2015 Interbasin Transfer Certificate

Revised Compliance and Monitoring Plan

Prepared by

Town of Cary
Town of Apex

Submitted to

North Carolina
Division of Water Resources

March 2018

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1. Introduction

On March 12, 2015, the North Carolina Environmental Management Commission (EMC) granted an interbasin transfer (IBT) certificate modification to the Towns of Cary and Apex (Towns) with transfer limits of 31 million gallons per day (mgd) from the Haw River basin to the Neuse River basin, and 2 mgd from the Haw River basin to the Cape Fear River basin, calculated as a daily average of a calendar month.

In addition to the permitted transfer volume, the IBT certificate includes eight conditions:

1. **Water Conservation Plan** – Within 90 days of receipt of the IBT certificate, the Towns are required to submit a water conservation plan subject to approval by the North Carolina Division of Water Resources (NCDWR) that specifies the water conservation measures that will be implemented by the Towns to ensure the efficient use of the transferred water.
2. **Drought Management Plan** – Within 90 days of receipt of the IBT certificate, the Towns are required to submit a drought management plan subject to approval by the NCDWR that specifies how the transfer will be managed to protect the source river basin (Haw River basin) during drought conditions or other emergencies that occur within the source river basin.
3. **Compliance and Monitoring Plan** – Within 90 days of receipt of the IBT certificate, the Towns are required to submit a quarterly compliance and monitoring plan subject to approval by the NCDWR.
4. **EMC Consideration of Alternative Sources** – The EMC may reopen and amend the maximum amount of the IBT authorized if it appears that an alternative source of water is available to the Towns within the receiving basin (Neuse River basin).
5. **EMC Consideration of Future Water Demands** – The EMC may reopen and amend the certificate if it is determined that the Towns' actual future water needs are significantly less than the projected water needs at the time the certificate was granted.
6. **Resale of Transferred Water** – The Towns shall not resell the water that would be transferred pursuant to the IBT certificate to another public water system.
7. **EMC Consideration of Impacts** – The EMC may reopen the certificate and amend existing or require new conditions to ensure detrimental impacts are mitigated if environmental impacts are found to be substantially different from those on which the EMC's Findings of Fact were based.
8. **Intake Access** – The Towns shall be required to provide access at their existing intake site to other Jordan Lake water allocation holders that need access to utilize their allocations to the extent that this additional use is determined to be feasible by the NCDWR.

To meet Condition 3, the following sections of this Compliance and Monitoring Plan include a description of how the Towns will monitor the amount of IBT, and also as required by the certificate, methodologies, and schedules for reporting the following information:

- Monthly average day transfer amounts (calculated)
- Compliance with IBT certificate conditions
- Progress on mitigation measures (there are no mitigation measures required by this IBT certificate)
- Reporting

On January 18, 2018, the Interbasin Transfer Certificate was revised by Consent Judgment [N.C. Environmental Management Commission, et al v. the City of Fayetteville, et al. 9Cumberland Co. Sup. Ct. 17 CVS 1888)] to add a new Condition 9, which is summarized below in a form comparable with the prior descriptions of Conditions 1 through 8.

9. **Required Discharge** – The Towns shall discharge to the Cape Fear River Basin and Haw River Basin receiving waters a calendar year average daily treated wastewater discharge ("Required Discharge") calculated as:

   Required Discharge = Neuse Basin Demand – 9.756 million gallons per day (mgd)

   Neuse Basin Demand is defined as the 3-year running annual average daily amount for the 3 preceding calendar years of all finished water supplied from sources within the Haw River and Cape Fear River Basins, including both billed and unbilled amounts, expressed in mgd, used by the Towns of Cary and Apex in the Neuse River Basin. Unbilled amounts of finished water use are to be quantified following the procedures of AWWA's Manual of Practice M36, *Water Audits and Loss Control Programs*.

The January 2018 Consent Judgment requires the Towns to modify this Compliance and Monitoring Plan to include protocols to implement Condition 9 and provide for timely implementation of corrective measures for compliance purposes. Compliance with the implementation protocols in this Compliance and Monitoring Plan shall be deemed to constitute compliance with Condition 9. This information is included in a new Section 3 of this Compliance and Monitoring Plan, as well as revisions to Section 4, which was previously Section 3.

2. Interbasin Transfer Calculation

The combined IBT amount from the communities served will be calculated on a daily basis. The methodology for calculating the daily IBT amount was developed in cooperation with NCDWR staff for the Towns' 2001 IBT Certificate Compliance and Monitoring Plan and is consistent with NCDWR guidelines (2009) for estimating IBT amounts as part of the local water supply planning process.

Because of the complexity of the Towns' water systems, which straddle the ridge line between IBT basins, water is transferred via wastewater discharge, potable water consumptive use, or reclaimed water consumptive use. Daily IBT is calculated based on a combination of meter data and assumptions. Daily IBT data are then used to calculate the IBT certificate compliance metric – IBT calculated as the daily average of a calendar month.

2.1 Definitions

The following definitions are used to assign collected water system data and conduct calculations for IBT compliance and monitoring, as shown by column in Table 1.

- ***Water Withdrawal/Purchase*** *(Table 1, Columns 1-4)* could occur in two ways: water withdrawal from Jordan Lake (Haw River basin) and purchases from the Neuse River basin. Currently, emergency purchases can be made via interconnections with the City of Durham and City of Raleigh water systems (Neuse River basin sources), and reclaimed water is purchased from Durham County (Neuse River basin source) to provide reclaimed water supply on a daily basis to the Town of Cary's reclaimed water system in the Haw River basin.
- ***Total System Use*** *(Table 1, Column 5)* is the sum of water withdrawn from the Haw River basin and bulk purchases from the City of Raleigh, City of Durham, and Durham County in the Neuse River basin.
- ***Consumptive Use*** *(Table 1, Column 6-11)* is the water used by customers that does not end up in the wastewater collection system; irrigation is the most common consumptive use. Potable and reclaimed water consumptive use are estimated separately.
- ***Water Use Discharged as Wastewater*** *(Table 1, Column 12-15)* is the proportion of non-consumptive water use discharged as wastewater in each basin, based on effluent flow meter data and Total System Use. The following facilities discharge in each basin:
  - Neuse River basin (*Table 1, Column 15*):
    - North Cary Water Reclamation Facility (NCWRF)
    - South Cary Water Reclamation Facility (SCWRF)
    - Apex Middle Creek Water Reclamation Facility (MCWRF)
    - Wastewater sent from the Town of Apex to the City of Raleigh (emergency use only)
  - Cape Fear River basin (*Table 1, Column 14*):
    - Western Wake Regional Water Reclamation Facility (WWRWRF) – While this discharge is physically in the Cape Fear River basin, for IBT purposes, it is considered a return to the source basin (Haw River basin) because the water is returned to a point downstream of the withdrawal that it would have reached anyway if it had not been withdrawn (referred to by NCDWR as the "cork rule").
  - Haw River basin (*Table 1, Columns 12-13*):
    - Process water use at Cary/Apex Water Treatment Facility (WTF), discharged to Jordan Lake
    - Wastewater sent by the Town of Cary to Durham County Triangle Wastewater Treatment Plant

- ***Total Returned/Used in Each Basin*** (*Table 1, Columns 16-18*) is the sum of ***Consumptive Use*** and ***Water Use Discharged as Wastewater*** for each basin.
- ***Interbasin Transfer*** (*Table 1, Columns 20-21*) is defined as the withdrawal from the source basin (Haw River basin) minus the return to the source basin. IBT is calculated for each of the two receiving basins (Neuse and Cape Fear River basins):
  - Cape Fear River basin: The transfer to the Cape Fear River basin is made up solely of the consumptive use by the Town of Apex in this portion of its service area.
  - Neuse River basin: The total amount of water transferred out of the Haw River basin, minus the transfer to the Cape Fear River basin. This value includes both wastewater discharge and consumptive use.

2.2 Data Compilation

Metered daily data are used to calculate IBT. The following data are collected and input into the Towns' IBT tracking spreadsheet:

- Water Withdrawal and Purchase, comprising:
  - Cary/Apex WTF, including:
    - Jordan Lake withdrawal
    - Process water use (discharged back to Jordan Lake per National Pollution Discharge Elimination Permit)
    - Finished water produced
  - Finished water purchase from others (emergency use only)
  - Reclaimed water purchase from others
- Consumptive Use
  - Reclaimed Water
  - NCWRF and SCWRF, including:
    - In-facility use of reclaimed water
    - Distributed reclaimed water
    - Bulk reclaimed water
  - WWRWRF's bulk reclaimed water
- Water Use Discharged as Wastewater, including:
  - Discharges from the NCWRF, SCWRF, WWRWRF, and MCWRF
  - Wastewater sent from the Town of Cary to Durham County (emergency use only)
  - Wastewater sent from the Town of Apex to City of Raleigh (emergency use only)

2.3 Data Assumptions

The calculation of IBT is essentially similar to performing a water balance – estimating how much of the water withdrawn from the source basin ends up in each IBT basin as either treated wastewater discharge, potable consumptive use, or reclaimed water consumptive use. The following assumptions are used to estimate consumptive use and to account for factors such as wastewater system infiltration and inflow (I/I):

- Potable consumptive use is estimated daily as the greater of (a) water produced minus wastewater generated or (b) 5 percent of water used (typically in the winter or very rainy periods).

- The percentages of consumptive use that occurs in the source basin and each IBT receiving basin are estimated based on a review of actual water consumption data for customers in each IBT basin during previous years. Based on this review, the assumed percentage of consumptive use in each basin is set at the beginning of each year.
- When wastewater discharge is greater than water used (including consumptive use), it is likely the result of wastewater system I/I during very rainy periods. In these instances, the proportion of water use discharged as wastewater in each IBT basin is assumed to be the same as the proportion of measured wastewater discharged in each basin.

2.4 Interbasin Transfer Calculation

Generally, the sequence of the daily IBT calculations is as follows:

1. Estimate potable consumptive use from total potable water use and wastewater discharges, and calculate total consumptive use by adding reclaimed water usage, as follows:
   a. Potable consumptive use is estimated based on assumptions described in Section 2.3.
   b. Reclaimed water usage is based on meter data.
2. Calculate amount of water use discharged as wastewater, calculated as the difference between the total water withdrawal and total consumptive use.
3. Distribute consumptive use and water use discharged as wastewater by IBT basin: Haw, Cape Fear, and Neuse River basins, as follows:
   a. Consumptive use distribution by IBT basin is based on assumptions described in Section 2.3.
   b. Water use discharged as wastewater distribution by IBT basin is based on the calculated proportion of each water reclamation facility's (WRF's) metered discharge of the total WRF discharge multiplied by the difference between total finished water produced and consumptive use.
4. Calculate the total returned and used in each basin, calculated as the total amount of consumptive use and water use discharged as wastewater within the Haw, Cape Fear, and Neuse River basins.
5. Determine IBT from the Haw to the Cape Fear River basins, which is equal to consumptive use in the Cape Fear River basin.
6. Calculate IBT from the Haw to the Neuse River basin as the sum of the Neuse River basin consumptive use and water use discharged as wastewater, minus any Neuse River basin water withdrawal and purchase.

The average day IBT values will be calculated for each month in a calendar year from the daily IBT values developed following the calculation steps outlined herein.

Table 1 provides a summary example of the calculations used for determining daily IBT amounts and the IBT compliance metric: IBT calculated as an average day of a calendar month.

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TABLE 1

Sample of Daily Interbasin Transfer and Average Day of Calendar Month Interbasin Transfer Calculation

Column Number:	(1)	(2)	(3)	(4)	(5)=1+2+3+4	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)=6+7+12+13	(17)=8+9+14	(18)=10+11+15	(19)=16+17+18	(20)=8+9	(21)=18-2-3-4
	Water Withdrawal / Purchase (mgd)					Consumptive Use (mgd)						Water Use Discharged as Wastewater (mgd)				Total Return / Used (mgd)				Interbasin Transfer (mgd)	
	Haw Withdrawal	Neuse Basin Purchase			Total System Use	Haw		Cape Fear		Neuse		Haw		Cape Fear	Neuse	Haw	Cape Fear	Neuse	Total Return/ Used	Haw to Cape Fear	Haw to Neuse
Date	Jordan Lake	Raleigh	Durham	Durham County Reclaimed		Potable	WRF Reuse	Potable	WRF Reuse	Potable	WRF Reuse	WTF Process Water	WRF	WRF	Total WRFs						
3/1/2015	18.52	0.00	0.00	0.03	18.55	0.25	0.03	0.01	0.00	0.58	0.19	1.98	0.00	3.98	11.54	2.26	3.99	12.31	18.55	0.01	12.3
3/2/2015	20.20	0.00	0.00	0.05	20.25	0.25	0.03	0.01	0.00	0.59	0.22	3.19	0.00	3.90	12.04	3.49	3.91	12.85	20.25	0.01	12.8
3/3/2015	16.60	0.00	0.00	0.04	16.64	0.23	0.03	0.01	0.00	0.53	0.23	1.43	0.00	3.49	10.68	1.69	3.50	11.44	16.64	0.01	11.4
3/4/2015	16.53	0.00	0.00	0.10	16.63	0.27	0.03	0.01	0.00	0.53	0.28	1.45	0.00	3.65	10.39	1.77	3.66	11.20	16.63	0.01	11.1
3/5/2015	18.49	0.00	0.00	0.04	18.53	0.25	0.03	0.01	0.00	0.58	0.26	1.83	0.00	3.82	11.75	2.11	3.83	12.58	18.53	0.01	12.6
3/6/2015	19.20	0.00	0.00	0.04	19.24	0.25	0.02	0.01	0.00	0.59	0.24	2.19	0.00	3.97	11.95	2.48	3.98	12.78	19.24	0.01	12.7
3/7/2015	19.43	0.00	0.00	0.04	19.47	0.23	0.03	0.01	0.00	0.55	0.25	3.74	0.00	3.89	10.76	4.01	3.90	11.56	19.47	0.01	11.5
3/8/2015	16.38	0.00	0.00	0.05	16.43	0.22	0.03	0.01	0.00	0.53	0.25	1.27	0.00	4.03	10.07	1.54	4.04	10.84	16.43	0.01	10.8
3/9/2015	23.16	0.00	0.00	0.04	23.20	0.37	0.03	0.02	0.00	0.67	0.30	3.8	0.00	4.88	13.21	4.13	4.89	14.18	23.20	0.01	14.1
3/10/2015	14.92	0.00	0.00	0.17	15.09	0.20	0.03	0.01	0.00	0.48	0.24	1.18	0.00	3.36	9.44	1.56	3.37	10.17	15.09	0.01	10.0
3/11/2015	19.88	0.00	0.00	0.04	19.92	0.34	0.05	0.02	0.00	0.60	0.28	2.72	0.00	4.08	11.94	3.02	4.09	12.82	19.92	0.01	12.8
3/12/2015	17.87	0.00	0.00	0.05	17.92	0.30	0.04	0.02	0.00	0.53	0.26	2.5	0.00	3.69	10.64	2.77	3.70	11.44	17.92	0.01	11.4
3/13/2015	16.74	0.00	0.00	0.04	16.78	0.50	0.10	0.04	0.00	0.54	0.25	1.33	0.00	2.13	12.26	1.60	2.14	13.04	16.78	0.01	13.0
3/14/2015	16.15	0.00	0.00	0.04	16.19	0.20	0.04	0.01	0.00	0.46	0.26	2.88	0.00	3.73	8.62	3.12	3.73	9.34	16.19	0.01	9.3
3/15/2015	18.54	0.00	0.00	0.05	18.59	0.24	0.04	0.01	0.00	0.57	0.26	2.03	0.00	4.85	10.58	2.32	4.86	11.41	18.59	0.01	11.7
3/16/2015	19.81	0.00	0.00	0.05	19.86	0.33	0.04	0.02	0.00	0.61	0.44	2.35	0.00	4.15	11.99	2.66	4.16	13.04	19.86	0.01	13.0
3/17/2015	19.91	0.00	0.00	0.05	19.96	0.32	0.05	0.02	0.00	0.55	0.38	4.2	0.00	3.75	10.80	4.48	3.75	11.72	19.96	0.01	11.7
3/18/2015	16.61	0.00	0.00	0.04	16.65	0.22	0.04	0.01	0.00	0.50	0.33	2.178	0.00	3.45	9.93	2.43	3.46	10.76	16.65	0.01	10.7
3/19/2015	18.67	0.00	0.00	0.04	18.71	0.23	0.17	0.01	0.00	0.54	0.36	3.18	0.00	3.69	10.66	3.45	3.70	11.56	18.71	0.01	11.5
3/20/2015	18.84	0.00	0.00	0.03	18.87	0.25	0.04	0.01	0.00	0.58	0.24	2.03	0.00	3.82	11.91	2.31	3.83	12.73	18.87	0.01	12.7
3/21/2015	17.95	0.00	0.00	0.04	17.99	0.21	0.05	0.01	0.00	0.50	0.29	3.46	0.00	3.46	10.01	3.71	3.47	10.81	17.99	0.01	10.8
3/22/2015	17.94	0.00	0.00	0.03	17.97	0.23	0.04	0.01	0.00	0.53	0.29	2.67	0.00	3.79	10.43	2.93	3.80	11.24	17.97	0.01	11.2
3/23/2015	16.58	0.00	0.00	0.03	16.61	0.68	0.04	0.06	0.00	0.51	0.31	1.8	0.00	2.49	11.25	2.04	2.50	12.07	16.61	0.01	12.0
3/24/2015	17.13	0.00	0.00	0.02	17.15	0.22	0.05	0.01	0.00	0.52	0.29	2.26	0.00	4.35	9.48	2.50	4.36	10.29	17.15	0.01	10.3
3/25/2015	19.20	0.00	0.00	0.05	19.25	0.25	0.05	0.01	0.00	0.59	0.34	2.23	0.00	4.06	11.71	2.53	4.07	12.65	19.25	0.01	12.6
3/26/2015	18.88	0.00	0.00	0.05	18.93	0.23	0.05	0.01	0.00	0.53	0.32	3.59	0.00	3.76	10.45	3.86	3.77	11.30	18.93	0.01	11.3
3/27/2015	18.15	0.00	0.00	0.04	18.19	0.23	0.04	0.01	0.00	0.54	0.30	2.68	0.00	3.54	10.85	2.95	3.55	11.69	18.19	0.01	11.7
3/28/2015	15.85	0.00	0.00	0.04	15.89	0.22	0.04	0.01	0.00	0.48	0.29	2.08	0.00	3.33	9.47	2.32	3.34	10.23	15.89	0.01	10.2
3/29/2015	18.13	0.00	0.00	0.04	18.17	0.23	0.03	0.01	0.00	0.53	0.28	2.86	0.00	3.86	10.36	3.12	3.87	11.17	18.17	0.01	11.1
3/30/2015	18.34	0.00	0.00	0.04	18.38	0.24	0.04	0.01	0.00	0.56	0.31	2.12	0.00	3.89	11.21	2.40	3.90	12.08	18.38	0.01	12.0
3/31/2015	19.36	0.00	0.00	0.05	19.41	0.24	0.03	0.01	0.00	0.56	0.31	3.38	0.00	3.83	11.04	3.67	3.84	11.90	19.41	0.01	11.9
Average Day	18.19	0.00	0.00	0.05	18.24	0.27	0.04	0.01	0.00	0.55	0.28	2.47	0.00	3.76	10.88	2.75	3.77	11.72	18.24	0.01	11.7

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3. Required Discharge Calculation

IBT Certificate Condition 9 per the Consent Judgement as described in Section 1, added in 2018, establishes a minimum required discharge of treated wastewater effluent by the Towns to the Cape Fear River basin and Haw River basin, on a calendar year average daily discharge basis. This section defines the protocols for implementing Condition 9 and making annual reports of Required Discharge and Actual Discharge, as defined below, to demonstrate compliance with this Condition.

3.1 Definitions

The following definitions are used in IBT Certificate Condition 9.

- *Neuse Basin Demand* is the three-year running annual average daily amount (in mgd) for the three preceding calendar years of all finished water supplied from sources within the Haw River (2-1) and Cape Fear River (2-3) Basins, including both billed and unbilled amounts, used by the Towns of Cary and Apex in the Neuse River Basin (10-1).
- *Actual Discharge* is the three-year running annual average daily amount (in mgd) for the three preceding calendar years of treated wastewater that the Towns of Cary and Apex actually discharge to the Haw River Basin (2-1) and Cape Fear River Basin (2-3) receiving waters, without regard to which Town of Cary or Apex treatment facilities (whether by ownership or third-party contract) from which the treated wastewater is discharged.
- *Discharge Report* is the annual report of data submitted by the Towns addressing:
  - (a) Required Discharge
  - (b) Data supporting the computation of Neuse Basin Demand
  - (c) Actual Discharge
  - (d) Data supporting the computation of the Actual Discharge
  - (e) Mitigation measures and temporary compliance solutions undertaken by the Towns of Cary and Apex in the prior calendar year, the estimated impact of each such measure, and all data supporting each estimated impact
- *Deficiency Year* is a calendar year in which the Actual Discharge is less than the Required Discharge but at least 95% of the Required Discharge.
- *Deficiency Report* is the Discharge Report due by May 1 immediately following a Deficiency Year.
- *Deficiency Trigger Date* is the last day of the 12th month following the due date for each Deficiency Report.
- *Engineering Evaluation* is the engineering evaluation prepared by or for the Towns, and sealed by a licensed Professional Engineer, which outlines specific plans for meeting the Required Discharge within five (5) years of the Deficiency Trigger Date. The Engineering Evaluation also identifies temporary compliance solutions that can be implemented within one (1) year after the completion of the Engineering Evaluation. The Engineering Evaluation shall be filed with NCDWR promptly after it is completed.
- *Committed Wastewater Flows* are used to estimate future actual wastewater flows as part of the Engineering Evaluation. They are assumed to be 65% of the Towns of Cary and Apex's reasonably projected volume of permitted, obligated flows associated with new and anticipated residential and commercial developments in the Towns of Cary and Apex's service areas.
- *95% Deficiency Trigger Date* is the November 1st that immediately follows the due date for a Discharge Report which documents that the Actual Discharge is less than ninety-five percent (95%) of the Required Discharge in a calendar year.
- *Construction Initiation* is the collective description for these 3 activities:

(a) Towns apply for all permits needed to achieve compliance with the Required Discharge, unless permit applications first require approvals pursuant to the North Carolina Environmental Policy Act (NCEPA) or National Environmental Policy Act (NEPA).

(b) Towns submit approvable final plans and specifications to bring the Actual Discharge above the Required Discharge, if construction is needed.

(c) Towns prepare a construction schedule or schedule for other actions to ensure that Actual Discharge does not drop below 85% of the Required Discharge at any time and that the Actual Discharge will equal or exceed the Required Discharge within 5 years of the 95% Deficiency Trigger Date.

- *Construction Completion Date* is within 5 years of the 95% Deficiency Trigger Date.
- *Discharge Documents* is the collective description for the Discharge Report, Deficiency Report, Engineering Evaluation, and Construction Notice to Proceed for any construction undertaken as a result of these documents.

3.2 Annual Reporting

The Discharge Report of the Towns of Cary and Apex shall be submitted to NCDWR by May 1 each year, as an element of the Town's Interbasin Transfer annual report. The Discharge Report will address the following, as defined below and in Section 3.1:

(a) Required Discharge

(b) Data supporting the computation of Neuse Basin Demand

(c) Actual Discharge

(d) Data supporting the computation of the Actual Discharge

(e) Mitigation measures and temporary compliance solutions undertaken by the Towns of Cary and Apex in the prior calendar year, the estimated impact of each such measure, and all data supporting each estimated impact

3.2.1 Required Discharge

Required Discharge is calculated as follows:

Required Discharge = (Neuse Basin Demand) – 9.756 mgd,

3.2.2 Neuse Basin Demand

Neuse Basin Demand is the three-year running annual average daily amount of all finished water supplied from sources within the Haw River (2-1) and Cape Fear River (2-3) Basins, for the three preceding calendar years. Neuse Basin Demand is the sum of both billed and unbilled use by the Towns in the Neuse River Basin (10-1).

Billed amounts will be quantified from the Town of Apex and Town of Cary water meter and billing databases. Unbilled amounts of finished water use will be quantified as a percentage of billed water demand, calculated on a system-wide basis for the Towns on a yearly basis using procedures detailed in AWWA's M36 Water Audits and Loss Control Programs publication in effect as of 2017.

The Discharge Report will include a table summary of the Neuse Basin Demand calculation and the M36 Water Audit system-wide unbilled water percentage for the prior 3 years. Table 2 illustrates an example format for the Neuse Basin Demand and Required Discharge Summary. For purposes of this calculation, the annual average Neuse Basin Demand for calendar 2015 shall be 11.1 mgd and for calendar year 2016 shall be 11.2 mgd.

TABLE 2
Neuse Basin Demand and Required Discharge Summary

	Cary Billed Neuse Usage (mgd)	Apex Billed Neuse Usage (mgd)	Total Billed Neuse Usage (mgd)	Water Audit Unbilled Water %	Neuse Basin Usage (mgd)	Neuse Supply (mgd)	Total Neuse Basin Demand (mgd)
2015	-	-	-	-		-	11.1
2016	-	-	-	-		-	11.2
2017	x	x	X	X		X	X
3 year Running Average							X
Required Discharge (Neuse Basin Demand – 9.756)							X

3.2.3 Actual Discharge

Actual Discharge is the three-year running annual average daily amount (in mgd) of treated wastewater that the Towns of Cary and Apex actually discharge to the Haw River Basin (2-1) and Cape Fear River Basin (2-3) receiving waters, for the three preceding calendar years, without regard to which Town of Cary or Apex treatment facilities (whether by ownership or third-party contract) from which the treated wastewater is discharged.

Treated wastewater discharges will be quantified from the Towns' wastewater flow meters, including third-party contractors discharging the Towns' treated wastewater. A table with daily wastewater discharges will be included as an appendix to the Discharge Report.

Table 3 illustrates an example format for the Actual Discharge summary with comparison to the Required Discharge.

TABLE 3
Actual Discharge Calculation Table

	Western Wake Regional WRF Average Day Discharge (mgd)	Other Treated Wastewater Discharges (itemize, mgd)	Total Actual Discharge (mgd)
2015	4.3	0	4.3
2016	4.9	0	4.9
2017	X	X	X
3 year running average			X
Required discharge (from Table 2)			X
Deficiency Year			(NO or YES)
95% Deficiency Trigger			(NO or YES)

3.2.4 Comparison of Actual Discharge to Required Discharge

Each annual Discharge Report will present a table comparing the prior calendar year's Actual Discharge to the Required Discharge as shown in Table 3.

- In years when Actual Discharge is equal to or greater than Required Discharge, no further action will be required until the next annual Discharge Report.
- In years when Actual Discharge is less than Required Discharge, additional actions shall be required, as described in Section 3.3.

3.2.5 Mitigation and Temporary Compliance Measures

In the event the previous Discharge Report was a "Deficiency Report", the subsequent Discharge Report will provide narrative summaries of mitigation measures and temporary compliance solutions undertaken by the Towns during the prior calendar year, along with tables summarizing the estimated impact of each measure.

Appropriate supporting documentation for the mitigating measures and their estimated impact will be included in Appendices.

If the previous Discharge Report was not a Deficiency Report, the subsequent Discharge Report will not include these elements.

3.3 Deficiency Year Required Actions

In a year when the annual Discharge Report documents that Actual Discharge is less than Required Discharge for the reporting period, then the report will be termed a "Deficiency Report", and the Towns will take the following additional actions. Capitalized terms used below are defined in Section 3.1.

1. *Engineering Evaluation.* The Towns will prepare an Engineering Evaluation and submit it to NCDWR by the following May 1. The Engineering Evaluation will be sealed by a licensed professional engineer, and include the following elements:

   - Town's current and projected deficiency between Required Discharge and Actual Discharge, documenting and taking into consideration the Towns' estimated Committed Wastewater Flows and most-recent projections of growth in Neuse Basin Demand and treated wastewater discharges to the Haw River Basin and Cape Fear River Basin receiving waters.
   - Document if Committed Wastewater Flows are sufficient to project no additional actions are required to meet Required Discharge within 5 years of the Deficiency Date.
   - Present alternatives for meeting the Required Discharge and describe rationale for selecting proposed alternative.
   - Present specific plan for implementing proposed alternative within 5 years of the Deficiency Trigger Date.
   - Identify temporary compliance solutions that can be implemented within 1 year after completion of the Engineering Evaluation.

   After the Engineering Evaluation is completed, it shall be submitted promptly to NCDWR.

   In subsequent years, if a Discharge Report documents Actual Discharge is less than Required Discharge, or if a 95% Deficiency Trigger Date (as defined in Section 3.1 above) occurs more than 2 years after the most-recent Deficiency Report, the Towns shall either submit a new Engineering Evaluation or obtain written reconfirmation from the licensed Professional Engineer who sealed the most recent existing Engineering Evaluation of its conclusions and recommended solutions.

2. *95% Deficiency Trigger.* The following Construction Initiation actions shall be taken if an annual Discharge Report documents that Actual Discharge in a calendar year is less than 95% of the Required Discharge:

   (i) If the first year in which the Actual Discharge is less than 95% of the Required Discharge occurs at any time after a Deficiency Year, then by the 95% Deficiency Trigger Date, the Towns shall:

   (A) Apply for all permits needed to achieve compliance with the Required Discharge unless permit applications first require approvals pursuant to the North Carolina Environmental Policy Act (NCEPA) or National Environmental Policy Act (NEPA) as described in (iii) below.

   (B) Submit approvable final plans and specifications to bring the Actual Discharge above the Required Discharge, if construction is needed.

   (C) Prepare a schedule for construction or other actions to ensure that Actual Discharge does not drop below 85% of the Required Discharge at any time and that the Actual

Discharge will equal or exceed the Required Discharge within 5 years of the 95% Deficiency Trigger Date.

(ii) If the first year in which the Actual Discharge is less than 95% of the Required Discharge occurs at any time before the first Deficiency Year has occurred, then the Towns shall complete an Engineering Evaluation and the Construction Initiation within 12 months after the 95% Deficiency Trigger Date, except as delayed by permitting and approvals pursuant to the NCEPA or NEPA as described in (iii) below.

Construction to be performed in accordance with the Construction Initiation for paragraphs (i) or (ii) shall be completed within 5 years of the 95% Deficiency Trigger Date, subject to the NCEPA or NEPA processes as follows:

(iii) Permit applications will be submitted as soon as the permitting agency indicates they will be accepted and no later than 30 days after public notice of a Finding of No Significant Impact (FONSI) or Record of Decision (ROD) pursuant to NCEPA or NEPA. If compliance with the NCEPA/NEPA approval process may delay the Construction Initiation in a manner that would reasonably be expected to delay the completion of construction beyond the Construction Completion Date or impede the Towns' ability to comply at all times with the minimum requirement for 85% of the Required Discharge, the Towns shall identify and pursue other engineering and financial solutions that will permit the Towns to ensure by any available means, including means other than construction, that the Actual Discharge will equal or exceed the Required Discharge within the five (5) year period equivalent to the Construction Completion Date, and to satisfy at all times the minimum requirement for 85% of the Required Discharge without having to comply with NCEPA/NEPA.

3. Actual Discharge shall not at any time be less than 85% of the Required Discharge. The Towns shall immediately and proactively implement measures as may be necessary from time to time to ensure that the Actual Discharge is not at any time less than 85% of the Required Discharge.

3.4 Distribution of Compliance and Monitoring Documents to Others

The Towns shall forward a copy of each of the following documents via electronic mail to an email address designated each by Fayetteville Public Works Commission (FPWC) and Lower Cape Fear Water and Sewer Authority (LCFWASA):

- Discharge Report
- Deficiency Report
- Engineering Evaluation
- Construction Notice to Proceed for any construction undertaken as a result of these documents

FPWC and LCFWSA are expected to provide contact information in writing, to the Cary Town Manager, designating the person or entity authorized to receive these documents at the time the Towns' submit these documents to NCDWR.

The Town of Cary will post copies of the Discharge Documents on the Town's website, or, if the document is posted on the NCDWR Cary/Apex IBT web page, the Town of Cary will post on its website a cross-link to the document's address on the Division of Water Resources' Cary/Apex IBT web page, which is currently entitled the "TOWN OF CARY, APEX, MORRISVILLE, AND WAKE COUNTY (FOR RTP SOUTH) INTERBASIN TRANSFER CERTIFICATE" and which can be currently accessed through the Division of Water Resources' website either via the "Jordan Lake Water Supply Allocation" page or the "Water Supply Planning-Interbasin Transfer" page.

4. Reporting Methodologies and Schedules

Compliance with the permitted IBT limits from the Haw River basin to the Neuse River basin, and from the Haw River basin to the Cape Fear River basin, is required in the IBT certificate to be reported quarterly. The status of the additional eight conditions that the Towns must meet in order to maintain compliance with the IBT certificate will be reported annually.

4.1. Compliance Reporting

4.1.1. Quarterly Reporting

At the end of each quarter, the Towns will calculate the daily average IBT amount for each month in the quarter and post this information on the Town of Cary website within 30 days after the end of the quarter. NCDWR will be able to review and download the information from this website, as will the public.

The schedule for quarterly reporting is as follows:

- Quarter 1 (Q1) – report due by April 30 (Q1 includes January, February, and March)
- Quarter 2 (Q2) – report due by July 30 (Q2 includes April, May, and June)
- Quarter 3 (Q3) – report due by October 30 (Q3 includes July, August, and September)
- Quarter 4 (Q4) – report due by January 30 (Q4 includes October, November, and December)

4.1.2. Annual Reporting

At the end of each calendar year, by May 1 of the following year, the Towns will submit an Annual IBT Report to NCDWR with the following information:

1. Summary of historical water withdrawals, reclaimed water usage, wastewater discharges, and IBT, beginning with the 2015 award date of this IBT certificate for the 2015 Annual Report and reported for the January to December calendar year thereafter.
2. Table of calculated daily IBT amounts for January 1 to December 31 of the reporting year.
3. Table of calculated daily average of calendar month IBT amounts for the reporting year.
4. Summary of amount of water used during previous years by customers in the Neuse River, Haw River, and Cape Fear River basins for use in determining the distribution of consumptive uses among the basins. Based on the amount of water used in each basin for the previous year, the distribution of consumptive use by basin in the following calendar year will be determined and documented.
5. Discharge Report, documenting Required Discharge and Actual Discharge.
6. Status of compliance with IBT certificate limits and conditions.

4.2. Compliance Schedule

The schedule for monitoring and reporting on IBT certificate compliance is provided in Table 4.

TABLE 4
Interbasin Transfer Compliance Monitoring and Reporting

	Description [a]	Comments
IBT Limits	Daily average of a calendar month: - 31 mgd Haw to Neuse - 2 mgd Haw to Cape Fear	Daily average IBT is calculated daily and reported in the Annual IBT Report. IBT calculated as the daily average of a calendar month reported on the Town of Cary website quarterly and in the Annual IBT Report. The percentages of water use in each basin, summarized historically, and set for calculating daily IBT for the next year will be reported in the Annual IBT Report.
Condition 1	Water Conservation Plan	Initial submittal to NCDWR by June 10, 2015, and then revised as needed to obtain NCDWR approval. Updates, if necessary, will be provided to NCDWR in the Towns' respective Secondary and Cumulative Impacts Master Management Plan biennial updates. Water Conservation Plan will always be available on the Town of Cary website. Status of the plan will be included in the Annual IBT Report.
Condition 2	Drought Management Plan	Initial submittal to NCDWR by June 10, 2015, and then revised as needed to obtain NCDWR approval. Updates will be provided to NCDWR as needed. Drought Management Plan will always be available on the Town of Cary website. Status of the plan will be included in the Annual IBT Report.
Condition 3	IBT Compliance and Monitoring Plan	Initial submittal to NCDWR by June 10, 2015, and then revised as needed to obtain NCDWR approval. IBT Compliance and Monitoring Plan will always be available on the Town of Cary website. Status of the plan will be included in the Annual IBT Report.
Condition 4	EMC Consideration of Alternative Sources	No reporting necessary.
Condition 5	EMC Consideration of Future Water Demand	No reporting necessary.
Condition 6	Resale of Transferred Water	Included in the Annual IBT Report.
Condition 7	EMC Consideration of Impacts	No reporting necessary.
Condition 8	Intake Access	Included in the Annual IBT Report.
Condition 9	Required Discharge	Included in the Annual IBT Report

[a] Certificate conditions are described in Section 1.

5. References

CH2M HILL. 2001. *Compliance and Monitoring Plan*. Prepared for RTP South and the Towns of Cary, Apex, and Morrisville.

CH2M HILL. 2015. *Compliance and Monitoring Plan, 2015 Interbasin Transfer Certificate*. Prepared for RTP South and the Towns of Cary, Apex, and Morrisville.

North Carolina Division of Water Resources (NCDWR). 2009. *Regulation of Surface Water Transfers Statutory Guidance*. http://www.ncwater.org/files/IBT_guidance_v1.pdf. Accessed April 10, 2015.

North Carolina Environmental Management Commission (EMC). 2015. Certificate Authorizing the Towns of Cary and Apex to Transfer Water from the Haw River Basin to the Neuse and Cape Fear River Basins. http://www.ncwater.org/files/ibt/CaryApex/IBT_Modification_Certificate_signed.pdf.