Yadkin Project
FERC No. 2197

TRANSMISSION LINE AND PROJECT FACILITY HABITAT ASSESSMENT

FINAL STUDY REPORT

JUNE 2005

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Prepared for
ALCOA POWER GENERATING INC.
Yadkin Division
293 NC 740 Highway
Badin, NC 28009-0576

Prepared by
NORMANDEAU ASSOCIATES, INC.
25 Nashua Road
Bedford, NH 03110

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SUMMARY

The Transmission Line and Project Facility Habitat Assessment Final Study Report presents the results of a survey of vegetation cover types and wildlife habitat quality of Yadkin Project lands, including two transmission line sections. The study was conducted by Normandeau Associates, Inc. (NAI) as part of the Federal Energy Regulatory Commission (FERC) relicensing process for the Yadkin Project. The study was conducted in accordance with the Final Study Plan that was developed by Alcoa Power Generating Inc. (APGI) in consultation with the Wetlands, Wildlife and Botanical Issue Advisory Group (IAG). Specific objectives identified in the Final Study Plan included:

- Identify vegetation cover types and wildlife habitat quality in the vicinity of Project transmission lines, dams and powerhouses.
- Evaluate the 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.

The Study Area for this assessment included the Falls and Narrows transmission line corridors (approximately 4.4 miles) and associated lands in the vicinity of the four dams and powerhouses (High Rock, Tuckertown, Narrows and Falls) including parking lots and access roads.

A preliminary delineation of vegetation cover types was made using aerial photographs taken July 28, 2003 and was verified in the field during three reconnaissance-level surveys conducted between April and October 2004. During the field surveys NAI biologists reviewed vegetation cover types and wildlife habitat quality and also inventoried representative areas as to species, structure and composition. All of the dam-related facilities and both transmission line corridors were visited one or more times during the field surveys. A qualitative evaluation was completed of wildlife habitat quality and use by birds, mammals, reptiles and amphibians within representative areas.

Results of the surveys showed that the vegetation found on Project lands around the dams and powerhouses and in the transmission line corridors is managed by APGI through a combination of logging to remove tree fall risk, and mowing and herbicides to maintain visibility, appearance and facility access. As a result, the predominant vegetation cover type found in these areas is a mixture of grasses and shrubs. Around the dams and powerhouses, most lands are open areas used for parking and vehicle access. These areas offer relatively low quality habitat for wildlife. Common vertebrate wildlife using these areas include small mammals and small birds, including migratory songbirds. Species likely to be encountered include Gray Squirrel, moles, shrews, lizards, snakes, Carolina Chickadee, Blue Jay, and Cardinal.

The Falls and Narrows transmission line corridors are predominantly rolling upland, with scattered rock outcrops and boulders. The vegetation found within the cleared portion of the corridors is generally a mix of herbaceous and shrub species. Grasses, sedges, and regenerating tree species are all common. For the most part, species that are adapted to direct sunlight and generally droughty conditions are dominant, while on either side of the transmission line corridors, where trees provide some shading, there is a narrow band in which species that prefer partial shade and more moisture grow. Several small, mostly intermittent streams drain from the transmission line corridors to the

Narrows, Falls or Tillery reservoirs, and both the Falls and Narrows transmission line corridors cross narrow coves of their respective reservoirs which support a narrow fringe of scrub-shrub habitat. In addition, the Falls transmission line crosses two narrow wetland areas: a wet meadow, in which water is at or near the surface but rarely ponds, and an emergent marsh, in which the water ponds for a sufficient time to support aquatic species. The latter "ephemeral pool" is important habitat to many amphibian species such as salamanders and frogs which use them for breeding.

The Falls and Narrows transmission line corridors add to the diversity of habitat within the area that otherwise is characterized by large blocks of woodland, sections of which are under silvicultural management. The mix of herbaceous and shrub habitat abutting timber stands provides structure (vertical and horizontal complexity), an important habitat element for wildlife usage. Because of this habitat diversity, many vertebrate species use the transmission line corridor environment including neotropical migratory birds, resident songbirds and game birds, birds of prey, large and small mammals, reptiles and amphibians. Reptiles find particular value in the "solar window" provided by forest openings of the kind maintained in transmission line corridors.

Vegetation within the transmission line corridors and Project Lands associated with the dam facilities are maintained by APGI at specific height limits, depending on location. APGI's maintenance program utilizes herbicide treatments as the major method of control, with mowing or brush cutting used where appropriate. Herbicide applications are not made within 100 feet of the reservoirs. Along the transmission line corridors, the treatment objectives are to maintain vegetation height while minimizing adverse impacts on sensitive habitats and desirable species such as cedar and dogwood, which will not interfere with the line. By means of spot applications, spray drift to non-target species and soil is kept to a minimum. In sensitive areas such as wetlands, the herbicide Habitat® is used, which is approved for use in wetlands when there is no ponded water. Herbicides are generally applied with either backpack sprayers or from a truck by means of a 600-foot hose. A drift control agent is added to the mix when there is wind and applications are discontinued when wind speed exceeds approximately 10 mph. Herbicides are not applied during rainfall.

Historically, the Falls and Narrows transmission line corridors have been maintained to a cleared width of approximately 100-150 feet. In a recent initiative to improve safety and enhance transmission line reliability, APGI cleared the Falls transmission line corridor to an average width of 200 feet. This clearing activity resulted in some short-term impacts to vegetation. In the long-term, the widening of the transmission line corridor can be expected to add additional mixed grass and shrub habitat for wildlife use. A similar widening of the Narrows transmission line corridor is scheduled to occur in 2005.

1.0 INTRODUCTION

Alcoa Power Generating Inc. (APGI) is applying to the Federal Energy Regulatory Commission (FERC) for a new license for the Yadkin Hydroelectric Project. The Project consists of four reservoirs (High Rock, Tuckertown, Narrows, and Falls, Figure 1), dams, and powerhouses 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 and its other aluminum operations, or is sold on the open market.

Because the FERC project boundary generally follows the normal full pool elevation of the reservoirs, Project Lands at the Yadkin Project are generally limited to small areas of land around the dams, powerhouses and two transmission line corridors. The two transmission line corridors, Narrows and Falls, are Project-dedicated lines that remain within the Yadkin Project Boundary.[1] The two transmission lines that will remain part of the hydroelectric project include the approximately 2.7-mile Falls, and 1.7-mile Narrows transmission line corridors. The Narrows Line has a four-circuit 13.2 kV transmission line extending from Narrows Dam to the Badin Substation, and the Falls Line has a single-circuit 100 kV transmission line extending from Falls Dam to the Badin Substation. The purpose of this study was to identify vegetation cover types and wildlife habitat quality on Yadkin Project Lands, including the areas around the dams and powerhouses and along the two transmission line corridors, and to assess potential impacts on habitat from the maintenance and operation of these facilities. In pursuing this objective, this study considers where necessary the broader area adjoining the Project Lands, much of it Yadkin property, the use or attributes of which may affect or be affected by activities undertaken within or upon the Project Lands.

2.0 BACKGROUND

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 were needed to address relicensing issues. To further assist in the identification of issues and study needs, APGI formed Issue Advisory Groups (IAG) to advise APGI on resource issues throughout the relicensing process. Through meetings, reviews and comments, the IAGs assisted in developing the Study Plans for the various resource issues, and will further review and comment on the findings resulting from the implementation of the Study Plans. The Transmission Line and Project Facility Habitat Assessment was guided by the Wetlands, Wildlife and Botanical IAG which was interested in the effects of transmission lines and dam related facilities on vegetation cover and wildlife habitat under existing conditions, assessing how these resources could be affected by existing Project operations including the ongoing maintenance required for Project facilities. The study also examines any changes that may occur as a result of altered Project operations, if proposed. This report presents the findings of this investigation, following implementation of the Final Study Plan, dated June 2003.

[1] By order dated July 15, 2003 FERC approved a request by Yadkin to remove several other high voltage transmission lines from within the FERC boundary as they had become part of the interstate transmission system.

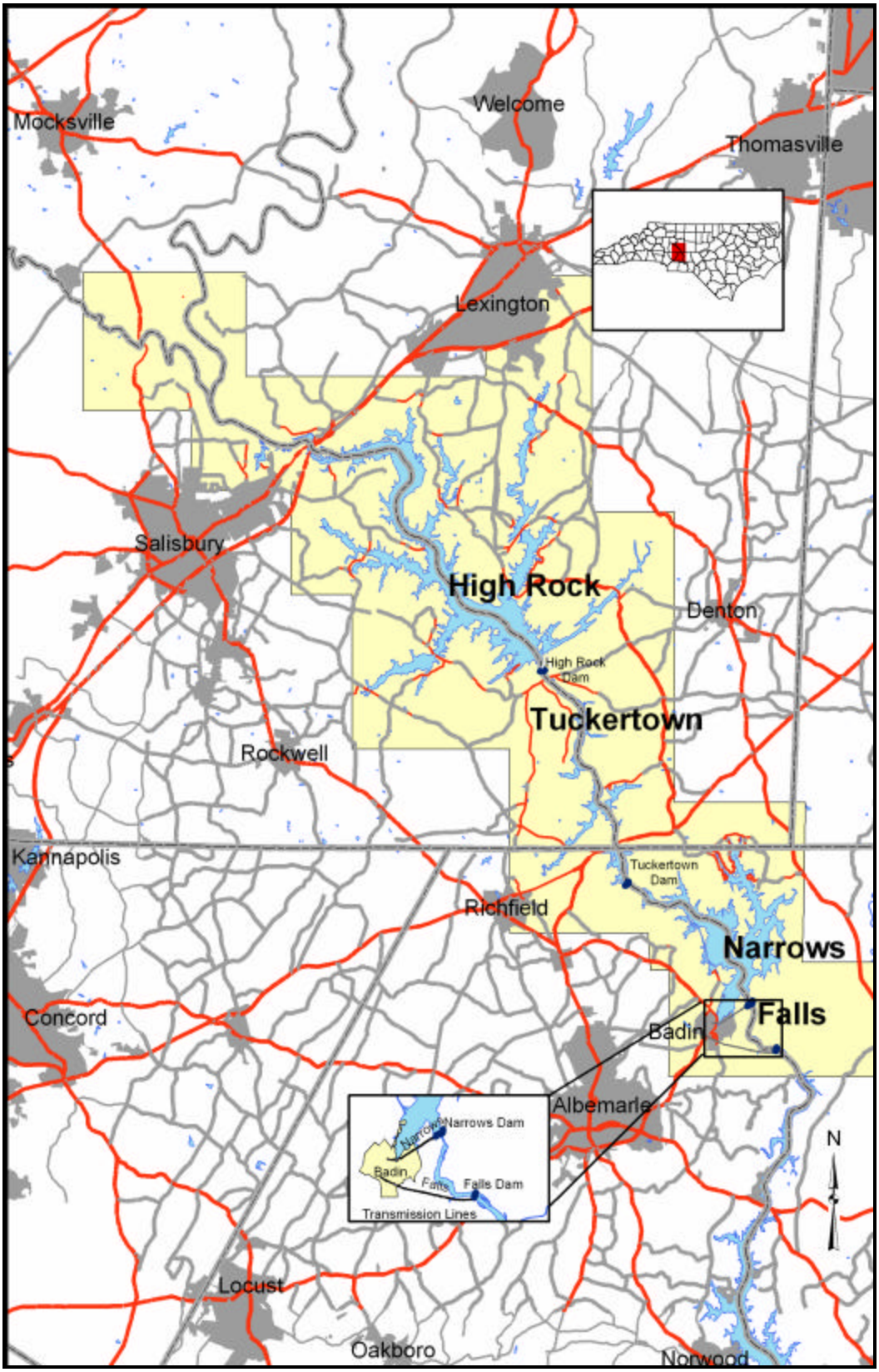

Figure 1. Locus of Yadkin Project.

3.0 STUDY AREA

The Study Area for this assessment includes the Falls and Narrows transmission line corridors and Project Lands within the vicinity of the four dams and powerhouses (Figures 2-6). The combined length of the two transmission corridors is approximately 4.4 miles. The review included the maintained corridor plus an additional area extending 50 feet beyond on either side. Other Project Lands under the present review included the cleared land and facilities in the immediate area of the four dams, including parking lots and access roads.

4.0 STUDY PURPOSE AND OBJECTIVES

On March 13, and April 25, 2003 the Wetlands, Wildlife and Botanical IAG met and discussed objectives for the Transmission Line and Project Facility Habitat study. Over the course of those discussions the following objectives were identified:

- Identify vegetation cover types and wildlife habitat quality 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 enhancement on Yadkin Project Lands.

5.0 STUDY METHOD

A review was completed of existing information available for the two transmission line corridors and Project Lands associated with the four dams, which included previous material generated during the re-licensing process (Yadkin Inc, 1999; Alcoa Power Generating Inc, 2002) and interviews with key personnel knowledgeable about the vegetation management program (Hunsucker 2004; Olson 2004, Wright 2004).

A preliminary delineation of cover types, using stereo-paired aerial photographs taken July 28, 2003, was completed and field-verified during three reconnaissance-level surveys conducted between April and October 2004. Three NAI senior biologists participated, and for several days respectively during each season, they were joined by a local botanist, Dr. Peter Diamond, from the North Carolina Zoological Park in Asheboro. Additional field surveys, specifically for reptiles and amphibians, were conducted during June through August by Mr. Mark Lewis, also of the North Carolina Zoological Park. Diamond and Lewis conferred with NAI at other times as well, both in print and in person. The field surveys reviewed questionable areas identified in the aerial photo review and also inventoried representative areas as to species, structure and composition. All dam-related facilities and both transmission line corridors were visited one or more times during the field surveys. A qualitative evaluation was completed of wildlife habitat quality and use by birds, mammals, reptiles and amphibians within representative areas.

Surveys for rare, threatened and endangered (RTE) species on the transmission line corridors were conducted during the ground-truthing work using the Final RTE list developed by the Wetlands, Wildlife and Botanical IAG for RTE Species (Normandeau 2004). The list is provided in Appendix A. Scheduling of the field surveys throughout the growing season ensured that all plant species on the

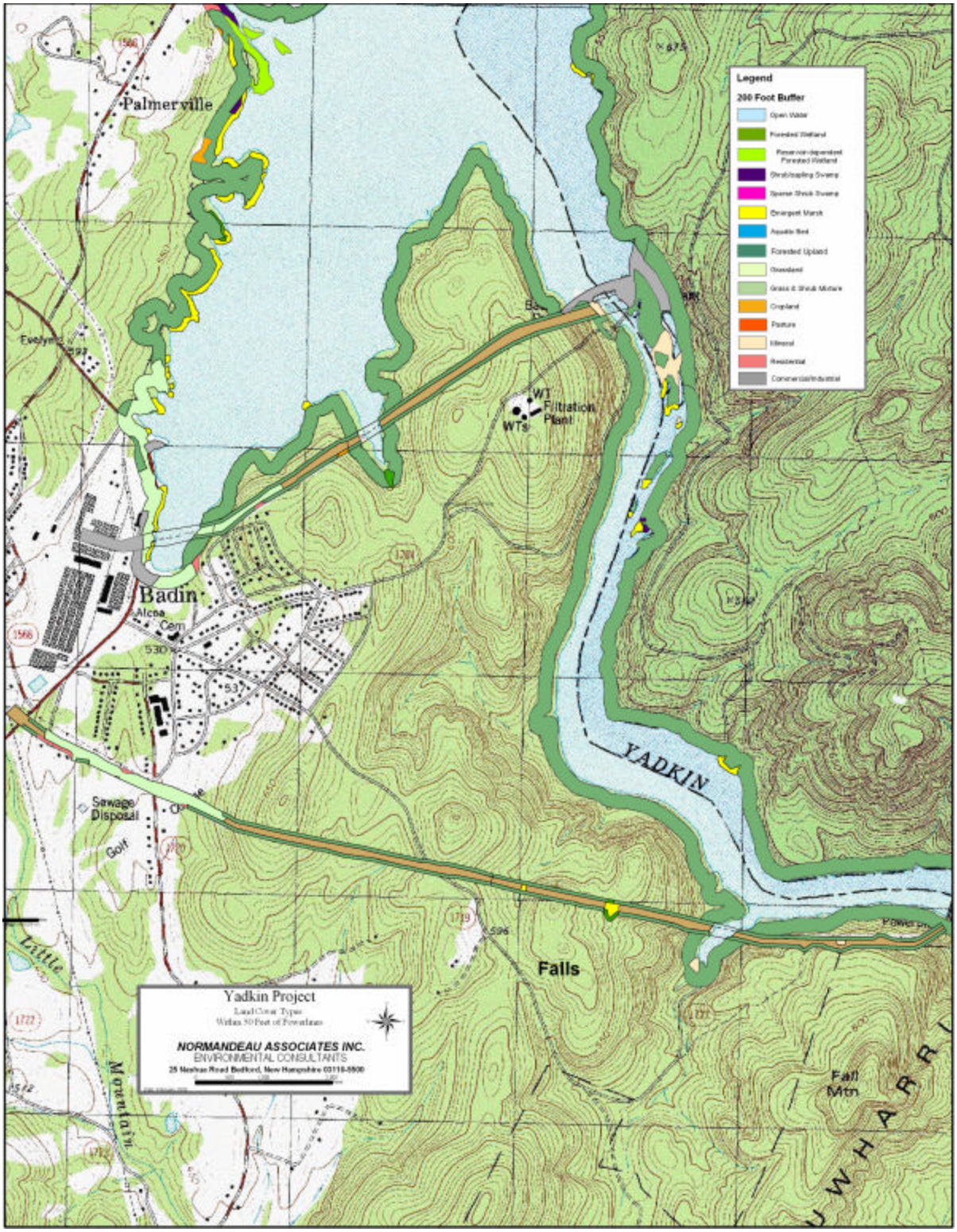

Figure 2. Cover type map of transmission line corridors and the adjacent reservoirs.

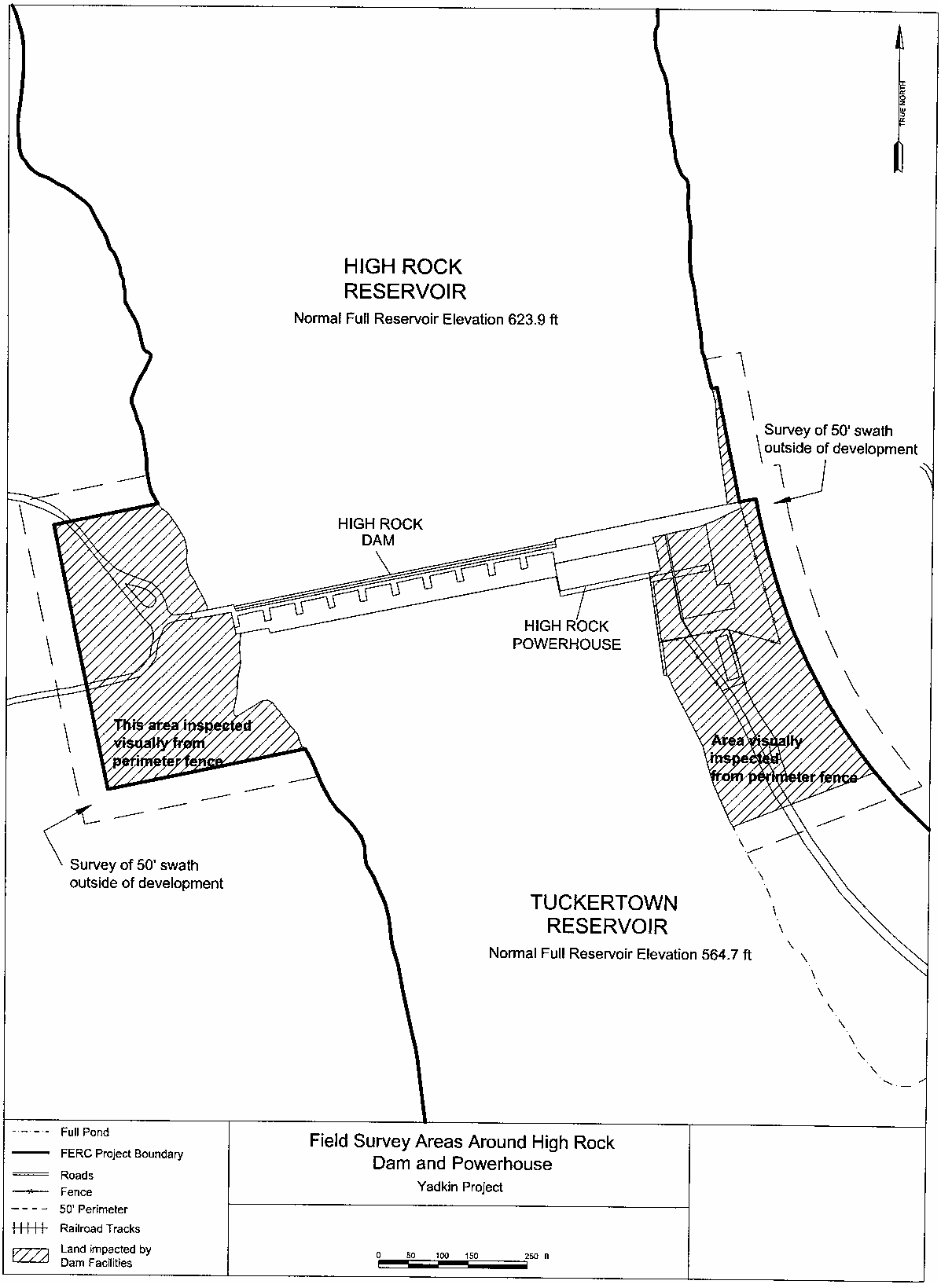

Figure 3. High Rock Reservoir dam facility.

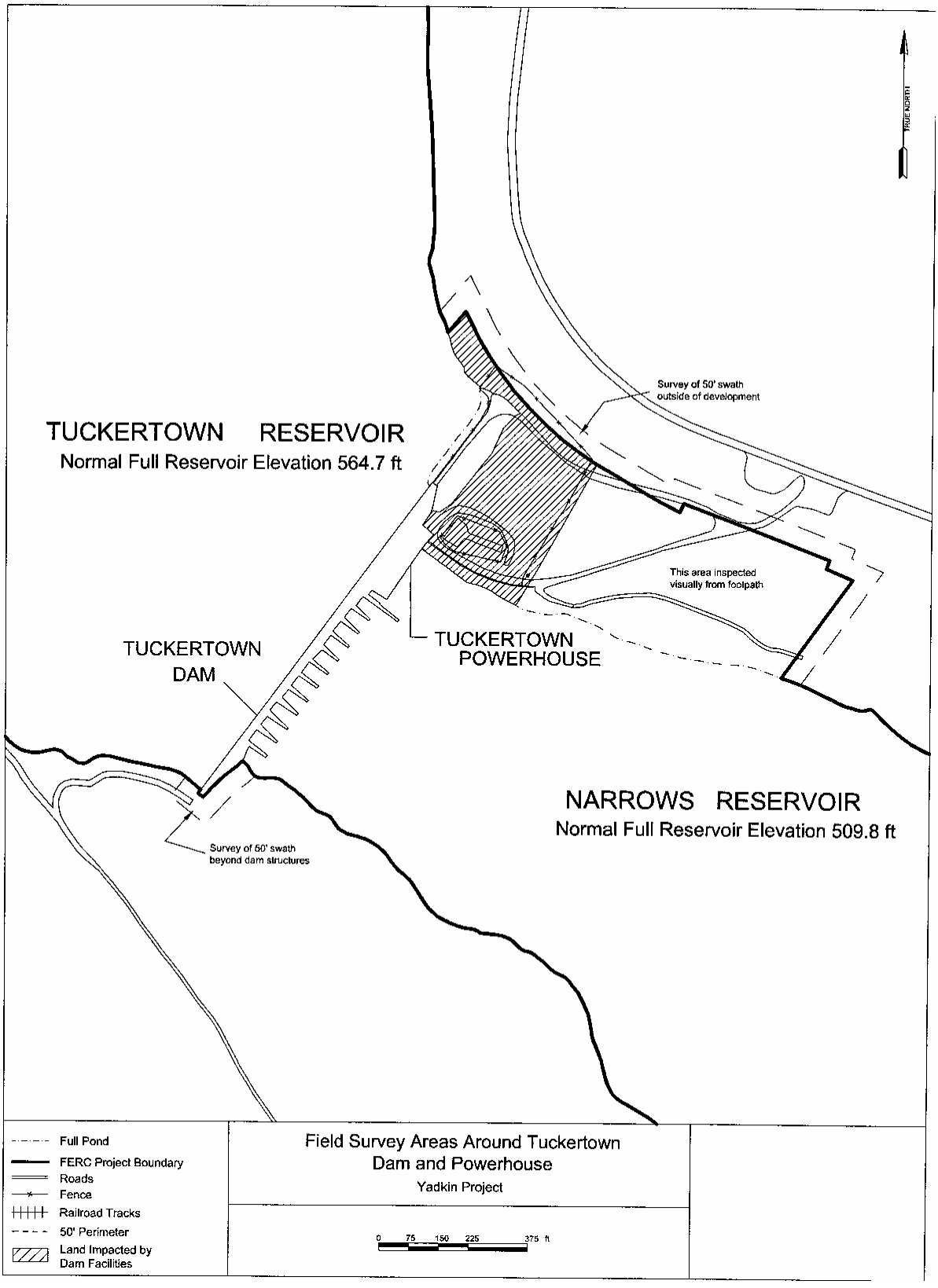

Figure 4. Tuckertown Reservoir dam facility.

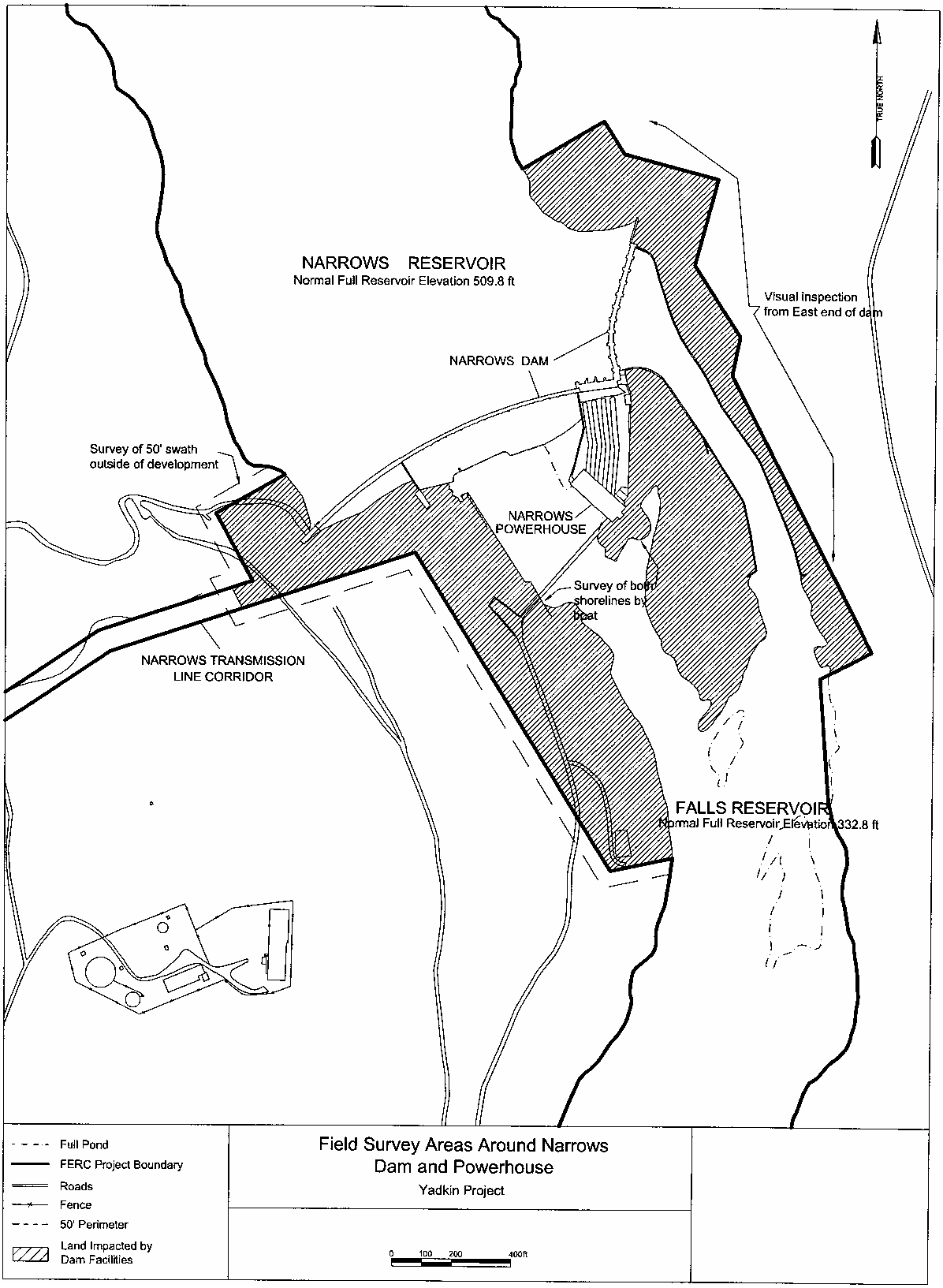

Figure 5. Narrows Reservoir dam facility.

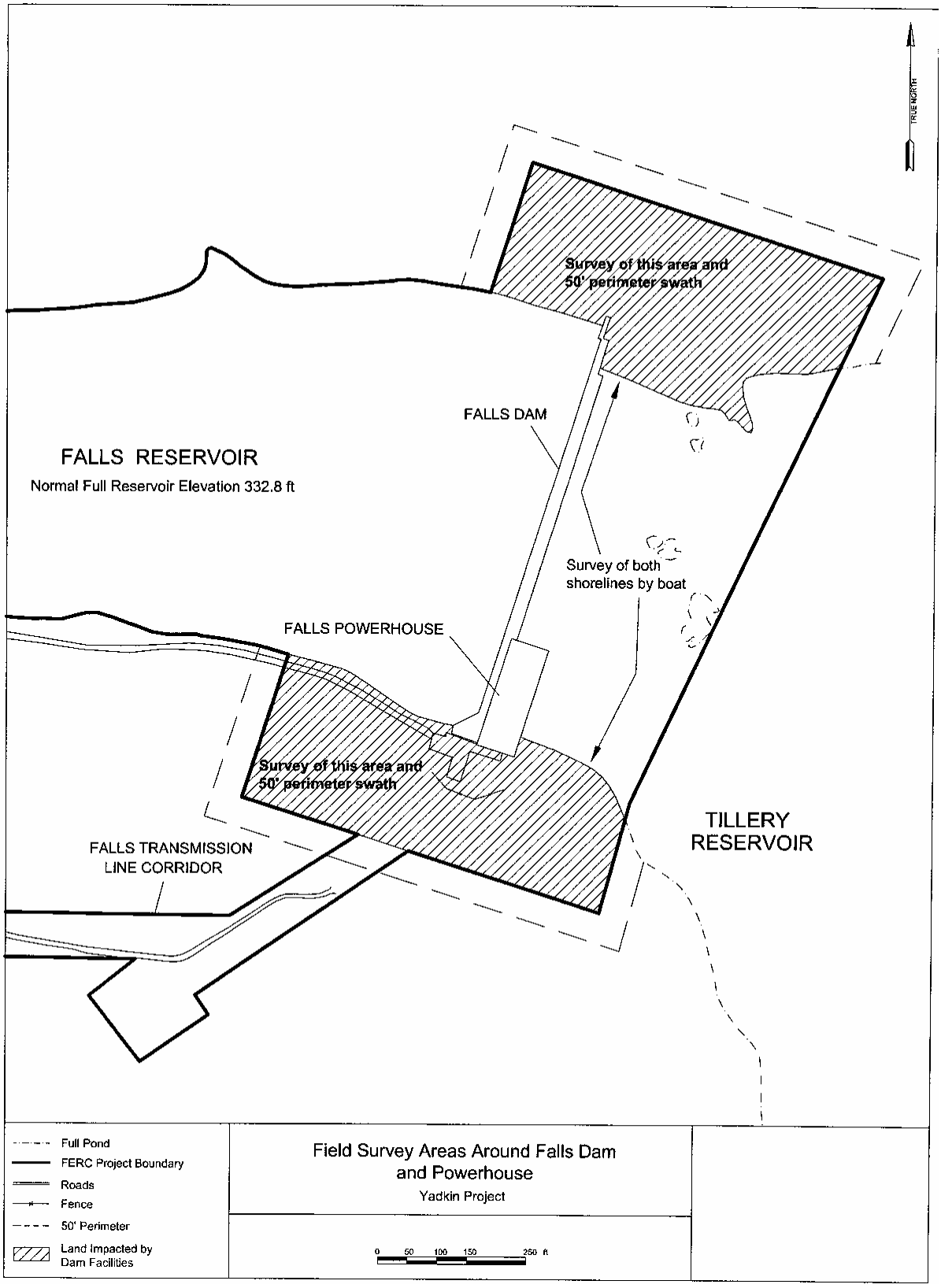

Figure 6. Falls Reservoir dam facility.

search list could be encountered, if present, in a reasonably detectable and identifiable condition during at least one life-history stage. Observations of listed animal species also benefited from the same dispersed effort, as each species' behavior changed from season to season. The relatively large number of listed plant species, many with specialized habitat needs and markedly seasonal manifestations, required the continued services of the local botanist to help refine the survey team's search patterns.

6.0 SUMMARY OF EXISTING INFORMATION

6.1 DAM FACILITIES

For the purpose of this review the Project Lands include the powerhouses, access roads, and parking lots associated with the four dams. The fenced-in area associated with each dam facility is approximately 1-2 acres in size. Access roads distributed along the length of both transmission line corridors are gated to control public access.

6.2 TRANSMISSION LINE CORRIDORS

The length of the transmission line corridor from the Badin Works is approximately 2.7 miles to the Falls Dam and 1.7 miles to the Narrows Dam. The historic width of the cleared corridor for both transmission lines ranged from 100 to 125 feet. The corridor widths are currently being expanded to an approximate total width of 200 feet to minimize the chance of tree falls causing power outages (Olson 2004). Widening along the Falls corridor was 90% complete by Fall 2004. Widening in the Narrows corridor is scheduled to begin in the first quarter of 2005.

7.0 EXISTING CONDITIONS

7.1 DAM FACILITIES

Vegetation

The Project Lands in the immediate area of the dam facilities include the access road and parking facilities. These areas are fenced to a gated entrance. The vegetation is managed in the immediate area of the parking lots and along the fence lines through a combination of mowing and herbicide to maintain visibility and access. Vegetation is virtually absent within the substations and their fence lines, and shrub and herbaceous vegetation dominate immediately adjacent to the dam buildings and parking areas.

Wildlife

The cleared lands at the dam facilities are generally open areas used for parking and vehicle access. These areas offer relatively low quality habitat for wildlife. Common vertebrate wildlife using these areas includes small mammals and small birds, including migratory songbirds. Species likely to be encountered include Gray Squirrel (*Sciurus carolinensis*), moles, shrews, lizards, snakes, Carolina Chickadee (*Poecile carolinensis*), Blue Jay (*Cyanocitta cristata*), and Cardinal (*Cardinalis cardinalis*). Within the substation limits, vegetation has been eliminated and the area fenced to discourage use by wildlife.

7.2 TRANSMISSION LINE CORRIDORS

Vegetation

There are two distinct habitats within the transmission line corridors: terrestrial shrub/grassland and freshwater shrub-scrub/emergent wetland. The major cover type within the Falls transmission line corridor is shrubby grassland bordered by woodland, with the exception of a segment that crosses a maintained golf course. The Narrows transmission line corridor is also dominated by shrubby grassland bordered by woodland except for the westernmost slope adjoining the town of Badin, which is mowed grassland.

The Falls and Narrows transmission line corridors are predominantly rolling upland, the Falls having generally steeper slopes. Scattered rock outcrops and boulders are evident. The terrestrial shrub/grassland habitat has a moisture gradient as a result of aspect and shade effects from adjacent woodlands. Species adapted to direct sunlight and generally droughty conditions are dominant, while an edge effect is apparent on either side of the transmission line corridors along a narrow band in which can grow species that are adapted to partial shade and more moisture. In addition, north-facing slopes also favor species that prefer moister, cooler habitats. Several small, mostly intermittent streams drain from the transmission line corridors to the Narrows, Falls or Tillery reservoirs, depending on location.

The vegetation is generally a mix of herbaceous and shrub species as summarized in Table 1. Common species include the following: bush clovers (*Lespedeza* spp.), beard grasses (*Andropogon* spp.), sedges (*Carex* spp.), foxtail grasses (*Setaria* spp.), Meadow Fescue (*Festuca elatior*), Small White Aster (*Aster vimineus*), Ragweed (*Ambrosia artemisiifolia*), St. Johnsworts (*Hypericum* spp.), *Lobelia* spp., black-eyed susans (*Rudbeckia* spp.), goldenrods (*Solidago* spp.) and panic grasses (*Panicum* spp.) in the herbaceous layer, with regenerating Loblolly Pine (*Pinus taeda*), Water Oak (*Quercus falcata*), Shortleaf Pine (*Pinus echinata*), and Black Locust (*Robinia pseudoacacia*) in the shrub layer. Vine species are also common, including greenbrier (*Smilax* spp.) and rose (*Rosa* spp.). Species diversity is enhanced by relatively shady north-facing slopes and by bordering trees that shade a narrow band on either side of the transmission line corridor. Species that commonly occur along either edge of the transmission line corridor include Black Cherry (*Prunus serotina*), Poison Ivy (*Rhus radicans*), Black Oak (*Quercus velutina*), Red Maple (*Acer rubrum*), serviceberry (*Amelanchier* spp.), Sassafras (*Sassafras albidum*), and Deciduous Holly (*Ilex decidua*).

Both the Falls and Narrows transmission line corridors cross narrow coves of their respective reservoirs. The dominant wetland classes, using the US Fish and Wildlife Service cover type classes (Cowardin et al.1979), include a narrow scrub-shrub wetland fringe, which borders the Narrows segment, and on the Falls transmission line corridor, two narrow, headwater emergent wetland swales. One headwater wetland is a wet meadow, in which water is at or near the surface but rarely ponds, and the other is an emergent marsh, in which the water ponds for a sufficient time to support aquatic species. The emergent marsh may meet the criteria of an ephemeral or seasonal pool, which dries out periodically and therefore is fishless or contains few or occasional fish (Center for Reptile and Amphibian Conservation and Management 2004). Ephemeral pools are an important habitat, as many amphibian species such as Spotted and Marbled Salamanders (*Ambystoma* spp.) and Upland Chorus Frog (*Pseudacris triseriata*) are highly dependent on them for breeding.

Table 1. List of plant species observed on Falls and Narrows powerlines during 2004 field surveys. Species names in bold type indicate RTE species.

FALLS POWERLINE

Cleared Upland

Aesculus sylvatica	
Agalinis purpurea	
Ailanthus altissima	
Alisma subcordatum	
Allium sp.	
Ambrosia artemisiifolia	
Ambrosia sp.	
Ambrosia trifida	
Amianthemum muscaetoxicum	
Amorpha schwerinii	
Andropogon (Schizachyrium) scoparius	
Andropogon elliottii	
Andropogon ternarius	
Andropogon virginicus (A.glomeratus)	Broom-sedge
Antennaria plantaginifolia	
Antennaria sp.	
Anthoxanthum odoratum	
Apocynum cannabinum	Clasping-leaf Dogbane
Aristida sp.	
Aristida sp.	
Artemisia vulgaris	
Asclepias tuberosa	
Asclepias verticillata	
Asparagus officinalis	
Asplenium platyneuron	
Aster cf. vimineus	
Aster novae-angliae	
Baccharis halimifolia	
Bidens aristosa	
Botrychium sp.	
Bromus tectorum	
Campsis radicans	
Carex digitalis	
Carex squarrosa	
Cassia (Chamaecrista) nictitans	
Cassia obtusifolia	
Castilleja coccinea	
Ceonothus americanus	
Chamaecrista (cf. Cassia)	
Chasmanthium latifolium	
Chrysanthemum leucanthemum	
Cimicifuga racemosa	
Cirsium vulgare	
Clitoria mariana	
Coreopsis verticillatum	
Cratageus crusgalli	
Croton glandulosa	
Crotonopsis sp.	
Cunila oreganoides	
Cynodon dactyloides	
Cyperus ovularis	
Danthonia spicata	Spiky Oat-grass
Daucus carota	
Desmodium sp.(not orbiculata)	
Dichanthelium lanuginosum	
Dichanthelium sp.	
Duchesnea indica	
Eragrostis hirsuta	
Erechtites hieracifolia	
Erianthus brevibarbis	
Erianthus contortus	Bent-awn Plume Grass
Erigeron philadelphicus	
Erigeron spp.	Daisy Fleabane species
Eupatorium aromaticum	
Eupatorium capillifolium	Small Dog-fennel Thoroughwort
Eupatorium hyssopifolium	
Eupatorium rotundifolium	
Eupatorium rugosum	
Euphorbia sp.	
Festuca elatior	Meadow Fescue
Festuca myuros	
Galactia volubilis	
Galium sp.	
Gelsemium sempervirens	
Geranium cf. virginianum	
Gnaphalium obtusifolium	
Gnaphalium purpureum	
Helianthus atrorubens	
Helianthus laetiflorus	
Hieracium spp.	Hawkweed species
Houstonia caerulea	
Houstonia purpurea	
Hypericum gentianoides	
Hypericum hypericoides	
Hypericum mutilum	
Hypericum prolificum	
Hypericum punctatum	
Hypericum spp.	St. Johnswort species
Hypericum stragalum	
Hystrix patula (Elymus hystrix)	
Ilex laevigata	
Ilex opaca	
Kuhnia eupatorioides	
Lactuca sp.	
Lathyrus sp.	
Lespedeza cuneata	Chinese Bush Clover
Lespedeza procumbens	
Lespedeza virginica	
Leucanthemum vulgare	
Liquidambar styraciflua	
Lobelia cf. spicata	
Lobelia inflata	
Lobelia puberula	

Table 1. (Continued)

FALLS POWERLINE

Lonicera japonica	
Lonicera x bella	
	Heller's Birdsfoot
Lotus helleri	**Trefoil**
Mecardonia acuminata	
Melia azedarach	
Melinis mutica	
Microstegium vimineum	
Miscanthus sinensis	
Monarda fistulosa	
Nandina domestica	
Oenothera fruticosa	
Oxalis sp.	
Oxalis violacea	Violet Wood Sorrel
Panicum anceps	
Panicum clandestinum	
Panicum depauperatum	
Panicum distans	
Panicum sp.	
Paspalum boscianum	
Paspalum cf. laeve	
Paspalum sp	
Passiflora incarnata	
Phlox sp.	
Phyllanthus sp.	
Phytolacca americana	
Pinus echinata	
Pinus taeda	
Pinus virginiana	
Piptochaetium (cf. Stipa)	
Plantago aristata	
Plantago virginica	
Polygala curtisii	
Polygala nuttallii	
Prunella vulgaris	
Pteridium aquilinum	
Pueraria lobata (P. montana)	
Pycnanthemum tenuifolium	
Pyrrhopappus carolianus	
Quercus falcata	
Rhynchosia tomentosa	
Rhyncospora sp.	
Robinia hispida	
Rosa carolina	
Rubus argutus	
Rudbeckia fulgida	
Rudbeckia hirta	Orange Coneflower
Ruellia caroliniana	
Ruellia purshiana	**Pursh's Wild Petunia**
Rumex sp.	
Salvia lyrata	
Schizachyrium (cf.Andropogon in part)	
Schrankia microphylla	
Scirpus cyperinus	
Scleria sp.	
Senecio smallii	
Senecio sp.	
Setaria spp.	Bristle Grass species
Sisyrinchium sp.	
Smilax hispida	
Solanum carolinense	
Solidago canadensis	Canada Goldenrod
Solidago erecta	
Solidago nemoralis	
Sorghastrum eliottii	
Sorghastrum nutans	
Sorghum halepense	Johnson Grass
Staphylea trifolia	
Stipa (Piptochaetium) avenacea	
Stylosanthes biflora	
Styrax americana	
Symphoricarpos orbiculatus	
Tephrosia hispidula	
Tragia urticifolia	
Trichostema dichotoma	Blue-curls
Tridens flavus	Purple-top
Tripsacum dactyloides	
Ulmus alata	
Valerianella sp.	
Verbascum sp.	
Verbena brasiliensis	
Verbesina occidentalis	Yellow Crownbeard
Verbesina virginica	

Wetland 1

Acer rubrum	
Agrostis perennans	Perennial Bent-grass
Arthraxon hispidus	Hairy Joint-grass
Aster puniceus	
Bidens aristosa	
Boehmeria cylindrica	
Carex baileyi	
Carex tribuloides	
Cyperus strigosus	
Dichanthelium sp. 1	
Dichanthelium sp. 2	Witch Grass species
Festuca elatior	
Glyceria sp.	
Helenium autumnale	
Juncus coriaceus	
Juncus effusus	Smooth Rush
Lespedeza cuneata	
Liquidambar styraciflua	
Lobelia cardinalis	
Lobelia puberula	
Lonicera japonica	
Microstegium vimineum	
Mimulus ringens	
Oxalis violacea	
Parthenocissus quinquefolia	
Pinus taeda	

Table 1. (Continued)

FALLS POWERLINE

Platanus occidentalis	American Sycamore
Polygonum sagittatum	
Prunus serotina	
Rhyncospora sp.	
Scirpus sp.	
Scirpus polyphyllus	Leafy Bulrush
Typha latifolia	
Ulmus rubra	
Verbesina occidentalis	

Wetland 2 (vernal pool/headwater stream)

Alisma subcordatum	
Carex baileyi	
Carex lupulina	Hop Sedge
Dichanthelium sp. 2	Witch Grass species
Diodia virginiana	
Eleocharis sp.	
Hypericum mutilum	
Juncus sp.	
Leersia oryzoides	Rice Cutgrass
Microstegium vimineum	
Panicum large	Panic Grass species
Polygonum sp.	
Rhyncospora corniculata	Short-bristlle Beakrush
Scirpus sp.	
Scirpus cyperinus	Woolgrass
Smilax glauca	

Edge of clearing

Acer rubrum	
Ailanthus altissima	
Amelanchier sp.	
Asplenium platyneuron	
Cercis canadensis	Redbud
Clitoria mariana	
Coreopsis major	
Diospyros virginiana	Persimmon
Gaylussacia frondosa	Dangleberry
Hypericum stans	
Ilex decidua	
Juniperus virginiana	Eastern Red Cedar
Liquidambar styraciflua	
Lonicera japonica	
Magnolia grandiflora	
Melia azedarach	
Pinus echinata	
Prunus serotina	Black Cherry
Quercus phellos	
Quercus velutina	Black Oak
Robinia cf. pseudoacacia	
Sassafras albidum	
Toxicodendron radicans	
Viburnum prunifolium	
Vitis rotundifolia	
Woodsia obtusa	Cliff Brake

Forest

Acer rubrum	
Acer saccharum leucoderme	
Aesculus sylvatica	Painted Buckeye
Alnus serrulata	
Amelanchier arborea	
Botrychium dissectum	
Carya glabra	Pignut Hickory
Carya ovata	
	Carya tomentosa
Celtis occidentalis	
Celtis tenuifolia	
Chrysogonum virginianum	
Clematis cf. viorna	
Cornus florida	Flowering Dogwood
Crataegus cf. crusgalli	
Fraxinus americana	
Houstonia purpurea	
Hypericum fruticosum	
Ilex laevigata	
Ilex decidua	
Ilex opaca	
Juglans nigra	
Ligustrum japonicum	
Liquidambar styraciflua	Sweet Gum
Liriodendron tulipifera	
Microstegium vimineum	
Morus rubra	
Nyssa sylvatica	Black Gum
Oxalis venosa	
Oxydendrum arboreum	
Panicum clandestinum	
Pinus echinata	Shortleaf Pine
Pinus taeda	Loblolly Pine
Pinus virginiana	Scrub Pine
Platanus occidentalis	
Polypodium virginianum	
Polystichum acrostichoides	
Prunus serotina	
Quercus alba	White Oak
Quercus coccinea	
Quercus falcata	Southern Red Oak
Quercus marilandica	
Quercus nigra	
Quercus prinus (Q. montana)	Chestnut Oak
Quercus rubra	
Quercus stellata	Post Oak
Quercus velutina	
Styrax grandifolia	
Thalictrum thalictroides	
Ulmus alata	
Vaccinium arboreum	
Viburnum rufidulum	
Viburnum dentatum	
Vitis rotundifolia	

Table 1. (Continued)

NARROWS POWERLINE

Cleared Upland		**Edge**	
Allium sp.			
Andropogon (Schizachyrium) scoparium		*Ailanthus altissima*	
Andropogon spp.	bluestem grass species	*Cercis canadensis*	
Apocynum cannabinum		*Ligustrum sinense*	
Asclepias verticillata		*Pinus virginiana*	Scrub Pine
Aster novae-angliae		*Prunus serotina*	Black Cherry
Coreopsis major		*Viburnum prunifolium*	
Erianthus brevibarbis	Short-beard Plume Grass		
Erianthus contortus		**Woods**	
Eupatorium aromaticum			
Eupatorium capillifolium	Small Dog-fennel Thoroughwort	*Asplenium platyneuron*	
Eupatorium serotinum		*Carya glabra*	Pignut Hickory
Gnaphalium sp.	Cudweed species	*Lonicera x bella*	
Hypericum prolificum		*Piptochaetium (cf. Stipa)*	
Hypericum punctatum		*Polypodium virginianum*	
Lespedeza spp.		*Quercus alba*	White Oak
Lespedeza cuneata	Chinese Bush Clover	*Quercus rubra*	Northern Red Oak
Lonicera japonica		*Quercus stellata*	
Monarda fistulosa		*Rhus aromatica*	
Oxalis violacea		*Stipa avenacea*	Needle Grass
Panicum anceps	Beaked Panic Grass	*Symphoricarpos orbiculatus*	
Passiflora incarnata		*Vaccinium arboreum*	Farkleberry
Phlox cf. subulata			
Pycnanthemum sp.			
Schizachyrium (cf. Andropogon) scoparium			
Senecio sp.			
Smilax rotundifolia			
Sorghastrum nutans	Indian Grass		
Tridens flavus	Purple-top		
Vaccinium arboreum			
Valerianella radiata			

Common species within the wet meadow wetland include sedges (*Carex* spp.), rushes (*Juncus* spp.), mannagrasses (*Glyceria* spp.), bulrushes (*Scirpus* spp.), Narrow-leaved Cattail (*Typha angustifolia*), Upland Bentgrass (*Agrostis perennans*), and Arrow-leaved Tear-thumb (*Polygonum sagittatum*). Common species within the emergent marsh, where water ponds periodically, includes Woolgrass (*Scirpus cyperinus*), Short-bristle Beakrush (*Rhynchospora corniculata*), Rice Cutgrass (*Leersia oryzoides*), and Water Plantain (*Alisma subcordatum*). Red Maple (*Acer rubrum*), American Sycamore (*Platanus occidentalis*), Brookside Alder (*Alnus serrulata*) and Sweet Gum (*Liquidambar styraciflua*) are common shrub-scrub species fringing the marsh edge.

There are three readily distinguishable woodland cover types bordering the transmission line corridors: mixed hardwood, mixed hardwood/softwood, and softwood stands. Typical hardwood tree species include White Oak (*Quercus alba*), Scarlet Oak (*Quercus coccinea*), Southern Red Oak (*Quercus falcata*), Blackjack Oak (*Quercus marilandica*), Tulip Tree (*Liriodendron tulipifera*), Sweet Gum, Painted Buckeye (*Aesculus sylvatica*), Pignut Hickory (*Carya glabra*), Shagbark Hickory (*Carya ovata*), and Mockernut Hickory (*Carya tomentosa*). The softwood stands, which include those under silvicultural management, include Loblolly Pine (*Pinus taeda*), Shortleaf Pine (*Pinus echinata*), and Scrub Pine (*Pinus virginiana*).

Invasive species observed within the dam facility lands and transmission line corridors include Chinese Bushclover (*Lespedeza cuneata*) in relatively open, dry sites and Nepalese Browntop (*Microstegium vimineum*) in relatively moist ones. The highly disturbed vegetation surrounding dam facilities is dominated by primarily woody or climbing invasives: Tree of Heaven (*Ailanthus altissima*), Kudzu (*Pueraria lobata (P. montana)*), Japanese Privet (*Ligustrum japonicum*), *Wisteria* spp., and climbing roses (*Rosa* spp.).

Wildlife

The Falls and Narrows transmission line corridors add to the diversity of habitat within the immediate area. Both transmission line corridors cross large blocks of woodland, sections of which are under silvicultural management. The mix of herbaceous and shrub habitat provides additional structure (vertical and horizontal complexity), an important habitat element (Conner and Dickson 1997; DeGraaf and Rudis 1986). Many vertebrate species use the transmission line corridor environment as a necessary or preferred part of a larger home range or territory. These include neotropical migratory birds, resident songbirds and game birds, birds of prey, large and small mammals, reptiles and amphibians. Reptiles find particular value in the "solar window" provided by forest openings of the kind maintained in transmission line corridors. The observations of Six-lined Racerunner lizards (*Cnemidophorus sexlineatus*) in the Falls transmission line during the survey may indicate that this heat-loving species is taking advantage of basking opportunities not easily available otherwise in the study area. The presence of Timber Rattlesnake (*Crotalus horridus*), a Special Concern species in NC – see following paragraph) in the Falls transmission line may also owe much to the same opportunity for efficient thermoregulation (Lewis 2004). Table 2 provides a summary of species observed during the transmission line corridor field review.

Rare, Threatened and Endangered Species

Lotus helleri and *Ruellia purshiana*, both of which are listed by the state as Significantly Rare, were identified in the Falls transmission line corridor east of Falls Rd. The natural habitat of both species includes open-canopy forest, but wildfire suppression in the Project Area probably affords them less

Table 2. Wildlife species or their signs observed in the 2004 Narrows and Falls transmission line corridor surveys.

Common Name	Scientific Name	Narrows	Falls
Birds			
Blue jay	*Cyanocitta cristata*		x
Bluebird, eastern	*Sialia sialis*		x
Chickadee, Carolina	*Poecile carolinensis*		x
Crow, American	*Corax brachyrhynchos*		x
Cuckoo, yellow-billed	*Coccyzus americanus*		x
Eagle, bald	*Haliaeetus leucocephalus*	x	
Flycatcher, Acadian	*Empidonax virescens*		x
Flycatcher, great crested	*Myiarchus crinitus*		x
Goldfinch, American	*Carduelis tristis*		x
Hawk, red-tailed	*Buteo jamaicensis*	x	
Hummingbird, ruby-throated	*Archilochus colubris*		x
Indigo bunting	*Passerina cyanea*	x	x
Kingfisher, belted	*Ceryle torquata*	x	
Tanager, summer	*Piranga rubra*	x	x
Thrush, wood	*Hylocichla mustelina*	x	
Towhee	*Pipilo erythrophthalmus*	x	x
Tufted titmouse	*Baeolophus bicolor*		x
Turkey	*Meleagris gallopavo*		x
Vireo, red-eyed	*Vireo olivaceus*	x	x
Vulture, black	*Coragyps atratus*	x	x
Vulture, turkey	*Cathartes aura*	x	x
Warbler, black and white	*Mniotilta varia*		x
Warbler, magnolia	*Dendroica magnolia*		x
Warbler, parula	*Parula Americana*		x
Warbler, pine	*Dendroica pinus*		x
Warbler, prairie	*Dendroica discolor*		x
Warbler, prothonotary	*Protonotaria citrea*		x
Woodpecker, red-bellied	*Melanerpes carolinus*		x
Wren, Carolina	*Thyothorus ludovicianus*	x	x
Reptiles			
Fence lizard	*Sceloporus undulatus*		x
Racerunner, six-lined	*Cnemidophorus sexlineatus*		x
Skink, ground skink	*Scincella lateralis*		x
Snake, black racer	*Coluber constrictor*		x
Snake, eastern hognosed	*Heterodon platyrhinos*		x
Snake, rat	*Elaphe obsolete*		x
Snake, ringneck	*Diadophis punctatus*		x
Snake, timber rattler	*Crotalus horridus*		x
Snake, worm	*Carphophis amoenus*	x	
Turtle nest	Emydidae	x	x
Turtle, box	*Terrepene Carolina*	x	x
Amphibians			
Egg masses	*Rana clamitans*		x
Green frog	*Acris crepitans*		x
Northern cricket frog	*Hyla crucifer*		x
Spring peeper	*Hyla versicolor*		x
S. gray treefrog	*Acris* spp.		x
Cricket frog chorusing			x
Salamander tadpoles			x
Toad tadpoles			x
Toad, American	*Bufo americanus*		x
Mammals			
Red Squirrel	*Tamiasciurus hudsonicus*		x
Rodent	Cricetidae		x
White-tailed deer	*Odocoileus virginicus*		x

opportunity than previously for widespread persistence outside the managed clearings characteristic of power transmission systems. Both species are relatively short and weak-stemmed and appear to do best in relatively dry sites, where drought-hardy and taller plants (e.g. *Andropogon virginicus*, *Apocynum cannabinum*) may be present but discontinuous in cover. Transmission lines maintain linear openings of varying soil moisture as they cut across a landscape's heights and hollows, exposing the primarily herbaceous community to sun for differing lengths of time. Conditions favorable to a great diversity of light-demanding herbaceous plant species therefore may be found within these artificial landscape features. Continual human disturbance of such features, however, does not necessarily work to the benefit of some rare species. For instance, neither population of *L. helleri* and *R. purshiana* could be found in autumn following their initial discovery in June, due to disturbance during maintenance and widening of the transmission line corridor. However, both species are perennial and will likely resprout next year, and in the long term, may actually benefit from the widening of the transmission line corridor.

Timber Rattlesnake was the only target animal species on the RTE list observed during the 2004 surveys. One gravid female was found in the Falls Dam transmission line corridor, east of Falls Road. This observation confirms anecdotal reports of other rattlesnake sightings in the vicinity of the Falls Dam transmission line as a result of logging operations carried out during the summer and autumn of 2004 (Olson 2004).

Rattlesnakes overwinter in a hibernaculum, which typically consists of deep outcrop fissures and boulder piles with a southern aspect. Several instances of this resource occur within or adjacent to the transmission line corridor. Sunny locations near a rattlesnake hibernaculum provide the animals each spring with an important means of elevating body temperature efficiently after their period of winter quiescence. This opportunity for efficient thermoregulation is particularly important for gravid females, whose young develop faster and emerge sooner if provided with an optimal basking environment (Gardner 2004). The young may also benefit by increased food availability and cover in the open habitats within the right-of-way. A gravid female basking in the transmission line right-of-way probably indicates the presence of a hibernaculum in close proximity, one which the same female is likely to use for the duration of her life, especially with the continued availability of optimal basking locations (Lewis 2004).

The larger of the two emergent wetlands that cross the Falls Dam transmission line affords potentially suitable habitat for the two target amphibian species, Mole Salamander (*Ambystoma talpoideum*) and Four-toed Salamander (*Hemidactylium scutatum*). Although no salamander egg masses were observed there during 2004, one unidentified salamander larva was observed in October 2004. Confirmation of the presence of these salamander species requires revisitation of the wetland during winter or early spring to detect breeding activity. Set in an upland environment remote from the reservoirs, however, this wetland faces no impact from water-level management changes.

8.0 EFFECTS OF PROJECT OPERATIONS ON HABITAT

The transmission line corridors and Project Lands associated with the dam facilities are maintained by APGI primarily to ensure the safe and reliable operation of the Project. Most of these areas have maintained vegetation heights within specific limits, depending on location. As a result of this vegetation management program, wildlife habitat is affected. The program utilizes herbicide

treatments as the major method of control, with mowing or brush cutting used where appropriate. Herbicides are not allowed within 100 feet of the reservoir.

The management program within Project Lands includes application of herbicides to maintain bare ground in gravel areas and along fence lines, with a first application in March and a follow-up application in July (Wright 2004). Depending on weather conditions, a third treatment may be applied later in the summer. Herbicides are rotated with a mix of three types of chemicals: contact herbicide (e.g. Roundup® or Krenite®), pre-emergent herbicide (e.g. Oust®), and postemergent herbicide (e.g. Arsenal®). A fourth herbicide, Habitat®, is used in the vicinity of the emergent wetlands.

Typically, vegetation is managed within the transmission line corridors by the application of herbicides, generally on a 3-year rotation within each corridor (Wright 2004). Additional treatments may be requested by APGI when the need arises. The treatment objectives are to maintain vegetation height while minimizing adverse impacts on sensitive habitats and desirable species such as cedar and dogwood (*Juniperus* and *Cornus* spp. respectively), which will not interfere with the line. By means of spot applications, spray drift to non-target species and soil is kept to a minimum. Two mixes are used depending on the vegetation present. For control of hardwood species and shrubs a mix of Roundup® and Arsenal® with a surfactant is applied. The herbicide treatment used for softwoods is Krenite® with a surfactant. In sensitive areas such as wetlands, the herbicide Habitat® is used, which is approved for use in wetlands when there is no ponded water.

Herbicides are applied with either backpack sprayers or from a truck by means of a 600-foot hose. A drift control agent is added to the mix when there is wind and applications are discontinued when wind speed exceeds approximately 10 mph. Herbicides are not applied during rainfall.

Off-road vehicle use is restricted by gates at most access points on the transmission line corridors, which helps prevent soil erosion and adverse impacts on wildlife. The access roads and parking areas to all dams are paved, which reduces erosion into the reservoirs.

APGI is currently in the process of expanding the corridor width on both of the Project transmission lines. This expansion is being done to improve system safety and reliability. Expansion of the transmission lines involves clearing trees and other woody vegetation from approximately 25-50 feet on either side of the existing corridor. This work was completed on the Falls transmission line in 2004 and is scheduled to occur on the Narrows transmission line in 2005. Once this initial corridor widening is completed, there are no proposed or anticipated changes in Project operation that will affect the transmission line corridors or the maintained lands at the dams. Timber harvesting associated with the current transmission line corridor expansion and nearby lands has had temporary impacts on soils and vegetation due to the operation of heavy equipment. But in the long-term, it is anticipated that the expanded corridors will benefit game species such as White-tailed Deer (*Odocoileus virginicus*), Turkey (*Meleagris gallopavo*) and Bobwhite (*Colinus virginianus*) as well as some non-game species. A widened transmission line corridor, especially one that has been recently cleared, may reduce or eliminate the crossing movements of some animals (e.g. small birds and mammals) that now may include both forested edges in one territory. However, most of the impacts to many area-sensitive species with a need for large, intact forest have already occurred, since much of the adjoining forest is managed for timber production. Before that, forested land was fragmented by agriculture, more intensively than it is now. Area-sensitive species would have undergone the preponderant impacts of forest fragmentation centuries ago, and more recently at the time the original transmission line corridors were cut out of the newly regenerating forest.

The current vegetation management program used by APGI for maintenance of its transmission lines and project facilities utilizes herbicides appropriate to the control of target species and sensitive environments. Continued facility maintenance using appropriately selected and applied herbicides should have no adverse impacts on the use of these areas by wildlife. However, to ensure that the desired effects are being achieved, the program should be periodically reviewed to ensure that adverse impacts are avoided. Such a review could, for example, reassess application methods and herbicide use near water bodies, and RTE species. In addition, APGI should consider some modifications to its routine maintenance operations to better protect existing habitats and species of importance. For example, logging equipment could be routed around sensitive habitats such as wetlands and rare and endangered species habitats. An upland buffer could be maintained around wetlands in which motorized vehicles are prohibited. Crossings of wetlands could be at established points using best management practices to control sediment and erosion. Such management guidelines for generally enhancing wildlife habitat as well as the known RTE species occurring on the Falls powerline should be developed with consultation with experts in those species.

9.0 CONCLUSIONS

The continued operation and maintenance of the Yadkin Project facilities and reservoirs will not impact the habitats associated with the Falls and Narrows transmission line corridor, and maintained lands associated with the four dams. The current expansion of the Falls and Narrows transmission corridors will result in an increase in shrubby grassland habitat in an area dominated by woodland. The use of herbicides in vegetation management should be periodically reviewed to ensure that impacts to rare and endangered species habitats and wetlands are minimized, and herbicide selection follows the approved label guidelines.

10.0 REFERENCES CITED

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APPENDIX A

List of Rare, Threatened and Endangered Species for Yadkin Project Search

Appendix Table 1. Final List of Rare, Threatened and Endangered Species for Yadkin Project Search for Terrestrial and Wetland Species only, Including Insects. Birds and Aquatic Wildlife were handled by others.

Scientific Name	Common Name	Source	State*	Federal**	County	Habitat Notes
Priority						
Amorpha schwerinii	Piedmont indigo-bush	1	SR-T		M, R, S, Dd	dry forests
Aster georgianus	Georgia aster	1,2	T	C1	M, R, S, Dd	open woods and roadsides
Aster mirabilis	Piedmont aster	1	SR-T		S	rich slopes and bottomlands
Baptisia alba	Thick-pod white wild indigo	1	SR-P		M, S	open woodland clearings
Baptisia albescens	Thin-pod white wild indigp	1	SR-P		M, R, S	open woodland clearings
Cardamine dissecta	Dissected toothwort	1	SR-P		M, R, Dd	rich woods, bottomlands
Carex impressinervia	Ravine sedge	1,2	SR-T	FSC	M	wet forests
Cirsium carolinianum	Carolina thistle	1	SR-P		M, R	forests, disturbed areas, basic soils
Helenium brevifolium	Littleleaf sneezeweed	1	E		M, R	bogs, seeps, riverbanks
Helianthus schweinitzii	Schweinitz's sunflower	1, 2, 3	E	E	M, R, S, Dd	open woods and roadsides
Plantago cordata	Heart-leaf plantain	1	E		Dd	beds of small, slate-bottomed perennial streams
Porteranthus stipulatus	Indian Physic	1	SR-P		M, Dd	forests and open woods, mainly over mafic rocks
Solidago plumosa	Yadkin River goldenrod	1,2	E	FSC	M, S	riverside rocks
Solidago radula var. radula	Western rough goldenrod	1	SR-P		S	dry woodlands over mafic rocks
Secondary						
Ambystoma talpoideum	Mole salamander	1	SC		M, R	fish-free semipermanent woodland ponds
Anemone berlandieri	Southern anemone/thimbleweed	1	SR-P		M, R, S	thin soils around rock outcrops
Carex bushii	Bush's sedge	1	SR-P		R	open wet areas
Collinsonia tuberosa	Piedmont horsebalm	1	SR-P		M	rich hardwood forests
Corynorhinus rafinesquii	Rafinesque's big-eared bat	***	E	FSC		old buildings, hollow trees, caves, mines, near water
Crotalus horridus	Timber rattlesnake	1	SC		M, S, Dd	rocky, upland forests
Fothergilla major	Large witch-alder	1	SR-T		M, S	dry ridgetop or bluff forests
Gomphus abbreviatus	Spine-crowned clubtail	1	SR		M	rivers
Gomphus fraternus	Midland clubtail	1	SR		S	rocky rivers
Hemidactylium scutatum	Four-toed salamander	1	SC		M	wetlands in hardwood forests
Hexalectris spicata	Crested coralroot	1	SR-P		S, Dd, D	dry or mesic woods on basic soils
Quercus austrina	Bluff oak	1	SR-P		M	bluff and bottomland forests
Ruellia purshiana	Pursh's wild-petunia	1	SR-O		M	glades, woodlands over mafic/calcareous rocks
Spartina pectinata	Freshwater cordgrass	1	SR-P		M	freshwater marshes
Stachys sp 1	Yadkin hedge nettle	1	SR-T		M	sandy edges of forested floodplains
Tradescantia virginiana	Virginia spiderwort	1	SR-P		M	rich woods on circumneutral soils
Verbena riparia	Riverbank vervain	1,2	SR-T	FSC	S	habitat not known
Transmission lines						
Echinacea laevigata	Smooth coneflower	1, 2, 3	E-SC	E	M	glades and open areas over mafic rocks
Gnaphalium helleri var helleri	Heller's rabbit tobacco	1	SR-P		M, R, Dd	dry woodlands, openings, glades over mafic rocks
Helianthus laevigatus	Smooth sunflower	1	SR-P		M, R, S	shaly open woods and roadsides

(continued)

Appendix Table 1. (Continued)

Scientific Name	Common Name	Source	State*	Federal**	County	Habitat Notes
Lotus helleri	Carolina birdfoot-trefoil/Heller's trefoil	1,2	SR-T	FSC	R, S, Dd, D	open woods over clay soils, roadsides
Parthenium auriculatum	Glade wild quinine	1	SR-T		M	glades and openings over mafic rocks
Excluded						
Arabis missouriensis	Missouri rockcress	1	SR-P		S	thin soils around basic rock outcrops
Aster laevis var concinnus	Narrow-leaf aster	1	SR-P		S	forests, woodland borders over mafic rocks
Baptisia minor	Prairie blue wild indigo	1	T		S	glades and open forests on basic soils
Clemmys muhlenbergii	Bog turtle	2, 3	T	T/SA	Dd	bogs, wet pastures
Cyperus houghtonii	Houghtons umbrella sedge	1	SR-P			dry soil
Desmodium ochroleucum	Cream ticktrefoil	1,2	SR-T	FSC	D	sandy/rocky woodland openings
Dicanthelium annulum	Ringed witch grass	1	SR-P			dry, sandy or rocky woods, borders of thickets
Dodecatheon meadia var meadia	Eastern shooting star	1	SR-P		S, Dd	rich rocky woods over mafic or calcareous rocks
Erynnis martialis	Mottled duskywing	1	SR		M	upland woods, needs Ceanothus americanus
Fixsenia favonius ontario	Northern oak hairstreak	1	SR		M	dry oak-dominated woods
Gomphus consanguis	Cherokee clubtail	1	SR		D	spring-fed streams
Helenium pinnatifidum	Dissected sneezeweed	1	SR-P		R	savannahs and open mucky sites
Ilex amelanchier	Sarvis holly	1	SR-P		M	blackwater swamps and riverbanks
Isoetes piedmontana	Piedmont quillwort	1	T		R	granite flatrocks and diabase glades
Isoetes virginica	Virginia quillwort	1,2	SR-L	FSC	R	upland depression swamp forests
Juglans cinerea	Butternut	2		FSC	S	coves, stream benches, rock ledges
Lilium canadense ssp editorum	Red Canada lily	1	SR-P		S	bogs, wet meadows
Lindera subcoriacea	Bog spicebush	1,2	E	FSC	M	streamhead pocosins, white cedar swamps, bogs
Masticophis flagellum	Coachwhip	1	SR		S	dry sandy woods, pine/oak sandhills
Matelea decipiens	Glade milkvine	1	SR-P		S, Dd	thin woodlands over mafic or calcareous rocks
Minuartia uniflora	Single-flowered sandwort	1	E		R	granite flatrocks
Oxypolis ternata	Savanna/Piedmont cowbane	***		FSC		wetlands, wet swales, bogs
Pellaea wrightiana	Wright's cliff-brake	1	E-SC		S	rock outcrops, mafic or with nutrient-rich seepage
Pituophis melanoleucus melanoleucus	Northern pinesnake	1,2	SC	FSC	M	dry, sandy woods, pine/oak sandhills
Platanthera integra	Yellow fringeless orchid	1	T		R	savannas
Portulaca smallii	Small's portulaca	1	T		R	granite flatrocks and diabase glades
Puma concolor couguar	Eastern cougar	1, 2, 3	E	E	M	needs open forest
Quercus prinoides	Dwarf Chinquapin oak	1	SR-P		S	dry, rocky slopes
Rhus michauxii	Michaux's sumac	1, 2, 3	E-SC	E	D	sandhills, sandy forests, woodlands and edges
Silphium terebinthinaceum	Prairie dock	1	SR-P		D	diabase glades, open/semi-open areas, mafic rocks
Sistrurus miliarius	Pigmy rattlesnake	1	SC		M	pine flatwoods, pine/oak sandhills
Solidago ptarmicoides	Prairie goldenrod	1	E		R	diabase glades

(continued)

Appendix Table 1. (Continued)

Notes:

1 NC Natural Heritage Program County lists updated May 2003,
NHP List of Rare Animal Species 2001, and NHP list of Rare Plant Species, 2002
2 US Fish & Wildlife Service North Carolina County lists updated 2/2003
3 US Fish and Wildlife Service TESS State list updated 2/2004
* based on NCNHP County lists updated May 2003
** based on USFWS County lists updated 2/2003
*** State and/or Federally listed but not found in counties
C1 = Consideration for listing- no protected status
E = Endangered
E/PT = Endangered Potentially Threatened
E-SC = Endangered but available commercially
FSC = Federal Special Concern - no protected status
SC = Special Concern
SR = Significantly Rare
SR-L = Significantly Rare Limited
SR-O = Significantly Rare Other
SR-P = Significantly Rare Peripheral
SR-T = Significantly Rare Throughout
T = Threatened
T/SA = Threat. due to Similarity of Appearance -
no effect on land-management activities by private landowners

Counties
S Stanly
R Rowan
M Montgomery
Dd Davidson
D Davie

Expert Reviewers
Dr. Alan Weakley, Curator, UNC Herbarium, Chapel Hill, NC
Dr. Moni Bates, NC Plant Conservation Program
Dr. Peter Diamond, NC Zoological Park, Asheboro, NC
Sarah McRae, Natural Heritage Program, Raleigh, NC
Dr. Mary Kay Clark, NC Museum of Natural Sciences, Raleigh, NC
Mr. Mark Lewis, NC Zoological Park, Asheboro, NC
Dr. Dennis Herman, NC Museum of Natural Sciences, Raleigh, NC

APPENDIX B

Comment Response Table

Appendix B: Transmission Line Comment Response Table

Copies of the Transmission Line and Project Facility Assessment Draft Report were distributed to the Wetlands, Wildlife and Botanical Issues Advisory Group (IAG) on March 2, 2005. The Draft Report was then summarized and discussed at the meeting, and comments and recommendations were made. Additionally, the IAG was given until April 1, 2005 to submit additional comments. Table 1 below is a summary of the comments received and responses to the comments.

TABLE 1: SUMMARY OF COMMENTS AND RESPONSES

Source of Comment	Comment	Response
Todd Ewing, NC Wildlife Resources Commission, 3/2/05 WWB IAG meeting	Suggested that the final report discuss the feasibility of managing the Yadkin Project transmission lines for quail.	No specific habitat or wildlife management objectives were identified or discussed in the Final Report. However, such objectives could be developed as part of a future management plan for the Yadkin Project transmission lines.