Cities of Concord and Kannapolis Proposed Interbasin Transfer

Hearing Officers' Report

Environmental Management Commission

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

December 2006

HEARING OFFICERS' RECOMMENDATIONS

Public hearings on the Interbasin Transfer Certification Petition by the Cities of Concord and Kannapolis were held on June 22, 2005 at 5:00 p.m. at UNC-Charlotte in Charlotte and on June 23, 2005 at 5:00 p.m. at the Albemarle City Hall Annex, in Albemarle. Two additional public meetings were held on September 7, 2006 at 6:00 p.m. at the Old Rock School Auditorium in Valdese and September 19, 2006 at 6:00 p.m. at the Olympic High School Gymnasium in Charlotte. A total of 233 oral comments were received and 1,564 persons submitted written comments during the comment periods for the Draft and Final Environmental Impact Statements and the Interbasin Transfer Petition.

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 Director recommend that the Environmental Management Commission grant the cities of Concord and Kannapolis a 10 million gallon per day maximum transfer from the Catawba River Basin to the Rocky River Basin and a 10 million gallon per day transfer from the Yadkin River Basin to the Rocky River Basin with the following conditions:

1. If at any time any legal requirement that (a) governs the operation of the hydroelectric facilities in the Catawba River basin currently licensed as Federal Energy Regulatory Commission ("FERC") Project No. P-2232 or in the Yadkin-Pee Dee River basin currently licensed as FERC Project Nos. P-2206 and P-2197 and (b) governs or affects water use and/or quality, differs from the actual or anticipated FERC license conditions or other legal requirements upon which the analysis underlying this Certificate is based, such as changes to minimum flow requirements or drought mitigation measures, the Commission may reopen and modify this Certificate to ensure continued compliance with G.S. ch. 143, art. 21, part 2A.
2. The Cities shall implement drought management measures that become more stringent as drought conditions increase in severity. Prior to transferring any water under this Certificate, the Cities shall submit a plan to the Division of Water Resources ("Division"), for the Division's approval, for implementing this condition. The plan shall include a demonstration that each of the Cities has legal authority and adequate resources to implement the drought management measures specified in this condition. The Cities shall not transfer any water to any other jurisdiction (regardless of the origin of that water) unless that jurisdiction agrees to be bound by this condition in full. The drought management measures shall be at least as stringent as the measures in Attachment A to this Certificate, which is incorporated herein:

3. If the Division determines that the Cities are no longer cooperating with each other for the implementation of this Certificate, the Division may, in consultation with the Cities and considering the proportionate 2035 projected needs of each of the Cities, allocate the certified transfer amount between the Cities. Within three months of any such allocation, each of the Cities shall submit a plan to the Division, for the Division's approval, which shall assure that the Certificate amounts will not be exceeded.

4. Within four months of the effective date of this Certificate, the Cities shall develop and submit to the Division for the Division's approval compliance and monitoring plan for reporting at least annually: (a) maximum daily transfer amounts based on data derived from water meters, (b) compliance with certificate conditions, and (c) drought management activities.

5. If the Commission determines that the record on which this Certificate is based, including the revised Final Environmental Impact Statement ("FEIS") or the analysis on which the FEIS 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.

6. No later than twenty years from the date of this Certificate, and then no later than twenty years from the prior report, the Cities shall, with direction from the Division and after solicitation of input from and consultation with interested stakeholders (notice to stak3eholders shall be distributed in accordance with G.S. § 143-215.22I(d)(2)-(3)), submit a written report to the Commission (a) summarizing transfers for the previous twenty years; (b) discussing any new or revised facts that suggest that the record was substantially in error or that the environmental impacts associated with activities pursuant to this Certificate are substantially different from those projected impacts that formed the basis for the findings of fact and this Certificate; (c) summarizing all actions taken to address actual or potential drought conditions; (d) recommending any changes to this Certificate (including under Condition 5) or any plans pursuant to this Certificate that may be necessary to assure compliance with G.S. ch. 143, art. 21, part 2A; (e) detailing consultation with interested stakeholders; and (f) certifying compliance with this Certificate. The report shall be signed by an officer of each city that is responsible for compliance with this Certificate. The Cities shall make the report available to all interested stakeholders.
7. This Certificate does not exempt the Cities or any other entity from compliance with any other requirements of law. For example, if a Capacity Use Area is designated under the provisions of the Water Use Act of 1967, G.S. § 143-215.11 et seq. in the Catawba, Yadkin or Rocky river basins the Cities and other entities shall comply with any implementing rules and the Commission may reopen and modify this Certificate to ensure compliance.

E. Leo Green
Environmental Management Commission

David M. Moreau
Environmental Management Commission

Kenny Waldroup
Environmental Management Commission

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PART 1 – INTERBASIN TRANSFER CERTIFICATE

CERTIFICATE AUTHORIZING THE CITIES OF CONCORD AND KANNAPOLIS TO TRANSFER WATER FROM THE CATAWBA RIVER AND YADKIN RIVER BASINS TO THE ROCKY RIVER BASIN UNDER THE PROVISIONS OF G.S. § 143-215.22I

In November 2004, the cities of Concord and Kannapolis petitioned the Environmental Management Commission (EMC) for a 24 million gallon per day (MGD) interbasin transfer (IBT) on an average day basis from a combination of the Catawba River basin and the Yadkin River basin to the Rocky River basin. Subsequently, the petitioners revised their request to an average 22 MGD IBT from a combination of the Catawba and Yadkin River Basins. In addition to the average daily transfer limit, the applicants' request includes limits on the maximum transfer in any single calendar day. The maximum day limits proposed are 10 MGD from the Yadkin River Basin and 36 MGD from the Catawba River Basin. If permission is granted to transfer 10 MGD from the Yadkin River Basin, then the requested amount of the transfer from the Catawba River Basin is reduced to a maximum day transfer of up to 26 MGD.

The proposed IBT would use existing water system interconnections to meet short-term increases in demands, allowing Concord and Kannapolis the opportunity to expand the amount of finished water obtained from Charlotte-Mecklenburg Utilities, Salisbury-Rowan Utilities, and/or Albemarle, or to obtain raw water from Lake Norman in the Catawba River Basin.

Public hearings on the Interbasin Transfer Certification Petition for the Cities of Concord and Kannapolis were held on June 22, 2005 in Charlotte and on June 23, 2005 in Albemarle pursuant to G.S 143-215.22I. In response to the public's requests for additional comment opportunities, two additional public meetings were held on September 7, 2006 in Valdese and September 19, 2006 in Charlotte. Throughout the process, a total of 233 oral comments were received and 1,564 persons submitted written comments.

The EMC considered the petitioners' request at its regular meeting on January 11, 2007. According to G.S. § 143-215.I(g), the EMC shall issue a transfer certificate if the benefits of the proposed transfers outweigh the detriments of the proposed transfers, 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 grant a certificate with conditions, as provided in G.S. § 143-215.22I(g)-(h). In making this determination, the EMC shall specifically consider:

1. Necessity, reasonableness, and beneficial effects of the transfer
2. Detrimental effects on the source river basin
2a. Cumulative effects on the source major river basins of any current or projected water transfer or consumptive water use
3. Detrimental effects on the receiving basin
4. Reasonable alternatives to the proposed transfer
5. Applicants' use of impounded storage capacity
6. Purposes of any US Army Corps of Engineers multi-purpose reservoir relevant to the petition
7. Any other facts or circumstances that are reasonably necessary to carry out the law

In addition, the certificate must include a drought management plan. The plan will specify how the transfer will be managed to protect the source river basins during drought conditions

The Commission Finds:

The members of the EMC reviewed and considered the complete record, which included the Hearing Officers' Report, the applicants' petition for the interbasin transfer, and the Revised Final Environmental Impact Statement, including public comments on the petition, Draft, and Final Environmental Impact Statements. Based on the record, the Commission makes the following findings of fact.

Findings of Fact

(1) Necessity, Reasonableness, and Beneficial Effects of the Transfer

The proposed transfers would provide water to the cities of Concord and Kannapolis and other surrounding communities. The current population served is about 112,800 and has an estimated current maximum day water demand (MDD) of about 29.3 MGD and an average day water demand (ADD) of about 19.6 MGD (See Table 1). The applicants are requesting an interbasin transfer, which together with other water supplies, would be sufficient to meet their demands for the next 30 years. The 2035 projected service area population is 418,300, with a MDD of 66.5 MGD and an ADD of 42.5 MGD. These projections are based on a continuing 10% reduction in per capita water use compared to per capita use prior to the 2002 drought.

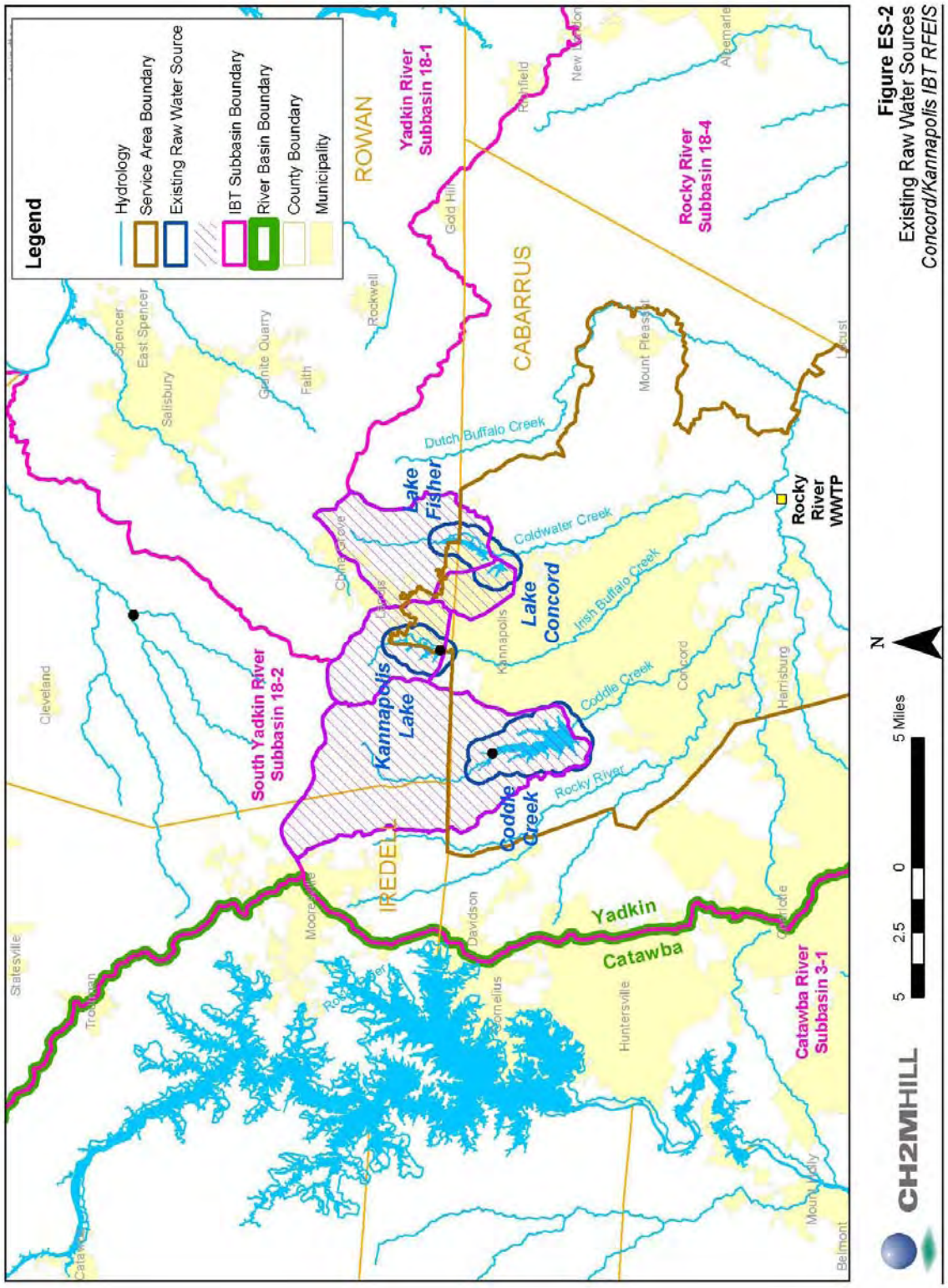
Concord and Kannapolis excelled in both the adoption and enforcement of rigorous water conservation measures during the 1998-2002 drought. Per capita water use in the two cities has remained below what it was before the drought and is in the normal range of similar cities in North Carolina.

Table 1 - Current and Projected Water System Demands for the Water Service Areas

	2000		2010		2020		2035	
Service Area	**ADD MGD**	**MDD MGD**	**ADD MGD**	**MDD MGD**	**ADD MGD**	**MDD MGD**	**ADD MGD**	**MDD MGD**
Concord/Harrisburg/ Midland	10.7	17.1	14.8	24.9	19.8	33.0	25.6	42.3
Mount Pleasant	0.3	0.45	0.4	0.7	0.6	0.9	0.8	1.3
Kannapolis	8.6	11.8	7.6	11.2	12.0	17.8	16.0	22.9
Combined Total	19.6	29.3	22.8	36.9	32.3	51.7	42.5	66.5

The applicants' current water supplies are obtained from reservoirs located near the headwaters of the Rocky River Basin and a small creek in the South Yadkin Basin (Figure 1). The City of Concord's current raw water supplies include Lake Howell (Coddle Creek Reservoir), operated by the Water and Sewer Authority of Cabarrus County (WSACC), Lake Concord, and Lake Fisher. The City of Kannapolis' raw water supply, Kannapolis Lake (Rocky River Basin), has a limited watershed of approximately 10 square miles. However, Kannapolis Lake is supplemented with raw water transfers from Lake Howell (Rocky River Basin) and Second Creek (South Yadkin River Basin). The transfer from Second Creek is a "grandfathered" IBT of 6 MGD, but only increases the safe yield of Kannapolis Lake by approximately 2.5 MGD. Taken all together, these sources provide a reliable supply of about 31 MGD based on the 50-year safe yield.

Figure 1 - Existing Water Sources



The applicants' requested maximum day IBT of 36 MGD is estimated to provide sufficient water supplies so that the applicants' maximum daily demand would reach 80% of available supplies in the year 2035. G.S. § 143-215.22I(l) requires a certificate holder to submit a plan to address future foreseeable water needs when water use reaches 80% of the amount of an approved interbasin transfer. However, this planning requirement does not require that the amount of water approved in an interbasin transfer certificate be increased beyond the normal 30-year planning period. When considering the necessity and reasonableness of the IBT request, the Commission finds that it is appropriate to consider actual projected demands, without the application of the 80% planning factor. This does not affect the requirement that the applicant have a plan in place when average demands eventually reach 80% of supplies.

Table 2 summarizes the applicants' projected water supply deficit, not including the 80% factor.

Table 2 - Summary of 2035 Water Supply Deficit

Projected ADD in 2035, MGD	42.50
Existing 50-Year Safe Yield, MGD	31.05
2035 ADD Deficit, MGD	11.45
2035 MDD Deficit (1.6 Peaking Factor), MGD	18.32

While the estimated 50-year safe yield of Concord and Kannapolis is about 31 MGD, the estimated 100-year safe yield is about half of the 50-year safe yield, or about 16.45 MGD. This is a larger than normal reduction in safe yield in going from a 50-year to a 100-year return period, resulting from the small size and particular hydrologic characteristics of the water supply watersheds of Concord and Kannapolis.

Based on the record, the Commission finds that current water supplies are insufficient to supply the Cities of Concord and Kannapolis and their related service areas on the reasonable planning horizon of the year 2035. Providing water for the anticipated growth of these communities will have a major beneficial effect. The Commission projects that the water supply deficit for these areas will be about 18.32 MGD on a maximum calendar day basis in 2035. Considering the unusually low 100-year yield of their existing water sources, a 20 MGD MDD transfer amount is appropriate. In droughts that exceed the 50-year return period, the cities will need to be prepared to impose water use restrictions.

(2) Detrimental Effects on the Source River Basin

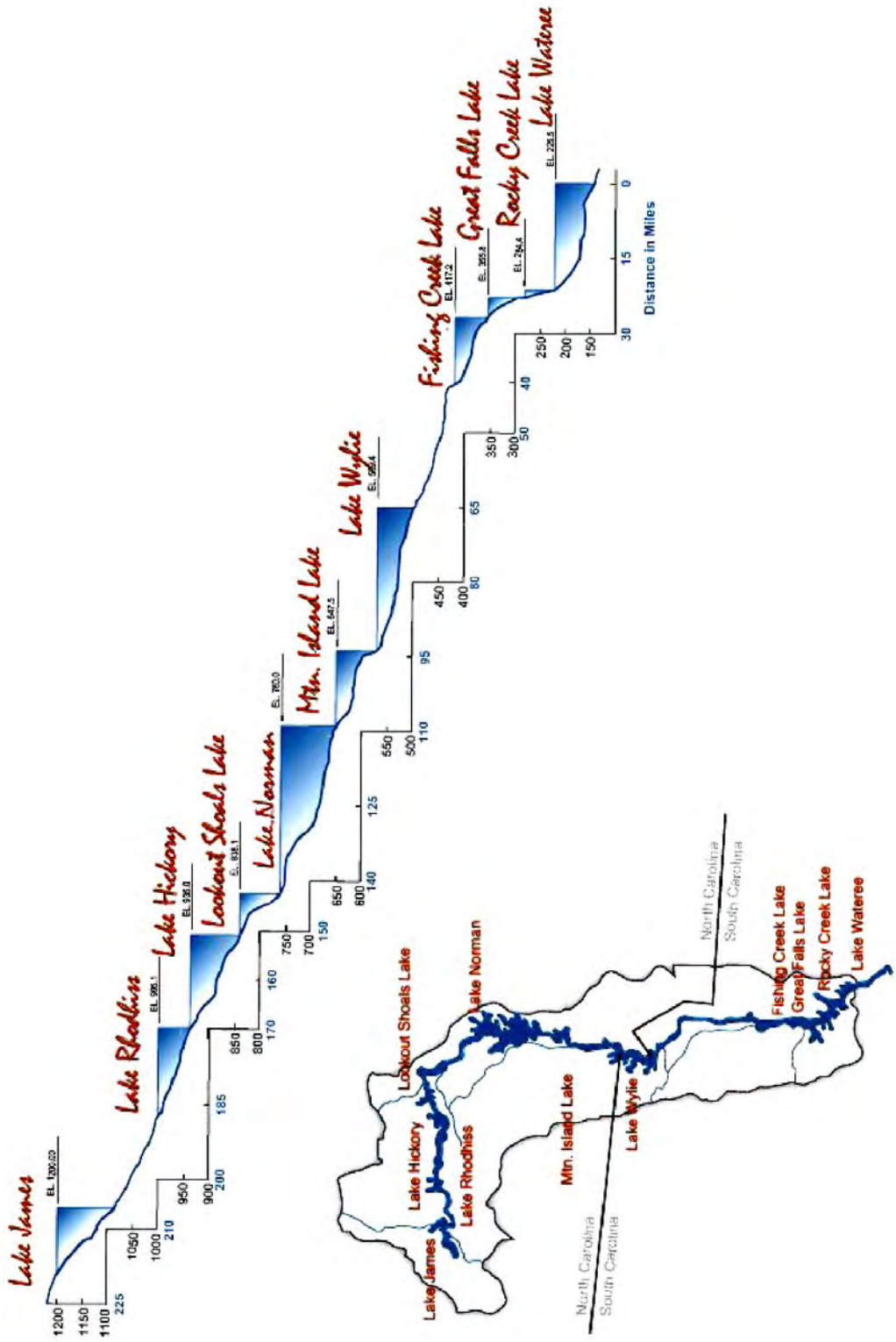
The direct impacts of the proposed IBT in the source basins were evaluated using modeling tools developed for relicensing of the hydropower facilities on the Catawba and Yadkin Rivers. Evaluation of direct impacts on the source basin focused on water quantity, including reservoir levels and instream flows, and an assessment of the likely impacts to water quality from changes in water quantity.

Catawba

For the Catawba River Basin the Division of Water Resources used the Catawba-Wateree CHEOPS (Computer Hydro-Electric Operations and Planning Model Software) model. The Catawba-Wateree model simulates variations in the amount of water in the river system based on variations in inflows, reservoir operations and water withdrawals. The model covers the area from Lake James in North Carolina to Lake Wateree in South Carolina (see Figure 2 - Catawba River Basin Reservoirs) and includes 75 years of data on inflows. The model uses average daily withdrawal amounts, which it varies for each month of the year based on the historical monthly water use pattern for each individual water withdrawer. All modeling results are based on the version of the model that was used by Duke Energy as the basis for the FERC license application and for the Final Comprehensive Relicensing Agreement for the Catawba-Wateree Hydroelectric Project filed with FERC in August 2006. This model includes a Low Inflow Protocol (LIP) for water resource management during drought periods. The LIP was also developed as part of the FERC relicensing application process based on the principle that all water users will share the responsibility to conserve water during low inflow conditions (see Appendix D in the revised Final EIS).

The impacts of the proposed IBT for Concord and Kannapolis were analyzed along with the estimated future demands for other water users in the Catawba River Basin and the operating scenario, including the LIP, from the relicensing application as described above. As required under G.S. § 143-215.22I(f)(2), local water supply plans were used in developing the projected water demands for water users in the Catawba River Basin through 2035. Water use projections included all permitted and anticipated withdrawals and all current and projected IBTs that were reported during the Duke Energy Water Supply Study (Appendix CD-7 in the revised Final EIS).

Figure 2 - Catawba River Basin Reservoirs



In the Catawba River source basin, the direct impacts of various levels of IBT were evaluated: Zero IBT from the Catawba, 10 MGD average daily transfer, 10 MGD constant daily transfer, and a 16 MGD average daily transfer. The 16 MGD average daily transfer is equivalent to the 26 MGD maximum daily transfer requested by the petitioners. Zero IBT reflects the baseline from which the impacts of the IBT were evaluated. The version of the model used for this analysis originally contained future withdrawals for Concord and Kannapolis that were used in the relicensing analysis. Under the Zero IBT modeling scenario, the withdrawals for Concord and Kannapolis were set at zero so the model would not withdraw any water for them. All four scenarios are based on 2035 water use projections. The impacts on several key indicators were assessed by reviewing:

- Long-Term Analysis
    - Examination of reservoir elevation duration data and minimum water levels
    - Examination of reservoir outflow duration and minimum daily releases
    - Low Inflow Protocol (LIP) implementation
- Extreme Case Analysis
    - Reservoir elevation based on time series data for the drought of record
- Water quality impacts
- Water supply impacts

Long-term Analysis

Reservoir Elevation

The modeling results indicate that the proposed IBT scenarios had very little effect on reservoir level duration data. Table 3 and Table 4 show the reservoir elevation duration data for Lake James and Lake Norman for the four modeling scenarios. These values show slight differences in the absolute minimum elevation predicted during the 75-year simulation of results. Lake James elevation differences from the base case are in the range of 1 to less than 3 inches on the lowest day in 75 years of record. Ninety-nine percent of the time the impact is less than 3/4 of an inch. Lake Norman elevation differences from the base case are in the range of 4 to 11 inches on the lowest day in 75 years of record. Ninety-nine percent of the time the impact is less than 1.5 inches.

Table 3 - Lake James Elevation Duration Data

Model Scenario	Zero IBT	Average 10 MGD IBT	Constant 10 MGD IBT	16 MGD (26 MGD MDD) IBT
Exceedance, Percent Time	Elevation, ft	Elevation Difference, inches	Elevation Difference, inches	Elevation Difference, inches
0%	1203.20	0.00	0.00	0.00
10%	1199.88	0.00	-0.12	-0.24
25%	1197.65	-0.12	-0.48	-0.72
50%	1195.67	-0.12	-0.24	-0.60
75%	1194.59	0.00	0.00	0.00
90%	1193.05	0.00	0.00	0.00
95%	1192.57	0.00	0.00	0.12
99%	1192.01	0.00	0.00	0.00
100%	1188.88	-1.32	-2.16	-2.40

Table 4 - Lake Norman Elevation Duration Data

Model Scenario	Zero IBT	Average 10 MGD IBT	Constant 10 MGD IBT	16 MGD (26 MGD MDD) IBT
Exceedance, Percent Time	Elevation, FT	Elevation Difference, inches	Elevation Difference, inches	Elevation Difference, inches
0%	760.00	0.00	0.00	0.00
10%	759.99	0.00	0.00	0.00
25%	758.10	-0.12	-0.12	-0.12
50%	757.84	-0.12	-0.24	-0.36
75%	756.11	-0.24	-0.36	-0.36
90%	755.20	-0.96	-0.96	-0.72
95%	754.67	-1.08	-1.08	-1.08
99%	754.19	-0.60	-0.72	-0.12
100%	751.53	-10.56	-10.56	-3.72

Outflow Duration

The model was also used to predict changes in outflow from the reservoirs which might impact downstream reaches. Table 5 shows reservoir outflow duration data for outflows from Lake Wylie. This reservoir was selected because it is downstream of the proposed withdrawal and there is a flowing portion of the Catawba River below this dam. In addition, changes in outflows from Lake Wylie are a key indicator of potential downstream impacts in South Carolina. The differences in outflow duration among the four IBT scenarios as shown in this table are not appreciable. The daily minimum flows, which are important for assessing assimilative capacity, are identical for all scenarios. There are only minor differences across the range of the flows. For example, at the median (50% percent exceedance level) downstream flows are about 1% less for each of the other three scenarios than they are for the Zero IBT scenario.

Table 5 - Lake Wylie Outflow Duration Data

Model Scenario	Zero IBT	Average 10 MGD IBT	Constant 10 MGD IBT	16 MGD (26 MGD MDD) IBT
Exceedance, Percent Time	Outflow, cfs	Outflow Difference, cfs	Outflow Difference, cfs	Outflow Difference, cfs
0%	68400	-1	-2	-8
10%	8047	-50	-34	-82
25%	4027	-45	-38	-46
50%	2345	-24	-24	-32
75%	1271	0	-1	0
90%	1221	0	0	0
95%	1205	0	0	0
99%	1011	0	0	0
100%	838	0	0	0

Low Inflow Protocol (LIP) Implementation

Another approach to examining the long-term impacts of an IBT is to evaluate changes in the frequency of occurrence of LIP stage for the different scenarios modeled. Each LIP stage stipulates water management actions designed to manage project operations and withdrawals during low inflow conditions. Stage 0 is a drought watch and stages 1 through 4 include increasing levels of water use reductions. In Table 6 Stage -1 represents normal, non-drought, operations. Table 6 is a summary of the LIP stages for the Catawba River Basin model scenarios. For the two 10-MGD scenarios, there is no change in the number of days when the four LIP stages (1-4) that cause water users to require water use reductions are in effect.

Table 6 - Summary of Catawba LIP Stages

Model Scenario	Zero IBT		Avg 10 MGD IBT	Constant 10 MGD IBT	16 MGD Avg (26 MGD MDD) IBT
LIP Stage	Months	% Time	Number of Months Difference	Number of Months Difference	Number of Months Difference
Monthly Summary					
-1	576	64%	-2	0	0
0	276	31%	2	0	-1
1	43	5%	0	0	1
2	5	1%	0	0	0
3	0	0%	0	0	0
4	0	0%	0	0	0
Annual Summary - Number of years with at least one month occurrence in the calendar year					
LIP Stage	Year	% Year	Number of Years Difference	Number of Years Difference	Number of Years Difference
-1	66	88%	0	0	0
0	56	75%	0	0	0
1	10	13%	0	0	0
2	1	1%	0	0	0
3	0	0%	0	0	0
4	0	0%	0	0	0

During the public review of the FEIS, several commenters in the upper Catawba River Basin provided information related to possible lost revenue associated with increased occurrence of LIP Stages associated with a 22-MGD IBT. These commenters alleged that costs ranged from $75,000 to $400,000 per community and that this lost revenue could be multiplied many times to represent all of the communities in the basin. However, these costs were associated with the worst case situation that occurred only once during the 75-year simulation and based on all projected increased water demands in the basin for the year 2035. This worst case would only be expected to occur if inflows were similar to the drought of record. This worst case is also based on taking all of the water from the Catawba River Basin or a 22 MGD ADD IBT. Revenue impacts associated with a 10-MGD ADD IBT from the Catawba were not provided by the commenters. Based on the modeling results, even with the worst case analysis of increased 2035 water demands and a reoccurrence of the drought of record, the two versions of a 10 MGD IBT would not cause any additional months of LIP stages 1 through 4 and would therefore not have revenue impacts on public water supply systems.

Extreme Case Analysis

To assess impacts on a shorter time scale during extreme conditions, the effects of the four modeled IBT scenarios during significant droughts in the period of record were examined. The most severe drought during the 75-year period of record in the Catawba River Basin occurred during 2001-02. For all 11 reservoirs, reservoir levels predicted by the model are very similar for all of the IBT scenarios evaluated except during the extreme drought of 2002. Figure 3 shows that during 2002, the worst part of the five-year drought, the simulated reservoir levels for Lake James for the two 10

MGD transfer scenarios show no apparent difference from the ZERO IBT scenario. Figure 4 shows that during 2002 the Lake Norman simulated reservoir levels for the two 10 MGD transfer scenarios are about 11 inches lower than both the zero transfer and 16 MGD scenarios once in 75 years. Both Figure 3 and Figure 4 show some temporary higher reservoir levels for the 16 MGD scenario, which at first seems counter-intuitive. However, the 16 MGD scenario causes LIP stage 1 to be implemented sooner. In turn, this causes reductions in both required releases and water withdrawals, resulting in higher reservoir levels. This is explained in more detail in Section 2.1.10.1 of the revised Final EIS.

Figure 3 - Lake James Simulated 2002 Drought Elevations

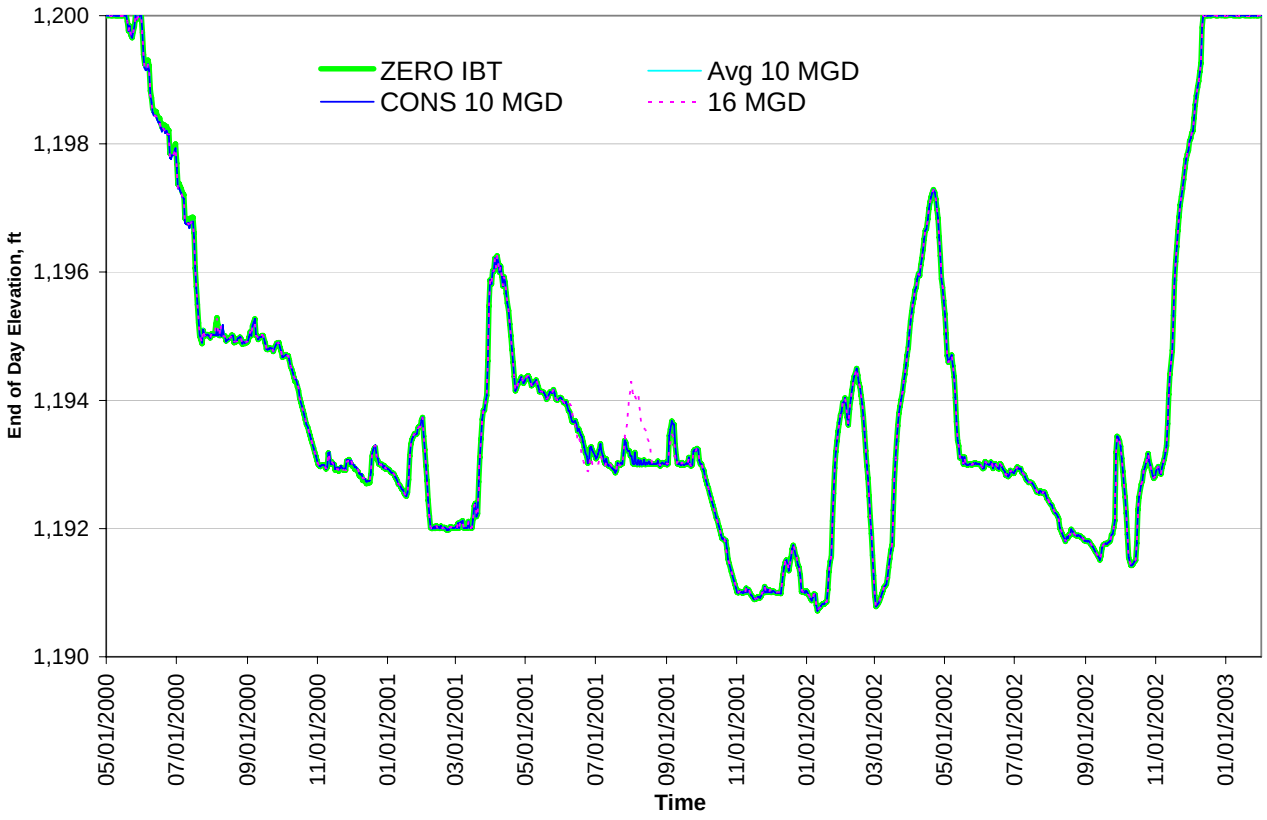
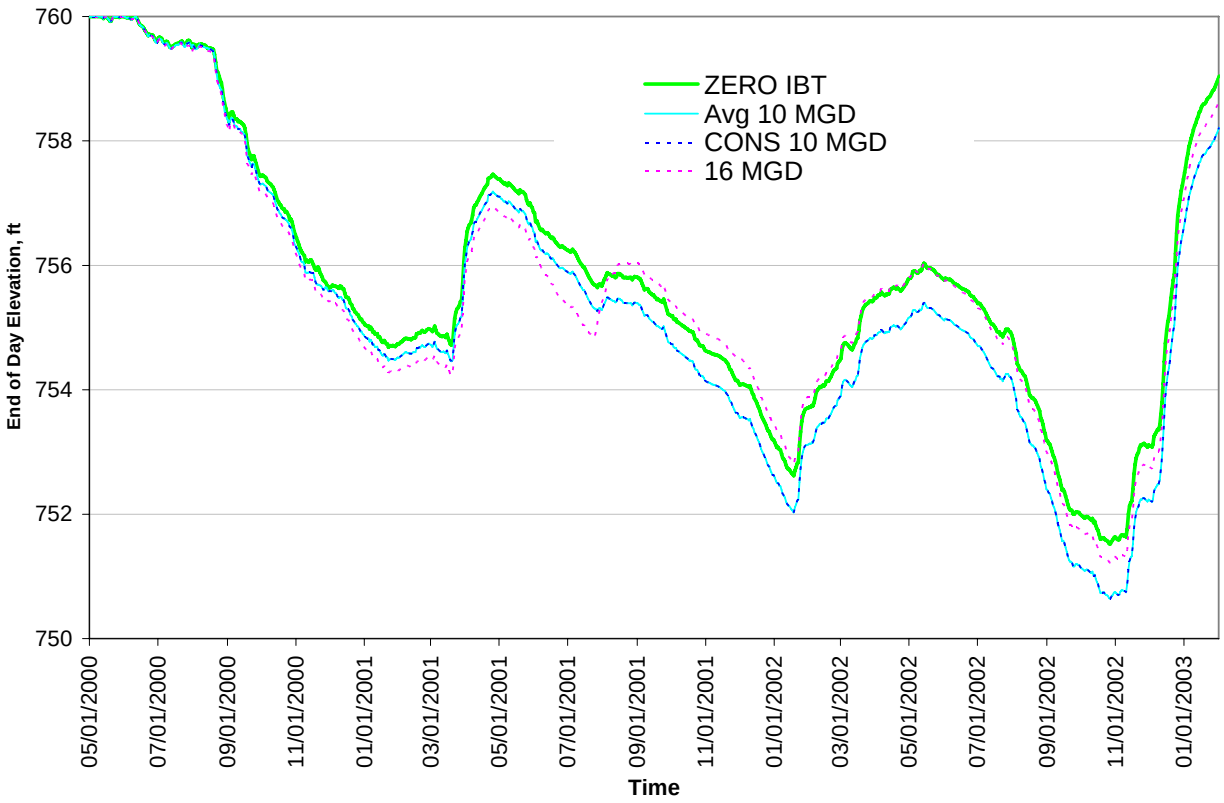


Figure 4 - Lake Norman Simulated 2002 Drought Elevations



The analysis of the reservoir water level effects of the IBT has been primarily based on the use of the CHEOPS model and includes the anticipated effects of the Low Inflow Protocol. This approach was chosen because it uses the same model and assumptions that have been developed with the participation of stakeholders during relicensing. However, it is desirable to verify the conclusions of this analysis through another method that is not dependent on the CHEOPS model or the LIP.

The following simplified analysis of the impact to reservoir storage assumes no inflow for the 183 days from June 1 through November 30 for Mountain Island Lake and the five upstream reservoirs. This period is typically the driest six-month period of the year. A 10 MGD withdrawal would require a total of 1,830 million gallons over the 183 days. The six reservoirs have a combined surface area of 48,781 acres when they are full. If there were no inflows to these reservoirs during the 183-day period, the drawdown from a 10 MGD withdrawal would be 1.4 inches. If the reservoirs were initially at 50-percent capacity the drawdown would be 1.6 inches. These estimates can be considered the likely upper bounds on the impact to storage because the lowest estimated inflow during June 1 – November 30 over 75 years of record is 358 MGD, over 35 times a 10 MGD IBT.

Water Quality

Modeling shows that the IBT scenarios analyzed would have no appreciable effect on reservoir outflow duration or minimum daily releases from the reservoirs. Since by rule (15A NCAC 2B .0206), minimum daily flows are used to assess assimilative capacity on regulated streams for permitting of discharges, the proposed IBT would have no effect on assimilative capacity in the source basin. Since the IBT scenarios analyzed produced no appreciable effects on reservoir level duration, no impact to reservoir water quality is expected due to any of the modeled transfers compared to the Zero IBT scenario.

Whether the small variations in reservoir levels and outflows attributable to an IBT during droughts would have any impact on reservoir water quality conditions was also considered. Water quality data for drought and non-drought years used to calibrate water quality models used for FERC relicensing were examined to see if there was an effect that could be assessed with the model. At the stations examined, ambient concentrations of key parameters, including chlorophyll *a* and nutrients, decreased or remained approximately the same during the drought conditions. Ambient water quality data indicate that although water surface elevations decrease during drought conditions, watershed pollutant loadings, reservoir residence time, and other hydrologic and meteorological effects are such that the water quality of the reservoirs is virtually unchanged between recent normal and drought conditions observed in 1998 and 2001. This comparison, a review of the Duke Energy FERC water quality studies, review of water quality model calibration reports, and discussions with the water quality model developers indicated that additional water quality analysis of minor reservoir level and outflow changes was not warranted.

Water Supply

As part of FERC relicensing, Duke Energy commissioned a water supply study for the entire Catawba-Wateree Project (Revised Final EIS appendix CD-7). A major focus of this study was whether the Catawba-Wateree River Basin could support large projected increases in water use and electric power generation, while providing higher downstream releases for aquatic habitat and still meet critical reservoir elevation targets. To answer this question, Duke Energy coordinated a Water Supply Study, with the participation of major water users in the basin in North and South Carolina. Starting with data from the Local Water Supply Plans the Water Supply Study projected future water use to 2058 for industrial, public water supply, power generation, and agricultural irrigation activities for the Catawba-Wateree River Basin in North Carolina and South Carolina above Lake Wateree Dam. The projections included grandfathered, permitted, and other potential IBTs, including estimates for Concord and Kannapolis. In fact, 2038 and 2058 average IBTs used in the analysis for Concord and Kannapolis were 15 and 27 MGD, respectively. The analysis, using the final set of operating protocols and the final LIP, shows that all the projected demands (including all anticipated IBTs) can be met beyond 2048. The Duke Energy Water Supply Study concluded that all water supply demands could be satisfied through 2048, including the projected additional 354 MGD of water withdrawals and a total of 421 MGD of net outflows, even during a reoccurrence of drought conditions like 2001-2002 (the drought of record).

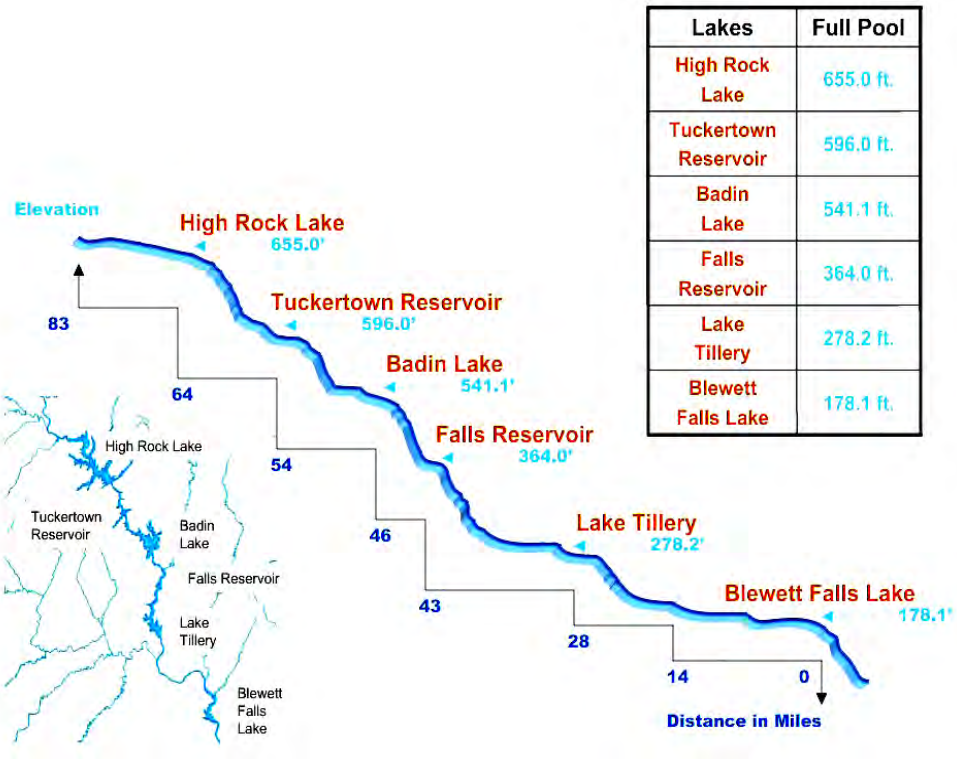
The Duke Water Supply Study evaluated water uses that remove water from the Catawba Basin, such as irrigation, power plant cooling, and transfers out of the basin. The study called these uses "net outflows". They are more often termed "consumptive uses". Considering the average flow of the Catawba River at Lake Wylie, the greatest net outflows projected for 2038 are evaporation for power plant cooling at 5.2% of average flow, public water supply consumptive use at 4.5%, and agricultural use at 1.7%. The 10 MGD Concord-Kannapolis net outflow would be about 0.4% of average flow.

Yadkin

In the Yadkin River Basin, the transfer of water and the impacts due to this transfer were analyzed, by the Division of Water Resources, using a hydrologic simulation computer model called Yadkin Project Operations OASIS model. The Yadkin Project Operations model simulates water quantity changes due to variations in inflows, reservoir operations, and water withdrawals from Kerr Scott Reservoir in North Carolina to Pee Dee, South Carolina. Figure 5 shows the hydropower reservoirs owned and operated by Alcoa Power Generation Inc. (APGI) and Progress Energy. The basic OASIS program was customized for APGI in preparation for the relicensing of their four hydroelectric stations on the Yadkin River. The customized Yadkin OASIS model was used during relicensing to analyze short-term and long-term water management options for the Yadkin River Basin, as well as potential drought management protocols. As required under G.S. § 143-215.22I(f)(2), local water supply plans were used in developing the projected water demands from all users in the Yadkin River Basin through 2035 that could potentially affect or be affected by the proposed transfers.

A Low Inflow Protocol is under development as part of the FERC relicensing process for the Yadkin River Basin hydroelectric projects and is expected to be included in the final settlement agreements for both licensees. The LIP being developed for the FERC licensees and reservoir water users has provisions similar to the LIP for the Catawba-Wateree Basin.

Figure 5 - Yadkin River Basin Reservoirs and Full Pool Elevations



In the Yadkin River source basin, OASIS modeling results were used to assess the impact of the proposed 10-MGD IBT on the reservoirs, using several withdrawal options, including purchasing finished water from the cities of Salisbury and Albemarle. The model results indicate that the direct impacts of the IBT on High Rock Lake, Tuckertown Reservoir, and Badin Lake would not be appreciable. Key indicators used for the assessment included reservoir water levels, reservoir outflow duration data, impacts during extreme droughts, water quality effects and water supply effects. Because the applicants' petition limited their request from the Yadkin River basin to 10 MGD, that is the maximum demand that was modeled. However, several options for meeting a 10 MGD withdrawal were modeled, including the following IBT scenarios:

- *Zero Yadkin Transfer conditions.*
  - "2035 No Transfer" – 2035 water use projections and no Yadkin interbasin transfer.
- *Maximum Daily Demand (MDD) Transfer conditions.*
  - "Tuckertown 10 MGD MDD Transfer" – 2035 water use projections with the Concord-Kannapolis IBT being supplied by the City of Albemarle via a 10 MGD maximum day transfer from Tuckertown Reservoir.
  - "Tuckertown-Salisbury 10 MGD MDD Transfer" – 2035 water use projections with the Concord Kannapolis IBT being supplied by the cities of Albemarle and Salisbury with a 10 MGD maximum day transfer divided evenly between Tuckertown Reservoir and the City of Salisbury.

- *Constant Transfer conditions.*
  - "Tuckertown 10 MGD Constant Transfer" – 2035 water use projections with the Concord-Kannapolis IBT being supplied by the City of Albemarle via a 10 MGD constant day transfer from Tuckertown Reservoir.
  - "Tuckertown-Salisbury 10 MGD Constant Transfer" – 2035 water use projections with the Concord-Kannapolis IBT being supplied by the cities of Albemarle and Salisbury with a 10 MGD constant day transfer divided evenly between Tuckertown Reservoir and the City of Salisbury.

Long-term Analysis

Table 7 and Table 8 show that the impacts to High Rock and Narrows (Badin) reservoirs are insignificant. For the 74 years simulated, 99% of the time the IBT results in a reservoir elevation difference of at most 1.3 inches lower, and usually much less than that. The maximum difference in reservoir elevation resulting from the IBT scenarios ranges from 2.5 to 5.9 inches lower, which occurs only one time in 74 years.

Table 7 - High Rock Lake Elevation Duration Table

Model Scenario	2035 Zero Transfer	Tuckertown 10 MGD MDD Transfer	Tuckertown-Salisbury 10 MGD MDD Transfer	Tuckertown 10 MGD Constant Transfer	Tuckertown-Salisbury 10 MGD Constant Transfer
Exceedance, Percent Time	Yadkin Datum, ft	Difference in Inches	Difference in Inches	Difference in Inches	Difference in Inches
0	655.00	0.0	0.0	0.0	0.0
10	654.17	-0.1	-0.1	-0.1	-0.1
25	652.04	-0.1	0.0	-0.1	-0.1
50	651.05	0.0	0.0	-0.1	-0.1
75	650.13	-0.1	-0.1	-0.1	-0.4
95	646.04	-0.2	-0.4	-0.2	-0.5
99	645.00	0.0	0.0	0.0	0.0
100	644.03	-3.1	-3.6	-5.0	-5.9

Table 8 - Narrows (Badin) Lake Elevation Duration Table

Model Scenario	2035 Zero Transfer	Tuckertown 10 MGD MDD Transfer	Tuckertown-Salisbury 10 MGD MDD Transfer	Tuckertown 10 MGD Constant Transfer	Tuckertown-Salisbury 10 MGD Constant Transfer
Exceedance, Percent Time	Yadkin Datum, ft	Difference in Inches	Difference in Inches	Difference in Inches	Difference in Inches
0	541.10	0.0	0.0	0.0	0.0
10	541.10	0.0	0.0	0.0	0.0
25	534.96	-0.1	0.0	-0.1	-0.1
50	534.51	0.0	0.0	0.0	0.0
75	534.50	0.0	0.0	0.0	0.0
95	534.42	-0.2	-0.1	-0.2	-0.2
99	532.04	-0.8	-0.8	-1.3	-1.2
100	526.77	-3.1	-2.5	-4.7	-3.7

Reservoir Outflow

Table 9 shows the modeling output at the Rockingham streamflow gage. The Rockingham gage is used to measure the minimum flows released from Blewett Falls reservoir. The simulated daily stream flows show no differences for all scenarios for low flows in the 75 to 100 percent exceedance levels, and insignificant differences for the 0 to 75 percent exceedance levels.

Table 9 - Rockingham Streamflow Gage Duration Data

Model Scenario	2035 Zero Transfer	Tuckertown 10 MGD MDD Transfer	Tuckertown-Salisbury 10 MGD MDD Transfer	Tuckertown 10 MGD Constant Transfer	Tuckertown-Salisbury 10 MGD Constant Transfer
Exceedance, Percent Time	Discharge, cfs	Difference in cfs	Difference in cfs	Difference in cfs	Difference in cfs
0	277,918	-10	-10	-10	-16
10	14,780	-9	-9	-9	-15
25	9,400	0	0	0	0
50	5,666	-13	-4	-13	-22
75	1,800	0	0	0	0
95	1,200	0	0	0	0
99	1,200	0	0	0	0
100	809	0	0	0	0

Low Inflow Protocol (LIP) Occurrence

The Yadkin LIP is similar to the Catawba LIP, with five LIP stages. Stage 0 is drought watch and Stages 1 through 4 include increasing levels of water use restrictions. In Table 10 and Figure 6 the Stage -1 represents normal, non-drought operations.

Table 10 is a summary of the LIP stages for the Yadkin River Basin model scenarios. For the two 10 MGD MDD scenarios there is no change in the number of days for the four LIP Stages (1-4) that cause water users to implement water use restrictions. The largest impact occurs under one of the 10 MGD constant IBT scenarios, where there are 19 additional days of stage 3 water use restrictions that occur during one event in the 74 years simulated.

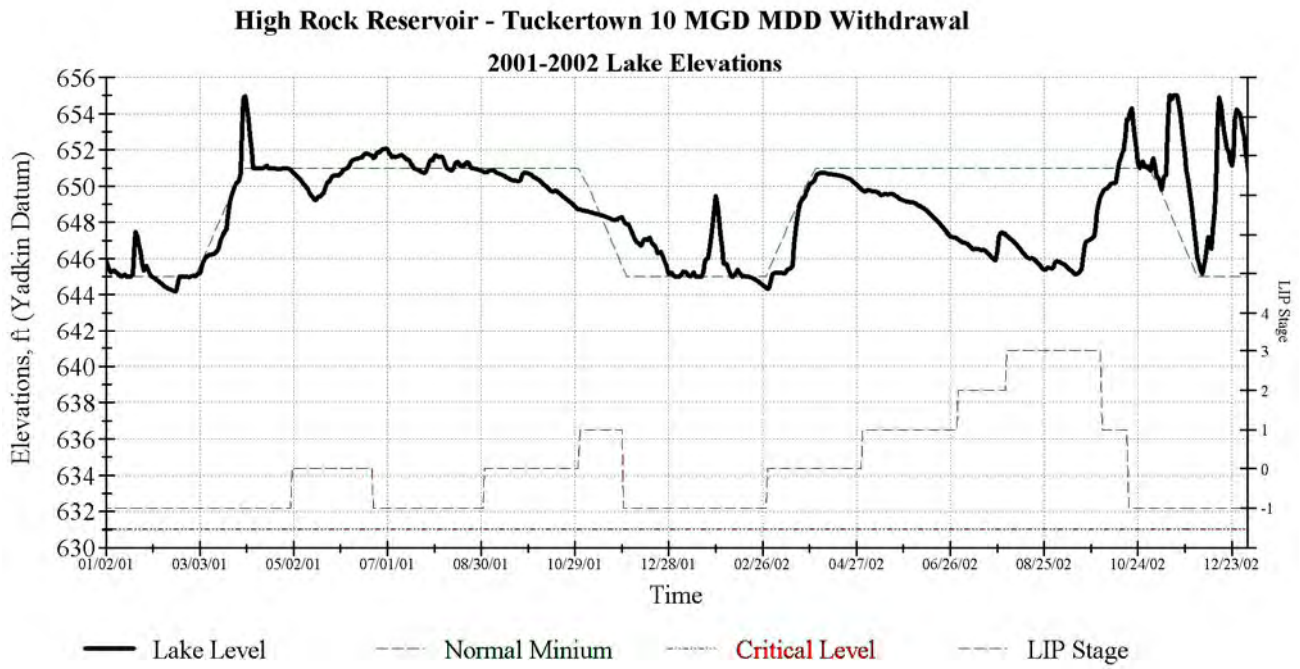
Table 10 - Summary of Yadkin LIP Stages

Model Scenario	2035 No Transfer		Tuckertown 10 MGD MDD Transfer	Tuckertown-Salisbury 10 MGD MDD Transfer	Tuckertown 10 MGD Constant Transfer	Tuckertown-Salisbury 10 MGD Constant Transfer
LIP Stage	**Days**	**% Time**	**Number of Days Difference**	**Number of Days Difference**	**Number of Days Difference**	**Number of Days Difference**
Monthly Summary						
-1	26,004	96.2%	0	-18	-4	-19
0	791	2.9%	0	18	3	19
1	92	0.3%	0	0	0	0
2	49	0.2%	0	0	1	-19
3	92	0.3%	0	0	0	19
4	0	0.0%	0	0	0	0
LIP Stage	**Years**	**% Years**	**Number of Years Difference**	**Number of Years Difference**	**Number of Years Difference**	**Number of Years Difference**
Annual Summary - Number of years with at least month occurrence in the calendar year.						
-1	74	100.0%	0	0	0	0
0	19	25.7%	0	0	0	0
1	3	4.1%	0	0	0	0
2	1	1.4%	0	0	0	0
3	1	1.4%	0	0	0	0
4	0	0.0%	0	0	0	0

Extreme Case Analysis

High Rock Lake experienced severe impacts associated with the drought of 2000 to 2002 as a result of the operating rules specified in the current FERC license, which does not include a LIP. The relicensing process is developing new operating rules that are expected to increase the protection of High Rock Lake during droughts. Figure 6 shows reservoir levels during conditions like the drought of record for the different IBT scenarios. Even during this extreme drought, only minor differences in reservoir levels occurred as a result of the IBT, on the order of 3 to 4 inches for very short periods of time.

Figure 6 - High Rock 2001-2002 Simulated Reservoir Levels – Extreme Drought



The analysis of the reservoir water level effects of the IBT has been primarily based on the use of the OASIS model and includes the anticipated effects of the Low Inflow Protocol. This approach was chosen because it uses the same model and assumptions that have been developed with the participation of stakeholders during relicensing. However, it is desirable to verify the conclusions of this analysis through another method that is not dependent on the OASIS model or the LIP.

The following simplified analysis of impacts to the storage of High Rock Lake, Narrows (Badin) Reservoir and Lake Tillery assumes no inflow for the 183-day period from June 1 through November 30. This is typically the driest six-month period of the year. A 10 MGD withdrawal would require a total of 1830 million gallons of water over the 183 days. The combined surface area of the three reservoirs is 25,400 acres. If the reservoirs are full initially, an 1830 million gallon withdrawal would result in a drawdown of 2.7 inches on the three reservoirs. If the reservoirs were at 50-percent capacity, the drawdown due to the 10 MGD withdrawal would be 3.8 inches. These drawdown estimates can be considered an upper bound on elevation reductions, since the lowest inflow into High Rock Lake over 67 years of record for this 183-day period is 642 MGD, over 60 times a 10 MGD withdrawal.

Water Quality

No water quality effects are anticipated because the proposed IBT would not appreciably affect reservoir water levels or outflows. Return flow to the Rocky River would contain additional wastewater treatment plant effluent as a result of the IBT from the Yadkin and from the Catawba. The wastewater treatment plants expected to receive the increased flows are currently permitted for sufficient capacity to handle the majority of this increased flow, indicating that the flow is within the assimilative capacity of the Rocky River system.

Water Supply

Appreciable changes in reservoir levels and reservoir outflows would not occur in the Yadkin River Basin as a result of the IBT, and therefore impacts on water supply would be insignificant. Water intakes and withdrawals would not be impacted by either the 10-MGD MDD or constant 10-MGD IBT scenarios.

Based on the record, the Commission finds that the detrimental effects on the source basins described in G.S. § 143-215I(f)(2) will be insignificant.

(2a) Cumulative Effects on the Source Major River Basins of Any Current or Projected Water Transfer or Consumptive Water Use

Catawba

The Catawba-Wateree CHEOPS model discussed in Finding Number 2 includes data for current and projected water use withdrawals and water transfers. The model was used to evaluate current and future scenarios of basin water use. A safe yield analysis developed for the Duke Energy Water Supply Study for the entire Catawba-Wateree Project (revised Final EIS appendix CD-7) was evaluated using the Catawba-Wateree CHEOPS Operations Model. The analysis, using the final set of operating protocols and the final LIP, shows that all the projected demands (including all anticipated IBTs) can be met beyond 2048. The Duke Energy Water Supply Study concluded that through 2048, additional 354 MGD of water withdrawals, and a total of 421 MGD of consumptive uses or net outflows, the Catawba-Wateree Basin can meet these demands even during a reoccurrence of drought conditions such as those of 2001-2002 (the worst on record), without any reservoir dropping below critical elevations for the existing water supply intakes.

Yadkin

The Yadkin Project Operations OASIS model discussed in Finding Number 2 includes data for current and projected water withdrawals and water transfers. The model was used to evaluate current and future scenarios of basin water use. The safe yield of the reservoir system has not been determined. The reservoirs are managed by two different power companies and the model lacks adequate detail on the operational policies of both power companies to do a detailed safe yield analysis. However, based on the water use and operational scenarios and proposed LIP operations, the yield is at least as large as or larger than the cumulative 2035 water use scenario, including the 10 MGD IBT.

Based on the record, the Commission finds that the cumulative effects of this and other future water transfers and consumptive water uses on the source basins described in G.S. § 143-215I(f)(2a) are well within the sustainable capacity of the basins.

(3) Detrimental Effects on the Receiving Basin

Secondary impacts in the receiving basin would result from the proposed IBT because the additional water supply provided by the transfer would facilitate growth. Urbanization of portions of the water service areas could cumulatively cause degradation and/or loss of wetlands, aquatic resources and habitats, forest resources, prime agricultural land, wildlife habitat, and archeological resources. Changes in land use have an effect on both the quantity and quality of stormwater runoff.

In addition to state and federal programs and regulations that help mitigate these potential impacts associated with increased growth, Concord, Kannapolis, and other Cabarrus County communities have adopted an updated Unified Development Ordinance (UDO) (Revised Final EIS Appendix CD-1). The UDO was developed and adopted through cooperative efforts among all municipalities within the County. The following is a summary of the measures included in the UDO to address growth-related impacts:

- Measures have been implemented to address, and go beyond, Phase II Stormwater Rules.
- An undisturbed buffer of at least 50 feet shall be established along both sides of perennial streams, as measured from the top of the stream bank. Each ordinance also requires an additional buffer width based on slope up to a maximum buffer width of 120 feet. Buildings or structures may not be placed within an additional 20-foot zone outside the buffer. Intermittent streams are protected in accordance with the Phase II Stormwater Rules. When development is planned, streams will be designated on-site by a qualified professional to ensure proper application of stream buffer rules.
- Floodplain protection regulations limit land-disturbing and fill activities within floodplains, protecting and preserving their water quality and flood control functions.
- The City of Concord has developed and approved the use of a Stormwater Technical Standards Manual.

These efforts to address growth-related impacts were reviewed and accepted by agencies within DENR during EIS review.

The IBT will cause additional wastewater discharge to the Rocky River Basin; however, the NPDES permitted capacity is sufficient to accommodate almost all of the IBT flows. The NPDES permit is written to protect water quality standards.

Additional discharges associated with the IBT were considered as inputs to the Yadkin Project Operations OASIS model described in Finding Number 2. Modeling results did not show an appreciable impact due to the additional wastewater flows associated with the IBT.

Several of the facilities that could be used to transfer and treat water to implement the proposed IBT are already substantially complete. There would therefore be only minor detrimental effects expected in the short term associated with expansion of these facilities. Though improvements to these facilities will eventually be required, the improvements are expected to represent minor construction, and would follow established rights-of-way

Based on the record, the Commission finds that there would be secondary and cumulative impacts associated with the proposed interbasin transfer on the receiving basin as described in G.S. § 143-215I(f)(3). However, the implementation of the growth management measures adopted as part of the Unified Development Ordinance will be adequate to mitigate the impacts to a reasonable degree.

(4) Reasonable Alternatives to the Proposed Transfer

Four IBT alternatives and two non-IBT alternatives were considered in addition to the No Action Alternative (NAA). These alternatives are summarized as follows and the routes are shown in Figure 7.

- **Interbasin Transfer Alternatives**

    - **Alternative 1** would meet the entire water supply shortfall through transfers from the Catawba River Basin. This alternative would require the development of a water supply contract with Charlotte-Mecklenburg Utilities (CMU) for at least 10 MGD and up to 36 MGD MDD of finished water. A combination of finished water transferred through existing interconnections and transport of raw water from a new or existing intake on Lake Norman could also be used.

    - **Alternative 2** would meet the entire water supply shortfall through transfers from the Yadkin River Basin of 22 MGD ADD and up to 36 MGD MDD of water from Tuckertown Reservoir or Badin Lake. For this alternative, either raw water or finished water could be transferred.

    - **Alternative 3** would meet the entire water supply shortfall through transfers from the Yadkin River Basin of 22 MGD ADD and up to 36 MGD MDD of raw water from High Rock Lake. The water would be transferred from High Rock Lake and pumped through a new raw water main that would discharge into Lake Howell in Cabarrus County and Kannapolis Lake in Rowan County.

- The **Applicants' Preferred Alternative** is a combination of Alternatives 1 and 2, involving an IBT from both the Yadkin and the Catawba River Basins to the Rocky River Basin. This alternative would continue the use of the existing interconnections with Charlotte, Salisbury, and Albemarle to meet short-term increases in demands, and would allow Concord and Kannapolis the opportunity to expand the amount of finished water obtained from Charlotte, Salisbury, and/or Albemarle or to obtain raw water from Lake Norman in the Catawba River Basin. The Applicants' Preferred Alternative IBT certificate would be for up to 26 MGD MDD from the Catawba River Basin (if the Yadkin transfer were approved) and up to 10 MGD MDD from the Yadkin-Pee Dee River Basin. The total IBT from both sources would not exceed an MDD of 36 MGD or an ADD of 22 MGD.

- **Non-Interbasin Transfer Alternatives**

  - Two non-IBT alternatives that use flows in the Rocky River augmented by wastewater treatment plant (WWTP) discharges were also considered.

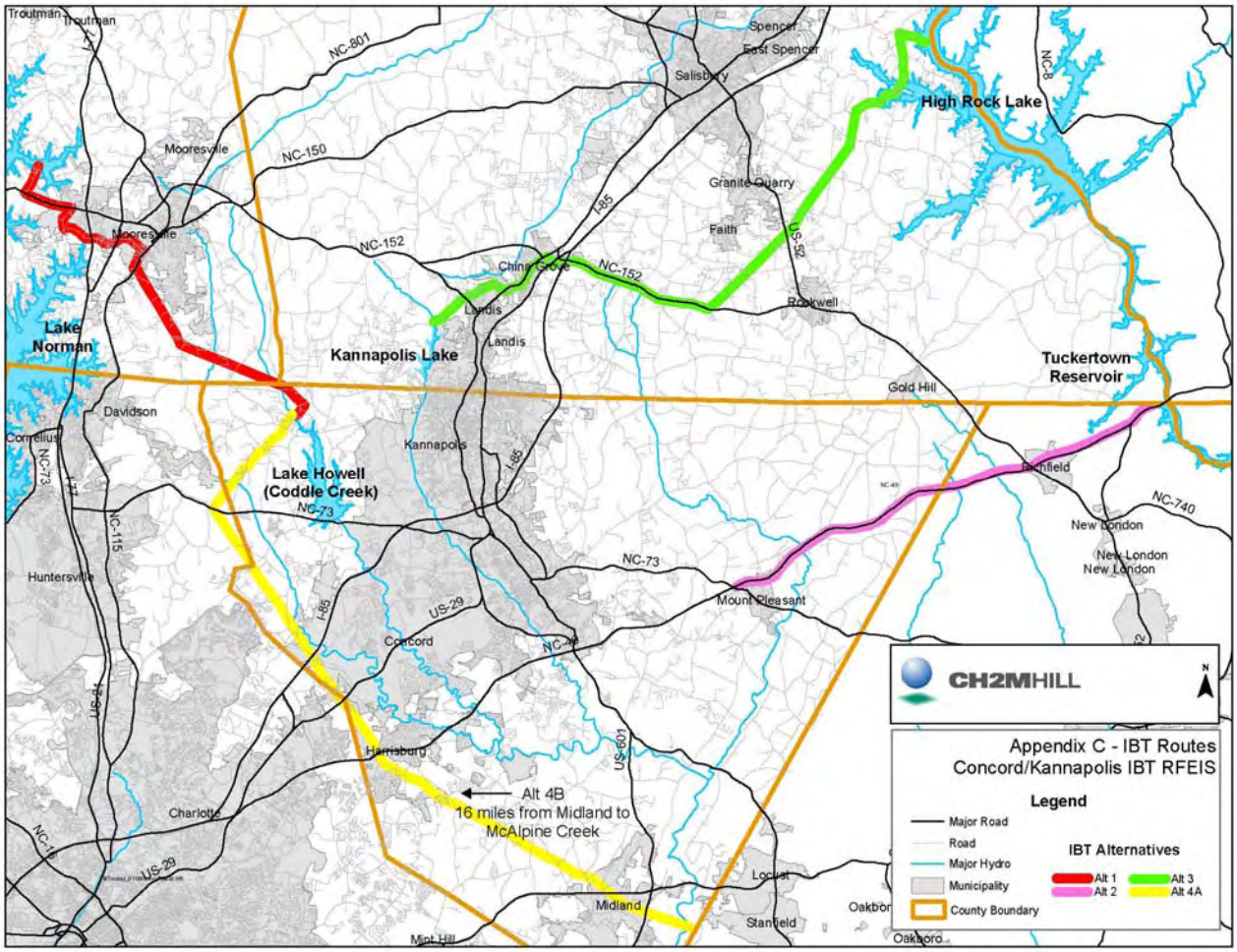
    - In **Alternative 4A**, an ADD of 22 MGD would be withdrawn near Midland from the Rocky River approximately 10 miles downstream of the Rocky River Regional WWTP and raw water would be pumped up to Lake Howell.

    - **Alternative 4B** would transfer up to an ADD of 22 MGD of raw water from Lake Norman to Lake Howell and simultaneously withdraw up to an ADD of 22 MGD from the Rocky River near Midland and pump it to McAlpine Creek near Mint Hill in the Catawba River Basin to mitigate the IBT.

These alternatives were not found to be feasible because of several factors. In particular, the high proportion of flow in the Rocky River from WWTP discharges significantly reduces its potential use as a water supply under the North Carolina water supply protection regulatory framework.

Alternatives that involve eliminating or reducing the IBT by returning WWTP effluent discharges to the source basins were considered but were found to be impractical because the discharges would need to be to very small streams or directly to reservoirs used as public water supply.

Figure 7 - IBT Routes



In addition to the alternatives considered in the EIS, the Hearing Officers requested staff to consider a variation on the applicants' preferred alternative, an IBT from both the Yadkin and the Catawba River Basins to the Rocky River Basin. This alternative would continue the use of existing and expanded interconnections with Charlotte, Salisbury, and Albemarle to meet demands. The Hearing Officers' Alternative IBT would be for up to 10 MGD MDD from the Catawba River Basin and up to 10 MGD MDD from the Yadkin-Pee Dee River Basin. The summary of the staff analysis is in attachment B. This alternative meets the projected 2035 deficit, after removing the 80% planning factor, as shown in Table 2 - Summary of 2035 Water Supply Deficit.

Based on the record, the Commission finds that reasonable alternatives to the proposed IBT were considered. Based on a review of the project information, the Hearing Officers have selected the recommended alternative as the most feasible means of meeting the petitioners' water supply needs while minimizing detrimental environmental impacts.

(5) Applicants' Use of Impoundment Storage Capacity

This criterion is not applicable, as the petitioners do not own or operate the impoundments involved in the proposed transfer.

(6) Purposes of Any US Army Corps of Engineers Multi-Purpose Reservoir Relevant to the Petition

Catawba

This criterion is not applicable, because there are no US Army Corps of Engineers reservoirs in the basin.

Yadkin

The US Army Corps of Engineers operates W. Kerr Scott reservoir in the headwaters of the basin. This criterion is not applicable because the petitioners are proposing to use storage in an Alcoa Power Generating, Inc. reservoir and the operation of Kerr Scott reservoir is unaffected by the IBT.

(7) Any Other Facts or Circumstances that are Reasonably Necessary to Carry Out the Law

During the public review period, a number of comments stated that the environmental analysis on which the IBT petition is based is flawed, because the hydrologic modeling results are greatly affected during drought by assumptions related to the LIPs. The LIPs include both voluntary and mandatory water conservation measures both for hydropower and required releases and for water users. The hydrologic models include assumptions about the expected levels of water withdrawal reduction during the various stages of drought. Therefore, the concerns are the uncertainty in the enforceability of the LIP on water users other than the power companies and the uncertainty about whether FERC will make the LIP a part of the power companies' new FERC licenses.

Two factors may reduce the uncertainty surrounding the enforceability of the LIPs. First, water users which have signed the Catawba-Wateree Comprehensive Relicensing Agreement are agreeing to follow the LIP protocols. The second factor is the 401 water quality certification for the hydropower projects in both source basins. FERC is required to include North Carolina's 401 certification requirements in the applicant's license. The Division of Water Quality (DWQ) is the agency responsible for 401 certifications. In past similar cases, DWQ has required an LIP as a condition for certification. DWR intends to request that DWQ require the LIPs as a condition to the 401 water quality certification in both the Catawba and Yadkin basins.

In addition to the concerns surrounding the LIPs, there were concerns regarding the possibility that the FERC final license requirements could turn out to be significantly different from the assumptions used in the impact analysis. In the case of the Catawba-Wateree process, the impact analysis was consistent with the relicensing agreement signed by 85 percent of the stakeholders involved in the process and with Duke Energy's FERC application. Nevertheless, some uncertainty about the eventual outcome of hydropower relicensing is being recognized by applying conditions to the IBT certificate that will allow the license to be reopened if the license conditions are substantially different from those that are anticipated.

Several comments were received indicating concern that the Catawba River was supporting a heavy demand for water and may be approaching overuse. There are existing state laws and regulations to address that condition. If the aggregate water use in either the Catawba or Yadkin River basins, including transfers out to the basin, reaches the point that water users are facing water shortages not associated with hydrological drought conditions, or if there is a potential of impairing the renewal or replenishment of the water resources of the basin, the Commission has the authority under the Water Use Act of 1967 (G.S. 143-215.11 et seq.) to designate a capacity use area to provide coordination and limited regulation of water resources in the basin. Designation of a capacity use area requires development of an administrative rule delineating the boundaries of the capacity use area and requiring all water users over 100,000 gallons per day to obtain a permit. The administrative rule and permits can regulate and modify all withdrawals, including interbasin transfers.

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. As part of the plan, the cities of Concord and Kannapolis and the communities to which they supply water will follow all applicable water conservation rules included in the Low Inflow Protocols for both the Catawba and Yadkin River basins. The drought management plan will describe the actions that the cities of Concord and Kannapolis will take to protect the Catawba and Yadkin River basins during drought conditions.

The Commission finds that if the Revised Final Environmental Impact Statement or the analysis on which it is based turns out to be substantially in error, or if new information becomes available indicating that the environmental impacts associated with the transfer are substantially different from the projected impacts that form the basis for the Findings of Fact associated with this certificate, the Commission reserves the right to reopen the certificate to modify it as needed to protect the resources of the Catawba and Yadkin river basins, under the terms of G.S. § 143-215.22I.

The Commission finds that the recommended certificate conditions are based on specific anticipated FERC license conditions for the licensees in the Catawba and Yadkin river basins which have been developed during several years of stakeholder consultations, but which will not be finally determined by FERC until 2008; and that if the final FERC decisions are substantially different from the anticipated conditions, such as changes to minimum flow requirements or low inflow protocols, the Commission reserves the right to reopen the certificate to modify it as needed to protect the resources of the Catawba and Yadkin river basins.

The Commission determines that if at some future time, total water use in either the Catawba or the Yadkin basin, including transfers out of the basin, reaches the point that water users in the basin are facing water shortages or if there is a potential of depleting the water resources of the basin, the EMC may investigate adopting a Capacity Use Area for the entire basin in North Carolina and instituting an administrative rule to regulate the use of water resources. The rule would be designed to provide equitable access to water supplies and to protect the resource. Any transfers of water out of the basin would be subject to control and adjustment by the provisions of the Capacity Use Area rule, along with all the water uses within the basin.

The Commission finds that the applicants' Compliance and Monitoring Plan as included in the petition is not adequate to monitor the proposed water transfer. The monitoring plan needs to be based on actual metered water usage.

Decision

Based on the record and the recommendation of the Hearing Officers, the Commission, on January 11, 2007 by duly made motions, concludes by a preponderance of the evidence based upon the Findings of Fact stated above that (1) the benefits of the proposed transfer outweigh the detriments of the transfer, and (2) the detriments of the proposed transfer will be mitigated to a reasonable degree under the conditions of this Certificate. Therefore, and by duly made motions, the Commission grants in part the petition of the cities of Concord and Kannapolis ("Cities") to transfer water from the Catawba and Yadkin River basins to the Rocky River basin. The permitted transfer amount shall not exceed a maximum of 10 million gallons on any calendar day from the Catawba River basin to the Rocky River basin and shall not exceed a maximum of 10 million gallons on any calendar day from the Yadkin River basin to the Rocky River basin. These transfer amounts are nonexclusive of each other. This certificate is effective immediately.

The certificate is subject to the conditions below, which are imposed under the authority of G.S. § 143-215.22I. The Cities shall comply with any plan that is approved pursuant to this Certificate and any approved amendments to such plan. A violation of any plan approved pursuant to this Certificate will be considered a violation of the terms and conditions of this Certificate.

1. If at any time any legal requirement that (a) governs the operation of the hydroelectric facilities in the Catawba River basin currently licensed as Federal Energy Regulatory Commission ("FERC") Project No. P-2232 or in the Yadkin-Pee Dee River basin currently licensed as FERC Project Nos. P-2206 and P-2197 and (b) governs or affects water use and/or quality, differs from the actual or anticipated FERC license conditions or other legal requirements upon which the analysis underlying this Certificate is based, such as changes to minimum flow requirements or drought mitigation measures, the Commission may reopen and modify this Certificate to ensure continued compliance with G.S. ch. 143, art. 21, part 2A.
2. The Cities shall implement drought management measures that become more stringent as drought conditions increase in severity. Prior to transferring any water under this Certificate, the Cities shall submit a plan to the Division of Water Resources ("Division"), for the Division's approval, for implementing this condition. The plan shall include a demonstration that each of the Cities has legal authority and adequate resources to implement the drought management measures specified in this condition. The Cities shall not transfer any water to any other jurisdiction (regardless of the origin of that water) unless that jurisdiction agrees to be bound by this condition in full. The drought management measures shall be at least as stringent as the measures in Attachment A to this Certificate, which is incorporated herein:

3. If the Division determines that the Cities are no longer cooperating with each other for the implementation of this Certificate, the Division may, in consultation with the Cities and considering the proportionate 2035 projected needs of each of the Cities, allocate the certified transfer amount between the Cities. Within three months of any such allocation, each of the Cities shall submit a plan to the Division, for the Division's approval, which shall assure that the Certificate amounts will not be exceeded.

4. Within four months of the effective date of this Certificate, the Cities shall develop and submit to the Division for the Division's approval a compliance and monitoring plan for reporting at least annually: (a) maximum daily transfer amounts based on data derived from water meters, (b) compliance with certificate conditions, and (c) drought management activities.

5. If the Commission determines that the record on which this Certificate is based, including the revised Final Environmental Impact Statement ("FEIS") or the analysis on which the FEIS 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.

6. No later than twenty years from the date of this Certificate, and then no later than twenty years from the prior report, the Cities shall, with direction from the Division and after solicitation of input from and consultation with interested stakeholders (notice to stakeholders shall be distributed in accordance with G.S. § 143-215.22I(d)(2)-(3)), submit a written report to the Commission (a) summarizing transfers for the previous twenty years; (b) discussing any new or revised facts that suggest that the record was substantially in error or that the environmental impacts associated with activities pursuant to this Certificate are substantially different from those projected impacts that formed the basis for the findings of fact and this Certificate; (c) summarizing all actions taken to address actual or potential drought conditions; (d) recommending any changes to this Certificate (including under Condition 5) or any plans pursuant to this Certificate that may be necessary to assure compliance with G.S. ch. 143, art. 21, part 2A; (e) detailing consultation with interested stakeholders; and (f) certifying compliance with this Certificate. The report shall be signed by an officer of each city that is responsible for compliance with this Certificate. The Cities shall make the report available to all interested stakeholders.
7. This Certificate does not exempt the Cities or any other entity from compliance with any other requirements of law. For example, if a Capacity Use Area is designated under the provisions of the Water Use Act of 1967, G.S. § 143-215.11 et seq. in the Catawba, Yadkin or Rocky river basins the Cities and other entities shall comply with any implementing rules and the Commission may reopen and modify this Certificate to ensure compliance.

NOTICE: The holders of this certificate are jointly and severally responsible for compliance with the terms, conditions and requirements stated herein, and are therefore jointly and severally liable for all penalties assessed to enforce such terms, conditions and requirements as provided in G.S. §143-215.6A.

This is the _____ day of _____, 2007.

_____
David H. Moreau, Chairman

PART 2 – STAFF RESPONSE TO COMMENTS

Public hearings on the Interbasin Transfer Certification Petition for the Cities of Concord and Kannapolis were held on June 22, 2005 at 5:00 p.m. at UNC-Charlotte in Charlotte and on June 23, 2005 at 5:00 p.m. at the Albemarle City Hall Annex, in Albemarle. Two additional public meetings were held on September 7, 2006 at 8:00 p.m. at the Old Rock School Auditorium in Valdese and on September 19, 2006 at 6:00 p.m. at the Olympic High School Gymnasium in Charlotte. A total of 22 oral comments and 58 written comments were received during the initial 2005 comment period for the Environmental Impact Statement and Interbasin Transfer Petition. Including the 2006 public comment period, a total of 233 oral comments and 1,564 written comments were received on the Environmental Impact Statement and Interbasin Transfer Petition.

The Department received oral and written comments at the public hearings and public meetings along with additional written comments. Many of the commenters commented on issues related to both the EIS and petition, so all the comments and responses are included in the EIS. The comments and staff responses on the draft Environmental Impact Statement can be found in the May 2006 Final Environmental Impact Statement in Appendix F. Additional comments and responses are in the November 2006 Revised Final Environmental Impact Statement in Appendices F, CD-8, and CD-9.

PART 3 – ATTACHMENTS

Attachment A – Minimum Criteria for Drought Management Plan

General Statute § 143-215.22I(h) states "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." At a minimum, the following conditions shall be included in the drought management plan submitted to the Division.

Implementation of the Cities' drought management plan shall, at a minimum, be linked to declarations of levels of drought severity pursuant to (a) the protocol established in the Low Inflow Protocol ("LIP") that is included in any FERC license (including via a certificate under 33 U.S.C. § 1341) for Project Nos. 2232, 2206, or 2197 or (b) the drought classifications applied by the North Carolina Drought Management Advisory Council (NC DMAC), whichever is more stringent.

The Cities' drought management measures shall be at least as stringent as the following measures:

Stage 1 Actions - (NC DMAC Moderate Drought) The goal is to reduce water usage by 3-5% (or more) from the amount that would otherwise be expected. The Cities (and other jurisdictions) shall complete at a minimum the following activities within 14 days after the Stage 1or Moderate Drought declaration:

a. Notify their water customers and employees of the low inflow condition through public outreach and communication efforts.
b. Request that their water customers and employees implement voluntary water use restrictions, in accordance with their drought response plans.
c. Provide a status update to the appropriate drought management advisory group and the Division of Water Resources on actual water withdrawal trends and plans for moving to mandatory restrictions, if required.

Stage 2 Actions - (NC DMAC Severe Drought) The goal is to reduce water usage by 5-10% (or more) from the amount that would otherwise be expected. The Cities (and other jurisdictions) shall complete at a minimum the following activities within 14 days after the Stage 2 or Severe Drought declaration:

a. Notify their water customers and employees of the continued low inflow condition and movement to mandatory water use restrictions through public outreach and communication efforts.
b. Require that their water customers and employees implement mandatory water use restrictions, in accordance with their drought response plans.
c. Enforce mandatory water use restrictions through the assessment of penalties.
d. Provide a status update to the appropriate drought management advisory group and the Division of Water Resources on actual water withdrawal trends and plans for moving to increased water restrictions, if required.

Stage 3 Actions - (NC DMAC Extreme Drought) The goal is to reduce water usage by 10-20% (or more) from the amount that would otherwise be expected. The Cities (and other jurisdictions) shall complete at a minimum the following activities within 14 days after the Stage 3 or Extreme Drought declaration:

a. Notify their water customers and employees of the continued low inflow condition and movement to mandatory water use restrictions through public outreach and communication efforts.
b. Require that their water customers and employees implement increased mandatory water use restrictions, in accordance with their drought response plans.
c. Enforce mandatory water use restrictions through the assessment of penalties.
d. Encourage industrial/manufacturing process changes that reduce water consumption.
e. Provide a status update to the appropriate drought management advisory group and the Division of Water Resources on actual water withdrawal trends and plans for moving to increased water restrictions, if required.

Stage 4 Actions - (NC DMAC Exceptional Drought) The goal is to reduce water usage by 10-20% (or more) from the amount that would otherwise be expected. The Cities (and other jurisdictions) shall complete at a minimum the following activities within 14 days after the Stage 4 or Exceptional Drought declaration:

a. Notify their water customers and employees of the continued low inflow condition and movement to emergency water use restrictions through public outreach and communication efforts.
b. Require that their water customers and employees implement emergency water use restrictions, in accordance with their drought response plans.
c. Enforce emergency water use restrictions through the assessment of penalties.
d. Restrict all outdoor water use.
e. Prioritize and meet with their commercial and industrial large water customers to discuss strategies for water reduction measures, including development of an activity schedule and contingency plans.
f. Provide a status update to the appropriate drought management advisory group and the Division of Water Resources on actual water withdrawal trends and prepare to implement emergency plans to respond to water outages, if required.

Attachment B – Staff Modeling Analysis of Hearing Officers' Recommendation

Staff Modeling Analysis of Hearing Officers' Recommended Alternative

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

December 2006

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PURPOSE

The purpose of this attachment is to provide additional information to assess the potential impacts associated with the hearing officer's recommended alternative for the proposed interbasin transfer (IBT) by the Cities of Concord and Kannapolis. The hearing officers are recommending certification of a transfer amount to the Rocky River Basin not to exceed 10 million gallons per day (MGD) on any day from the Yadkin basin and an amount not to exceed 10 MGD on any day from the Catawba basin.

In order to study the potential impacts of the recommended transfer, this report uses modeling results from the Catawba Wateree CHEOPS model and the Yadkin River Basin OASIS model to examine 10 MGD constant IBT scenarios from both source basins. Under the 10 MGD constant IBT scenario, 10 MGD is transferred from the two source basin every day of the year. This represents the worst case impact scenario under the Hearing Officers' recommended alternative.

The analysis in this attachment related to the Catawba River source basin includes a comparison of the 10 MGD constant IBT scenario to a 26 MGD maximum daily demand (MDD) transfer scenario. The 26 MGD MDD transfer represents the requested transfer amount from Catawba River Basin if the requested 10 MGD MDD transfer from the Yadkin River Basin were to be approved. The 26 MGD MDD transfer is modeled as a 16 MGD average day demand (ADD) with monthly fluctuations.

The analysis related to the Yadkin River source basin includes a comparison of several 10 MGD MDD alternatives to a 10 MGD constant IBT scenario. The applicant has requested a 10 MGD MDD transfer amount from the Yadkin.

Additional streamflow and storage information on both the Catawba and Yadkin River basins is also presented in this attachment.

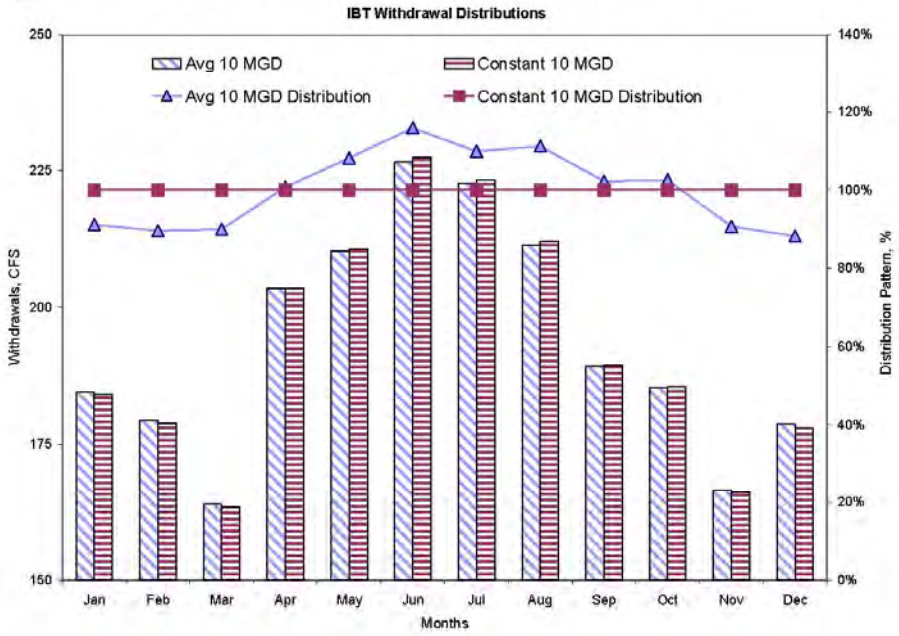
CATAWBA RIVER BASIN ANALYSIS

For this analysis, a 10 MGD constant IBT scenario and a 10 MGD ADD IBT scenario were compared to a scenario representing the Applicant's Preferred Alternative of 16 MGD ADD (roughly 26 MGD MDD). A comparison scenario was also included using 2035 demands on the system with zero IBT by the cities of Concord and Kannapolis. All IBT from the Catawba River Basin is considered by the model to be withdrawn from Lake Norman.

In modeling the 10 MGD constant IBT scenario, 10 MGD was added to the 2035 total system withdrawal from Lake Norman. For the 10 MGD ADD scenario, a monthly distribution pattern was used to develop the average daily IBT. The average daily IBT was then added to the 2035 demand from Lake Norman.

The withdrawal amounts represented by the two 10 MGD IBT scenarios (constant and ADD) are compared in Figure 1. Notice that the withdrawal for the constant 10 MGD IBT scenario are slightly lower than those for the average 10 MGD IBT scenario during winter months and slightly higher in summer months. It will be shown that this slight difference in withdrawals between the two scenarios produces slight variations in the modeling results.

Figure 1 - Lake Norman 2035 Water Use Distribution Pattern



Predicted Impacts - LIP

Impacts on the number of months of LIP restrictions under the various scenarios being examined are summarized in Table 1. The summary shows that for the 16 MGD ADD IBT scenario, Stage 1 LIP occurrence was observed for one extra month compared to Zero IBT. For the two 10 MGD IBT scenarios, there was no predicted increase in the number of months of Stage 1 LIP occurrence. Occurrences of Stage 2 LIP or higher are the same for all scenarios. The table also compares the numbers of years with at least one month occurrence of the various LIP stages predicted under each of the scenarios. The table shows no differences between any of the scenarios.

Table 1 - Summary of Catawba LIP Stages

Model Scenario	Zero IBT		Avg 10 MGD IBT		Constant 10 MGD IBT		16 MGD Avg (26 MGD MDD) IBT	
LIP Stage	Months	% Time	Months	% Time	Months	% Time	Months	% Time
Monthly Summary								
-1	576	64%	574	64%	576	64%	576	64%
0	276	31%	278	31%	276	31%	275	31%
1	43	5%	43	5%	43	5%	44	5%
2	5	1%	5	1%	5	1%	5	1%
3	0	0%	0	0%	0	0%	0	0%
4	0	0%	0	0%	0	0%	0	0%
Annual Summary - Number of years with at least one month occurrence in the calendar year								
LIP Stage	Year	% Year	Year	% Year	Year	% Year	Year	% Year
-1	66	88%	66	88%	66	88%	66	88%
0	56	75%	56	75%	56	75%	56	75%
1	10	13%	10	13%	10	13%	10	13%
2	1	1%	1	1%	1	1%	1	1%
3	0	0%	0	0%	0	0%	0	0%
4	0	0%	0	0%	0	0%	0	0%

Predicted Impacts – Lake Elevations and Outflows

Predicted lake elevation and outflow profiles for Lake James and Lake Norman were compared across the IBT scenarios. The profiles are shown in time series over the entire 75-year record, as well as during critical low flow periods.

Figure 2 shows the simulated elevation profiles for Lake James over the entire 75-year record. Figure 3 shows the predicted elevation of Lake James during the1990s low flow period. Figure 3 shows that the constant 10 MGD IBT curve is predicted to stay higher during July 1991. This higher predicted elevation of 9.22 inches for the constant 10 MGD IBT scenario compared to the 10 MGD ADD scenario occurred even with slightly higher withdrawals in summer months.

Figure 4 shows the simulated elevations for Lake James during the 2002 drought. Similar Lake James elevations were predicted for all IBT scenarios during the 2002 drought.

Figure 5 shows simulated elevations for Lake Norman over the entire 75-year record. Figure 6 shows the simulated elevations for Lake Norman during the 1980's drought. Figure 6 shows that the elevation for the constant 10 MGD IBT scenario was predicted to be slightly higher during the fall season of 1986 with about 3.2 inches maximum difference as compared to the average 10 MGD IBT scenario.

Lake elevation duration plots for Lakes James and Norman are shown in Figure 8 and Figure 9 respectively. The duration data are presented in Table 2 and Table 3. The differences are in hundredths of a foot and are not noticeable in the plots.

Figure 10, Figure 11, Table 4, and Table 5 contain the total outflow plots and data. They show no noticeable differences among the scenarios studied.

Figure 2 - Lake James Elevation Profiles

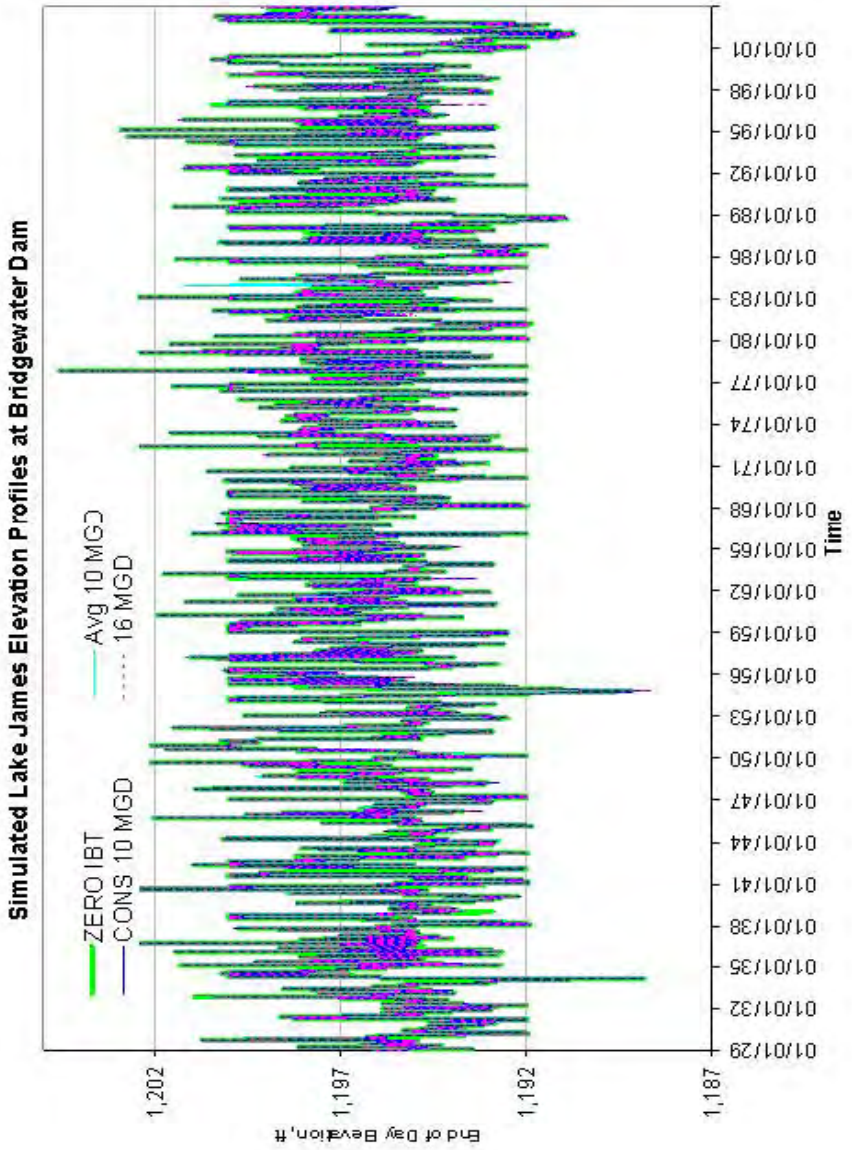
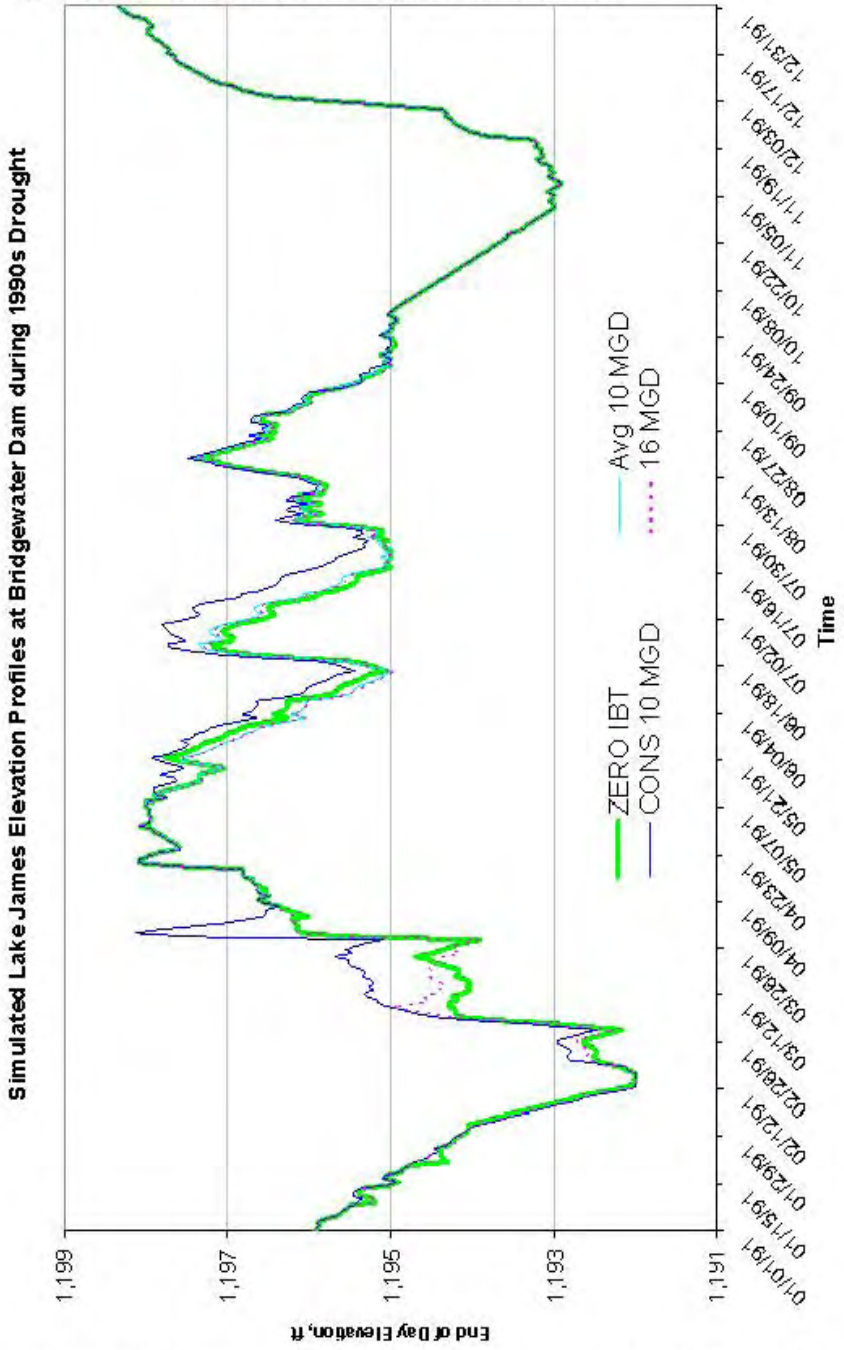


Figure 3 - Lake James Elevation Profiles during 1990s Dry Period



North Carolina Division of Water Resource 6 *Staff Modeling Analysis of Hearing Officers' Recommendations SUPPLEMENT TO HEARING OFFICERS' REPORT December, 2006*

Figure 4 - Lake James Elevation Profiles during 2002 Dry Period

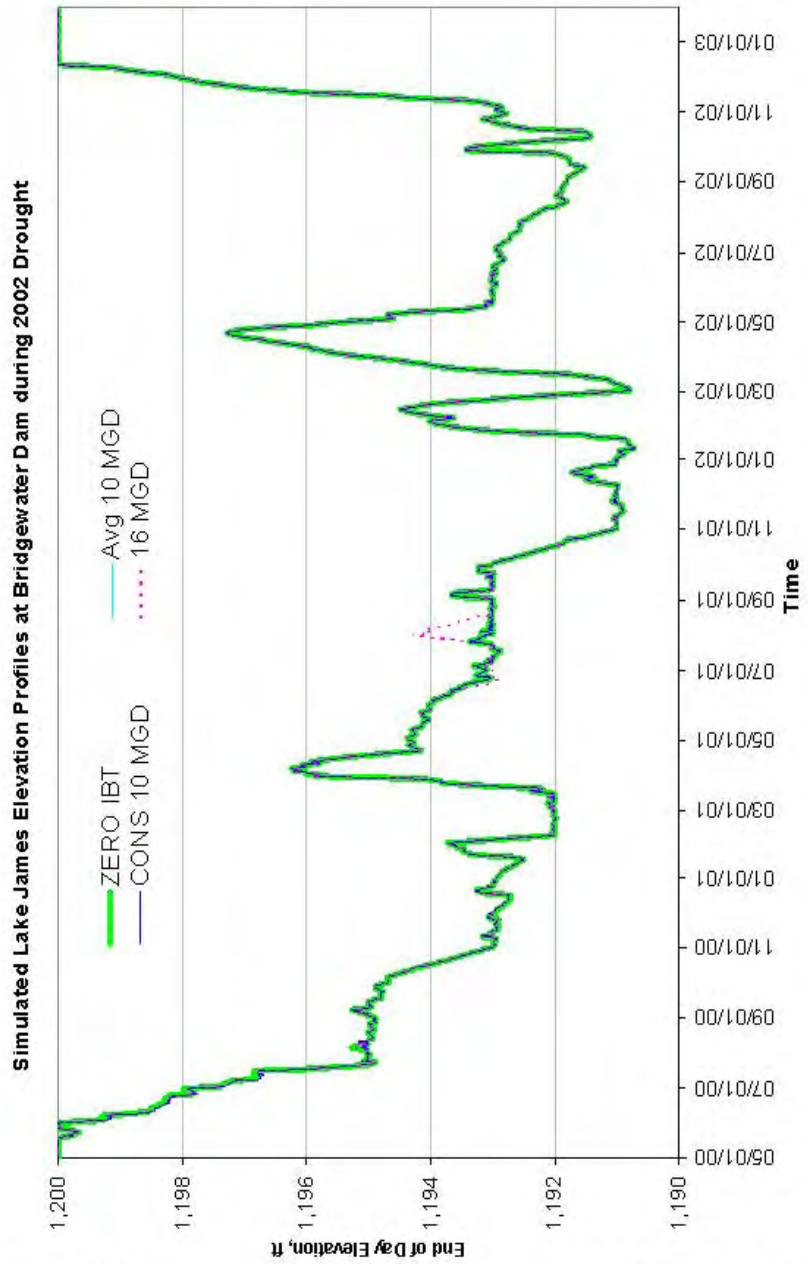


Figure 5 - Lake Norman Elevation Profiles

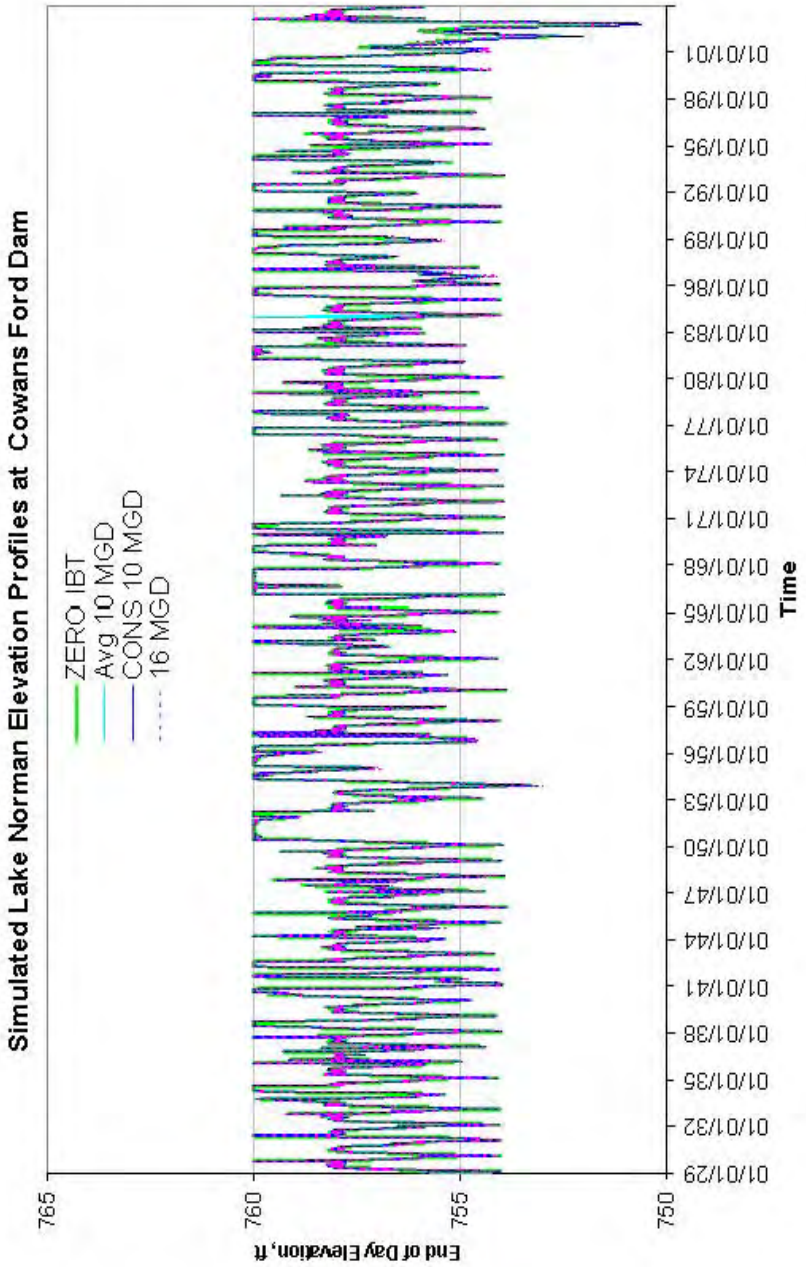


Figure 6 - Lake Norman Elevation Profiles during 1980s Dry Period

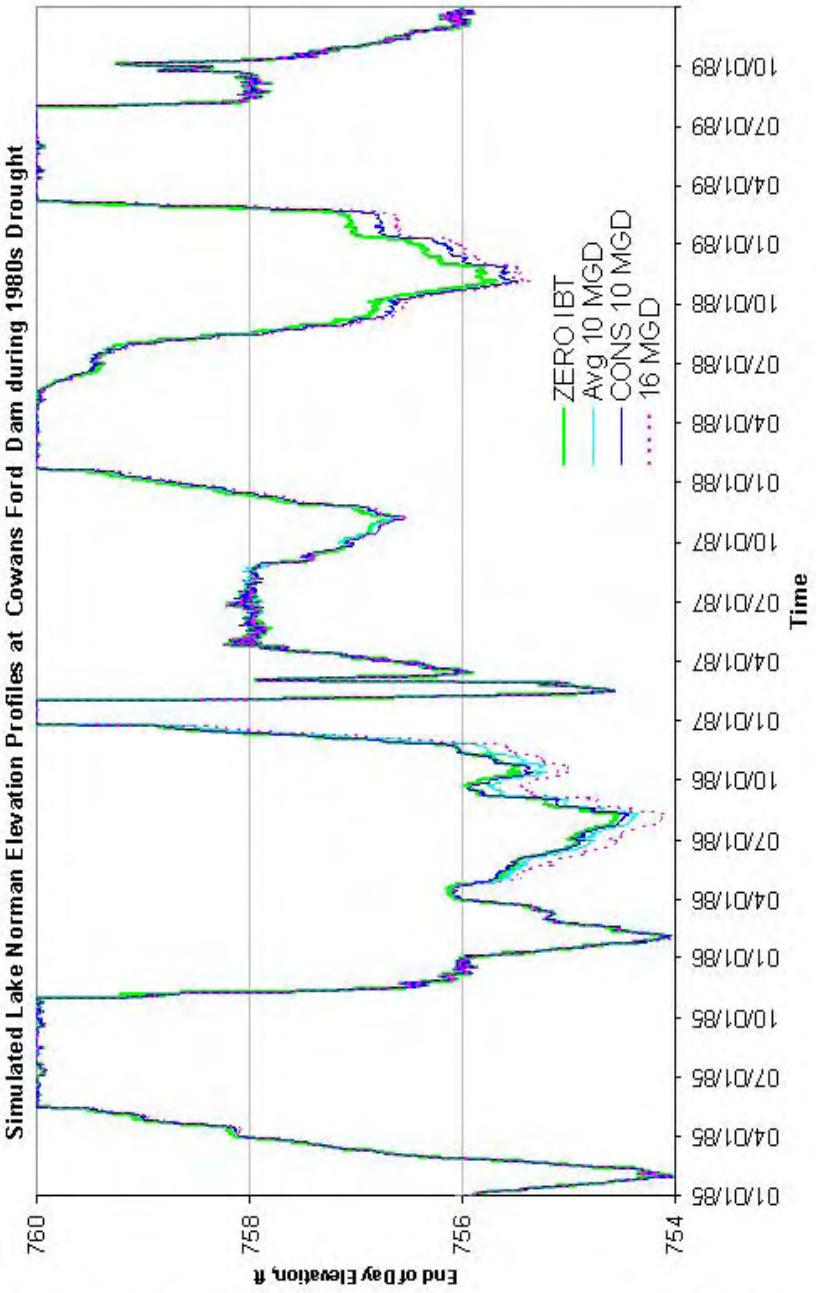


Figure 7 - Lake Norman Elevation Profiles during 2002 Dry Period

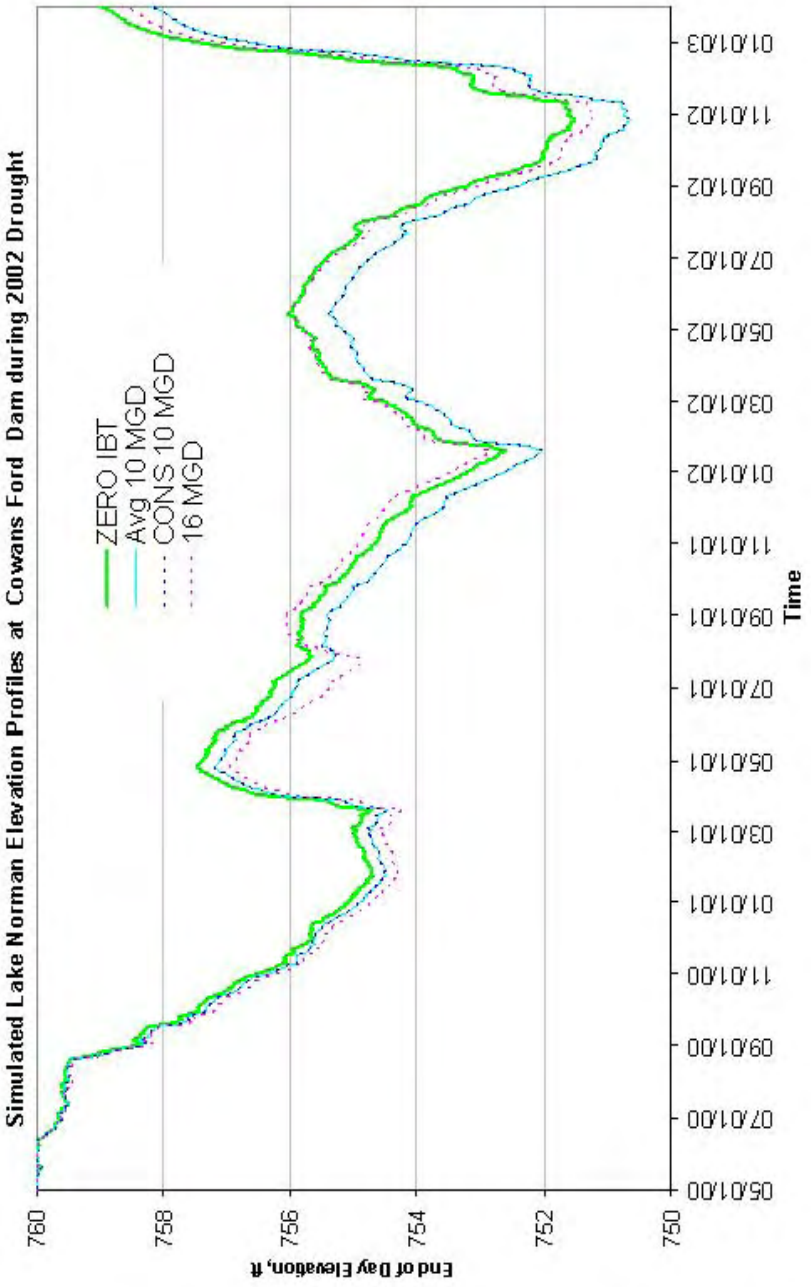


Figure 8 - Lake James Elevation Duration Plot

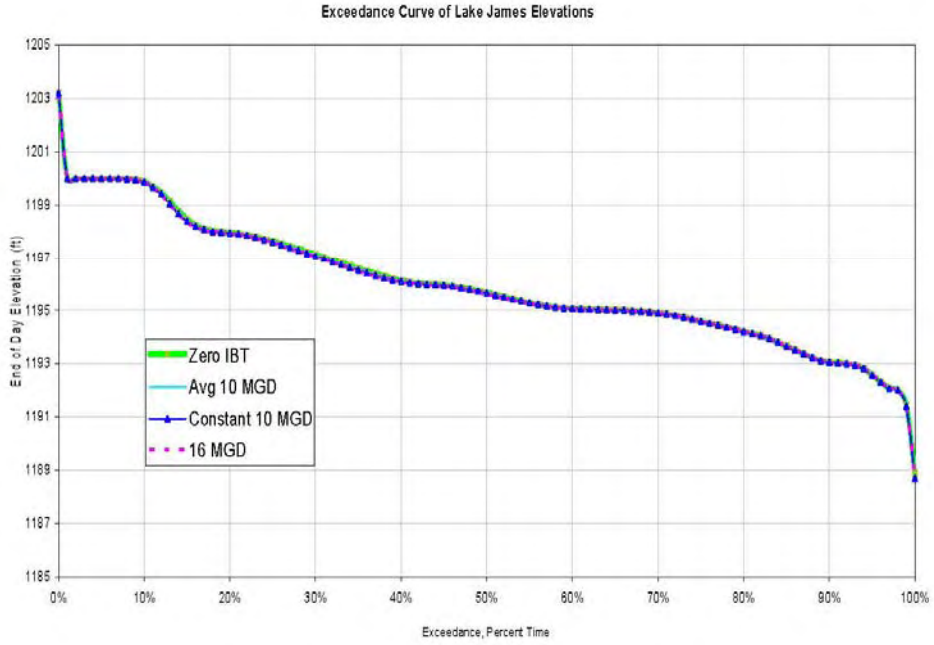


Table 2 - Lake James Elevation Duration Data

Model Scenario	Zero IBT	Average 10 MGD IBT	Constant 10 MGD IBT	16 MGD (26 MGD MDD) IBT
Exceedance, Percent Time	Elevation, FT	Elevation, FT	Elevation, FT	Elevation, FT
0%	1203.2	1203.2	1203.2	1203.2
10%	1199.88	1199.88	1199.87	1199.86
25%	1197.65	1197.64	1197.61	1197.59
50%	1195.67	1195.66	1195.65	1195.62
75%	1194.59	1194.59	1194.59	1194.59
90%	1193.05	1193.05	1193.05	1193.05
95%	1192.57	1192.57	1192.57	1192.58
99%	1192.01	1192.01	1192.01	1192.01
100%	1188.88	1188.77	1188.7	1188.68

Figure 9 - Lake Norman Elevation Duration Plot

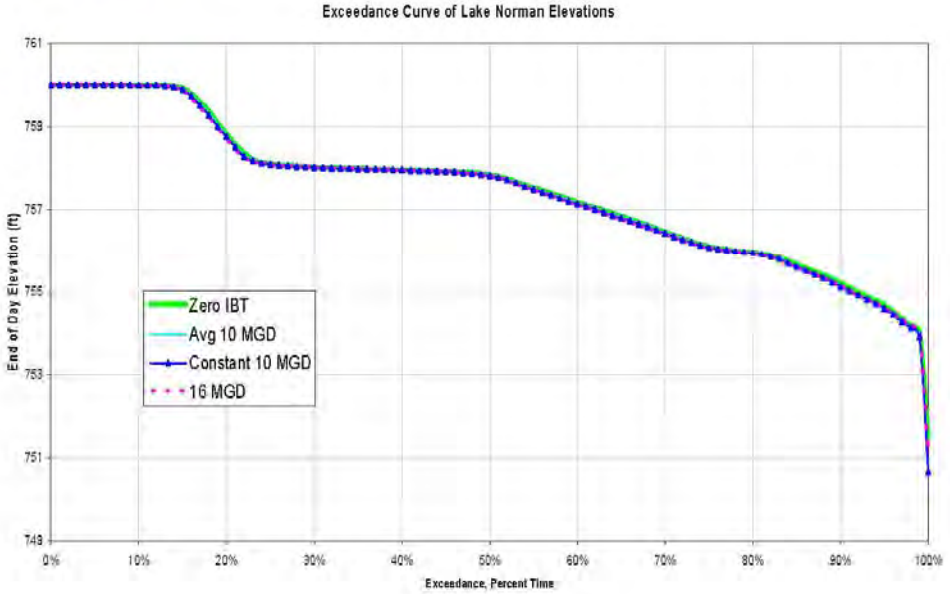


Table 3 - Lake Norman Elevation Duration Data

Model Scenario	Zero IBT	Average 10 MGD IBT	Constant 10 MGD IBT	16 MGD (26 MGD MDD) IBT
Exceedance, Percent Time	Elevation, FT	Elevation, FT	Elevation, FT	Elevation, FT
0%	760.00	760.00	760.00	760.00
10%	759.99	759.99	759.99	759.99
25%	758.10	758.09	758.09	758.09
50%	757.84	757.83	757.82	757.81
75%	756.11	756.09	756.08	756.08
90%	755.20	755.12	755.12	755.14
95%	754.67	754.58	754.58	754.58
99%	754.19	754.14	754.13	754.18
100%	751.53	750.65	750.65	751.22

Figure 10 - Lake James Outflow Duration Plot

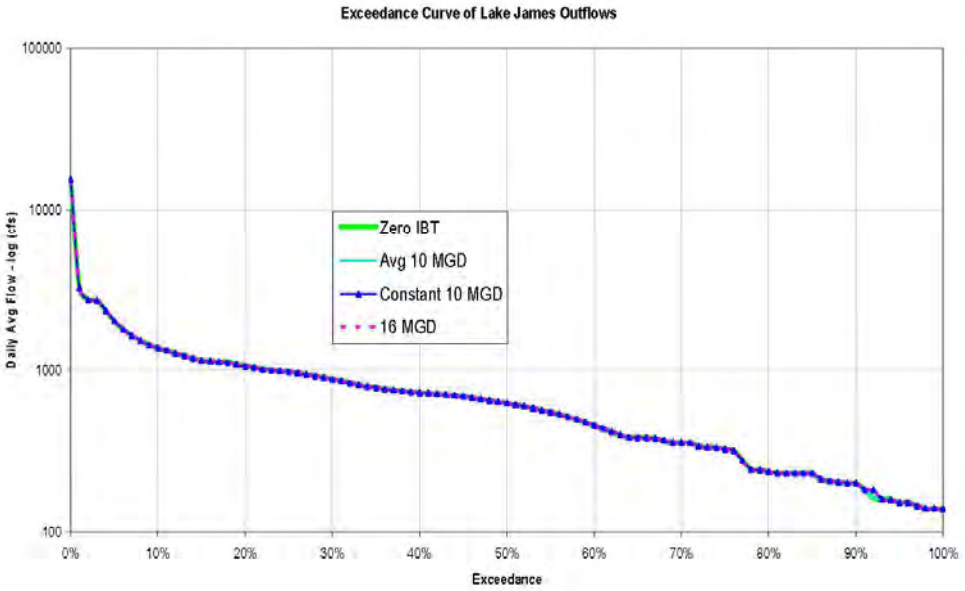


Table 4 - Lake James Outflow Duration Data

Model Scenario	Zero IBT	Average 10 MGD IBT	Constant 10 MGD IBT	16 MGD (26 MGD MDD) IBT
Exceedance, Percent Time	Outflow, cfs	Outflow, cfs	Outflow, cfs	Outflow, cfs
0%	15491	15491	15491	15491
10%	1384	1382	1384	1381
25%	986	985	984	985
50%	627	627	629	628
75%	327	327	327	327
90%	202	202	202	202
95%	159	159	159	159
99%	140	140	140	140
100%	139	139	139	139

Figure 11 - Lake Wylie Outflow Duration Plot

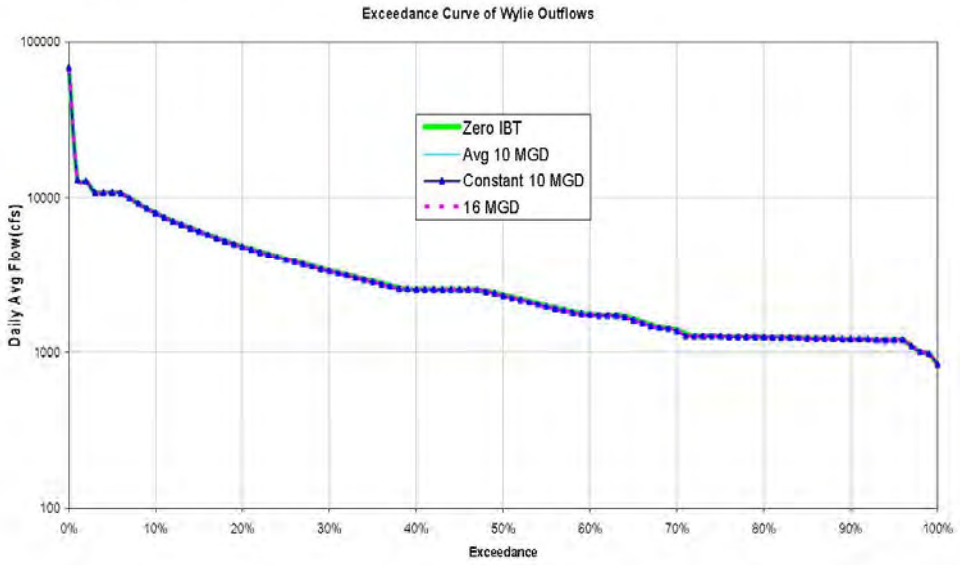


Table 5 - Lake Wylie Outflow Duration Data

Model Scenario	Zero IBT	Average 10 MGD IBT	Constant 10 MGD IBT	16 MGD (26 MGD MDD) IBT
Exceedance, Percent Time	Outflow, cfs	Outflow, cfs	Outflow, cfs	Outflow, cfs
0%	68400	68399	68399	68392
10%	8047	7997	8013	7965
25%	4027	3981	3989	3980
50%	2345	2321	2322	2314
75%	1271	1270	1270	1270
90%	1221	1221	1221	1221
95%	1205	1205	1205	1205
99%	1011	1011	1011	1011
100%	838	838	838	838

Catawba River Basin Simplified Storage Analysis

The following is a simplified storage impact analysis. For this analysis, a 10 MGD daily withdrawal is assumed to be distributed across Mountain Island Lake and the five upstream reservoirs on the Catawba River. The period June 1-November 30 (183 days) is typically the driest six-month period of the year. During this period, a 10 MGD withdrawal would require a total of 1830 million gallons (MG) for 183 days. The six reservoirs have a combined surface area of 48,741 acres when they are full. If there were no inflow to these lakes during the 183-day period, the drawdown due to the IBT is estimated to be 1.4 inches. If the reservoirs were initially at 50 percent of usable capacity, the drawdown is estimated to be 1.6 inches. These estimates must be considered as upper bounds on the expected lake elevation impact, as the lowest estimated inflow for that period over the 75 years of record is 358 MGD, over 35 times the amount of the IBT.

YADKIN RIVER BASIN ANALYSIS

The Yadkin River Basin analysis includes a comparison of several 10 MGD MDD scenarios to a constant 10 MGD IBT scenario. All the modeling scenarios are described in more detail in the November 6, 2006 report *Simulation of the Proposed Concord-Kannapolis Interbasin Transfer from the Yadkin River Basin*, by the North Carolina Division of Water Resources.

The scenario "2035 No Transfer" scenario represents the best available estimate of the new 2035 water demand baseline conditions when the new Yadkin River Basin hydropower license takes effect. This scenario was selected as the base case for purposes of comparison. The "2035 No Transfer" is also included for the purpose of quantifying the incremental difference of the proposed IBT. The model scenarios analyzed are as follows:

- *Zero Yadkin Transfer conditions.*
  - "2035 No Transfer" – 2035 water use projections and no Yadkin interbasin transfer.
- *Maximum Daily Demand (MDD) Transfer conditions* (Based on applicant's preferred alternative)
  - "Tuckertown 10 MGD MDD Transfer" – 2035 water use projections with the Concord Kannapolis 10 MGD maximum day IBT being supplied by the City of Albemarle from the Tuckertown Reservoir.
  - "Tuckertown-Salisbury 10 MGD MDD Transfer" – 2035 water use projections with the Concord Kannapolis 10 MGD maximum day IBT being supplied by the cities of Albemarle and Salisbury evenly supplied by the Tuckertown Reservoir and the City of Salisbury's intake on the Yadkin River.
- *Constant Transfer conditions* (Worst case analysis under the hearing officer's recommended alternative)
  - "Tuckertown 10 MGD Constant Transfer" – 2035 water use projections with the Concord Kannapolis 10 MGD constant day IBT being supplied by the City of Albemarle from the Tuckertown Reservoir.
  - "Tuckertown-Salisbury 10 MGD Constant Transfer" – 2035 water use projections with the Concord Kannapolis 10 MGD maximum day IBT being supplied by the cities of Albemarle and Salisbury evenly supplied by the Tuckertown Reservoir and the City of Salisbury's intake on the Yadkin River.
- *2001-2002 Drought conditions*
  - "Tuckertown 10 MGD MDD Drought Transfer" – The 2008 water use projections are subtracted from the 2035 projections with the Concord Kannapolis 10 MGD maximum day IBT being supplied by the City of Albemarle from the Tuckertown Reservoir.
  - "Tuckertown 10 MGD Constant Drought Transfer" – The 2008 water use projections are subtracted from the 2035 projections with the Concord Kannapolis 10 MGD constant day IBT being supplied by the City of Albemarle from the Tuckertown Reservoir.

The results presented in this report focus on the key areas of:

- Elevation Duration Plots for High Rock Reservoir and Narrows (Badin) Reservoir
- Discharge Duration Plot for the Rockingham Gage
- Summary of LIP stages
- Elevation Plots for High Rock Reservoir and Narrows (Badin) Reservoir during the 2001-2002 drought

Predicted Yadkin River Basin Impacts

In the following impact discussion, all the differences are as compared to the "2035 No Transfer" base case scenario. A negative difference means, for example, that lake levels in the scenario being examined are lower than in the "2035 No Transfer" scenario.

Figure 12 and Figure 13 are the elevation duration plots for High Rock and Narrows (Badin) reservoirs. In both figures there are no noticeable differences as seen in Table 6 and Table 7. In most cases, the differences in elevations are in hundredths of a foot. The lowest lake levels for the 74 years of simulation show lake levels range from -0.2 to -0.5 feet.

Figure 14 and Table 8 show the discharge duration data for the Rockingham streamflow gage. For flows of less than the 75th percentiles, there are no noticeable differences. For flows greater than the 75th percentile, the differences range from the 0 to -22 cfs (0 to -0.4% difference).

Table 9 is a summary of the LIP stages for the Yadkin River Basin model scenarios. Figure 15 is the time series plot of the LIP stages. The greatest LIP impact occurs in "Tuckertown-Salisbury 10 MGD MDD Transfer" scenario, where there are 19 additional days of stage 3 water reductions that occur during one drought event in the 74 years simulated.

Figure 16, Figure 17, Figure 18, and Figure 19 show the lake levels for High Rock and Narrows (Badin) reservoirs during the 2001 to 2002 drought period. Even during this extreme drought, only minor differences in reservoir levels occurred as a result of the IBT for short periods of time.

Figure 12 - High Rock Reservoir Level Duration Plots

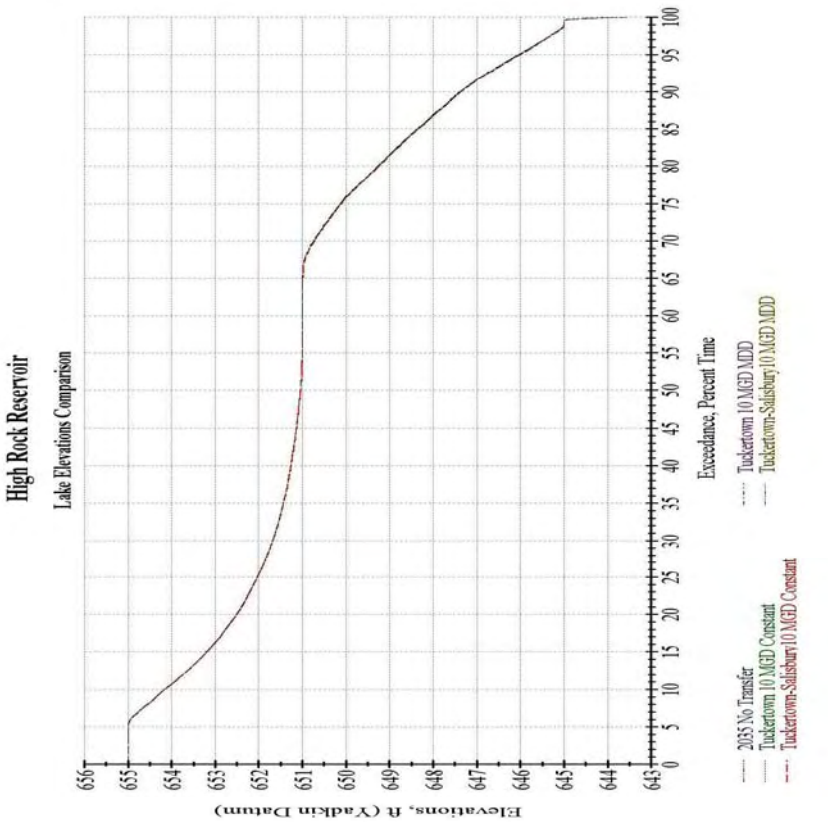


Table 6 - High Rock Elevation Durations Data

Model Scenario	2035 Zero Transfer	Tuckertown 10 MGD MDD Transfer	Tuckertown-Salisbury 10 MGD MDD Transfer	Tuckertown 10 MGD Constant Transfer	Tuckertown-Salisbury 10 MGD Constant Transfer
Exceedance, Percent Time	Yadkin Datum, ft	Yadkin Datum, ft	Yadkin Datum, ft	Yadkin Datum, ft	Yadkin Datum, ft
0	655.00	655.00	655.00	655.00	655.00
10	654.17	654.16	654.16	654.16	654.16
25	652.04	652.03	652.04	652.03	652.03
50	651.05	651.05	651.05	651.04	651.04
75	650.13	650.12	650.12	650.12	650.10
95	646.04	646.02	646.01	646.02	646.00
99	645.00	645.00	645.00	645.00	645.00
100	644.03	643.78	643.73	643.61	643.54

Figure 13 - Narrows (Badin) Reservoir Level Duration Plots

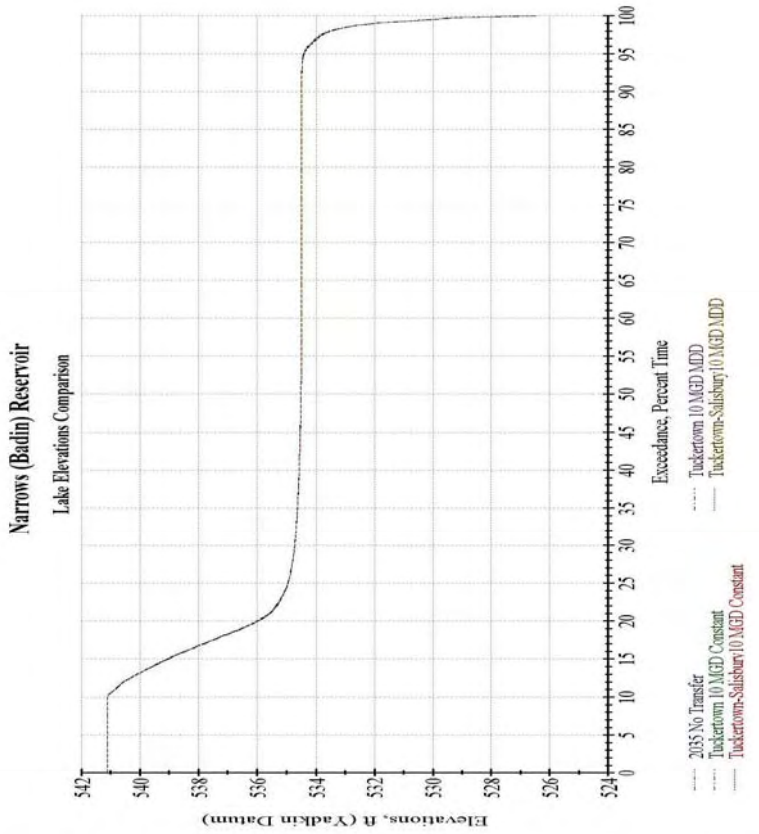


Table 7 - Narrows (Badin) Elevation Durations Data

Model Scenario	2035 Zero Transfer	Tuckertown 10 MGD MDD Transfer	Tuckertown-Salisbury 10 MGD MDD Transfer	Tuckertown 10 MGD Constant Transfer	Tuckertown-Salisbury 10 MGD Constant Transfer
Exceedance, Percent Time	Yadkin Datum, ft	Yadkin Datum, ft	Yadkin Datum, ft	Yadkin Datum, ft	Yadkin Datum, ft
0	541.10	541.10	541.10	541.10	541.10
10	541.10	541.10	541.10	541.10	541.10
25	534.96	534.95	534.96	534.95	534.95
50	534.51	534.51	534.51	534.51	534.51
75	534.50	534.50	534.50	534.50	534.50
95	534.42	534.40	534.41	534.40	534.40
99	532.04	531.97	531.97	531.93	531.94
100	526.78	526.52	526.57	526.39	526.47

Figure 14 - Rockingham Streamflow Gage Flow Duration Plots

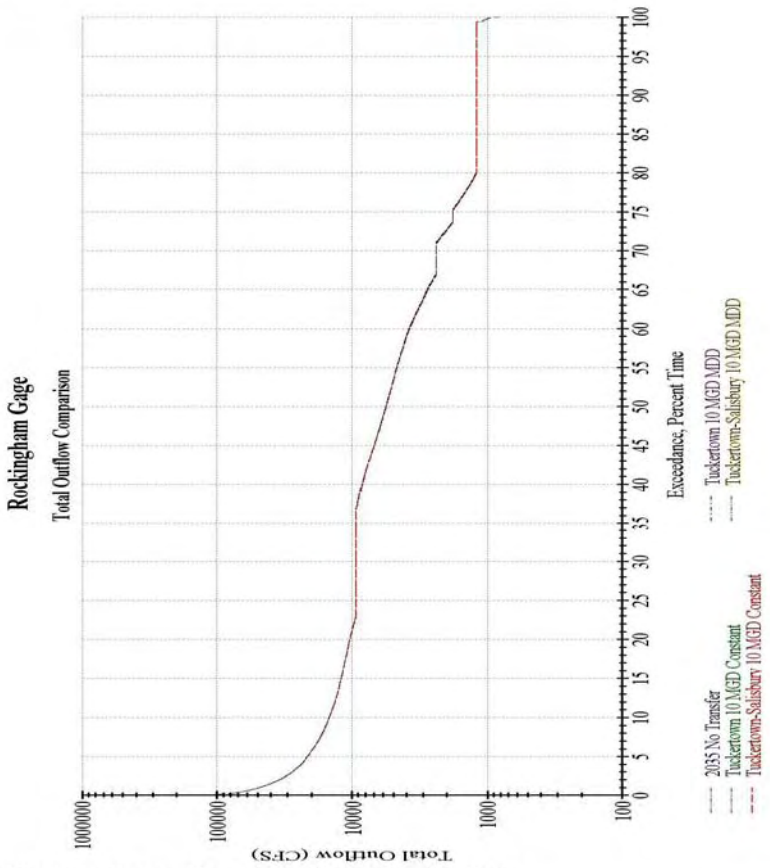


Table 8 - Rockingham Streamflow Gage Flow Duration Data

Model Scenario	2035 Zero Transfer	Tuckertown 10 MGD MDD Transfer	Tuckertown-Salisbury 10 MGD MDD Transfer	Tuckertown 10 MGD Constant Transfer	Tuckertown-Salisbury 10 MGD Constant Transfer
Exceedance, Percent Time	Discharge, cfs	Discharge, cfs	Discharge, cfs	Discharge, cfs	Discharge, cfs
0	105,844	105,660	105,664	105,660	105,528
10	14,780	14,771	14,771	14,771	14,765
25	9,400	9,400	9,400	9,400	9,400
50	5,666	5,653	5,662	5,653	5,644
75	1,800	1,800	1,800	1,800	1,800
95	1,200	1,200	1,200	1,200	1,200
99	1,200	1,200	1,200	1,200	1,200
100	809	809	809	809	809

Table 9 - Summary of Yadkin Low Inflow Protocol (LIP) Stages

Model Scenario	2035 No Transfer		Tuckertown 10 MGD MDD Transfer		Tuckertown-Salisbury 10 MGD MDD Transfer		Tuckertown 10 MGD Constant Transfer		Tuckertown-Salisbury 10 MGD Constant Transfer	
LIP Stage	Days	% Time	Days	% Time	Days	% Time	Days	% Time	Days	% Time
Monthly Summary										
-1	26,004	96.2%	26,004	96.2%	25,986	96.1%	26,000	96.2%	25,985	96.1%
0	791	2.9%	791	2.9%	809	3.0%	794	2.9%	810	3.0%
1	92	0.3%	92	0.3%	92	0.3%	92	0.3%	92	0.3%
2	49	0.2%	49	0.2%	49	0.2%	50	0.2%	30	0.1%
3	92	0.3%	92	0.3%	92	0.3%	92	0.3%	111	0.4%
4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%
LIP Stage	Years	% Years	Years	% Years	Years	% Years	Years	% Years	Years	% Years
Annual Summary - Number of years with at least month occurrence in the calendar year.										
-1	74	100.0%	74	100.0%	74	100.0%	74	100.0%	74	100.0%
0	19	25.7%	19	25.7%	19	25.7%	19	25.7%	19	25.7%
1	3	4.1%	3	4.1%	3	4.1%	3	4.1%	3	4.1%
2	1	1.4%	1	1.4%	1	1.4%	1	1.4%	1	1.4%
3	1	1.4%	1	1.4%	1	1.4%	1	1.4%	1	1.4%
4	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%

Figure 15 - Yadkin Simulated LIP Stages

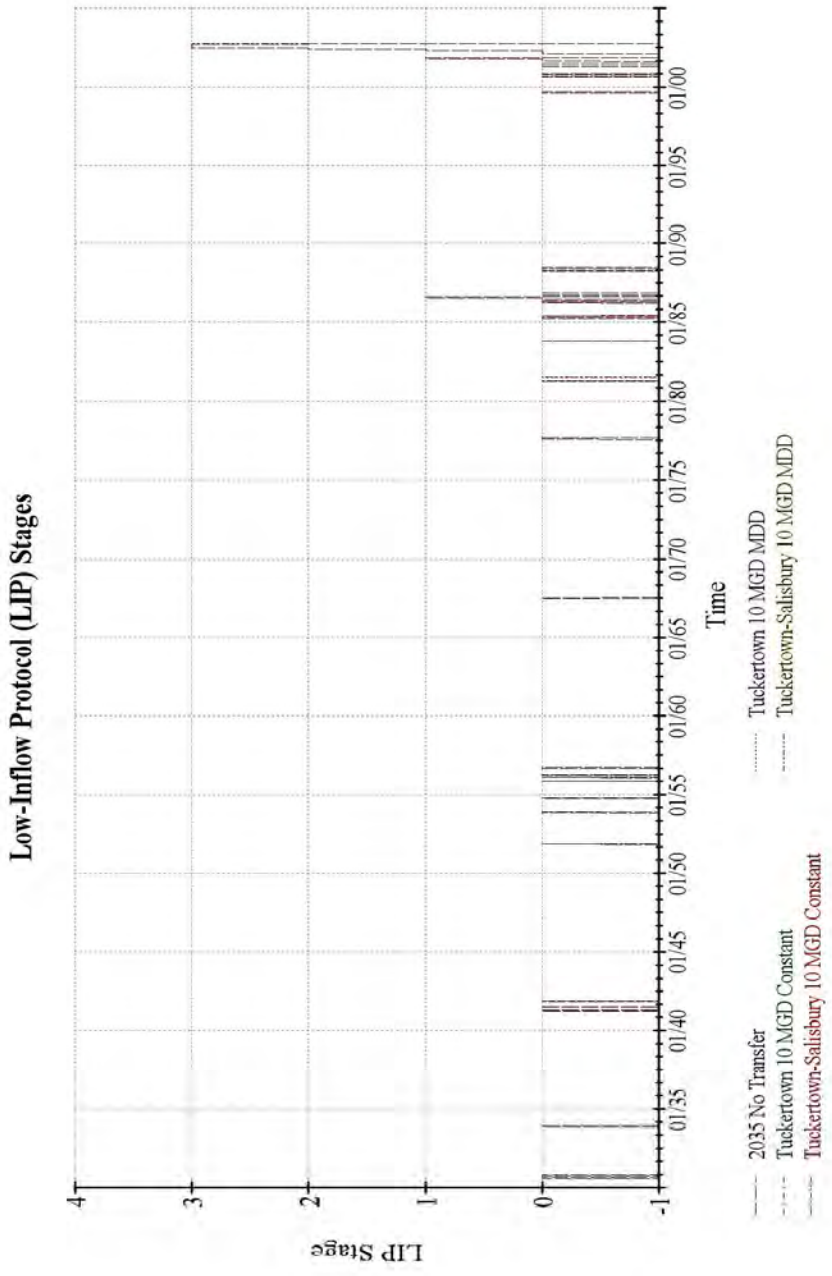


Figure 16 - High Rock 10 MGD MDD Lake Levels

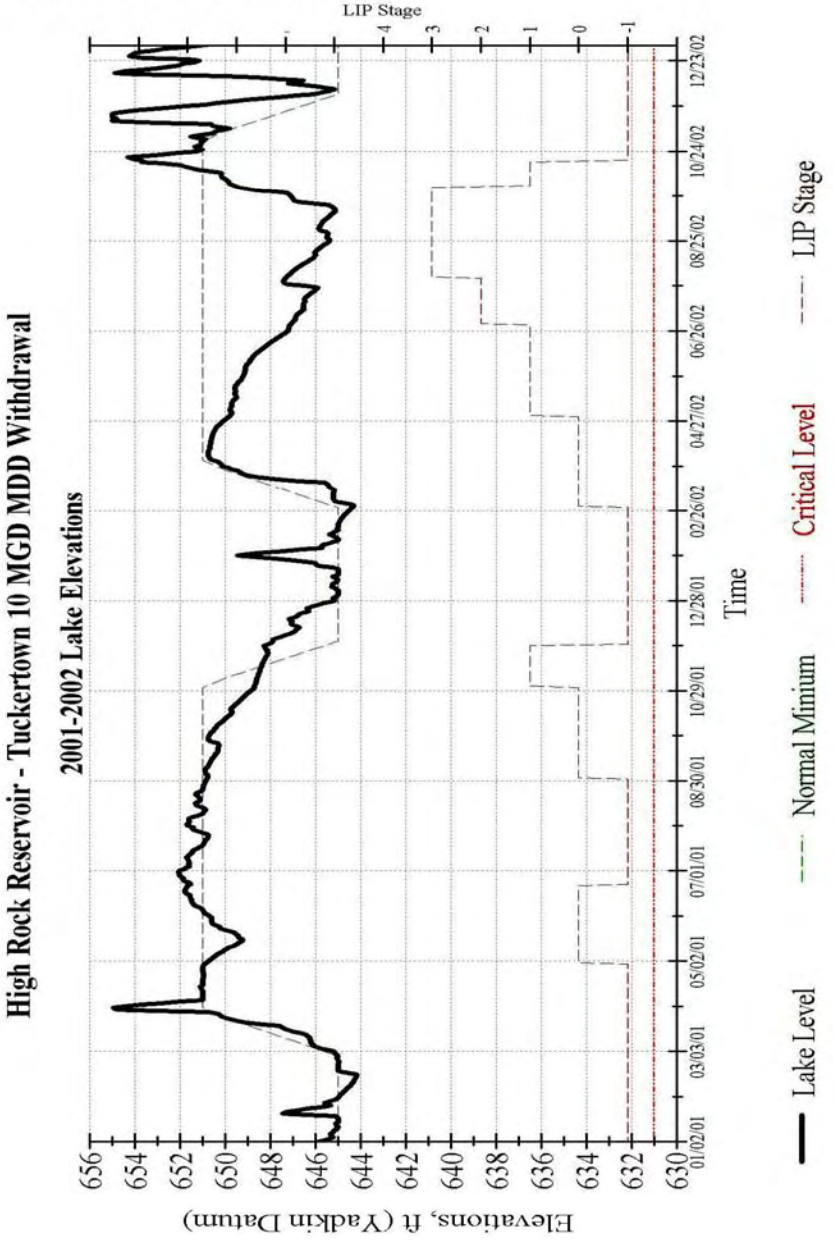


Figure 17 - High Rock 10 MGD Constant Lake Levels

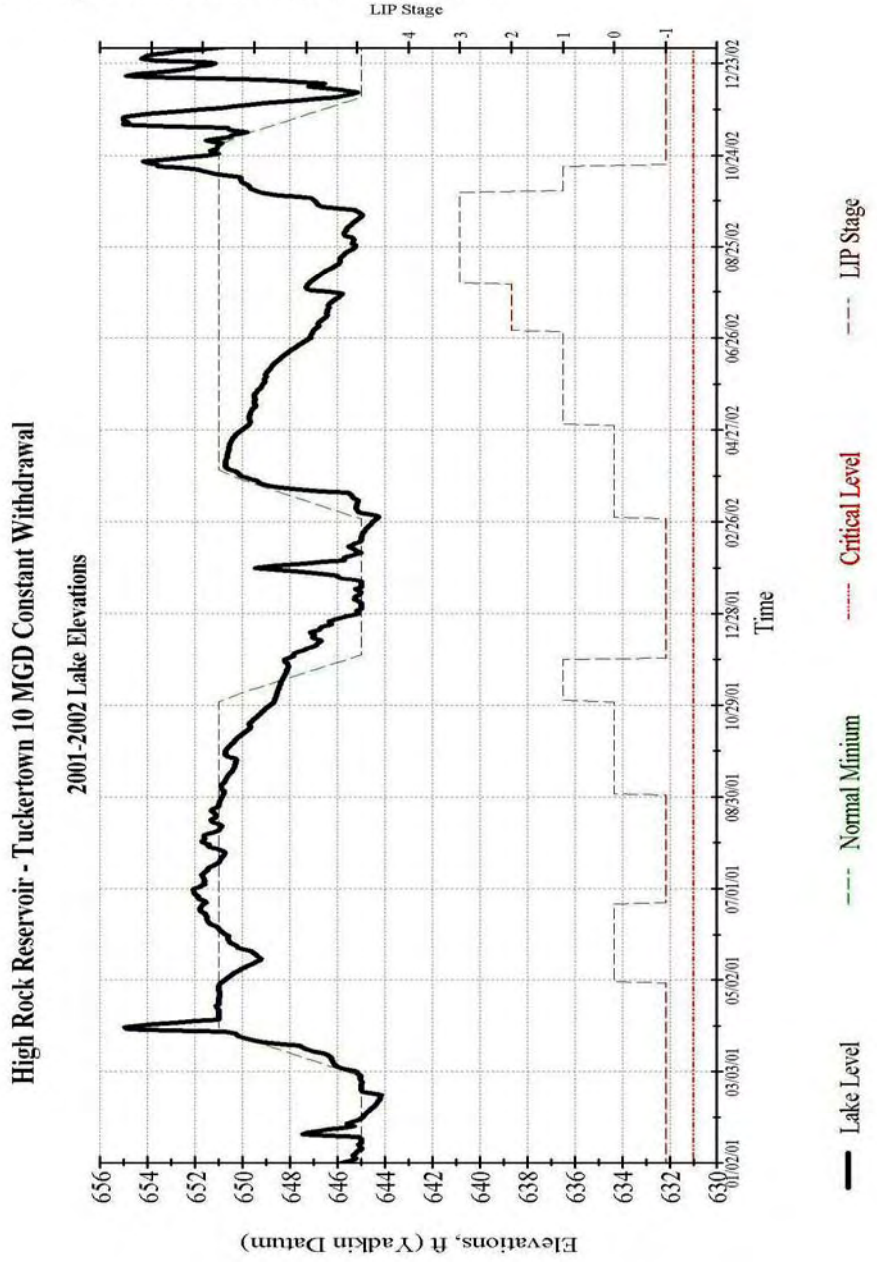
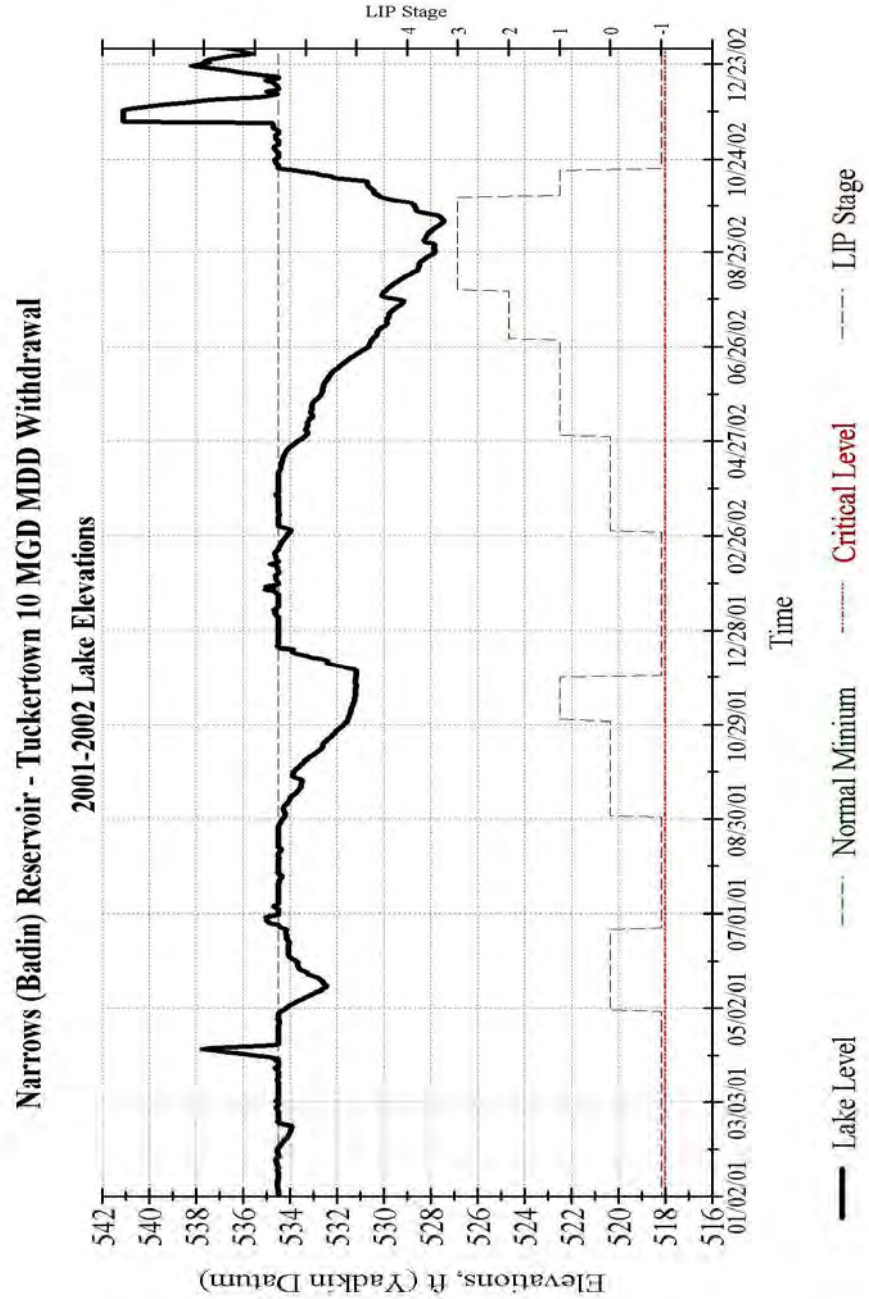
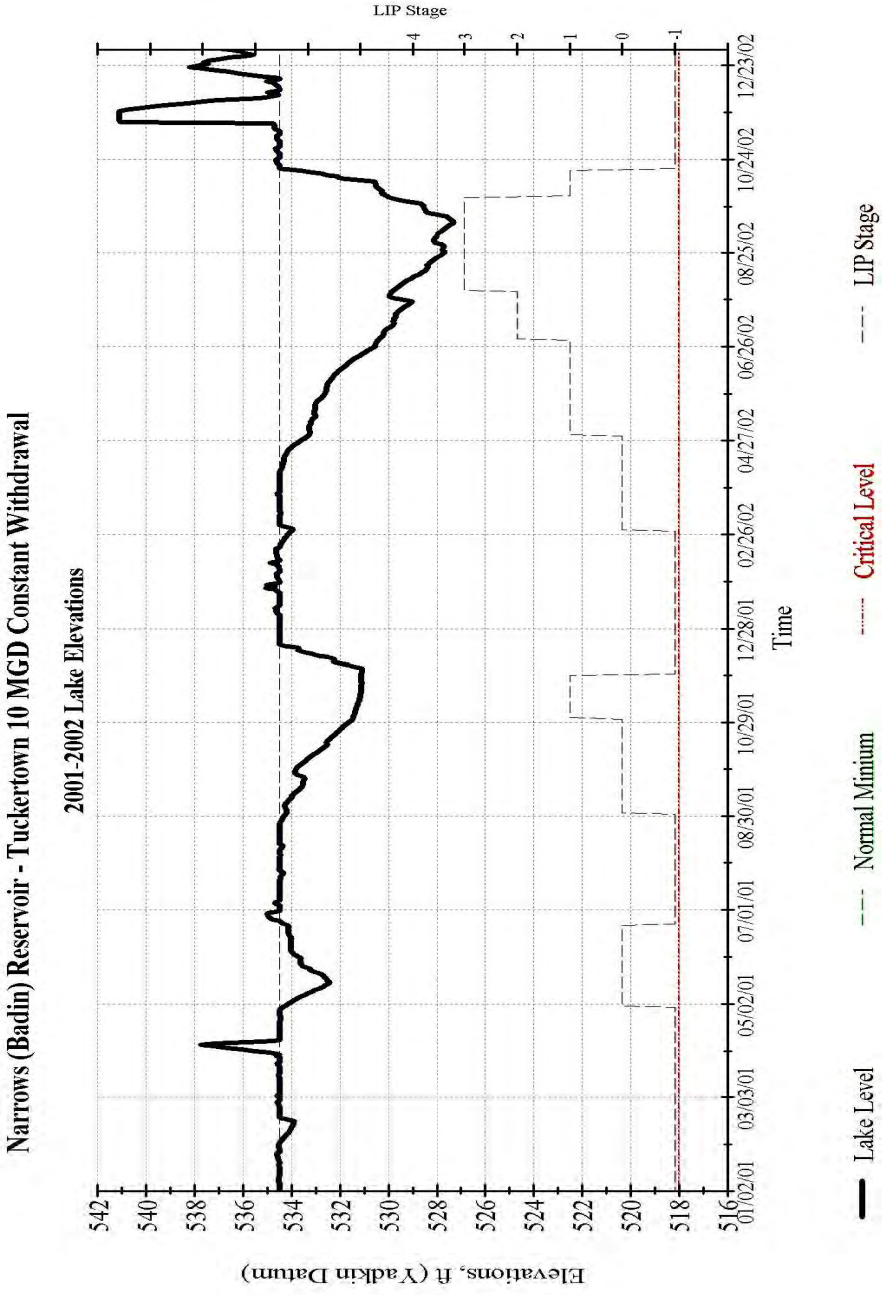


Figure 18 - Narrows (Badin) 10 MGD MDD 2001-02 Lake Levels



North Carolina Division of Water Resource 25 *Staff Modeling Analysis of Hearing Officers' Recommendations SUPPLEMENT TO HEARING OFFICERS' REPORT December, 2006*

Figure 19 - Narrows (Badin) 10 MGD Constant 2001-02 Lake Levels



Yadkin River Basin Simplified Storage Analysis

The following is a simplified storage impact analysis of a constant 10 MGD withdrawal on High Rock, Baden, and Tillery Reservoirs on the Yadkin River. The period June 1-November 30 (183 days) is typically the driest six-month period of the year. A 10 MGD withdrawal would require a total of 1830 million gallons (MG) for 183 days. The combined surface area of High Rock, Baden, and Tillery Reservoirs is 25,400 acres. A transfer of 1830 MG without any inflow would result in an estimated drawdown of 2.7 inches. If the reservoirs were at 50-percent capacity, the drawdown due to the IBT would have an estimated upper bound of 3.8 inches. In actuality, inflow during that period is not likely to be zero. The lowest inflow to High Rock during June 1-November 30 over 67 years of record is 642 MGD, over 60 times the IBT amount.

ANALYSIS OF STREAMFLOW

Catawba River Basin Streamflow Analysis

Gages operated by the United States Geological Survey on the Catawba River below Lake James and above Rock Hill, SC generally have a limited historical period of record. The only long-term gage on tributaries between Lake James and Mountain Island Dam covers a drainage area of only 28 square miles. There is a long-term record of flows at Rock Hill, but it includes effects of upstream regulation.

A representative set of unregulated streamflows at Mountain Island can be constructed using a weighted combination of gages above Lake James and in the nearby South Fork Catawba Basin. Weights assigned to the various gages are proportional to drainage areas that they are used to represent. These flows are referred to as the "estimated" flows. They are estimated using:

- A combined record on the Catawba River at Marion, NC and Pleasant Garden, NC.
- The gage on Henry Fork, less than five miles from the Catawba River near Hickory, and
- The South Fork gage at Lowell which is 6-8 miles from Mountain Island Dam.

None of these gages are subject to upstream regulation. There are unregulated mill dams upstream.

Because of deficiencies in historical stream gage data, it is not possible to compare the estimated flows at Mountain Island with actual flows. One estimation method is to compare values of estimated flows with similar flows in the Catawba at Rock Hill after each of the records has been standardized by dividing by the respective drainage areas. Estimated flows at Mountain Island without any adjustment are higher than these flows. Some of that difference is to be expected because flows based on tributary flows do not include losses due to evaporation and diversion. Another difference is that estimated flows are unregulated while apportioned flows are regulated (there should not be great differences there when flows are compared on an annual basis). Other differences may arise from either estimation formula.

To correct for the differences, flows over the period 1981-2004 were adjusted by the ratio of the 24-year total of estimated Mountain Island flows and a similar total of measured flows at Rock Hill. Figure 20 shows the relationship between annual flows at Rock Hill and adjusted estimated flows at Mountain Island. There is close agreement among these values. Figure 21 shows the relationship between monthly flows at Rock Hill and adjusted estimated monthly flows at Mountain Island. Some scatter about the one-to-one line on the graph is expected because the flows at Mountain Island are unregulated and the flows at Rock Hill are regulated. Some of the scatter may also reflect effects of the estimation technique.

Effects of the 44 MGD diversion from Mountain Island are shown in two figures, one for annual flows and one for monthly flows. Effects on annual flows are shown in Figure 22. From 199 through 2002 the diversion would have exceeded five percent. In 2002 it would have reached about seven percent.

Figure 4 shows effects on monthly flows. In July and August 2002, the diversion would have amounted to about 19 and 25 percent of the flow at Mountain Island. It would have routinely reached 10 percent in other years of the record.

Figure 20 - Comparison of Adjusted Mountain Island and Rock Hill Annual Streamflow 1981-2004

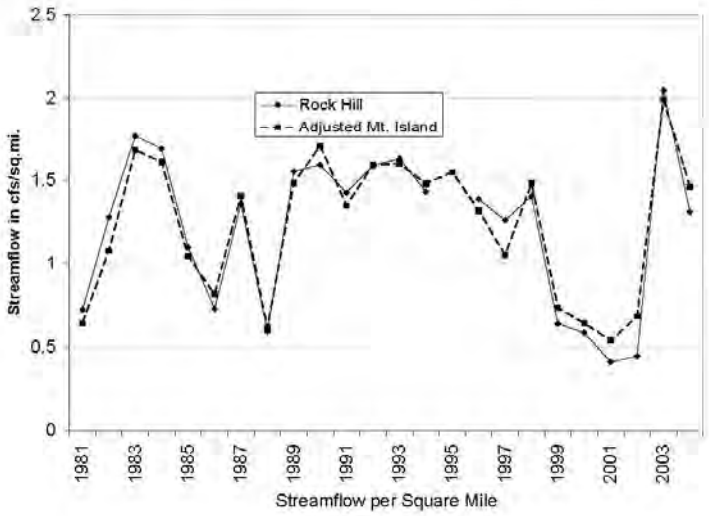


Figure 21 -Comparison of Adjusted Monthly Streamflow at Mountain Island and Rock Hill

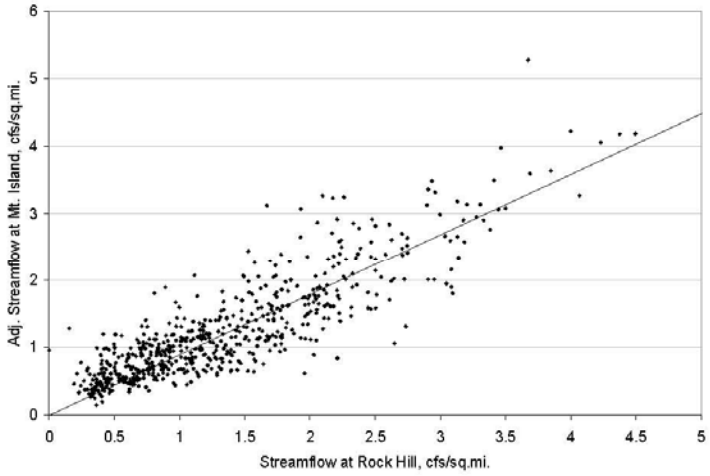


Figure 22 - Withdrawal of 44 MGD as a Percent of Annual Flow at Mountain Island

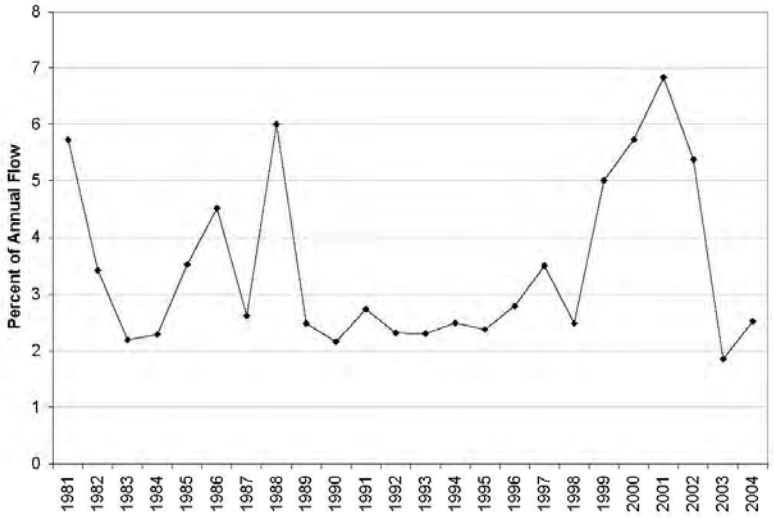
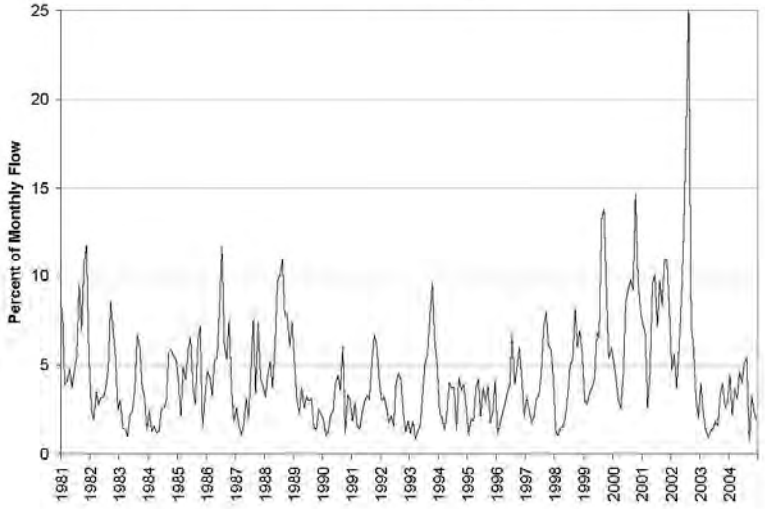


Figure 23 - Diversion of 44 MGD as a Percent of Monthly Flow at Mountain Island Dam



Yadkin River Basin Streamflow Analysis

The purpose of this analysis is to evaluate techniques for adjusting streamflow records in the Yadkin River Basin to eliminate some effects of upstream regulation. The first analysis is to estimate average streamflow per square miles of drainage area at several streamflow gages over the common period of April, 1964 through September, 2005.

Mean flows per square mile of drainage area:

- Yadkin River at Elkin = 1.562 cfs/mi^2
- Yadkin River at Yadkin College = 1.342 cfs/mi^2
- South Yadkin River at Mocksville = 1.133 cfs/mi^2
- Rocky River at Norwood = 1.024 cfs/mi^2
- Pee Dee River at Rockingham = 1.182 cfs/mi^2

Correlation coefficients:

1. ($Q_{\text{Yadkin River at Yadkin College}} - Q_{\text{Yadkin River at Elkin}}$) and $Q_{\text{South Yadkin}} = 0.909$
   Yadkin River at Yadkin College less Yadkin River at Elkin eliminates effect of regulation from Kerr Scott Reservoir.
2. $Q_{\text{Rocky River at Norwood}}$ and $Q_{\text{South Yadkin River at Mocksville}} = 0.782$

Other observations:

- The South Yadkin River has lower low flows per square mile than the Rocky River.
- The Pee Dee River at Rockingham adjusted for Yadkin River at Yadkin College and the Rocky River at Norwood has higher low flows per square mile than the Rocky River. A likely reflection of the regulated low flows in the lower Yadkin Basin caused by the releases from Blewett Falls Reservoir. The Rocky River could be used to simulate lower Yadkin Basin flows.
- $Q_{\text{Yadkin River at Yadkin College}} - Q_{\text{Yadkin River at Elkin}}$ or $Q_{\text{Yadkin River at Yadkin College}} - Q_{\text{Yadkin River at Wilksboro,}}$ if adjusted for drainage areas, gives estimates of unregulated flows at the Yadkin River at Yadkin College. The second of these two choices gives a better estimate because it covers a larger portion of the drainage area. That difference adjusted for drainage area above High Rock Reservoir can be used to estimate inflow into High Rock from the Yadkin Basin. To that is added the inflow in the South Yadkin at Mocksville and this is adjusted for the drainage area of the full basin.

A comparison of adjusted and unadjusted flows in the Yadkin River at Yadkin College for the period of October 1938 through September 2005 (67 water years) is shows that adjusted flows are slightly less than unadjusted flows. That is to be expected since unadjusted flows include effects of low flow augmentation. Regulation effects have been eliminated in adjusted flows.

Estimated inflows into High Rock Reservoir were computed as follows:

$$Q_{\text{High Rock}} = [3025/(2280-504)]*(Q_{\text{Yadkin River at Yadkin College}} - Q_{\text{Yadkin River at Wilkesboro}}) + (915/306)*Q_{\text{South Yadkin}}$$

The Yadkin Basin drainage area that contributes to High Rock is 3025 square miles, 2280 square miles at Yadkin College, and 504 square miles at Wilkesboro. The drainage area of the South Yadkin at Mocksville is 306 square miles, and the tributary area to High Rock is 925 square miles.

The lowest monthly flow in 67 years was 447 cfs or 289 MGD that occurred in August 2002 (1.5 percentile). The second lowest value is 746 cfs or 481 MGD in July 1953 (3.0 percentile).

Attachment C –Notice of Public Hearings and Public Meetings

Notice of Public Hearings

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

Michael F. Easley, Governor

William G. Ross Jr., Secretary
John N. Morris, Director

Cities of Concord and Kannapolis Proposed Interbasin Transfer

NOTICE OF PUBLIC HEARINGS

June 22, 2005, 5:00 PM
McKnight Auditorium in the Cone Center, Third Floor
UNC-Charlotte

June 23, 2005, 5:00 PM
Albemarle City Hall Annex
157 N. Second Street
Albemarle, NC 28001

The North Carolina Environmental Management Commission will hold two public hearings to receive comments on a petition for an interbasin transfer from the Catawba River and Yadkin River Sub-Basins to the Rocky River Sub-Basin. The Cities of Concord and Kannapolis are requesting an interbasin transfer (IBT) certificate from the North Carolina Environmental Management Commission for a total transfer of 48 million gallons per day (MGD) on a maximum day basis. The maximum day IBT under the proposal would be up to 38 MGD from the Catawba River Sub-Basin and up to 10 MGD from the Yadkin River Sub-Basin.

Under the proposal, the applicants would meet short-term water supply demand increases using interconnections with Charlotte (Catawba), Salisbury (Yadkin), and Albemarle (Yadkin). Long-term demands would be met by developing a raw water supply from Lake Norman (Catawba) to supplement flows to Lake Howell and Kannapolis Lake. IBT occurs because of consumptive use in and discharge to the Rocky River Sub-Basin via the Water and Sewer Authority of Cabarrus County's Rocky River Regional Wastewater Treatment Plant. The IBT certificate is being requested to meet a projected cumulative water demand shortfall of 24 MGD (average day demand) in 2035.

Notice of these hearings is given in accordance with N.C. General Statute 143-215.22I(d). The first public hearing will start at 5:00 PM on June 22, 2005 on the Third Floor of McKnight Auditorium on the campus of the University of North Carolina at Charlotte, Charlotte, NC. The second hearing will begin at 5:00 PM on June 23, 2005 in the Albemarle City Hall Annex, Albemarle, NC. In addition, Division of Water Resources (DWR) staff will be available to answer questions from 4:00 – 5:00 PM at the hearing locations. The public may inspect the staff's recommendation report, the interbasin transfer petition, and the draft Environmental Impact Statement (EIS) supporting the petition during normal business hours at the offices of DWR, 512 N. Salisbury Street, Room 1106, Archdale Building, Raleigh. These documents may also be viewed at the DWR web site:

http://www.ncwater.org/Permits_and_Registration/Interbasin_Transfer/Status/Concord/

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According to the draft EIS, there are no expected significant direct impacts in either the Catawba River or Yadkin River Sub-Basins. No significant changes are predicted in lake levels, downstream flows, or water supply withdrawals. Direct impacts on water supply, water quality, wastewater assimilation, fish and wildlife resources, navigation, or recreation are not expected since there will be no significant changes in the hydrology of the system due to the increased withdrawal. There is some potential for loss of power generation capacity in the Yadkin Sub-basin.

The draft EIS concludes that there are no secondary impacts related to growth in either of the source basins. However, the IBT will provide additional water supply to support growth and development in the receiving basin. Mitigation measures presented in the IBT petition are expected to mitigate secondary impacts related to growth and development in the receiving basin.

The draft EIS was circulated among agencies of the Department of Environment and Natural Resources. The Division of Water Quality, Natural Heritage Program, and the Wildlife Resources Commission were the primary commenting agencies. Their comments included concerns concentrated on secondary and cumulative impacts in the receiving basin on aquatic habitat and water quality. Suggested mitigation measures were specified, such as stream buffers and development ordinances, including low impact development measures.

The purpose of this announcement is to encourage those interested in this matter to provide comments and to comply with statutory notice requirements. You may attend either of the public hearings and make relevant oral comments and/or submit written comments, data, or other relevant information. Written submissions of oral comments at the hearings are requested. The hearing officers may limit the length of oral presentations if many people want to speak. If you are unable to attend, written comments can be mailed to Phil Fragapane, Division of Water Resources, DENR, 1611 Mail Service Center, Raleigh, NC 27699-1611. Comments may also be submitted electronically to Phil.Fragapane@ncmail.net. All comments must be received before July 1, 2005. Oral, mailed, and emailed comments will be given equal weight.

Under the Regulation of Surface Water Transfers Act (G.S. 143-215.22I), persons intending to transfer 2.0 mgd or more, or increase an existing transfer by 25 percent or more, must first obtain a certificate from the Environmental Management Commission. As part of the petition process, the applicants completed an environmental impact statement. Review of the environmental impact statement by the Department of Environment and Natural Resources has been completed in accordance with the State Environmental Policy Act.

The public is invited to comment on the applicants' petition and supporting environmental impact statement. The Commission is considering and seeking comments on three options with regard to the interbasin transfer request. The options are: (a) grant the certificate for the interbasin transfer request; (b) deny the interbasin transfer request; or (c) grant the certificate including any conditions necessary to achieve the purposes of the statute or to provide mitigation measures.

The public is invited to comment on the following possible conditions and to suggest any other appropriate conditions, including limitations on the amount of the transfer:

1. The Cities of Concord and Kannapolis will enact the following buffer definitions as part of the Unified Development Ordinance (UDO):
    - A perennial stream buffer shall be an undisturbed area measured, at minimum, 50 feet from the top of stream bank plus 20 feet of vegetated setback, totaling 70 feet
    - An intermittent stream buffer shall be an undisturbed area measured from the top of stream bank perpendicularly for a distance of 20 feet with an additional 10 feet of vegetated setback, totaling 30 feet

    The UDO shall require that within stream buffer areas, the following regulations will apply:
    - No new on-site sewage systems utilizing ground adsorption
    - No new structures
    - Maintenance of stream buffers to maintain sheet flow and provide for diffusion and infiltration of runoff and filtering of pollutants

2. All municipalities and counties receiving water and/or sewer services from the Cities of Concord and/or Kannapolis shall comply with the UDO, including the stream buffer requirements. Municipalities and counties potentially affected include Harrisburg, Landis, Midland, Mount Pleasant, and Cabarrus County.

3. Prior to transferring water under the proposed IBT certificate, the holders of the certificate will work with the Division of Water Resources to develop a compliance and monitoring plan subject to approval by the Division. The plan will include methodologies and reporting schedules for reporting the following information: maximum daily transfer amounts, compliance with permit conditions, progress on mitigation measures, and drought management. A copy of the approved plan will be kept on file with the Division for public inspection. The Division of Water Resources will have the authority to make modification to the compliance and monitoring plan as necessary to assess compliance with the certificate.

4. If either the EIS were to be found at a later date to be incorrect or new information were to become available such that the environmental impacts associated with the proposed transfer were substantially different from the projected impacts that formed the basis for certifying the IBT, the Environmental Management Commission can reopen the certificate to adjust the conditions or to require new conditions to ensure that the detriments of the transfer continue to be mitigated to a reasonable degree.

For more information or to download the EIS supporting this IBT request, visit the Division of Water Resources' website at

http://www.ncwater.org/Permits_and_Registration/Interbasin_Transfer/Status/Concord/

You may also contact Phil Fragapane in the Division of Water Resources at 919-715-0389, or email: Phil.Fragapane@ncmail.net

Notice of Public Meeting – September 7, 2006

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

Michael F. Easley, Governor

William G. Ross Jr., Secretary
John N. Morris, Director

Cities of Concord and Kannapolis Proposed Interbasin Transfer

NOTICE OF PUBLIC MEETING

September 7, 2006, 5:00 – 8:00 PM
Old Rock School Auditorium
400 West Main St
Valdese, NC

The Division of Water Resources will hold a public meeting to receive comments on the request by the Cities of Concord and Kannapolis for an interbasin transfer from the Catawba River and Yadkin River Basins to the Rocky River Basin. The North Carolina Environmental Management Commission (EMC) has requested this meeting in order to facilitate further public comment.

The public meeting will start at 5:00 PM on September 7, 2006 in the Old Rock School Auditorium in Valdese, NC. Division of Water Resources (DWR) staff members will be available to answer questions from 4:00 – 5:00 PM at the meeting location.

All statements made at the meeting will be audio recorded. This recording will be provided to members of the EMC. Oral statements will not be included in the written record for this decision. Interested parties are encouraged to submit written comments for the record through September 30, 2006. Based on the number of people who wish to speak, the length of oral presentations may be limited. Speakers will not be allowed to give their allotted time to other speakers.

The Cities of Concord and Kannapolis are requesting an interbasin transfer (IBT) certificate from the EMC for a maximum of 36 million gallons per day (MGD) with an annual average transfer of 22 MGD. The communities desire to transfer water from the Catawba River and Yadkin River Basins to the Rocky River Basin. The IBT request is for up to a maximum of 10 MGD to be transferred from the Yadkin River Basin with the remainder to come from the Catawba River Basin.

The Division of Water Resources is currently preparing a report which will summarize revised modeling and other analyses related to the impacts of the proposed IBT. The report will correct errors that were made in the modeling portion of the Final Environmental Impact Statement and in a supplement to this document. This report will be available before September 1 and will be available for download from the DWR website. The public may inspect this and any document related to this request during normal business hours at the offices of DWR, 512 N. Salisbury

1611 Mail Service Center, Raleigh, North Carolina 27699-1611
Phone: 919-733-4064 \ FAX: 919-733-3558 \ Internet: www.ncwater.org

Street, Room 1106, Archdale Building, Raleigh. These documents may also be viewed at the DWR web site at:

http://www.ncwater.org/Permits_and_Registration/Interbasin_Transfer/

Written comments on the FEIS should be mailed to:

Phil Fragapane, Division of Water Resources
Department of Environment and Natural Resources
1611 Mail Service Center
Raleigh, NC 27699-1611

Comments may also be submitted electronically to Phil.Fragapane@ncmail.net. Mailed and emailed comments will be given equal weight. **The comment period closes on Septmember 30, 2006.**

ConKannPMNotice.doc

Notice of Public Meeting – September 19, 2006

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

Michael F. Easley, Governor

William G. Ross Jr., Secretary
John N. Morris, Director

Cities of Concord and Kannapolis Proposed Interbasin Transfer

NOTICE OF PUBLIC MEETING

September 19, 2006, 6:00 – 9:15 PM
Olympic High School Gymnasium
4301 Sandy Porter Rd.
Charlotte, NC 28273

The Division of Water Resources will hold a public meeting to receive comments on the request by Concord and Kannapolis for an interbasin transfer from the Catawba River and Yadkin River Basins to the Rocky River Basin. The North Carolina Environmental Management Commission (EMC) has requested this meeting in order to facilitate further public comment.

The public meeting will start at 6:00 PM. Division of Water Resources (DWR) staff members will be available to answer questions at 5:00 PM at the meeting location.

The presiding officer will begin the meeting with a review of the proposal and ground rules for the meeting. All statements made at the meeting will be audio recorded. This recording will be provided to members of the EMC. Oral statements will also be transcribed and included in the written record. Interested parties who wish not to speak during the meeting may submit written comments for the record. Those must be received by Sept. 30, 2006.

The site of the public meeting, Olympic High School, will be open to the public beginning at 4:30 PM. Speakers will be asked to register prior to the meeting. Speaker sign-in will begin promptly at 4:30 PM. In order to accommodate all viewpoints during this registration, speakers will be asked if they wish to speak for or against the proposal. Opponents will be given a total of 90 minutes to present their views. Proponents will be given a total of 90 minutes to present their views. The length of oral presentations for each speaker will be between two and three minutes, based on the number of people who sign up to speak. Speakers will not be allowed to give their allotted time to other speakers.

The Division of Water Resources requests that everyone be respectful during presentations so that every speaker's views are heard. The meeting will adjourn no later than 9:15 p.m.

Concord and Kannapolis are requesting an interbasin transfer (IBT) certificate from the EMC for a maximum of 36 million gallons per day (MGD) with an annual average transfer of 22 MGD.

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The communities desire to transfer water from the Catawba River and Yadkin River Basins to the Rocky River Basin. The IBT request is for up to a maximum of 10 MGD to be transferred from the Yadkin River Basin with the remainder to come from the Catawba River Basin.

The Division of Water Resources has prepared a report summarizing revised modeling and other analyses related to the impacts of the proposed IBT. The report corrects errors that were made in the modeling portion of the Final Environmental Impact Statement and in a supplement to this document. This report is available for download at the following web address:

http://www.ncwater.org/Data_and_Modeling/Catawba/Reports/August31_2006_Analysis_Report.pdf

The public may inspect this and any document related to this request during normal business hours at the offices of DWR, 512 N. Salisbury Street, Room 1106, Archdale Building, Raleigh NC. These documents may also be viewed at the DWR web site at:

http://www.ncwater.org/Permits_and_Registration/Interbasin_Transfer/

Written comments on the FEIS should be mailed to:

Phil Fragapane, Division of Water Resources
Department of Environment and Natural Resources
1611 Mail Service Center
Raleigh, NC 27699-1611

Comments may also be submitted electronically to Phil.Fragapane@ncmail.net. Mailed and emailed comments will be given equal weight. **The comment period closes on September 30, 2006.**

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Attachment C – Statutes and Administrative Rules

Registration of Water Withdrawals and Transfers
Regulation of Surface Water Transfers

Statutory Authority for Regulating Interbasin Transfers

Part 2A. Registration of Water Withdrawals and Transfers; Regulation of Surface Water Transfers.

§ 143-215.22G. Definitions.

In addition to the definitions set forth in G.S. 143-212 and G.S. 143-213, the following definitions apply to this Part.

(1) "River basin" means any of the following river basins designated on the map entitled "Major River Basins and Sub- basins in North Carolina" and filed in the Office of the Secretary of State on 16 April 1991. The term "river basin" includes any portion of the river basin that extends into another state. Any area outside North Carolina that is not included in one of the river basins listed in this subdivision comprises a separate river basin.

a. 1-1 Broad River.
b. 2-1 Haw River.
c. 2-2 Deep River.
d. 2-3 Cape Fear River.
e. 2-4 South River.
f. 2-5 Northeast Cape Fear River.
g. 2-6 New River.
h. 3-1 Catawba River.
i. 3-2 South Fork Catawba River.
j. 4-1 Chowan River.
k. 4-2 Meherrin River.
l. 5-1 Nolichucky River.
m. 5-2 French Broad River.
n. 5-3 Pigeon River.
o. 6-1 Hiwassee River.
p. 7-1 Little Tennessee River.
q. 7-2 Tuskasegee (Tuckasegee) River.
r. 8-1 Savannah River.
s. 9-1 Lumber River.
t. 9-2 Big Shoe Heel Creek.
u. 9-3 Waccamaw River.
v. 9-4 Shallotte River.
w. 10-1 Neuse River.
x. 10-2 Contentnea Creek.
y. 10-3 Trent River.
z. 11-1 New River.
aa. 12-1 Albemarle Sound.
bb. 13-1 Ocoee River.
cc. 14-1 Roanoke River.
dd. 15-1 Tar River.
ee. 15-2 Fishing Creek.
ff. 15-3 Pamlico River and Sound.

gg. 16-1 Watauga River.
hh. 17-1 White Oak River.
ii. 18-1 Yadkin (Yadkin-Pee Dee) River.
jj. 18-2 South Yadkin River.
kk. 18-3 Uwharrie River.
ll. 18-4 Rocky River.

(2) "Surface water" means any of the waters of the State located on the land surface that are not derived by pumping from groundwater.

(3) "Transfer" means the withdrawal, diversion, or pumping of surface water from one river basin and discharge of all or any part of the water in a river basin different from the origin. However, notwithstanding the basin definitions in G.S. 143-215.22G(1), the following are not transfers under this Part:

a. The discharge of water upstream from the point where it is withdrawn.

b. The discharge of water downstream from the point where it is withdrawn. (1991, c. 712, s. 1; 1993, c. 348, s. 1; 1997-443, s. 15.48(b).)

§ 143-215.22H. (V2)(Effective March 1, 2000) Registration of water withdrawals and transfers required.

(a) Any person who withdraws 100,000 gallons per day or more of water from the surface or groundwaters of the State or who transfers 100,000 gallons per day or more of water from one river basin to another shall register the withdrawal or transfer with the Commission. A person registering a water withdrawal or transfer shall provide the Commission with the following information:

(1) The maximum daily amount of the water withdrawal or transfer expressed in thousands of gallons per day.

(1a) The monthly average withdrawal or transfer expressed in thousands of gallons per day.

(2) The location of the points of withdrawal and discharge and the capacity of each facility used to make the withdrawal or transfer.

(3) The monthly average discharge expressed in thousands of gallons per day.

(b) Any person initiating a new water withdrawal or transfer of 100,000 gallons per day or more shall register the withdrawal or transfer with the Commission not later than six months after the initiation of the withdrawal or transfer. The information required under subsection (a) of this section shall be submitted with respect to the new withdrawal or transfer.

(b1) Subsections (a) and (b) of this section shall not apply to a person who withdraws or transfers less than 1,000,000 gallons per day of water for activities directly related or incidental to the production of crops, fruits, vegetables, ornamental and flowering plants, dairy products, livestock, poultry, and other agricultural products.

(c) A unit of local government that has completed a local water supply plan that meets the requirements of G.S. 143-355(l) and that has periodically revised and updated its plan as required by the Department has satisfied the requirements of this section and is not required to separately register a water withdrawal or transfer or to update a registration under this section.

(d) Any person who is required to register a water withdrawal or transfer under this section shall update the registration by providing the Commission with a current version of the information required by subsection (a) of this section at five-year intervals following the initial registration. A person who submits information to update a registration of a water withdrawal or transfer is not required to pay an additional registration fee under G.S. 143-215.3(a)(1a) and G.S. 143- 215.3(a)(1b), but is subject to the late registration fee established under this section in the event that updated information is not submitted

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.

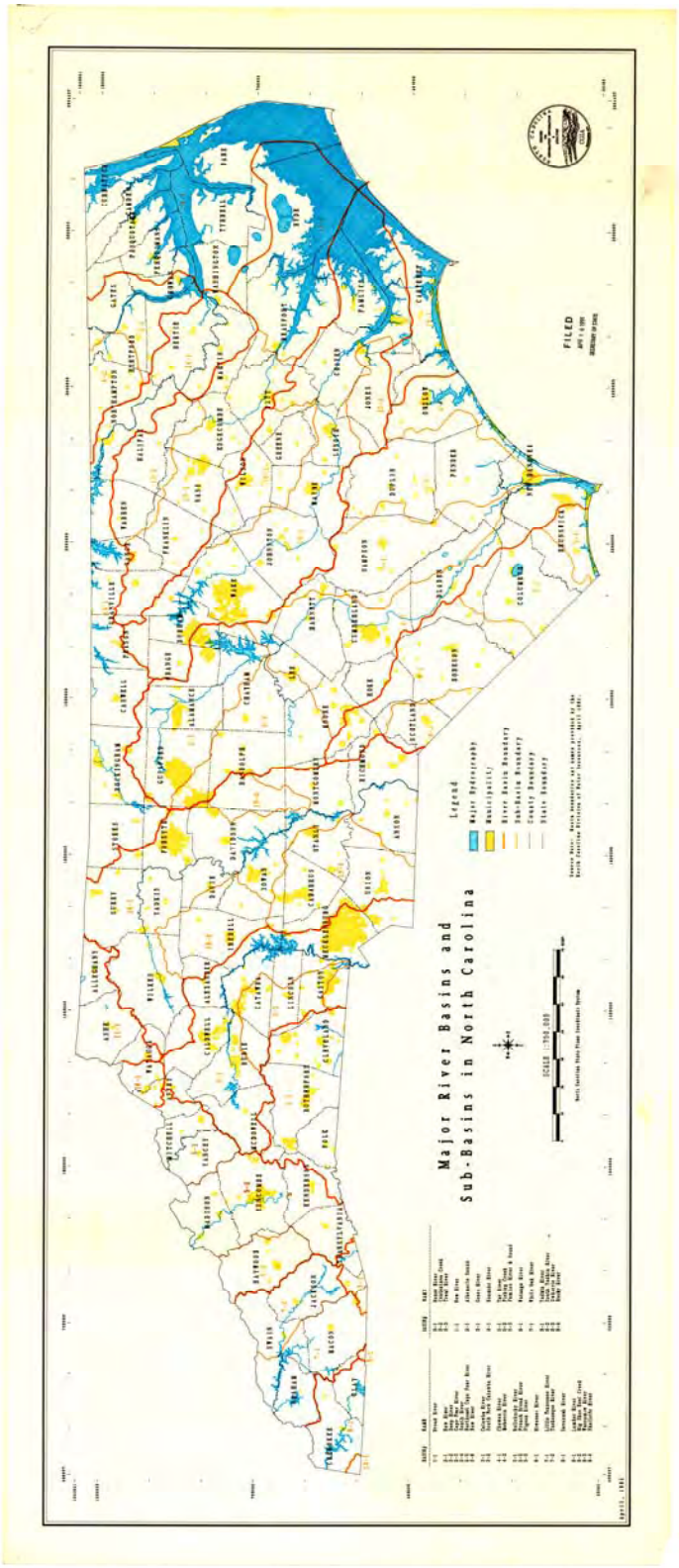
(i) In cases where an applicant requests approval to increase a transfer that existed on July 1, 1993, the Commission shall have authority to approve or disapprove only the amount of the increase. If the Commission approves the increase, however, the certificate shall be issued for the amount of the 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 (1 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.)


Major River Basins and
Sub-Basins in North Carolina
Legend
FILED

Administrative Code for Interbasin Transfer

Administrative Code for Interbasin Transfer

SECTION .0400 - REGULATION OF SURFACE WATER TRANSFERS

.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:Statutory Authority G.S. 143-215.22G; 143-215.22I; 143B-282(a)(2);
Eff. September 1, 1994.

.0402 JUDICIAL REVIEW

Judicial Review of the Commission's decision shall be as provided in G.S. 143-215.5.

History Note:Statutory Authority G.S. 143-215.5; 143B-282(a)(2);
Eff. September 1, 1994.