

**Yadkin Hydroelectric Project (FERC No. 2197)
Wetlands, Wildlife, and Botanical IAG Meeting
April 25, 2003
Alcoa Conference Center
Badin, North Carolina**

Final Meeting Summary

Agenda

See Attachment 1.

Meeting Attendees

See Attachment 2.

Welcome and Review of March 13, 2003 IAG Meeting

Wendy Bley, Long View Associates, opened the meeting with a review of the agenda and a brief review of the preliminary discussions of study requests from the March 13, 2003 Issue Advisory Group (IAG) meeting.

Wendy explained that the scope of four wildlife and botanical study requests were discussed during the March 13, 2003 IAG meeting.

1. Wetlands and Riparian Habitat Assessment
2. Transmission Line and Project Facility Habitat Assessment
3. Rare, Threatened and Endangered (RTE) Species Survey
4. Invasive Exotic Plant Species

Wendy noted that the Fish and Aquatics IAG would handle the aquatic RTE species survey, but that the overall RTE survey effort would be overseen by the Wetlands, Wildlife and Botanical IAG.

Wendy explained that the general plan is to revise the draft study plans for the above-listed studies based on today's discussions, distribute the revised plans to the IAG for review and final comments within the next few weeks, and depending on the extent of the additional comments, finalize the plans. She noted that if there were any substantive comments on the revised study plans that Yadkin would like to try to resolve these via conference call with interested members of the IAG.

Review of Draft Terrestrial Resource Study Plans

Sarah Allen, Normandeau Associates (NAI), explained that the purpose of the meeting was to review the draft study plans that were previously distributed electronically (April 18) and to elicit feedback from the IAG.

Wetland and Riparian Habitat Assessment

Sarah reviewed the components (issues, objectives, geographic extent, and methods) of the Wetland and Riparian Habitat Assessment Draft Study Plan (see Attachment 3).

Sarah explained that Yadkin planned to use the 2002 orthophoto maps of the reservoirs as the base maps for the wetland study. She also noted that the black and white aerial photos taken in 1997 after leaf off will be used to confirm identifications for shrub swamps and bottomland hardwood wetlands. For the delineation of non-wetland shoreline cover types, Sarah indicated that Normandeau intends to use the general land use categories that were designated during the 1997 survey of shoreline cover types.

Larry Jones, High Rock Lake Association, asked how the potential effects of the 2002 drought on water willow would be taken into account when comparing the 1999 water willow survey data with the data that will be collected as part of this study. Sarah explained that a change in water willow composition or abundance regardless of location (developed vs. undeveloped) would be attributed to environmental conditions. Whereas, a change in water willow composition or abundance that is concentrated under and adjacent to piers would indicate a direct effect of piers on the aquatic plant.

Scott Jackson, NC Watershed Coalition, asked how the potential impacts of boat wakes on wetland and riparian habitat would be assessed. Sarah stated that it is a difficult impact to measure, but possible approaches include assessing the “choppiness” of aquatic vegetation or observing whether the shoreline edge is eroded or stable. She noted that it is easier to notice boat wake impacts in a protected cove where wind-driven impacts are generally absent.

Ben West, U.S Environmental Protection Agency (EPA), asked if dredging is included as a “permitted” activity in the evaluation of non-Project reservoir facilities/activities on wetland and riparian habitat, pursuant to his request at the March 13 meeting. Wendy indicated that dredging is not allowed under provisions of the SMP, but that there is a single grandfathered dredging operation on High Rock. She noted that Yadkin had not previously considered including activities like dredging and excavation, but agreed these activities could be considered as part of the wetland evaluation.

When asked if an assessment of the short-term effects of the Shoreline Management Plan (SMP) on the wetland and riparian habitats since its implementation in 1999 would be part of this study, Wendy replied that it might be too soon to observe any discernable changes, but that Yadkin intended to update the inventory of permitted facilities/activities and to provide IAG members with the updated information. Ben clarified that he is interested in the rate of change in the number of permitted facilities/activities since implementation of the SMP, and also for projections into the future, if available. Wendy stated that it would be difficult to develop a predictive model for shoreline development primarily because Yadkin is not the potential developer, but given the expressed interest, Yadkin could conduct a qualitative analysis to identify the wetland areas potentially at risk of development (e.g., non-USFS or state-owned lands). Ben expressed approval for this approach.

Larry clarified that Yadkin the power generator may not be a developer, but that Alcoa Power Generating Inc. could be considered one and asked whether Alcoa was willing to stipulate to no development in wetland areas. Wendy replied that this is a premature question at this early stage of the relicensing process.

Mark Bowers, U.S. Fish and Wildlife Service (USFWS), noted that the current study plan does not include an objective to identify opportunities to protect valuable wetlands and stated that Yadkin may want to consider conservation easements. Gene Ellis, Yadkin, stated that habitat protection on land immediately adjacent to the reservoirs has been addressed to some degree under the SMP (i.e., the 100-ft forested setback rule on non-Project lands), which may not be as legally binding as a conservation easement, but is representative of Yadkin's general position/practice.

Gary Kauffman, U.S. Forest Service (USFS), asked for clarification on how wetlands would be delineated. Sarah Allen replied that land use categories would be identified within a particular cover type to the extent practicable. Sarah indicated that the inventory would be quite general due to the size of the Project; there will be an estimated 550 photos for High Rock Reservoir alone. Wendy added that NAI intends to review existing information (e.g., Catawba University study) to identify unique wetland areas.

Mark Bowers reiterated from the last meeting that the USFWS would like the geographic extent of the assessment to include the flood elevation in the reservoir tributaries. Wendy replied that including areas subject to flooding would increase the study area greatly, significantly increasing the cost and timeframe of the study, resulting in a marginal level of benefit because most of the areas prone to flooding, flood under natural conditions and cannot be controlled by Yadkin. Julian Polk, Yadkin, added that flooding above High Rock Reservoir would occur whether the dam was in place or not because it is a riverine habitat. Wendy suggested conducting the evaluation as currently planned, and if it appears that wetland and riparian habitat communities are under the influence of flooding effects, then the IAG could consider conducting further analysis.

Larry Jones asked why shoreline erosion was not included in the scope of the study. Wendy replied that based on discussions with Rick Simmons, NAI, it made more sense for the Fish and Aquatic IAG to address this issue since they are surveying the entire shoreline this summer as part of the aquatic habitat mapping assessment. Sarah Allen added that her team could look at the "significant" areas identified by the Fish and Aquatics IAG when in the field ground truthing in spring 2004.

Transmission Line and Project Facility Habitat Assessment

Sarah Allen reviewed the components (issues, objectives, geographic extent, and methods) of the Transmission Line and Project Facility Habitat Assessment Draft Study Plan (see Attachment 4).

Gary Kauffman asked if the entire four miles of transmission line corridor would be ground truthed. Sarah replied that the entire area would be surveyed, though more time would be spent in the “questionable” and representative areas.

Ken Knight, North Carolina Wildlife Resources Commission (NCWRC), asked about the frequency of herbicide and pesticide use in the vicinity of the transmission line corridors and Project lands surrounding the powerhouses and dams. Julian Polk, Yadkin, stated that he did not know the frequency of treatments but noted that application is localized around the Project facilities. Wendy pointed out that one objective of the study is to evaluate Yadkin’s current vegetation management practices and to identify potential opportunities for changing these practices to improve the wildlife habitat.

Brian Strong, North Carolina Parks and Recreation, asked whether water quality effects from sedimentation and pesticide use in the study area would be assessed. Wendy replied that nothing specific is planned at this time. Donley Hill, U.S. Forest Service, proposed that an evaluation of the effects of transmission line and facility operation and maintenance on surrounding waters be added as another objective.

Ben West stated that the effects of stormwater management in the vicinity of the powerhouses and dams on shoreline erosion should be addressed. Wendy acknowledged this suggestion.

Gary Kauffman asked if a shape file of the transmission lines and Project boundary would be available to IAG members. Wendy committed to looking into providing the requested maps, but cautioned that the Project boundary as defined by the original license has changed over time so references to boundary lines in various documents may not align with the current maps.

RTE Species Survey

Sarah Allen reviewed the components (issues, objectives, geographic extent, and methods) of the Rare, Threatened and Endangered (RTE) Species Survey Draft Study Plan (see Attachment 5).

Sarah noted that the geographic scope of species searches would be limited to known locations and habitat of species of concern and that they would rely on existing information to identify these areas. Sarah stated that it will be important to first develop an agreed-upon focused list of RTE species that are known to occur or could potentially occur in the habitats that could be affected by Project operations (not just observed in the vicinity of the Project). Sarah proposed that NAI develop a strawman list, and then give the list to the IAG for review and comment. When asked about a timetable for developing the list, Wendy replied that since the field work would not begin until 2004, the list could be developed over the summer.

Brian Strong asked if RTE species foraging (as well as breeding) in the Project area would be surveyed. Sarah stated that in general it would not be practical to look for foraging species because of the difficulty of conducting such a survey.

When asked about the level of concern (federal, state, etc.) that will be evaluated, Sarah indicated that the IAG would need to make the decision. Mark Bowers stated that the USFWS

would likely try to conduct Endangered Species Act §7 consultation for aquatic and terrestrial species at one time.

Donley Hill stated that having just finished reviewing the Tapoco Project Draft Environmental Assessment, it would seem beneficial for the IAG to provide input on how the Project effects analysis should be structured in the Yadkin NEPA document. Wendy reminded the group that because Yadkin did not initiate an Alternative Licensing Process, Yadkin would be responsible for developing the license application only (not a NEPA document), but having said that, any input is appreciated. Donley noted that he was specifically thinking about how to package agency-specific groups of species. Gary Kauffman stated that a recent draft management plan for plant species in the Uwharrie National Forest grouped the species into those that inhabit open space and those that do not. At Wendy's request, Gary agreed to provide a copy of the plan to Yadkin once it was finalized.

Sarah pointed out that one step of the study is to confer with local natural experts and IAG members to refine survey techniques and during inception of the field work to assist in the initial search efforts, and encouraged IAG members to let Yadkin and NAI know of their interest/availability in participating.

Invasive Exotic Plant Species

Sarah Allen reviewed the components (issues, objectives, geographic extent, and methods) of the Invasive Exotic Plant Species Draft Study Plan (see Attachment 6).

Sarah pointed out that the study would focus on areas of natural habitat that are most likely at risk of invasion.

Sarah noted that similar to the RTE species survey, NAI would be consulting with IAG members on the development of a list of priority species based on considerations such as threat significance and known occurrence in areas of concern.

Brian Strong noted that Morrow Mountain State Park is included in the geographic extent of the study and asked if the park is within the Project boundary. Wendy replied that though the park is not within the boundary, invasive exotic plant pest (IEPP) species located in the vicinity of Falls Dam have the potential to migrate into the park.

Gary Kauffman stated that IEPP species have been found to establish in areas of recent fire activity. He suggested that in the event Yadkin implements a burn management plan in the transmission line corridor, survey efforts should be concentrated in these areas. Wendy stated that she is not aware of such a plan, but agreed that any recently disturbed areas are particularly subject to invasion and therefore should be a focus of the survey.

When asked if eradication of IEPP species is an objective of the study, Sarah Allen indicated that NAI would likely identify areas of concern that may require some management or control, but will not make specific recommendations concerning methods of management or control. Wendy

noted that IEPP species do not observe Project boundaries; therefore, management efforts would need to be conducted in cooperation with adjoining land owners.

Gary Kauffman asked if there was any opportunity for a USFS/Alcoa joint burning effort to expose fertile land for a federally listed sunflower species to more readily seed. Gene Ellis indicated that this would need to be discussed with Alcoa property management, but that such an effort is not outside the realm of cooperative endeavors done by Yadkin in the past.

Avian Inventory Draft Study Plan

Wendy explained that based on discussions at the March 13 meeting, Yadkin asked the Center for Conservation Biology (CCB) at the College of William and Mary to draft a study plan for an avian inventory (see Attachment 7). Because Dana Bradshaw, CCB, could not attend the meeting to discuss the plan, Wendy stated, that she is handing out the draft study plan to be discussed by the IAG at a later time. She stated that Jody Johns-Cason, Long View Associates, would distribute the plan electronically following the meeting. Wendy asked that comments be sent to NAI and Long View electronically. She noted that the study would begin with the fall migration surveys (mid-October).

Wrap-up

Mark Bowers thanked Yadkin for their efforts to get comprehensive draft study plans distributed in a timely manner.

As mentioned earlier, Wendy indicated that the general plan is for NAI to revise the draft study plans based on the day's discussions, and then to distribute the revised draft plans electronically to IAG members for final review and comment. If significant issues are raised, Wendy proposed that the IAG convene via conference call to discuss. Otherwise, the revised draft plans will be finalized after a sufficient review/comment period.

Wendy noted that the only time sensitive aspect of a study was the aerial photography that needed to be done in June or July of this year. The IAG agreed that the photography should be conducted in July to ensure the best water clarity.

The IAG agreed to convene next in late summer/early fall (date to be determined) to allow NAI time to develop the RTE and IEPP lists and to take a preliminary look at the aerial photos.

The meeting adjourned at approximately 12:00 noon.

Attachment 1 – Meeting Agenda

**Alcoa Power Generating Inc. Yadkin Division (FERC No. 2197)
Communications Enhanced Three-Stage Relicensing Process**

Wetlands, Wildlife and Botanical Issue Advisory Group Meeting

**April 25, 2003
Alcoa Conference Center
Badin, North Carolina**

9:00 AM – 3:00 PM

Agenda

1. Introductions, Review Agenda
2. Review of March 13, 2003 IAG Meeting
3. Review of Draft Terrestrial Resource Study Plans
 - I. Wetland and Riparian Habitat Assessment
 - II. Transmission Line and Project Facility Habitat Assessment
 - III. RTE Species Survey
 - IV. Invasive Exotic Plant Species Survey
4. Schedule and Agenda for Next Meeting

Attachment 2 – Meeting Attendees

Name	Organization	Email
Ben West	US Environmental Protection Agency	west.ben@epa.gov
Bob Smet	APGI, Yadkin Division	robert.smet@alcoa.com
Brian Strong	NC State Parks	brian.strong@ncmail.net
Donley Hill	US Forest Service	donleyhill@fs.fed.us
Emily Andersen	Long View Associates	andersen991@attbi.com
Gary Kauffman	US Forest Service	garykauffman@earthlink.net
Gene Ellis	APGI, Yadkin Division	gene.ellis@alcoa.com
Jane Peeples	Meeting Director	jpeeples@carolinapr.com
Jim Melton	Savehighrocklake.org	jrmelton@lexcominc.net
Julian Polk	APGI, Yadkin Division	julian.polk@alcoa.com
Ken Knight	NC Wildlife Resources Commission	kbknight@vnet.net
Larry Jones	High Rock Lake Association	larry@foxhollowfarm.org
Mark Bowers	US Fish and Wildlife	mark_bowers@fws.gov
Sarah Allen	Normandeau Associates Inc.	sallen@normandeau.com
Scott Fletcher	Framatome-ANP	scott.fletcher@framatome-anp.com
Scott Jackson	NC Watershed Coalition	scott@ncwatershedcoalition.org
Shannon Sharp	Uwharrie National Forest	sdsharp@fs.fed.us
Wendy Bley	Long View Associates	bleylva@aol.com

Attachment 3 – Wetland and Riparian Habitat Assessment

Yadkin Project (FERC No. 2197)
Wetland and Riparian Habitat Assessment
Draft Study Plan
4/18/03

Background

Alcoa Power Generating Inc. (APGI) is the licensee for the Yadkin Hydroelectric Project. The Yadkin Project is currently licensed by the Federal Energy Regulatory Commission (FERC) as Project No. 2197. This license expires in 2008 and APGI must file a new license application with FERC on or before April 30, 2006 to continue operation of the Project.

The Yadkin Project consists of four reservoirs, dams, and powerhouses (High Rock, Tuckertown, Narrows, and Falls) located on a 38-mile stretch of the Yadkin River in central North Carolina. The Project generates electricity to support the power needs of Alcoa's Badin Works, to support its other aluminum operations, or is sold on the open market.

As part of the relicensing process, APGI prepared and distributed, in September 2002, an Initial Consultation Document (ICD), which provides a general overview of the Project. Agencies, municipalities, non-governmental organizations and members of the public were given an opportunity to review the ICD and identify information and studies that are needed to address relicensing issues. To further assist in the identification of issues and data/study needs, APGI has formed several Issue Advisory Groups (IAGs) to advise APGI on resource issues throughout the relicensing process. IAGs will also have the opportunity to review and comment on Draft Study Plans. This Draft Study Plan has been developed in response to comments on the ICD and through discussions with the Wetlands, Wildlife and Botanical IAG, to provide additional necessary information for consideration in the relicensing process.

Overview

In this study, wetlands and riparian habitats will be inventoried and characterized and the effects of existing Project operations, including reservoir fluctuations and tailwater flows, will be assessed. In addition, at Narrows Reservoir, the impacts of piers on water willow¹ are of particular interest to the North Carolina Wildlife Resources Commission (NCWRC). Narrows Reservoir has both an abundance of water willow and piers whereas the other three reservoirs may have an abundance of one or the other but not both. In a study conducted for Yadkin by NC State University in 1999, data on water willow growing under and adjacent to piers was collected for one growing season. The purpose of the present study will be to conduct a follow-up investigation, building on the information previously collected, to assess the relationship between piers and water willow.

Issues

The following issues were raised during initial consultation regarding wetlands and riparian habitat at the Yadkin Project:

- Effects of reservoir operations and fluctuations on wetlands and riparian habitats
- Effects of piers on water willow at Narrows Reservoir

¹ Water willow is a term that is used to generically describe submerged aquatic vegetation that occurs at the Yadkin Project. At Narrows Reservoir, submerged aquatic vegetation beds are generally dominated by the species *Justicia americana*, which is commonly called "water willow".

Objectives

On March 13, 2003 the Wetlands, Wildlife and Botanical IAG met and discussed objectives for the wetlands and riparian habitat study. Over the course of those discussions the following objectives were identified for the study.

- Identify and map vegetated wetlands and riparian habitats within the influence of reservoir water levels, including aquatic beds, emergent and shrub-wetlands and some forested wetlands.
- Evaluate effects of current Project operations, including reservoir water level fluctuations on these wetlands and riparian habitats.
- Evaluate how significant changes in Project operations, including both increasing and decreasing short-term and long-term reservoir drawdowns would impact existing wetlands, or would allow for additional wetland development.
- Qualitatively assess the effects of reservoir facilities (such as piers, boat ramps, beaches, bulkheads and other forms of shoreline hardening) on wetlands and riparian habitats, with a particular emphasis on the potential impact of piers on water willow at Narrows Reservoir.

Geographic Extent

- The shorelines of all four reservoirs including all wetlands within the zone of influence of reservoir operations
- Riparian habitats adjacent to remnant mainstem riverine habitats (upper end of High Rock) and tailwater habitats (below the dams)
- Narrows Reservoir for assessment of the effects of piers on water willow

Methods

- Transfer National Wetlands Inventory (NWI), hydric soils, SMI, and other existing information onto orthophoto base maps of the reservoirs.
- Delineate wetlands (including aquatic beds) and riparian habitats within the zone of influence of reservoir operations on stereo pairs of true color aerial photos taken in May or June. Delineate non-wetland shoreline cover types in general land use categories. Use black and white aerial photos taken after leaf fall to confirm identifications for shrub swamps and bottomland hardwoods.
- Conduct a quality control check on approximately twenty percent of the photos.
- Ground truth and photograph questionable areas and a representative sample of wetland types, including aquatic beds, and record hydrologic, soils and vegetation conditions.
- Digitize images on the stereo photos into ARCVIEW GIS and prepare maps of wetlands and riparian habitats.
- Characterize composition, functions and values of wetland types.
- Assess water level fluctuation and drawdown data for the four reservoirs, calculate median, mean low and mean high water levels from long term means and prepare a graph for a 12-month cycle to assess impacts.

- Determine the portion of existing wetlands affected by current, typical Project operations and resulting water level fluctuations.
- Evaluate how wetland configuration, structure and composition might change under altered Project operations. Provide a qualitative assessment of wetland increases and decreases anticipated at the four Project reservoirs under the following conditions:
 - a. High Rock Reservoir (if water levels were more stable, limited seasonal drawdown)
 - b. Narrows Reservoir (if water levels were less stable, more seasonal drawdown)
 - c. Minor changes in operations (short-term reservoir water level fluctuations) for Tuckertown Reservoir
 - d. No changes in the operation of Falls Reservoir.
- Evaluate the impacts of reservoir facilities such as piers, boat ramps, beaches, bulkheads, rip-rap and other recreational facilities on wetland and riparian habitats
- Evaluate the impact of piers on water willow at Narrows.
 - a. Review data from previous investigations and maps showing previous sampling locations; prepare a plan for field data collection.
 - b. Identify new piers built since the last study using the 2002 orthophotos.
 - c. Visit a subset of piers surveyed previously and an equal number of new piers.
 - d. Qualitatively assess the impact of piers on water willow relative to change in areal coverage and health of the plants. Take photos to document water willow coverage beneath and adjacent to piers.

Attachment 4 – Transmission Line and Project Facility Habitat Assessment

**Yadkin Project (FERC No. 2197)
Transmission Line and Project Facility Habitat Assessment
Draft Study Plan
4/18/03**

Background

Alcoa Power Generating Inc. (APGI) is the licensee for the Yadkin Hydroelectric Project. The Yadkin Project is currently licensed by the Federal Energy Regulatory Commission (FERC) as Project No. 2197. This license expires in 2008 and APGI must file a new license application with FERC on or before April 30, 2006 to continue operation of the Project.

The Yadkin Project consists of four reservoirs, dams, and powerhouses (High Rock, Tuckertown, Narrows, and Falls) located on a 38-mile stretch of the Yadkin River in central North Carolina. The Project generates electricity to support the power needs of Alcoa's Badin Works, to support its other aluminum operations, or is sold on the open market.

As part of the relicensing process, APGI prepared and distributed, in September 2002, an Initial Consultation Document (ICD), which provides a general overview of the Project. Agencies, municipalities, non-governmental organizations and members of the public were given an opportunity to review the ICD and identify information and studies that are needed to address relicensing issues. To further assist in the identification of issues and data/study needs, APGI has formed several Issue Advisory Groups (IAGs) to advise APGI on resource issues throughout the relicensing process. IAGs will also have the opportunity to review and comment on Draft Study Plans. This Draft Study Plan has been developed in response to comments on the ICD and through discussions with the Wetlands, Wildlife and Botanical IAG, to provide additional necessary information for consideration in the relicensing process.

Overview

Currently, Project lands (lands within the FERC Project boundary) at the Yadkin Project are generally limited to small areas of land around the development dams and powerhouses, and several transmission corridors. Yadkin anticipates that two sets of transmission lines (combined length about four miles) will remain within the Yadkin Project boundary, after FERC acts on a request by Yadkin to remove other transmission lines from within the existing FERC boundary. The two transmission lines that will remain part of the hydroelectric project include an approximately two mile long transmission line from Falls Reservoir and an approximately one mile long transmission line from Narrows Reservoir. The objective of this study will be to evaluate wildlife habitat conditions on Yadkin Project lands, including the areas around the dams and powerhouses and along these two transmission line corridors, and to assess potential impacts to habitat from the maintenance and operation of these facilities.

Issues

The following issues were raised during initial consultation regarding terrestrial wildlife habitat at the Yadkin Project:

- Effects of transmission lines and dam related facilities on vegetation cover and wildlife habitat

Objectives

On March 13, 2003 the Wetlands, Wildlife and Botanical IAG met and discussed objectives for the wildlife habitat study. Over the course of those discussions the following objectives were identified for the study.

- Identify vegetation cover types and wildlife habitat types in the vicinity of transmission lines, dams and powerhouses.
- Evaluate effects of transmission line and facility operation and maintenance on vegetation cover and wildlife habitat.
- Identify opportunities for wildlife habitat enhancements on Yadkin Project lands.

Geographic Extent

- Transmission line corridors from Falls Reservoir and from Narrows Reservoir; total length approximately four miles, including the cleared transmission line corridor and within a band 50 feet to either side of the cleared corridor.
- Project lands within the vicinity of the four dams and powerhouses.

Methods

- Review and evaluate existing inventory information for the transmission lines.
- Delineate vegetation cover types, under the transmission lines, within a band 50 feet wide along each side of the transmission line corridor and in the vicinity of dams and powerhouses on stereo-aerial photos. Prepare a cover type map for each of the two lines and the dams and powerhouses.
- Ground truth questionable areas and inventory the vegetation in representative areas of each cover type; characterize vegetation structure and composition of each cover type.
- Evaluate wildlife habitat quality (i.e., soil type, litter quality, micro relief, moisture regime etc.) and wildlife use at each of the representative areas including guilds of birds, mammals, reptiles and amphibians.
- Review Yadkin management practices for these facilities.
- Qualitatively evaluate the impacts of the transmission lines and Yadkin operations on vegetation cover, wildlife habitat (i.e. habitat fragmentation, invasive species, RTE species) and wildlife use.
- Identify opportunities to improve wildlife habitat
 - a. Changes in management and maintenance practices
 - b. Habitat modifications/enhancements

Attachment 5 – Rare, Threatened and Endangered (RTE) Species Survey Draft Study Plan

Yadkin Project (FERC No. 2197)
Rare, Threatened and Endangered (RTE) Species Survey
Draft Study Plan
4/18/03

Background

Alcoa Power Generating Inc. (APGI) is the licensee for the Yadkin Hydroelectric Project. The Yadkin Project is currently licensed by the Federal Energy Regulatory Commission (FERC) as Project No. 2197. This license expires in 2008 and APGI must file a new license application with FERC on or before April 30, 2006 to continue operation of the Project.

The Yadkin Project consists of four reservoirs, dams, and powerhouses (High Rock, Tuckertown, Narrows, and Falls) located on a 38-mile stretch of the Yadkin River in central North Carolina. The Project generates electricity to support the power needs of Alcoa's Badin Works, to support its other aluminum operations, or is sold on the open market.

As part of the relicensing process, APGI prepared and distributed, in September 2002, an Initial Consultation Document (ICD), which provides a general overview of the Project. Agencies, municipalities, non-governmental organizations and members of the public were given an opportunity to review the ICD and identify information and studies that are needed to address relicensing issues. To further assist in the identification of issues and data/study needs, APGI has formed several Issue Advisory Groups (IAGs) to advise APGI on resource issues throughout the relicensing process. IAGs will also have the opportunity to review and comment on Draft Study Plans. This Draft Study Plan has been developed in response to comments on the ICD and through discussions with the Wetlands, Wildlife and Botanical IAG, to provide additional necessary information for consideration in the relicensing process.

Overview

To address questions over potential impacts of Project operations on RTE species a comprehensive survey for terrestrial and aquatic species is needed, particularly in light of the numerous new occurrences of listed species that have been documented in the Yadkin Project vicinity. Accordingly, an inventory will be conducted of federal and state-listed RTE, and US Forest Service sensitive and concern terrestrial and aquatic plants and wildlife potentially impacted by continued Yadkin Project operations. The study area will include reservoir and tailwater shorelines, tributaries mouths (at the confluence with the Project reservoirs), remnant riverine habitats (the upper end of High Rock) and other Project lands, including the transmission lines corridors and areas around the dams and powerhouses. The inventory will be a focused effort that will be conducted at known locations and habitats of species of concern that could be affected by Project operations. Previous survey work done by Natural Heritage Program and by other contractors will serve as a starting point for this study and will be used to help identify the focus species.

Issues

The following issues were raised during initial consultation regarding rare, threatened and endangered species at the Yadkin Project:

- Current status of RTE species of terrestrial and aquatic plants and wildlife at the Yadkin Project that could be affected by Project operations.

Objectives

On March 13, 2003 the Wetlands, Wildlife and Botanical IAG met and discussed objectives for the RTE species survey. Over the course of those discussions the following objectives were identified for the study.

- Determine the RTE species¹ of concern that may occur in the Project area and that may be affected by Project operations, and conduct focused field searches for those species.
- Evaluate potential effects of Project operations on RTE species of concern and their habitats.

Geographic Extent

- The study area will include reservoir and tailwater shorelines, tributaries mouths (at the confluence with the Project reservoirs), remnant riverine habitats (the upper end of High Rock) and other Project lands, including the transmission lines corridors and areas around the dams and powerhouses. However, species searches will be limited to known locations and habitats of species of concern that may be affected by Project operations at each of the four reservoirs.

Methods

- Review existing information regarding RTE species in the Yadkin Project area from such sources as the Natural Heritage Program surveys for the five counties (Stanly, Montgomery, Davidson, Rowan and Davie) surrounding the reservoirs, the Natural Areas Inventory for Yadkin River (Baranski, 1993) and the inventories conducted for Yadkin by Dames and Moore during the period 1995–1997.
- Prepare a candidate list of RTE species for more detailed evaluation under this study. The candidate list will include RTE species that are known to occur or that could potentially occur in the habitats that could be affected by Yadkin Project operations. Confer with the Wetlands, Wildlife and Botanical IAG in preparing this list.
- Prepare a plan and schedule for conducting RTE species field surveys. Field surveys may focus on identifying RTE species in high quality natural communities at the Project that may be affected by continued operation of the Project or may focus on select species on the candidate list that are of particular concern with respect to their status at the Project or potential impacts to the species or its habitat from the continued operation of the Project. The schedule for required field surveys will be based on times the various species are likely to be most identifiable or in evidence in the Yadkin Project area.
- Select appropriate, representative field survey locations based on known locations and the habitat preferences of the candidate species. For reservoirs the study area will include a band 200 feet wide along the shorelines at specific locations and the transmission lines will

¹ RTE aquatic species, including fish and mussels, will be evaluated as part of the fish and aquatic studies being conducted by Yadkin under the guidance of the Fish and Aquatics IAG.

include the cleared transmission line corridor and a band 50 feet to either side of the cleared corridor.

- Confer with local natural resource experts and IAG members to refine survey techniques and during startup of the field work to assist in the initial search efforts.

Following are the general kinds of survey techniques that might be used:

- a. Visual searches for listed plant species will be done at each representative location; listed aquatic plants will be searched for by boat.
 - b. Searches for the listed bird species will be done primarily by sight and sound sampling at the appropriate time of day at representative habitat locations. RTE bird species searches will be coordinated with, and may be conducted as part of, other migratory bird surveys being conducted by the Center for Conservation Biology.
 - a. Snakes and terrestrial phase amphibians will be searched for in likely places such as stumps, logs and debris piles at each representative location. Turtles will be looked for on basking surfaces in early morning hours and aquatic phase amphibians will be inventoried by dip netting at representative habitat locations. Trapping options will be reserved for specific instances as necessary.
 - b. Terrestrial insects will be surveyed using ultraviolet light traps and by observing them around populations of flowering plants or at bait as appropriate. Dragonflies and other odonates will be surveyed visually over open water and by netting.
 - c. Vernal pools will be sampled for listed species during spring.
- Conduct field searches for the candidate species; for reasons of cost effectiveness three 2-week surveys are planned at points during the growing season that are generally optimal for most species.
 - Identify opportunities to enhance conditions for species of concern and their habitats
 - a. Change in operations
 - b. Habitat modifications/enhancements

Attachment 6 – Invasive Exotic Plant Species Draft Study Plan

Yadkin Project (FERC No. 2197)
Invasive Exotic Plant Species
Draft Study Plan
4/18/03

Background

Alcoa Power Generating Inc. (APGI) is the licensee for the Yadkin Hydroelectric Project. The Yadkin Project is currently licensed by the Federal Energy Regulatory Commission (FERC) as Project No. 2197. This license expires in 2008 and APGI must file a new license application with FERC on or before April 30, 2006 to continue operation of the Project.

The Yadkin Project consists of four reservoirs, dams, and powerhouses (High Rock, Tuckertown, Narrows, and Falls) located on a 38-mile stretch of the Yadkin River in central North Carolina. The Project generates electricity to support the power needs of Alcoa's Badin Works, to support its other aluminum operations, or is sold on the open market.

As part of the relicensing process, APGI prepared and distributed, in September 2002, an Initial Consultation Document (ICD), which provides a general overview of the Project. Agencies, municipalities, non-governmental organizations and members of the public were given an opportunity to review the ICD and identify information and studies that are needed to address relicensing issues. To further assist in the identification of issues and data/study needs, APGI has formed several Issue Advisory Groups (IAGs) to advise APGI on resource issues throughout the relicensing process. IAGs will also have the opportunity to review and comment on Draft Study Plans. This Draft Study Plan has been developed in response to comments on the ICD and through discussions with the Wetlands, Wildlife and Botanical IAG, to provide additional necessary information for consideration in the relicensing process.

Overview

The presence of invasive exotic plant pest (IEPP) species in the Project area and their potential impacts on natural terrestrial and aquatic plant communities is of concern to natural resource agencies. The focus for this study will be on areas of concern including Uwharrie National Forest (UNF), Morrow Mountain State Park and Shoreline Management Plan (SMP) Conservation Zones (including islands), and on areas with impact potential on Narrows Reservoir and Falls Reservoir. This study will also evaluate the current status of known aquatic IEPPs including *Brazilian elodea* and *Hydrilla*.

Issues

The following issues were raised during initial consultation regarding IEPP species at the Yadkin Project:

- The presence of IEPP species in the Project area and their potential impacts on natural terrestrial and aquatic plant communities in areas of concern.

Objectives

On March 13, 2003 the Wetlands, Wildlife and Botanical IAG met and discussed objectives for the IEPP species study. Over the course of those discussions the following objectives were identified for the study.

- Identify potential impact areas within the Project area and inventory for presence of IEPP species.
- Evaluate the current status of known aquatic IEPPs i.e., *Brazilian elodea* and *Hydrilla*.
- Evaluate potential impacts of IEPPs on natural communities in areas of concern.

Geographic Extent

- Areas of concern including Uwharrie National Forest, Morrow Mountain State Park and SMP Conservation Zones (including islands).
- Areas with impact potential including Tuckertown Reservoir, Narrows Reservoir (east arm), Narrows Dam/Powerhouse and Falls Reservoir.

Methods

- Develop a list of priority species (approximately twelve) in consultation with the IAG and appropriate natural resource agencies based on considerations such as threat significance and known occurrence in areas of concern on Yadkin Project lands.
- Conduct a field survey for IEPP species in areas of concern and in areas with impact potential. The extent of invasiveness will be qualitatively assessed based on abundance and vigor of the IEPP population at a given occurrence location. Photos will be taken at each location to document occurrence and extent of invasiveness.
- Qualitatively assess relative level of threat to native species and communities at occurrence locations and surrounding environs based on proximity of the IEPPs and extent of invasiveness. Photos will be taken to document impacts occurring to native plant populations.
- Visit locations where *Brazilian elodea* and *Hydrilla* have been observed in order to note substrate, depth and other information on habitat characteristics. Evaluate the potential for spread of these aquatic species.
- Conduct a reconnaissance level survey at likely locations based on habitat requirements along the shorelines of Tuckertown Reservoir, Narrows Reservoir and Falls Reservoir by boat. Locations of occurrences of *Brazilian elodea* and *Hydrilla* will be determined using GPS and mapped.
- Identify appropriate management/control measures if necessary.

Attachment 7 – Avian Inventory Draft Study Plan

Yadkin Project (FERC No. 2197)
Avian Inventory
Draft Study Plan
4/21/03

Background

Alcoa Power Generating Inc. (APGI) is the licensee for the Yadkin Hydroelectric Project. The Yadkin Project is currently licensed by the Federal Energy Regulatory Commission (FERC) as Project No. 2197. This license expires in 2008 and APGI must file a new license application with FERC on or before April 30, 2006 to continue operation of the Project.

The Yadkin Project consists of four reservoirs, dams, and powerhouses (High Rock, Tuckertown, Narrows, and Falls) located on a 38 mile stretch of the Yadkin River in central North Carolina. The Project generates electricity to support the power needs of Alcoa's Badin Works, to support its other aluminum operations, or is sold on the open market.

As part of the relicensing process, APGI prepared and distributed, in September 2002, an Initial Consultation Document (ICD), which provides a general overview of the Project. Agencies, municipalities, non-governmental organizations and members of the public were given an opportunity to review the ICD and identify information and studies that are needed to address relicensing issues. To further assist in the identification of issues and data/study needs, APGI has formed several Issue Advisory Groups (IAGs) to advise APGI on resource issues throughout the relicensing process. IAGs will also have the opportunity to review and comment on the ICD and through discussions with the Wetlands, Wildlife, and Botanical IAG to provide additional necessary information for consideration in the relicensing process.

Overview

The Yadkin Project area comprises a series of four hydroelectric reservoirs located along the Yadkin River from Salisbury, NC to very near its confluence with the Uwharrie River just east of Albemarle, NC. From west to east, they are High Rock Reservoir (6143 ha), Tuckertown Reservoir (1036 ha), Narrows Reservoir (2166 ha) and Falls Reservoir (83 ha), comprising a total of 9428 ha and 895 kilometers in shoreline length. Within this reservoir complex there are some 40 islands ranging in size from less than half a ha to 40 ha with cover types ranging from bare sand to mature forest. The reservoirs contain shoreline in 4 counties: Rowan, Davidson, Stanley, and Montgomery.

The project reservoirs and surrounding riparian habitats likely provide significant habitat for a variety of bird species. At least one endangered species, the bald eagle, has been well documented and continues to be monitored in the project area. However, many more species are likely to inhabit the project area and may be affected by project operations. This study is directed at generating an annual bird profile for the Yadkin Project Area.

Many bird species are now under scrutiny with the formation of the Partners in Flight Bird Conservation Program (PIF) in 1990. This program is now international in scope and has the support of all 50 states. PIF has developed priority species lists for each physiographic region of the country. These lists are based on habitat stability, population size and trend, threats to wintering and breeding sites, etc. As a result, the lists have been adopted by most state and federal regulatory agencies as legitimate "watch" lists for species of management interest. This information, in conjunction with

data on existing state and federally listed species, will be used to prioritize efforts toward setting up and carrying out a bird survey within the project area.

Issues

The following issues were raised during initial consultation regarding birds at the Yadkin Project:

- Evaluate the current status of migratory and breeding bird use of the Yadkin Project.

Objectives

The primary objective of this study is to conduct an inventory of birds for the Yadkin Project area. Priority will be given to documenting species of management interest or species already listed by state or federal authorities. Emphasis will also be placed on documenting all species that breed in the area. Additional efforts will be made to identify species that depend on the area for wintering habitat, or for staging areas during spring or fall migration

Survey sites will include 4 main habitat categories:

- 1) Mainland uplands
- 2) Tributary mouths and marsh lands
- 3) Islands
- 4) Open water

Methods

The Center for Conservation Biology will be responsible for conducting bird surveys across all four Yadkin Project reservoirs including all priority habitats. All surveys will be carried out between June 1, 2003 and July 30, 2004. All terrestrial surveys will be conducted between sunrise and 5 hours thereafter to take advantage of periods of peak activity for birds. Hours outside of that time period will be used to evaluate access to other sites and conduct data entry. An exception will be a small number of nocturnal surveys for owls, rails, and nightjars. The protocol for these surveys will be implemented as follows:

- 1) Mainland habitats – There appear to be only small areas of mainland habitats within the Yadkin Project boundary including dams and powerhouses and two transmission line corridors: an approximately 1 mile long transmission line from Narrows development and an approximately 2 mile long transmission line from Falls development. General area counts for birds will be conducted around the dams and powerhouses given the small size and irregular shapes of habitat patches. Line transect surveys will be used within the transmission line corridors recording birds along both sides of a centerline. There will be two parallel transects extending the length of the transmission line corridor for both transmission line segments, contingent on accessibility.
- 2) Tributary mouths and marsh lands – There are approximately 18 primary creeks that drain into the Yadkin Project reservoirs. These areas will be accessed either by boat or nearby road, and will be surveyed using a conventional variable radius transect method, whereby all birds seen or heard are recorded along with their distance from the transect. The transect line in this case will be the creek or stream center.
- 3) Islands – There are approximately 40 islands located throughout the Yadkin Project reservoirs. Most of the islands are undeveloped. All undeveloped islands will be initially accessed and evaluated for habitat cover and size. Thereafter, a subset of islands representing each habitat and size class will be visited for surveys. Surveys will be conducted using a standard area

