

**Proposed Interbasin Transfer
Certificate Modification
Towns of Cary, Apex, Morrisville and
Wake County**

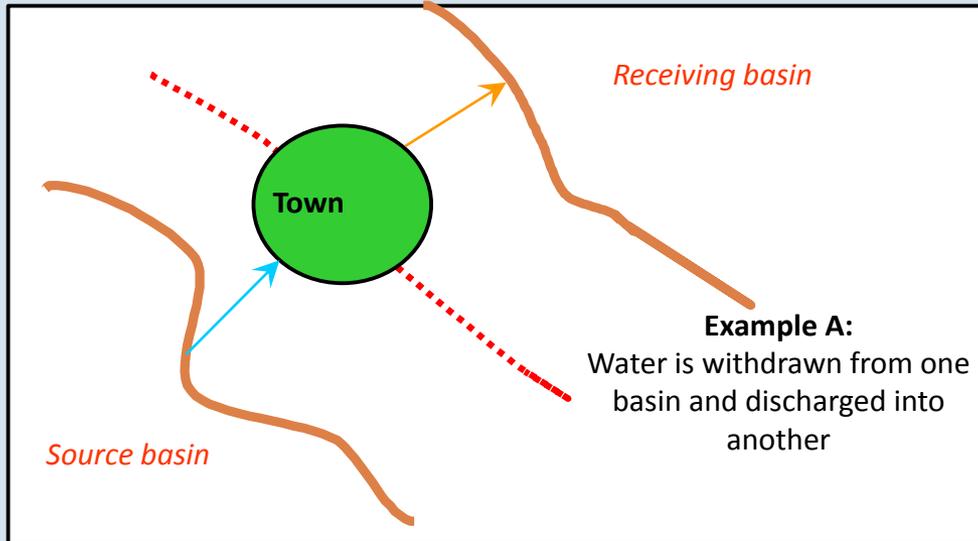
**Water Allocation Committee
Environmental Management Commission
March 11, 2015**

Outline

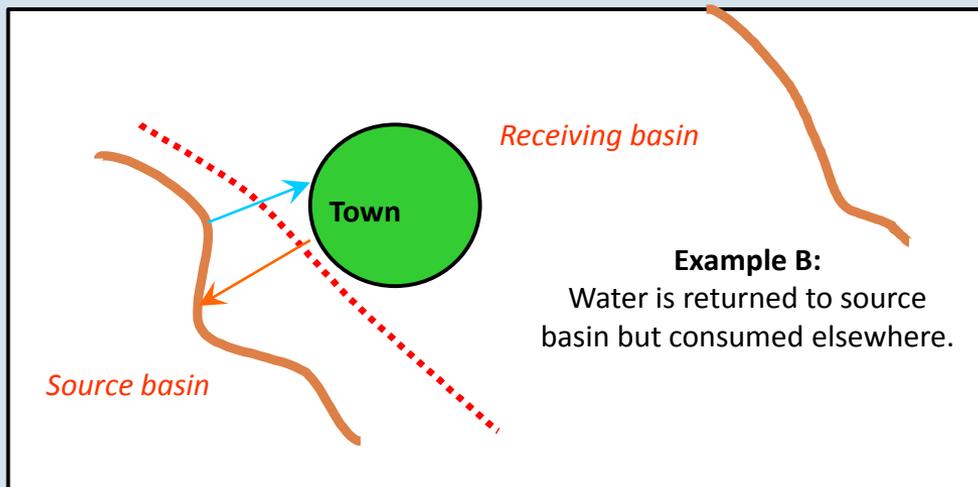
- Definitions and Thresholds
- IBT Certificate Modification
 - Description
 - Timeline
 - Completion of Statutory Requirements
- Findings of Fact
- Role of the WAC

Simplified View of IBT

$$\text{Transfer} = \text{Withdrawal} - \text{Return}$$



Example A:
Withdrawal = 4.0 mgd
Return = 0.0 mgd
IBT = 4.0 mgd

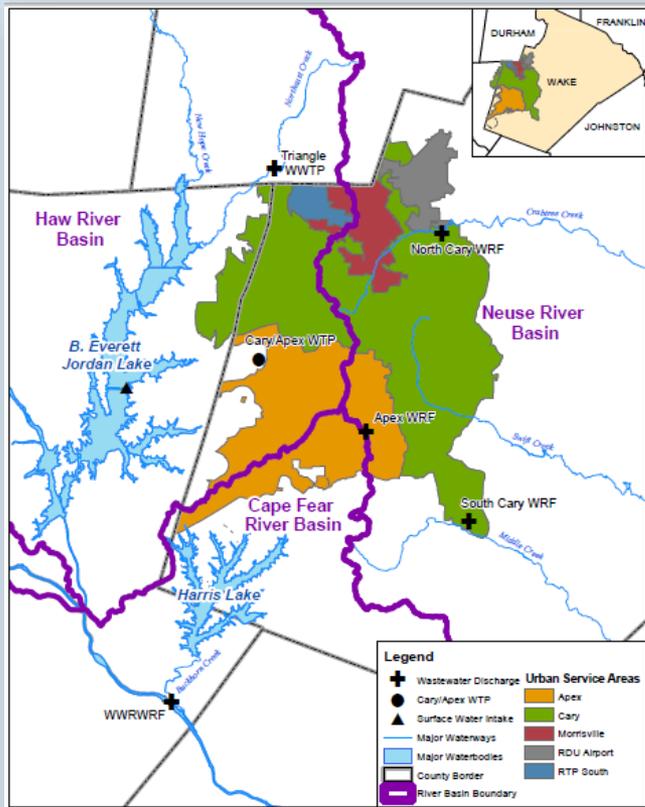


Example B:
Withdrawal = 4.0 mgd
Return = 1.5 mgd
IBT = 2.5 mgd

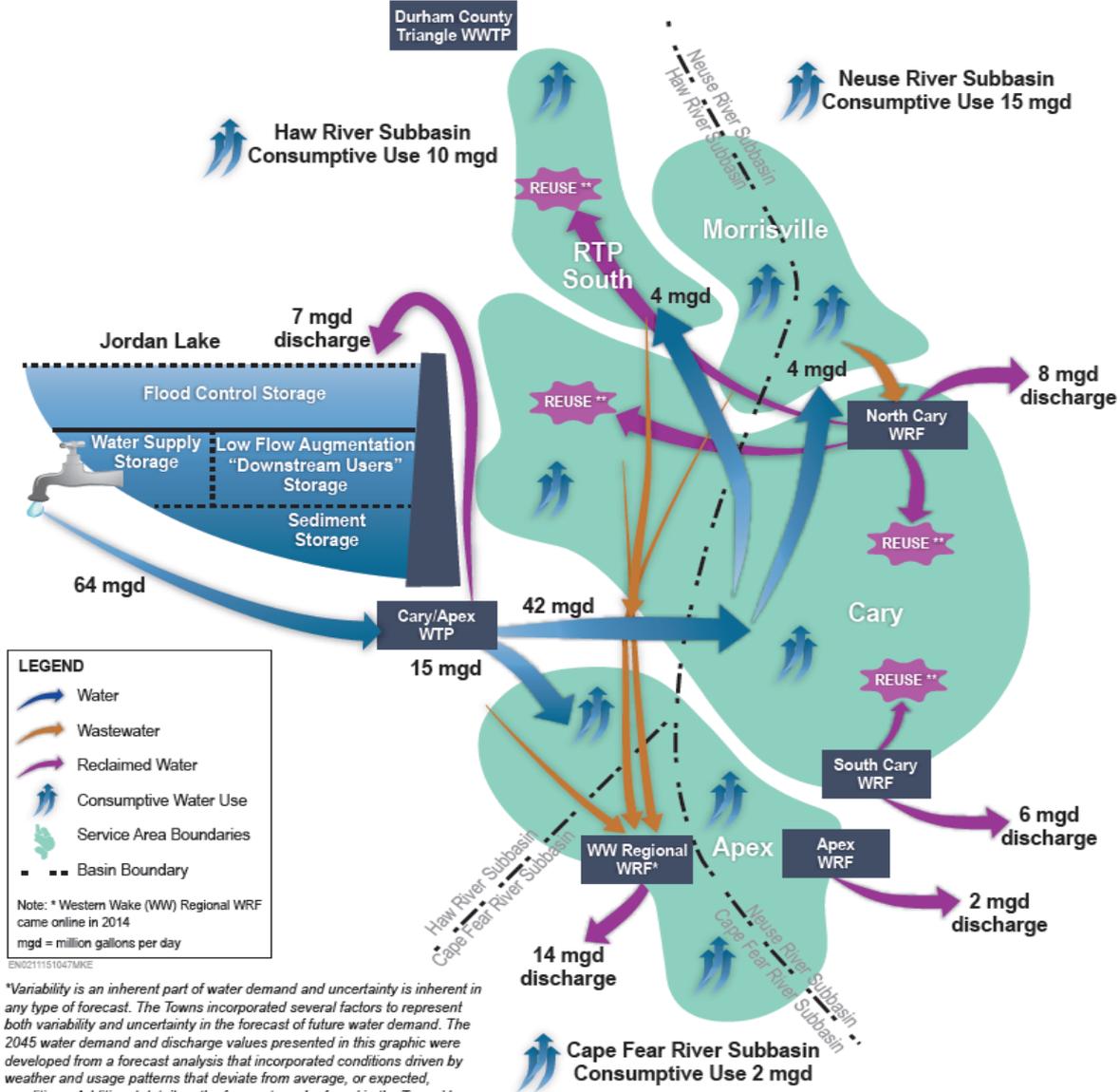
Requested Modification

Primary Applicant:	Towns of Cary, Apex, and Morrisville and Wake County	
Source Basin:	Haw	
Receiving Basins:	Neuse, Cape Fear	
Existing IBT Certificate:	24 MGD (max day)	
Existing IBT Certificate Equivalent:	22 MGD (avg day max month)	
Existing IBT (2013 data):	16 MGD (avg day max month)	
	Haw to Neuse (2013 data):	15.95 MGD
	Haw to Cape Fear (2013 data):	0.05 MGD
Total Requested IBT (<u>2045 Demand</u>):	33 MGD (avg day max month)	
	Haw to Neuse:	31 MGD
	Haw to Cape Fear:	2 MGD

Cary/Apex Regional Water Systems



2045 Projected Maximum Monthly Average Day Demand Conditions, for Requested IBT Certificate Modification*



"Variability is an inherent part of water demand and uncertainty is inherent in any type of forecast. The Towns incorporated several factors to represent both variability and uncertainty in the forecast of future water demand. The 2045 water demand and discharge values presented in this graphic were developed from a forecast analysis that incorporated conditions driven by weather and usage patterns that deviate from average, or expected, conditions. Additional detail on the forecast can be found in the Towns' Long Range Water Resources Plan.

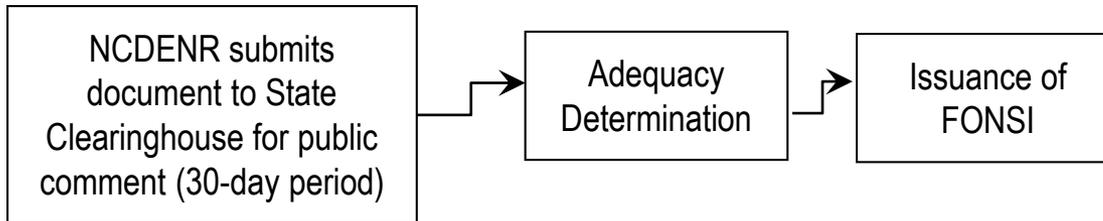
**2045 water demand on Jordan Lake and the resulting IBT accounts for the demand reductions attributed to existing reclaimed water system customers.

Requirements of IBT Statute

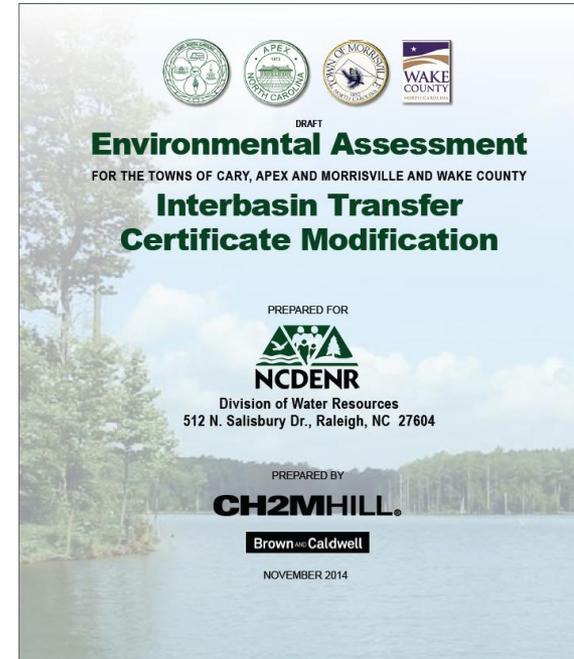
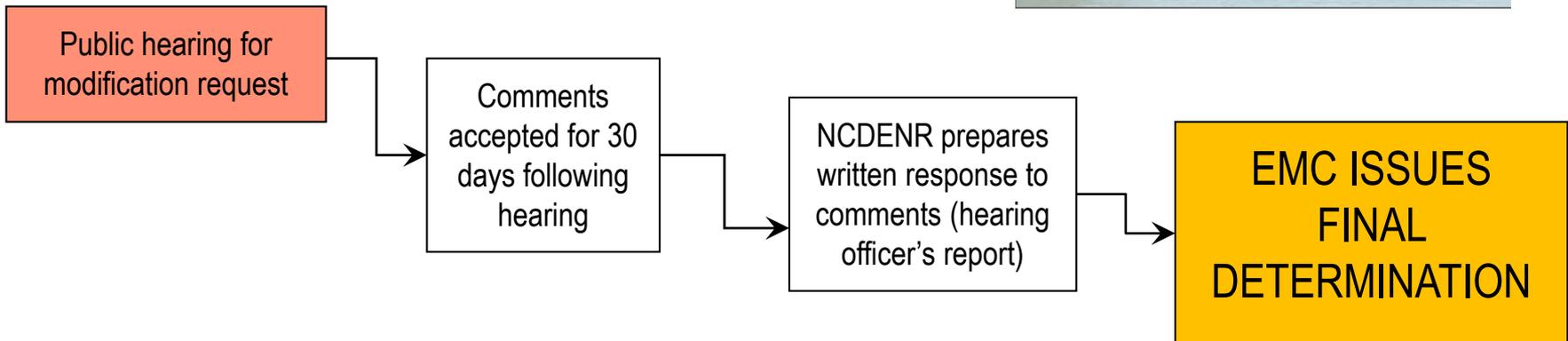
Modification to an Existing IBT certificate

I. Applicant submits Notice of Intent to file a request for modification.

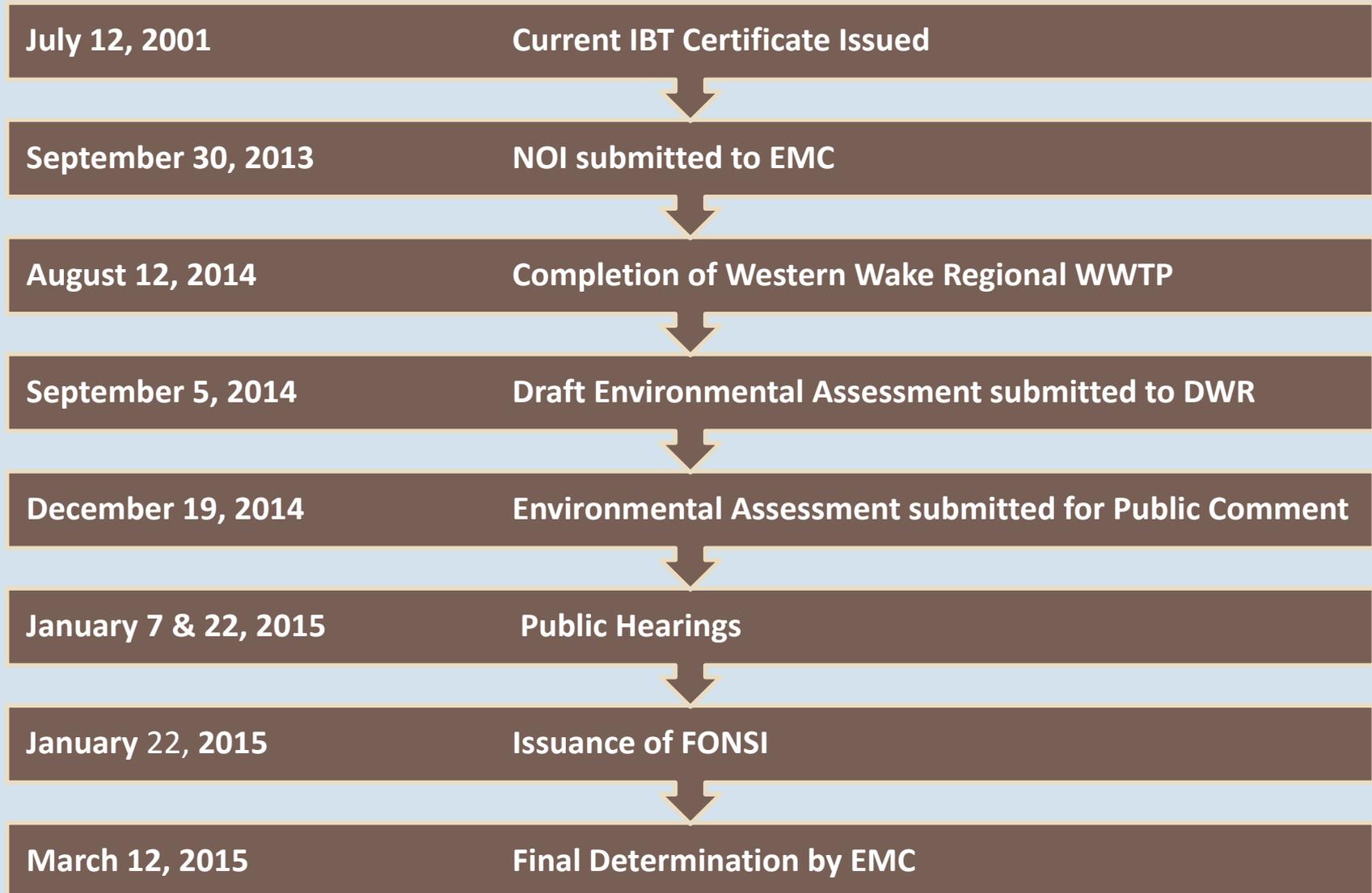
II. Applicant prepares environmental document (EA) pursuant to State Environmental Policy Act (SEPA).



III. NCDENR publishes a request for modification in the NC Register.



Project Timeline



EMC - Basis for Decision

- § 143-215.22L (v) Modification of Certificate
 - g. “The Commission shall make a final determination whether to grant the requested modification based on the factors set out in subsection (k) [Findings of Fact – 9 factors] of this section, information provided by the certificate holder, and any other information the Commission deems relevant. The Commission shall state in writing its findings of fact and conclusions of law with regard to each factor.”

Findings of Fact

- § 143-215.22L (k) requires the EMC to specifically consider:
 1. The necessity, reasonableness, and beneficial effects of transfer amount
 2. Detrimental effects on the source river basin
 3. Cumulative effects on the source major river basin of any current or projected water transfer or consumptive water use
 4. Detrimental effects on the receiving basin
 5. Reasonable alternatives to the proposed transfer
 6. Use of impounded storage
 7. Purposes and water storage allocations in a US Army Corps of Engineers multipurpose reservoir
 8. Compare the water system service area to the locations of both the source and receiving basins
 9. Any other facts or circumstances

1. Transfer amount is necessary, reasonable, and has beneficial effects

- Existing IBT limitations will be exceeded between 2020 and 2025
 - 2015 population: 215,800
 - 2015 Average day water demand (ADD): 24.1 MGD
 - 2045 population: 354,800
 - 2045 ADD: 45.1 MGD

Table 1. Forecast of IBT from the Haw River Basin to the Neuse River Basin and Cape Fear River Basin, Maximum Month Average Day

	2012a	2013 a	2015	2020	2025	2030	2035	2040	2045
IBT (MGD)	17.1	16.1	19.8	22.8	26.1	28.7	31.1	32.4	33

2. Insignificant Detrimental Effects on the Source River Basin

- Jordan Lake's low-flow augmentation pool never goes below 20 percent of capacity
- 0.4% increase in duration when the lake level is below 210 feet msl
- 0.6 % increase in duration when the water supply and water quality pools operate below 80 percent capacity
- Local ordinances minimize secondary effects caused by growth in Cary, Apex and Morrisville and Wake County

Table 2: Comparison of the Percentage of the Period of Record below the Key Hydrologic Indicators

Model Scenario	2010 Baseline	2045 Baseline	2045 Requested IBT	2045 Increased Neuse Discharge IBT
EA Alternative		Alt. 1 (no action) and 3a through 3e	2a (preferred)	2b
Jordan Lake Level < 210 feet msl ¹	0.0%	1.6%	2.0%	2.0%
Jordan Lake Level < 210 feet msl, Memorial Day to Labor Day ²	0.0%	0.2%	0.3%	0.4%
Water Quality Pool <80% ³	13.5%	15.8%	16.4%	16.9%
Water Quality Pool <60% ⁴	5.6%	5.9%	6.4%	6.5%
Water Quality Pool <40% ⁵	0.9%	0.5%	0.7%	0.8%
Water Quality Pool <20% ⁶	0.0%	0.0%	0.0%	0.0%
Water Supply Pool <50% ⁷	0.0%	1.6%	1.9%	1.9%
<i>Flows downstream of Jordan Dam in the Cape Fear receiving basin</i>				
Flow at Lillington < 550 cfs ⁸	13.9%	15.6%	15.9%	16.4%
Flow at Fayetteville < 600 cfs ⁹	5.9%	6.1%	6.3%	6.7%

3. Insignificant Cumulative Effects on the Source Major River Basin

- 0.4% increase in duration in the duration when the lake level is below 210 feet msl
- All downstream demands are met 100 percent of the time for all model scenarios; no shortages result from the increase in future demands or from either of the scenarios with an increase in IBT.

Table 3. Comparison of Downstream User Water Supply Availability

Percent of Time the Full Projected Water Supply Withdrawals are Met¹
 Demand values are presented in parentheses (MGD)

Water System/Withdrawer	2010 Baseline	2045 Baseline	2045 Requested IBT	2045 Increased Neuse Discharge IBT
		Alt. 1 (no action) and 3a through 3e	2a (preferred)	2b
City of Sanford	100% (6.54)	100% (17.83)	100% (17.83)	100% (17.83)
Harnett County	100% (16.28)	100% (50.36)	100% (50.36)	100% (50.36)
Fayetteville PWC	100% (29.38)	100% (69.04)	100% (69.04)	100% (69.04)
City of Dunn	100% (3.41)	100% (3.07)	100% (3.07)	100% (3.07)
Smithfield Foods	100% (2.25)	100% (2.25)	100% (2.25)	100% (2.25)
Lower Cape Fear Water and Sewer Authority	100% (25.16)	100% (20.79)	100% (20.79)	100% (20.79)
Cape Fear Public Utility Authority	100% (4.67)	100% (20.12)	100% (20.12)	100% (20.12)

¹: The reliability for these systems are without the Water Shortage Response Plans being included in the model.

Table 2: Comparison of the Percentage of the Period of Record below the Key Hydrologic Indicators

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Flow at Fayetteville < 600 cfs ⁹	5.9%	6.1%	6.3%	6.7%

4. Insignificant Detrimental Effects on the Receiving Basins

- Neuse River basin:
 - Wastewater discharges within the limits of the current NPDES permitted flows.
 - Stream flows are not expected to change significantly.
- Cape Fear River basin
 - In-stream flow patterns will not be impacted
 - Target flows at Lillington will continue to be met
 - All downstream demands are met 100 percent of the time for all model scenarios

5. Reasonable Alternatives to the Proposed Transfer Considered

1. No action (Updated 2001 IBT Certificate; 22 mgd total IBT)
2. Increase IBT:
 - **Alternative 2a** – Increase in IBT to meet 2045 demands (**Proposed IBT Certificate Modification**; 33 MGD total IBT)
 - Alternative 2b – Increase in IBT to meet 2045 demands and use current permitted wastewater capacity (44 MGD total IBT)
3. Avoid IBT increase (Updated 2001 IBT Certificate; 22 mgd total IBT):
 - Alternative 3a – Transfer of untreated wastewater from the Neuse River basin to the WWRWRF, which discharges to the Cape Fear River basin.
 - Alternative 3b – Transfer of treated wastewater effluent from the Neuse River basin to the Cape Fear River basin
 - Alternative 3c – Use a water supply source in the Neuse River basin
 - Alternative 3d – Use groundwater as a water supply source
 - Alternative 3e – Use additional water resources management tools

6. Applicants' Use of Impoundment Storage Capacity Not Applicable

- Petitioners do not own, manage, or maintain a water supply impoundment.

7. Consistent with Purposes of Corps of Engineers Multi-Purpose Reservoir

- Insignificant change in impacts to water quality pool & water supply pool
- 0.4% increase in duration when the lake level is below 210 feet msl
- 0.1% increase in time during the prime boating season when the lake will drop below 210 feet msl

Table 2: Comparison of the Percentage of the Period of Record below the Key Hydrologic Indicators

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8. Applicants' service area is located in both the source and receiving river basins

Table 4. Percentage of Service Area in Individual River Basins

Municipality	River Basin		
	Neuse	Haw	Cape Fear
Town of Cary	71%	29%	-
Town of Apex	19%	59%	22%
Town of Morrisville	81%	19%	-
Wake County (RTP South)	-	100%	-

9. Any Other Facts or Circumstances that are Reasonably Necessary

- Specific conditions in IBT certificate for:
 - Submitted within 90 days of approval:
 - Water Conservation Plan
 - Drought Management Plan
 - Compliance and Monitoring Plan
 - Quarterly Monitoring Reports
 - Reopen, amend, and modify clauses
 - No selling of transferred water to water systems who are not co-applicants on the Certificate
 - Must provide access to the existing intake site to other Jordan Lake water allocation holders

Response to Public Hearing Comments

- 61 commenters including, oral and written (delivered by hand, mail, and email)
 - 17 were in favor of the request
 - 44 were opposed to the request as presented
- 36 comment categories
- Additional research conducted to respond to comments submitted included:
 - Cost analysis including alternative comparisons.
 - Hydrologic modeling analysis of 10% reduction of inflows in basin.

EMC - Authority

- § 143-215.22L (v) Modification of Certificate
 - h. “The Commission shall grant the requested modification if it finds that the certificate holder has established by a preponderance of the evidence that the requested modification satisfies the requirements of subsection (m) [Burden and Standard of Proof] of this section. The Commission may grant the requested modification in whole or in part, or deny the request, and may impose such limitations and conditions on the modified certificate as it deems necessary and relevant to the modification.”

§ 143-215.22L (m)

- Final Determination: Burden and Standard of Proof; Specific Findings. – The Commission shall grant a certificate for a water transfer if the Commission finds that the applicant has established by a preponderance of the evidence all of the following:
 - (1) The benefits of the proposed transfer outweigh the detriments of the proposed transfer. In making this determination, the Commission shall be guided by the approved environmental document and the policy set out in subsection (t) of this section.
 - (2) The detriments have been or will be mitigated to the maximum degree practicable.
 - (3) The amount of the transfer does not exceed the amount of the projected shortfall under the applicant's water supply plan after first taking into account all other sources of water that are available to the applicant.
 - (4) There are no reasonable alternatives to the proposed transfer.

Action – Request WAC Support

- Division of Water Resources is requesting the Water Allocation Committee support the requested IBT Modification, as presented, to go before the Full EMC tomorrow, March 12, 2015, for a Final Determination.

Contact Information

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§ 143-215.22L (k)

- Final Determination: Factors to be Considered. – 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 and conclusions of law with regard to each item:
 - (1) The necessity and reasonableness 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, economic, recreational, and agricultural water supply needs, wastewater assimilation, water quality, fish and wildlife habitat, electric power generation, navigation, and recreation. Local water supply plans for public water systems with service area located within the source river basin prepared pursuant to G.S. 143-355(l) shall be used to evaluate the projected future water needs in the source river basin that will be met by public water systems. Information on projected future water needs for public water systems with service area located within the source river basin that is more recent than the local water supply plans may be used if the Commission finds the information to be reliable. The determination shall include a specific finding as to measures that are necessary or advisable to mitigate or avoid detrimental impacts on the source river basin.

§ 143-215.22L (k) cont.

- (3) 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 petition for a certificate is occurring, is authorized under this section, or is projected in any local water supply plan for public water systems with service area located within the source river basin that has been submitted to the Department in accordance with G.S. 143-355(l).
- (4) The present and reasonably foreseeable future beneficial and detrimental effects on the receiving river basin, including present and future effects on public, industrial, economic, recreational, and agricultural water supply needs, wastewater assimilation, water quality, fish and wildlife habitat, electric power generation, navigation, and recreation. Local water supply plans prepared pursuant to G.S. 143-355(l) that affect the receiving river basin shall be used to evaluate the projected future water needs in the receiving river basin that will be met by public water systems. Information on projected future water needs that is more recent than the local water supply plans may be used if the Commission finds the information to be reliable. The determination shall include a specific finding as to measures that are necessary or advisable to mitigate or avoid detrimental impacts on the receiving river basin.

§ 143-215.22L (k) cont.

- (5) The availability of reasonable alternatives to the proposed transfer, including the potential capacity of alternative sources of water, the potential of each alternative to reduce the amount of or avoid the proposed transfer, probable costs, and environmental impacts. In considering alternatives, the Commission is not limited to consideration of alternatives that have been proposed, studied, or considered by the applicant. The determination shall include a specific finding as to why the applicant's need for water cannot be satisfied by alternatives within the receiving basin, including unused capacity under a transfer for which a certificate is in effect or that is otherwise authorized by law at the time the applicant submits the petition. The determination shall consider the extent to which access to potential sources of surface water or groundwater within the receiving river basin is no longer available due to depletion, contamination, or the declaration of a capacity use area under Part 2 of Article 21 of Chapter 143 of the General Statutes. The determination shall consider the feasibility of the applicant's purchase of water from other water suppliers within the receiving basin and of the transfer of water from another sub-basin within the receiving major river basin. Except in circumstances of technical or economic infeasibility or adverse environmental impact, the Commission's determination as to reasonable alternatives shall give preference to alternatives that would involve a transfer from one sub-basin to another within the major receiving river basin over alternatives that would involve a transfer from one major river basin to another major river basin.

§ 143-215.22L (k) cont.

- (6) 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.
- (7) 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.
- (8) Whether the service area of the applicant is located in both the source river basin and the receiving river basin.
- (9) Any other facts and circumstances that are reasonably necessary to carry out the purposes of this Part.