



Michael F. Easley, Governor

William G. Ross Jr., Secretary  
North Carolina Department of Environment and Natural Resources

Coleen H. Sullins, Director  
Division of Water Quality

November 16, 2007

Mr. William Bunker  
Alcoa Power Generating Inc.  
V.P. Hydro Operations - Yadkin Division  
P.O. Box 576  
Badin, NC 28009-0576

ORIGINAL

FEDERAL ENERGY  
REGULATORY COMMISSION

2007 NOV 30 P 2:18

FILED  
OFFICE OF THE  
SECRETARY

Re: Yadkin Hydroelectric Project  
Stanly County  
DWQ # 2007-0812; FERC Project No. 2197  
**APPROVAL of 401 Water Quality Certification with Additional Conditions**

Dear Mr. Bunker:

Attached hereto is a copy of Certification No. 003173 issued to Alcoa Power Generating, Inc. dated November 16, 2007. In addition, you should get any other federal, state or local permits before you go ahead with your project including (but not limited to) Solid Waste, Sediment and Erosion Control, Stormwater, Dam Safety, Non-discharge and Water Supply Watershed regulations.

If we can be of further assistance, do not hesitate to contact us.

Sincerely,

for Coleen H. Sullins, Director

CHS/jrd/ljm

Attachments: Certificate of Completion

cc: Becky Fox, EPA, 1307 Firefly Road, Whittier, NC 28789  
Alan Johnson, DWQ, Asheville Regional Office  
DLR Mooresville Regional Office  
File Copy  
Central Files  
Salisbury  
Stanly County  
Steve Reed, N.C. Division of Water Resources  
FERC staff  
Jerry D. Myers, County Manager, Stanly County, 1000 N. First Street, Suite 10, Albemarle, NC 28001  
Thomas N. Griffin, III, Three Wachovia Center, Suite 3000, 401 South Tryon Street, Charlotte,  
NC 28202-1935

Filename: 070812YadkinHydroelectricProject(Stanly)401\_IC

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North Carolina  
*Naturally*

## NORTH CAROLINA 401 WATER QUALITY CERTIFICATION

**THIS CERTIFICATION** is issued in conformity with the requirements of Section 401 Public Laws 92-500 and 95-217 of the United States and subject to the North Carolina Division of Water Quality (DWQ) Regulations in 15 NCAC 2H, Section .0500 to relicense the Yadkin Project (High Rock, Tuckertown, Narrows and Falls reservoirs) on the Yadkin River in Stanly County, North Carolina, pursuant to an application filed on the May 10, 2007, and in additional correspondence received August 27, 2007 and October 19, 2007.

The application and supporting documentation provides adequate assurance that the proposed work will not result in a violation of applicable Water Quality Standards and discharge guidelines. Therefore, the State of North Carolina certifies that this activity will not violate the applicable portions of Sections 301, 302, 303, 306, 307 of PL 92-500 and PL 95-217 if conducted in accordance with the application, the supporting documentation, and conditions hereinafter set forth.

This approval is only valid for the purpose and design submitted in the application. If the project is changed, prior to notification a new application for a new Certification is required. If the property is sold, the new owner must be given a copy of the Certification and approval letter and is thereby responsible for complying with all conditions of this Certification. Any new owner must notify the Division and request the Certification be issued in their name. Should wetland or stream fill be requested in the future, additional compensatory mitigation may be required as described in 15A NCAC 2H .0506 (h) (6) and (7). If any plan revisions from the approved site plan result in a change in stream or wetland impact or an increase in impervious surfaces, the DWQ shall be notified in writing and a new application for 401 Certification may be required. For this approval to be valid, compliance with the conditions listed below is required.

### Conditions of Certification:

#### Sediment and Erosion Control:

1. Erosion and sediment control practices must be in full compliance with all specifications governing the proper design, installation and operation and maintenance of such Best Management Practices in order to protect surface waters standards:
  - a. The erosion and sediment control measures for the project must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Sediment and Erosion Control Planning and Design Manual*.
  - b. The design, installation, operation, and maintenance of the sediment and erosion control measures must be such that they equal, or exceed, the requirements specified in the most recent version of the *North Carolina Sediment and Erosion Control Manual*. The devices shall be maintained on all construction sites, borrow sites, and waste pile (spoil) projects, including contractor-owned or leased borrow pits associated with the project.
  - c. For borrow pit sites, the erosion and sediment control measures must be designed, installed, operated, and maintained in accordance with the most recent version of the *North Carolina Surface Mining Manual*.
  - d. The reclamation measures and implementation must comply with the reclamation in accordance with the requirements of the Sedimentation Pollution Control Act.
2. No waste, spoil, solids, or fill of any kind shall occur in wetlands, waters, or riparian areas beyond the footprint of the impacts depicted in the 404/401 Permit Application. All construction activities, including the design, installation, operation, and maintenance of sediment and erosion control Best Management Practices, shall be performed so that no violations of state water quality standards, statutes, or rules occur;
3. Sediment and erosion control measures shall not be placed in wetlands or waters to the maximum extent practicable. If placement of sediment and erosion control devices in wetlands and waters is

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unavoidable, they shall be removed and the natural grade restored within six months of the date that the Division of Land Resources has released the project;

Continuing Compliance:

4. Alcoa Power Generation Inc. (APGI) shall conduct project operations and any construction activities in a manner consistent with State water quality standards (including any requirements resulting from compliance with section 303(d) of the Clean Water Act) and any other appropriate requirements of State law and federal law. If the Division determines that such standards or laws are not being met (including the failure to sustain a designated or achieved use and designated uses of Badin Lake) or that State or federal law is being violated, or that further conditions are necessary to assure compliance, the Division may reevaluate and modify this Certification to include conditions appropriate to assure compliance with such standards and requirements in accordance with 15A NCAC 2H.0507(d). Before modifying the Certification, the Division shall notify APGI and the Federal Energy Regulatory Commission (FERC), provide public notice in accordance with 15A NCAC 2H.0503 and provide opportunity for public hearing in accordance with 15A NCAC 2H.0504. Any new or revised operating conditions shall be provided to Alcoa Power Generation Inc. in writing, shall be provided to the FERC for reference in any License issued pursuant to the Federal Power Act, and shall become conditions of the License to operate the Yadkin Hydroelectric Project. Any new or revised conditions for construction activities shall be provided to APGI in writing, shall be provided to the United States Army Corps of Engineers for reference in any Permit issued pursuant to Section 404 of the Clean Water Act, and shall also become conditions of the 404 Permit for the project;

Other conditions:

5. Sediment removal at City of Salisbury water supply intake

Alcoa Generating Inc. shall allow access to and provide for dredging operations to remove sand and other debris that may accumulate at the City of Salisbury's water supply intake whenever the accumulation of sand and other debris makes use of the intake inoperable. If this condition conflicts with any existing arrangements between Alcoa and other parties, then additional written approval is from DWQ to resolve this conflict.

6. Other Relicensing Settlement Agreement Conditions – The following conditions were taken from appropriate sections of the Relicensing Settlement Agreement related to project operations, instream flows, water quality, reservoir shoreline protection and compliance monitoring. Any conflict with these conditions and the Relicensing Settlement Agreement will need additional written confirmation from DWQ.

**a. Project Operations**

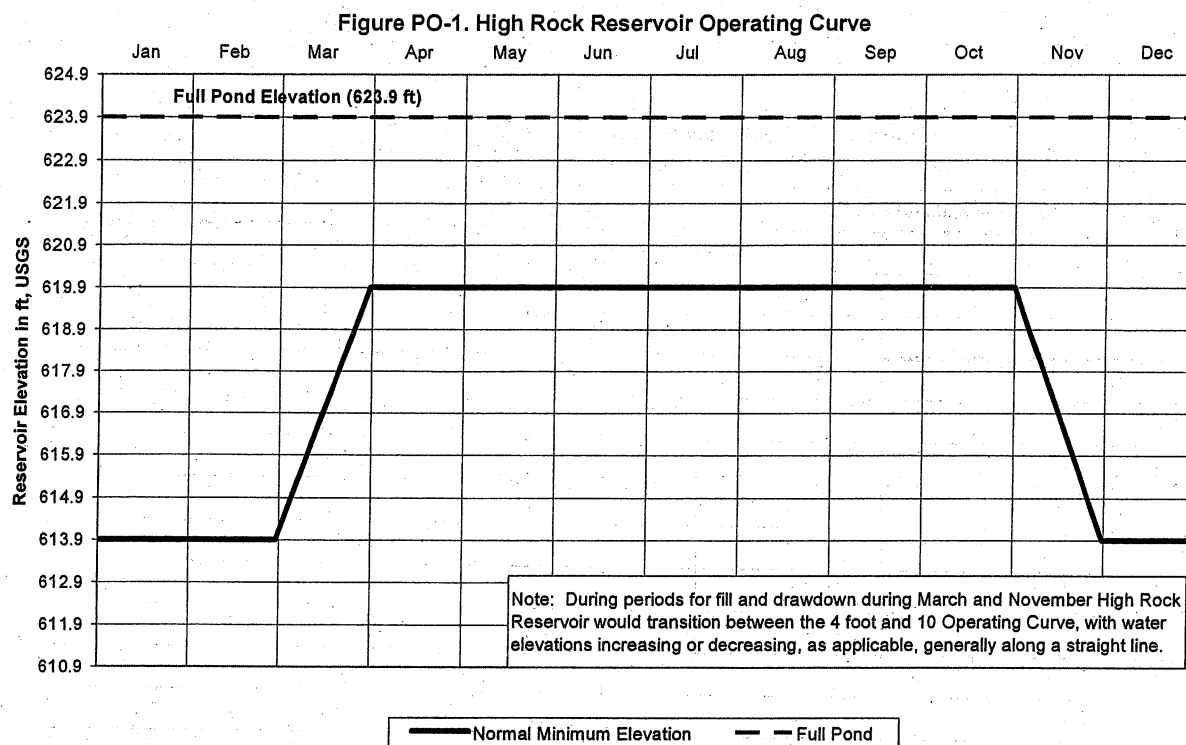
Unless in accordance with the Hydro Project Maintenance and Emergency Protocol (HPMEP) and Low Inflow Protocol (LIP), Project minimum flows take priority over reservoir water elevations, as specifically described in Articles PO-1 and PO-2, below.

**Article PO-1 - Reservoir Operations**

**A. High Rock Reservoir Operations**

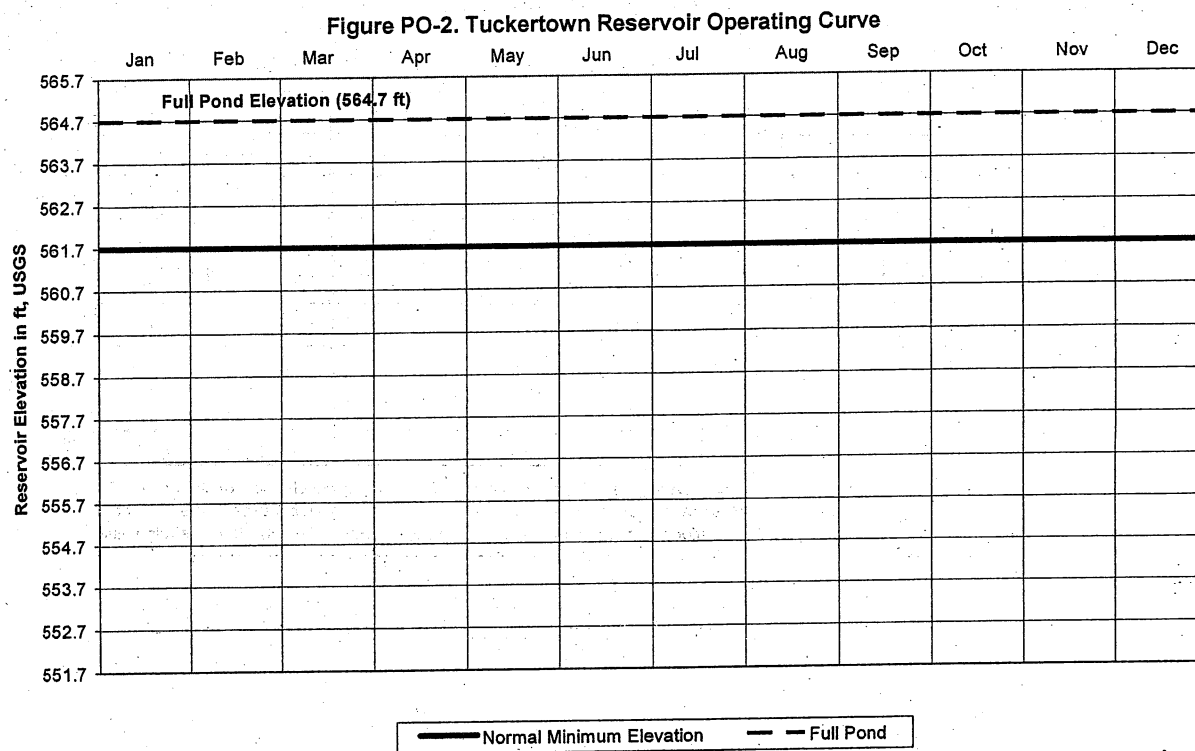
The Applicant shall operate High Rock Reservoir at or above the normal minimum elevation (NME) as depicted on the High Rock Operating Curve (Figure PO-1), except as needed in order to maintain minimum flows or as provided under the Low Inflow Protocol (LIP) or the Hydro Project Maintenance and Emergency Protocol (HPMEP). High Rock Reservoir may be drawn down below its NME in order to meet the Required Minimum Instream Flow at Falls, as specified in Article PO-2, only after Narrows Reservoir has reached its NME. If High Rock Reservoir water elevation is below the NME at 12:01 AM on any operating day, where the operating day is defined as 12:01 AM through 12:00 midnight, the Applicant shall reduce releases from High Rock Reservoir for that operating day up to a maximum of the daily

average flow equivalent of the minimum flow requirement at Falls, as specified in Article PO-2. Under this condition, releases from Falls will be limited to those defined in Article PO-2.



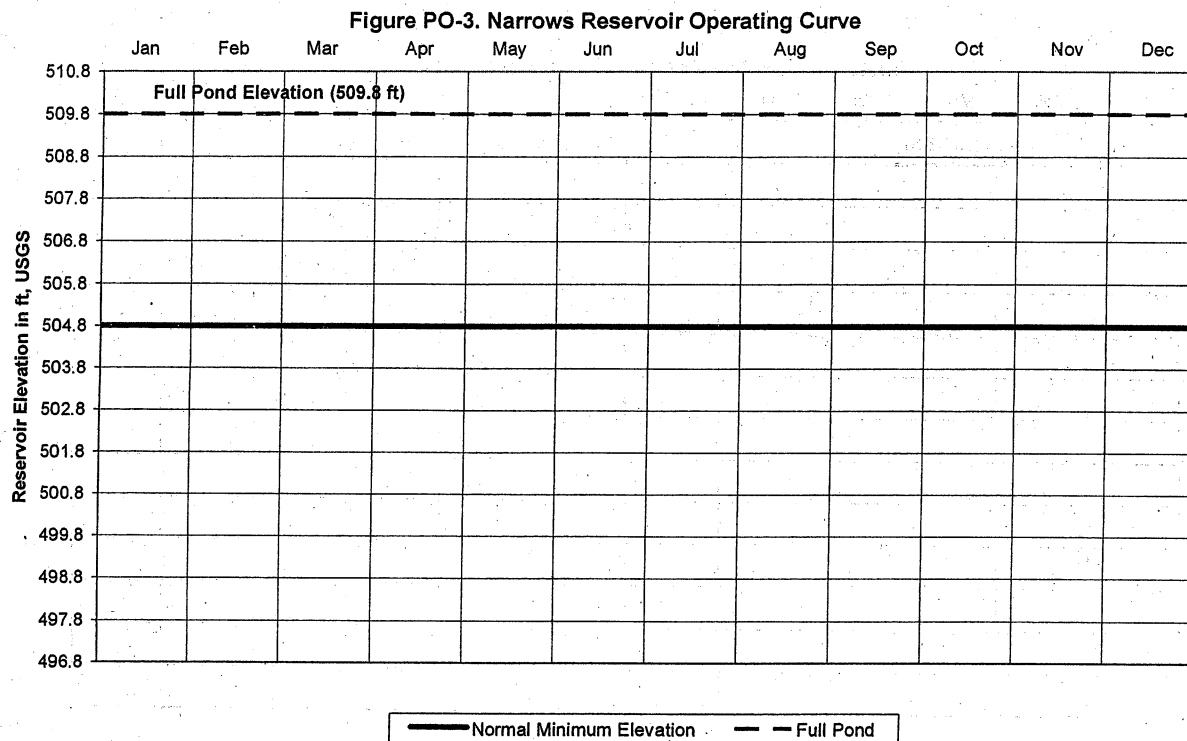
## B. Tuckertown Reservoir Operations

The Applicant shall operate Tuckertown Reservoir at or above the NME as depicted on the Tuckertown Operating Curve (Figure PO-2), except as provided in the HPMEP.



### C. Narrows Reservoir Operations

The Applicant shall operate Narrows Reservoir at or above the NME as depicted on the Narrows Operating Curve (Figure PO-3), except as needed in order to maintain minimum flows, or as provided under the LIP or HPMEP.



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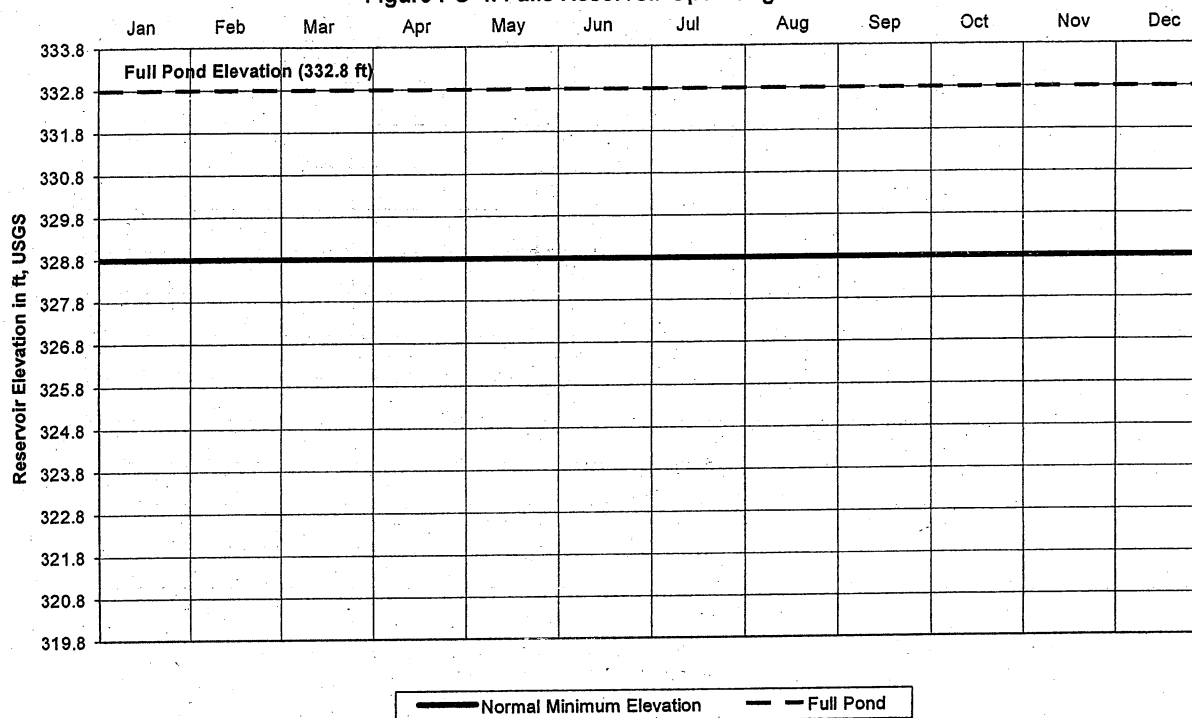
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D. Falls Reservoir Operations

The Applicant shall operate Falls Reservoir at or above the NME as depicted on the Falls Operating Curve (Figure PO-4), except as provided in the HPMEP.

Figure PO-4. Falls Reservoir Operating Curve

E. Reservoir Stabilization to Enhance Fish Spawning

From April 15 through May 15 of each year, the Applicant will endeavor to maintain reservoir water elevations at all four Project reservoirs no lower than -1.0 feet below the elevation of each reservoir on April 15 to enhance conditions for fish spawning in the reservoirs. No later than August 31 of each year, the Applicant will report the resulting reservoir water elevations at each reservoir during the April 15 through May 15 period in a letter report to the North Carolina Wildlife Resources Commission (NCWRC). The letter report will provide an explanation of any circumstances that prevented the Applicant from maintaining the target water elevations. Within 60 days of filing the letter report with the NCWRC, a copy of the letter report will be filed with NCDWQ and FERC. Satisfaction of these reporting commitments shall constitute compliance with this Article.

**Article PO-2 - Project Instream Flows****A. Required Minimum Instream Flows**

Commencing no later than six months from the effective date of the License and except when operating under the Low Inflow Protocol (LIP) or Hydro Project Maintenance and Emergency Protocol (HPMEP), the Applicant shall operate the Project to provide a daily average minimum flow from the Falls Development according to the following schedule:

June 1 – January 31	1,000 cfs
February 1 – May 15	2,000 cfs
May 16 – May 31	1,500 cfs

**B. Flow Adjustment for Enhancement  
of Downstream Spawning**

The Applicant will work with the licensee of the Yadkin-Pee Dee River Project, FERC No. 2206, (Downstream Licensee), the North Carolina Division of Water Resources (NCDWR), the North Carolina Wildlife Resources Commission (NCWRC), the South Carolina Department of Natural Resources (SCDNR), the U.S. Fish and Wildlife Service (USFWS), the National Marine Fisheries Service (NMFS), The Nature Conservancy (TNC) and American Rivers (collectively, Group) to develop a process to allow the Downstream Licensee to provide adjusted flow between February 1 and May 15 to enhance spawning conditions in the lower river downstream of the Blewett Falls development, part of the Yadkin-Pee Dee River Project.

The Applicant's role in enhancing downstream spawning below Blewett Falls will be limited to:

1. Attending an annual meeting with the Group, if held, to consider expected flow and hydrologic conditions and to schedule adjusted flow period(s) for the upcoming spawning season, and
2. Once the schedule for adjusted spawning flow period(s) has/have been established by the Group, the Applicant will communicate its daily generation/flow release schedule during the adjusted spawning flow period(s) to the Downstream Licensee at least one week in advance of the start of the adjusted spawning flow period(s). If unexpected hydrologic conditions, or other conditions, such as those covered in the Low Inflow Protocol (LIP, Appendix A) or the Hydro Project Maintenance and Emergency Protocol (HPMEP, Appendix B), occur during any adjusted spawning flow period, the Applicant shall communicate to the Downstream Licensee any resulting changes in its daily generation/flow release schedule for the remainder of that adjusted spawning flow period.

The Applicant will not be required to attempt to match Yadkin Project outflow to inflow during any adjusted spawning flow period(s), nor will the Applicant be required to provide an instantaneous minimum flow release from the Yadkin Project during any adjusted spawning flow period(s).



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The Applicant's participation in enhancement of downstream spawning will take place within the confines of the other requirements of the New License and 401 Water Quality Certification relating to management of flows and reservoir water elevations, and would not result in any modification of those flow and reservoir management requirements. Specifically, nothing in this section will require or cause the Applicant to fall below the Project Minimum Flows as described in Article PO-2 or to have to modify its reservoir operations as prescribed in Article PO-1.

If state and federal agencies and the Downstream Licensee are unable to come to an agreement on what measures are to be undertaken by the Downstream Licensee to achieve Flow Adjustment for Enhancement of Downstream Spawning, the Applicant will be under no obligation to meet the commitments outlined in Article PO-2, section B.

### **Article PO-3 - Flow and Reservoir Elevation Monitoring**

Within six months of the effective date of the License, the Applicant shall file with the North Carolina Division of Water Quality (NCDWQ) a final Flow and Reservoir Elevation Monitoring and Compliance Plan for the Yadkin Project. The Flow and Reservoir Elevation Monitoring and Compliance Plan shall be developed in consultation with the North Carolina Division of Water Resources (NCDWR), the South Carolina Department of Natural Resources (SCDNR), the U.S. Geological Survey (USGS) and the Downstream Licensee (the Licensee of the Yadkin-Pee Dee River Project, FERC No. 2206), and shall include detailed provisions for monitoring reservoir water elevations and for monitoring flows from both the Falls and High Rock developments.

The Applicant shall include with the final plan documentation of consultation, copies of comments and recommendations on the draft plan after it has been prepared and provided to the agencies and Downstream Licensee, and specific descriptions of how comments are accommodated by the final plan. The Applicant shall allow a minimum of 30 days for the agencies and Downstream Licensee to comment prior to filing the plan with the NCDWQ. If the Applicant does not adopt a recommendation, the filing shall include the Applicant's reasons, based on Project-specific information.

The NCDWQ reserves the right to require changes to the plan. Upon NCDWQ approval, the Applicant shall submit the plan to the FERC for approval. Upon receiving FERC approval, APGI shall implement the plan, including any changes required by the NCDWQ. The Applicant shall file the final plan with NCDWQ within 30 days of receiving FERC approval.

#### **A. Releases from High Rock Development**

Flow monitoring from the High Rock Development will serve as the measure for the flow releases from the High Rock Development required under Article PO-1 or under the Low Inflow Protocol (LIP). Daily average flows within +25% of the applicable maximum flow, measured from 12:01 AM to 12:00 midnight, shall be considered compliant for each operating day.

## B. Releases from Falls Development

Flow monitoring from the Falls Development will serve as the compliance measure for the flow release from the Falls Development required under Articles PO-1, PO-2 or under the LIP. Daily average flows within -5% of the applicable minimum flow, measured from 12:01 AM to 12:00 midnight, shall be considered compliant for any operating day so long as:

- a) Whenever High Rock Reservoir is at or above its normal minimum elevation (NME), the applicable daily average minimum flow is achieved on a weekly average basis, measured from 12:01 AM Saturday to 12:00 midnight Friday.
- b) Whenever High Rock Reservoir is drawn down below its NME (when a maximum release from Falls is also applicable), releases from Falls shall be limited to +/- 5% of the cfs equivalent of the Required Instream Minimum Flow at Falls, as measured on a weekly average basis from 12:01 AM Saturday to 12:00 midnight Friday.

The Applicant shall endeavor to meet the Required Minimum Instream Flows required in Article PO-2, and shall not routinely use the flow variances provided above. The Applicant shall prepare an annual flow monitoring report documenting its compliance with minimum flow releases, including a record of any days during the year when the daily average required minimum instream flow fell within the -5% and was made up as part of the weekly average, a record of flows during any period when High Rock was below its NME, and a record of any LIP events. By no later than March 31 of the following year, the Applicant shall file the report with NCDWQ of the North Carolina Department of Environment and Natural Resources (NCDENR) summarizing its evaluation. If, based on the results of the report, the State of North Carolina has a concern about the frequency or pattern of use of the variance by the Applicant, the State may request consultation with the Applicant to discuss the Applicant's reasons for that use and any practicable alternatives to that use.

## **Article PO-4 - Low Inflow Protocol (LIP)**

This Article highlights the responsibilities of the Applicant from Appendix A, "Low Inflow Protocol for the Yadkin and Yadkin-Pee Dee River Hydroelectric Projects." The complete text of the LIP is also attached for inclusion by reference in the 401 Water Quality Certificate.

### A. Definitions

The following definitions shall be applicable to this Article PO-4:

- Stream Gage Three-Month Rolling Average Flow – The three-month rolling average of streamflow at the following U.S. Geological Survey (USGS) stream gages:
  - Yadkin River at Yadkin College (02116500)
  - South Yadkin River near Mocksville (02118000)
  - Abbotts Creek at Lexington (02121500)
  - Rocky River near Norwood (02126000)

On the last day of each month, the Applicant shall calculate the arithmetic mean of (a) the daily flows of the current month and (b) the arithmetic mean of the daily flows of each of the two preceding months. The sum of the three-month rolling average for these four gage stations shall be compared by the Applicant to the Historic Stream Gage Three-Month Rolling Average Flow for the corresponding period and a percentage of Historic Three-Month Rolling Average shall be calculated.

- Historic Stream Gage Three-Month Rolling Average Flow – The historical three-month rolling average flow for each of the four designated USGS stream gages for the period 1974 through 2003 (except for the Abbotts Creek gage, for which the period is 1988 through 2003) are set forth in Table LIP-1 below:

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**Table LIP-1. Historic Stream Gage Three-Month Rolling Average Flow**

For Evaluation of Flow Trigger on:	Average of daily flows during:	Historic Three-Month Rolling Average Flow, cfs:
January 1	Oct-Nov-Dec	4,000
February 1	Nov-Dec-Jan	5,200
March 1	Dec-Jan-Feb	6,250
April 1	Jan-Feb-Mar	7,700
May 1	Feb-Mar-Apr	7,550
June 1	Mar-Apr-May	6,850
July 1	Apr-May-Jun	5,350
August 1	May-Jun-Jul	4,200
September 1	Jun-Jul-Aug	3,600
October 1	Jul-Aug-Sep	3,200
November 1	Aug-Sep-Oct	3,300
December 1	Sep-Oct-Nov	3,550

- Full Pond Elevation –The Full Pond Elevation for each development's reservoir is listed in Table LIP-2.

**Table LIP-2. Full Pond Elevations**

Reservoir	Full Pond Elevation (feet USGS datum - NGVD 1929)
High Rock	623.9
Tuckertown	564.7
Narrows	509.8
Falls	332.8

- Normal Minimum Elevation (NME) – NME for each Project reservoir is listed in Table LIP-3.

**Table LIP-3. Normal Minimum Elevations (feet, USGS datum - NGVD 1929)**

Month	High Rock	Tucker town	Narrows	Falls
Full Pond	623.9	564.7	509.8	332.8
January 1	613.9	561.7	504.8	328.8
February 1	613.9	561.7	504.8	328.8
March 1	transition	561.7	504.8	328.8
April 1	619.9	561.7	504.8	328.8
May 1	619.9	561.7	504.8	328.8
June 1	619.9	561.7	504.8	328.8
July 1	619.9	561.7	504.8	328.8
August 1	619.9	561.7	504.8	328.8
September 1	619.9	561.7	504.8	328.8
October 1	619.9	561.7	504.8	328.8
November 1	transition	561.7	504.8	328.8
December 1-15	613.9	561.7	504.8	328.8
December 16-31	613.9	561.7	504.8	328.8

- U.S. Drought Monitor Three-Month Numeric Average – The Applicant shall calculate a three-month rolling average of U.S. Drought Monitor (<http://www.drought.unl.edu/dm/monitor.html>) values by (a) assigning a numeric value equal to the highest U.S. Drought Monitor designation (e.g. D0=0, D1=1, D2=2, D3=3 and D4=4) for any part of the Yadkin-Pee Dee River Basin draining to Blewett Falls development as of the last day of that month; and (b) calculating an arithmetic mean of that numeric value and numeric values correspondingly assigned for the previous two months. A normal condition in the basin, defined as the absence of a drought designation, shall be assigned a numeric value of negative one (-1).
- Yadkin-Pee Dee River Basin Drought Management Advisory Group (YPD-DMAG) – The YPD-DMAG shall consist of one representative from each of the following organizations (to the extent that they are willing to participate): Alcoa Power Generating Inc. (APGI), Progress Energy (PE), North Carolina Department of Environment and Natural Resources (NCDENR), North Carolina Division of Water Resources (NCDWR), North Carolina Division of Water Quality (NCDWQ), North Carolina Wildlife Resources Commission (NCWRC), South Carolina Department of Natural Resources (SCDNR), South Carolina Department of Health and Environmental Control (SCDHEC), the United States Fish and Wildlife Service (USFWS), High Rock Lake Association (HRLA), Badin Lake Association (BLA), Duke Power Company, Lake Tillery Homeowners Association, South Carolina Pee Dee River Coalition (SCPDRC) and owners of intakes that withdraw more than one million gallons of water per day from the impoundments of either the Yadkin Project (FERC Project 2197) or the Yadkin-Pee Dee Project (FERC Project 2206).

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B. Implementation Procedure

1. Table LIP-4 sets forth the combinations of conditions under which the LIP shall be implemented. The determination of the applicable LIP Stage shall be made using the High Rock Reservoir water elevation as of midnight between the last day of the previous month and the first day of the current month in combination with the U.S. Drought Monitor Three-Month Numeric Average and the Stream Gage Three-Month Rolling Average Flow to determine the need to declare or change a Stage of the LIP. The LIP shall be implemented beginning at Stage 0 and, if the combination of conditions becomes more severe, the Stages shall increase in one Stage increments.

Table LIP-4 Summary of LIP Triggers					
Stage	High Rock Reservoir Elevation		U.S. Drought Monitor Three-Month Numeric Average		Stream Gage Three-Month Rolling Average as a percent of the Historical Average
0	< NME minus 0.5 ft	and	any	or	any
	OR				
	< NME	and either	$\geq 0$	or	< 48 %
1	< NME minus 1 ft	and either	$\geq 1$	or	< 41 %
2	< NME minus 2 ft	and either	$\geq 2$	or	< 35 %
3	< NME minus 3 ft	and either	$\geq 3$	or	< 30 %
4	< $\frac{1}{2}$ of ( NME minus Critical Reservoir Water Elevation)	and either	$\geq 4$	or	< 30 %

2. The average daily flows set forth in Table LIP-5 shall be initiated no later than seven days after the determination of the applicable LIP Stage and shall be in effect for the balance of the month except as provided in the section titled "Recovery from LIP Stages."

Table LIP-5. LIP Flows <sup>(1)</sup> , cfs						
Stage	High Rock (daily average maximum flow target)			Falls <sup>(2)</sup> (daily average flow target)		
	Feb 1- May 15	May 16-31	Jun 1- Jan 31	Feb 1- May 15	May 16-31	Jun 1- Jan 31
0	2000	1500	1000	2000	1500	1000
1	1450	1170	900	1450	1170	900
2	1080	950	830	1080	950	830
3	770	770	770	770	770	770
4	Additional measures may be determined by consensus of the Applicant and State Agencies, subject to NCDWQ approval					
<p>1 (1) Developments shall be operated to achieve the target flows to the extent practicable as a first priority and to supplement inflows equitably from the storage reservoirs as a second priority. For LIP Stages 1, 2, 3 and 4, APGI shall achieve the indicated average daily flows set forth in this table by supplementing Project inflows by drawing proportionally from High Rock and Narrows reservoirs such that the difference between the respective drawdowns below NME of High Rock and Narrows reservoirs shall be approximately one foot.</p> <p>2</p> <p>3 (2) For LIP Stages 0-3, the values shown in this table reflect flow targets. These values cannot be met exactly as shown and shall likely vary slightly on a real time basis from the values shown here, but it is expected that the variances from the target flows shall be minimal.</p>						

3. The Applicant shall notify via email the NCDWR of LIP implementation or a change in Stage as soon as practicable but no later than (i) three business days after a Stage 0 determination; (ii) two business days after a Stage 1 or a Stage 2 determination; or (iii) 48 hours after a Stage 3 or Stage 4 determination.

4. The Applicant shall consult with the YPD-DMAG with respect to issues relating to or arising out of implementation of the LIP, including, but not limited to, (i) notification to the public of the possible effects of and/or continuance of drought; (ii) issues relating to the effects of drought conditions on life, health, property, wildlife, aquatic life; (iii) possible public health concerns; and (iv) short and long term prospects for recovery from drought.

5. The Applicant shall develop and provide information on its website to inform the public on reservoir water elevations, Project releases, usability of public access areas, reservoir inflows, meteorological forecasts, Historic and Actual Stream Gage Three-Month Rolling Average Flow calculations, U.S. Drought Monitor Three-Month Numeric Average calculations, LIP status, YPD-DMAG meeting summaries, and implementation of maintenance or emergency operation plans.

### C. Recovery from LIP Stages

1. Recovery from the LIP shall be triggered by the occurrence of any of the three following conditions either separately or in combination:

- Condition 1: All three triggering conditions associated with a lower numbered LIP Stage, as described in Table LIP-4, are met.

OR

- Condition 2: High Rock Reservoir water elevations return to at or above the NME plus 2.5 ft.

OR

- Condition 3: High Rock Reservoir water elevations return to at or above the NME for 2 consecutive weeks.

2. When any of these three conditions occurs, the Applicant shall take the following actions as indicated by the particular condition:

- Condition 1: The LIP recovery shall be a stage-by-stage reversal of the staged approach described in Table LIP-4 above, beginning at the first day of each month.
- Condition 2: Implementation of the LIP shall be immediately discontinued.
- Condition 3: Implementation of the LIP shall be immediately discontinued.

3. The Applicant shall notify the NCDWR via email within 3 business days following attainment of any of the conditions necessary to return to a lower stage of the LIP.

### D. Updating the LIP

During the term of this license, the Applicant shall consult with the YPD-DMAG at least once every five (5) years to review and consider updating the LIP. The use of the period of record 1974 through 2003 to calculate the Historic Stream Gage Three-Month Rolling Average flows set forth in Table LIP-1 of this Article shall be evaluated every five years during such review. On the basis of such consultation, review and consideration, the Applicant may propose modifications to this Article for the NCDWQ's review and approval.

### **E. Funding of Gages**

Assuming the U.S. Geological Survey (USGS) has necessary rights for the License term, the Applicant shall continue to provide 100% funding support during the License term for the maintenance of the following USGS standard flow gages that are used in the LIP to determine the Three-Month Rolling Average Flow:

- Yadkin River at Yadkin College (02116500)
- South Yadkin River near Mocksville (02118000)
- Abbotts Creek at Lexington (02121500)

Any substantial increase in funding support due to changes in these flow gages are subject to review by the Applicant with the North Carolina Department of Environment and Natural Resources (NCDENR). The Applicant may review and propose changes in the contractor, location, or equipment associated with these gages. Any changes proposed by the Applicant will require agreement of NCDENR's Division of Water Quality.

### **Article PO-5 - Hydro Project Maintenance and Emergency Protocol**

If conditions so warrant, the Applicant shall operate the Project in accordance with the Hydro Project Maintenance and Emergency Protocol (HPMEP) included as Appendix B, "Yadkin Project Hydro Project Maintenance and Emergency Protocol." The complete text of the HPMEP is also attached for inclusion by reference in the 401 Water Quality Certificate.



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**b. Water Quality****Article WQ-1 - Water Quality****A. Tailwater Dissolved Oxygen Enhancement Schedule**

The Applicant shall install equipment and implement measures designed to enhance Yadkin Project (Project) tailwater dissolved oxygen (DO) conditions as specified in the schedule in Table WQ-1.

**Table WQ-1. Dissolved Oxygen Enhancement and Monitoring Schedule**

Year	DO Enhancement Action	Monitoring/Reporting
2007 <sup>1</sup>		<ul style="list-style-type: none"> <li>- Continuous DO/temperature monitoring 5/1-11/30 at existing stations in all four tailwaters.</li> <li>- File Draft DO Monitoring Plan and Quality Assurance Project Plan (QAPP) with the North Carolina Division of Water Quality (NCDWQ) as part of 401 Application.</li> </ul>
2008 <sup>2</sup>	Narrows Unit 2 - Addition of two aeration valves by 03/31/08.	<ul style="list-style-type: none"> <li>- Continuous DO/temperature monitoring 5/1-11/30 at existing stations in all four tailwaters.</li> <li>- File Final DO Monitoring Plan and QAPP for approval by NCDWQ and the Commission.</li> </ul>
2009	Narrows Unit 1 - Addition of two aeration valves by 12/31/09.	<ul style="list-style-type: none"> <li>- Implement NCDWQ/FERC approved DO Monitoring Plan.</li> <li>- File annual DO monitoring data report with NCDWQ by March 31.</li> </ul>
2010	Narrows Unit 3 - Addition of two aeration valves by 12/31/10.  High Rock Unit 3 - Install "through the blade" aerating turbine by 12/31/10.	<ul style="list-style-type: none"> <li>- Monitoring/reporting in accordance with DO Monitoring Plan.</li> </ul>
2011	High Rock Unit 2 - Install a "through the blade" aerating turbine by 12/31/11.	<ul style="list-style-type: none"> <li>- Monitoring/reporting in accordance with DO Monitoring Plan.</li> <li>- Initiate special study (up to 2 years) to evaluate the effectiveness of the aeration at Narrows on DO levels being discharged from Falls (2011-2012).</li> </ul>
2012	High Rock Unit 1 - Install a "through the blade" aerating turbine by 12/31/12.	<ul style="list-style-type: none"> <li>- Monitoring/reporting in accordance with DO Monitoring Plan.</li> <li>- Complete second year of 2-year study of effectiveness of aeration at Narrows on DO at Falls by 12/31/12 and prepare Study Report.</li> </ul>
2013		<ul style="list-style-type: none"> <li>- Monitoring/reporting in accordance with DO Monitoring Plan.</li> <li>- File 2-year Narrows/Falls DO Study Report with NCDWQ by 3/1/13.</li> <li>- If 2-year study does not demonstrate compliance at Falls, file an Action Plan for DO (DOAP) enhancement at Falls with NCDWQ by 12/31/13.</li> <li>- Initiate special study (up to 2 years) to evaluate the effectiveness of aeration at High Rock on DO levels being discharged from Tuckertown (2013-2014).</li> </ul>
2014	Falls Unit 1 - Install aeration valves or other appropriate aeration technology, if needed, in accordance with Falls Action Plan by 12/31/14.	<ul style="list-style-type: none"> <li>- Monitoring/reporting in accordance with DO Monitoring Plan.</li> <li>- Complete second year of 2-year study of High Rock/Tuckertown DO by 12/31/14 and prepare Study Report.</li> </ul>

Year	DO Enhancement Action	Monitoring/Reporting
2015	Falls Unit 2 - Install aeration valves or other appropriate aeration technology, if needed, in accordance with Falls Action Plan by 12/31/15.	- Monitoring/reporting in accordance with DO Monitoring Plan. - File 2-year High Rock/Tuckertown DO Study Report with NCDWQ by 3/1/15. - If 2-year study does not demonstrate compliance at Tuckertown, file an Action Plan for DO enhancement at Tuckertown by 12/31/15.
2016	Falls Unit 3 - Install aeration valves or other appropriate aeration technology, if needed, in accordance with Falls Action Plan by 12/31/16.  Tuckertown - Install aeration technology, if needed, at Tuckertown in accordance with Tuckertown Action Plan by 12/31/16.	- Monitoring/reporting in accordance with DO Monitoring Plan.

- Notes:
- 1 Actions to be taken under the current, existing FERC License for the Yadkin Project, not the New License
  - 2 The schedule shown starting in 2008 assumes an effective date of the New License for the Yadkin Project of or before May 1, 2008. If the effective date of the New License is after May 1, 2008, the schedule will be adjusted such that the 2008 schedule would begin within the year following the effective date of the New License, as provided in a revised schedule that has written approval from NCDWQ.

### B. Tailwater Dissolved Oxygen Enhancement Operations

As DO enhancement equipment or measures are installed or implemented on the schedule in Table WQ-1, the Applicant shall operate the generating units with DO enhancement equipment added on a "first-on-last-off" basis, subject to unit availability, from no later than May 1 of each year through November 30 of each year. If DO enhancement equipment or measures are not associated with generating equipment, once completed, that equipment or those measures shall be operated or implemented as designed from no later than May 1 of each year through November 30 of each year.

If at any time during the term of the New License, the Applicant can demonstrate through studies and/or monitoring that DO conditions have improved, the Applicant may consult with the North Carolina Division of Water Quality (NCDWQ) regarding the possibility of reducing the period of DO enhancement operations (May 1 – November 30). Should any such consultation result in an agreement between the Applicant and the NCDWQ to modify the operation of the Project for purposes of DO enhancement, the Applicant shall consult with the NCDWQ to develop a plan to revise DO enhancement operations. The Applicant shall include with the plan, an implementation schedule, documentation of consultation, copies of comments and recommendations on the plan after it has been prepared and provided to NCDWQ, and specific descriptions of how NCDWQ's comments are accommodated by the plan. The Applicant shall file the plan with the FERC within 30 days of receiving NCDWQ's written approval of the plan.

## **Article WQ-2 - Dissolved Oxygen Monitoring**

Within six months of the effective date of the New License, the Applicant shall file with NCDWQ a Dissolved Oxygen Monitoring Plan (DO Monitoring Plan) and Quality Assurance Project Plan (QAPP) for the Project. The DO Monitoring Plan and QAPP will be developed in consultation with NCDWQ and other appropriate state and federal resource agencies.

The primary component of the DO Monitoring Plan will be the operation of four (4) continuous DO/temperature monitors (one in each tailwater), for the period May 1 through November 30 of each year. The Plan shall include a schedule for preparing an annual DO and temperature data report. The annual report shall be filed with NCDWQ and the Downstream Licensee no later than March 31 of the following year.

The Plan shall also include provisions for conducting two studies as part of the overall DO enhancement schedule (Table WQ-1) designed specifically to investigate the effectiveness of aeration technology installed and operating at Narrows on the DO conditions in the Narrows and Falls tailwaters, and the effectiveness of aeration technology installed and operating at High Rock on DO conditions in the High Rock and Tuckertown tailwaters. At the completion of each of the two studies, the Applicant shall prepare a study report which shall be filed with NCDWQ in accordance with the schedule in the DO Monitoring Plan. If the study results demonstrate that the Falls and/or Tuckertown tailwaters do not meet state dissolved oxygen standards as a result of Project operations, the Applicant shall prepare a DO Action Plan (DOAP) for the Falls and Tuckertown developments, respectively. The resulting DOAP(s), if needed, will be filed with NCDWQ in accordance with the schedule shown in Table WQ-1.

The Applicant shall file the DO Monitoring Plan with the FERC within 30 days of receiving NCDWQ's written approval of the plan. The Applicant shall include with the DO Monitoring Plan an implementation schedule, documentation of consultation, copies of comments and recommendations on the plan after it has been prepared and provided to NCDWQ, and specific descriptions of how NCDWQ's comments are accommodated by the plan.

## **Article WQ-3 - Additional Dissolved Oxygen Enhancement Actions**

If at any time during the term of the New License, after all the DO enhancement equipment and measures outlined in Table WQ-1 have been installed and implemented, all of the planned unit upgrades have been completed and the upgraded units are operational, and at least two additional years of monitoring have been completed, the Applicant is notified by the NCDWQ that based on the results of monitoring under the DO Monitoring Plan, State water quality standards are not being met as a result of the Applicant's hydroelectric operations, the Applicant shall consult with the NCDWQ to develop a plan to implement corrective actions. The Applicant shall file a Dissolved Oxygen Corrective Action Plan (DOCAP) for NCDWQ approval within one year of initiating consultation with the NCDWQ. The Applicant shall include with the DOCAP an implementation schedule, documentation of consultation, copies of comments and recommendations on the plan after it has been prepared and provided to NCDWQ, and specific descriptions of how NCDWQ's comments are accommodated by the plan. The Applicant shall file the plan with the FERC within 30 days of receiving NCDWQ's written approval of the plan.

## **Article WQ-4 - Total Maximum Daily Load Process**

The Applicant agrees to participate in the High Rock Total Maximum Daily Load (TMDL) process for High Rock Reservoir initiated by the State of North Carolina in 2005. The Applicant will contribute up to \$50,000 in in-kind services for planned water quality sampling efforts, upon notification that the Yadkin-Pee Dee River Basin Association has received federal or state grants of at least \$50,000, for which the Applicant's contribution will be used as the required "matching funds".

If, during the term of the New License, other TMDL processes are required for the Yadkin River or its tributaries, within the Project Boundary of the Yadkin Project, the Applicant will participate in these processes.

**c. Shoreline Management****Article SMP-1 - Shoreline Management Plan**

The Applicant shall file a revised Shoreline Management Plan (SMP) for the Project with the Federal Energy Regulatory Commission within two years of the effective date of this License. The Applicant shall revise the SMP in consultation with state and federal resource agencies and other interested parties. The Applicant shall provide the consulted parties with a 30-day period to review and comment on a draft revised SMP. The Applicant shall include with its filing copies of all comments received on the draft revised SMP and a discussion of those comments, including whether the Applicant adopted the comments or the Applicant's rationale for not incorporating the comments in the final revised SMP. Additional written DWQ approval is needed for this shoreline management plan notably for those issues related to water quality such as buffer zones and management of shoreline erosion.

Upon Federal Energy Regulatory Commission approval, the Applicant shall implement the approved SMP, including any changes required by the Commission.

**d. Incorporation of Appendix A and B by reference.**

The following Appendices are hereby incorporated by reference as conditions to this Certification and are drawn verbatim from the Relicensing Settlement Agreement. In a few instances, "NCDWQ" should be substituted for "FERC" or "Commission" in these appendices – specifically in the sections that describe approval of LIP or HPMEP updates or revisions, and approval of additional stages (level 4 and beyond) to the LIP.

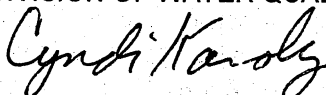
Appendix A: Low Inflow Protocol for the Yadkin & Yadkin-Pee Dee River Hydroelectric Projects

Appendix B: Yadkin Project, Hydro Project Maintenance and Emergency Protocol

**Also, this approval to proceed with your proposed impacts or to conduct impacts to waters as depicted in your application shall expire upon expiration of the new FERC License and any Annual Licenses issued after the expiration of the new License.**

If this Certification is unacceptable to you, you have the right to an adjudicatory hearing upon written request within sixty (60) days following receipt of this Certification. This request must be in the form of a written petition conforming to Chapter 150B of the North Carolina General Statutes and filed with the Office of Administrative Hearings, 6714 Mail Service Center, Raleigh, N.C. 27699-6714. If modifications are made to an original Certification, you have the right to an adjudicatory hearing on the modifications upon written request within sixty (60) days following receipt of the Certification. Unless such demands are made, this Certification shall be final and binding.

This the 16th day of November 2007  
DIVISION OF WATER QUALITY

  
for Coleen H. Sullins, Director

CHS/jrd

## **Certification of Completion**

DWQ Project No.: \_\_\_\_\_ County: \_\_\_\_\_

Applicant: \_\_\_\_\_

Project Name: \_\_\_\_\_

Date of Issuance of Certification or Authorization: \_\_\_\_\_

### **Certificate of Completion**

Upon completion of all work approved within the **401 Water Quality Certification and Buffer Rules**, and any subsequent modifications, the applicant is required to return this certificate to the 401 Oversight/Express Permitting Unit, North Carolina Division of Water Quality, 1650 Mail Service Center, Raleigh, NC, 27699-1650. This form may be returned to DWQ by the applicant, the applicant's authorized agent, or the project engineer. It is not necessary to send certificates from all of these.

### ***Applicant's Certification***

I, \_\_\_\_\_, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the **401 Water Quality Certification and Buffer Rules**, the approved plans and specifications, and other supporting materials.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

### ***Agent's Certification***

I, \_\_\_\_\_, hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the **401 Water Quality Certification and Buffer Rules**, the approved plans and specifications, and other supporting materials.

Signature: \_\_\_\_\_ Date: \_\_\_\_\_

### ***If this project was designed by a Certified Professional***

I, \_\_\_\_\_, as a duly registered Professional \_\_\_\_\_ (i.e., Engineer, Landscape Architect, Surveyor, etc.) in the State of North Carolina, having been authorized to observe (periodically, weekly, full time) the construction of the project, for the Permittee hereby state that, to the best of my abilities, due care and diligence was used in the observation of the construction such that the construction was observed to be built within substantial compliance and intent of the **401 Water Quality Certification and Buffer Rules**, the approved plans and specifications, and other supporting materials.

Signature: \_\_\_\_\_ Registration No. \_\_\_\_\_ Date: \_\_\_\_\_