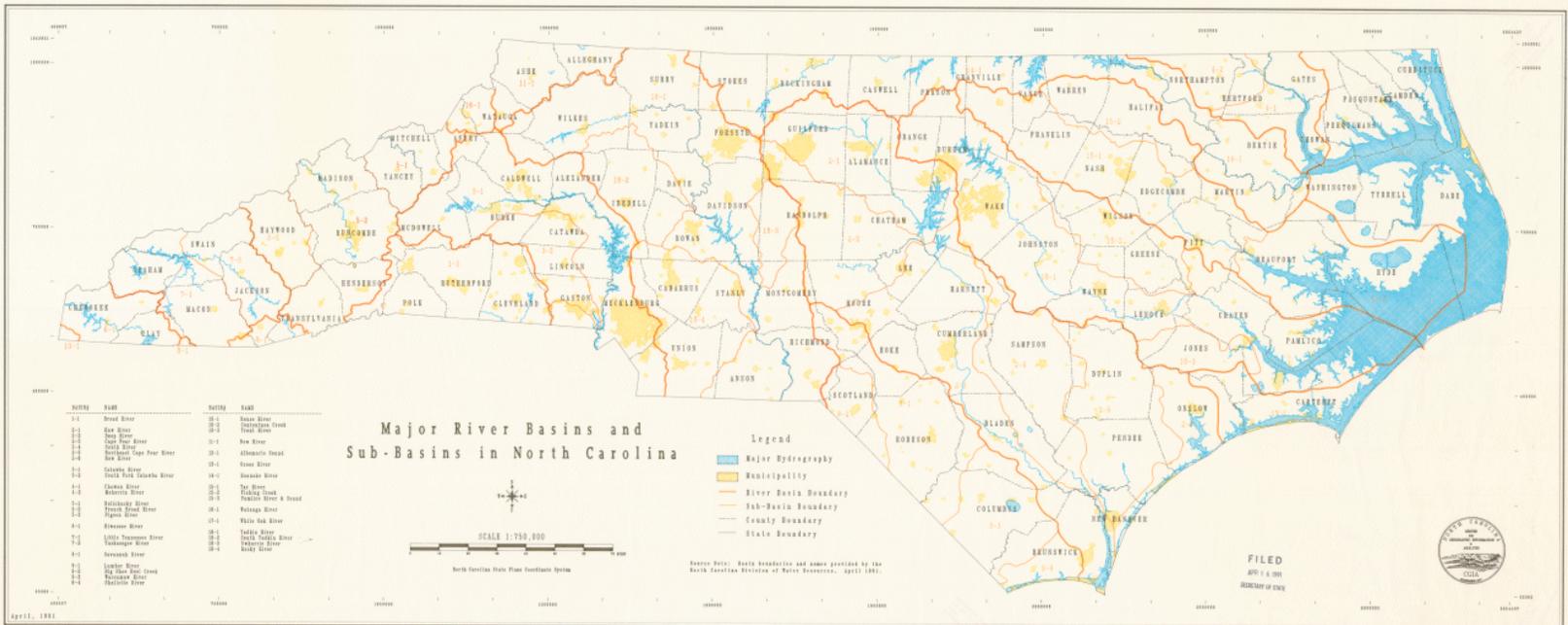


# Cities of Concord and Kannapolis Proposed Interbasin Transfer

- Review of the Hearing Officers' Report -

Environmental Management  
Commission

January 10, 2007

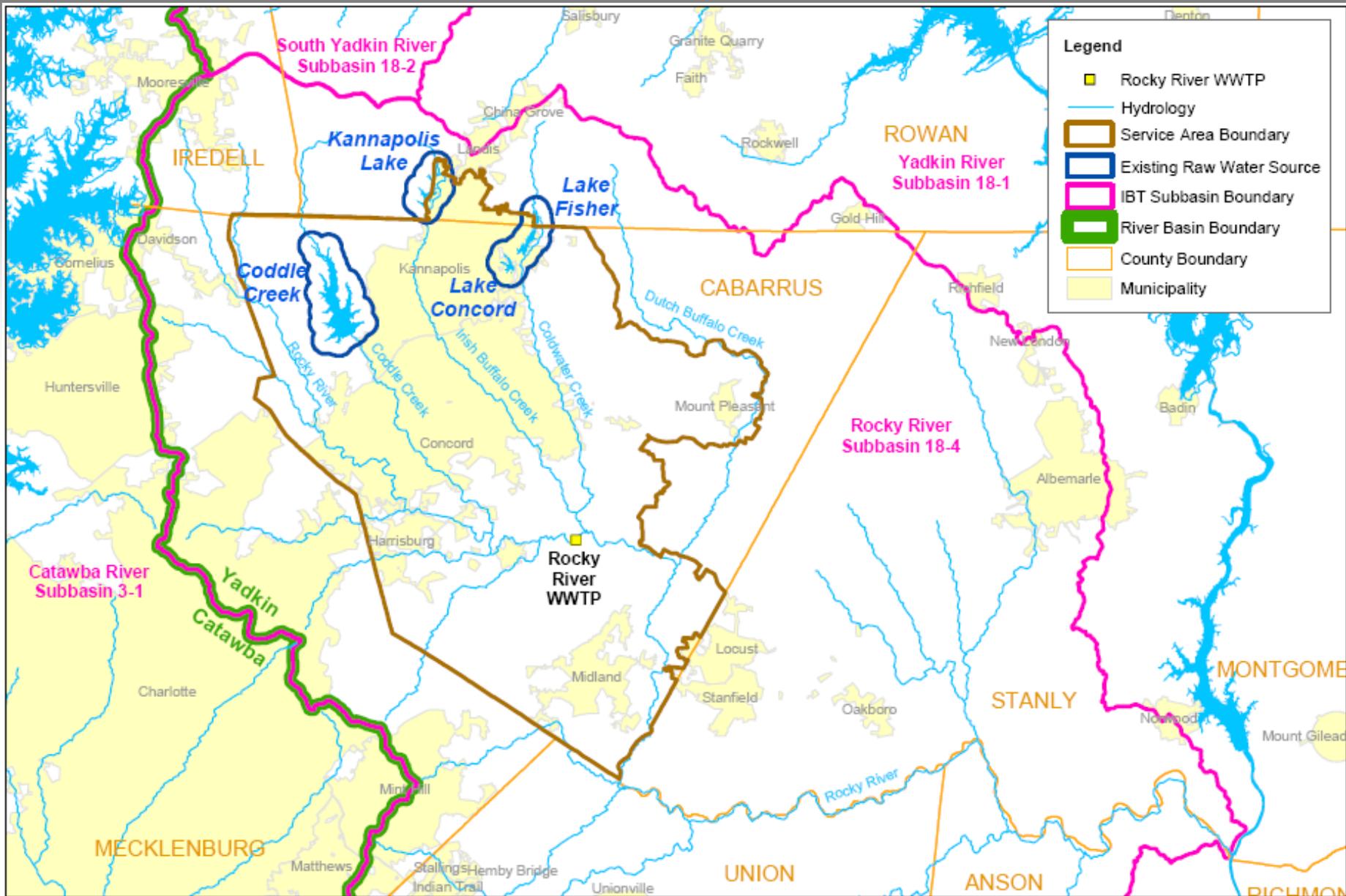


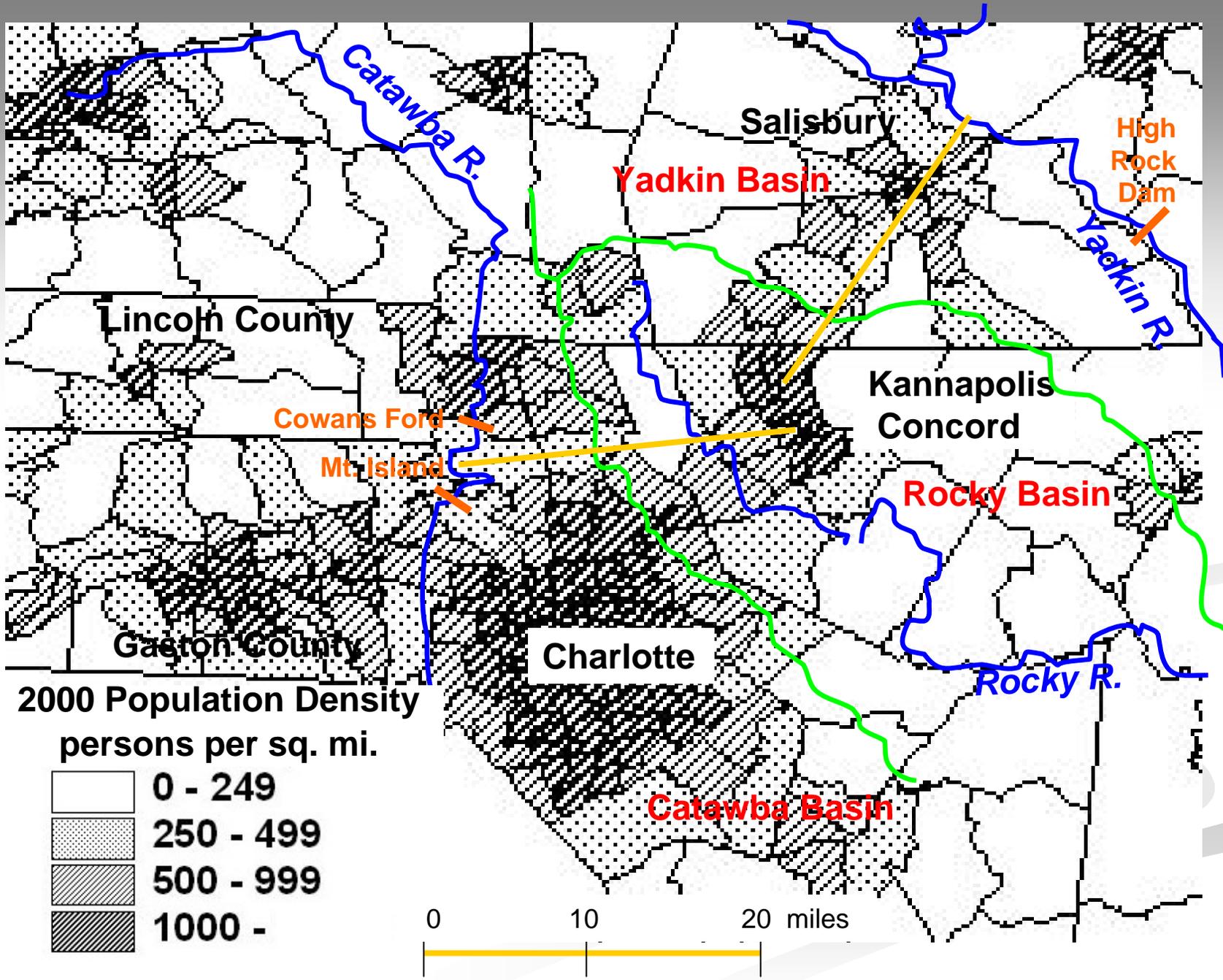
# Timeline

- **2001-2002** Evaluation of water supply alternatives
- **2002** Scoping
- **Dec 2003** Draft EIS submitted for DENR review.
- **Nov 2004** Concord and Kannapolis petition EMC to request IBT
- **Feb 2005** EMC authorizes proceeding to public hearing
- **June 2005** Two public hearings Charlotte and Albemarle
- **May 2006** Final EIS released and beginning of public review period.
- **Sept 2006** Public Meetings held in Valdese and Charlotte
- **Oct 31, 06** Close of Public Comment Period
- **Nov 28, 06** Revised Final EIS issued that consolidated Catawba RB modeling results, and included responses to Final EIS comments.
- **Dec 11, 06** Hearing Officers issues report with recommendations to the EMC.
- **Jan 8, 07** Public review period for Revised Final EIS ends.
- **Jan 10, 07** EMC meets to decide on IBT request.

# Applicants' Request

- The original request was for a 24 MGD ADD IBT from a combination of the Catawba River basin and the Yadkin River basin to the Rocky River basin.
- The revised request was a 22 MGD ADD IBT from a combination of the Catawba and Yadkin River Basins.
- In addition to the average daily transfer limit, 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.





# Hearing Officers' Recommendation

- A 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

- A transfer amount shall not exceed a maximum of 10 million gallons on any calendar day from the Yadkin River basin to the Rocky River basin.
- 7 Conditions

**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

# Findings of Fact

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
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7. Any other facts or circumstances that are reasonably necessary to carry out the law

# 1. Necessity, reasonableness, and beneficial effects of the transfer

## Summary of 2035 Water Supply Deficit

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

# 1. Necessity, reasonableness, and beneficial effects of the transfer

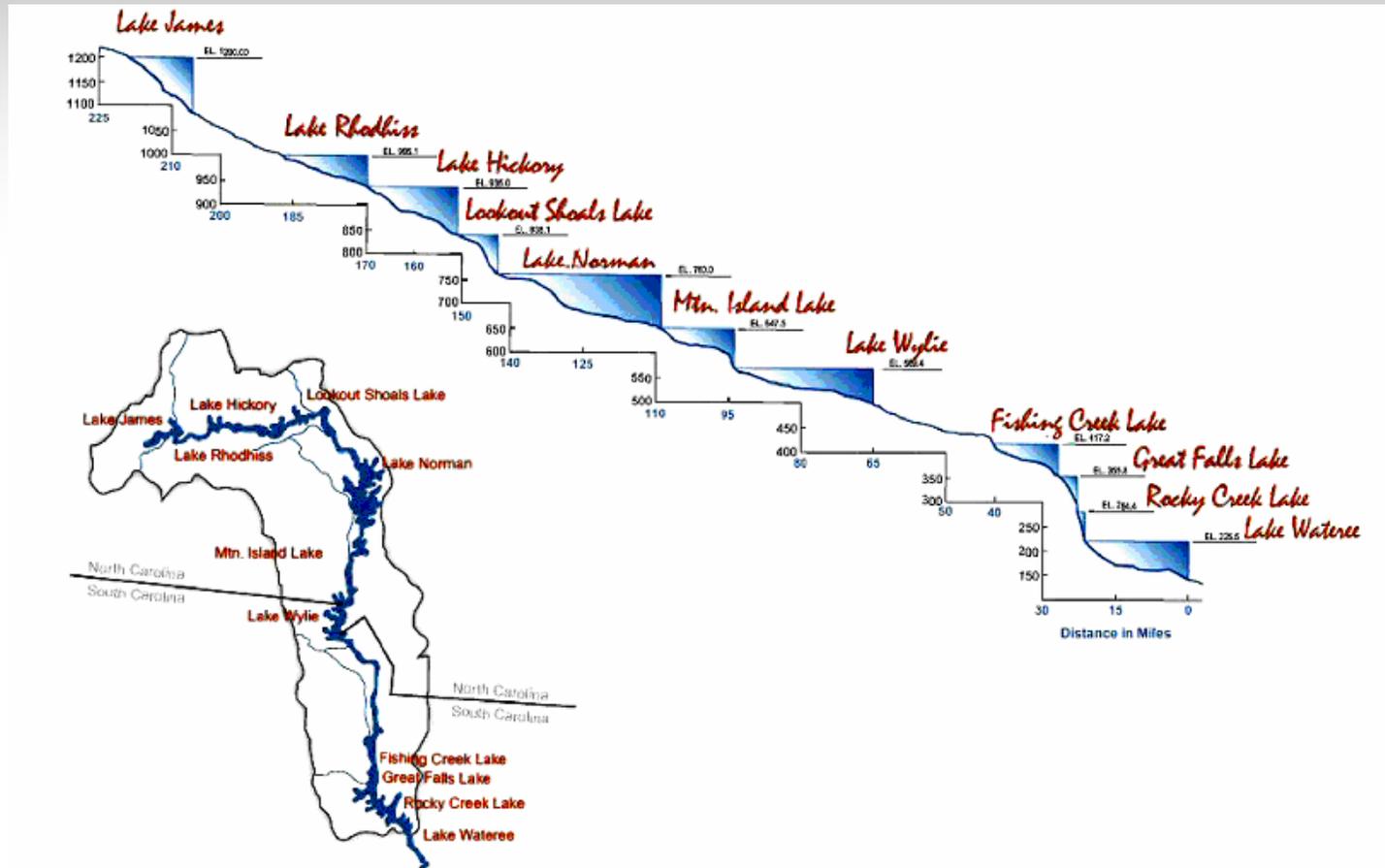
## *Finding of Fact*

*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.*

# Findings of Fact

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
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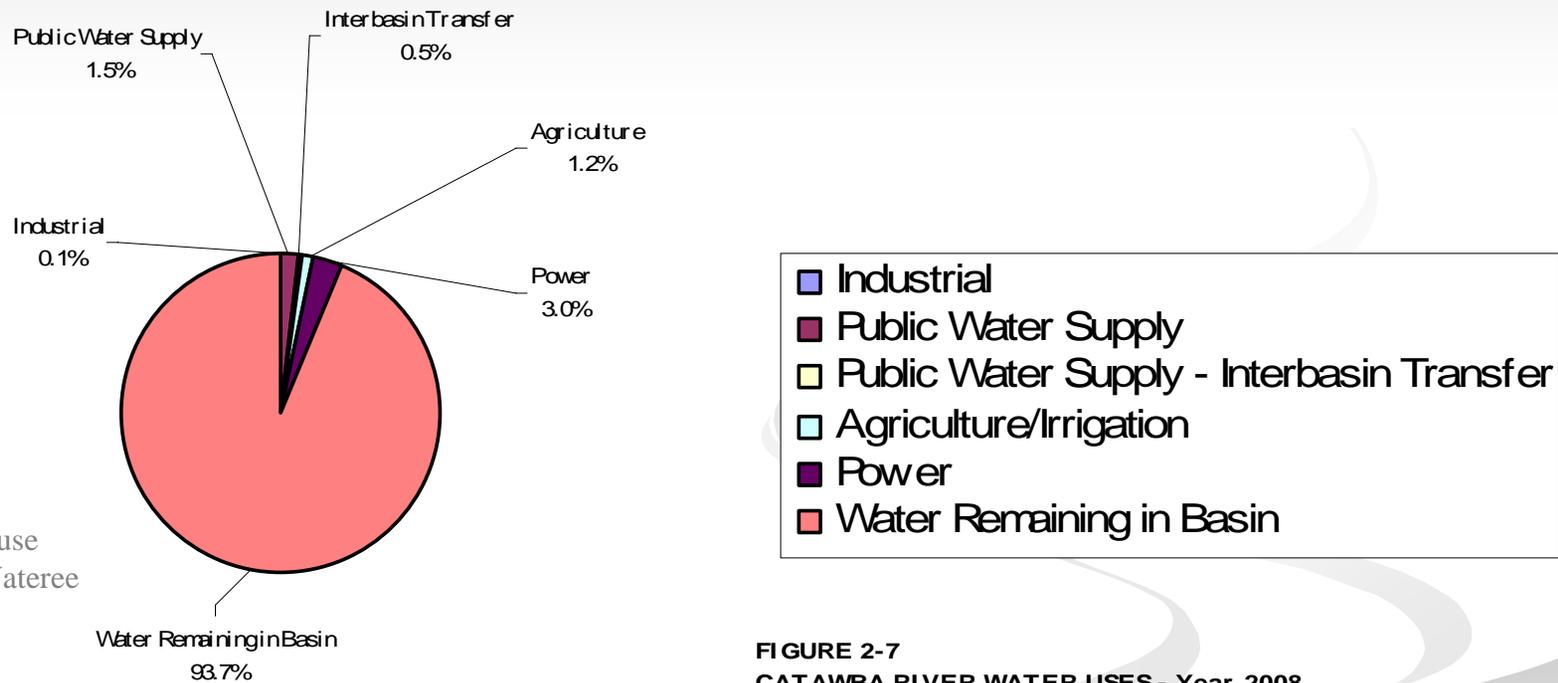
## 2. Detrimental effects on the source river basin Catawba



# 2. Detrimental effects on the source river basin

## Catawba

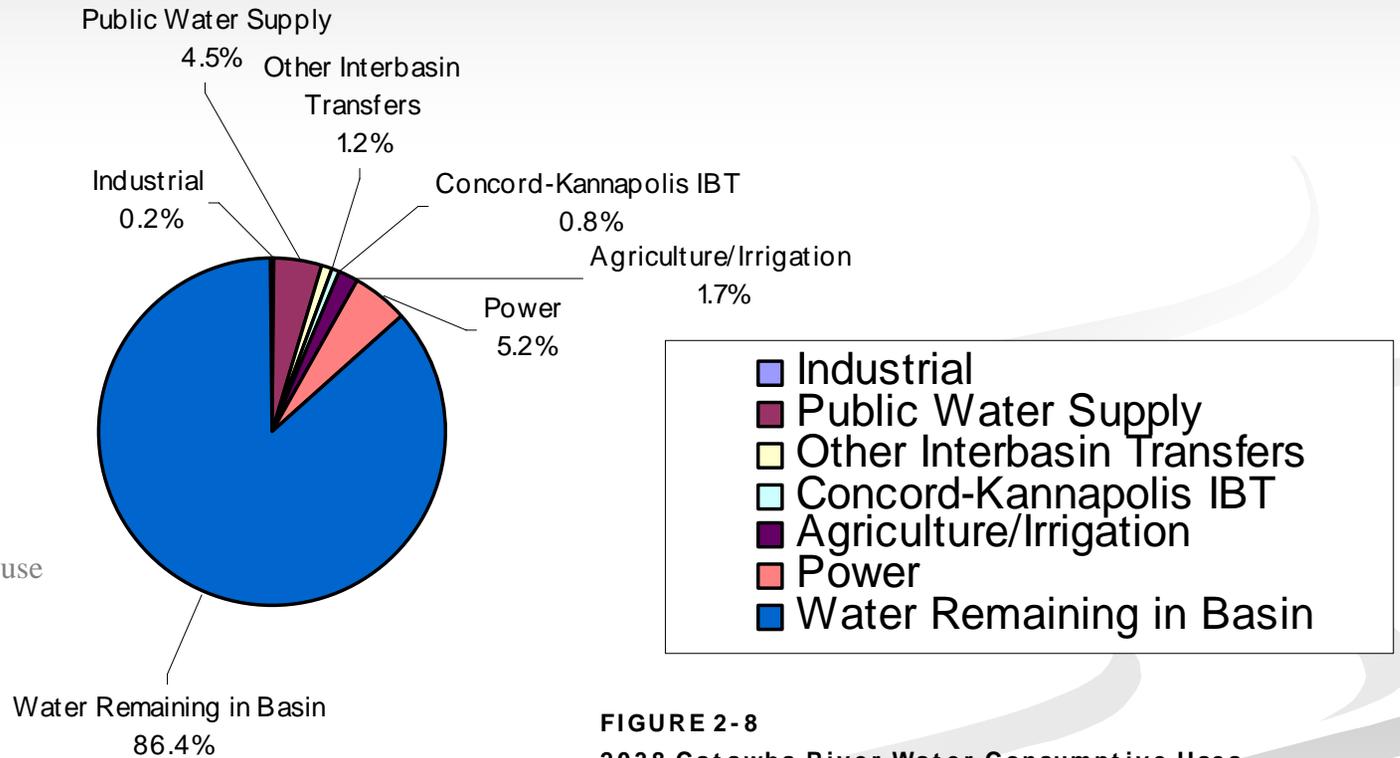
### 2008 Consumptive Uses In Catawba RB



# 2. Detrimental effects on the source river basin

## Catawba

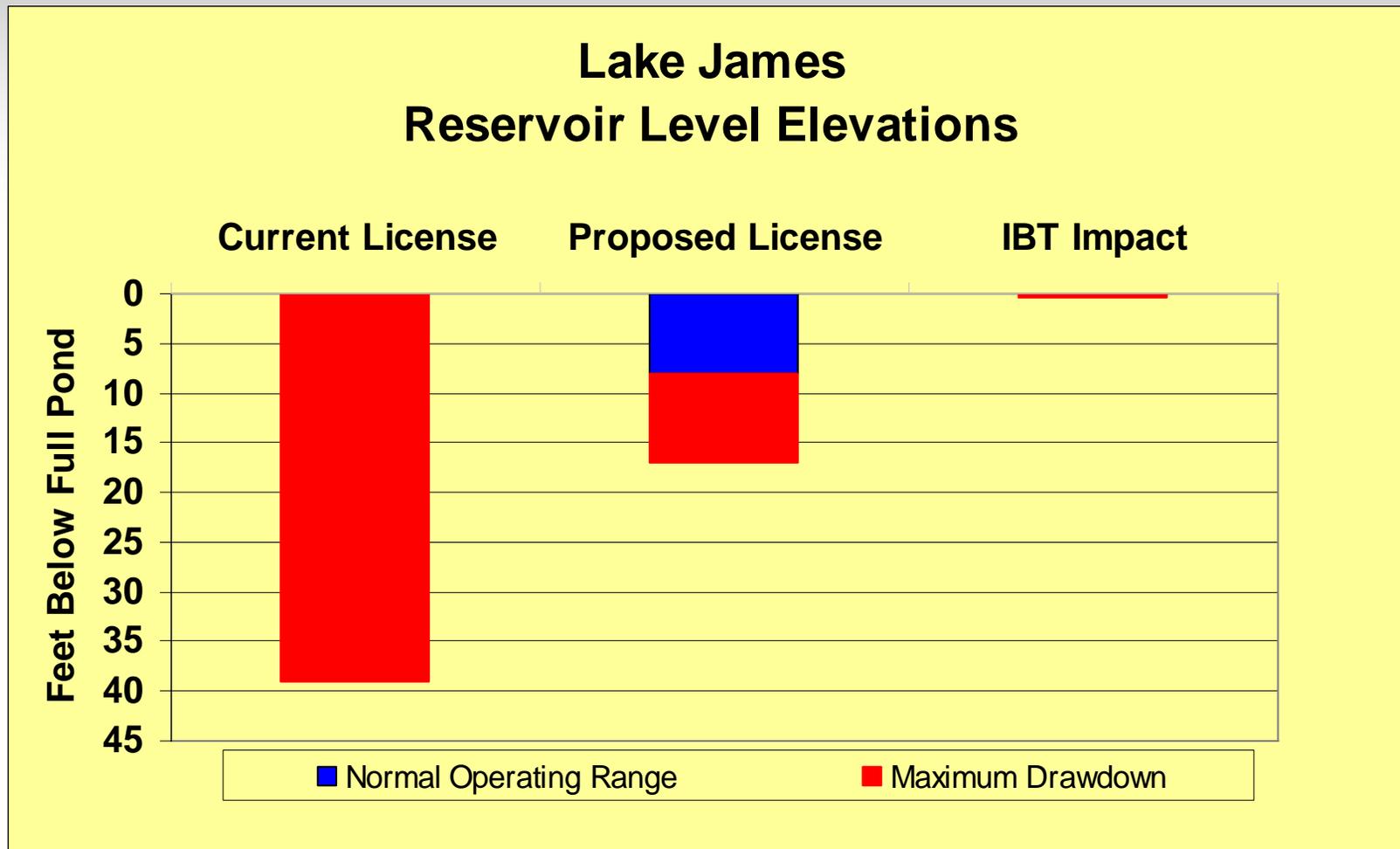
### 2038 Consumptive Uses In Catawba RB



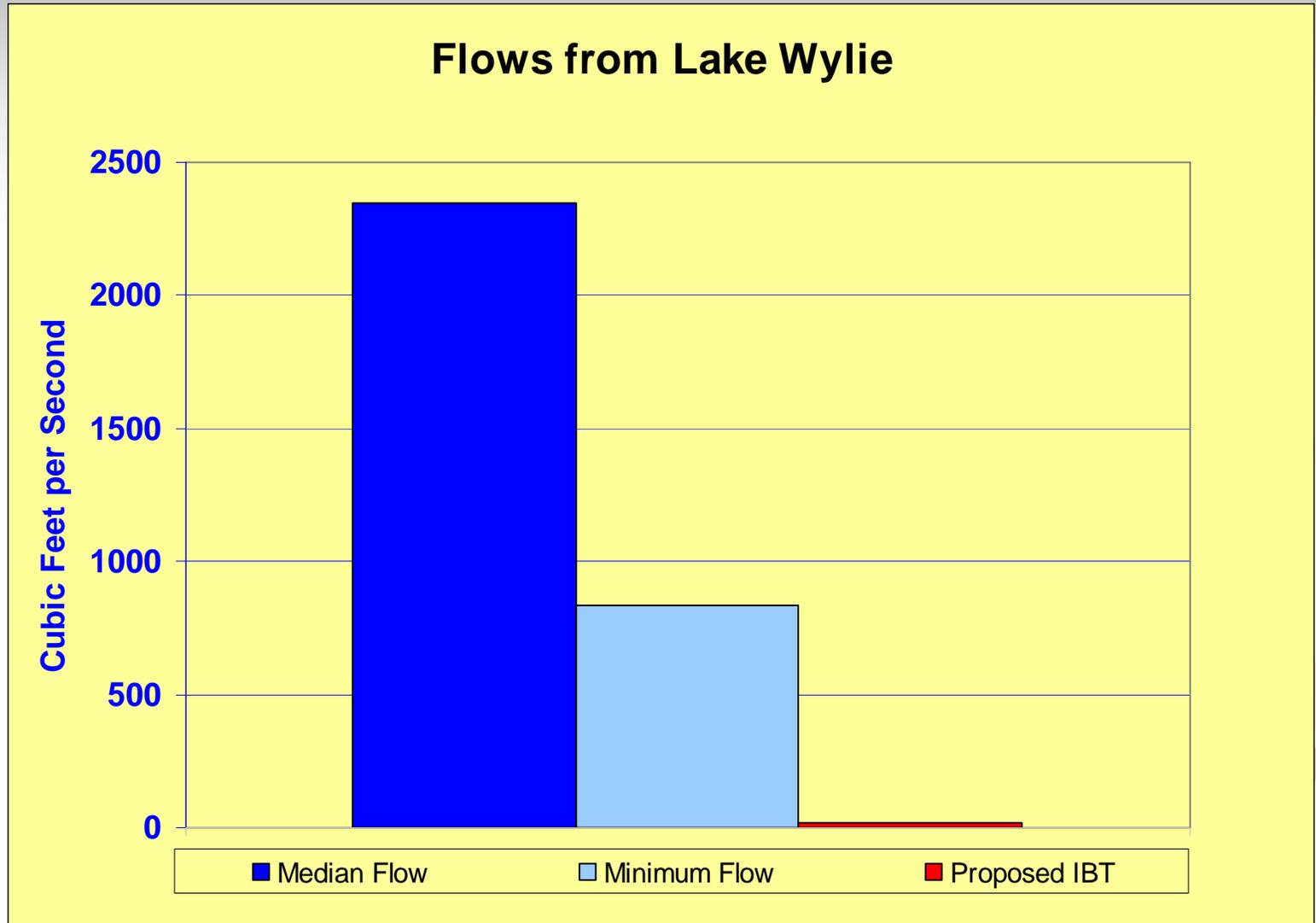
Note: Consumptive use measured at Lake Wateree

**FIGURE 2-8**  
**2038 Catawba River Water Consumptive Uses**  
**Concord/Kannapolis IBT Environmental Impact Statement**

## 2. Detrimental effects on the source river basin Catawba



## 2. Detrimental effects on the source river basin Catawba



## 2. Detrimental effects on the source river basin Catawba

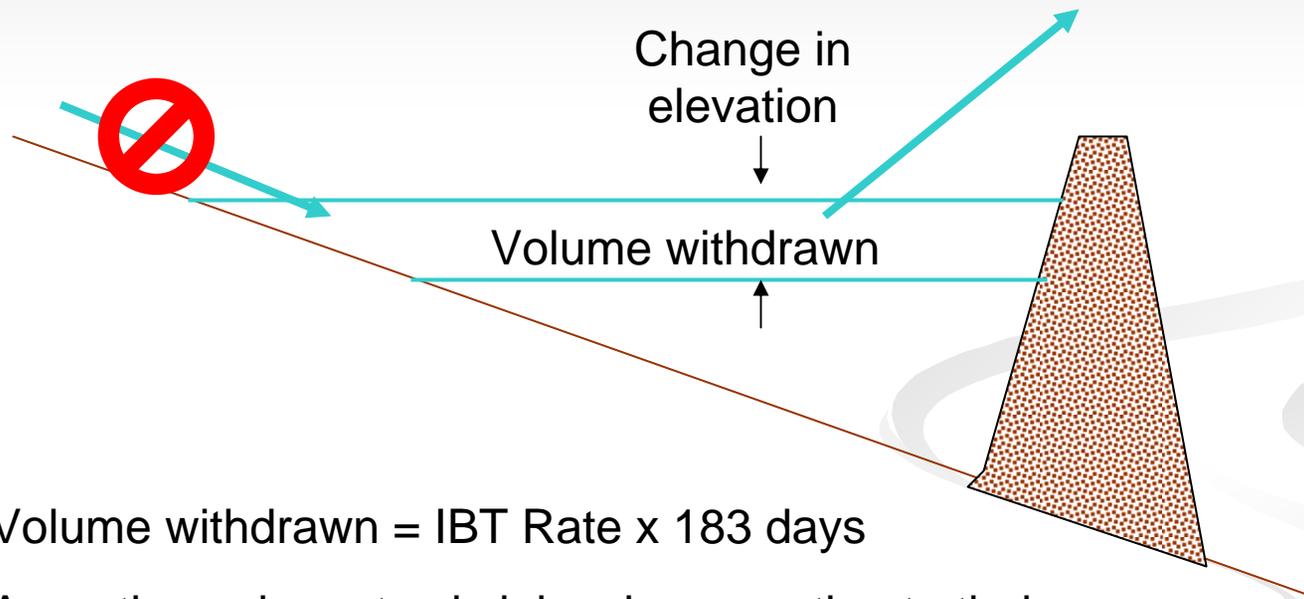
### Summary of Catawba LIP Stages

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

## 2. Detrimental effects on the source river basin Catawba

### Simple Check – Upper Bounds on Changes in Elevation

6-months of IBT



- 1)  $\text{Volume withdrawn} = \text{IBT Rate} \times 183 \text{ days}$
- 2) Apportion volume to six lakes in proportion to their storage levels at 75 and 90 percent full.
- 3)  $\text{Calculate change in elevation} = \text{volume withdrawn} / \text{surface area}$

## 2. Detrimental effects on the source river basin Catawba

### Results

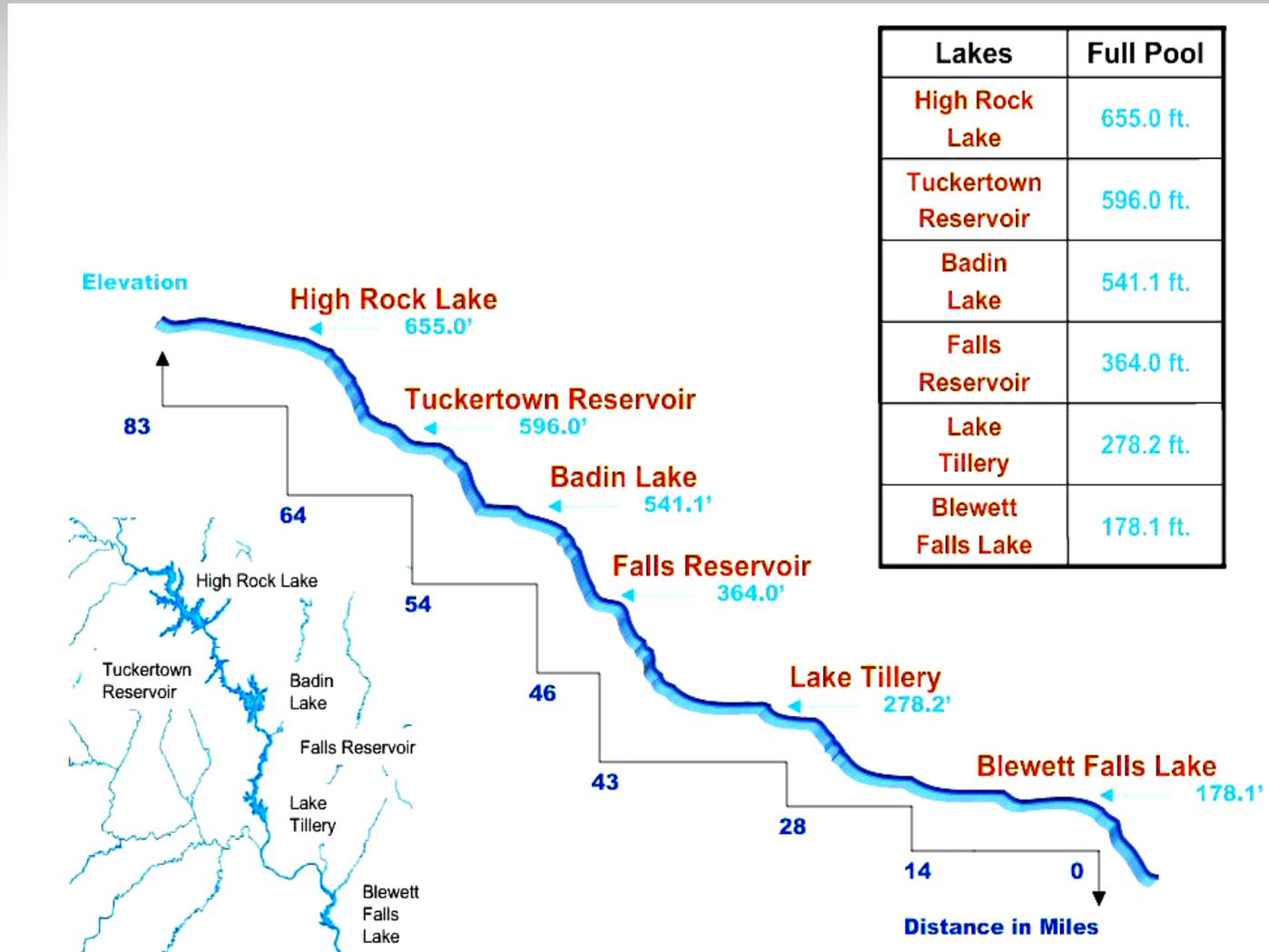
TABLE 2-14

Simple Analysis based on Stage-Storage Curves and Assumption of No Inflow  
Concord/Kannapolis IBT RFEIS

Reservoir	Reduction in Reservoir Elevations (inches) for Transfers of 10, 16, and 22 mgd					
	10 mgd		16 mgd		22 mgd	
	Initial Storage Conditions					
	90% storage	75% storage	90% storage	75% storage	90% storage	75% storage
James	2.1	2.3	2.1	3.7	4.5	5.0
Rhodhiss	1.1	1.2	1.1	1.9	2.4	2.6
Hickory	1.4	1.6	1.4	2.5	3.0	3.5
Lookout Shoals	1.3	1.3	1.3	2.1	2.8	2.9
Norman	1.4	1.7	1.4	2.6	3.1	3.6
Mountain Island	0.9	1.0	0.9	1.6	2.1	2.3

## 2. Detrimental effects on the source river basin

# Yadkin



# 2. Detrimental effects on the source river basin Yadkin

## High Rock Lake Elevations

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

# 2. Detrimental effects on the source river basin Yadkin

## Rockingham Streamflow

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

# 2. Detrimental effects on the source river basin Yadkin

## 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
<b>Monthly Summary</b>						
-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

## 2. Detrimental effects on the source river basin Yadkin

### Simple Check – Upper Bounds on Changes in Elevation

Storage,  % of Available <u>Capacity</u>	Drawdown in inches resulting  <u>from 183 days of 10 MGD IBT</u>		
	<u>High Rock</u>	<u>Narrows</u>	<u>Tillery</u>
100%	2.7	3.6	1.6
75%	3.3	3.9	1.7
50%	4.4	4.4	1.9

## 2. Detrimental effects on the source river basin

### *Finding of Fact*

*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.*

# Findings of Fact

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

## 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 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.

**2a. Cumulative effects on the source major river basins of any current or projected water transfer or consumptive water use**

**■ Yadkin**

- The Yadkin Project Operations OASIS model discussed in Finding Number 2 includes data for current and projected water withdrawals and water transfers. 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.**

2a. Cumulative effects on the source major river basins of any current or projected water transfer or consumptive water use

*Finding of Fact*

*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.*

# Findings of Fact

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
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7. Any other facts or circumstances that are reasonably necessary to carry out the law

### 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. 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 to address growth-related impacts.**

### 3. Detrimental effects on the receiving basin

- **The IBT will cause additional wastewater discharge to the Rocky River Basin.**
  - **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.**

### 3. Detrimental effects on the receiving basin

#### *Finding of Fact*

*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.*

# Findings of Fact

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



## **4. Reasonable alternatives to the proposed transfer**

**In addition to the alternatives considered in the EIS, the Hearing Officers considered 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. This alternative meets the projected 2035 deficit, after removing the 80% planning factor.**

#### 4. Reasonable alternatives to the proposed transfer

*Finding of Fact*

*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.*

# Findings of Fact

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

## 5. Applicants' use of impounded 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.

# Findings of Fact

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**

7. Any other facts or circumstances that are reasonably necessary to carry out the law

- **Uncertainty in the FERC hydropower regimenting process.**
  - Concerns the final FERC license requirements will be significantly different from the assumptions used in the analysis.
  - Concerns about the effectiveness and enforceability of the LIPs.
- **Concerns that the Catawba River was supporting a heavy demand for water and may be approaching overuse**

7. Any other facts or circumstances that are reasonably necessary to carry out the law

*Finding of Fact*

***The Commission finds that to protect the source basin during drought conditions and as authorized by G.S. § 143-215.22l(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.***

7. Any other facts or circumstances that are reasonably necessary to carry out the law

*Finding of Fact*

***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. § 143-215.22l.***

7. Any other facts or circumstances that are reasonably necessary to carry out the law

*Finding of Fact*

***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.***

## 7. Any other facts or circumstances that are reasonably necessary to carry out the law

### *Finding of Fact*

***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

- 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).

# Decision

Based on the record and the recommendation of the Hearing Officers, the Commission, on January 10, 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.

# Decision - Conditions

1. Re-opener for changes in FERC license.
2. Requirement for a drought management plan.
3. How to divide up the transfer if the two applicants no longer cooperate with each other.
4. Requirement for a compliance and monitoring plan based on data derived from water meters.
5. Re-opener if EIS is substantially in error or if new information becomes available.
6. Repeating twenty year report requirement.
7. This Certificate does not exempt the Cities or any other entity from compliance with any other requirements of law.