5/day
Clinic Flat Rate Fees	
TB Skin Test	$10
Pregnancy Test	$20
Blood Sugar	$15
***Hepatitis B Vaccine	$75
***Flu Vaccine	$25
***Pneumococcal Vaccine	$45
Hemoglobin	$10

* When owner calls and requests pickup of unwanted pets.
**For pets picked up as strays and quarantined animals.

Clinic flat rate fees are for services that are provided that are not part of another service.

***Fees for vaccines are based on the Medicaid or Medicare reimbursement rate or the actual costs to the Health Department in providing the vaccines.

SECTION 27. TRANSPORTATION FEES That there is hereby imposed the following fee schedule for Transportation Department in Greene County:

A rate of $1.55 per van mile.

SECTION 28. WATER AND SEWER RATES

WATER and SEWER

On January 1, 2011 Greene County will begin using water from Greenville Utilities Commission and using our new distribution facilities that were built in conjunction with the Town of Farmville. This change will necessitate a proposed increase in water rates (outlined below) and the Alternative Water Fee is scheduled to increase from $9.00 to $10.00. These rates will be effective July 1, 2010.

Category	Adopted Rates
Residential	
First 2,000 Gallons	
1 meter (R1)	$10.50
2 meters (R2)	$21.00
3 meters (R3)	$31.50
4 meters (R4)	$42.00
All over 2,000 Gallons	$3.50 per 1,000 gallons
Commercial	
First 1,000 Gallons	$40.00
Next 1,000 Gallons	$2.00
Next 2,000 Gallons	$2.50
All over 4,000 Gallons	$3.50 per 1,000 gallons
Prison	
First 1,000 Gallons	$4,345.00
All over 1,000 Gallons	$3.50 per 1,000 gallons
Bulk water Rate	
Cost per 1,000 Gallons	$2.30
Monthly Surcharge	
Cost per equivalent user	$10.00

SECTION 29. DELEGATED AUTHORITY

The County Manager is hereby authorized to transfer appropriations among line items within the department for which the funds were originally appropriated.

The County Manager is hereby authorized to transfer appropriations, not to exceed $5,000 per transfer, among departments within the Fund for which the funds were originally appropriated.

Adopted this the 25th day of June, 2010.

Chairman of the Board

Clerk to the Board

GREENE COUNTY COMMISSIONERS NORTH CAROLINA

GREENE COUNTY

Attachment GC4

RESOLUTION BY BOARD OF COMMISSIONERS
GREENE COUNTY

WHEREAS, Greene County desires to establish a Water Conservative Incentive Program to include incentives for the replacement of existing standard faucets, shower heads and toilets with low flow faucets, shower heads and toilets, and

WHEREAS, Greene County desires that all new homes and new commercial establishments install and use low flow faucets, shower heads and toilets,

NOW THEREFORE BE IT RESOLVED BY THE GREENE COUNTY BOARD OF COMMISSIONERS

That Greene County hereby authorizes the following schedule of credits to be applied against water bills for the replacement of standard faucets, shower heads and toilets with low flow faucets, shower heads and toilets:

Item	Credit
Replacement of Faucet	$1.00 per fixture
Replacement of Shower Head	$3.00 per fixture
Replacement of Toilet	$20.00 per fixture

Credits shall apply to utility bills after evidence satisfactory to Greene County has been provided and Greene County's representative has inspected the replacement fixture(s).

That the Greene County Board hereby directs that all new homes and new commercial establishments install low flow faucets, shower heads and toilets and that standard faucets, shower heads, and toilets not be allowed in new homes and new commercial establishments.

Adopted this the 3rd day of May, 1999 by a vote of 5 to 0 in Snow Hill, North Carolina.

Paul F. Miller, Chairman

CERTIFICATE OF RECORDING OFFICER

This is to certify that the above Resolution is a true and correct copy of the Resolution adopted by the Board of Commissioners providing a Water Conservation Incentive Program for the replacement of existing plumbing fixtures with low flow fixtures , at its meeting of May 3, 1999.

Gregory Martin, Clerk to the Board

GREENE COUNTY

Attachment GC5

RESOLUTION
ESTABLISHING WATER CONSERVATION PROGRAM
GREENE COUNTY
MARCH 15, 1999

WHEREAS, Greene County intends to construct water and or wastewater improvements to increase capacity, and

WHEREAS, Greene County desires to implement a program to provide its customers with information on water conservation to assist in educating the public on the value of existing utility resources, and

WHEREAS, Greene County desires to further promote water conservation by officially adopting the State Plumbing Code and encouraging its enforcement,

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF COMMISSIONERS OF GREENE COUNTY:

That Greene County will promote water conservation through a public education program to include displaying conservation information on monthly billing statements and on water department bulletin board along with the display of brochures and other educational literature.

That Greene County hereby adopts the North Carolina Plumbing Code and instructs local building inspectors to provide strict enforcement of the Plumbing Code.

Adopted this the 18th day of March, 1999

Paul D. Miller

Paul F. Miller, Chairman
Greene County

ATTEST:

R. Erika Churchill

R. Erika Churchill
Clerk to the Board

GREENE COUNTY
REGIONAL WATER SYSTEM
Post Office Box 338
Snow Hill, North Carolina 28580
(919) 747-2429

CONTINUING PROGRAM OF WATER CONSERVATION
EDUCATION AND INFORMATION
GREENE COUNTY REGIONAL WATER SYSTEM

The County has an ongoing program of water conservation education that includes the following activities:

1. Education via messages included on monthly bills.
2. Posters displayed at the County Office Complex encouraging water conservation.

Water bills are used to convey simple conservation messages such as, "PLEASE CHECK FOR WATER LEAKS". Posters on display at the County Office Complex promoting water conservation can be viewed daily by visitors. Water Department employees advise customers to be aware of the leaks and assist in identifying problems based upon discrepancies noted in month to month meter reading activities.

Greene County
Regional Water System
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Snow Hill, NC 28580
(252) 747-2429

The top 10 water-wise tips

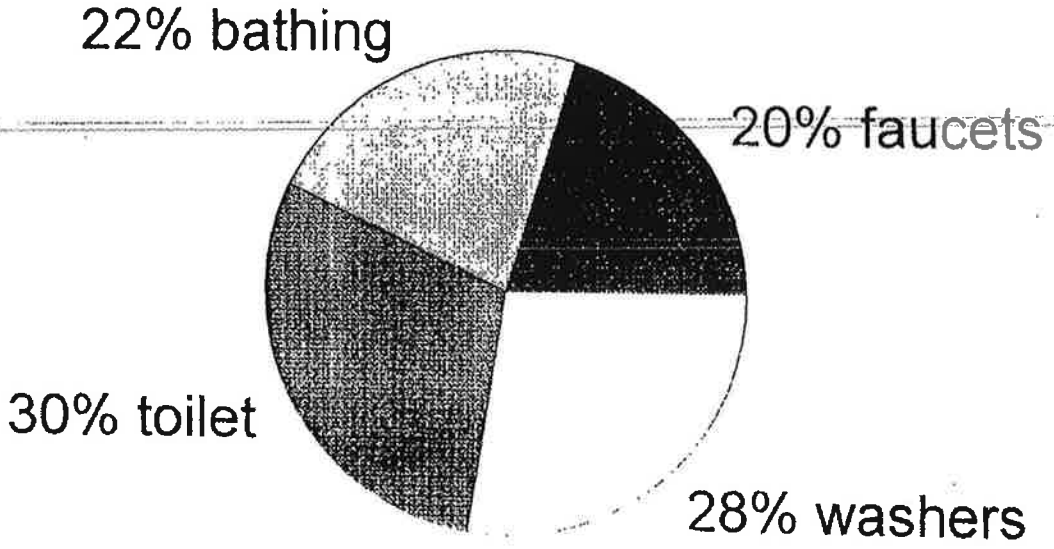
Post them in your house to help the whole family save water every day

1. Install the items in this kit! Use dye tablets to detect silent toilet leaks. Replace leaky flappers.
2. Save water in the shower or when taking a bath. Limit showers to 5 minutes and don't fill the tub more than 5".
3. Catch water in a bucket while waiting for the tub or shower to warm up. Use the water for house plants and in the garden.
4. Don't let the water run while you are brushing your teeth, shaving or washing your face.
5. Run only full loads of laundry or dishes.
6. Fix or report all leaky toilets, faucets and pipes. A 1/16" continuous trickle will waste 74,000 gallons of water in 3 months.
7. Use a bucket to wash your car. Only turn the hose on to wet and rinse.
8. Pull the car on the lawn and water the lawn while washing the car.
9. Sweep (never hose!) the patio, sidewalks or driveway.
10. Incorporate the 7 principles of Xeriscape into your landscape: (1) Start with a plan for your landscape. REDUCE TURF AREAS, take into account existing vegetation, group plants with similar water needs together. (2) Analyze and improve your soil. Add compost and peat moss to improve water infiltration and retention and improve root development. (3) Use plants with low water needs. Additional information on drought tolerant plants is available at the District Office 425-235-9200 (4) Reduce turf areas and select the type of grass best suited to the light, soil and your plan for watering. (5) Water or irrigate efficiently. Manage your watering according to the conditions and needs of the plants rather than according to a fixed schedule. (6) Use mulch to reduce weeds, retain moisture and reduce erosion. (7) Maintain your landscape with proper pruning, weeding, appropriate fertilizers and watering.


WATER SAVING DEVICES

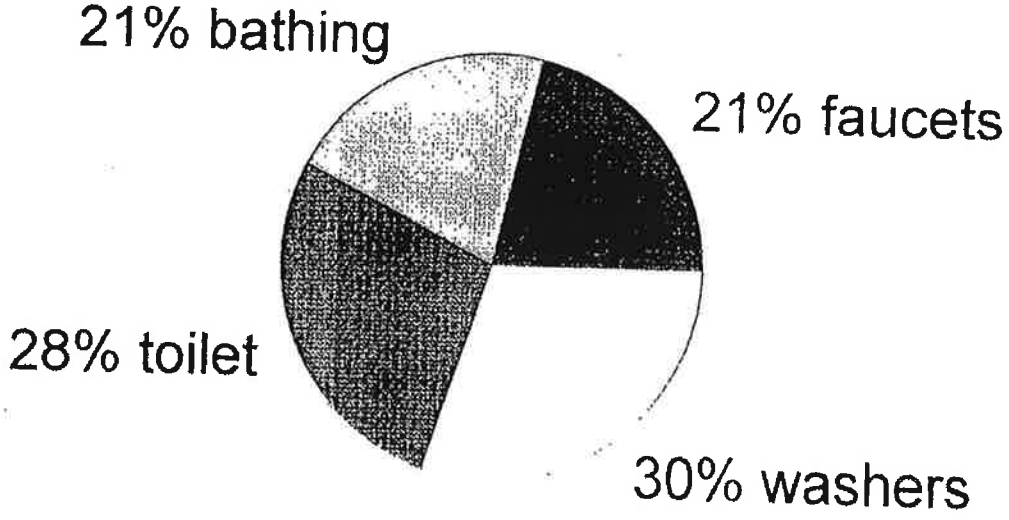
Water Use Without Conservation

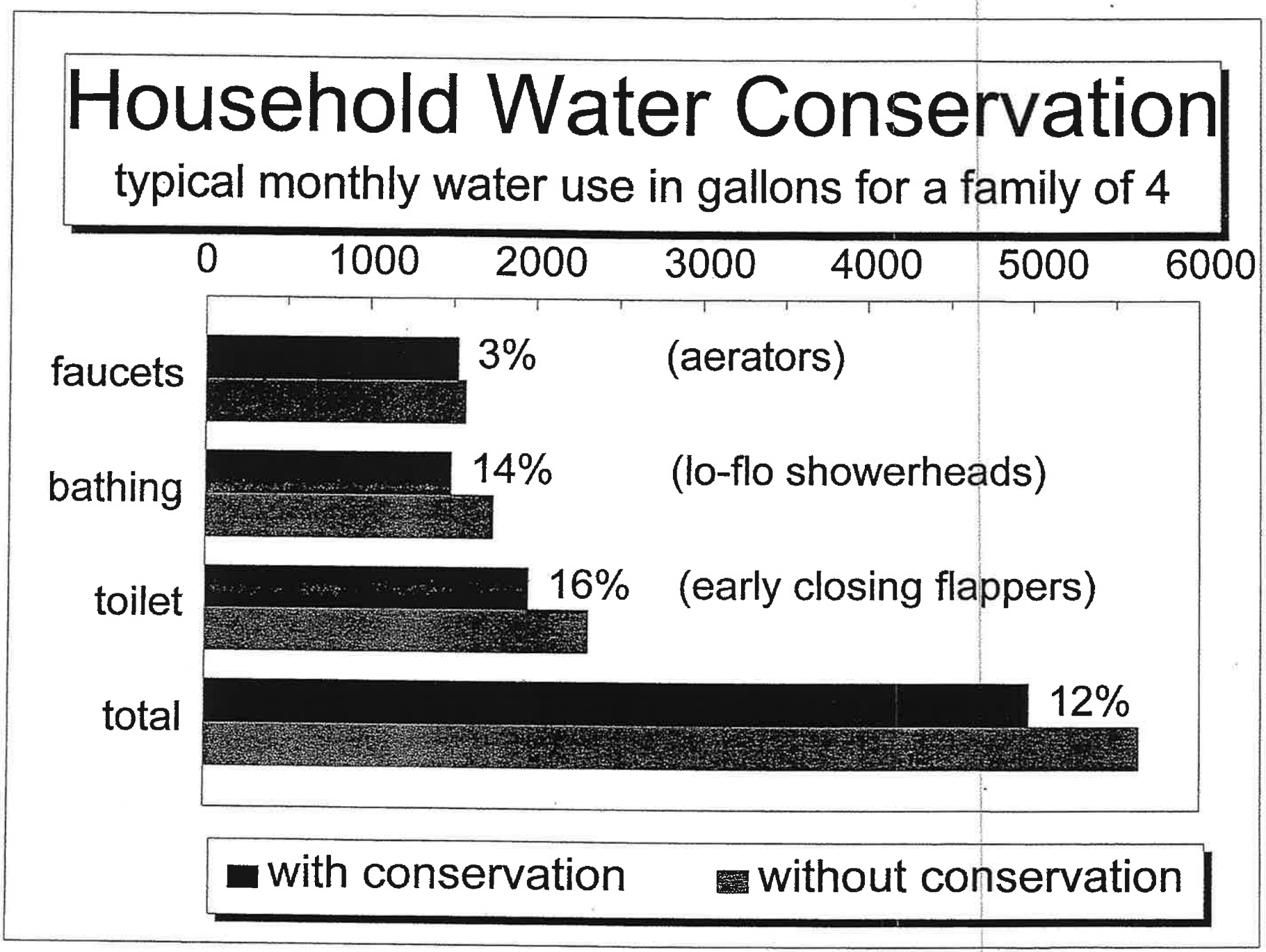
family of 4 per month



Water Use With Conservation

family of 4 per month




Household Water Conservation
typical monthly water use in gallons for a family of 4
0
1000
2000
3000
4000
5000
6000
faucets
3%
(aerators)
bathing
14%
(lo-flo showerheads)
toilet
16%
(early closing flappers)
total
12%
with conservation
without conservation

North Carolina
Division of Water Resources
512 North Salisbury St.
Raleigh, NC 27611-768
Phone: 919-715-5444

The top 10 water-wise tips

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NEW RESOURCES GROUP, INC. P.O. Box 320049 Fairfield, CT 06432

Home Water Conservation Kit

Compliments of:

North Carolina
Division of Water Resources
512 North Salisbury St.
Raleigh, NC 27611-768
Phone: 919-715-5444

NCDENR
North Carolina Department of Environment and Natural Resources

Make every drop count!

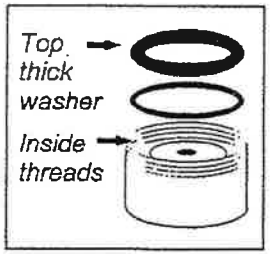
A162

Appendix 3

Installation Instructions

Galaxy Adjustable Spray Shower Head

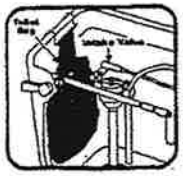
1. Unscrew old shower head (turn counter clockwise).
2. Clean shower arm threads.
3. Apply Teflon thread sealing tape (optional).
4. Screw on Galaxy shower head. Do not over-tighten.
5. Run water to test for leaks. If necessary gently tighten with a wrench. Protect chrome finish with a cloth. Adjust spray from coarse to fine by grasping outside surface of shower head and twisting to desired spray.



Water Saving Faucet Aerator

1. Unscrew old faucet attachment. For inside threaded faucet install as is. For outside threaded faucet first remove top washer to expose inside threads and install.
2. Hand tighten, do not over-tighten. If a wrench is used, protect finish with a cloth.

Toilet Displacement Bag



1. Remove the toilet tank lid.
2. Fill the Toilet Displacement Bag to the top with water from the sink. Squeeze out all of the air to eliminate buoyancy.
3. Place the filled Toilet Displacement Bag in the toilet tank between the tank wall and the intake valve.
4. Hang the mounting bracket on the toilet tank wall as shown.

Note: If the Toilet Displacement Bag interferes with the toilet's internal components on the left side of the tank, try hanging it on the right. You may need to add some weights to make it hang straight down.

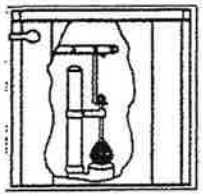


Fig 1

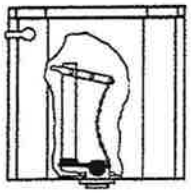


Fig 2

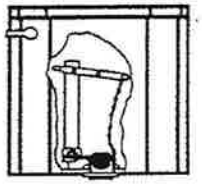


Fig 3

Standard Replacement Toilet Flapper

To Replace Old Style Tank Ball (Fig1)

1. Shut off water supply to toilet. Move refill tube out of the way.
2. Remove lift wires, guide arm and tank ball.
3. If there are no protruding arms at the base of the overflow, slide expanding collar down overflow tube until it reaches the bottom.
4. If there are protruding arms, remove flapper from collar and place ears of flapper over arms.
5. Fasten chain to lift arm with hook. Adjust so that there is a minimum amount of slack in closed position. Replace fill tube and turn on water supply.
6. Flush and check for proper action and sealing.
7. To Replace Flapper With Collar (Fig 2)
8. See Step 1 above.
9. Slide old flapper up over overflow tube
10. Perform steps 4&5 above.
11. To Replace Flapper With Ears (Fig 3)
12. See Step 1 above.
13. Cut off collar on designated lines.
14. Attach new flapper by slipping ears over protruding arms at the base of the overflow tube.
15. Perform steps 4&5 above.

Leak Detecting Non-Toxic Dye Tablets

1. Remove lid from toilet tank.
2. Drop one dye tablet into water in the tank.
3. Wait a few minutes. If blue color appears in the Bowl, then your toilet has a silent leak and repairs need to be made.

Greene County
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Snow Hill, NC 28580
(252) 747-2429

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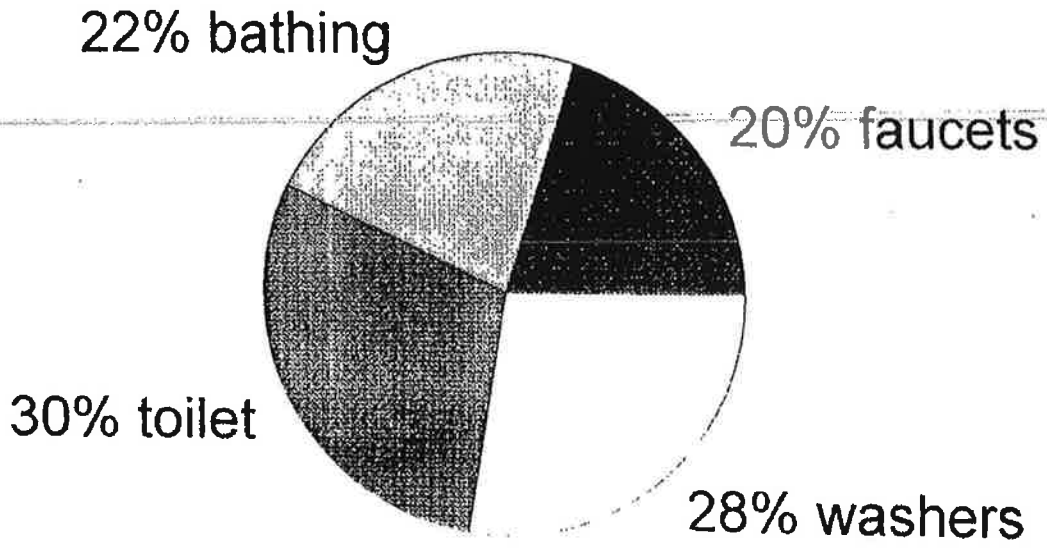
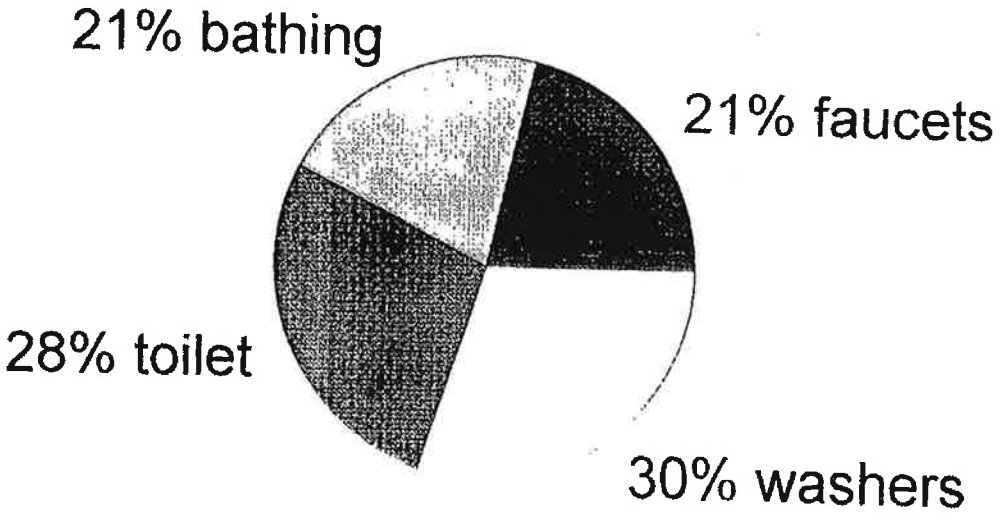
Water Use Without Conservation

family of 4 per month



Water Use With Conservation

family of 4 per month



Greene County
Regional Water System
P.O. Box 338
Snow Hill, North Carolina 28580

ACCOUNT #	5826
CURRENT BILL DUE	02/10/03

FIRST CLASS MAIL
U.S. POSTAGE PAID
PERMIT NO. 23
SNOW HILL NC

PAY BY DUE DATE	AFTER DUE DATE	SERVICE ADDRESS
8.54	18.54	

CODE	DATE READ	CURRENT READ	PREVIOUS READ	USAGE	CHARGE
WA	01/02/03	13069	13045	2400	7.54
WA					1.00

WATER SAVING DEVICES (FLAPPERS, SHOWERHEADS, FAUCET AERATORS) AVAILABLE IN OUR OFFICE.

CURRENT CHARGES	8.54
PREVIOUS BALANCE	0.00

PAY BY DUE DATE	PAY AFTER THE 15TH
8.54	18.54

TO RECEIVE PROPER CREDIT RETURN THIS STUB WITH PAYMENT

[redacted]

5826
ACCOUNT NUMBER

5826 02

GREENE COUNTY

Attachment GC6

Greene County/Town of Farmville Alternative Water Supply Evaluation, Dec. 2004, McDavid & Associates

SECTION 5 - WATER DEMAND PROJECTIONS AND REUSE DISCUSSION

The most critical component to evaluating alternative water supply source options is a projection of long-term demand. Although CCPCUA rules establish a base rate for withdrawal of water from declining cretaceous aquifers, planning for future needs should incorporate the ability to implement alternative water supply capable of serving 100% of projected needs. Demand projections help quantify future water supply needs. Projected needs help determine if potential water supply sources are capable of delivering the necessary volume of water.

Table 5 computes equivalent users for all impacted water systems based upon recent billing data. Equivalent users are calculated based upon the average monthly residential water use for each system. Converting non-residential customers to equivalent residential users allows a better projection of long-term demand needs to account for increases in commercial water use. Greene County water use has been updated to reflect construction of a new 1,000+ bed prison facility expected to be operational in 2006. Water use data for the new prison is based on projections provided by the Department of Correction.

Water demand differs from actual water withdrawal due to incidental losses attributed to water leaks, flushing activities, emergency service needs, new construction, etc. Water losses can be calculated by comparing water sold to water withdrawn from supply wells. A generally accepted benchmark for water loss is ten percent (10%) of demand (water sales). Existing water systems may have a greater amount of loss at this time. Each water system needs to develop leak detection programs to help minimize water losses. Table 6 projects water demand needs for the Year 2010, Year 2020, and Year 2030 based upon county population projections developed by the North Carolina Department of Commerce (demographic statistics).

TABLE 5.
EQUIVALENT USER CALCULATION

Water System	Active Customers	Average Annual Use (Gal/Year)	Average Monthly Use (Gal/Month)	Average Daily Use (GPD/User)	Equivalent Users
Town of Farmville					
- Residential	2,718	183,266,172	15,272,181	185	2,718
- Non-Residential	519	368,077,776	30,673,148	1,943	5,459
- Town of Fountain	1	30,226,992	2,518,916	82,814	448
Greene County					
- Residential	3,577	249,075,900	20,756,325	191	3,577
- Non-Residential	14	9,962,200	830,183	1,950	143
- Greene Correctional	1	15,178,500	1,264,875	41,585	218
- Eastern Correctional	1	14,676,000	1,223,000	40,208	211
- New Greene Co. prison	1	81,856,725	6,821,394	224,265	1,176
Town of Snow Hill					
- Residential	1,038	58,415,100	4,867,925	154	1,038
- Non-Residential	26	15,826,600	1,318,883	1,668	281
- Industrial	6	5,943,200	495,267	2,714	106
- Institutional	19	7,470,900	622,575	1,077	133
South Greene Water Corp.					
- Residential	998	66,853,900	5,571,158	184	998
- Non-Residential	20	7,763,200	646,933	1,063	116
Town of Walstonburg					
- Residential	122	6,061,900	505,158	136	122
- Non-Residential	15	266,900	22,242	49	5
Town of Hookerton					
- Residential	258	13,168,913	1,097,409	140	258
- Non-Residential	18	970,263	80,855	148	19
Nahunta Sanitary District					
- Residential	255	22,179,000	1,848,250	238	255
Ormondsville Water Corp.					
- Residential	122	8,385,600	698,800	188	122
Athal Water Corporation					
- Residential	85	4,460,900	371,742	144	85
Lizzie Water Corporation					
- Residential	28	2,520,000	210,000	247	28
Jason-Shine Water Corp.					
- Residential	250	14,622,900	1,218,575	160	250
- Non-Residential	2	269,000	22,417	368	5
PITT COUNTY TOTAL	3,238	561,570,940	46,464,245		8,645
GREENE COUNTY TOTAL	6,856	625,927,601	52,093,967		9,145
TOTALS	***10,094***	***1,187,498,541***	***98,958,212***		***17,770***

Notes:

(1) Farmville data based on 2002 billing

(2) Greene County water systems (except Lizzie) data based on 2003 billing records.

(3) Lizzie Water Corporation data based on 2002 billing records.

TABLE 6
WATER DEMAND PROJECTIONS

	2002/2003 Water Demand Statistics				2010 Projections		2020 Projections		2030 Projections	
Water System	Equivalent Users	Average Monthly Demand (Gal/Month)	Monthly Water Losses (10% Use)	Total Daily Demand (GPD)	Equivalent Users	Total Daily Demand (GPD)	Equivalent Users	Total Daily Demand (GPD)	Equivalent Users	Total Daily Demand (GPD)
Town of Farmville	8,177	45,945,329	4,594,533	1,661,585	8,990	1,826,898	10,208	2,074,384	11,398.02	2,316,125
Town of Fountain	448	2,518,916	251,892	91,095	493	100,158	560	113,726	624.89	126,980
Greene County	5,324	30,895,777	3,089,578	1,117,327	5,991	1,257,140	6,993	1,467,462	8,001.47	1,679,122
Town of Snow Hill	1,558	7,304,650	730,465	264,168	1,752	297,224	2,046	346,950	2,340.75	396,993
Town of Hookerton	277	1,178,265	117,826	42,611	312	47,943	364	55,964	416.29	64,036
Town of Walstonburg	127	527,400	52,740	19,073	143	21,460	167	25,050	191.41	28,663
South Greene Water Corp.	1,114	6,218,092	621,809	224,873	1,253	253,012	1,463	295,342	1,673.96	337,941
Maury Sanitary District	255	1,848,250	184,825	66,841	287	75,205	335	87,787	383.21	100,449
Ormondsville Water Corp.	122	698,800	69,880	25,272	137	28,434	160	33,191	183.34	37,978
Arba Water Corporation	85	371,742	37,174	13,444	96	15,126	112	17,657	127.74	20,203
Lizzie Water Corporation	28	210,000	21,000	7,595	32	8,545	37	9,974	42.08	11,413
Jason-Shine Water Corporation	255	1,240,992	124,099	44,880	286	50,496	334	58,944	382.61	67,445
TOTALS	***17,770***			***3,578,763***	***19,772***	***3,981,641***	***22,779***	***4,586,432***	***25,766***	***5,187,348***

Projected potable water needs based on NC Department of Commerce data far exceed anticipated available water supply from existing wells operated by Greene County, Snow Hill, and Farmville. In support of consideration for developing alternative water supply sources, reuse of wastewater represents an option to reduce future potable water demand needs. Wastewater reuse is commonly referred to as wastewater in which pathogenic organisms have been destroyed by chemical, physical, or biological means, allowing the treated effluent to be used for non-potable water needs. In more common terms, reuse may be described as treated sewage that is safe to the human touch.

Reuse has been implemented with great success in water deficient areas. Primarily used for irrigation to supplement natural precipitation in order to increase the yield of crops, reuse quality standards are typically more restrictive as compared to wastewater disposal requirements. In North Carolina, the Division of Water Quality is the agency responsible for permitting and monitoring reuse facilities. Where the protection of the public health is the top priority, a wastewater treatment plant must produce a higher quality of effluent in order to gain approval to implement reuse. The Division of Water Quality requires all essential treatment units at a wastewater treatment plant to be provided in duplicate and effluent must meet increased quality standards for total suspended solids and fecal coliform.

In general, the following is a brief summary of opportunities for the implementation of wastewater reuse:

1. Crop Irrigation

   Short-term droughts are common during the growing seasons in eastern North Carolina. Reuse serves as a constant source for irrigation activities. Eliminating the effects of a drought, reuse can lead to increased crop production and reduced risk of crop failure.

2. Landscape Irrigation

   Open (public) access areas such as golf courses, parks, playgrounds, school yards, and residences represent large water demand needs often met with potable water provided through service meters. Due to the large demands represented by landscape needs, some communities within North Carolina have built reuse systems where customers actually purchase treated sewage for irrigation needs.

3. Ornamental

Municipal-owned decorative fountains and ponds are often viewed as marketing tools that can attract residential and commercial growth. The opportunity to use reclaimed water (wastewater reuse) offers a low-cost supply source.

4. Groundwater Recharge

Although not currently in use in North Carolina, other States have approved reuse projects where highly treated effluent is injected into the groundwater aquifers to protect underground freshwater from saltwater intrusion. Additionally, reuse has been injected into groundwater aquifers to support aquifer storage and recovery (ASR) programs.

Concerns regarding implementation of reuse include public education, cross connection control, certified operators, sampling and testing, and signage. Where the protection of the public health must remain the top priority, implementation of wastewater reuse requires a substantial financial commitment on behalf of the participating local government.

Among the water system owners identified in this report, four (4) presently operate wastewater treatment facilities. Table 7 lists existing wastewater treatment facilities:

TABLE 7
EXISTING WASTEWATER TREATMENT FACILITIES

Facility	NPDES Permit	Permitted Capacity (MGD)
Town of Farmville	NC 0029572	3.500
Town of Hookerton	NC 0025712	0.060
Maury Sanitary District	NC 0061492	0.225
Town of Snow Hill	NC 0020842	0.500

The following paragraphs summarize the ability of each facility identified in Table 7 to provide wastewater effluent capable of meeting reuse standards.

Town of Farmville

Farmville's existing wastewater treatment plant was constructed in the 1970's. The existing plant consists of an influent pump station with barscreen, grit removal chamber, primary and secondary aeration basin, primary and secondary clarifier, pressure filters, chlorine contact tank, aerobic sludge digesters and sludge drying beds. Farmville initiated a reuse project in 2003 consisting of pumping effluent to a local golf course where it is stored in a pond and used for irrigation needs. Table 8 summarizes effluent quality standards required by the Division of Water Quality for Farmville's reuse project.

TABLE 8
FARMVILLE REUSE EFFLUENT QUALITY STANDARDS

Parameter	Monthly Average	Daily (Instantaneous) Maximum
BOD_5	10 mg/l	15 mg/l
NH_3 as N	4 mg/l	6 mg/l
TSS	5 mg/l	10 mg/l
Fecal Coliform	14 per 100 ml	25 per 100 ml
Turbidity		10 NTU

Farmville's treatment plant could not meet the required monitoring standards for reuse. The reuse project included the installation of a pre-packaged tertiary filter. The reuse facility began operation in July 2004 with a permitted flow of 120,000 gallons per day.

Town of Hookerton

Hookerton's original wastewater treatment facility consisted of a 3 cell waste stabilization lagoon with effluent flow measuring and recording. Effluent is discharged into the Contentnea Creek. The Town was placed under a Special Order By Consent on March 31, 1999 due to violations in permitted effluent limits and operational problems with a portion of sewer collection line located within Town (behind Town Hall). The Town is currently in the process of constructing an Aquatic Plant System where duckweed is used to support wastewater treatment by enhancing bacteria growth and providing a natural method for the absorption and filtration of solids. The new treatment facility should be operational by the end of 2004. The perceived benefit of an aquatic plant system is reduced operation and maintenance. The primary limitation of an aquatic plant system is the inability to meet stringent limits on quality standards for nitrogen and phosphorous. It is unknown if the Town's wastewater treatment facility will be capable of producing effluent capable of meeting reuse standards.

Maury Sanitary District

The Maury Sanitary District completed a substantial upgrade to its treatment plant in the 1990's. The current facility consists of a mechanical barscreen, oxidation ditch, clarifier, and lagoon (used for flow equalization). Duplex facilities are not provided such that the basic requirement for wastewater to meet reuse standards cannot be achieved.

Town of Snow Hill

Snow Hill completed an upgrade and expansion of its wastewater treatment plant in 2001. The wastewater treatment plant presently consists of mechanical screening, aerated grit removal, dual oxidation ditch, dual clarifiers, dual aerobic digesters, dual sludge holding tanks, and dual chlorination/dechlorination/post aeration/flow measuring facilities. Table 9 summarizes effluent limitations identified in the Town's NPDES Permit.

TABLE 9
SNOW HILL WWTP NPDES EFFLUENT LIMITATION STANDARDS

Parameter	Monthly Average	Weekly Average
BOD_5 (April 1 – Oct. 31)	15.0 mg/l	22.5 mg/l
BOD_5 (Nov. 1 – March 31)	30.0 mg/l	45.0 mg/l
TSS	30.0 mg/l	45 mg/l
NH_3 as N (April 1 – Oct. 31)	4.0 mg/l	No limit
NH_3 as N (Nov. 1 – March 31)	8.0 mg/l	No limit
Fecal Coliform	200 per 100 ml	400 per 100 ml
Turbidity	No limit	No limit

Comparing Table 9 to the reuse standards placed on Farmville (Table 8), Snow Hill's wastewater treatment plant will require additional upgrades in order to meet effluent limits necessary for reuse classification.

Based on existing wastewater treatment facilities in the project area, the Farmville and Snow Hill wastewater treatment plants meet the minimum requirements for meeting Division of Water Quality reuse standards. Developing reuse as a method of reducing potable water demand requires identifying current water users who can benefit from using recycled wastewater. Based on current customer water uses within Greene County and Farmville, the largest volume non-potable water needs may be identified as follows:

1. Greene Central High School (athletic field irrigation).
2. Farmville Country Club (golf course irrigation).
3. Farmville Central High School (athletic field irrigation).

Each of these users has seasonal irrigation needs that can be met with reclaimed water. Irrigation at public schools must be carefully planned and well promoted. Public perception of spraying high quality effluent in areas of probable human contact can be negative.

Farmville recognized the benefit of providing reuse to the country club as a method of reducing potable water demand and has constructed a 120,000 gallon per day facility. Activated in July 2004, insufficient historic data exists to determine the effect of providing reuse to the country club in reducing potable water demand within Farmville.

Greene County and Farmville need to continue to monitor potential prospects for further implementation of reuse as a method of reducing potable water demand. Recognizing that the benefit of reduced potable water demand as a result of reuse opportunities is not presently available within the Greene County and Farmville planning area, water demand projections shown in Table 6 serve as an accurate representation of future demands. Projections in Table 6 may be used to evaluate and implement long-term water supply alternatives.

TOWN OF WINTERVILLE

Attachment W1

2571 Railroad Street
PO Box 1459
Winterville, NC 28590

WINTERVILLE
A slice of the good life!

Phone: (252) 756-2221
Fax: (252) 321-8455
www.wintervillenc.com

Ms. Mary Sadler
Hazen and Sawyer, P.C.
4011 WestChase Blvd. Suite 500
Raleigh, NC 27607

6-29-2010

Re: Town of Winterville Water and Sewer Rate Structure

Dear Ms. Sadler,

The Town of Winterville is currently reviewing our rate structure with the hope of developing a more environmentally friendly policy. The Town administration recognizes that the current rate structure does not promote water and sewer conservation. As recognition of this situation staff is promoting the following timeline.

At our July council meeting staff will discuss the current Water and Sewer rate structure with the council. We will present the council with our current rates and explain how a different structure will affect customers; as well as, water and sewer consumption. Staff will present a plan to introduce an increasing rate structure that will have higher cost for customers who have higher consumption. The new rate structure will target customers that are heavy consumers of water. We will also be recommending that this new rate structure be implemented at the beginning of the 2011-2012 fiscal year.

We understand the importance of having the proper strategy in place for long term sustainability of our natural resources.

Please let me know if I can assist you with any questions that you may have regarding this matter.

Sincerely,

Anthony Bowers

Anthony Bowers
Finance Director
Town of Winterville

TOWN OF WINTERVILLE

Attachment W2

Attached, please find the calculations done for Contentnea Metropolitan Sewerage District. The calculations include the total amount of water put into the system minus the total amount billed. The difference is the unbilled water which includes such things as flushing, fire fighting, use by the Town and leaks.

Our unbilled water percentage is 4%.

Contentnea Metropolitan Sewerage District

CMSD

POST OFFICE BOX 477
GRIFTON, NORTH CAROLINA 28530

CHARLES M. SMITHWICK, JR.
DISTRICT MANAGER

April 14, 2010

Mr. Bill Whisnant
Town of Winterville
P.O. Box 1459
Winterville, NC 28590

Dear Mr. Whisnant,

Please fax the following information for the new budget to our office as soon as possible. The fax number is 524-3491.

Population (as of 12-31-09) 8,949 (July 1, 2009 State estimate)

Sewer Customers (as of 12-31-09) 3397

Gallons of water sold to sewer customers per month (ave.) January through December 2009 Total- 192,984,300 Avg. 16,082,025

Gallons of unmetered flow January through December 2009 7,767,368

FAXED 4/19/10

We would like to have this information in our office no later than April 23, 2010.

Thank you for your assistance.

Faxed to CMSD 4/19/10 9:20 AM FCW

Sincerely,

Harriett G. Pridgen

Harriett G. Pridgen
Bookkeeper

Total Gallons Pumped 192,984,300
Total Gallons Billed 185,216,932
Unmetered Flow 7,767,368

= 4% unbilled water

TOWN OF WINTERVILLE

Attachment W4

Memorandum

To: Mary Sadler

CC: Bill Whisnant, Terri Parker-Eakes

From: John Woods

Date: 7/12/2010

Re: Winterville's Utility Conservation Retrofit Program

Currently the Town provides an energy audit for residents that request one. A part of this service includes a conservation kit which has literature on conserving water and a water saving shower head. Work is underway on a more comprehensive retrofit program. The implementation date for this program is July 2012.

TOWN OF WINTERVILLE

Attachment W5

By Town of Winterville

Town of Winterville
P.O. Box 1459
Winterville, NC 28590

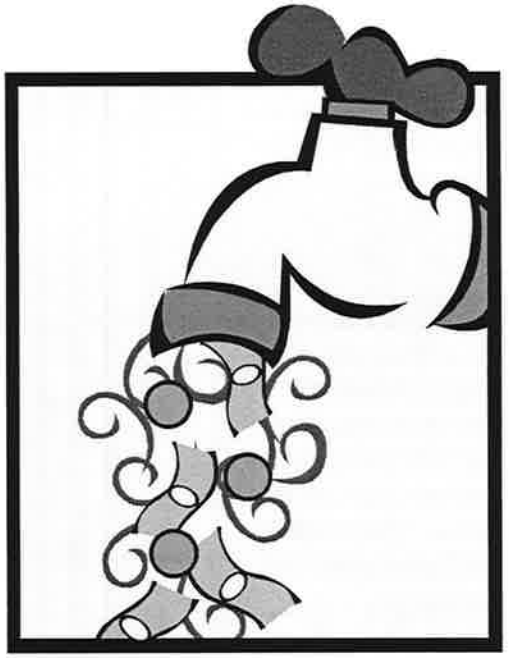
Phone: (252) 756-2221
Fax: (252)321-8455

Town of Winterville
P.O. Box 1459
Winterville, NC 28590

Postage Here

Town of Winterville

Water Conservation Starts at Home



Conserve Water. Save Money.

By Town of Winterville

Water Conservation

The Town of Winterville encourages our customers to do their part to conserve water. Saving water starts at home, but does not stop there. By doing your part to conserve water, you save money and the Town of Winterville's valuable water resources.

Water Leaks Cost $$

Water customers are constantly seeking means to keep monthly bills down and keep water rates low. One of the most effective ways of accomplishing this is by checking periodically for leaks and repairing the leak once identified.

If you have a leak at home, contact a licensed plumber to help you diagnose and repair your problem.

If you see leaks in the public right-of-way, please contact the Town of Winterville immediately at (252) 756-2221.

Average Water Usages

Water use includes many types of activities. The table below lists some common household activities and the average amount of water used for each.

1 Bath	30 Gallons
30 Baths	900 Gallons
1 Shower	20 Gallons
30 Showers	600 Gallons
1 Wash Load	45 Gallons
20 Loads	900 Gallons
1 Toilet Flush	5 Gallons
10 Flushes/Day	1,500 Gallons/Month
1 Dishwasher Load	10-15 Gallons
20 Dishwasher Loads	200-300 Gallons
Note: Values are typical for standard fixtures and top load washers.	

Customers can reduce the amount of water they use on these activities by taking some simple steps:

- Replace showerheads with water-efficient models.
- Take showers instead of baths.
- Don't waste water when brushing your teeth. Turn the water off until it's time to rinse.
- Don't run the water continuously while shaving.
- Wash only full loads of laundry.
- Only run the dishwasher with a full load.
- Replace leaky or dripping faucets.

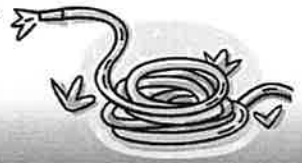
Average Leak Volumes

Water leaks can be a constant drain on a customer's water bill. Even small leaks can add up over time. The table below shows the volume of water that can be lost from leaks and lawn irrigation.

Leaking Faucet @ 100 Drips/Minute	350 Gallons/Month
Leaking Toilet @ 1/2 GPM	21,600 Gallons/Month
Watering Garden or Lawn Daily for 2 Hours @ 5GPM	18,000 Gallons/Month
Leak Through a 1/16" Hole	720 Gallons/Day 21,600 Gallons/Month
Leak Through a 1/8" Hole	2,880 Gallons/Day 86,400 Gallons/Month

There are several things that water customers can do to help reduce water leaks.

- Review your water bill each month. Know how much water you typically use. If your usage unpredictably goes up, it could be the sign of a leak.
- Repair or replace leaky faucets or other household fixtures.
- Investigate the cause if you hear water running in your pipes when all water devices are turned off.
- Contact a licensed plumber if there are signs of leaks on your side of the water meter.



Winterville's Utility Conservation Program Proposal

The Towns primary function will be an information and referral resource. To accomplish this, the following services will be provided:

- ✓ Information pamphlets/brochures mailed out and made available at the Town Hall, Police Station, and Planning Office as well as handed out by the Meter Readers + Library
  - o To include a list of websites that offer conservation tips and ideas

- ✓ Tips for utility savings included in the monthly News Letter

- ✓ The above information and website addresses included on the Town's website

- ✓ Referrals to outside agencies that do energy audits, make or recommend improvements, provide low cost/no cost energy loans, etc. to be handled by the new administrative assistant working with the planning department. This individual will take calls, handle walk-ins and requests for information via e-mail

- ✓ **"How To"** workshops for showing home owners how to decrease their consumption of utilities and lower their utility costs

  - o Heat/cool loss reduction
  - o Fixing leaks
  - o Installing water conserving devices
  - o Selecting and installing energy efficient lights and appliances
  - o Doing full wash and dish loads
  - o Collecting rain water to use on the lawn and garden

- ✓ Identification as a **"Resources Conservationist"**

  - o Designation earned by reducing utilities consumption by a yet to be determined percentage
  - o A small sign in the yard or sticker for the front door declaring this residence as a "Resources Conservationist"
  - o Story including how they accomplished recognition and idea of monthly savings in the Monthly News Letter and Town website

TOWN OF WINTERVILLE

Attachment W6

WINTERVILLE WATER REUSE CONSIDERATIONS

Water is one of Winterville's most valuable resources. As such it is under constant threat due to climate change and resulting drought, explosive population growth and waste. One of the most promising effects to stem the growing water crisis is industrial and municipal waste reclamation and reuse. Water reuse allows communities to become less dependent on groundwater and surface water sources and can decrease the diversion of water from sensitive ecosystems. It also reduces nutrient loads from wastewater discharge into waterways thereby reducing and preventing pollution.

The Federal Government has established "Guidelines for Water Reuse" (EPA/625/R-04/108) dated September 2004 for Urban Reuse, Industrial Reuse, Agricultural Reuse, Environmental and Recreational Reuse, and groundwater Recharge. Winterville is reviewing the potential reuse situations to insure that the most practical conservation measures are considered.

Winterville has had success with Industrial Reuse with two facilities in the community. The first is Winterville Machine Works that reclaims and reuses water used in the metal plating process. This water never goes into the town wastewater system. The Fullerton plant that is now temporarily closed used recycled water as a part of its industrial cooling process. Both of these reuse situations allowed our domestic water system to be sustainable without a dramatic increase of the water supply facilities. In addition, there are two car washes within the Town limits that recycle water used for washing cars.

ARCADIS
801 Corporate Center Drive
Suite 300
Raleigh
North Carolina 27607
Tel 919.854.1282
Fax 919.854.5448

To:
Toya Ogallo and Steve Reed
DENR, Division of Water Resources

Kevin Martin and Stan Crowe
Environmental Management Commission

Copies:
Steve Porter, Greenville Utilities
Randy Emory, Greenville Utilities
Tony Cannon, Greenville Utilities
Ron Elks, Greenville Utilities
Richard Wyche, ARCADIS

From:
Mary Sadler, Hazen and Sawyer

Date:
July 21, 2010

ARCADIS Project No.:
NC706015.0030

Subject:
Environmental and Economic Impacts of Water Supply Alternatives
Hearing Officer's Report Request for Additional Information
Greenville Utilities Commission Interbasin Transfer Certification

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Introduction

In June 2010, the Hearing Officers requested more information on the economic and environmental impacts of water supply alternatives to the proposed Interbasin transfer (IBT) for Greenville Utilities. This request was prompted by comments received during the public comment period. The Final Environmental Assessment (EA) provided an alternative analysis on several water supply options. This Technical Memorandum (TM) provides more detailed information on the economic and environmental impacts of water supply alternatives for Greene County, Farmville, and Winterville.

Description of Water Supply Alternatives

Five water supply alternatives were determined to be viable sources for Farmville, Greene County, and Winterville, as follows:

- Alternative 1.A – New 4 million gallons per day (mgd) water treatment plant (WTP) on Contentnea Creek.
- Alternative 1.B – New 13.5 mgd WTP and reservoir on Contentnea Creek.
- Alternative 2.A – New surficial aquifer well field and five 2 mgd WTPs.
- Alternative 2.B – New surficial aquifer well field and 13.5 mgd nanofiltration WTP.
- Alternative 3 – Purchase of finished water from Neuse Regional Water and Sewer Authority (NRWASA).
- Alternative 4 – Purchase of finished water from the City of Wilson.
- Alternative 5 – Purchase of finished water from Greenville Utilities.

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Alternatives 1.A / 1.B and 2.A / 2.B reflect the differences in the water supply project(s) as described by McDavid and Associates (*Preliminary Engineering Report Alternative Water Supply Evaluation for Greene County and Farmville*, 2004) and ARCADIS (*Final Environmental Assessment for Greenville Utilities Commission Interbasin Transfer*, 2008). Alternative 1.A, as described by McDavid and Associates, only considered a surface water source for a capacity equivalent to the safe yield on Contentnea Creek (e.g., 4 mgd). A reservoir for storage was not considered. Alternative 1.A is presented herein for consistency with the alternatives as presented in the 2004 Preliminary Engineering Report (PER); however, this alternative would not be sufficient to meet long-term water supply demands for any of the three communities. Alternative 1.B (ARCADIS, 2008) provides a surface water supply alternative intended to achieve long-term water supply demand with a larger water treatment plant and a reservoir.

Alternatives 2.A and 2.B also reflect the differences in the surficial aquifer and treatment alternatives. Alternative 2.A, per the 2004 PER, assumes that five small water treatment plants would be located in the vicinity of Farmville and throughout Greene County. This alternative would not serve the Town of Winterville. Alternative 2.B, per the 2008 ARCADIS Environmental Assessment (EA), assumes one larger water treatment plant and well field would be centrally located to serve all three communities.

Assumptions Used in Analysis

Tables 2 and 3 provide a summary of the construction costs and expected water use rates for the five water supply alternatives for Greene County-Farmville and Winterville, respectively. Construction costs in 2004 and 2008 dollars, provided by McDavid and Associates and ARCADIS, respectively, were updated to 2010 dollars per Engineering News Record (ENR) Construction Cost Indices. Water use rates were updated from 2004 to 2010 dollars using the Consumer Price Index. In the event that a water use rate was not provided, a rate was estimated using the water use rates provided by McDavid and Associates. Where applicable, water use rates were increased proportionally to the estimated construction cost to reflect the increased cost of larger infrastructure.

Tables 4 and 5 provide a summary of the environmental impacts associated with the water supply alternatives for Greene County-Farmville and the Town of Winterville, respectively. The information provided in Tables 4 and 5 were obtained from an analysis of readily available Geologic Information System (GIS) data. The data review included an analysis of twenty-one potential environmental impacts, ranging from 100-year floodplain impacts, streams, wetlands, 303d impaired waters, etc. Table 6 provides a list of the GIS data reviewed for this TM. If applicable, quantification of the environmental impacts was determined, such as the number of stream crossings and the acres of expected wetland impacts.

A majority of the information pertaining to the water supply alternatives discussed herein was obtained and compiled from several engineering sources. In a few instances, gaps in information were found between the different reports and various alternatives. These information gaps were filled based on best available information.

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Summary of Environmental and Economic Impacts of Water Supply Alternatives

Table 1 provides a summary and comparison of the economic and environmental impacts of the water supply alternatives for Greene County-Farmville and Winterville. Tables 2 through 5 should be consulted for detailed information.

The only alternatives not resulting in an Interbasin transfer are the construction of surficial wells and water treatment plants (Alternative 2.A / 2.B). However, surficial well fields and treatment may not be viable if the Division of Water Resources (DWR) were to implement a capacity use rule in this aquifer. All of the other water supply alternatives result in an Interbasin transfer for Winterville, Greene County, and Farmville individually or collectively.

The reservoir alternative has the greatest economic and environmental impact. A reservoir in Greene County would be difficult to construct due to the fairly flat topography. Additionally, this alternative is not feasible due to the large array of environmental and public issues. A significant amount of private industry and public land would be affected by this alternative. Construction of a reservoir also results in a high economic impact due to capital cost and debt service.

The purchase of finished water from the City of Wilson and NRWASA carry a high capital cost and/or debt service required for implementation. The environmental impacts for these two alternatives are similar. Furthermore, Winterville would be required to obtain an Interbasin transfer for the City of Wilson water supply alternative. All three communities would be required to obtain an Interbasin transfer for the NRWASA water supply alternative.

The purchase of finished water from Greenville Utilities is the selected water supply alternative for several reasons. This alternative is the most economical in capital cost and debt service. With the exception of the transmission lines, this alternative uses an existing water treatment plant and intake and therefore eliminates the need for a larger infrastructure project. The environmental impact of the transmission mains is similar to the purchase of finished water from the City of Wilson and NRWASA.

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Table 1: Comparison of Economic and Environmental Impacts of Water Supply alternatives for Greene County-Farmville and Winterville

Greene County-Farmville	Town of Winterville
Alternative 1.A – New 4 mgd WTP on Contentnea Creek	
• Not a sustainable engineering solution (a 4 mgd water supply capacity not sufficient for long-term demand). • Construction of 31 miles of transmission line and WTP. • 20 acres of wetlands impacted. • 45 stream crossings with one stream noted as an anadromous fish spawning area.	• This water supply alternative is not applicable to the Town of Winterville. The McDavid and Associates PER (2004) did not consider Winterville as part of this alternative.
Alternative 1.B – New 13.5 mgd WTP and Reservoir on Contentnea Creek	
• Order of magnitude higher in capital cost than other alternatives and would result in high water use rates to pay down the debt service. • Environmental studies and permitting required for the construction of new reservoir may require up to 10 years to complete. This option will not meet the near term need to replace the reductions in groundwater withdrawal as required by CCPCUA Rule • Construction of a reservoir is not a feasible engineering solution due to environmental impact and fairly flat topography in Greene County.	
• Construction of 43 miles of transmission line, a water treatment plant, and 9,500 acre reservoir. • Significant impacts to 100-year floodplain, wetlands, streams, and important forestland. • One anadromous fish spawning stream crossing. • Significant use of resources (>15 mi^2 for reservoir). • 13 permitted animal operations within the reservoir and 21 additional operations within 2 miles of the reservoir. • Three threatened and endangered species populations noted within one mile of the reservoir. • A significant natural heritage area within reservoir. • 1 school, 3 churches, & 1 library in 0.5 mile of reservoir.	• Construction of 55 miles of transmission line, a water treatment plant, and 9,500 acre reservoir. • Significant impacts to 100-year floodplain, wetlands, streams, and important forestland. • One anadromous fish spawning stream crossing. • Significant use of resources (>15 mi^2 for reservoir). • 13 permitted animal operations within the reservoir and 21 additional operations within 2 miles of the reservoir. • Three threatened and endangered species populations noted within one mile of the reservoir. • A significant natural heritage area within the reservoir. • 1 school, 3 churches, & 1 library in 0.5 mile of reservoir. • Interbasin transfer.
Alternative 2.A – New Surficial Aquifer Well Field and Five 2 mgd WTPs	
• Higher construction costs than other alternatives. • This alternative would not be viable if DWR were to implement a capacity use rule in the surficial aquifer similar to the CCPCUA Rule in the Cretaceous aquifer. • Construction of 43 miles of transmission line, five water treatment plants, and 20 wells. • 23 acres of wetlands impacted. • 38 stream crossings with 2 streams noted as anadromous fish spawning areas. • One threatened and endangered species population noted adjacent to a corridor.	• This water supply alternative is not applicable to the Town of Winterville. The McDavid and Associates PER (2004) did not consider Winterville as part of this alternative.
Alternative 2.B – New Surficial Aquifer Well Field and 13.5 mgd nanofiltration WTP	
• Significantly higher construction costs than other alternatives. • This alternative would not be viable if DWR were to implement a capacity use rule in the surficial aquifer similar to the CCPCUA Rule in the Cretaceous aquifer.	
• Construction of 41 miles of transmission line, a water treatment plant, and 30 wells.	• Construction of 53 miles of transmission line, a water treatment plant, and 30 wells.

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Table 1: Comparison of Economic and Environmental Impacts of Water Supply alternatives for Greene County-Farmville and Winterville

Greene County-Farmville	Town of Winterville
• 26 acres of wetlands impacted. • 51 stream crossings with 2 streams noted as anadromous fish spawning areas. • A threatened and endangered species population noted adjacent to a corridor.	• 30 acres of wetlands impacted. • 63 stream crossings with 2 streams noted as anadromous fish spawning areas. • A threatened and endangered species population noted adjacent to a corridor.
Alternative 3 – Purchase of Finished Water from Neuse Regional Water and Sewer Authority	
• A water use rate that is three times higher than the alternative to purchase finished water from Greenville Utilities. • NRWASA members are contractually obligated to purchase a minimum of 75 percent of a member's 2002 water use in order to pay down the debt service on the new infrastructure. This obligation applies even if less water is required for a particular year.	
• Construction of 21 miles of transmission line. • Interbasin transfer. • 13 acres of wetlands impacted. • 22 stream crossings with one stream noted as an anadromous fish spawning area.	• Construction of 26 miles of transmission line. • Interbasin transfer. • 23 acres of wetlands impacted. • 30 stream crossings with one stream noted as an anadromous fish spawning area. • A threatened and endangered species population noted adjacent to a corridor.
Alternative 4 – Purchase of Finished Water from the City of Wilson	
• Purchasing finished water from the City of Wilson requires a $12.5 million surcharge and higher water use rates than the alternative to purchase finished water from Greenville Utilities. • Not an economically feasible alternative for Winterville independently. Winterville would need to tie-in to Farmville and Greene County infrastructure.	
• Construction of 75 miles of transmission line. • 35 acres of wetlands impacted. • 55 stream crossings with 2 streams noted as anadromous fish spawning areas.	• Construction of 87 miles of transmission line. • Interbasin transfer. • 67 stream crossings with 2 streams noted as anadromous fish spawning areas. • 39 acres of wetlands impacted. • A threatened and endangered species population noted adjacent to a corridor.
Alternative 5 – Purchase of Finished Water from Greenville Utilities	
• Most economical water supply alternative. • No surcharge rate. • Water use rates reflect the wholesale cost of water with increases tied to the Consumer Price Index and not debt service payoff. • Use of existing treatment plant and raw water intake.	
• Construction of 31 miles of transmission line. • Interbasin transfer. • 21 acres of wetlands impacted. • 35 stream crossings with one stream noted as an anadromous fish spawning area. • Three threatened and endangered species populations noted adjacent to corridors.	• Construction of a booster pump station. • Interbasin transfer.

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Table 2: Summary of Water Supply Alternative Capital Cost and Water Use Rates for Greene County and Farmville

	Water Supply Alternative	Construction Cost (2004$)	Construction Cost (2008$)	Construction Cost (2010$)	Expected Usage Rate in 2004 (per 1000 gallons treated)	Expected Usage Rate in 2010 (per 1000 gallons treated)	Comments
1.A	New 4.0 mgd Water Treatment Plant on Contentnea Creek	$28,260,000		$33,554,000	$1.50	$1.72	1. The 2004 capital cost and rate is from McDavid and Associates PER dated December 4, 2004. 2. The 2010 usage rate was estimated based on the Consumer Price Index. 3. McDavid and Associates PER states that a 4 mgd plant capacity is not sufficient to meet long-term water supply demands. 4. The water treatment plant costs were estimated by McDavid and Associates at $3.00 per gallon, which is a low estimate for water plant construction.
1.B	New 13.5 mgd Water Treatment Plant and Reservoir on Contentnea Creek		$100,000,000	$100,900,000		$5.18	1. The 2008 capital cost is from ARCADIS Final EA for GUC Interbasin Transfer, dated November 2008. 2. Total water treatment plant capacity as stated in the EA includes the Town of Winterville. Plant capacity includes 2030 maximum day demand to meet long-term water supply needs. 3. The Final EA (ARCADIS, 2008) states that capital costs will most likely exceed stated estimate, depending on specific factors during design. 4. The usage rate was increased proportionally to reflect the cost of larger WTP and reservoir.
2.A	New Surficial Aquifer Well Field and Five (5) 2 mgd Water Treatment Plants in Greene County and Farmville	$48,163,550		$57,186,000	$1.50	$1.72	1. The 2004 capital cost and rate is from McDavid and Associates PER dated December 4, 2004. 2. The 2010 usage rate was estimated based on the Consumer Price Index. 3. The water treatment plant costs were estimated by McDavid and Associates at $2.00 per gallon, which is a low estimate for water plant construction.
2.B	New Surficial Aquifer Well Field and 13.5 mgd Nanofiltration Water Treatment Plant		$70,000,000	$70,600,000		$2.12	1. The 2008 capital cost is from ARCADIS Final EA for GUC Interbasin Transfer, dated November 2008. 2. The rate per 1000 gallons was estimated based on usage rates provided by McDavid and Associates and increased proportionally to reflect the cost of larger WTP.

ARCADIS

Table 2: Summary of Water Supply Alternative Capital Cost and Water Use Rates for Greene County and Farmville

	Water Supply Alternative	Construction Cost (2004$)	Construction Cost (2008$)	Construction Cost (2010$)	Expected Usage Rate in 2004 (per 1000 gallons treated)	Expected Usage Rate in 2010 (per 1000 gallons treated)	Comments
3.	Purchase Finished Water from Neuse Regional Water and Sewer Authority	$33,681,000		$39,990,000	$3.03	$3.34 (Expected to be greater than $4.00 in fiscal year 2011)	1. Capital cost reflects the internal improvements needed to distribute purchased water to existing elevated storage tanks. The 2004 capital cost and rate is from McDavid and Associates PER dated December 4, 2004. 2. The capital cost of the NRWASA treatment plant and large distribution mains, per the Certified Bid Tab, is $115 million. City of Kinston website states total construction cost is at $144 million. 3. The water use rate reflects the debt service required to pay for the new water treatment plant and large distribution mains. The debt service for the construction cost of the tie-in would be an additional cost to the stated usage rate. 4. NRWASA members are contractually obligated to an annual 75% minimum purchase based on 2002 water use. This obligation applies even if less water is required for a particular year. 5. The 2010 usage rate was obtained from NRWSA.
4.	Purchase Finished Water from the City of Wilson	$25,804,190		$30,638,000	$1.75	$2.19 ($12.5 million surcharge either a lump sum, factored into usage rate, or annual payment of approximately $500,000 per year)	1. The 2004 capital cost and rate is from McDavid and Associates PER dated December 4, 2004. 2. One time capacity charge (connection fee) of $2.50 per gallon per day demand, equating to a $12,500,000 surcharge for 5 mgd. 3. Wilson agreed to rates comparable to existing Wilson customers starting at $1.75 / 1000 gallons. The percent increase between 2005 and 2009 is 125% ($29.78 in 2009 / $23.84 in 2005) 4. The current Wilson residential rate inside the City limit is $3.37 per ccf, which equates to $4.52 / 1000 gallons. 5. The usage rate reflects the debt service required to pay for the new NRWASA water treatment plant and large distribution mains. The debt service for the construction cost of the tie-in would be an additional cost to the stated usage rate.

ARCADIS

Table 2: Summary of Water Supply Alternative Capital Cost and Water Use Rates for Greene County and Farmville

	Water Supply Alternative	Construction Cost (2004$)	Construction Cost (2008$)	Construction Cost (2010$)	Expected Usage Rate in 2004 (per 1000 gallons treated)	Expected Usage Rate in 2010 (per 1000 gallons treated)	Comments
5.	Purchase Finished Water from the Greenville Utilities Commission			$30,695,417	$1.29	$1.48	1. The 2008 capital cost is from ARCADIS Final EA for GUC Interbasin Transfer, dated November 2008. 2. The project to purchase water from GUC has been implemented in three phases: Phase 1A has been bid (connection from GUC to Pitt County master meter), Phase 1B is the tie-in to Farmville's distribution system, and Phase 1C is the tie-in to Greene County's distribution system. 3. The 2010 usage rate is based on the Water Purchase Agreements between Greenville Utilities and Farmville / Greene County. The debt service for the construction cost of the tie-in would be an additional cost to the stated usage rate or could be covered with the existing usage rate. 4. Usage rate increases are tied to the Consumer Price Index.

[1] Engineering News Record (ENR) construction cost indices: December 2004 = 7380, November 2008 = 8602, and April 2010 = 8677.
[2] The Consumer Price Index in 2004 was 188.9. The index in 2010 is 216.741.

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Table 3: Summary of Water Supply Alternative Capital Cost and Water Use Rates for Winterville

	Water Supply Alternative	Construction Cost (2004$)	Construction Cost (2008$)	Construction Cost (2010$)	Expected Usage Rate in 2004 (per 1000 gallons treated)	Expected Usage Rate in 2010 (per 1000 gallons treated)	Comments
1.A	New 4.0 mgd Water Treatment Plant on Contentnea Creek	N/A	N/A	N/A	N/A	N/A	1. This water supply alternative is not applicable to the Town of Winterville. The McDavid and Associates PER (2004) stated that a 4 mgd plant capacity is not sufficient to meet long-term water supply demands. Additionally, the PER did not consider Winterville as part of this alternative.
1.B	New 13.5 mgd Water Treatment Plant and Reservoir on Contentnea Creek		$100,000,000	$100,900,000		$5.18	1. The 2008 capital cost is from ARCADIS Final EA for GUC Interbasin Transfer, dated November 2008. 2. Total water treatment plant capacity as stated in the EA includes the Town of Winterville. Plant capacity includes 2030 maximum day demand to meet long-term water supply needs. 3. The Final EA (ARCADIS, 2008) states that capital costs will most likely exceed stated estimate, depending on specific factors during design. 4. The usage rate cost was increased proportionally to reflect the cost of larger WTP and reservoir.
2.A	New Surficial Aquifer Well Field and Five (5) 2 mgd Water Treatment Plants in Greene County and Farmville	N/A	N/A	N/A	N/A	N/A	1. This water supply alternative is not applicable to the Town of Winterville. The McDavid and Associates PER (2004) did not consider Winterville as part of this alternative.
2.B	New Surficial Aquifer Well Field and 13.5 mgd Nanofiltration Water Treatment Plant		$70,000,000	$70,600,000		$2.12	1. The 2008 capital cost is from ARCADIS Final EA for GUC Interbasin Transfer, dated November 2008. 2. The rate per 1000 gallons was estimated based on usage rates provided by McDavid and Associates and increased proportionally to reflect the cost of a larger WTP.

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Table 3: Summary of Water Supply Alternative Capital Cost and Water Use Rates for Winterville

	Water Supply Alternative	Construction Cost (2004$)	Construction Cost (2008$)	Construction Cost (2010$)	Expected Usage Rate in 2004 (per 1000 gallons treated)	Expected Usage Rate in 2010 (per 1000 gallons treated)	Comments
3.	Purchase Finished Water from Neuse Regional Water and Sewer Authority			$6,246,000	$3.03	$3.34 (Expected to be greater than $4.00 in fiscal year 2011)	1. Capital costs of a tie-in with Greene County's water distribution system were not stated in the Water Supply Master Plan (Wooten Company, 2001). Therefore, the capital cost for this alternative was estimated as part of this Hearing Officer's request for information. 2. The capital cost of the NRWASA treatment plant and large distribution mains, per the Certified Bid Tab, is $115 million. City of Kinston website states total construction cost is at $144 million. 3. The usage rate reflects the debt service required to pay for the new NRWASA water treatment plant and large distribution mains. The debt service for the construction cost of the tie-in would be an additional cost to the stated usage rate. 4. NRWASA members are contractually obligated to an annual 75% minimum purchase based on 2002 water use. This obligation applies even if less water is required for a particular year. 5. The 2010 usage rate was obtained from NRWASA.
4.	Purchase Finished Water from the City of Wilson			$2,883,000	$1.75	$2.19 ($12.5 million surcharge either a lump sum, factored into usage rate, or annual payment of approximately $500,000 per year)	1. This alternative was not evaluated in the Water Supply Master Plan (Wooten, 2001). However, the alternative would be feasible if a tie-in were made to Greene County's distribution system. The capital cost for this alternative was estimated as part of this Hearing Officer's request for information. 2. One time capacity charge (connection fee) of $2.50 per gallon per day demand, equating to a $12,500,000 surcharge for 5 mgd. 3. Wilson agreed to rates comparable to existing Wilson customers starting at $1.75 / 1000 gallons. The percent increase between 2005 and 2009 is 125% ($29.78 in 2009 / $23.84 in 2005). 4. The current Wilson residential rate inside the City limit is $3.37 per ccf, which equates to $4.52 / 1000 gallons.

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Table 3: Summary of Water Supply Alternative Capital Cost and Water Use Rates for Winterville

	Water Supply Alternative	Construction Cost (2004$)	Construction Cost (2008$)	Construction Cost (2010$)	Expected Usage Rate in 2004 (per 1000 gallons treated)	Expected Usage Rate in 2010 (per 1000 gallons treated)	Comments
							5. The usage rate reflects the debt service required to pay for the new NRWASA water treatment plant and large distribution mains. The debt service for the construction cost of the tie-in would be an additional cost to the stated usage rate.
5.	Purchase Finished Water from the Greenville Utilities Commission	$200,000 (2001$)		$276,000	$1.29	$1.48	1. The 2001 capital cost is from the Water Supply Master Plan (Wooten, 2001). 2. The usage rate reflects the debt service required to pay for the new NRWASA water treatment plant and large distribution mains. The debt service for the construction cost of the tie-in would be an additional cost to the stated usage rate or could be covered with the existing Winterville usage rate. 3. The 2010 usage rate is based on the Water Purchase Agreements between Greenville Utilities and Farmville / Greene County. 4. Usage rate increases are tied to the Consumer Price Index.

[1] Engineering News Record (ENR) construction cost indices: May 2001= 6288, December 2004 = 7380, November 2008 = 8602, and April 2010 = 8677.
[2] The Consumer Price Index in 2004 was 188.9. The index in 2010 is 216.741.

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Table 4 Summary of Water Supply Alternative Environmental Impacts for Farmville and Greene County

	Water Supply Alternative	Interbasin Transfer	100-Year Floodplain Impacts (acres)	Wetlands (acres)	Streams Crossed (DWQ Classified)	Streams Crossed (DWQ Unclassified)	Important Forestland (acres)	303(d) Listed Impaired Waters	Anadromous Fish Spawning Areas	Federal or State Owned Lands	State or Municipal Parks	High Quality/ Outstanding Resource Waters	Hazardous Waste Facilities	Historic National Register Districts/ Structures	NPDES Sites	Non-discharge Systems	Landfills	Permitted Animal Operations	Natural Heritage Occurrence Sites (T&Es)	Significant Natural Heritage Areas	Schools, Library's, or Churches	Land Managed for Conservation and Open Space and Recreational Lands	Source of Impacts
1.A	New 4.0 mgd WTP on Contentnea Creek	No	17	20 (20 sites)	8	37	17	Yes 1 stream	Yes 1 stream	No	No	No	Yes 1 within 600 feet of corridor	No	No	No	No	No	No	No	No	No	No	1. Construct 31 miles of transmission line. 2. Construct a WTP.
1.B	New 13.5 mgd WTP and Reservoir on Contentnea Creek	No	3,745 (100-year floodplain) 4,398 (floodway)	4,450 (>200 sites)	13	58	1,982	Yes 1 stream	Yes 1 stream	No	No	No	Yes 1 within 600 feet of corridor	Yes 3 structures and 1 district within 2 miles of reservoir	Yes 1 site within reservoir and 1 site 0.7 mile upstream of reservoir	No	Yes 1.9 miles from reservoir	Yes 34 within 2 miles of reservoir	Yes 3 within 1 mile of reservoir	Yes 1 site	Yes 1 school, 3 churches, 1 library within 0.5 mile of reservoir	Yes 81 acres of land man-aged for conser-vation	1. Construct 43 miles of transmission line 2. Construct a WTP. 3. Construct a 9,518-acre reservoir.
2.A	New Surficial Aquifer Well Field and Five (5) 2 mgd WTPs in Greene County and Farmville	No	21	23 (21 sites)	8	30	11	Yes 1 stream	Yes 2 streams	No	No	No	Yes 1 within 600 feet of corridor	Yes 1 structure and 1 district adjacent to corridor	No	Yes 1 site	No	No	Yes 1 within or adjacent to corridor	No	No	No	1. Construct 35 miles of transmission line. 2. Install 20 wells 3. Construct five WTPs.
2.B	New Surficial Aquifer Well Field and 13.5 mgd Nanofiltration WTP	No	21	26 (29 sites)	9	42	11	Yes 1 stream	Yes 2 streams	No	No	No	Yes 1 within 600 feet of corridor	Yes 1 structure and 1 district adjacent to corridor	No	Yes 1 site	No	No	Yes 1 within or adjacent to corridor	No	No	No	1. Construct 41 miles of transmission line. 2. Install 30 wells. 3. Construct a WTP.
3.	Purchase Finished Water from Neuse Regional Water and Sewer Authority	Yes	15	13 (14 sites)	8	14	3	No	Yes 1 stream	Yes 1 site	No	No	Yes 1 within 600 feet of corridor	No	No	No	No	No	No	No	No	No	No	1. Construct 21 miles of transmission line.
4.	Purchase Finished Water from the City of Wilson	No	35	35 (46 sites)	19	36	13	Yes 1 stream	Yes 2 streams	No	No	No	No	4 NR and 3 state listed districts and 4 NR structures	No	No	No	No	No	No	No	No	No	1. Construct 75 miles of transmission line.
5.	Purchase Finished Water from the Greenville Utilities Commission	Yes	20	21 (21 sites)	8	27	18	Yes 2 streams	Yes 1 stream	No	No	No	Yes 1 within 600 feet of corridor	No	No	No	No	No	Yes 3 within or adjacent to corridor	No	No	No	No	1. Construct 31 miles of transmission line.

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Table 5: Summary of Water Supply Alternative Environmental Impacts for Winterville

	Water Supply Alternative	Interbasin Transfer	100-Year Floodplain Impacts (acres)	Wetlands (acres)	Streams Crossed (DWQ Classified)	Streams Crossed (DWQ Unclassified)	Important Forestland (acres)	303(d) Listed Impaired Waters	Anadromous Fish Spawning Areas	Federal or State Owned Lands	State or Municipal Parks	High Quality/ Outstanding Resource Waters	Hazardous Waste Facilities	Historic National Register Districts/ Structures	NPDES Sites	Non-discharge Systems	Landfills	Permitted Animal Operations	Natural Heritage Occurrence Sites (T&Es)	Significant Natural Heritage Areas	Schools, Libraries, or Churches	Land Managed for Conservation and Open Space and Recreational Lands	Source of Impacts
1.A	New 4.0 mgd WTP on Contentnea Creek	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
1.B	New 13.5 mgd WTP and Reservoir on Contentnea Creek	Yes	3,751 (100-year floodplain) 4,398 (floodway)	4,454 (>200 sites)	15	68	1,984	Yes 3 streams	Yes 1 stream	No	No	No	Yes 1 within 600 feet of corridor	Yes 4 structures and 2 districts within 2 miles of reservoir or adjacent to corridor	Yes 1 site within reservoir and 1 site 0.7 mile upstream of reservoir	No	Yes 1.9 miles from reservoir	Yes 34 within 2 miles of reservoir	Yes 4 within 1 mile of reservoir	Yes 1 site	Yes 1 school, 3 churches, 1 library within 0.5 mile of reservoir	Yes 81 acres of land man-aged for conser-vation	1. Construct 55 miles of transmission line. 2. Construct a WTP. 3. Construct a 9,518-acre reservoir.
2.A	New Surficial Aquifer Well Field and Five (5) 2 mgd WTPs in Greene County and Farmville	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
2.B	New Surficial Aquifer Well Field and 13.5 mgd Nanofiltration WTP	No	23	30 (27 sites)	11	52	13	Yes 1 stream	Yes 2 streams	No	No	No	Yes 1 within 600 feet of corridor	Yes 1 structure and 1 district adjacent to corridor	No	Yes 1 site	No	No	Yes 1 within or adjacent to corridor	No	No	No	1. Construct 53 miles of transmission line. 2. Install 30 wells. 3. Construct a WTP.
3.	Purchase Finished Water from Neuse Regional Water and Sewer Authority	Yes	19	23 (16 sites)	10	20	3	Yes 1 stream	Yes 1 stream	Yes 2 sites	No	No	Yes 1 within 600 feet of corridor	No	No	No	No	No	Yes 1 within or adjacent to corridor	No	No	No	1. Construct 26 miles of transmission line.
4.	Purchase Finished Water from the City of Wilson	Yes	42	39 (51 sites)	21	46	15	Yes 3 streams	Yes 2 streams	No	No	No	No	5 NR and 3 state listed districts and 4 NR structures	No	No	No	No	Yes 1 within or adjacent to corridor	No	No	No	1. Construct 87 miles of transmission line.
5.	Purchase Finished Water from the Greenville Utilities Commission	Yes	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	No	1. Construct a booster pump station.

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Table 6: Summary of GIS Data Used in Analysis

Environmental Concern	Data Reviewed
100-year Floodplain	GIS data published on 16July2008 by the Federal Emergency Management Agency (FEMA) titled *National Flood Hazard Layer* and distributed by FEMA.
303(d) List of Impaired Waters	Review of the draft 1020 303(d) list, as provided in the *NC 2010 Integrated Report Category 5-303(d) List – EPA Submittal 20100329* and draft GIS data published on 3Feb2010 and distributed by the North Carolina Department of Environment and Natural Resources (NC DENR) Division of Water Quality (DWQ).
Ambient Water Quality Monitoring Sites	GIS data published on 13Mar2007 by the NC DENR DWQ, Water Quality Section titled *Ambient Water Quality Monitoring Sites* and distributed by the North Carolina Center for Geographic Information and Analysis (NCCGIA).
Anadromous Fish Spawning Areas	GIS data published on 1Dec1998 by the NCDENR Division of Marine Fisheries (DMF) titled *afsa* and distributed by NCCGIA.
Benthic Monitoring Sites	GIS data published on 29Apr2003 by the NCDENR DWQ, Environmental Sciences Branch titled *onemap_prod.SDEADMIN.benthic* and distributed by NCCGIA.
Federally Owned Land (including federally owned game lands)	GIS data published on 29Mar2006 by the NCCGIA titled *Federal Land Ownership* and distributed by NCCGIA.
Fish Community Monitoring Sites	GIS data published on 31Mar2004 by the NC DENR, DWQ titled *onemap_prod.SDEADMIN.dshcmntysts* and distributed by NCCGIA.
Fish Nursery Areas	GIS data published by the NC DENR Division of Marine Fisheries (DMF), Information and Technology Section on 3Dec2008 titled *Protected Areas Fishery Nursery Areas 2005* and distributed by the DMF, Information and Technology Section.
Game Lands	GIS data published on 1June2009 by the North Carolina Wildlife Resources Commission (NC WRC) titled *WRC Gamelands* and distributed by the NC WRC and NCCGIA.
Hazardous Substance Disposal Site	GIS data published on 1Dec1998 by the NC DENR Division of Waste Management titled *onemap_prod.SDEADMIN.hsds* and distributed by NCCGIA.
Hazardous Waste Facilities	GIS data published by the NC DENR Division of Waste Management on 1Dec1998 titled *Hazardous Waste Facilities* and distributed by NCCGIA.
High Quality Outstanding Resource Waters (HQW/ORW)	GIS data published by the NC DENR DWQ on 7Jun2007 titled *High Quality Water and Outstanding Resource Water Management Zones, Division of Water Quality* and distributed by NCCGIA.
Historic National Register Districts	GIS data published by State Historic Preservation Office (SHPO) on 21Aug2002 titled *Historic Natl. Register Districts.*
Historic National Register Structures	GIS data published by SHPO on 21Aug2002 titled *Historic Natl. Register Structures.*
Wetlands	GIS data published by the United States Fish and Wildlife Service (US FWS) National Wetlands Inventory (NWI) on 18May1999 titled *onemap_prod.SDEADMIN.nwi_poly* and distributed by NCCGIA.
National Pollution Discharge Elimination System (NPDES) Sites	GIS data published by the NC DENR DWQ, Planning Branch on 30Mar2006 titled *onemap_prod.SDEADMIN.npdes* and distributed by NCCGIA.
NPDES Non-Discharge Systems	GIS data published by the NC DENR DWQ, Planning Branch on 10Jul2006 titled *onemap_prod.SDEADMIN.ndsys* and distributed by NCCGIA.

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Table 6: Summary of GIS Data Used in Analysis

Environmental Concern	Data Reviewed
Proposed Critical Habitat	GIS data published by an unknown author on 10Jul2006 titled *pcha.*
Permitted Animal Operations	Animal Operation Sites: GIS data published by the NC DENR DWQ, Non-Discharge Compliance/Enforcement Section on 4Dec2003 titled *onemap_test.SDEADMIN.aop* and distributed by NCCGIA.
State Parks	GIS data published by the North Carolina Parks and Recreation Department on Jul2009 titled *ncprk0709* and distributed by NCCGIA.
Streams	DWQ classified and unclassified: GIS data published by the NC DENR DWQ on 30Nov2007 titled *dwq_classifications_20071130* and distributed by the NC DENR DWQ.
Water Supply Watersheds	GIS data published by the NC DENR DWQ on 1Jul2007 titled *Water Supply Watersheds* and distributed by NCCGIA.
Important Forestland	GIS data published by the North Carolina Division of Forest Resources (DFR) in Jan2009 titled *forimp0109_fullstate.*
Landfills	GIS data published by the United Stated Environmental Protection Agency (US EPA) Landfill Methane Outreach Program on 4Nov2004 titled *onemap_prod.SDEADMIN.lndfls* and distributed by NCCGIA.
Lands Managed for Conservation and Open Space	GIS data published by the NCCGIA on 28Feb2002 titled *onemap_SDEADMIN.lmcos* and distributed by NCCGIA.
Recreational Lands and Open Space	GIS data compiled by the NCDENR that contains various layers from varying sources published on 13Feb2008 titled *RecLands_OpenSpace_Shapefiles* and distributed by NCCGIA.
State Owned Lands	GIS data published by the North Carolina Department of Administration, State Property Office on 6May2008 titled *State-Owned Lands* and distributed by NCCGIA.
Wild and Scenic Rivers	GIS data published by the National Wild and Scenic Rivers System (administered by the Bureau of Land Management, the National Park Service, the US FWS, and the United States Forest Service) on 13May2008 titled *Wild and Scenic Rivers* and distributed by NCCGIA.

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To
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DENR, Division of Water Resources

Kevin Martin and Stan Crowe
Environmental Management Commission

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Van Lewis, McDavid and Associates
Terri Parker-Eakes, Town of Winterville

From:
Mary Sadler, Hazen and Sawyer

Date:
July 20, 2010

ARCADIS Project No.:
NC706015.0030

Subject:
Summary of Mitigation for Secondary and Cumulative Impacts
Hearing Officer's Report Request for Additional Information
Greenville Utilities Commission Interbasin Transfer Certification

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In June, the Hearing Officers requested more information on mitigative measures for Greene County and the Towns of Farmville and Winterville. The Hearing Officers want to verify that mitigation is consistent between communities so that any secondary and cumulative impacts as a result of the proposed Interbasin transfer (IBT), albeit minor, are mitigated to a reasonable degree. This Technical Memorandum (TM) provides a mitigation summary and an update to the Final Environmental Assessment (EA). In particular, the Hearing Officers are focused on consistent stormwater measures between communities.

Table 1 provides a summary of mitigation for Pitt County, City of Greenville, Town of Farmville, Town of Winterville, and Greene County. The City of Greenville, Pitt County, and the Town of Winterville currently comply with the NPDES Phase II stormwater rules in addition to requiring 50-foot riparian buffers on perennial and intermittent streams. The Town of Farmville and Greene County have not adopted any stormwater requirements. The Town of Farmville does have a 50-foot riparian buffer requirement on perennial streams and an impervious surface requirement in their Erosion and Sedimentation Control Ordinance. Greene County is very rural and currently does not have a zoning ordinance. All of the communities have similar erosion and sedimentation control programs.

In a June 25, 2010 email update to the Division of Water Resources (DWR), the mitigation issue was put into perspective for Greene County, in particular. Greene County is ranked 82/100 in population and 86/100 in income. The County is rural and primarily agricultural based. A quick analysis was performed on impervious surface using land classification data. High intensity and low intensity land classes were assumed to be 100 percent impervious. This assumption yielded an impervious surface of 0.37 percent of the total land area in Greene County. Using the published growth rate for Greene County, the resulting total impervious surface coverage in 2030 would equal to 0.47 percent, assuming that the rate of

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impervious surface per capita would remain constant until 2030. A question was posed to the Hearing Officers: Is a tenth of a percentage point difference in impervious surface enough of a growth impact to be considered significant enough for the implementation of stormwater rules?

In a recent discussion with DWR staff, the Hearing Officers will not approve an IBT Certificate without stormwater measures for mitigation. A special condition would be included in the IBT Certificate to address the stormwater issues. In lieu of a specific schedule for stormwater ordinance adoption, the Hearing Officers will write the condition such that water may be transferred once a stormwater program is approved by DWR. However, the Hearing Officers have asked that all parties provide verbal assurance of a reasonable schedule.

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Table 1: Summary of Mitigation for City of Greenville, Pitt County, Farmville, Greene County, and Winterville

	Mitigation Measure	City of Greenville	Pitt County	Town of Farmville	Greene County	Town of Winterville
1.	Land Use Planning	• 2004 Update to 1992 Horizons Comprehensive Plan.	• 2002 Land Use Plan Update.	• 2008 Revision to Land Use Plan.	• No comprehensive land use planning due to many small towns and unincorporated areas.	• 1997 Land Development Plan. • Board adopted Pitt County Greenway Plan in 2005.
2.	Zoning	• Thirty-two zoning districts. • Includes overlay districts (water supply watershed, historic district, and conservation district). • Open space requirements in the conservation overlay district.	• County zoning ordinance applies to areas outside corporate or municipal ETJs. • Eight zoning districts. • Water Supply Watershed Protection Overlay.	• Zoning Ordinance. • Nineteen zoning districts.	• No zoning due to many small towns and unincorporated areas.	• Zoning Ordinance adopted 2000 and amended May 2010. • Seventeen zoning districts.
3.	Riparian Buffers	• Tar Pamlico Riparian Buffer Rule requiring a 50-foot riparian buffer on perennial and intermittent streams.	• 2006 Riparian Buffer Protection Ordinance to enforce Tar Pamlico and Neuse Rules for a 50-foot riparian buffer on perennial and intermittent streams.	• Zoning Ordinance requires a 50-foot vegetative buffer along all perennial waters.	• Subdivision Regulations require vegetated buffer strips of 15 feet along all watercourses and wetlands.	• 50-foot riparian buffer on perennial and intermittent streams. Ordinance is administered by Pitt County under an interlocal agreement executed October 2008.
4.	Erosion and Sedimentation Control	• Soil Erosion and Sedimentation Control Ordinance. • Measures provide protection from the 25 year storm.	• Soil Erosion and Sedimentation Control Ordinance. • Requirements similar to City of Greenville.	• Sedimentation and Erosion Control Ordinance. • Requirements similar to City of Greenville and Pitt County.	• Subdivision Regulations enforce state requirements for erosion and sedimentation control.	• Pitt County Erosion and Sedimentation Control Ordinance enforced.
5.	Stormwater Programs	• 2002 Stormwater Program that complies with NPDES Phase II and Tar Pamlico Stormwater Rules. • Tar Pamlico rules include Neuse watershed areas in the ETJ. • Measures enforced via ordinance.	• 2004 Stormwater Ordinance for Nutrient Control effective to comply with Tar Pamlico rules. • Identical program to City of Greenville.	• Compliance not currently required under Phase II or Neuse Rules. • Zoning Ordinance establishes 60 percent impervious surface for the neighborhood business district and 65 percent impervious	• None (due to rural nature of County).	• 1988 Stormwater Management Plan ordinance amended 2001. • Complies with NPDES Phase II Stormwater rules.

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Table 1: Summary of Mitigation for City of Greenville, Pitt County, Farmville, Greene County, and Winterville

	Mitigation Measure	City of Greenville	Pitt County	Town of Farmville	Greene County	Town of Winterville
				surface for R-12 through R-8. A limit of 75 percent impervious surface has been established for high density residential and business districts.		
6.	Floodplain Regulations	• Identified flood hazard areas via FEMA requirements.	• Identified flood hazard areas via FEMA requirements.	• Identified flood hazard areas via FEMA requirements.	• Identified flood hazard areas via FEMA requirements.	• Identified flood hazard areas via FEMA requirements.

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To
Toya Ogallo and Steve Reed
DENR, Division of Water Resources

Kevin Martin and Stan Crowe
Environmental Management Commission

Copies:
Steve Porter, Greenville Utilities
Randy Emory, Greenville Utilities
Tony Cannon, Greenville Utilities
Ron Elks, Greenville Utilities
Richard Wyche, ARCADIS

From:
Mary Sadler, Hazen and Sawyer

Date:
July 19, 2010

ARCADIS Project No.:
NC706015.0030

Subject:
Explanation of Hydrologic Analysis and Results Interpretation
Hearing Officer's Report Request for Additional Information
Greenville Utilities Commission Interbasin Transfer Certification

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Summary of Hydrologic Modeling in Support of IBT Effort

A hydrologic model was developed for the lower Tar River to predict river flow under current and future water use scenarios (ENTRIX 2007). The model was designed to evaluate the effect of Greenville Utilities Commission (GUC) proposed Interbasin transfer (IBT) withdrawals on current and future flow at Greenville. The model was based on available United States Geological Survey (USGS) flow records from the Tar River at Tarboro (Gage No. 02083500) and the Tar River at Greenville (Gage No. 02084000). The flow record at Tarboro provided a long-term record (1931 to 2007) of hydrologic conditions in the river. This gage represents the majority of the entire drainage area of the basin and therefore was considered the best available data set for predicting downstream flow at Greenville. Comparatively, the Greenville gage represents a short period of record (1997 to 2007).

The relationship between the flow record at the Greenville and Tarboro gages was estimated using hydrologic and statistical methods. This relationship was used to generate a long-term flow record at Greenville. Tidal influences were not simulated in the model. Days may occur when the tidal influence creates a net downstream flow of zero or a net upstream flow ("negative" flow).

Model Development

The hydrologic model is a mass balance type model that quantified the relative difference in output flow associated with and without the proposed IBT at current and future withdrawals and discharges. The hydrologic mass balance was represented with two modeling locations: the Greenville gage downstream of GUC's Water Treatment Plant (WTP) intake and a point downstream of GUC's Wastewater Treatment Plant (WWTP) National Pollutant Discharge Elimination System (NPDES) discharge. These two locations represented a 7.7-mile portion of the Tar River that would be the most influenced by the proposed IBT.

The hydrologic model accounts for all documented withdrawals and discharges in the Tar River downstream of the Rocky Mount Reservoir. The amount of withdrawal and discharge was calculated on a monthly basis and for two time periods: 2002 and 2030. The 2002 withdrawals were developed using 2002 Local Water Supply Plans (LWSP), GUC withdrawal and discharge data, and registered agricultural withdrawal data from the Division of Water Resources (DWR). The projected 2030 withdrawals and discharges were added to the model incrementally and were converted from an annual average to a monthly average using composite adjustment factors based on historic variability.

Hydrologic Scenarios

Eight different modeling scenarios were developed to reflect a range of existing and proposed conditions at the upstream and downstream locations in the mass balance. The names of the modeled scenarios have been altered slightly to provide additional clarification to the original published report, as follows:

- Scenario A – Withdrawal and discharge in 2002, no IBT.
- Scenario B – Withdrawal and discharge in 2002, average day IBT.
- Scenario C – Withdrawal and discharge in 2002, maximum day IBT
- Scenario D – Withdrawal and discharge in 2002, 2x maximum day IBT.
- Scenario E – Withdrawal and discharge in 2030, no IBT.
- Scenario F – Withdrawal and discharge in 2030, average IBT.
- Scenario G – Withdrawal and discharge in 2030, maximum day IBT
- Scenario H – Withdrawal and discharge in 2030, 2x maximum day IBT.

Statistical Analysis

To clarify the results presented in the original report, an analysis was performed to determine if there was a statistical difference between the distribution of the upstream data set and the downstream data set for each scenario. In order to prevent dampening of low flow events due to the large data set, only flow events defined as less than 300 cubic feet per second (cfs) were used. The non-parametric Kolmogorov-Smirnov test was used to compare the low flow data set for each scenario at a confidence interval of 95 percent. This non-parametric test was used to compare the cumulative frequency distribution of the low flow data sets to determine statistically significant differences. Table 1 provides a partial summary of the results as reported in the original report in addition to the results of the Kolmogoroy-Smirnov test. For the evaluated scenarios, there are no significant statistical differences between the distributions in the upstream and downstream low flow data sets.

A frequency-duration analysis was performed on flow less than 300 cfs for the two opposing withdrawal scenarios: 2030 withdrawal and discharge – no IBT (Scenario E) and 2030 withdrawal and discharge – maximum day IBT (Scenario G). The entire 76 year record was filtered for all days where the flow was less than 300 cfs, 109 cfs (7Q10), and 27 cfs (25 percent of 7Q10). The low flow days were then grouped into 25 low flow events where there were at least 40 days of flow less than 300 cfs that occurred over a 60 day span. A summary of these 25 low flow events is provided in Table 2. Table 2 includes the total

number of days in each event per scenario as well as the difference in the number of low flow days (e.g. difference in duration) for each event. Conclusions from this analysis are as follows:

1. The average difference in duration between Scenarios E and G at flow less than 300 cfs was less than 5 days.
2. A maximum of 10 days difference in duration occurred only once at flow less than 300 cfs.
3. A maximum of 15 days difference in duration occurred twice at flow less than 109 cfs.
4. A maximum of 20 days difference in duration occurred once at flow less than 27 cfs.
5. Out of 25 total low flow events, the proposed IBT resulted in only six occurrences where the number of very low flow days would be longer in duration as a result of the proposed IBT.

Summary

The impact of the proposed IBT on the hydrology of the Tar River will be insignificant. First, there are no statistically significant differences between the distributions of the upstream and downstream low flow data sets between scenarios that were developed for the hydrologic mass balance. Second, the frequency-duration analysis for the two opposing withdrawal scenarios indicates less than a three week difference in duration, occurring once, on a very low flow event over the 76-year period of record. The additional three week duration, a rare occurrence, should not be considered a significant impact. During low flow periods, Greenville Utilities would be withdrawing less water than the maximum day due to their water conservation ordinance and initiatives. This three week interval would therefore be shorter in duration.

Another important consideration is that the GUC raw water intake is tidally influenced, which will also help to ameliorate the proposed IBT. The salt water wedge moves fresh water inland (e.g. upstream) as the tidal wedge pushes into the estuary. Salt water is heavier than fresh water, so the salt water wedge will move upstream with the highest concentration of salinity at the bottom of the river. This moving wall of salt water creates a dam-like effect that pushes fresh water upstream. This phenomenon is particularly acute during low flow periods. GUC closely monitors the salt water wedge, as their WTP is not designed to treat saline water. Furthermore, GUC's water conservation tiers are linked to the stage of water at the intake *and* the location of the salt water wedge. These conservation tiers are thus directly linked to manifestation of low flow in the river.

The Tar River channel is never depleted due to tidal influence. Withdrawal in a tidally influenced stream does not equate to withdrawal in a fresh water stream. In a fresh water stream, a withdrawal is a permanent subtraction of flow from the system. In a tidally influenced stream, flow is moving back and forth continuously under the influence of the tides. This tidal buffering effect reduces the aquatic impact during low flow periods.

Finally, Greenville Utilities is not requesting an increase in permitted withdrawal as part of the proposed IBT. Rather, Greenville is selling excess water capacity to communities with reduced water supply as a result of the Central Coastal Plain Capacity Use Area (CCPCUA) rules.

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Response to Public Comments

1. **Are the flows at the Tarboro gage, which were used to predict the flow at Greenville, representative of flows that will occur in the future?**

   The use of the flow record at the Tarboro gage to predict flows at Greenville provided the best available representation of flow. The Rocky Mount Reservoir operating rules were considered in the hydrologic analysis and model. The hydrologic analysis was based on actual flow at the Tarboro gage, reflecting 40 years of data prior to the reservoir and 36 years of reservoir operation data. Reservoirs often augment low flow in rivers due to storage in higher flow periods and release in extended lower flow periods. Flow duration curves for the pre-reservoir period of record and post-reservoir period of record were evaluated to determine if this effect was present in the Tar River. Specific trends were not observed; therefore, the difference in pre- and post-reservoir low flow was considered negligible. Furthermore, the hydrologic model reflects the Rocky Mount reservoir operating rules and minimum flow during the entire 36 year period of record.

2. **The impact of the reservoir due to minimum flow is less than unaltered conditions. The magnitude of flow does not prove this hypothesis. The timing, frequency, and duration of low flows have not been considered.**

   A frequency-duration analysis was performed on flow less than 300 cfs for the 2030 withdrawal and no IBT scenario and the 2030 withdrawal and maximum day IBT scenario. The entire 76 year record was filtered for all days where the flow was less than 300 cfs, 109 cfs, and 27 cfs. These low flow days were then grouped into 25 low flow events where there were at least 40 days of flow less than 300 cfs during a 60 day span. Out of 25 total low flow events, the proposed IBT resulted in only six occurrences where the number of very low flow days would be longer in duration as a result of the proposed IBT. At flow less than 27 cfs, a maximum of 20 days difference in duration occurred only once during the 76 year period of record.

   In summary, the frequency-duration results indicate that there is less than a three week difference in duration during a very low flow event as a result of the proposed IBT. The additional three week duration, a rare occurrence, will not impose a significant impact as a result of the proposed IBT.

3. **Concern with the validity of the 7Q10 value as a relevant statistic for comparing flow changes.**

   Several flow statistics were generated for each modeled scenario to provide a comparison between the upstream and downstream locations. The 7Q10 flow statistic was used as one of the “yardsticks” to compare results. The 7Q10 value of 109 cfs was confirmed by the USGS in 2007. However, an important point to note is that the historical flow record in the Tar River near Greenville (low, medium, or high) was not being analyzed or debated in this hydrologic modeling effort. Rather, the change in the flow record as a result of a modeled scenario was being evaluated, e.g. the difference in the flow between upstream and downstream for the period of record.

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Table 1: Summary of Statistical Significance Between Upstream and Downstream Data Sets for Scenarios A, B, D, E, F, and H

	Scenario A – Withdrawal and Discharge in 2002, No IBT		Scenario B – Withdrawal and Discharge in 2002, Average Day IBT		Scenario D – Withdrawal and Discharge in 2002, Maximum Day IBT [1]		Scenario E – Withdrawal and Discharge in 2030, No IBT		Scenario F – Withdrawal and Discharge in 2030, Average Day IBT		Scenario H – Withdrawal and Discharge in 2030, Maximum Day IBT [1]	
	Percent of Time Per Year Flow is Below Benchmark Flow											
Benchmark	**Up [2]**	**Down [3]**	**Up**	**Down**	**Up**	**Down**	**Up**	**Down**	**Up**	**Down**	**Up**	**Down**
109 cfs (7Q10)	1.3%	1.0%	1.6%	1.3%	1.8%	1.8%	1.4%	1.3%	1.6%	1.6%	1.8%	2.1%
87 cfs (80% of 7Q10)	0.9%	0.7%	1.1%	0.9%	1.2%	1.2%	0.9%	0.8%	1.1%	1.1%	1.3%	1.6%
54 cfs (50% of 7Q10)	0.3%	0.2%	0.5%	0.3%	0.6%	0.6%	0.3%	0.4%	0.6%	0.5%	0.6%	0.8%
27 cfs (25% of 7Q10)	0.0%	0.0%	0.2%	0.0%	0.3%	0.3%	0.1%	0.1%	0.2%	0.3%	0.3%	0.5%
Significant Difference in the Distribution of Upstream and Downstream Flow below 300 cfs at α = 0.05? [4]	No		No		No		No		No		No	

[1] This scenario increases the Greenville withdrawal by the Max IBT amount (as in the 'Max IBT' scenario) and also decreases the Greenville WWTP discharge (not adjusted for the other IBT scenarios) by the Max IBT amount (effectively removing 2x the Max IBT amount from the Tar River flow). If the calculated discharge was below zero, the discharge was entered as zero (0).
[2] The location at the point "upstream" in the hydrologic mass balance: the Greenville gage downstream of GUC's water supply intake.
[3] The location at the point "downstream" in the hydrologic mass balance: a point downstream of Greenville WWTP discharge.
[4] Based on two sample Kolmogorov-Smirnov Test comparing the distribution of flow events below 300 cfs for the period of time modeled at a level of significance of 95%.

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Table 2: Summary of Frequency-Duration Analysis for the No IBT Scenario 'E' and the Maximum Day IBT Scenario 'G' During Low Flow Events

Event	Start Date / End Date	Scenario	Days Less Than 300 cfs during Event	Difference in Duration at < 300 cfs (days)	Days Less Than 109 cfs during Event	Difference in Duration at < 109 cfs (days)	Days Less Than 27 cfs during Event	Difference in Duration at < 27 cfs (days)
1	July 14, 1932	Scenario E [1]	87	1	41	13	2	10
	October 17, 1932	Scenario G [2]	88		54		12	
2	June 22, 1933	Scenario E	152	8	48	11	10	12
	February 1, 1934	Scenario G	160		59		22	
3	September 15, 1941	Scenario E	64	4	11	1	0	0
	December 4, 1941	Scenario G	68		12		0	
4	August 10, 1943	Scenario E	109	5	20	15	0	0
	December 24, 1943	Scenario G	114		35		0	
5	September 1, 1951	Scenario E	60	2	2	3	0	0
	November 2, 1951	Scenario G	62		5		0	
6	August 28, 1953	Scenario E	55	3	0	2	0	0
	November 8, 1953	Scenario G	58		2		0	
7	July 7, 1954	Scenario E	101	7	38	4	0	6
	November 21, 1954	Scenario G	108		42		6	
8	July 11, 1963	Scenario E	83	4	8	8	0	0
	November 6, 1963	Scenario G	87		16		0	
9	September 3, 1966	Scenario E	50	6	0	1	0	0
	November 27, 1966	Scenario G	56		1		0	
10	July 2, 1968	Scenario E	82	1	47	3	13	20
	November 10, 1968	Scenario G	83		50		33	
11	August 29, 1970	Scenario E	67	2	38	4	0	7
	December 14, 1970	Scenario G	69		42		7	

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Table 2: Summary of Frequency-Duration Analysis for the No IBT Scenario 'E' and the Maximum Day IBT Scenario 'G' During Low Flow Events

Event	Start Date / End Date	Scenario	Days Less Than 300 cfs during Event	Difference in Duration at < 300 cfs (days)	Days Less Than 109 cfs during Event	Difference in Duration at < 109 cfs (days)	Days Less Than 27 cfs during Event	Difference in Duration at < 27 cfs (days)
12	July 7, 1977	Scenario E	57	3	0	0	0	0
	October 14, 1977	Scenario G	60		0		0	
13	August 7, 1980	Scenario E	95	5	0	2	0	0
	November 20, 1980	Scenario G	100		2		0	
14	June 28, 1981	Scenario E	122	7	11	4	0	0
	December 14, 1981	Scenario G	129		15		0	
15	July 30, 1983	Scenario E	71	6	0	0	0	0
	November 11, 1983	Scenario G	77		0		0	
16	June 11, 1986	Scenario E	46	3	0	2	0	0
	August 6, 1986	Scenario G	49		2		0	
17	July 8, 1988	Scenario E	61	10	0	0	0	0
	October 19, 1988	Scenario G	71		0		0	
18	August 1, 1993	Scenario E	116	2	19	12	0	0
	November 29, 1993	Scenario G	118		31		0	
19	September 10, 1994	Scenario E	56	3	3	2	0	0
	November 19, 1994	Scenario G	59		5		0	
20	August 6, 1998	Scenario E	64	5	0	0	0	0
	November 16, 1998	Scenario G	69		0		0	
21	June 5, 1999	Scenario E	51	4	0	1	0	0
	August 26, 1999	Scenario G	55		1		0	
22	August 21, 2001	Scenario E	46	6	0	0	0	0
	October 25, 2001	Scenario G	52		0		0	

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Table 2: Summary of Frequency-Duration Analysis for the No IBT Scenario 'E' and the Maximum Day IBT Scenario 'G' During Low Flow Events

Event	Start Date / End Date	Scenario	Days Less Than 300 cfs during Event	Difference in Duration at < 300 cfs (days)	Days Less Than 109 cfs during Event	Difference in Duration at < 109 cfs (days)	Days Less Than 27 cfs during Event	Difference in Duration at < 27 cfs (days)
23	April 21, 2002	Scenario E	92	4	34	9	0	0
	July 28, 2002	Scenario G	96		43		0	
24	July 26, 2005	Scenario E	77	4	7	15	0	0
	October 21, 2005	Scenario G	81		22		0	
25	May 20, 2007	Scenario E	88	1	32	6	0	12
	August 31, 2007	Scenario G	89		38		12	

[1] Withdrawal and discharge in 2030, no IBT, location downstream of GUC WWTP discharge.
[2] Withdrawal and discharge in 2030, maximum day IBT, location downstream of GUC WWTP discharge.

Appendix 7
Record of Public Comments Received on Greenville Utilities Commission, Town of Farmville, Town of Winterville and Greene County's Petition for an Interbasin Transfer Certificate

Ogallo, Toya

From: Barney Kane [microbemanager@gmail.com]
Sent: Tuesday, January 19, 2010 4:37 PM
To: Ogallo, Toya
Subject: Comment on GUC IBT Permit
Attachments: Revised and resubmitted comments of BEK re the GUC IBT.doc

Dear Ms. Ogallo,
I am attaching my revised comments in opposition to the Permit Request by the Greenville Utilities Commission for an Interbasin Transfer.

I thank you for considering my comments.
Bernard E. Kane, Jr.
Prof. Emeritus Retired & former member and chair of Greenville Utilities Commission

--
Barney

"Everybody needs beauty as well as bread, places to plan in and pray in, where Nature may heal and cheer and give strength to body and soul alike." -
John Muir

01/19/2010
Statement of Bernard E. Kane, 1706 Canterbury Road, Greenville, NC 27858
Phone 252-355-6789.

January 19, 2010

I am opposed to the GREENVILLE UTILITIES COMMISSION INTERBASIN TRANSFER CERTIFICNATION REQUEST.

It is my belief that the interbasin transfer (IBT) requested is not warranted. It is, in fact, counter to the best interest of all parties concerned. I also believe the requested transfer is contrary to contemporary sustainable growth management practices. I believe the needs presented are exaggerated and that there are better alternatives

I am generally opposed to interbasin transfers. Historically most such transfers have resulted in great economic trauma for some populations while selectively offering transitory benefits to others. More often than not IBTs have resulted in unintended and unforeseen environmental disasters.

It is my belief, based upon thirty-five years of teaching water supply and wastewater treatment at East Carolina University, that interbasin transfers should only be approved for where extraordinary and overwhelming justification is provided such as saving human lives.

My major and minor points:

Point #1

1.1

The Approved Base Rate (ABR) used by the NCDWR to determine historical use from the Cretaceous aquifer in the capacity use area is flawed.

The ABR applied was determined based on historical use at a time when there were no conservation rates in place, pumping and treatment costs were low, and energy costs for water production were also low. Thus, these ABR's may be presumed to be based upon water use patterns that were excessive. There was little reason to limit use or apply conservation practices. A more realistic (much lower) ABR should have been used

It is therefore also true that the reductions proposed from the artificially high ABR do not reflect any serious conservation effort. Neither is there serious hardship caused in these capacity use areas by meeting the per cent reductions required in the early years of the limitations. Reductions of twenty-five percent could be achieved quite simply. Reductions of fifty percent represent only a small challenge in conservation and in planned growth. The seventy-five percent reduction would likely require access to surface water from the Neuse if growth is to be facilitated.

There is no need to transfer water from the Tar River.

Similarly if these high ABRs are used the projections of future needs are dramatically higher than needed. Offsetting these projected "needs" with the proposed interbasin transfer would effectively support these former wasteful, luxury, water-use practices.

My point is that these ABRs do not reflect the true base need. Rather they reflect luxury use patterns that do not warrant the support of the interbasin transfers proposed.

To use these erroneous ABRs as the basis for projected future water "needs" only results in support of continued wasteful consumption. A more critical, conservation-motivated analysis is needed in which limits are properly considered and conservation is practiced.

If such analysis were done there would be no basis for the proposed IBT.

Point #2

1.2

Water is available from the Neuse for the communities in that basin. In fact if the proposed IBT were approved water lines from the Tar would pass by lines from the Neuse providing water to communities in what is partially a turf war for utility growth. Feigned statements of cooperation and redundancy mask these turf wars including lawsuits over the right to serve select communities (Bell Arthur Rural Water District vs. GUC, as an example). NC Water Supply Branch should not facilitate these battles. Let GUC stay within its own basin and mandated mission to provide for the needs of Greenville.

Point #3

1.3

The data used and the peaking factors applied in the Arcadis/GUC Interbasin Management Strategy are probably flawed. For one thing there is no way that the Maximum Daily Demand for 1990 and 1995 for GUC could be "Not Available." The record keeping at GUC during those years was carefully documented and recorded. It is hard to imagine why the data are not presented here. I have too much faith in GUC to believe there was a selective motive for listing them as "NA" and yet these data are too important for Arcadis to overlook these values. This is puzzlement. NCDWR should ask for these values and consider them in the determining the proper peaking factors.

Point #4

1.4

The peaking factors of 1.7 and 1.8 used for communities in the Capacity Use Areas (CCAs) contrast dramatically with the 1.5 factor found valid for GUC.

Common sense would support the assumption that the peaking factor applied to Greenville should be used for the CCA communities as well.

The GUC peaking factor is based upon a larger, more valid, data base and one that likely reflects the management of water resources that will be needed in the future. The more rural communities tend to have larger lots and less steady industrial water consumption.

Thus these high peaking factors may be now be supported by the current use patterns. In the future use will require more conservation and less irrigation. MDDs will need to more closely approach ADDs as these communities grow and as water resources become more restricted. Use of these high values of 1.7 and 1.8 for peaking factors is not reasonable and endorses wasteful use.

Point #5

I can see no valid purpose or reason for GUC to supply water to communities facing limited water supplies. On the surface such a statement might seem selfish. In fact it is likely both reasonable and helpful. It is only in a shortsighted rationale that an interbasin transfer might be viewed favorably. There are many reasons why GUC should not supply the water. Some reasons are environmental, some are economic, some are energy related, and some are moral. The following sub-points explain my position.

1.5

Point #5a.

I think it reasonable for areas with limited resources to recognize those limits and plan not to exceed the limits available. The alternative is an arrogant belief that there is some duty to push resources hither and yon across landscapes and basins with pumps and machines thereby disrupting natural systems and causing ripples of unknown but possibly disastrous consequences.

1.6

Point #5b.

Stream flows and receiving streams will be impacted by the proposed IBT as will the natural characteristics of the waters affected. These effects and impacts are not necessary and are not even needed except possibly in the minds eye of municipal officials and self-aggrandizing developers in the region.

1.7

Point #5c.

Greenville has had a remarkably flat water consumption pattern over the past 15 years. This may seem puzzling considering the growth in Greenville. It is likely attributed in part to several factors, including good management at the utility, changes in water use practices at local industries and other more minor practices. But there are limits to these benefits. It is probable, perhaps even certain, that Greenville's demand for water will return to the steep growth curves that were predicted by the consulting engineers in the mid 90's.

1.8

If this is true Greenville will be using its current plant capacity in the very near future. If that is the case, there will be very little excess to commit to other basins. To meet the commitments in the proposed IBT, GUC would need to expand their current facilities and would be absolutely dependent upon the Aquifer Storage and Recovery (ASR) system functioning as designed.

The ASR has not been tested. It is a pioneer system in NC. It has been a troubled project since inception, taking years longer to be in place than was planned. I would be unwilling to approve creating a dependency on this project.

1.9

Point #5d.
Development in Farmville, Winterville, and Greene Counties promotes rural sprawl. Thus the proposed IBT promotes rural sprawl. **It would be more efficient and conservative of water resources to develop within the Greenville Urban Area.** While it may seem outside the purview of the division whose approval is needed, the agency can surely not be blind to this problem.

As an example of this problematic growth consider this. There is no effective transportation system from these rural areas to major employment centers, to centers for heath care and to centers of recreational and cultural opportunity other than private vehicle. If these areas grow, in ten or twenty years there will be serious problems in transportation alone. There will be extremely limited reserves of fuel in 2030 according to the US Energy Information Agency.

1.10

Point #5e.
Development in Greene County especially highlights points 5e. In Greene County the development and growth is exemplified by proposals such as "Cutter Creek." Cutter Creek is a sprawling golf course retirement community focused upon large, irrigated lots, and private vehicular transportation to Raleigh and Greenville for employment, cultural opportunities and health care. It exemplifies an unsustainable community dependent upon subsidies such as water supply from the Tar River Basin.

Point #5f.
The water in the Tar River does not belong to GUC. We must ask for an answer as to what can be the reason the managers and board have for proposing to extract it, process it and distribute it elsewhere? Who authorizes this particular usurpation of the natural order? It does not serve the tax-payer or the rate-payer of Greenville. I suspect these good public servants do honestly believe they are extending a Good Samaritan helping hand. But I question whether they have thought it through properly. I ask that the Division of Water Resources view this from the perspective of a better management scheme. I believe it would be much better to manage water resources conservatively within their natural basin.

1.11

Point 6.

There are better alternatives.

1.12

First, apply conservation based water supply base requirements needs to the proposed areas. These should be much lower than the ABRs used in this proposal.

1.13

Second, as a matter of principle NCDWR should require vigorous conservation rate structures and peak demand management in any area receiving an IBT. **And the sword should cut both ways. The area supplying the water should be required to adopt the same vigorous conservation rates and peak demand management. The reason? Both would now be sharing the same water resources. It is thus absurd for a utility**

to supply water from a common resource and have disparate standard for allocation and use of that common resource. All users should abide by the same rules.

1.14 **Finally, the newly developed and potential for future development of Neuse River supplies is adequate without the potential problems associated with Interbasin Transfers,**

I thank you for considering these comments.

Bernard E. Kane Jr.

Ogallo, Toya

From: Reeder, Tom
Sent: Monday, December 07, 2009 10:27 AM
To: Ogallo, Toya
Subject: FW: Comment GUC IBT Request
Attachments: NCDWR IBT Comment BEK IBT.doc

fyi

From: Barney Kane [mailto:microbemanager@gmail.com]
Sent: Friday, December 04, 2009 4:43 PM
To: Reeder, Tom
Cc: toyo.ogallo@ncdener.gov; toya.ogallo@ncdenr.gov; toyo.f.ogallo@ncdenr.gov
Subject: Comment GUC IBT Request

Dear Mr. Reeder
Please consider the my attached comments in opposition to the Greenvill Utilities Commissioins proposed Interbasin Basin Transfer from thr Tar River to the Nuese and Contentnea Creek Sub-basins.

Thank you,

Bernard E. Kane Jr.

I have tried to send this to toya.f.ogallo without success.

Comments submitted by Mr. Kane on 1/19/10 include this document

12/4/2009

Statement of Bernard E. Kane, 1706 Canterbury Road, Greenville, NC 27858
Phone 252-355-6789.

I am opposed to the GREENVILLE UTILITIES COMMISSION INTERBASIN TRANSFER CERTIFICNATION REQUEST.

It is my belief that the interbasin transfer (IBT) requested is not warranted. It is, in fact, counter to the best interest of all parties concerned. I also believe the requested transfer is contrary to contemporary sustainable growth management practices. I believe the needs presented are exaggerated and that there are better alternatives

I am generally opposed to interbasin transfers. Historically most such transfers have resulted in great economic trauma for some populations while selectively offering transitory benefits to others. More often than not IBTs have resulted in unintended and unforeseen environmental disasters.

It is my belief, based upon thirty-five years of teaching water supply and wastewater treatment at East Carolina University, that interbasin transfers should only be approved for where extraordinary and overwhelming justification is provided such as saving human lives.

My major and minor points:

Point #1

The Approved Base Rate (ABR) used by the NCDWR to determine historical use from the Creteaceous aquifer in the capacity use area is flawed. The ABR was determined based on historical use in a time when there were no conservation rates in place, pumping and treatment costs were low, and energy costs for water production were also low. Thus these ABR's may be presumed to be based upon water use patterns that were excessive because there was little reason to limit use. A more realistic (lower) ABR should have been used

It is therefore true that the reductions proposed from the artificially high ABR do not reflect a serious conservation effort nor any hardship in these capacity use areas that might seem apparent by the per cent reductions required. Similarly, projections of future needs to be offset by the proposed interbasin transfer result in proposed supplies which support these former wasteful or luxury water usage practices. My point is that these ABRs do not reflect the true base need. Rather they reflect luxury use patterns that do not warrant the support of the interbasin transfers proposed.

To use these erroneous ABRs as the basis for projected future water "needs" only results in support of continued wasteful consumption. A more critical, conservation motivated analysis is needed in which limits are properly considered and conservation is practiced.

Point #2

The data used and the peaking factors applied in the Arcadis/GUC Interbasin Management Strategy are probably flawed. For one thing there is no way that the Maximum Daily Demand for 1990 and 1995 for GUC could be "Not Available." The record keeping at GUC during those years was carefully documented and recorded. It is hard to imagine why the data are not presented here. I have too much faith in GUC to believe there was a selective motive for listing them as "NA" and yet these data are too important for Arcadis to overlook these values. This is a puzzlement. NCDWR should ask for these values and consider them in the determining the proper peaking factors.

The peaking factors of 1.7 and 1.8 used for communities in the Capacity Use Areas (CCAs) contrast dramatically with the 1.5 factor found valid for GUC. I suspect that the peaking factor applied to Greenville should be used for the CCA communities as well. The GUC peaking factor is based upon a larger, more valid, data base and one that likely reflects the management of water resources that will be needed in the future. The more rural communities tend to have larger lots and less steady industrial water consumption. Thus these high peaking factors may be supported by the current use patterns. But future use will require more conservation and less irrigation. MDDs will need to more closely approach ADDs as these communities grow and as water resources become more restricted. Use of these high values for peaking factors in this GUC management strategy is to endorse wasteful use.

Point #3

I can see no valid purpose or reason for GUC to supply water to communities facing limited water supplies. In fact there are many reasons why GUC should not supply the water. Some reasons are environmental, some are economic and some are energy related and some are moral.

Point #3a.
I think it reasonable for areas with limited resources to recognize those limits and plan not to exceed the limits available. The alternative is an arrogant belief that there is some duty to push resources hither and yon across landscapes and basins with pumps and machines thereby disrupting natural systems and causing ripples of unknown but possibly disastrous consequences.

Point #3b.
Streamflows and receiving streams will be impacted by the proposed IBT as will the natural characteristics of the waters affected. These effects and impacts are not necessary and are not even needed except possibly in the minds eye of municipal officials and self-aggrandizing developers.

Point #3c.

Development in Farmville, Winterville, and Greene Counties promotes rural sprawl. Thus the proposed IBT promotes rural sprawl. It would be more efficient and conservative of water resources to develop within the Greenville Urban Area. It is particularly important to note there is no effective transportation system from these rural areas to major employment centers other than private vehicle (which will have limited access to dwindling reserves of fuel in 2030 according to the US Energy Information Agency).

Point #3d.
Development in Greene County especially highlights points 3a though 3c. In Greene County the development and growth is exemplified by proposals such as "Cutter Creek." Cutter Creek is a sprawling golf course retirement community focused upon large, irrigated lots, and private vehicular transportation to Raleigh and Greenville for employment, cultural opportunities and health care. It exemplifies an unsustainable community dependent upon subsidies such as water supply from the Tar River Basin.

Point #3e.
The water in the Tar River does not belong to GUC. We must ask for an answer as to what can be the reason the managers and board have for proposing to extract it, process it and distribute it elsewhere? Who authorizes this particular usurpation of the natural order? It does not serve the tax-payer or the rate-payer of Greenville. I suspect these good public servants do honestly believe they are extending a good Samaritan helping hand. But I question whether they have thought it through properly. I ask that the Division of Water Resources view this from the perspective of a better management scheme. I believe it would be much better to manage water resources conservatively within their natural basin.

Point 4

There are better alternatives.

First, apply conservation based water supply base requirements needs to the proposed areas. These should be much lower than the ABRs used in this proposal.

Second, as a matter of principle NCDWR should require vigorous conservation rate structures and peak demand management in any area receiving an IBT. And the sword should cut both ways. The area supplying the water should be required to adopt the same vigorous conservation rates and peak demand management. The reason? Both are now sharing the same water resources.

I thank you for considering these comments.

Bernard E. Kane Jr.

Ogallo, Toya

From: Anne Bunnell [anne_bunnell@yahoo.com]
Sent: Thursday, January 14, 2010 12:48 PM
To: Ogallo, Toya
Subject: Re: IBT

You're welcome.

Anne

----- Original Message ----
From: "Ogallo, Toya" <toya.f.ogallo@ncdenr.gov>
To: Anne Bunnell <anne_bunnell@yahoo.com>
Sent: Thu, January 14, 2010 10:36:52 AM
Subject: RE: IBT

Thank your for your comments!

Toya

Please note that my email address has changed to toya.f.ogallo@ncdenr.gov

Toya F. Ogallo
Environmental Engineer
River Basin Management Section
Division of Water Resources

Phone: (919) 715-0389
Fax: (919) 733-3558

-----Original Message-----
From: Anne Bunnell [mailto:anne_bunnell@yahoo.com]
Sent: Tuesday, January 12, 2010 3:43 PM
To: Ogallo, Toya
Subject: IBT

Dear Sir or Madam,

I was present at the Greenville City Council meeting last night when GUC presented its IBT plan. Although I understand that having a regional water system may in the future to be beneficial to the human population there are some issues that I think need to be addressed.

2.1

1) According to the map water from GUC and the Tar River is being piped to Snow Hill and water from Kinston and the Neuse River Basin is being piped to Eastern Pines. The map itself revealed the flaws in this plan. It doesn't take much to realize that it is inefficient to pipe water over long distances rather than shorter ones. There is an increased chance of loss by leakage and an increased need of additional purification for safety. This also makes economical sense.

2.2

2) As the population of eastern North Carolina continues to grow a strain will be placed on all water resources. It seems logical to promote water conservation practices now. The reductions in the withdrawl from underground sources should first be attained by reducing water usuage rather than by transfering water across miles.

2.3

3) Humans are not the only species in these river basins. I value the wildlife in eastern North Carolina. The opportunity to paddle these rivers and creeks are activities that I cherish. Transfering water between basins may have unanticpated and negative impacts on native species decreasing their abilities to survive. Again, it seems that water conservation efforts should be the first priority, rather than IBTs.

Thank you for reading my comments.

Sincerely yours,
Anne E. Bunnell
Greenville, NC

Ogallo, Toya

From: John and Kathy Schermerhorn [schermsfarm@earthlink.net]
Sent: Tuesday, October 27, 2009 3:25 PM
To: Ogallo, Toya
Subject: Tar to Neuse water transfer

From: John and Kathy Schermerhorn <schermsfarm@earthlink.net>
Date: October 27, 2009 2:58:54 PM EDT
To: Toya.F.Ogall0@ncdenr.gov
Cc: riverkeeper@ptrf.org, John Chrystal <jmchrystal@yahoo.com>
Subject: Tar to Neuse water transfer

What an interesting issue you are collecting information and opinions on.

3.1 We are not in favor of intra-regional water transfer agreements as they are permanently divisive. They tend to make enemies of neighbors and they, in this case, stifle the growth potential for eastern Beaufort County by reducing the available water supply to this region. As close as eastern Beaufort Co. is to Greenville, what better place to develop without having to give up water rights. At times, water transfers are necessary for the true and actual benefit of all - which has yet to be determined as I understand this Water Transfer Agreement process. That being said, available water allows for community growth. 3.2 We're not opposed to controlled growth in general but there must be aggressive controls on how much growth and how that associated water will be used. Waste of this life-giving resource must be a major controlling factor in the issuance of this agreement. Now is the time to address water waste as a condition of water transfer. 3.3 There need to be enforceable building/plumbing permit requirements (as well as environmental considerations) that aggressively address the use and potential waste of our water resources for new homes, businesses, industries and their eventual upgrade improvements. These requirements should (must) be adopted and enforced by the local and county municipalities paid for by permit fees. Incorporating an ongoing and far reaching educational process on the importance of this resource and ways it must be protected and conserved must also be a part of this transfer agreement.
There are many proven and currently practiced ways of using less water and with the imaginative minds and talent we have in this region this should not be a daunting task to undertake. We truly don't need to reinvent the "wheel" but only take what already exists and refine it to work more efficiently for the benefit of all. We would like to suggest that these ideas be pursued and adopted by the Greenville Utilities Commission prior to the allowance of this water transfer agreement. 3.4 Additionally, a stepped fee schedule for all water users in GUC's region must be implemented to aid in the education and reduction of wasted water resources. A five level fee structure based on amount of water used starting with a reasonable baseline use and climbing through excessive use needs to be implemented. The monies generated by the excessive use fees will be accounted for and expended in areas of education, retrofitting of household and business fixtures with water conservation fixtures. This can be done through discount programs or

out-right give-a-ways. This program in turn will reduce water waste and subsequently reduce water bills, putting at least a temporary smile on the end-users face.

Although not everyone will take kindly to these suggestions, the honest truth is that they will be implemented out of panicked necessity in the not too distant future as this valued and necessary resource becomes more scarce, valuable and consequently more costly. By starting this water saving program now, a model can be developed for other water districts to follow and improve on, creating needed jobs and allowing conservative water transfer agreements to be less necessary and when truly needed, positive rather than divisive.

The next issue for consideration is to reduce and or eliminate pollutants from up stream users as they affect our water and it's potential use to we downstream users. Lots to do!!

John and Kathy Schermerhorn
Beaufort County
schermsfarm@earthlink.net

Pamlico-Tar River Foundation
P.O. Box 1854, Washington, NC 27889
252-946-7211

Southern Environmental Law Center
200 W. Franklin Street, Ste. 330, Chapel Hill, NC 27516
919-967-1450

December 4, 2009

Toya Ogallo
Division of Water Resources
DENR
1611 Mail Service Center
Raleigh, NC 27699-1611

Dear Ms. Ogallo,

The Pamlico-Tar River Foundation (PTRF) and Southern Environmental Law Center (SELC) submit the following comments on the Greenville Utilities Commission's (GUC) petition for an Interbasin Transfer (IBT) certificate. GUC has requested the IBT certificate to transfer water from the Tar River Basin to the Contentnea Creek and Neuse River basins. The receiving communities include the Towns of Farmville, Winterville, and Greene County Regional Water system, which provides water service to the communities of Snow Hill, Hookerton, Walstonburg and six other water corporations.

PTRF founded in 1981, is a grassroots environmental organization representing 1900 members and a licensed member of Waterkeeper Alliance, Inc. Our mission is to enhance and protect the Pamlico-Tar River watershed through education, advocacy, and research.

SELC is a non-profit legal advocacy group dedicated to protecting the environment of the South. SELC works with more than 100 partner groups in six southeastern states. SELC has been actively involved in a variety of efforts to protect and improve water quality in the Pamlico-Tar River watershed.

I. Background

In 2007, the General Assembly recognized the need to consider more carefully the impacts of water transfers on the source basin and amended the state interbasin transfer law to reflect that need. N.C. Gen. Stat. § 143-215.22L. N.C. Gen. Stat. § 143-215.22L(t) states

> It is the public policy of the State to maintain, protect, and enhance water quality within North Carolina. It is the public policy of this State that the reasonably foreseeable future water needs of a public water system with its service area located primarily in the receiving river basin are subordinate to the reasonably foreseeable future water needs of a public water system with its service area located primarily in the source river basin. Further, it is the public policy of the State that the cumulative impact of transfers from a source river basin shall not result in a violation of the antidegradation policy set out in 40 Code of Federal

Regulations § 131.12 and the statewide antidegradation policy adopted pursuant thereto.

4.1 Although the new requirements do not go into effect for interbasin transfers to supplement ground water supplies in the fifteen counties designated as the Central Coastal Plain Capacity Use Area under until January 2011 (H.B. 820 (7)(b) (2007)), it would be shortsighted of the Environmental Management Commission not to consider the broad policy objectives stated in the amendments in looking at the proposed transfer. Our comments rely on the requirements set out in N.C. Gen. Stat. 143-215.22I but we urge the EMC to consider the spirit of the amendments in reviewing the GUC petition.

The receiving communities and the source (GUC) are all regulated under the Central Coastal Plain Capacity Use Area ("CCPCUA)" rules, initiated in 2002. The rules require the communities to reduce ground water withdrawals from the cretaceous aquifers by 75% from a state approved base rate by 2018. At the present, the receiving communities rely on this groundwater as their sole source of water supply. The CCPCUA rules also require regulated communities to implement and provide information on a number of water conservation measures.

The Division of Water Resources ("DWR") has developed a cretaceous water bank guidance document that allows communities who choose to reduce groundwater withdrawal faster than mandated by the rules. This banked water would then be available for use in later years.

II. Specific Concerns Regarding North Carolina Environmental Policy Act Compliance

The North Carolina Environmental Policy Act ("SEPA") requires the preparation of an environmental assessment ("EA") or environmental impact statement ("EIS") for any transfer of surface water that requires the filing of a petition pursuant to the Surface Water Transfer Act, N.C. Gen. Stat. § 143-215.22I; § 113A-8.1. 1 N.C. Admin. Code 25.0502 requires an EA to include maps and discussion of the following:

(1) need for the proposed activity,
(2) reasonable alternatives to the recommended course of action,
(3) methods proposed to mitigate or avoid significant adverse environmental impacts, and
(4) environmental effects of the proposed activity and alternatives.

The FONSI/EA for the Greenville Utilities Commission IBT has not met these requirements.

A. The EA provides no meaningful consideration of mitigation measures.

4.2 SEPA requires the agency to include a review of methods "proposed to mitigate or avoid significant adverse environmental impacts" from the proposed transfer. 1 N.C. Admin. Code 25.0502 (3);. The EA fails to include any meaningful discussion of mitigation measures, instead providing a review of land use planning regulations and ordinances. Appropriate measures to

mitigate, i.e., *lessen*, the environmental impacts would include, for example, returning treated wastewater to the source basin, implementing aggressive water conservation measures, or detailing measures that would be taken to protect aquatic life in the source basins during times of drought.

B. The EA provides no assessment of the anticipated environmental impacts of alternatives to the IBT.

Both SEPA and the Surface Water Transfer Act (SWTA) require an evaluation of alternatives to the proposed transfer. The EA must include "reasonable alternatives to the recommended course of action." 1 N.C.A.C. § 25.0502(2). The SWTA requires the EMC to consider reasonable alternatives to the proposed transfer, including estimated costs and environmental impacts.

4.3 While the EA does identify several alternatives to the proposed IBT, the discussion is woefully inadequate to the task set forth in the applicable statutes and regulations. The overview assigns a dollar amount to the financial cost associated with the construction of each alternative.

4.4 However, there is no discussion, evaluation, or modeling of environmental impacts, the source basin. In addition, the EA fails to evaluate the costs in terms of lost revenues to source basin water suppliers that may be expected to impose restrictions on water use for longer time periods

4.5 ~~as a result of the proposed transfer of water.~~ For example, the alternative briefly mentioned in the EA for the receiving basins to purchase water from the Neuse Regional Water and Sewer Authority does not provide an analysis of cost, only that the costs would be "prohibitive."

4.6 Furthermore, the applicant suggests that since an IBT certificate would be needed for a NRWSA transfer to Winterville since the transfer occurs from the Neuse River to the Contentnea Creek sub-basin, that this automatically negates this as a viable option. The 2007 changes to the SWTA clearly demonstrate that a transfer of water within a major river basin (i.e. Neuse to Contentnea sub-basin) is preferred over a transfer between major river basins. A more complete discussion of alternatives, including a thorough review of the comparative environmental impacts, is required.

C. The EA ignores the cumulative and secondary impacts from growth in the receiving basin.

4.7 The EA wholly dismisses the need for evaluation of secondary and cumulative impacts from growth since the IBT is designed to only replace the lost groundwater resource due to the CCPCUA. The EA states that *"significant growth in these areas is not a component of this project or a reason for developing the interbasin transfer request."* IBT Petition, pp 4-1. DWR questioned this dismissal of secondary and cumulative impacts associated with growth that is a direct result of the transfer of water in their comments on the draft EA (EA Response to Comments, pp: 2/12-2/13, February 1, 2008). The comments stated:

The document dismisses cumulative and secondary impacts associated with growth by repeatedly stating that the project is primarily a water replacement project and significant growth is not a component of this project or a reason for

developing the IBT request. It is true that the y are being forced to switch to surface water and that initially the volume of surface water matches the volume of ground water; however, over time the volume of water increases due to growth projections that the communities would have supported with an untapped volume of ground water. On page 4-2 it states that "these communities will be unable to compensate for the reduced groundwater withdrawals for predicted growth to 2030". There appear to be pockets of significant growth and, without the additional water, this growth could not be supported. The Executive Summary states that growth is modest at 1 to 3 percent in some communities. However, Section 2.2 gives growth rates of from 11 to 50 percent for Winterville, Greene County had a 25 percent growth rate from '90 to '06; although the overall growth rate of the county may be 1 percent, pockets of higher growth may occur, e.g. near the Global Transpark. The document does not provide the percent growth for Greenville, but from the numbers provided it could be 45 percent from '05 to'30.

Comments to draft EA by DWR (on file with DWR)

The applicant responded by saying that the growth would occur in these communities with or without the IBT, therefore assessing the environmental impacts is unnecessary. The communities are required to reduce their groundwater withdrawal due to the CCPCUA rules. Without a new source of water, either from the Neuse River Basin or from GUC, the growth could not be sustained. The applicant dismisses all other alternatives as viable options, therefore growth would not occur if the IBT were to be denied. Therefore, the applicant must provide detailed information on the secondary and cumulative impacts associated with this growth.

4.8 → A similar lack of attention plagues the brief discussion of impacts to air quality. In 2009, the federal government changed the air quality standard for ozone, and in doing so designated 24 counties and parts of 17 others as not meeting this new standard. Pitt County was recommended as unclassifiable due to a lack of monitoring data. The EA states that DAQ adopted new ozone standards in 1997 and that DAQ has a monitoring site in Farmville that recorded no ozone exceedances in 2006. This is outdated information. The EA should include the new federal ozone standard and an assessment of any state of federal data available for Pitt County. Again, the EA dismissed the impact of growth on the potential for impacts to air quality:

"No construction activities will occur relative to the proposed project; therefore, no direct impacts to air quality will occur. Indirect impacts to air quality within the service area from growth will be minimal."

EA pp 5-26. The region may be a non-attainment area for the new ozone standard. The proposed IBT would facilitate residential and industrial growth in the receiving basin. Although this growth and the associated increases in vehicular traffic and use of lawnmowers will lead to complicate the existing air quality problems, this impact is not discussed.

4.9 → Another example of the inadequacy of the secondary and cumulative impacts review concerns threatened and endangered species. The EA states that threatened and endangered

aquatic species are present in both the receiving and source basins but does not address the impacts. The EA must correct its review of cumulative and secondary impacts to include the impacts to these species from growth that would be induced by the IBT.

4.10 → Finally, Contentnea Creek and Little Contentnea Creek are both impaired streams. All of the communities within the receiving basin that will experience greater wastewater flow due to the growth precipitated by this IBT discharge their wastewater into these impaired streams. The Towns of Hookerton and Snow Hill, and the Contentnea Creek wastewater plant have all been non compliant with their NPDES permits within the past year. The EA should provide a compliance history of each of the wastewater facilities as well as the communities' ability to handle the increase flow. The EA does state that no wastewater facility will need to increase their permitted discharge amount, but if the facilities suffer from inflow and infiltration, or other maintenance problems, these issues would be exacerbated by the increased growth and flow due to the IBT and should be addressed in the IBT.

D. The EA fails to provide information on water conservation measures implemented or planned by source and receiving communities.

As noted above, the proposed IBT is not subject to the 2007 session law changes to the Regulation of Surface Water Transfers Act. Therefore, the proposed IBT was required to conduct an EA and not an EIS. Under the old rules, an applicant must provide information regarding the facilities to be used for the water transfer, the proposed uses of the water to be transferred, the water conservation measures to be used by the applicant and any other information deemed necessary by the Commission. The EA failed to provide any information (except the short paragraph below from GUC) regarding the source or receiving communities current and planned water conservation measures. The only information provided was related to drought management protocols. Useful data should include information on water rate structures, presence or plans for retrofit programs, feasibility of reclamation projects, ordinances or incentives for use of cisterns or other rain water harvesting practices, etc.

4.11 ↗

> *"Additionally, GUC and its wholesale customers strongly encourage the use of water saving devices. GUC is a licensed member of the national "Water Use it Wisely" campaign. The Energy Services and Public Information Offices incorporate water conservation messages into all communications. This includes preparation of fact sheets, television and radio advertisements, print ads, and billboards to provide local citizens with water conservation tips."*

4.12 → Furthermore, all communities are required by the CCPCUA rules to adopt water conservation-based rate structures, implement conservation ordinances for irrigation, provide a retrofit program for homeowners as well as an educational program and provide information to the state regarding existing conservation measures and those to be implemented (NCAC 15A 2E 0.0502(d)(5)). Phone conversations with DWR staff reveal that such information has not been supplied by these communities. Such information is crucial for the EMC to be able to make a decision on the reasonableness of the IBT and whether or not conditions should be placed on the certificate if the Petition is granted. The changes in 2007 to the Regulation of Surface Water

Transfers Act clearly reveal that the State is emphasizing the efficient use of water resources. The petition and EA submitted by GUC provides none of this critical information.

E. The EA does not adequately consider the impacts combined with the Greenville Utilities Emergency Drought Management Planning Project on the Tar River.

4.13 Additional evidence of the lack of thoroughness in the environmental review stems from the petitioner's lack of discussion of their intention to construct a temporary dam across the Tar River in the vicinity of the Greenville Utilities Water Treatment Plant. The Petition states that "it is challenging to fully understand and quantify the flow characteristics for the Tar River at Greenville" and that "[c]urrent USGS techniques for low-flow analyses do not provide a means of account for tidal effect." Petition at 3-4. Despite these challenges, the applicant should have considered this related project in its analysis of the probable environmental impacts from the IBT.

III. Specific Concerns Regarding the IBT Petition

A. Transfer Amount

4.14 Along with our concerns regarding the inadequacies of the EA, we are especially concerned about the transfer amount requested by the applicant. The stated purpose of the IBT request in GUC's petition is to aid the receiving communities' compliance with CCPCUA regulations, which require a 75% reduction in water withdrawals from the cretaceous aquifers phased over a 10-year period.

The amount of groundwater water withdrawal reductions that are required by the receiving communities are outline in Table 1. The total amount the communities need to replace this loss of groundwater supply due to CCPCUA rules is 3.771 mgd. Therefore, the proposed IBT allows for significant growth over the time period evaluated and is incongruent with the project's stated objective of compliance with CCPCUA rules.

Community	ABR* (mgd)	Allowable withdrawal by 2018 (mgd)	Loss of Groundwater Source (mgd)*
Greene County	2.96	0.74	2.22
Farmville	1.572	0.393	1.179
Winterville	0.496	0.121	0.372
Total			**3.771**

Table 1. CCPCUA groundwater withdrawal requirements.
* Approved Base Rate
**Amount allowable for withdrawal after compliance with 75% reduction (CCPCUA).

The IBT certificate proposes an interbasin transfer of 8.3 mgd for the Towns of Farmville and Greene County Regional Water authority, as well as an additional 1.0 mgd for emergency conditions. The second certificate request proposes 4.0 mgd to the Town of Winterville with an additional 0.2 mgd for emergency conditions. The total transfer requested from the Tar River

basin to the Neuse River basin is 12.3 with emergency conditions allowing up to 13.5 mgd. This amount is well in excess of the stated purpose of the IBT to aid the communities in compliance with the CCPCUA rules. The IBT does allow for significant growth; growth that would not be viable without the transfer of water via this IBT.

4.15 All of the receiving communities have the option, and appear to be planning, to bank groundwater by reducing their required 75% reduction prior to the 2018 deadline. Using the figures in the EA, we have calculated that with maximum day demands minus the use of allocated groundwater withdrawal and banked water (assuming equal distribution for 20 years starting in 2018), the maximum transfer needs (to meet maximum day demands) is 11.3 mgd. This also assumes that per capita demand will not change over the time period. Aggressive water conservation activities that must accompany a transfer awarded could reduce demand upwards of 10% or more, thereby reducing the maximum day water demands of the receiving communities. At the moment, the Town of Winterville's per capita water use is the lowest of all the communities at 90 gpcd. Greenville's per capita use is currently at 120 gpcd.[1]

	Banked water Total (MG)	Banked Water Available per year until 2037 (MG)	Daily banked water available until 2037 (mgd)	Allocated pumping Rate (mgd)	Total Groundwater Withdrawal through 2037 (mgd)	Maximum Demand 2030 (mgd)	Maximum Demand - groundwater withdrawal (mgd)
Greene County	2700	135	0.39	0.74	1.13	5.64	4.51
Farmville	1434	71.7	0.196	0.393	0.589	3.96	3.37
Winterville	449	22.45	0.06	0.123	0.183	3.6	3.42
						Max IBT Amount	**11.30**

B. Infrastructure Investments

4.16 Finally, the decisions by the source and receiving basin communities to invest millions of dollars of public monies for construction of infrastructure, partially completed, for the Tar River to Neuse River proposed IBT should in no way bias the decision of the EMC. The commission may only grant the IBT if the commission determines that the benefits of the proposed transfer outweigh the detriments and that any detriments are mitigated to a reasonable degree. As noted throughout the comments, it is clear that the EA and Petition do not provide enough information for the EMC to make this decision.

IV. Recommendations

4.17 Based on the previous comments, we urge the EMC to deny the request for the proposed IBT at this time. As noted above, the EMC does not have the necessary information to grant the certificate.

4.18 Given the significant environmental impacts of the proposal, we also encourage the EMC to reconsider the adequacy of the EA and the associated Finding of No Significant Impact.

[1] Interbasin Transfer Petition: From Tar River to Contentnea and Neuse River Subbasins. April 2009. pp 2-5.

4.19 SEPA requires the preparation of an environmental assessment, and, if warranted, an environmental impact statement ("EIS") for any transfer of surface water that requires the filing of a petition pursuant to the Surface Water Transfer Act, N.C. Gen. Stat. § 143-215.22I; § 113A-8.1. An EIS is required if the scope and environmental impact of a planned project is significant. 1 N.C. Admin. Code 25.0501. The EA for the GUC IBT shows that there will be significant impacts and that an EIS was warranted. Therefore, the EMC should deny the petition and require GUC to complete a full and comprehensive environmental review of this project and associated projects. At a minimum, GUC and the receiving basin communities should be instructed to provide the following information:

The listed comments are a recap of previously discussed (and captured) comments

1) Include information on GUC's drought management planning that has selected a temporary dam proposal as the preferred alternative for raw water inlet protection during low flow conditions.
2) Current and planned water conservation measures by both source and receiving basin communities.
3) Demonstrate compliance with CCPCUA rules regarding required water conservation activities.
4) Submit an improved alternatives analysis that provides cost estimates for all alternatives as well as the potential environmental impacts. The EMC should require GUC and the receiving communities to take a hard look at the Neuse Regional Water and Sewer Authority alternative. The 2007 law change to the Regulation of Surface Water Transfers Act gives preference to transfers of waters within a major river basin.
5) Include an analysis of secondary and cumulative environmental impacts due to the growth that will be possible due to the IBT.
6) Provide more information on the secondary and cumulative impacts of the proposed IBT to aquatic resources, including impaired streams and endangered and threatened species in both the source and receiving basins.
7) Detail the compliance history of the receiving basins wastewater treatment plants and demonstrate ability to maintain compliance with higher wastewater flows.

The EMC has the authority to grant the petition in whole or part and may grant a certificate with conditions attached. "The conditions may include mitigation measures proposed to minimize detrimental effects of the proposed transfer and measures to protect the availability of water in the source river basin during a drought or other emergency." Again, we believe the

4.20 EA and petition do not provide enough relevant information on the secondary and cumulative impacts in both basins for the EMC to be able to make this decision. But, if the IBT is to be granted, we recommend the following:

1. The EMC should make the IBT a temporary certificate and provide enough time for the receiving basin communities to identify and make the necessary investments for Neuse Basin source water. The cross-connections currently being built to GUC could be used for emergency connections in the future.
2. The EMC should require regional land-use planning to insure that as growth occurs is does not exceed the available water supply.
3. The EMC should reduce total IBT amount to reflect the stated objectives of replacing cretaceous aquifer water source of approximately 4 mgd.

4. The EMC should require aggressive water conservation measures enacted by both source and receiving basins, including but not limited to:
   - Home fixtures retrofit program,
   - Ordinances for requiring (or incentivizing) cisterns or other rain water harvesting uses,
   - Separate irrigation meters and higher pricing for irrigation,
   - Comprehensive educational programming and written information
5. The EMC should require that GUC submit a plan and implement activities for reducing per capita residential water use by 10% over a 10-year time period.
6. The EMC should require that GUC submit a plan and implement for reducing per capita industrial water use by 5% over a 10-year period.
7. The EMC should require that GUC conduct a feasibility study and create an action plan for water reclamation projects.
8. The EMC should require that the receiving basin wastewater treatments plants remain in compliance with their NPDES permits 11 of 12 months of the year or face reduction in IBT amount.

V. Conclusion

4.21 → The Surface Water Transfer Law requires the EMC to issue a certificate for the proposed transfer ***if*** – and only if – two conditions are met: the benefits of the proposed transfer must outweigh the detriments, and the detriments must be mitigated "to a reasonable degree." N.C. Gen. Stat. § 143-215.22I(g). The EMC must find that these conditions are met "by a preponderance of the evidence," *id.*, a legal standard requiring that the evidence on which a decision rests be credible, and that the evidence, taken as a whole, shows that the fact sought to be proved is more probable than not. Given the numerous inadequacies, errors and oversights in the EA, this standard cannot be met. The EMC should exercise its authority to deny the petition and certificate in accordance with N.C. Gen. Stat. § 143-215.22I(h).

We appreciate the opportunity to comment.

Sincerely,

/s/ Kay Bond

Heather Jacobs Deck
Pamlico-Tar **RIVERKEEPER®**
Pamlico-Tar River Foundation

Kay Bond
Staff Attorney
Southern Environmental Law Center

Ogallo, Toya

From: Heather [riverkeeper@ptrf.org]
Sent: Tuesday, January 19, 2010 4:22 PM
To: Ogallo, Toya
Cc: 'Kay Bond'
Subject: GUC IBT comments

Attachments: PTRF_SELC supplemental GUC IBT comments.pdf; GUC IBT Final Comments_PTRF_SELC.pdf


PTRF_SELC pplemental GUC IBT


GUC IBT Final omments_PTRF_SE.

Toya,

Please find the attached comments that supplement a letter sent on December 4, 2009. We have also included that letter for reference.

Thank you,

Heather Jacobs Deck
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919-967-1450

January 19, 2010

VIA ELECTRONIC MAIL
Toya Ogallo
Division of Water Resources
DENR
1611 Mail Service Center
Raleigh, NC 27699-1611

Dear Ms. Ogallo,

The Pamlico-Tar River Foundation (PTRF) and Southern Environmental Law Center (SELC) submit the following comments on the Greenville Utilities Commission's (GUC) petition for an Interbasin Transfer (IBT) certificate. These comments are intended to supplement comments provided in a letter dated December 4, 2009. Our more detailed review of the IBT Petition and supporting documents in the intervening weeks has strengthened our initial concerns. Based on our previous comments submitted in December, we continue to urge the EMC to deny the request for the proposed IBT at this time. The EMC does not have the necessary information to grant the certificate. However, if the IBT certificate is to be granted we recommend including several conditions that will mitigate the negative impacts from the proposed transfer. We have also had the opportunity to review comments from and confer with the City of Rocky Mount, and echo the concerns and problems the City raised in its comment letter. If the EMC moves forward with the petition, we strongly encourage the state to consider the conditions proposed by the City of Rocky Mount.

4.22

4.23

The City of Rocky Mount has proposed several conditions for Greenville Utilities Commission's (GUC) petition for an Interbasin Transfer (IBT) certificate. Pursuant to N.C. Gen. Stat. § 143-215.22I, the Environmental Management Commission can impose conditions on an IBT certificate and has done so in several other cases, including the Charlotte-Mecklenburg Utilities IBT from 2002 and the Cary/Apex IBT from 2001.

4.24

The first condition Rocky Mount proposed is that the certificate be revisited upon completion of the Tar River Hydrologic Model. PTRF and SELC strongly support this recommendation and suggest that the EMC incorporate similar language as was used in previous IBTs. In the CMU and Cary/Apex IBT certificates, the EMC included the condition below:

> *"The Commission notes that future developments may prove the projections and predictions in the EIS to be incorrect and new information may become available that shows that there are substantial environmental impacts associated with this transfer. Therefore, to protect water quality and availability and associated benefits, modification of the terms and conditions of the certificate may be necessary at a later date."*

If the EMC moves forward with the GUC IBT, the final certificate should include similar language triggering a reopening of the certificate based on the Tar River Hydrologic Model.

4.25 → We also urge the EMC to consider conditions that seek to increase the long-term water use efficiency by both the receiving and source river basin communities. The IBT petition includes information on drought management response measures, but fails to include information on long-term efficiency measures. Conditions to address efficiency could include:

- Implementation of regional planning to ensure the most efficient management of the shared water resources in both the source and receiving communities.
- Requirements that GUC and other wastewater facilities in the receiving basins conduct a feasibility study and action plan for water reclamation / reuse projects.
- Plan for and implement strong water conservation programs and activities with the goal of reducing customer water demand, including but not limited to:
  - Home fixture retrofit programs
  - Requiring or incentivizing water harvesting practices (i.e. cisterns)
  - Separate irrigation meters and pricing of irrigation water
  - Aggressive public educational campaigns

4.26 → An additional condition, similar to that included in the Cary/Apex IBT below, should be included to ensure that any drought management measures and other mitigation measures are properly enacted. The Cary/Apex IBT certificate included the following:

> *"Prior to transferring water under this certificate, the holders of this certificate shall work with the Division of Water Resources to develop compliance and monitoring plan subject to approval by the Division. The plan shall include methodologies and reporting schedules for reporting the following information: maximum daily transfer amounts, compliance with permit conditions, progress on mitigation measures, drought management, and reporting. A copy of the approved plan shall be kept on file with the Division for public inspection. The Division of Water Resources shall have the authority to make modifications to the compliance and monitoring plan as necessary to assess compliance with the certificate."*

4.27 → During the comment extension period, we also had time to further review the hydrologic study done by Entrix for GUC and to consult with a hydrologist about its validity. After further review, we are concerned about the validity of the 7Q10 value that was used in the analysis and whether or not this is a relevant statistic for the purposes of determining flow changes as a consequence of the IBT over a one year period. We would have liked to see how this value was derived. 4.28 → Furthermore, it appears that the flow duration curves that GUC relied upon to determine no significant impact do not reveal the temporal nature of what is actually occurring in the river over the short-term. Low-flow values that may occur over a significant period of time (for example 1-2 month time period) would be masked by such a long-term analysis. It would be more helpful to see the minimum/maximum percent changes in flow over given periods, such as a one year period. In short, with out a summary of all the raw statistics used in the modeling it is

difficult to independently verify the report's conclusions and the validity of the methodology used.

We appreciate the opportunity to comment.

Sincerely,

/s/ Kay Bond

Heather Jacobs Deck
Pamlico-Tar **RIVERKEEPER®**
Pamlico-Tar River Foundation

Kay Bond
Staff Attorney
Southern Environmental Law Center

Ogallo, Toya

From: Heather [riverkeeper@ptrf.org]
Sent: Wednesday, December 02, 2009 5:20 PM
To: scrowe@suddenlink.net; kmartinncemc@hotmail.com
Cc: Ogallo, Toya
Subject: GUC IBT comment period
Attachments: 12-2-09 GUC IBT extension request letter.pdf

Please see the attached letter. It was communicated to me that any request for extension of the written comment period would have to be made to the hearing officers.

Thank you for your consideration of this request,

Heather Jacobs Deck
Pamlico-Tar Riverkeeper
Pamlico-Tar River Foundation
Phone: (252) 946-7211
Cell: (252) 402-5644
Fax: (252) 946-9492
www.ptrf.org
Waterkeeper Alliance Member

PAMLICO-TAR RIVER FOUNDATION

PO Box 1854, Washington, NC 27889
252-946-7211

December 2, 2009

VIA ELECTRONIC MAIL
Kevin Martin
Stan Crowe
Hearing Officers
Environmental Management Commission

Re: Proposed IBT for Greenville Utilities

Dear Mr. Martin and Mr. Crowe,

We understand that the City of Rocky Mount may ask for an extension of the comment period to pursue further communication with Greenville Utilities to address the concerns of the City. We support this extension as it will also be difficult for us to provide the best possible comments on this proposed IBT by this Friday. We need additional time for analysis of several concerns listed below. We would greatly appreciate receiving a two-week extension of time, i.e., until Friday, December 18, 2009 to submit our comments.

4.29

Among the concerns we want to address and need additional time to explore are the hydrologic model, the wastewater capacities of the receiving basin communities, and the Aquifer Storage and Recovery program and how it may impact the transfer amounts. It has also come to our attention that the Greenville Utilities Commission has completed a draft Environmental Assessment regarding future drought management planning with a preferred alternative for a temporary dam structure in times of low flow. This EA should be incorporated into the analysis of the IBT EA and petition. Furthermore, we would like the additional time to continue the dialogue with community members that may by this IBT.

These concerns are elaborated upon in later comments from the Riverkeeper

Finally, we have concerns with some of the conclusions stated in the EA. For example, the conclusion that the proposed IBT will have no impact on threatened, rare and endangered species in the either the receiving or source river basin because of the lack of construction lacks supporting evidence and does not address potential impacts from increased development (and its attendant construction). Moreover, there is no mention at all of potential impacts from increased flow or changes in water quality; nor is there mention of impacts to species of concern in the source basins from decreased flow or changes in water quality. In addition, the EA fails to provide adequate information on mitigative measures related to current year-round water conservation measures and planning. The IBT petition similarly excludes this critical information.

Thank you for your consideration of these preliminary comments and our request for additional time to submit more complete comments. I look forward to hearing from you.

Sincerely,

Heather Jacobs Deck
Pamlico-Tar **RIVERKEEPER**
Pamlico-Tar River Foundation

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December 3, 2009

Toya F. Ogallo, NCDWR
1621 Mail Service Center
Raleigh, North Carolina 27699-1621

Dear Ms. Ogallo:

5.1 The purpose of this letter if to inform you of the Town of Winterville's official support for Greenville Utilities Commission's Petition for an Interbasin Transfer Certificate. The approval of this petition is not only important to the Town of Winterville, but to neighboring communities as well.

Like many of the jurisdictions in eastern North Carolina, the Town of Winterville is subject to the Central Coastal Plain Capacity Use Area restrictions. Winterville currently relies on a combination of groundwater and water purchased from Greenville Utilities for water supply. The Capacity Use Area restrictions require that the Town reduce its dependency upon groundwater. In 2008, the Town reduced its use of groundwater by 25% and entered into a water purchase agreement with Greenville Utilities. The Town will be required to reduce groundwater use by another 25% in 2013 and another 25% by 2018.

5.2 The Town of Winterville has explored several options as it prepares to meet the reductions imposed by the Capacity Use Area rules. Winterville has no local source of surface water available to the Town and has therefore determined that the purchase of water from Greenville Utilities Commission is the most economical and technically feasible engineering alternative.

5.3 The reduction in water supply per the CCPCUA rules places an extreme hardship on the Town of Winterville. The Town believes that the EMC has an obligation to allow Winterville to replace its previously permitted water supply capacity with a high quality water that is readily available and accessible.

The proposed Interbasin Transfer will allow Winterville to replace the water supply capacity that has been reduced as a result of the Central Coastal Plain Capacity Use Area Rules. While understanding why the rules were necessary, the Town of Winterville has few options and believes the IBT proposal submitted by Greenville Utilities Commission will provide both communities with high quality water that is readily available and accessible, and will still allow GUC to meet its future water needs.

5.4 As in many other communities, the Town supports the desire of the Division of Water Resources for communities to seek a regional solution to issues such as water capacity. The Town already has connections with Greenville Utilities and Bell Arthur Water Corporation. As other communities tie in with the Greenville Utilities system, these connections will provide the ability to provide water over a large portion of Pitt County and Greene County. This further enhances the region's ability to tie into other water systems in the region that could be a tremendous asset in the times of emergencies or water shortages. This project is a true approach to a regional

Page 2
GUC IBT Support Letter

problem that will make eastern North Carolina a stronger area of the state with increased potential. The City of Greenville is the "hub" of eastern North Carolina with the ability to provide services on a regional scale. This ability is a real benefit to the region as a whole, as well as provide for economies of scale when future needs have to be addressed.

5.5

The Town of Winterville fully and enthusiastically supports the request by Greenville Utilities Commission for the Interbasin Transfer Petition. We hope that the Environmental Management Commission will support this request for the benefit of eastern North Carolina, Greenville Utilities Commission, and the Town of Winterville.

Sincerely,

Douglas Jackson
Mayor

Cc: Ron Elks, General Manager, Greenville, Utilities Commission
Randy Emory, Director of Water Resources, Greenville Utilities Commission
Bill Whisnant, Town Manager
Terri Parker-Eakes, Assistant Town Manager

CITY OF ROCKY MOUNT NORTH CAROLINA

December 1, 2009

Ms. Toya F. Ogallo
Division of Water Resources
DENR
1611 Mail Service Center
Raleigh, NC 27699-1611

Re: Greenville Utilities Commission
IBT Petition

Dear Ms. Ogallo:

I am submitting these comments regarding the above-referenced IBT petition on behalf of the City of Rocky Mount to express our concern regarding the uncertainty as to the impact the requested IBT might have on Rocky Mount's management of the Tar River Reservoir.

6.1

As a result of the drought of 2007/08, Rocky Mount intends to review and, if necessary, update its drought management plan. The review will be conducted following the completion of DWR's Tar River Hydrologic Model, which is anticipated in early 2011. If revised, Rocky Mount will seek approval of the updated plan from DWR. A revised drought management plan may result in a low-flow regime at Tarboro that is different from the one on which the IBT FONSI was based. Rocky Mount is concerned that the analysis done to support the FONSI is not adequate to determine whether there could be conflicts between its revised drought management plan and the IBT. Rocky Mount is attempting to work with the GUC and its consultant to further analyze the potential interaction between the requested IBT and Rocky Mount's possible future need to reduce its releases and whether the flows are adequate to accommodate both. This analysis has not been completed. Rocky Mount understands that the comment period closes on December 4, 2009 and requests that the record be held open for forty-five (45) additional days so that this analysis can be completed and a further comment can be submitted based on the results.

6.2

Rocky Mount recognizes the possibility that even after further analysis the effect of the IBT on its ability to reduce its releases from the Tar River Reservoir at times low flow may be uncertain. It is our understanding that further study of instream flows at Greenville are to be conducted in the near future. In view of this uncertainty and the need for additional information, and in order not to unnecessarily delay consideration of the GUC IBT request, Rocky Mount requests that the EMC consider including conditions in the IBT certificate that:

331 South Franklin Street • Post Office Box 1180 • Rocky Mount, North Carolina 27802-1180
Telephone (252) 972-1325 • Fax (252) 972-1173 • *Website: www.rockymountnc.gov*

6.3

1. Acknowledge that Rocky Mount's drought management plan will be evaluated based on the normally applicable criteria and not its potential effect on the requested IBT.

2. Provide that if implementation of Rocky Mount's approved drought management plan causes flows at Greenville that result in unacceptable impacts (e.g., location of the salt front) or are insufficient to allow the permitted transfer, the systems that receive the transferred water will resume groundwater pumping until such time as conditions allow resumption of the transfer. The groundwater pumped as a result of these modified operations will be offset by additional transfers during periods of higher flow in the Tar River over a period of no longer than one year following the resumption of transfers so that there will be no net change in the amount of the groundwater pumped over the long term.

3. Provide that if at such time as Greenville applies for an increased withdrawal, there is insufficient water to meet in-basin needs, including those of Rocky Mount, the transfer will be reduced in order to accommodate in-basin needs.

6.4

We realize that the above proposed conditions will require rewording, but trust that the intended meaning is clear. Please understand that Rocky Mount is not attempting to oppose the requested IBT but does believe that extension of the comment period and inclusion of the above conditions are necessary to ensure that Rocky Mount's future water needs are fairly protected.

Please let me know as soon as is feasible whether the comment period will be extended. Do not hesitate to contact me if you have any questions.

Sincerely,

Peter Varney

Peter F. Varney
Assistant City manager

cc: Stephen W. Raper, City Manager
Wayne Hollowell, Director of Water Resources

CITY OF ROCKY MOUNT NORTH CAROLINA

January 19, 2010

Ms. Toya Ogallo
Division of Water Resources
DENR
1611 Mail Service Center
Raleigh, NC 27699-1611

Re: City of Rocky Mount
Comments Regarding the Greenville Utilities Commission's ("GUC") IBT Request

Dear Ms. Ogallo:

Please accept these comments concerning the above-referenced matter. If you or any other person with the Division of Water Resources would like to discuss these comments, please do not hesitate to contact me. My telephone number is (252) 972-1330 and my email address is peter.varney@rockymountnc.gov.

COMMENTS GREENVILLE INTERBASIN TRANSFER ("IBT") APPLICATION

1. The City of Rocky Mount is concerned that the Environmental Assessment ("EA") does not examine potential impacts on the Tar River Reservoir.

6.5

The IBT statute requires that the applicant examine the present and reasonably foreseeable future detrimental effects on the source river basin. N.C.6.5. §3-215.22I(f)(2). The City of Rocky Mount is concerned that the GUC looked only at the potential impacts on an approximately eight-mile reach of the Tar River below Greenville, as acknowledged in the Environmental Assessment ("EA"), and not on the Tar River Reservoir.

> "The model was used to evaluate resulting flow in the river at two locations. The first location was the USGS gage at Greenville, which is downstream of GUC's water treatment plant intake and water treatment plant discharge, but is upstream of GUC's wastewater treatment plant (WWTP) discharge.....This 7.7-mile portion of the Tar River is the reach that will have the lowest flows as a result of all upstream withdrawals, and therefore, may be considered the reach of the Tar River most affected by the proposed IBT. The second location where flows were evaluated is the Tar River downstream of the GUC WWTP discharge..." (EA, Appendix B, page 1)

2. Rocky Mount's future consideration of operational changes for the Tar River Reservoir should be taken into account.

6.6

The EA further explains the decision not to consider impacts on the Tar River Reservoir as follows:

> The hydrologic analysis and modeling assumed that interbasin transfers at Greenville would have no impact on operations of the Rocky Mount reservoir 70 river miles upstream. The only way that the IBT could affect upstream operations would be if there were to be an approved change in Rocky Mount's permitted withdrawal and operating conditions. GUC has not made such a request and such as (sic) operational change has not been assumed in the hydrologic analysis and modeling." (EA Appendix C, page 10/12.)

However, Rocky Mount was extremely hard hit by the drought of 2007/08 and, as a result, is considering a modification to its water shortage response plan.

For Rocky Mount, as for many municipalities in North Carolina, the drought of 2007/08 was an unprecedented event. Whereas Rocky Mount had been able to negotiate the drought of 2002 with relative ease, the event of 2007/08 was different. The Tar River Reservoir, Rocky Mount's sole source of water, dropped to10 percent of usable storage. To avert what appeared to be an impending crisis, in addition to activating the drought management plan[1], emergency connections were made to Wilson and Tarboro. At times, and with the permission of the Division of Water Resources, releases from the reservoir were cut to 30 cfs, compared to a minimum of 60 cfs allowed in the approved water shortage response plan. An aerial reconnaissance of the Tar River upstream of the reservoir revealed previously unknown upstream withdrawals whose aggregate withdrawals exceeded the City's demand. Thus the storage in the reservoir was falling as if there were two cities the size of Rocky Mount withdrawing water.

As a result of this experience, Rocky Mount intends to update its probability-based drought management plan. Thus, the "operational change" that was assumed in the EA not to be a possibility is exactly the type of change that Rocky Mount is, in fact, considering. This fact was apparently not known to GUC during preparation of the EA, possibly because Rocky Mount was not consulted.

[1] In addition to demand restrictions, the plan includes pumping from several abandoned quarries to supplement flows in the Tar River. 10 cfs were pumped continuously from July 30 through mid-November, during which time the quarries were pumped down 60 feet.

Ms. Toya Ogallo
Division of Water Resources
January 19, 2010
Page 3

Rocky Mount plans to conduct the review of its water shortage response plan after DWR's Tar River Hydrologic Model is completed. This model will not only have hydrology that includes the 2007-08 drought, but it will also include the impacts of the other withdrawals in the basin that had not previously been accounted for. (A comprehensive review of demands, including agricultural demands, throughout the basin will be a part of the development of this model. It is likely that even more previously unknown demands will be identified.) The Tar River Hydrologic Model is expected to be completed in the summer of 2011.

3. The impacts of the proposed IBT on the potential to alter the operation of Rocky Mount's Tar River Reservoir cannot be determined from the EA

6.7

A. The flows at the Tarboro gage upon which the predicted flows at Greenville were based are not representative of those that will occur in the future.

The analysis in the EA used the flows recorded at the USGS Tarboro River at Tarboro gage (Gage No. 02083500) from 1931 through 2007 (EA, Appendix B, page 1). The flows recorded at the gage reflect the cumulative impact of all the withdrawals and discharges upstream of the gage as well as the regulation resulting from the operation of the Rocky Mount's Tar River Reservoir. Although at this time it is not known definitively, we suspect that the operation of the reservoir has the largest impact on the gage readings. The Tar River Reservoir has been in operation since 1971. Thus, the gage record reflects essentially natural, i.e., unregulated, flows for the period from 1931 thru 1970, and regulated flows thereafter. This fact was acknowledged in the EA (Appendix B, page 22). The operating protocol for the reservoir has changed several times since 1971. Rather than including the reservoir in the hydrologic model explicitly and applying the current operating protocol consistently over the entire record, including the period prior to 1970, the analysis used the gage record "as is." The justification for this approach appears to be that because "Reservoirs such as Rocky Mount's often augment low flows in rivers because they store water from higher flow periods and release it over extended lower flow periods" (EA, Appendix B, page 22), the lower unaltered flows in the record prior to 1970 lead to a conservative result. That is, because there were flows in the record prior to 1970 that are lower than the current minimum flows, the substitution of the required minimum flows for the lower, unaltered, flows would result in even less impact than shown. However, the magnitude of flows alone does not prove this hypothesis. The timing, frequency, and duration of low flows are equally important, and they have not been considered.

The currently-approved water shortage response plan for the Tar River Reservoir allows for discharges to be reduced incrementally to 60 cfs during the course of a drought. This policy has been invoked only three times since the mid-1990s. Thus, the statement in the EA that "the hydrologic model reflects the impacts of the Rocky Mount operating rules

and minimum flows that have been in place over the past 36 years" (EA, Appendix B, page 22) is true for only a very small portion of the record used for the analysis. Also, flows recorded early in the early stages of the 2007/08 event are not representative even though the current water shortage response plan was in place because the Tar River below Tar River Reservoir gage (Gage No. 02082506), upon which the release from the reservoir is based, was out of calibration. As a result, for a period of approximately a month, rather than releasing 60 cfs, as intended, the actual release was approximately twice that much. The reservoir releases, of course, are captured by the Tarboro gage. Thus, at least for a portion of the drought of record, the flows recorded at the Tarboro gage are higher than intended and not representative of system operations.

6.8 → Further, there is no information in the EA as to the timing, frequency, or duration of low-flow occurrences prior to dam construction as compared to the timing, frequency, and duration, post dam construction, of the periods when the releases from the dam were 80 cfs. It is highly likely that the impacts to the aquatic environment from, for example, a 30 day period of flows of 20 cfs embedded in a four-month period in which flows were below 80 cfs are very different from those associated with a six-month period of a constant flow of 80 cfs.

6.9 → Finally, the period of record analyzed (October 1, 1931, through September 30, 2007) did not include the lowest flow 7-day period in the record, which occurred in October 2007.

B. Flow duration curves are, at best, an incomplete metric of impact.

6.10 → Flow duration curves present the fraction of time that flows are above (or below) some value. They are prepared by sorting the flows and computing the percentile associated with each flow. Thus the lowest flow in the record is equal to or exceeded 100 percent of the time, the median flow is exceeded 50 percent of the time, etc. Flow duration curves can be prepared either for the whole year, in which case all flow data are included in the sort, or, as was done in the EA, for shorter periods, such as a month. To prepare the flow duration curve for July, for example, if there are 50 years in the record, there are 31 * 50 values that go into the July flow duration curve.

The problem arises because flow duration curves do not account for the temporal variability of flows. This is true even if the curves are prepared for a period shorter than one year. To continue the example from above, if there are 50 values of 20 cfs in the July data, and every other value is greater than 100 cfs, the same flow duration curve will result whether the 50 values of 20 cfs occur one in each year or all in two years. The potential impact to the stream of the two scenarios, however, could be very different. In order to fully assess the impact of altered streamflow regimes, one must also examine the frequency and duration of low flow periods.

Looked at another way, based on the flow duration curves, the applicant concludes that flows will be lower than 109 cfs (the pre-IBT 7Q10[2]), on average, 4.7 days per year without the IBT and 6.4 days with the maximum IBT (EA, Table 6-3, page 6-7). Again, this metric does not tell the whole story because the frequency, timing, and duration of the extra 127 days (1.7 extra days per year times 76 years) below 109 cfs are not reported. The impacts to the stream will likely be very different if all those days occur in one or two years versus being distributed over 20 years.

These comments do not address the appropriateness of using comparisons of the 7Q10 with and without the IBT as a basis for determining impact. The 7Q10 is a relevant statistic for unregulated rivers. Where, as here, the river is regulated, the statistic is much less useful because the same number can result from very different flow sequences. For example, as noted above, the pre-IBT 7Q10 was determined to be 109 cfs. That is, the lowest weekly average flow in 10 years was 109 cfs. However, the 7Q10 would also be 109 cfs if flows of 109 cfs continued for three months. Dams, such as Rocky Mount's, with fixed minimum releases have exactly this type of effect.

4. The City of Rocky Mount requests that any IBT certificate issued to the GUC include a condition allowing the Certificate to be reopened following completion of the Tar River Hydrologic Modeling and Water Resource Plan if the results indicate that the approved IBT impinges upon Rocky Mount's ability to modify its water shortage response plan.

6.11

Rocky Mount is concerned that, if approved, the demand to transfer water outside the basin could influence the decision to approve a requested change in the release protocol for the Tar River Reservoir. To guard against this possibility, in our comments dated December 1, 2009, Rocky Mount proposed several conditions that might be included in the IBT certificate. Upon further reflection, Rocky Mount now considers that a condition that would allow, upon the approval of the EMC, the certificate to be reopened following the completion of the Tar River Hydrologic Model would be the best option for protecting the interests of all users in the losing basin while still allowing GUC to address their immediate needs.

In conversation with our consultant, the GUC's consultants indicated that because some of the modeling scenarios requested by DWR essentially "double count[3]" demand, this provides a safety factor that will assure no impact to Rocky Mount. While this assertion may be accurate, it cannot be established from the analysis in the EA. The best way to insure compliance with the statute is to use a basin-wide hydrologic model for the analysis AND to involve others in the

6.12

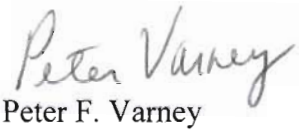
[2]The 7Q10 is a statistic that represents the lowest 7-day average flow that occurs once in 10 years.

[3]In fact, the demands were not double counted in all scenarios because withdrawals were capped at Greenville's currently-permitted treatment capacity (EA, Table 6-1, page 6-4), which is less than twice the demands.

basin in the decision-making. The updated Tar River Hydrologic Model will be such a basin-wide model and will be developed in consultation with stakeholders throughout the basin. Thus, the model will form an agreed-upon basis upon which all parties can evaluate the impacts of the proposed IBT. Following its completion, Rocky Mount will know whether a modification to its water shortage response plan is, in fact, needed. In addition, Rocky Mount and other users in the basin, including those who represent environmental interests, will be able to accurately evaluate the impacts of the proposed IBT in the context of a basin-wide water supply plan.

Rocky Mount does not oppose or want to delay issuance of an IBT Certificate pending completion of DWR's Tar River Hydrologic Model. However, In the interest of good water resources management, both for those in the basin as well as those outside, the Certificate should contain the requested provision that allows users in the basin to request that the EMC reopen the Certificate, if warranted, once the Tar River Hydrologic Model is complete.

Sincerely,



Peter F. Varney
Assistant City Manager

cc: Stephen W. Raper, City Manager
Wayne Hollowell, Director of Water Resources
Randall Emory, Director of Water Resources, Greenville Utilities Commission

Ogallo, Toya

From: Laura E. Williamson [laura.williamson@embarqmail.com]
Sent: Wednesday, January 13, 2010 5:31 PM
To: Ogallo, Toya
Subject: IBT discussion

As a resident of Greenville, Pitt County I am writing to express my concern re: the proposed IBT, as presented by GUC.

The population of Eastern North Carolina is likely to grow. Withdrawals from underground sources should first be addressed by reducing local water usage rather than simply meeting demand by transporting water over long distances. The latter increases the vulnerability of the water system to leakage and contamination. While the short-term economics may support the validity of building such an infrastructure, long-term development of the area and sustainable use of water resources would be better served by increasing our collective efficiency in water usage. Additionally it would appear that Greenville Utilities is willing to sell surface water cheaper than Neuse Regional WASA. This, if nothing else, is not a satisfactory reason for approving IBT. 7.1 7.2

And lastly – removing adversely effecting water resources impacts more than humans. This area has a rich diversity that has evolved precisely because of the abundance of water. Removing water from the Tar River Basin can only serve to negatively impact surrounding flora and fauna. 7.3

I strongly urge that this proposed plan be thoroughly reviewed. 7.4

Regards - Laura

Laura E. WILLIAMSON
Energy and Climate Change Policy Analyst
3402 Wyneston Road
Greenville - NC 27858
laura.williamson@embarqmail.com

Ogallo, Toya

From: Wayne Caldwell [ewaynec1@embarqmail.com]
Sent: Monday, January 04, 2010 12:24 PM
To: Ogallo, Toya
Subject: GUC Interbasin Transfer Request

The transfer of GUC water to Greene County does not make sense since the Neuse Regional WASA is in the best position to supply those needs and then there is no IBT. Farmville should likewise get it's water from NR WASA. NR WASA was created to supply these needs but apparently politics is playing out with the requesters familiarity with GUC and probably lower cost water. I support the use of GUC water to Winterville. This proposal would have minimal impact on the environment and would supply all parties with needed water.

8.1
8.2
8.3
8.4

Wayne Caldwell

Ogallo, Toya

From: Charles Schwartz [schwartzcf@embarqmail.com]
Sent: Monday, December 14, 2009 12:51 PM
To: Ogallo, Toya
Subject: Response to interbasin transfer

Dear Ms. Ogallo,

Thank you for this opportunity to respond to the proposed draft petition for an interbasin transfer certificate.

I attended a recent public hearing on this matter at Pitt Community College in Greenville. After listening to the pros and cons of those who spoke, I was convinced that the citizens of Greenville should be deeply troubled about what is being proposed.

One of the major concerns that a number of individuals identified was that the proposed transfer appears to be a one-way flow of water from our area. In follow up comments, it was said that if the water must be given, then a return of the waste water should be made mandatory as a part of the agreement. 9.1

The folks in our region want to be good neighbors. In the event that an existing neighboring community was experiencing a lack of suitable drinking water, one would expect assistance to be forthcoming. However, if that neighboring community was expanding and using water in a manner not consistent with good conservation practices, then one would expect questions to be raised. 9.2

One can observe that new subdivisions are being built around Greenville. Some of these feature verdant lawns which undoubtedly are sustained and enhanced by frequent watering and fertilizers. Should scarce water be diverted from the Tar River so that new sub-divisions can create expansive lawns?

At a minimum, those communities requesting water should require their residents to use landscaping alternatives as a part of a larger conservation program. There are lawn substitutes for grass that tolerate light foot traffic and even moderate mowing. 9.3

Sincerely,

Charles Schwartz

schwartzcf@embarqmail.com

Carolyn Reed
110 Kenilworth Drive
Greenville, N.C. 27858
(252) 353-5781
johncaro2@embarqmail.com

PUBLIC HEARING COMMENTS
Greenville Utilities Commission – Request for an Interbasin Transfer Certificate

Thursday, November 5, 2009
Goess Student Center, Pitt Community College
Winterville, NC

TO: The North Carolina Environmental Management Commission (EMC)

I have owned riverfront property on the Tar River in Greenville, N.C. for the last ten years. Over those ten years I have witnessed extreme variation in the size and strength of the water flow in the Tar River. Frequently in the summer months I have observed the water flow dwindle quite dramatically. The river, which is sometimes as wide as a six lane highway, has dwindled on at least one occasion to the size of a creek I could have hopped over.

10.1

I am not claiming expertise in these matters, but common sense tells me water should not be diverted from a river that regularly experiences such wide variations. What has happened before will undoubtedly happen again, and if water has been diverted when Greenville desperately needs it, then what? Will it have to be re-diverted back to the Tar, when people in other areas have come to rely on it? Seems better to find other, more permanent solutions for Farmville, Winterville and Greene County.

10.2

In addition, I think the environmental impact from such a drastic measure is essentially unquantifiable before the action, and may be irreparable after. The Tar River ecosystems are so complex and finely balanced there is just no telling what the consequences will be. Disturbing the flow of river basins, which have evolved over millenniums, is a drastic and risky action that may end up causing more problems than it solves. I for one don't think it's worth the risk.

Thank you,
Carolyn Reed

James C. Cooke, Jr.
201 Beth Street
Greenville, NC 27858

December 20, 2009

Toya F. Ogallo
Division of Water Resources, DENR
1611 Mail Service Center
Raleigh, NC 27699-1611

Dear Toya:

I am writing to register my comments against the proposed transfer by the Greenville Utilities Commission of millions of gallons of Tar River water to the Neuse River basin. We have entered a period of great climate change and uncertainty in which droughts are likely to reduce river flow in the future as we recently experienced in 2007. Already water is being transferred from the Roanoke River basin into the Tar River basin, and for water now to be transferred from the Tar to the Neuse with no return for replenishment defies environmental logic.

11.1 Whenever human engineering attempts to tinker with nature there are often unanticipated and unintended negative consequences. The potential damage of this proposed transfer from the Tar-Pamlico River system includes wetlands, habitat, the intrusion of salt water upstream, and the

11.2 loss of a viable water supply to a region that recently experienced a reported river flow of only 50 million gallons per day downstream to Greenville. According to my information the summer use of water from the Tar River for Greenville alone can amount to 16 million gallons per day. The math is troubling for the health of communities that depend on the Tar River for their water and for the ecological health of the river system itself.

11.3 I believe this issue is much more than being selfish and not wanting to be a good neighbor and assist other areas with a limited water supply. Science suggests river systems are best managed within their own basins, which precludes siphoning water off to other basins. We all must now learn to live in harmony with nature and within the natural resources available to us, and that means limiting water hungry development where the water is not available to support it.

Thank you very much for your kind attention to my comments.

Sincerely,

James C. Cooke, Jr.

"Interbasin Water Transfer" is a Euphemism for "Draining from a River"

My name is Dave Schwartz and I live and work in Greenville. I also volunteer with several non-profit groups in Eastern North Carolina promoting canoe tourism on our wonderful rivers and creeks in the Neuse, Tar, and Roanoke River Basins.

The Greenville Utilities Commission has requested from the State of North Carolina to drain 13.5 million gallons of water a day from our Tar River calling it, "interbasin water transfer." Interbasin water transfer sounds thoughtful, harmless, and scientific. It is not. Interbasin water transfer takes water out of a river without returning it. Interbasin water transfer is a euphemism for "draining from a river."

12.1

I am deeply concerned that 10 years from now the above sea level portions of the Neuse, Tar, and Roanoke Rivers will only be navigable after a good rain because our public trust waters will be injected into pipelines and aquifers to be distributed by huge water systems.

12.2

The GUC draining request will remove the water from the Tar River without returning a drop. Because they will make money from selling Greenville's water to the communities of Winterville, Farmville, and Greene County, I do not find it unreasonable that they could use part of this money to build another pipeline. This parallel pipeline to the one drawing from our river would return the treated wastewater from these communities back to our river and to us, so our businesses, families, ECU, and visitors can continue prospering in Greenville. I feel sure the residents of Greenville would be generous to loan out this valuable resource as long as it is returned.

Submitted by David Schwartz

Dave Schwartz
3000 Golden Rd. Apt. #8
Greenville, NC 27858
252.752.0697

CITY OF OXFORD

Oxford, North Carolina

OFFICE OF MAYOR
ALVIN WOODLIEF, JR.

October 30, 2009

Mrs. Toya Ogallo
Division of Water Quality
DENR
1611 Mail Service Center
Raleigh, North Carolina 27699-1611

13.1

Dear Mrs. Ogallo:

The City of Oxford supports the request for an interbasin transfer by the Greenville Utility Commission.

Yours truly,

Alvin Woodlief, Jr., Mayor

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NOV 2 2009
DIVISION OF WATER RESOURCES

PO Box 1307 ~ 300 Williamsboro Street ~ Oxford, NC 27565
V: (919) 603-1100 ~ F: (919) 603-1107
www.oxfordnc.org

WATER RESOURCES

December 4, 2009

Ms. Toya F. Ogallo
Division of Water Resources
DENR
1611 Mail Service Center
Raleigh, NC 27699-1611

Re: Greenville Utilities Commission
IBT Petition

Dear Ms. Ogallo:

I am submitting these comments regarding the above-referenced IBT Petition on behalf of the City of Wilson to express our concern regarding the uncertainty as to the impact the requested IBT might have on future wastewater flows to the Neuse River, and growth in the lower basin downstream of Wilson's wastewater discharge point and into an already impaired stream, and the potential impact to the City of Rocky Mount, because of our mutual finish water interconnection.

1) The City of Wilson is concerned about the transfer due to the potential of greater wastewater flows to the Neuse Basin. Based on current Nitrogen allocations in the Neuse Basin, how will this area grow in water use without a similar growth in the sewer flows? Will all of this flow then be pumped back to the Tar River, or land applied, or sent to the Neuse? The City of Wilson is concerned that potential water quality problems in the Neuse and Contentnea Creek could further impact point sources upstream of the IBT transfer communities. 14.1

2) In our opinion, Greenville is asking for a larger IBT than the minimum required. In fact they are requesting an amount large enough to supply as much as 93% of the maximum daily projected demand for a short term and 151% continuously of the average daily demand. CCPCUA rules only require up to a 75% reduction in the average daily demand of their permitted amount. Subtracting 75% from the Approved Base rate for Greene County, Farmville, and Snow Hill would only require 4.45 MGD from GUC to meet the demand for an average annual day and only 8.5 MGD for a maximum demand day, which is the day that GUC will only be transferring a minimal amount according to Table 2-3. We do not see the necessity for a request of 8.3 and 9.2 MGD respectively, and a total of as much as 13.4 MGD since GUC is also requesting to send 111% of the maximum daily demand to Winterville and 117% of the maximum daily demand for an emergency thru the year 2030. Even if you assume the unprecedented growth rates for Greene County, Farmville and Winterville are correct, this volume of transfer is unnecessary. 14.2

14.3 At the same time GUC in Table 2-3 stated that they have enough water plant capacity, but only reflect a minimum withdrawal for the IBT transfer on these same days. Are we to assume that Greenville can run easily at 100% of the plant rated capacity without any issues and that the communities can reliably count on this minimum amount on the same day when their wells cannot produce this increased demand?

14.4 3) We support Rocky Mount's request to extend the comment period for 45 days to complete a revised drought management plan. This is particularly important due to the existing modest emergency interconnection capable of transferring 1.9 MGD installed by both communities after the drought of 2007-2008.

14.5 4) Section 5 of the IBT Petition "Alternatives to Proposed Transfer" never mentions the City of Wilson as a viable alternative for both Greene County and Farmville. Wilson had discussions in 2003 with both, had the water available at a reasonable cost, and is in the Neuse Basin.

We realize that work for the IBT are well under way and funding for the potential IBT is already available. However, we hope that the Division will take into account all considerations and will fairly protect all the interests of everyone within the Tar / Pamlico and the Neuse Basins and will at least allow Rocky Mount's study to be completed before proceeding with authorization. We also hope that IBT amounts will be reduced if the Division reviews the report and thinks that the amounts of transfer are unnecessary.

Please let us know as soon as possible whether the comment period will be extended. Do not hesitate to contact me should you have any questions.

Sincerely,

Barry G. Parks
Assistant Director of Public Services / Water Resources

cc: Grant Goings, City Manager
Charles Pittman III, Deputy City Manager
Jim Cauley, City Attorney

GREENE COUNTY
A Place To Grow. The Way To Live.

November 18, 2009

Ms. Toya Ogallo
Division of Water Resources
DENR
1611 Mail Service Center
Raleigh, NC 27699-1611

RE: Greenville Utilities Commission (GUC) – Request for an Interbasin Transfer Certificate

Dear Ms. Ogallo:

Greene County is one of several public water suppliers that the State of North Carolina included in a capacity use area due to the amount of water that was being drawn from the groundwater aquifers. The State required water suppliers to reduce their reliance on this groundwater source.

This determination by the State led Greene County and the Town of Farmville to work out an agreement to purchase potable water from GUC. The sale, use, and disposal of GUC water to Greene County and Farmville creates an interbasin transfer.

15.1

Greene County is strongly in favor of the Environmental Management Commission issuing the Interbasin Transfer Certificate to GUC without delay.

Thank you for your cooperation.

Sincerely,

Don Davenport,
County Manager

xc: Greene County Board of Commissioners

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DIVISION OF WATER RESOURCES

fn:\Don\2009\GUC.Inter.Transf.Cert.Req

229 Kingold Blvd., Suite D • Snow Hill, NC 28580 • (252) 747-3446 • FAX (252) 747-3884
www.co.greene.nc.us

The mission of Greene County Government is to serve and improve the lives of all citizens by providing high-quality, cost-effective services in an open, professional and ethical environment

GREENE COUNTY
A Place To Grow. The Way To Live.

December 3, 2009

Toya Ogallo
Division of Water Resources
DENR
1611 Mail Service Center
Raleigh, NC 27699-1611
Toya.F.Ogallo@ncdenr.gov

Subject: Comment - Letter of Support
GUC Request For IBT Certificate
Tar River Basin to Neuse River Basin

Dear Ms. Ogallo:

Greene County submits this letter of support for Greenville Utilities Commission's (hereinafter referred to as GUC) Petition for an Interbasin Transfer (IBT) Certificate.

16.1 In the past, Greene County's sole source of water supply has been groundwater obtained from the Cretaceous aquifer. Greene County is under a state mandate (Central Coastal Plain Capacity Use Area Restrictions implemented August 1, 2002) to reduce our dependency upon groundwater by 25% in 2008, 50% in 2013, and 75% in 2018. After an extensive investigation of available alternative water supply sources, Greene County has entered into contract with GUC to obtain alternative water supply from GUC. In a joint arrangement with the Town of Farmville, Greene County has invested millions of dollars for the construction of a delivery system that will deliver up to 5 MGD to Farmville and Greene County. This water supply is needed to replace the state mandated reductions placed upon our groundwater supply.

Specifically, Greene County request approval of the GUC's requested IBT Certificate for the following reasons:

1. The IBT would allow Greene County to replace the water supply capacity being lost by the Central Coastal Plain Capacity Use Area requirements.

16.2 2. Based upon 2009 statistics from the NC Dept. Of Commerce, Greene County is one of the forty most distressed counties within NC, thus receiving a Tier 1 designation. Greene County has a population of 21,205 (2008 projection by Office of State Budget Management) and is solely dependent on agriculture. Greene County has only three incorporated towns, Snow Hill (Pop 1,618), Walstonburg (Pop. 231) and Hookerton (Pop 485). The annual median household income for Greene County is $32,074 as compared to the state average of $39,184 (2000 census data). Twenty percent of the people in Greene County are classified as "Poverty". Greene County must have an economically feasible solution for water supply. The proposed purchase of water from GUC is the most economically and technically feasible solution available.

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16.3 → 3. The unfunded mandate by the State reducing our dependency on groundwater by 25% in 2008, 50% in 2013 and 75% in 2018, places Greene County under an extreme hardship. Every consideration by the Environmental Management Commission is requested to allow us to implement the least cost alternative solution, which is the proposed GUC alternative.

16.4 → 4. The purchase of water from GUC, is for water currently permitted for withdrawal from the Tar River. No additional Tar River withdrawal permits by GUC are to be requested or needed to meet the obligations of GUC to supply water to Greene County. The contractual agreement between GUC and Greene County is based upon a ninety percent (90%) availability factor. The contract gives GUC the right to interrupt or curtail the supply of water to Greene County up to ten percent (10%) of the time, or up to thirty-six (36) days per year. This arrangement allows GUC to curtail water to Greene County on days of peak demand during which time Greene County will utilize their remaining 25% well capacity to meet their demand. Under this agreement GUC will not need to increase its withdrawal permitting capacity from the Tar River now or in the future as related to selling water to Greene County.

16.5 → 5. Other alternative water supplies for Greene County are significantly more expensive. Failure of GUC to obtain an IBT certificate will result in extreme financial hardship for the residents of Greene County.

Greene County strongly supports the issuance of an IBT Certificate to GUC in accordance with their petition. We encourage the Environmental Management Commission to support GUC's request and to approve the granting of the IBT Certificate.

Sincerely,

Bennie Heath
Chairman
Greene County Board of Commissioners

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109 E. Walnut Street • P.O. Box 1776
Goldsboro, NC 27533

December 3, 2009

Toya Ogallo
Division of Water Resources
DENR
1611 Mail Service Center
Raleigh, NC 27699-1611

Subject: Letter of Support
GUC Request For IBT Certificate
Tar River Basin to Neuse River Basin

Dear Ms. Ogallo:

On behalf of the Town of Farmville and Greene County, I write this letter in support for the Greenville Utilities Commission's Petition for an IBT Certificate.

17.1 → After many years of investigation and negotiation for an alternative water supply, Greenville Utilities Commission, Greene County and the Town of Farmville contracted for the transfer of water from Greenville Utilities Commission. The most economically, technically feasible alternative with the least impact on the citizens of Farmville and Greene County was to obtain their water supply from Greenville Utilities Commission. In order to comply with the state Central Capacity Plain Capacity Use regulations timetable, both Greene County and Farmville were required to begin the construction of the alternative water supply delivery system immediately. Greene County and Farmville have expended a large sum of money to date to implement the delivery system of water from Greenville to Greene County and Farmville, all in an effort to comply with the 2002 Central Coastal Plain Capacity Use Area law deadlines of 2008, 2013 and 2018. The project is nearing completion and scheduled to be activated in June, 2010.

17.2 →

17.3 → The proposed interbasin transfer will not result in significant direct or indirect environmental impacts. Failure by GUC to obtain an IBT Transfer Certificate will result in extreme hardship on the citizens of Greene County and the Town of Farmville.

17.4 → Request favorable consideration by the Environmental Management Commission in granting the Greenville Utilities Commission's request for an IBT Certificate permitting the delivery of water from Greenville Utilities Commission to Greene County and the Town of Farmville (Tar River basin to Neuse River Basin).

Please advise this office of the Environmental Management Commission's meeting date, time and agenda related to addressing of this issue.

Thank you for your consideration of this matter.

Sincerely,

McDavid Associates, Inc.

Albert V. Lewis, Jr.
Farmville Office

cc: Don Davenport
County Manager
Greene County

cc: Richard N. Hicks
Town Manager
Town of Farmville

Ogallo, Toya

From: Randy Emory [EMORYRD@guc.com]
Sent: Friday, January 15, 2010 4:13 PM
To: Ogallo, Toya
Cc: Tony Cannon; Ron Elks; Randy Emory; Barrett Lasater; Steve Porter; Mary Sadler
Subject: GUC IBT Request Comments

Attachments: Toya Ogallo - Interbasin Transfer Request letter.pdf

Toya Ogallo - Interbasin Trans...

Toya, please find attached Greenville Utilities comment submittal on our IBT request.

Please acknowledge that you have received this message. Thanks.

Randall Emory, P.E.
Director of Water Resources
Greenville Utilities Commission
Greenville, N.C.
(252) 551-1554
emoryr@guc.com

Greenville Utilities

January 15, 2010

Ms. Toya Ogallo
Water Resources Engineer, Interbasin Transfers
Division of Water Resources
Department of Environment and Natural Resources
1611 Mail Service Center
Raleigh, NC 27699-1611

RE: Interbasin Transfer Request
Greenville Utilities Commission

Dear Ms. Ogallo:

The Greenville Utilities Commission (GUC) is submitting this letter in support of our Interbasin Transfer (IBT) request. The Interbasin Transfer will allow us to provide long-term regional solutions to the water supply challenges our communities face in eastern North Carolina. Our long-range planning has positioned us to have the capability to provide water service to the neighboring communities of Farmville, Winterville and Greene County, as well as other systems. Our neighbors have been severely impacted by the Central Coastal Plain Capacity Use Area (CCPCUA) Rule, which requires them to reduce their groundwater withdrawal by 75 percent in 2018. The CCPCUA Rule impacts fifteen counties in eastern North Carolina, including Pitt County.

18.1 → The IBT Management Strategy was developed in 2007 as a significant component of the Environmental Assessment (EA). The IBT Management Strategy is a balanced, managed approach to the transfer of finished water to our neighboring communities. The Management Strategy takes into account the use of banked water, the sale of finished water during off-peak periods, and the reduction of groundwater supply due to the CCPCUA Rule. The IBT Management Strategy was constructed to allow GUC and neighboring communities the greatest flexibility in the purchase of water as well as the curtailment of service during peak water demand or low flow in the Tar River.

PO Box 1847
Greenville, NC
27835-1847
252-551-1502
www.guc.com

18.2 → The second significant component of the EA was the development of the hydrologic analysis of flow conditions in the Tar River. The hydrologic modeling effort used empirical flow data from USGS gauging stations that spanned a 76 year period of record. The hydrologic analysis considered carefully the General Statute provision

Your Local Advantage

that all withdrawals and transfers in the source basin not be impacted to the degree existing uses would be impaired (at the time of the IBT petition). To meet these requirements, fourteen modeling scenarios were developed: six modeling scenarios addressed the hydrologic effects upstream of GUC's raw water intake, and eight modeling scenarios addressed the hydrologic effects of the proposed transfer downstream of the GUC Wastewater Treatment Plant (WWTP). The scenarios included current and future (2030) water withdrawal conditions for no IBT, the average day IBT, the maximum day IBT, and a hypothetical scenario where twice the proposed transfer was effectively removed from the Tar River.

18.3 → The City of Rocky Mount's operating rules were considered and are reflected in the hydrologic analysis. The analysis was based on actual flows at Tarboro, which reflect approximately 40 years of conditions prior to the existence of the Rocky Mount reservoir and 36 years of data since reservoir operations. In addition, the analysis considered allowed modifications to the Rocky Mount's Drought Management Plan in 1993, 1999, 2002, and 2007.

18.4 → The results of the hydrologic analysis were presented relative to the flow duration curves developed for the Tar River. The impact of each scenario was compared against river flows as low as 80 percent of the 7Q10 (87.2 cfs). The worst-case modeling (twice the proposed IBT amount) scenario revealed a 0.8 percent impact in 2030 compared to the 2030 scenario without an Interbasin transfer. For comparison, the maximum IBT scenario resulted in a 0.5 percent impact in 2030 compared to the 2030 scenario without an Interbasin transfer. The EA concluded that the hydrologic analysis calculations demonstrated that the requested IBT amount will have a negligible impact on the Tar River.

18.5 → Even though the hydrologic modeling results demonstrated negligible impact on the Tar River, the tidal influence at our intake provides another opportunity to ameliorate the effect of low flow. The tidal influence results in a reverse flow direction during low flow periods. This phenomenon creates a reservoir effect that helps maintain water over our intake pipes. GUC is in a unique position whereby we have two opportunities to withdraw water from the river where most other water treatment plants have only one opportunity. This tidal effect phenomenon is part of the reason why we feel confident that we can reliably provide water to neighboring communities who require regional solutions to solve critical water supply needs.

Ms. Toya Ogallo
January 15, 2010
Page 3

18.6 The EA critically evaluated the current and future water uses in the Tar River basin under the current hydrologic conditions. Furthermore, the proposed IBT was developed such that GUC has the flexibility to curtail water during peak demand and fully utilize the groundwater resource (in the form of banked water) to the extent practicable. In effect, we have already placed operating conditions on ourselves to manage this proposed IBT in the best interest of our customers, our neighbors, and the environment. We strongly feel that the worst-case modeling scenario (effectively twice the proposed Interbasin transfer) fully addresses the ultimate impact to the Tar River as a result of this proposed transfer.

18.7 GUC is not requesting an increase in total water withdrawal or an increase in water treatment plant capacity as a result of the proposed transfer. Rather, our long-range water supply planning effort includes the use of an innovative technology, aquifer storage and recovery (ASR), which will offset future maximum day water demand. The ASR system, the first in North Carolina, will be operational this spring and we are confident that this technology, coupled with our water conservation initiatives, will allow us to manage our water resources even more effectively.

18.8 We have implemented a regional water supply strategy that utilizes our unique geographical advantages. Our conjunctive use approach to water supply planning has positioned us to be a regional water provider. Our mission is to protect water resources and provide regional water supply solutions to our customers and to our neighbors in critical need. We sincerely hope that our regional approach may serve as a model for neighboring watersheds faced with similar water supply concerns.

Sincerely,

Ronald R. Elks

Ronald D. Elks
General Manager/CEO

cc: Randall Emory, P.E., GUC Director of Water Resources
Barrett Lasater, GUC WR Plants Manager
Steve Porter, P.E. GUC WR Systems Engineer
Mary Sadler, P.E. Hazen and Sawyer

Attachment C
Notice of Public Hearings

ENVIRONMENTAL MANAGEMENT COMMISSION

NORTH CAROLINA
DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

September 4, 2009

Mr. Stan L. Crowe
600 School Drive
Williamston, NC 27892

Mr. Kevin C. Martin
176 Juniper Trail
Franklinton, NC 27525

re: Greenville IBT Hearing Officer Appointment

Commissioners Crowe and Martin,

North Carolina General Statute §143-215.22I(d) requires the Environmental Management Commission to hold a public hearing on a proposed interbasin transfer upon receipt of an applicant's petition. In accordance with this statute, Division of Water Resources staff has scheduled a public hearing on the Greenville Utility Commission's petition for an interbasin transfer certificate. I hereby appoint you as hearing officers for this public hearing. The hearing will be held Thursday, November 5, 2009 at Pitt Community College in Winterville, N.C. Please preside over the hearing and present your findings and recommendations to the Environmental Management Commission.

Thank you for your service.

Yours truly,

Stephen T. Smith, Chairman

Cc:
Hearing Record File

Greenville Utilities Commission – Request for an Interbasin Transfer Certificate

NOTICE OF PUBLIC HEARING
Thursday, November 5, 2009
7:00 PM
Goess Student Center, Pitt Community College
Winterville, NC

The North Carolina Environmental Management Commission (EMC) will hold a public hearing to receive comments on the Greenville Utility Commission's (GUC) petition for an interbasin transfer (IBT) certificate. GUC has requested an IBT certificate to transfer water from the Tar River Basin to the Contentnea Creek and Neuse River basins. GUC proposes to provide finished water to the Towns of Farmville, Winterville, and Greene County, which currently rely on the Cretaceous aquifers for water supply. These communities are required by law to reduce their reliance upon this groundwater source, and therefore plan to purchase potable water from GUC. The sale, use, and disposal of this water create an interbasin transfer.

GUC is requesting a transfer of 8.3 million gallons per day (MGD) from the Tar River Basin to the Contentnea Creek River Basin to meet Farmville and Greene County's demands through the year 2030, and 4.0 MGD from the Tar River Basin to the Neuse River Basin to meet Winterville's demands through the year 2030.

The applicant anticipates that there will be no impact to water quality within the source basin as a result of the proposed transfer. This is based on the results of an impact analysis indicating that the proposed interbasin transfer from the Tar River to the Neuse River and Contentnea Creek basins will have minimal impact on the existing stream flow at Greenville. The model accounted for existing and expected future withdrawals from, and discharges to, the Tar River (greater than 100,000 gallon per day). The applicant also anticipates that this proposed transfer will not result in increased growth, or wastewater discharges, in the receiving basins. The proposed project would allow existing communities with groundwater systems to reduce their dependence on those sources while at the same time serving existing and future customers.

The public hearing will start at 7 pm Thursday, November 5th at the Craig Goess Student Center, Pitt Community College. In addition, Division of Water Resources staff will be available to answer questions from 6:30 pm to 7:00 pm at the hearing location. The public may review the draft petition and the final Environmental Assessment (EA) at the Division's web site at: http://www.ncwater.org/Permits_and_Registration/Interbasin_Transfer/Status/Greenville
The documents may also be viewed at the hearing or during normal business hours at the offices of the Division of Water Resources (512 N. Salisbury Street, Room 1106, Archdale Building, Raleigh).

The purpose of this announcement is to encourage interested parties to attend and/or provide relevant written and verbal comments. Division staff request that parties submit written copies of oral comments. Based on the number of people who wish to speak, the length of oral presentations may be limited.

If you are unable to attend, you may mail written comments to Toya Ogallo, Division of Water Resources, DENR, 1611 Mail Service Center, Raleigh, NC 27699-1611. Comments may also be submitted electronically to Toya.F.Ogallo@ncdenr.gov. Mailed and emailed comments will be given equal weight. All comments must be postmarked or emailed by December 4, 2009.

North Carolina Department of Environment and Natural Resources
Division of Water Resources

Beverly Eaves Perdue
Governor

Thomas A. Reeder
Director

Dee Freeman
Secretary

October 1, 2009

Subject: Notice of Public Hearing
Greenville Utility Commission Interbasin Transfer Petition

Dear Sir or Madam:

The Division of Water Resources will be holding a public hearing on November 5, 2009 to receive comments on the Greenville Utility Commission's (GUC) petition for an interbasin transfer certificate. You are being sent this letter and the attached Notice of Public Hearing because you fall under the criteria set out in North Carolina General Statute 143-215.22(i) – Regulation of Surface Water Transfers. This General Statute requires that the following individuals receive notice by first class mail:

a) Anyone in the source basin who has registered a water withdrawal or transfer.

b) Anyone in the source basin who has secured a certificate for water transfer

c) Anyone in the source river basin holding a National Pollutant Discharge Elimination System (NPDES) wastewater discharge permit for a discharge of 100,000 gallons per day or more.

d) The board of county commissioners of each county that is located entirely or partially within either the source or receiving river basins.

e) The governing body of any public water supply system located in the source basin.

The attached Notice of Public Hearing has additional background information related to the interbasin transfer request, including details on how to submit comments on the project. If you have any questions regarding this matter, please contact Toya Ogallo at (919) 715-0389 or toya.f.ogallo@ncdenr.gov.

Sincerely,

LeToya F. Ogallo
River Basin Management Section

1611 Mail Service Center, Raleigh, North Carolina 27699-1611
Phone: 919-733-4064 \ FAX: 919-733-3558 Internet: www.ncwater.org

Greenville Utilities Commission – Request for an Interbasin Transfer Certificate

NOTICE OF PUBLIC HEARING

Thursday, November 5, 2009
7:00 PM
Goess Student Center, Pitt Community College
Winterville, NC

The North Carolina Environmental Management Commission (EMC) will hold a public hearing to receive comments on the Greenville Utility Commission's (GUC) petition for an interbasin transfer (IBT) certificate. GUC has requested an IBT certificate to transfer water from the Tar River Basin to the Contentnea Creek and Neuse River basins. GUC proposes to provide finished water to the Towns of Farmville, Winterville, and Greene County, which currently rely on the Cretaceous aquifers for water supply. These communities are required by law to reduce their reliance upon this groundwater source, and therefore plan to purchase potable water from GUC. The sale, use, and disposal of this water create an interbasin transfer.

GUC is requesting a transfer of 8.3 million gallons per day (MGD) from the Tar River Basin to the Contentnea Creek River Basin to meet Farmville and Greene County's demands through the year 2030, and 4.0 MGD from the Tar River Basin to the Neuse River Basin to meet Winterville's demands through the year 2030.

The applicant anticipates that there will be no impact to water quality within the source basin as a result of the proposed transfer. This is based on the results of an impact analysis indicating that the proposed interbasin transfer from the Tar River to the Neuse River and Contentnea Creek basins will have minimal impact on the existing stream flow at Greenville. The model accounted for existing and expected future withdrawals from, and discharges to, the Tar River (greater than 100,000 gallon per day). The applicant also anticipates that this proposed transfer will not result in increased growth, or wastewater discharges, in the receiving basins. The proposed project would allow existing communities with groundwater systems to reduce their dependence on those sources while at the same time serving existing and future customers.

The public hearing will start at 7 pm Thursday, November 5th at the Craig Goess Student Center, Pitt Community College. In addition, Division of Water Resources staff will be available to answer questions from 6:30 pm to 7:00 pm at the hearing location. The public may review the draft petition and the final Environmental Assessment (EA) at the Division's web site at:
http://www.ncwater.org/Permits_and_Registration/Interbasin_Transfer/Status/Greenville
The documents may also be viewed at the hearing or during normal business hours at the offices of the Division of Water Resources (512 N. Salisbury Street, Room 1106, Archdale Building, Raleigh).

The purpose of this announcement is to encourage interested parties to attend and/or provide relevant written and verbal comments. Division staff request that parties submit written copies of oral comments. Based on the number of people who wish to speak, the length of oral presentations may be limited.

If you are unable to attend, you may mail written comments to Toya Ogallo, Division of Water Resources, DENR, 1611 Mail Service Center, Raleigh, NC 27699-1611. Comments may also be submitted electronically to Toya.F.Ogallo@ncdenr.gov. Mailed and emailed comments will be given equal weight. All comments must be postmarked or emailed by December 4, 2009.

5100503698 A280

The Daily Reflector

P.O. Box 1967, Greenville, NC 27835-1967 (252) 329-9504

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NC DIV OF WATER SERVICES
1611 MAIL SERVICE CENTER

RALEIGH, NC 27699

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Legal Affidavit located below

PUBLISHER'S AFFIDAVIT

AD ID: 7350692

NORTH CAROLINA
PITT COUNTY:

Elyse Burchard affirms that she is clerk of The Daily Reflector, a newspaper published daily at Greenville, Pitt County, North Carolina, and that the advertisement, a true copy of which is hereto attached, entitled Notice of Public Hearing was published in said The Daily Reflector on the following dates:

Thursday, October 1, 2009 Page: B8

and that the said newspaper in which such notice, paper, document or legal advertisement was published, was at the time of each and every publication, a newspaper meeting all of the requirements and qualifications of Chapter 1, Section 597 of the General Statutes of North Carolina and was a qualified newspaper within the meaning of Chapter 1, Section 597 of the General Statutes of North Carolina.

CBL

Affirmed and subscribed before me this 07 day

of October 2009

Elizabeth H Poole
(Notary Public Signature)

Elizabeth H Poole
(Notary Public Printed Name)

My commission expires 1-17-2011

ELIZABETH H. POOLE NOTARY PUBLIC PITT COUNTY, N. C.

Greenville Utilities Commission - Request for an Interbasin Transfer Certificate
NOTICE OF PUBLIC HEARING
Thursday, November 5, 2009
7:00 PM
Goess Student Center,
Pitt Community College
Winterville, NC

The North Carolina Environmental Management Commission (EMC) will hold a public hearing to receive comments on the Greenville Utility Commission's (GUC) petition for an interbasin transfer (IBT) certificate. GUC has requested an IBT certificate to transfer water from the Tar River Basin to the Contentnea Creek and Neuse River basins. GUC proposes to provide finished water to the Towns of Farmville, Winterville, and Greene County, which currently rely on the Cretaceous aquifers for water supply. These communities are required by law to reduce their reliance upon this groundwater source, and therefore plan to purchase potable water from GUC. The sale, use, and disposal of this water create an interbasin transfer.

GUC is requesting a transfer of 8.3 million gallons per day (MGD) from the Tar River Basin to the Contentnea Creek River Basin to meet Farmville and Greene County's demands through the year 2030, and 4.0 MGD from the Tar River Basin to the Neuse River Basin to meet Winterville's demands through the year 2030.

The applicant anticipates that there will be no impact to water quality within the source basin as a result of the proposed transfer. This is based on the results of an impact analysis indicating that the proposed interbasin transfer from the Tar

☑ APPROVED

River to the Neuse River and Contentnea Creek basins will have minimal impact on the existing stream flow at Greenville. The model accounted for existing and expected future withdrawals from, and discharges to, the Tar River (greater than 100,000 gallon per day). The applicant also anticipates that this proposed transfer will not result in increased growth, or wastewater discharges, in the receiving basins. The proposed project would allow existing communities with groundwater systems to reduce their dependence on those sources while at the same time serving existing and future customers.

The public hearing will start at 7 pm Thursday, November 5th at the Craig Goess Student Center, Pitt Community College. In addition, Division of Water Resources staff will be available to answer questions from 6:30 pm to 7:00 pm at the hearing location. The public may review the draft petition and the final Environmental Assessment (EA) at the Division's web site at: http://www.ncwater.org/Permits_and_Registration/Interbasin_Transfer/Status/Greenville

The documents may also be viewed at the hearing or during normal business hours at the offices of the Division of Water Resources (512 N. Salisbury Street, Room 1106, Archdale Building, Raleigh).

The purpose of this announcement is to encourage interested parties to attend and/or provide relevant written and verbal comments. Division staff request that parties submit written copies of oral comments. Based on the number of people who wish to speak, the length of oral presentations may be limited.

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October 1, 2009

AFFIDAVIT OF PUBLICATION

NORTH CAROLINA.
Wake County.) Ss.

Greenville Utilities Commission - Request for an Interbasin Transfer Certificate

NOTICE OF PUBLIC HEARING
Thursday, November 5, 2009
7:00 PM
Goess Student Center, Pitt Community College, Winterville, NC

The North Carolina Environmental Management Commission (EMC) will hold a public hearing to receive comments on the Greenville Utility Commission's (GUC) petition for an interbasin transfer (IBT) certificate. GUC has requested an IBT certificate to transfer water from the Tar River Basin to the Contentnea Creek and Neuse River basins. GUC proposes to provide finished water to the Towns of Farmville, Winterville, and Greene County, which currently rely on the Cretaceous aquifers for water supply. These communities are required by law to reduce their reliance upon this groundwater source, and therefore plan to purchase potable water from GUC. The sale, use, and disposal of this water create an interbasin transfer.

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The applicant anticipates that there will be no impact to water quality within the source basin as a result of the proposed transfer. This is based on the results of an impact analysis indicating that the proposed interbasin transfer from the Tar River to the Neuse River and Contentnea Creek basins will have minimal impact on the existing stream flow at Greenville. The model accounted for existing and expected future withdrawals from, and discharges to, the Tar River (greater than 100,000 gallon per day). The applicant also anticipates that this proposed transfer will not result in increased growth, or wastewater discharges, in the receiving basins. The proposed project would allow existing communities with groundwater systems to reduce their dependence on those sources while at the same time serving existing and future customers.

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N&O: October 1, 2009

COUNTY NORTH CA

Before the undersigned, a Notary Public of Wake County North Carolina, duly commissioned and authorized to administer oaths, affirmations, etc., personally appeared Deborah McCullers, who, being duly sworn or affirmed, according to law, doth depose and say that she is Accounts Receivable Specialist of The News and Observer a corporation organized and doing business under the Laws of the State of North Carolina, and publishing a newspaper known as The News and Observer, in the City of Raleigh , Wake County and State aforesaid, the said newspaper in which such notice, paper, document, or legal advertisement was published was, at the time of each and every such publication, a newspaper meeting all of the requirements and qualifications of Section 1-597 of the General Statutes of North Carolina and was a qualified newspaper within the meaning of Section 1-597 of the General Statutes of North Carolina, and that as such she makes this affidavit; that she is familiar with the books, files and business of said corporation and by reference to the files of said publication the attached advertisement for NC DIVISION OF WATER RESOURC was inserted in the aforesaid newspaper on dates as follows: 10/01/09

Account Number: 71554290

T m the books and files of the aforesaid Corporation and publication.

Deborah McCullers

Deborah McCullers, Accounts Receivable Specialist
Wake County, North Carolina

Sworn or affirmed to, and subscribed before me, this 02 day of OCTOBER , 2009 AD, by Deborah McCullers

In Testimony Whereof, I have hereunto set my hand and affixed my official seal, the day and year aforesaid.

Timothy R. Winslow

Timothy R. Winslow, Notary Public

My commission expires June 2, 2013

BEAUFORT COUNTY
NORTH CAROLINA

AFFIDAVIT OF PUBLICATION

Before the undersigned, a Notary Public of said County and State, duly commissioned, qualified and authorized by law to administer oaths, personally appeared Brenda Foster, who being first duly sworn as a representative of the Washington Daily News, a newspaper, published, issued and entered as second class mail in Washington, NC in said county and state and is authorized to make this affidavit and sworn statement; that the notice or other legal advertisement, a true copy of which is attached hereto, was published in the Washington Daily News on the following dates:

Oct 1, 2009

and that the said newspaper in which such notice, paper, document, or legal advertisement was published was, at the time of each and every publication, a newspaper meeting all of the requirements and qualifications of Section I-597 of the General Statutes of North Carolina and was a qualified newspaper within the meaning of Section I-597 of the General Statutes of North Carolina.

This 16 day of Oct, 2009.

Brenda Foste
(Signature of person making affidavit)

Sworn to and subscribed before me, a Notary Public,

this 16 day of Oct, 2009.

Lucy C Woolard
(Notary Public)

My commission expires Nov 29, 2009.

Publication cost $ 125.74 paid.

GREENVILLE UTILITIES Commission – Request for an Interbasin Transfer Certificate

NOTICE OF PUBLIC HEARING
Thursday, November 5, 2009
7:00 PM
Goess, Student Center, Pitt Community College
Winterville, NC

The North Carolina Environmental Management Commission (EMC) will hold a public hearing to receive comments on the Greenville Utility Commission's (GUC) petition for an interbasin transfer (IBT) certificate. GUC has requested an IBT certificate to transfer water from the Tar River Basin to the Contentnea Creek and Neuse River basins. GUC proposes to provide finished water to the Towns of Farmville, Winterville, and Greene County, which currently rely on the Cretaceous aquifers for water supply. These communities are required by law to reduce their reliance upon this groundwater source, and therefore plan to purchase potable water from GUC. The sale, use, and disposal of this water create an interbasin transfer.

GUC is requesting a transfer of 8.3 million gallons per day (MGD) from the Tar River Basin to the Contentnea Creek River Basin to meet Farmville and Greene County's demands through the year 2030, and 4.0 MGD from the Tar River Basin to the Neuse River Basin to meet Winterville's demands through the year 2030.

The applicant anticipates that there will be no impact to water quality within the source basin as a result of the proposed transfer. This is based on the results of an impact analysis indicating that the proposed interbasin transfer from the Tar River to the Neuse River and Contentnea Creek basins will have minimal impact on the existing stream flow at Greenville. The model accounted for existing and expected future withdrawals from, and discharges to, the Tar River (greater than 100,000 gallon per day). The applicant also anticipates that this proposed transfer will not result in increased growth, or wastewater discharges, in the receiving basins. The proposed project would allow existing communities with groundwater systems to reduce their dependence on those sources while at the same time serving existing and future customers.

The public hearing will start at 7 pm Thursday, November 5th at the Craig Goess Student Center, Pitt Community College. In addition, Division of Water Resources staff will be available to answer questions from 6:30 pm to 7:00 pm at the hearing location. The public may review the draft petition and the final Environmental Assessment (EA) at the Division's web site at: http://www.ncwater.org/Permits_and_Registration/Interbasin_Transfer/Status/Greenville
The documents may also be viewed at the hearing or during normal business hours at the offices of the Division of Water Resources (512 N. Salisbury Street, Room 1106, Archdale Building, Raleigh).

The purpose of this announcement is to encourage interested parties to attend and/or provide relevant written and verbal comments. Division staff request that parties submit written copies of oral comments. Based on the number of people who wish to speak, the length of oral presentations may be limited.
If you are unable to attend, you may mail written comments to Toya Ogallo, Division of Water Resources, DENR, 1611 Mail Service Center, Raleigh, NC 27699-1611. Comments may also be submitted electronically to Toya.F.Ogallo@ncdenr.gov. Mailed and emailed comments will be given equal weight. All comments must be postmarked or emailed by December 4, 2009.
10-1 1tc

County of Greene
State of North Carolina

Publisher's Affidavit

I, Jimmy Lewis, Circulation Manager of The Standard Laconic, a newspaper published in Snow Hill, County of Greene, North Carolina, do hereby certify that the notice in the action entitled:
Notice of Public Hearing: Greenville Utilities Commission

Appeared in The Standard Laconic for 1 consecutive week(s) beginning 10/7/2009 and ending 10/7/2009.

A copy of the notice is attached.
This the 7th day of October, 2009.

Jimmy Lewis
Circulation Manager of The Standard Laconic

I, Margaret D. Fisher, a Notary Public, in and for the County and State aforementioned, do hereby certify the execution of the foregoing instrument for the purpose therein expressed.

In Witness Whereof, I have hereunto set my hand and attached by notarial seal, this the 7th day of Oct. 2009.

MARGARET D FISHER NOTARY PUBLIC GREENE COUNTY, NC

My Commission Expires

4 Nov. 2012 Margaret D. Fisher
Notary Public

GREENVILLE UTILITIES COMMISSION – Request for an Interbasin Transfer Certificate

NOTICE OF PUBLIC HEARING
THURSDAY, NOVEMBER 5, 2009
7:00 PM
GOESS STUDENT CENTER, PITT Community College
WINTERVILLE, NC

THE NORTH CAROLINA ENVIRONMENTAL Management Commission (EMC) will hold a public hearing to receive comments on the Greenville Utility Commission's (GUC) petition for an interbasin transfer (IBT) certificate. GUC has requested an IBT certificate to transfer water from the Tar River Basin to the Contentnea Creek and Neuse River basins. GUC proposes to provide finished water to the Towns of Farmville, Winterville, and Greene County, which currently rely on the Cretaceous aquifers for water supply. These communities are required by law to reduce their reliance upon this groundwater source, and therefore plan to purchase potable water from GUC. The sale, use, and disposal of this water create an interbasin transfer.

GUC IS REQUESTING A transfer of 8.3 million gallons per day (MGD) from the Tar River Basin to the Contentnea Creek River Basin to meet Farmville and Greene County's demands through the year 2030, and 4.0 MGD from the Tar River Basin to the Neuse River Basin to meet Winterville's demands through the year 2030.

THE APPLICANT ANTICIPATES THAT there will be no impact to water quality within the source basin as a result of the proposed transfer. This is based on the results of an impact analysis indicating that the proposed interbasin transfer from the Tar River to the Neuse River and Contentnea Creek basins will have minimal impact on the existing stream flow at Greenville. The model accounted for existing and expected future withdrawals from, and discharges to, the Tar River (greater than 100,000 gallon per day). The applicant also anticipates that this proposed transfer will not result in increased growth, or wastewater discharges, in the receiving basins. The proposed project would allow existing communities with groundwater systems to reduce their dependence on those sources while at the same time serving existing and future customers.

THE PUBLIC HEARING WILL start at 7 pm Thursday, November 5th at the Craig Goess Student Center, Pitt Community College. In addition, Division of Water Resources staff will be available to answer questions from 6:30 pm to 7:00 pm at the hearing location. The public may review the draft petition and the final Environmental Assessment (EA) at the Division's web site at: http://www.ncwater.org/Permits_and_Registration/Interbasin_Transfer/Status/Greenville
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THE PURPOSE OF THIS announcement is to encourage interested parties to attend and/or provide relevant written and verbal comments. Division staff request that parties submit written copies of oral comments. Based on the number of people who wish to speak, the length of oral presentations may be limited.
IF YOU ARE UNABLE to attend, you may mail written comments to Toya Ogallo, **Division of Water Resources, DENR, 1611 Mail Service Center,** Raleigh, **NC 27699-**1611. Comments may also be submitted electronically to Toya.F.Ogallo@ncdenr.gov. Mailed and emailed comments will be given equal weight. All comments must **be postmarked** or **emailed by December 4, 2009.**
(SL, 10/07)

Attachment D

(1) Central Coastal Plain Capacity Use Area Rules 15A NCAC 2E .0500

TITLE 15A - DEPARTMENT OF ENVIRONMENT AND NATURAL RESOURCES

CHAPTER 2 - ENVIRONMENTAL MANAGEMENT

SUBCHAPTER 2E - WATER USE REGISTRATION AND ALLOCATION

SECTION .0100 - AUTHORITY

.0102 PURPOSE

History Note: *Authority G.S. 143-215.12; 143-215.14;*
Eff. February 1, 1976;
Repealed Eff. August 1, 2002.

.0103 SCOPE

History Note: *Authority G.S. 143-215.14;*
Eff. February 1, 1976;
Repealed Eff. August 1, 2002.

.0106 DEFINITIONS

As used herein, unless the context otherwise requires:

(1) "Director" means the Director of the Division of Water Resources.

(2) "Division" means the Division of Water Resources.

History Note: *Authority G.S. 87-87; 143-215.14; 143-215.21;*
Eff. March 1, 1985;
Amended Eff. August 1, 2002.

.0107 DELEGATION

(a) The Director is delegated the authority to grant, modify, revoke or deny permits under G.S. 143-215.15 and G.S. 143-215.16.

(b) The Director may delegate any permitting function given by the rules of this Subchapter.

(c) The Director is delegated the authority to assess civil penalties and request the Attorney General to institute civil actions under G.S. 143-215.17.

(d) The Director is delegated the authority to process applications and collect fees for registration of water withdrawals and transfers under G.S. 143-215.22H and G.S. 143- 215.3(a)(1b).

(e) The Director may delegate any water withdrawal or transfer registration processing functions given by the rules of this Subchapter.

History Note: *Filed as a Temporary Amendment Eff. October 14, 1991 for a period of 180 Days to Expire on April 11, 1992;*
Authority G.S. 143-215.3(a)(1); 143-215.3(a)(4);
Eff. March 1, 1985;
Amended Eff. August 1, 2002; September 1, 1994; April 1, 1992.

SECTION .0200 - CAPACITY USE AREA NO. 1

.0201 DECLARATION AND DELINEATION OF CAPACITY USE AREA NO. 1

History Note: *Authority G.S. 143-215.13;*
Eff. February 1, 1976;
Repealed Eff. August 1, 2002.

.0202 PERSONS WITHDRAWING GROUNDWATER IN CAPACITY USE AREAS

History Note: *Authority G.S. 143-215.14; 143-215.15;*
Eff. February 1, 1976;
Amended Eff. March 1, 1985;
Repealed Eff. August 1, 2002.

.0205 ACTIVITIES

History Note: *Authority G.S. 143-215.14; 143-215.20;*
Eff. February 1, 1976;
Repealed Eff. August 1, 2002.

SECTION .0500 - CENTRAL COASTAL PLAIN CAPACITY USE AREA

.0501 DECLARATION AND DELINEATION OF CENTRAL COASTAL PLAIN CAPACITY USE AREA

The area encompassed by the following 15 North Carolina counties and adjoining creeks, streams, and rivers is hereby declared and delineated as the Central Coastal Plain Capacity Use Area: Beaufort, Carteret, Craven, Duplin, Edgecombe, Greene, Jones, Lenoir, Martin, Onslow, Pamlico, Pitt, Washington, Wayne and Wilson. The Environmental Management Commission finds that the use of ground water requires coordination and limited regulation in this delineated area for protection of the public interest. The intent of this Section is to protect the long term productivity of aquifers within the designated area and to allow the use of ground water for beneficial uses at rates which do not exceed the recharge rate of the aquifers within the designated area.

History Note: *Authority G.S. 143-215.13;*
Eff. August 1, 2002.

.0502 WITHDRAWAL PERMITS

(a) Existing ground water withdrawal permits issued in Capacity Use Area No. 1 (15A NCAC 2E .0200) within the Central Coastal Plain Capacity Use Area are reissued under Section .0500 of this Subchapter and are valid until the expiration date specified in each permit. Water use permits are no longer required for withdrawals in Hyde and Tyrrell Counties as of the effective date of this Rule. Permits are not required for surface water use under Section .0500 of this Subchapter in the Central Coastal Plain Capacity Use Area as delineated in Rule .0501 of this Section.

(b) No person shall withdraw ground water after the effective date of this Rule in excess of 100,000 gallons per day by a well, group of wells operated as a system, or sump for any purpose unless such person shall first obtain a water use permit from the Director. Existing withdrawals of ground water as of the effective date of this Rule and proposed withdrawals previously approved for funding appropriated pursuant to the "Clean Water and Natural Gas Critical Needs Bond Act of 1998" or other local, state or federally funded projects as of the effective date of this Rule shall be allowed to proceed with construction or to continue to operate under interim status until a permit has been issued or denied by the Director, provided that persons withdrawing in excess of 100,000 gallons per day by a well, group of wells operated as a system, or sump comply with the following requirements:

(1) Persons conducting withdrawals in the Capacity Use Area that require a permit shall submit a permit application to the Division of Water Resources within 180 days of the effective date of this Rule.
(2) Persons who have submitted applications shall provide any additional information requested by the Division of Water Resources for processing of the permit application within 30 days of the receipt of that request.
(3) Persons conducting withdrawals in the Capacity Use Area that require a permit shall submit water level and water use data on a form supplied by the Division four times a year, within 30 days of the end of March, June, September, and December until a permit has been issued or denied by the Division of Water Resources.

(c) Ground water withdrawals shall be governed by the following standards:

(1) Adverse impacts of ground water withdrawals shall be avoided or minimized. Adverse impacts include, but are not limited to:
  (A) dewatering of aquifers;
  (B) encroachment of salt water;
  (C) land subsidence or sinkhole development;
  (D) declines in aquifer water levels that indicate that aggregate water use exceeds the aquifer replenishment rate.
(2) Adverse impacts on other water users from ground water withdrawals shall be corrected or minimized through efficient use of water and development of sustainable water sources.
(3) In determining the importance and necessity of a proposed withdrawal the efficiency of water use and implementation of conservation measures shall be considered.

(d) An application for a water use permit must be submitted on a form approved by the Director to the North Carolina Division of Water Resources. The application shall describe the purpose or purposes for which water shall be used, shall set forth the method and location of withdrawals, shall justify the quantities needed, and shall document water conservation measures to be used by the applicant to ensure efficient use of water and avoidance of waste. Withdrawal permit applications shall include the following information:

(1) Location by latitude and longitude of all wells to be used for withdrawal of water.

(2) Specifications for design and construction of existing and proposed production and monitoring wells including:

(A) Well diameter;

(B) Total depth of the well;

(C) Depths of all open hole or screened intervals that will yield water to the well;

(D) Depth of pump intake(s);

(E) Size, capacity and type of pump;

(F) Depth to top of gravel pack;

(G) Depth measurements shall be within accuracy limits of plus or minus 0.10 feet and referenced to a known land surface elevation.

Exceptions may be made where specific items of information are not critical, as determined by the Director, to manage the ground water resource.

(3) Withdrawal permit applications for use of ground water from the Cretaceous aquifer system shall include plans to reduce water use from these aquifers as specified in Rule .0503 of this Section. Withdrawal rates from the Cretaceous aquifer system that exceed the approved base rate may be permitted during Phase I of Rule .0503 of this Section if the applicant can demonstrate to the Director's satisfaction a need for the greater amount. Cretaceous aquifer system wells shall be identified using the specifications in Rule .0502(d)(1) and .0502(d)(2) of this Section and the hydrogeological framework.

(4) Withdrawal permit applications for dewatering of mines, pits or quarries shall include a dewatering or depressurization plan that includes:

(A) the current withdrawal rate or estimates of the proposed withdrawal rate;

(B) the location, design and specifications of any sumps, drains or other withdrawal sources including wells and trenches;

(C) the lateral extent and depth of the zone(s) to be dewatered or depressurized;

(D) a monitoring plan that provides data to delineate the nature and extent of dewatering or depressurization;

(E) certification of all engineering plans and hydrogeological analyses prepared to meet these requirements consistent with professional licensing board statutes and rules governing such activities.

Exceptions may be made where specific items of information are not critical, as determined by the Director, to manage the ground water resource.

(5) Conservation Measures. The applicant shall provide information on existing conservation measures and conservation measures to be implemented during the permit period as follows:

(A) Public water supply systems shall develop and implement a feasible water conservation plan incorporating, at a minimum, the following components. Each component shall be described, including a timetable for implementing each component that does not already exist.

(i) Adoption of a water conservation-based rate structure, such as: flat rates, increasing block rates, seasonal rates, or quantity-based surcharges.

(ii) Implementation of a water loss reduction program if unaccounted for water is greater than 15 percent of the total amount produced, as documented annually using a detailed water audit. Water loss reduction programs shall consist of annual water audits, in-field leak detection, and leak repair.

(iii) Adoption of a water conservation ordinance for irrigation, including such measures as: time-of-day and day-of-week restrictions on lawn and ornamental irrigation, automatic irrigation system shut-off devices or other appropriate measures.

(iv) Implementation of a retrofit program that makes available indoor water conservation devices to customers (such as showerheads, toilet flappers, and faucet aerators).

(v) Implementation of a public education program (such as water bill inserts, school and civic presentations, water treatment plant tours, public services announcements, or other appropriate measures).

(vi) Evaluation of the feasibility of water reuse as a means of conservation, where applicable.

(B) Users of water for commercial purposes, other than irrigation of crops and forestry stock, shall develop and implement a water conservation plan as follows:

(i) an audit of water use by type of activity (for example, process make-up water, non-contact cooling water) including existing and potential conservation and reuse measures for each type of water use;

(ii) an implementation schedule for feasible measures identified in the above item for conservation and reuse of water at the facility.

(C) Users of water for irrigation of crops and forestry stock shall provide the following information:

(i) total acreage with irrigation available;

(ii) types of crops that may be irrigated;

(iii) method of irrigation (for example, wells that supply water to canals, ditches or central pivot systems or any other irrigation method using ground water);

(iv) a statement that the applicant uses conservation practice standards for irrigation as defined by the Natural Resources Conservation Service.

(6) If an applicant intends to operate an aquifer storage and recovery program (ASR), the applicant shall provide information on the storage zone, including the depth interval of the storage zone, lateral extent of the projected storage area, construction details of wells used for injection and withdrawal of water, and performance of the ASR program.

(e) The Director shall issue, modify, revoke, or deny each permit as set forth in G.S. 143-215.15. Permittees may apply for permit modifications. Any application submitted by a permittee shall be subject to the public notice and comment requirements of G.S. 143-215.15(d).

(f) Permit duration shall be set by the Director as described in G.S. 143-215.16(a). Permit transferability is established in G.S. 143-215.16(b).

(g) Persons holding a permit shall submit signed water usage and water level reports to the Director not later than 30 days after the end of each permit reporting period as specified in the permit. Monitoring report requirements may include:

(1) Amounts of daily withdrawal from each well.

(2) Pumping and static water levels for each supply well as measured with a steel or electric tape, or an alternative method as specified in the permit, at time intervals specified in the permit.

(3) Static water levels in observation wells at time intervals specified in the permit.

(4) Annual sampling by applicants located in the salt water encroachment zone and chloride concentration analysis by a State certified laboratory.

(5) Any other information the Director determines to be pertinent and necessary to the evaluation of the effects of withdrawals.

(h) Water use permit holders shall not add new wells without prior approval from the Director.

(i) The Director may require permit holders to construct observation wells to observe water level and water quality conditions before and after water withdrawals begin if there is a demonstrated need for aquifer monitoring to assess the impact of the withdrawal on the aquifer.

(j) For all water uses other than dewatering of mines, pits or quarries, withdrawals shall be permitted only from wells that are constructed such that the pump intake or intakes are at a shallower depth than the top of the uppermost confined aquifer that yields water to the well. Confined aquifer tops are established in the hydrogeological framework. Where wells in existence as of the effective date of this Rule are not in compliance with the requirements of this provision, the permit shall include a compliance schedule for retrofitting or replacement of non-compliant wells. Withdrawals from unconfined aquifers shall not lower the water table by an amount large enough to decrease the effective thickness of the unconfined aquifer by more than 50 percent.

(k) For withdrawals to dewater mines, pits or quarries, the permit shall delimit the extent of the area and depths of the aquifer(s) to be dewatered or depressurized. Maximum withdrawal rates and the permissible extent of dewatering or depressurization shall be determined by the Director using data provided by the applicant, data related to permits under G.S. 74-47, and other publicly available information. Withdrawal rates that do not cause adverse impacts, as defined in Rule .0502(c) of this Section, shall be approved.

(l) Withdrawals of water that cause changes in water quality such that the available uses of the resource are adversely affected shall not be permitted. For example, withdrawals shall not be permitted that result in migration of ground water that contains more than 250 milligrams per liter chloride into pumping wells that contain chloride at concentrations below 250 milligrams per liter.

(m) General permits may be developed by the Division and issued by the Director for categories of withdrawal that involve the same or substantially similar operations, have similar withdrawal characteristics, require the same limitations or operating conditions, and require similar monitoring.

(n) Permitted water users may withdraw and sell or transfer water to other users provided that their permitted withdrawal limits are not exceeded.

(o) A permitted water user may sell or transfer to other users a portion of his permitted withdrawal. To carry out such a transfer, the original permittee must request a permit modification to reduce his permitted withdrawal and the

proposed recipient of the transfer must apply for a new or amended withdrawal permit under Section .0500 of this Subchapter.

(p) Where an applicant or a permit holder can demonstrate that compliance with water withdrawal limits established under Section .0500 of this Subchapter is not possible because of construction schedules, requirements of other laws, or other reasons beyond the control of the applicant or permit holder, and where the applicant or permit holder has made good faith efforts to conserve water and to plan the development of other water sources, the Director may issue a temporary permit with an alternative schedule to attain compliance with provisions of Section .0500 of this Subchapter, as authorized in G.S. 143-215.15(c)(ii).

History Note: *Authority G.S. 143-215.14; 143-215.15; 143-215.16;*
Eff. August 1, 2002.

.0503 PRESCRIBED WATER USE REDUCTIONS IN CRETACEOUS AQUIFER ZONES

Cretaceous aquifer water use shall be reduced in prescribed areas over a 16 year period, starting from approved base rates on the effective date of this Rule. The Cretaceous aquifer system zones and the three phases of water use reductions are listed as follows:

(1) Cretaceous aquifer system zones are regions established in the fresh water portion of the Cretaceous aquifer system that delimit zones of salt water encroachment, dewatering and declining water levels. These zones are designated on the paper and digital map entitled "Central Coastal Plain Capacity Use Area Cretaceous Aquifer Zones" (CCPCUA) on file in the Office of the Secretary of State one week prior to the effective date of these Rules.

(2) The reductions specified in Rule .0503 of this Section do not apply to intermittent users.

(3) If a permittee implements an aquifer storage and recovery program (ASR), reduction requirements shall be based on the total net withdrawals. The reductions specified in Rule .0503 of this Section do not apply if the volume of water injected into the aquifer is greater than the withdrawal volume. If the withdrawal volume is greater than the injected volume, reductions specified in Rule .0503 of this Section apply to the difference between the withdrawal volume and the injected volume.

(4) The reductions specified in Rule .0503 of this Section shall not reduce permitted water use rates below 100,001 gallons per day.

(5) Phase definitions:

(a) Phase I: The six year period extending into the future from the effective date of this Rule.

(b) Phase II: The five year period extending into the future from six years after the effective date of this Rule to 11 years after the effective date of this Rule.

(c) Phase III: The five year period extending into the future from 11 years after the effective date of this Rule to 16 years after the effective date of this Rule.

(6) Phase reductions:

(a) Phase I:

(i) At the end of the Phase I, permittees who are located in the dewatering zone shall reduce annual water use from Cretaceous aquifers by 25% from their approved base rate.

(ii) At the end of the Phase I, permittees who are located in the salt water encroachment zone shall reduce annual water use from Cretaceous aquifers by 25% from their approved base rate.

(iii) At the end of the Phase I, permittees who are located in the declining water level zone shall reduce annual water use from Cretaceous aquifers by 10% from their approved base rate.

(b) Phase II:

(i) At the end of the Phase II, permittees who are located in the dewatering zone shall reduce annual water use from Cretaceous aquifers by 50% from their approved base rate.

(ii) At the end of the Phase II, permittees who are located in the salt water encroachment zone shall reduce annual water use from Cretaceous aquifers by 50% from their approved base rate.

(iii) At the end of the Phase II, permittees who are located in the declining water level zone shall reduce annual water use from Cretaceous aquifers by 20% from their approved base rate.

(c) Phase III:

(i) At the end of the Phase III, permittees who are located in the dewatering zone shall reduce annual water use from Cretaceous aquifers by 75% from their approved base rate.

(ii) At the end of the Phase III, permittees who are located in the salt water encroachment zone shall reduce annual water use from Cretaceous aquifers by 75% from their approved base rate.

(iii) At the end of the Phase III, permittees who are located in the declining water level zone shall reduce annual water use from Cretaceous aquifers by 30% from their approved base rate.

(7) The CCPCUA Cretaceous Aquifer Zones map shall be updated, if necessary, in the sixth, eleventh, and sixteenth years following the effective date of this Rule to account for aquifer water level responses to phased withdrawal reductions. The map update shall be based on the following conditions:
   (a) Rate of decline in water levels in the aquifers;
   (b) Rate of increase in water levels in the aquifers;
   (c) Stabilization of water levels in the aquifers;
   (d) Chloride concentrations in the aquifers.

This aquifer information shall be analyzed on a regional scale and used to develop updated assessments of aquifer conditions in the Central Coastal Plain Capacity Use Area. The Environmental Management Commission (EMC) may adjust the aquifer zones and the water use reduction percentages for each zone based on the assessment of conditions. The EMC shall adopt the updated map and reduction percentage changes after public hearing.

(8) The reductions specified in Rule .0503 of this Section do not apply to wells exclusively screened or open to the Peedee aquifer.

(9) An applicant may submit documentation supporting the exemption of a well located in the Declining Water Level Zone from the withdrawal reductions specified in Rule .0503 of this Section. This documentation must include a record of monthly static water levels from that well over at least a three-year period, ending with the month when the request for exemption is submitted. The Director may exempt a well from reductions if the water level history shows no pattern of decline during this three-year period. A well previously exempted from the withdrawal reductions shall become subject to the reductions if water levels begin to show a pattern of decline.

History Note: *Authority G.S. 143-215.15;*
Eff. August 1, 2002.

.0504 REQUIREMENTS FOR ENTRY AND INSPECTION

(a) The Division may enter and inspect property in order to evaluate wells, pumps, metering equipment or other withdrawal or measurement devices and records of water withdrawals and water levels, if:

(1) Persons conduct an activity that the Division believes requires the use of water at quantities that subject the person to regulation under these Rules;

(2) A permittee or applicant has not provided data or information on use of water and wells and other water withdrawal facilities as required by these Rules; or

(3) Water levels and chloride concentrations at the person's facility, or at nearby facilities or monitoring stations, indicate that aquifers may be damaged by overpumping or salt water encroachment, or other adverse affects that may be attributed to withdrawal by the person.

(b) All information submitted to fulfill the requirements of these Rules, or to obtain a permit under these Rules, or obtained by inspection under these Rules, shall be treated as Confidential Business Information, if requested by the applicant, and found to be such by the Division. Reports defined in Rule .0502(g) of this Section are not considered Confidential Business Information.

History Note: *Authority G.S. 143-215.19;*
Eff. August 1, 2002.

.0505 ACCEPTABLE WITHDRAWAL METHODS THAT DO NOT REQUIRE A PERMIT

(a) As of the effective date of this Rule, any person who is not subject to Rule .0502 of this Section and withdraws more than 10,000 gallons per day from surface or ground water in the Central Coastal Plain Capacity Use Area, shall register such withdrawals on a form supplied by the Division and comply with the following provisions:

(1) Construct new wells such that the pump intake or intakes are above the top of the uppermost confined aquifer that yields water to the well. Confined aquifer tops are established in the hydrogeological framework.

(2) Report surface and ground water use to the Division of Water Resources on an annual basis on a form supplied by the Division.

(3) Withdraw water in a manner that does not damage the aquifer or cause salt water encroachment or other adverse impacts.

(b) These requirements do not apply to withdrawals to supply an individual domestic dwelling.

(c) Agricultural water users may either register water use with the Division of Water Resources as provided in this Rule or provide the information to the North Carolina Department of Agriculture and Consumer Services.

History Note: *Authority G.S. 143-215.14; 143-355(k);*
Eff. August 1, 2002.

.0506 CENTRAL COASTAL PLAIN CAPACITY USE AREA STATUS REPORT

Within two years of the effective date of this Rule, and at five year intervals thereafter, the Division of Water Resources shall publish a status report on the Central Coastal Plain Capacity Use Area. The report shall include the following:

(1) Compilations of water use data,
(2) Evaluations of surface and ground water resources,
(3) Updated information about the hydrogeologic framework in the Central Coastal Plain Capacity Use Area,
(4) A summary of alternative water sources and water management techniques that may be feasible by generalized geographic location, and
(5) A status report on actions by water users to develop new water sources and to increase water use efficiency.

History Note: Authority G.S. 143-215.14;
Eff. August 1, 2002.

.0507 DEFINITIONS

The following is a list of definitions for terms found in Section .0500 of this Subchapter.

(1) Approved base rate: The larger of a person's January 1, 1997 through December 31, 1997 or August 1, 1999 through July 31, 2000 annual water use rate from the Cretaceous aquifer system, or an adjusted water use rate determined through negotiation with the Division using documentation provided by the applicant of:
  (a) water use reductions made since January 1, 1992,
  (b) use of wells for which funding has been approved or for which plans have been approved by the Division of Environmental Health by the effective date of this Rule,
  (c) the portion of a plant nursery operation using low volume micro-irrigation, or
  (d) other relevant information.
(2) Aquifer: Water-bearing earth materials that are capable of yielding water in usable quantities to a well or spring.
(3) Aquifer storage and recovery program (ASR): Controlled injection of water into an aquifer with the intent to store water in the aquifer for subsequent withdrawal and use.
(4) Confining unit: A geologic formation that does not yield economically practical quantities of water to wells or springs. Confining units separate aquifers and slow the movement of ground water.
(5) Cretaceous aquifer system: A system of aquifers in the North Carolina coastal plain that is comprised of water-bearing earth materials deposited during the Cretaceous period of geologic time. The extent of the Cretaceous Aquifer System is defined in the hydrogeological framework and includes the Peedee, Black Creek, Upper Cape Fear and Lower Cape Fear aquifers.
(6) Dewatering: Dewatering occurs when aquifer water levels are depressed below the top of a confined aquifer or water table declines adversely affect the resource.
(7) Flat rates: Unit price remains the same regardless of usage within customer class.
(8) Fresh water: Water containing chloride concentrations equal to or less than 250 milligrams per liter.
(9) Gravel pack: Sand or gravel sized material inside the well bore and outside the well screen and casing.
(10) Ground water: Water in pore spaces or void spaces of subsurface sediments or consolidated rock.
(11) Hydrogeological framework: A three-dimensional representation of aquifers and confining units that is stored in Division data bases and may be adjusted by applicant supplied information.
(12) Increasing block rates: Unit price increases with additional usage.
(13) Intermittent users: Persons who withdraw ground water less than 60 days per calendar year; or who withdraw less than 15 million gallons of ground water in a calendar year; or aquaculture operations licensed under the authority of G.S. 106-761 using water for the initial filling of ponds or refilling of ponds no more frequently than every five years.
(14) Observation well: A non-pumping well screened in a particular aquifer where water levels can be measured and water samples can be obtained.
(15) Pumping water level: The depth to ground water in a pumping well as measured from a known land surface elevation. Measurements shall be made four hours after pumping begins. Measurements shall be within accuracy limits of plus or minus 0.10 feet.
(16) Quantity based surcharges: Surcharges billed with usage over a certain determined quantity.
(17) Salt water: Water containing chloride concentrations in excess of 250 milligrams per liter.
(18) Salt water encroachment: The lateral or vertical migration of salt water toward areas occupied by fresh water. This may occur in aquifers due to natural or man-made causes.
(19) Seasonal rates: Unit prices change according to the season.
(20) Static water level: The depth to ground water in a non-pumping well as measured from a known land surface elevation. Measurements shall be made after pumping has ceased for 12 hours. Measurements shall be within accuracy limits of plus or minus 0.10 feet.

(21) Unaccounted for water: The difference between the total water entering the system (produced and purchased) and the total metered or otherwise accounted for water usage.

(22) Water table: The water level in an unconfined aquifer.

History Note: *Authority G.S. 143-215.14;*
Eff. August 1, 2002.

Attachment D

(2) Session Law 2006-246 Section 9(c) Post-Construction Practices

propose using any existing State or local program that relates to the minimum measures to meet, either in whole or in part, the requirements of the minimum measures.

SECTION 8. Exclusions from Post-Construction Practices. – The post-construction practices required by Section 9 of this act shall not apply to any of the following:

(1) Development in an area where the requirements of Section 9 of this act are applicable that is conducted pursuant to one of the following authorizations, provided that the authorization was obtained prior to the effective date of the post-construction stormwater control requirements in the area and the authorization is valid, unexpired, unrevoked, and not otherwise terminated:

a. A building permit pursuant to G.S. 153A-357 or G.S. 160A-417.

b. A site-specific development plan as defined by G.S. 153A-344.1(b)(5) and G.S. 160A-385.1(b)(5).

c. A phased development plan approved pursuant to G.S. 153A-344.1 for a project located in the unincorporated area of a county that is subject to the requirements of Section 9 of this act, if the Commission is responsible for implementation of the requirements of Section 9 of this act, that shows:

1. For the initial or first phase of development, the type and intensity of use for a specific parcel or parcels, including at a minimum, the boundaries of the project and a subdivision plan that has been approved pursuant to G.S. 153A-330 through G.S. 153A-335.

2. For any subsequent phase of development, sufficient detail so that implementation of the requirements of Section 9 of this act to that phase of development would require a material change in that phase of the plan.

d. A vested right to the development under G.S. 153A-344(b), 153A-344.1, 160A-385(b), or 160A-385.1 issued by a local government that implements Section 9 of this act.

e. A vested right to the development pursuant to common law.

(2) Redevelopment.

SECTION 9. Post-Construction Practices. –

(a) For post-construction requirements, a program will be deemed compliant for the areas where it is implementing any of the following programs:

(1) Water Supply Watershed I (WS-I) – 15A NCAC 2B.0212.

(2) Water Supply Watershed II (WS-II) – 15A NCAC 2B.0214.

(3) Water Supply Watershed III (WS-III) – 15A NCAC 2B.0215.

(4) Water Supply Watershed IV (WS-IV) – 15A NCAC 2B.0216.

(5) Freshwater High Quality Waters (HQW) – 15A NCAC 2H.1006.

(6) Freshwater Outstanding Resource Waters (ORW) – 15A NCAC 2H.1007.

(7) The Neuse River Basin Nutrient Sensitive Waters (NSW) Management Strategy – 15A NCAC 2B.0235.

(8) The Tar-Pamlico River Basin Nutrient Sensitive (NSW) Management Strategy – 15A NCAC 2B.0258.

(9) The Randleman Lake Water Supply Watershed Nutrient Management Strategy – 15A NCAC 2B.0251.

(b) In order to fulfill the post-construction minimum measure program requirement, a permittee, delegated program, or regulated entity may use the Department's model ordinance, design its own post-construction practices based on the Department's guidance on scientific and engineering standards for best management practices (BMPs), incorporate the post-construction model practices described in this act, or develop its own comprehensive watershed plan that is determined by the Department to meet the post-construction stormwater management measure required by 40 Code of Federal Regulations § 122.34(b)(5) (1 July 2003 Edition).

(c) Permittees, delegated programs, and regulated entities must require stormwater controls for a project that disturbs one acre or more of land, including a project that disturbs less than one acre of land that is part of a larger common plan of development or sale. The stormwater controls shall be appropriate to the project's level of density as follows:

(1) Post-construction model practices for low-density projects. – A project that is located within one-half mile of and draining to Shellfish Resource Waters is a low-density project if it contains no more than twelve percent (12%) built-upon area. A project that is not located within one-half mile of Shellfish Resource Waters is a low-density project if it contains no more than twenty-four percent (24%) built-upon area or no more than two dwelling units per acre. Low-density projects must use vegetated conveyances to the maximum extent practicable to transport stormwater runoff from the project. On-site stormwater treatment devices such as infiltration areas, bioretention areas, and level spreaders may also be used as added controls for stormwater runoff. A project with an overall density at or below the low-density thresholds, but containing areas with a density greater than the overall project density, may be considered low density as long as the project meets or exceeds the post-construction model practices for low-density projects and locates the higher density in upland areas and away from surface waters and drainageways to the maximum extent practicable.

(2) Post-construction model practices for high-density projects. – A project that is located within one-half mile of and draining to Shellfish Resource Waters is a high-density project if it contains more than twelve percent (12%) built-upon area. A project that is not located within one-half mile of Shellfish Resource Waters is a high-density project if it contains more than twenty-four percent (24%) built-upon area or more than two dwelling units per acre. High-density projects

must use structural stormwater management systems that will control and treat runoff from the first one inch of rain unless the project is in a county that is subject to the Coastal Area Management Act of 1974, in which case the project must use structural stormwater management systems that will control and treat runoff from the first one and one-half inches of rain. In addition, projects that are located within one-half mile and draining to Shellfish Resource Waters must control and treat the difference in the stormwater runoff from the predevelopment and post-development conditions for the one-year, 24-hour storm. The structural stormwater management system must also meet the following design standards:

a. Draw down the treatment volume no faster than 48 hours, but no slower than 120 hours.
b. Discharge the storage volume at a rate equal to or less than the predevelopment discharge rate for the one-year, 24-hour storm.
c. Remove an eighty-five percent (85%) average annual amount of Total Suspended Solids.
d. Meet the General Engineering Design Criteria set out in 15A NCAC 02H .1008(c).
e. Wet detention ponds designed in accordance with the requirements of subsection (h) of this section may be used for projects draining to Class SA waters.

(d) Permittees, delegated programs, and regulated entities must require built-upon areas to be located at least 30 feet landward of all perennial and intermittent surface waters. For purposes of this section, a surface water shall be present if the feature is shown on either the most recent version of the soil survey map prepared by the Natural Resources Conservation Service of the United States Department of Agriculture or the most recent version of the 1:24,000 scale (7.5 minute) quadrangle topographic maps prepared by the United States Geologic Survey (USGS). Relief from this requirement may be allowed when surface waters are not present in accordance with the provisions of 15A NCAC 02B .0233(3)(a). In addition, an exception to this requirement may be pursued in accordance with subsection (a) of Section 11 of this act.

(e) Permittees, delegated programs, and regulated entities must implement or require a fecal coliform reduction program that controls, to the maximum extent practicable, the sources of fecal coliform. At a minimum, the program shall include the development and implementation of an oversight program to ensure proper operation and maintenance of on-site wastewater treatment systems for domestic wastewater. For municipalities, this program may be coordinated with local county health departments.

(f) Permittees, delegated programs, and regulated entities must impose or require recorded deed restrictions and protective covenants that ensure development activities will maintain the project consistent with approved plans.

(g) Permittees, delegated programs, and regulated entities must implement or require an operation and maintenance plan that ensures the adequate long-term operation of the structural BMPs required by the program. The operation and

Attachment D

(3) Regulation of Surface Water Transfers §142-215.22I

as required by this subsection.

(e) Any person who is required to register a water transfer or withdrawal under this section and fails to do so shall pay, in addition to the registration fee required under G.S. 143- 215.3(a)(1a) and G.S. 143-215.3(a)(1b), a late registration fee of five dollars ($5.00) per day for each day the registration is late up to a maximum of five hundred dollars ($500.00). A person who is required to update a registration under this section and fails to do so shall pay a fee of five dollars ($5.00) per day for each day the updated information is late up to a maximum of five hundred dollars ($500.00). A late registration fee shall not be charged to a farmer who submits a registration that pertains to farming operations. (1991, c. 712, s. 1; 1993, c. 344, s. 1; c. 553, s. 81; 1998-168, s. 3.)

§ 143-215.22I. Regulation of surface water transfers.

(a) No person, without first securing a certificate from the Commission, may:

(1) Initiate a transfer of 2,000,000 gallons of water or more per day from one river basin to another.

(2) Increase the amount of an existing transfer of water from one river basin to another by twenty-five percent (25%) or more above the average daily amount transferred during the year ending July 1, 1993, if the total transfer including the increase is 2,000,000 gallons or more per day.

(3) Increase an existing transfer of water from one river basin to another above the amount approved by the Commission in a certificate issued under G.S. 162A-7 prior to July 1, 1993.

(b) Notwithstanding the provisions of subsection (a) of this section, a certificate shall not be required to transfer water from one river basin to another up to the full capacity of a facility to transfer water from one basin to another if the facility was existing or under construction on July 1, 1993.

(c) An applicant for a certificate shall petition the Commission for the certificate. The petition shall be in writing and shall include the following:

(1) A description of the facilities to be used to transfer the water, including the location and capacity of water intakes, pumps, pipelines, and other facilities.

(2) A description of the proposed uses of the water to be transferred.

(3) The water conservation measures to be used by the applicant to assure efficient use of the water and avoidance of waste.

(4) Any other information deemed necessary by the Commission for review of the proposed water transfer.

(d) Upon receipt of the petition, the Commission shall hold a public hearing on the proposed transfer after giving at least 30 days' written notice of the hearing as follows:

(1) By publishing notice in the North Carolina Register.

(2) By publishing notice in a newspaper of general circulation in the area of the river basin downstream from the point of withdrawal.

(3) By giving notice by first-class mail to each of the following:

a. A person who has registered under this Part a water withdrawal or transfer from the same river basin where the water for the proposed transfer would be withdrawn.

b. A person who secured a certificate under this Part for a water transfer from the same river basin where the water for the proposed transfer would be withdrawn.

c. A person holding a National Pollutant Discharge Elimination System (NPDES) wastewater discharge permit exceeding 100,000 gallons per day for a discharge located downstream from the proposed withdrawal point of the proposed transfer.

d. The board of county commissioners of each county that is located entirely or partially within the river basin that is the source of the proposed transfer.

e. The governing body of any public water supply system that withdraws water downstream from the withdrawal point of the proposed transfer.

(e) The notice of the public hearing shall include a nontechnical description of the applicant's request and a conspicuous statement in bold type as to the effects of the water transfer on the source and receiving river basins. The notice shall further indicate the procedure to be followed by anyone wishing to submit comments on the proposed water transfer.

(f) In determining whether a certificate may be issued for the transfer, the Commission shall specifically consider each of the following items and state in writing its findings of fact with regard to each item:

(1) The necessity, reasonableness, and beneficial effects of the amount of surface water proposed to be transferred and its proposed uses.

(2) The present and reasonably foreseeable future detrimental effects on the source river basin, including present and future effects on public, industrial, and agricultural water supply needs, wastewater assimilation, water quality, fish and wildlife habitat, hydroelectric power generation, navigation, and recreation. Local water supply plans that affect the source major river basin shall be used to evaluate the projected future municipal water needs in the source major river basin.

(2a) The cumulative effect on the source major river basin of any water transfer or consumptive water use that, at the time the Commission considers the application for a certificate is occurring, is authorized under this section, or is projected in any local water supply plan that has been submitted to the Department in accordance with G.S. 143-355(l).

(3) The detrimental effects on the receiving river basin, including effects on water quality, wastewater assimilation, fish and wildlife habitat, navigation, recreation, and flooding.

(4) Reasonable alternatives to the proposed transfer, including their probable costs, and environmental impacts.

(5) If applicable to the proposed project, the applicant's present and proposed use of impoundment storage capacity to store water during high-flow periods for use during low-flow periods and the applicant's right of withdrawal under G.S. 143-215.44 through G.S. 143-215.50.

(6) If the water to be withdrawn or transferred is stored in a multipurpose reservoir constructed by the United States Army Corps of Engineers, the purposes and water storage allocations established for the reservoir at the time the reservoir was authorized by the Congress of the United States.

(7) Any other facts and circumstances that are reasonably necessary to carry out the purposes of this Part.

(f1) An environmental assessment as defined by G.S. 113A- 9(1) shall be prepared for any petition for a certificate under this section. The determination of whether an environmental impact statement shall also be required shall be made in accordance with the provisions of Article 1 of Chapter 113A of the General Statutes. The applicant who petitions the Commission for a certificate under this section shall pay the cost of special studies necessary to comply with Article 1 of Chapter 113A of the General Statutes.

(g) A certificate shall be granted for a water transfer if the applicant establishes and the Commission concludes by a preponderance of the evidence based upon the findings of fact made under subsection (f) of this section that: (i) the benefits of the proposed transfer outweigh the detriments of the proposed transfer, and (ii) the detriments have been or will be mitigated to a reasonable degree. The conditions necessary to ensure that the detriments are and continue to be mitigated to a reasonable degree shall be attached to the certificate in accordance with subsection (h) of this section.

(h) The Commission may grant the certificate in whole or in part, or deny the certificate. The Commission may also grant a certificate with any conditions attached that the Commission believes are

necessary to achieve the purposes of this Part. The conditions may include mitigation measures proposed to minimize any detrimental effects of the proposed transfer and measures to protect the availability of water in the source river basin during a drought or other emergency. The certificate shall include a drought management plan that specifies how the transfer shall be managed to protect the source river basin during drought conditions. The certificate shall indicate the maximum amount of water that may be transferred. No person shall transfer an amount of water that exceeds the amount in the certificate.

(i) In cases where an applicant requests approval to increase a transfer that existed on July 1, 1993, the Commission shall have authority to approve or disapprove only the amount of the increase. If the Commission approves the increase, however, the certificate shall be issued for the amount of the existing transfer plus the requested increase. Certificates for transfers approved by the Commission under G.S. 162A-7 shall remain in effect as approved by the Commission and shall have the same effect as a certificate issued under this Part.

(j) In the case of water supply problems caused by drought, a pollution incident, temporary failure of a water plant, or any other temporary condition in which the public health requires a transfer of water, the Secretary of the Department of Environment and Natural Resources may grant approval for a temporary transfer. Prior to approving a temporary transfer, the Secretary of the Department of Environment and Natural Resources shall consult with those parties listed in G.S. 143-215.22I(d)(3) that are likely to be affected by the proposed transfer. However, the Secretary of the Department of Environment and Natural Resources shall not be required to satisfy the public notice requirements of this section or make written findings of fact and conclusions in approving a temporary transfer under this subsection. If the Secretary of the Department of Environment and Natural Resources approves a temporary transfer under this subsection, the Secretary shall specify conditions to protect other water users. A temporary transfer shall not exceed six months in duration, but the approval may be renewed for a period of six months by the Secretary of the Department of Environment and Natural Resources based on demonstrated need as set forth in this subsection.

(k) The substantive restrictions and conditions upon surface water transfers authorized in this section may be imposed pursuant to any federal law that permits the State to certify, restrict, or condition any new or continuing transfers or related activities licensed, relicensed, or otherwise authorized by the federal government.

(l) When any transfer for which a certificate was issued under this section equals eighty percent (80%) of the maximum amount authorized in the certificate, the applicant shall submit to the Department a detailed plan that specifies how the applicant intends to address future foreseeable water needs. If the applicant is required to have a local water supply plan, then this plan shall be an amendment to the local water supply plan required by G.S. 143-355(l). When the transfer equals ninety percent (90%) of the maximum amount authorized in the certificate, the applicant shall begin implementation of the plan submitted to the Department.

(m) It is the public policy of the State to maintain, protect, and enhance water quality within North Carolina. Further, it is the public policy of the State that the cumulative impact of transfers from a source river basin shall not result in a violation of the antidegradation policy set out in 40 Code of Federal Regulations § 131.12 (l July 1997 Edition) and the statewide antidegradation policy adopted pursuant thereto. (1993, c. 348, s. 1; 1997-443, ss. 11A.119(a), 15.48(c); 1997-524, s. 1; 1998-168, s. 4.)

Attachment D

(4) North Carolina Administrative Code NCAC 15A NCAC 02E .0401

SECTION .0400 - REGULATION OF SURFACE WATER TRANSFERS

15A NCAC 02E .0401 APPLICABILITY

(a) Pursuant to G.S. 143-215.22G(3), the amount of a transfer shall be determined by the amount of water moved from the source basin to the receiving basin, less the amount of the water returned to the source basin.

(b) Pursuant to G.S. 143-215.22G(3)(a) and 143-215.22G(3)(b), and notwithstanding the definition of basin in G.S. 143-215.22G(1), the following are not transfers:

(1) The discharge point is situated upstream of the withdrawal point such that the water discharged will naturally flow past the withdrawal point.

(2) The discharge point is situated downstream of the withdrawal point such that water flowing past the withdrawal point will naturally flow past the discharge point.

(c) The withdrawal of surface water from one river basin by one person and the purchase of all or any part of this water by another party, resulting in a discharge to another river basin, shall be considered a transfer. The person owning the pipe or other conveyance that carries the water across the basin boundary shall be responsible for obtaining a certificate from the Commission. Another person involved in the transfer may assume responsibility for obtaining the certificate, subject to approval by the Division of Water Resources.

(d) Under G.S. 143-215.22I(b), a certificate is not required to transfer water from one river basin to another up to the full capacity of a facility to transfer water from one basin to another if the facility was existing or under construction on July 1, 1993. The full capacity of a facility to transfer water shall be determined as the capacity of the combined system of withdrawal, treatment, transmission, and discharge of water, limited by the element of this system with the least capacity as existing or under construction on July 1, 1993.

History Note: *Authority G.S. 143-215.22G; 143-215.22I; 143B-282(a)(2);*
Eff. September 1, 1994.