

FINAL

ENVIRONMENTAL ASSESSMENT
MCINTOSH 230 kV TIE-LINE

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1.0 INTRODUCTION

1.1 OVERVIEW OF THE PROJECT

South Carolina Electric & Gas Company (SCE&G) proposes to construct a 230 kilovolt (kV) transmission line in Jasper County, South Carolina. This line will serve as a tie-line between Savannah Electric & Power Company's McIntosh Plant near Rincon, Georgia, and SCE&G's existing Ridgeland-Hardeeville 46-kV and 115-kV lines northeast of Hardeeville, South Carolina. This line, designated as the McIntosh Tie-Line, will be located in mainly an east-west direction from the Savannah River to the existing transmission lines. The proposed route, which is located approximately 4 miles [6.4 kilometers (km)] north of Hardeeville, is 8.9 miles (14.4 km) in length.

The McIntosh Tie-Line will be designed to operate at 230 kV, although initial operation will be at 115 kV. Because of the size of the line, SCE&G is required by South Carolina's Utility Facility Siting and Environmental Protection Act (Title 58, Chapter 33, Code of Laws of South Carolina) to provide an environmental assessment of the proposed route. The environmental assessment is necessary for completion of the Application for Certificate for Electric Transmission Line Construction required by the state's Public Service Commission.

This report presents a description of the environment along SCE&G's proposed route and possible impacts resulting from construction of a transmission line.

1.2 METHODOLOGY

Data and maps for the region were collected from a variety of sources, including local, state, and federal agencies; published literature; and SCE&G. A walkover survey of the entire route was conducted during the week of November 7 through 11, 1983, to identify local features, vegetation communities, land uses, and wildlife species, including endangered or threatened species. The week in the area was also used to interview people and collect data from local offices of various agencies.

2.0 AFFECTED ENVIRONMENT

The proposed route for the McIntosh Tie-Line is shown in Figure 1. Major features of the route include the Savannah River on the western end and crossings of U.S. Highways 321 and 17 and I-95. As previously mentioned, Hardeeville is approximately 4 miles (6.4 km) to the south. The town of Tillman is about 6 miles (9.7 km) to the north; the county seat, Ridgeland, is approximately 10 miles (16.1 km) to the northeast; and Savannah, Georgia, is approximately 20 miles (32.2 km) to the south.

2.1 PHYSIOGRAPHIC FEATURES/TOPOGRAPHY

Jasper County lies within the Lower Coastal Plain or "lowcountry" of South Carolina. Elevations range from sea level to slightly over 100 feet (ft). The area is characterized by level lowlands and low ridges with slopes usually less than 2 percent (USDA, 1980a). Elevations along the proposed route range from <10 ft along the Savannah River to isolated ridges within the Savannah River swamp of nearly 30 ft. The eastern two-thirds of the proposed route shows less topographic relief and averages about 20 ft in elevation. Drainage of the western portion of the route is accomplished by the Savannah River, and the New River provides slight drainage along the eastern portion of the route.

2.2 SOILS

USDA (1980a) lists six major soil associations found along the proposed route. The Savannah River floodplain consists of the Tawcaw-Chastain association while the ridge area immediately east is composed of the Buncombe-Santee association. The area around the crossing of State Highway 34 is comprised of the Eulonia and Santee associations. Eastward along the route, the Argent-Okeetee and Argent associations are found.

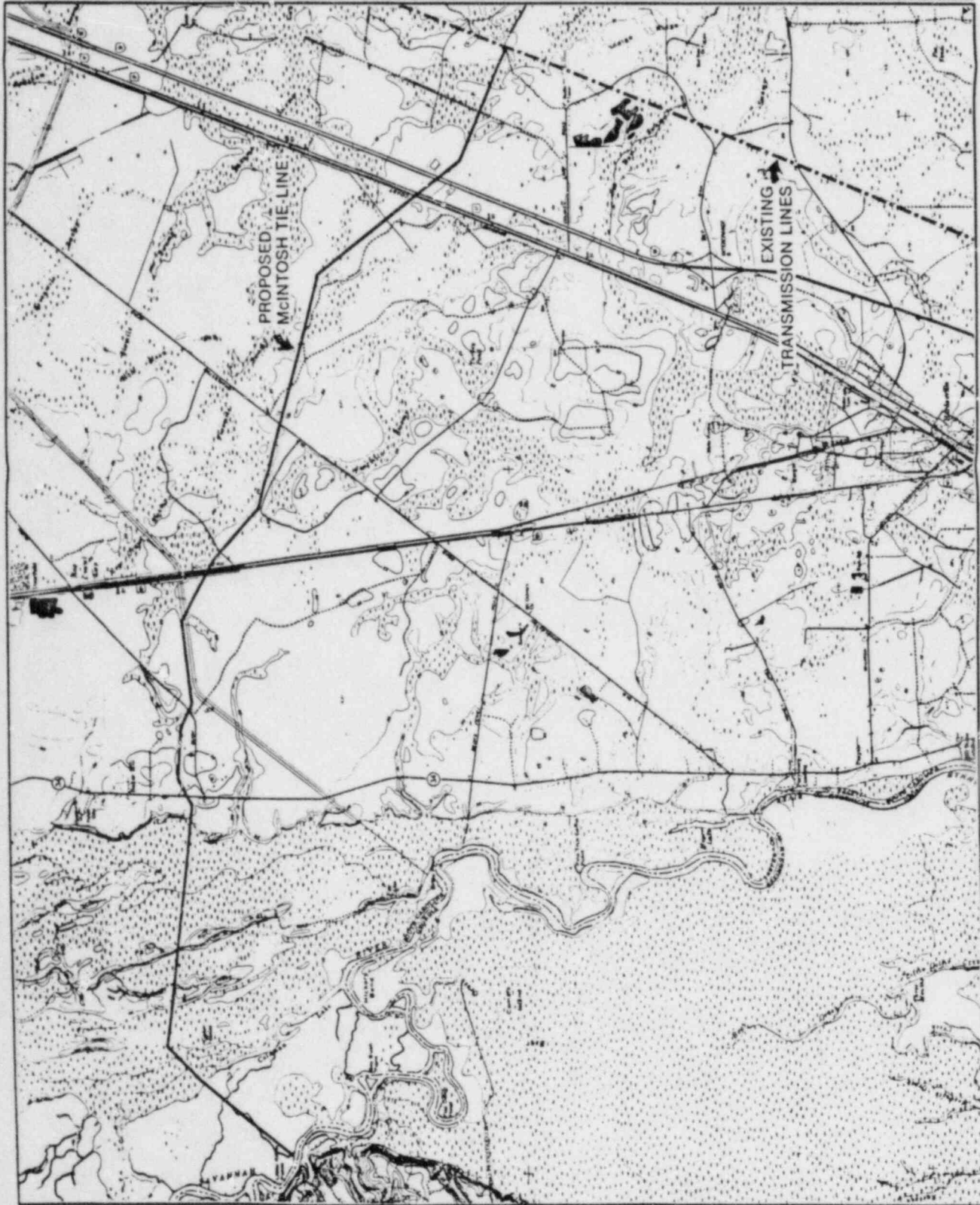
The Tawcaw-Chastain association consists of poorly drained soils on level floodplains which are frequently inundated. Soils are strongly acidic with water tables at or near the surface at least 6 months per

Figure 1
LOCATION OF PROPOSED
McINTOSH TIE-LINE
IN JASPER COUNTY,
SOUTH CAROLINA

SOURCE: ESE, 1983



SOUTH CAROLINA
ELECTRIC & GAS COMPANY



year. Although wooded, these soils have severe forestry limitations due to equipment use problems and seedling mortality. Farming of row crops or urban uses of these soils are impractical.

The Buncombe-Santee association characterizes the parallel ridges along the Savannah River swamp. Soils can be excessively to poorly drained but generally level. Woodlands dominate in this association with moderate forestry limitations due to equipment use problems and seedling mortality. Low potential exists for either farming or urban uses.

The Eulonia association consists primarily of moderately well-drained level soils with some depressions containing poorly drained soils. Acidity ranges from very strong to moderate. Although primarily wooded, these soils have high potential for row crops. Moderate forestry limitations exist due to equipment usage problems and seedling mortality. On moderately well-drained areas, medium potential exists for urban uses.

The Santee association paralleling the west side of State Highway 34 consists of very poorly drained level soils. Mainly wooded, this association is frequently flooded. Severe forestry limitations exist due to equipment usage and seedling mortality. High to medium potential exists for row crops and pasture but is limited by poor drainage and slow permeability. Ditching is frequently employed for farming. Low potential exists for urban uses due to flooding potential.

The Argent association consists of poorly drained, nearly level soils in areas of poorly defined drainage. The soils have slow permeability and high available water capacity. Most of this association is wooded with severe forestry limitations due to equipment use problems. Medium potential exists for small grain and row crops with high potential for pasture. Low potential exists for urban uses due to wetness and shrink-swell potential.

The Argent-Okeetee association is a predominant type along the proposed route and is characterized by poorly drained to somewhat poorly drained nearly level soils. Most of this association is wooded, with severe forestry limitations in relation to the use of equipment. Medium potential exists for small grains and row crops with high potential for pasture. Low potential exists for urban uses due to wetness and shrink-swell potential.

2.3 LAND USE

Nearly the entire proposed McIntosh Tie-Line traverses undeveloped lands, with the exception of minor areas used for farming, transportation, or utilities. The majority of the route is wooded and either is or has been commercially harvested. The majority of the route is owned by a timber company and a hunting club.

No residential or commercial structures occur on or adjacent to the proposed 100-ft right-of-way. No such development is likely to occur in the future due to the ownership and soil suitability of the route.

There are no zoning requirements for Jasper County outside of the major town boundaries. No current land use plan has been developed (Z. Ingram, Jasper County Development Board, Personal Communication, 1983).

One future recreation area will occur adjacent to the proposed route although not within the route. The South Carolina Department of Parks, Recreation, and Tourism has acquired property for and is planning the Jasper County State Park. The park will be located northeast of Hardeeville along I-95 and is bordered generally by I-95 on the west, the Bob Dam Swamp on the south, and the proposed McIntosh Tie-Line on the north. The eastern park boundary will include the existing Ridgeland-Hardeeville transmission lines. At this time, no park improvements to this property have been made.

USDA (1980b) designates prime farmlands in Jasper County. Prime farmlands are defined as those lands with the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, as is available for these uses. Prime farmlands are found just to the north of the proposed route along State Highway 34 and just immediately south of the route at the US 17/I-95 crossing.

2.4 VEGETATION

Most of the proposed route is forested due to the owners' past and current uses of the land. Six major vegetation communities are found along the route and include tupelo-cypress swamps, hardwood river bottoms, pine savannahs, pine plantations, old growth pine communities, and ruderal areas.

Tupelo-cypress dominates the route from the river eastward blending gradually into hardwood bottom-type vegetation. Tupelo-cypress communities are dominated by water tupelo (Nyssa aquatica) and bald cypress (Taxodium distichum). Less common overstory vegetation includes red maple (Acer rubrum), cottonwood (Populus heterophylla), and sycamore (Platanus occidentalis). Understory is comprised of red bay (Persea borbonia), red maple, and sugarberry (Celtis laevigata). Ground cover is virtually nonexistent due to frequent flooding. In many areas, cypress knees dominate the forest floor. Poison ivy (Toxicodendron radicans) occurs on tree trunks while Spanish moss (Tillandsia usneoides) and mistletoe (Phoradendron flavescens) can be found in the canopy.

Adjacent to and occasionally interspersed with the tupelo-cypress community is the hardwood bottom community. This community is also found in other, smaller, and lower areas along the route. The dominant overstory species is sweetgum (Liquidambar styraciflua) with laurel oak (Quercus laurifolia), cottonwood, red maple, and loblolly pine (Pinus taeda) appearing occasionally. Understory is comprised of red maple, sweetgum, sugarberry, hawthorne (Crataegus sp.), and river birch (Betula

nigra). A few grass and sedge (Carex sp.) species comprise the ground vegetation. Again, poison ivy is common along the ground and on tree trunks.

The various pine communities dominate eastward from State Highway 34. Pine savannahs are particularly common along the route from US 321 to I-95. These communities are fire-maintained principally for purposes of quail hunting. Widely scattered pines, primarily longleaf (Pinus palustris), dominate these flat, moist communities. Very little understory occurs due to frequent burning. Ground cover is comprised of grasses such as wiregrass (Aristida stricta), broomsedge (Andropogon sp.), and panic grass (Panicum sp.). Subcommunities exist within savannahs, a common one being pond cypress (Taxodium ascendens) depressions. These areas represent a wetter soil condition and thus are characterized by pond cypress, sweetgum, and a host of wet-type grasses and sedges. Insectivorous plants such as the hooded pitcher plant (Sarracenia minor) and sundew (Drosera sp.) may be locally abundant. Orchids may also be found in some of these areas, although none could be identified during the late fall survey. Much of the pine savannah habitat along the route had been ditched for better drainage.

Pine plantations were represented by small parcels crossed occasionally by the route. These communities are represented by even-aged stands of southern pines: loblolly, longleaf, or slash (Pinus elliottii). Younger stands crossed were fairly well maintained so little other vegetation occurred other than pioneer weed species. An older stand encountered east of I-95 on a moist site included sweetgum, red maple, red bay, ironwood (Carpinus caroliniana), and wax-myrtle (Myrica cerifera) in the understory. Very little ground cover existed due to the dense layer of pine needles.

Old growth pine communities characterized the route primarily between State Highway 34 and US 321. These are drier sites compared to most along the route. Periodic fires reduce shrub growth, although hardwoods

are found in the canopy and, occasionally, understory. Both longleaf and loblolly pines are found along with pignut hickory (Carya glabra), sweetgum, persimmon (Diospyros virginiana), bluejack oak (Quercus incana), blackjack oak (Quercus marilandica), and white oak (Quercus alba). A recent fire had eliminated most shrub growth from this area, although dwarf huckleberry (Gaylussacia dumosa) was found. Several herbaceous species can be expected in these communities as well.

Ruderal communities are those areas where disturbance (usually by man) has created small communities which differ from surrounding communities. Examples are roadsides, fencerows, powerline rights-of-way, and canal rights-of-way. The old ridges or levees paralleling the Savannah River are used for logging access and could also be considered a ruderal community. Resultant vegetation can often be diverse but is characterized usually by grasses, herbs, shrubs, and immature trees. Typical species found included greenbrier (Smilax sp.), sweetgum, blackberry (Rubus sp.), winged sumac (Rhus copallina), laurel oak, slash and longleaf pines, wax myrtle, and saw palmetto (Serenoa repens). These communities represent a minor part of the composition of the route, and vegetation can often change due to continual disturbance (i.e., herbicide spraying, mowing, and vehicular traffic).

2.5 WILDLIFE

The potential exists for a high diversity of wildlife species to occur in Jasper County due to the proximity of the Savannah River, Savannah River National Wildlife Refuge, and the Atlantic Coast. Varied habitats encountered along the proposed McIntosh Tie-Line also have the potential for a variety of wildlife species. Species expected to be found in the project vicinity are well documented in Zingmark (1978). Table 1 lists wildlife species or signs observed during the route walkover.

2.6 ENDANGERED AND THREATENED SPECIES

Both the U.S. Fish and Wildlife Service (FWS) and South Carolina Wildlife and Marine Resources Department (SCWMRD) provide protection for

Table 1. Wildlife Species or Signs Observed Along the Proposed McIntosh Tie-Line, November 7 through 11, 1983

Common Name	Scientific Name
<u>Bird Species</u>	
Great blue heron	<u>Ardea herodias</u>
Great egret	<u>Casmerodius albus</u>
Turkey vulture	<u>Cathartes aura</u>
Red-tailed hawk	<u>Buteo jamaicensis</u>
Merlin	<u>Falco columbarius</u>
Kestrel	<u>Falco sparverius</u>
Bobwhite quail	<u>Colinus virginianus</u>
Mourning dove	<u>Zenaida macroura</u>
Belted kingfisher	<u>Megasceryle alcyon</u>
Common flicker	<u>Colaptes auratus</u>
Pileated woodpecker	<u>Dryocopus pileatus</u>
Blue jay	<u>Cyanocitta cristata</u>
Common crow	<u>Corvus brachyrhynchus</u>
Tufted titmouse	<u>Parus bicolor</u>
Carolina wren	<u>Thrythorus ludovicianus</u>
Eastern bluebird	<u>Sialia sialis</u>
Starling	<u>Sturnus vulgaris</u>
Eastern meadowlark	<u>Sturnella magna</u>
Cardinal	<u>Cardinalis cardinalis</u>
<u>Mammal Species</u>	
Opossum	<u>Didelphis virginiana</u>
Eastern cottontail	<u>Sylvilagus floridanus</u>
Beaver	<u>Castor canadensis</u>
Fox squirrel	<u>Sciurus niger</u>
Raccoon	<u>Procyon lotor</u>
Wild hog	<u>Sus scrofa</u>
White-tailed deer	<u>Odocoileus virginianus</u>
<u>Amphibian/Reptile Species</u>	
None observed	

Source: ESE, 1983.

endangered and threatened species. Federal protection is afforded under the Endangered Species Act of 1973 (PL 93-205, as amended) and under Section 4 of the Act, Associated Critical Habitats. The current list of federally endangered and threatened species is found in the Federal Register, July 27, 1983 (48 FR 34182). Species listed currently by the state can be found in SCWMRD Rule 123-150, as amended.

The definitions between the federal law and the South Carolina law for the terms "endangered species" and "threatened species" vary slightly but generally are defined as follows:

1. Endangered species--Any resident species which is in danger of extinction throughout all or a significant portion of its range due to habitat destruction, exploitation, natural mortality, or any number of contributing factors.
2. Threatened species--Any resident species which is likely to become an endangered species in the foreseeable future if appropriate measures are not taken.

A review of federal and South Carolina listed species showed a number of endangered or threatened wildlife species occurring or potentially occurring in Jasper County in the vicinity of the proposed route. These species, their status, and potential for occurrence along the McIntosh Tie-Line are listed in Table 2. Discussions of each of these species, preferred habitats, and likelihood of occurrence are discussed below.

Shortnose Sturgeon

The shortnose sturgeon is a large fish inhabiting fresh, estuarine, and salt water. Siltation of preferred habitat and overfishing are the major reasons for its decline. SCWMRD (1983) lists one record of a specimen caught in a gillnet in 1980 in the Savannah River just west of Hardeeville. Due to a slight possibility of other individuals still occurring in this area, likelihood of occurrence was listed as low at the river crossing in the proposed right-of-way.

Table 2. Endangered/Threatened Species Ranging In or Near Jasper County, South Carolina

Common Name	Scientific Name	Status	Likelihood of Occurrence* Along Proposed Route
		Federal/State	
Shortnose sturgeon	<u>Acipenser brevirostrum</u>	Endangered/Endangered	Low
Gopher tortoise	<u>Gopherus polyphemus</u>	— /Endangered	Low
American alligator	<u>Alligator mississippiensis</u>	Threatened/Threatened	High
Southern bald eagle	<u>Haliaeetus l. leucocephalus</u>	Endangered/Endangered	Medium
Swallow-tailed kite	<u>Elanoides forficatus</u>	— /Endangered	Low
Red-cockaded woodpecker	<u>Picoides borealis</u>	Endangered/Endangered	High
Wood stork	<u>Mycteria americana</u>	— /Threatened	Medium
Cooper's hawk	<u>Accipiter cooperii</u>	— /Threatened	Medium
American osprey	<u>Pandion haliaetus</u>	— /Threatened	Medium

* Based on habitat and records from Zingmark (1978) and SCMRD (1983).

Sources: Zingmark, 1978.
SCMRD, 1983.
ESE, 1983.

Gopher Tortoise

The gopher tortoise inhabits xeric habitats, particularly sand ridges, where it excavates burrows. In South Carolina, this species is found only in the southernmost end of the state (Zingmark, 1978). Habitat is more suitable in the Ridgeland-Tillman area of the county and is where all the records for the county occur (SCWMRD, 1983). Little available habitat plus conversations with Okeetee Hunt Club employees indicate a lack of gophers in the region of the proposed route. Likelihood of occurrence along the route is low.

American Alligator

The alligator is a fairly common inhabitant of swamps, rivers, lakes, and even brackish waters in South Carolina. Although none were observed, it is highly likely individuals exist along the route in the Savannah River and associated tupelo-cypress swamp.

Southern Bald Eagle

The eagle occurs in coastal South Carolina along river and lake edges. Recent declines of this bird are attributed to egg shell thinning from pesticides and illegal shooting. Individuals have been observed along the Savannah River in Jasper County and SCWMRD (1983) lists one known nest occurring in the Savannah River National Wildlife Refuge. There is a medium potential for eagles occurring in the vicinity of the proposed route, especially at the river crossing.

Swallow-Tailed Kite

The swallow-tailed kite is an uncommon summer resident of the coastal counties of South Carolina. It prefers river swamps, woodlands, and open fields near water. Zingmark (1978) does list records for Beaufort County but none for Jasper County. It could occur along the Savannah River near the proposed route, but likelihood is low.

Red-Cockaded Woodpecker

This woodpecker is unique in that it inhabits living pine trees usually afflicted with red heart disease. The birds live in colonies and drill cavities into appropriate mature pines. Effective timber harvesting practices have reduced suitable old trees for habitat for this species. Zingmark (1978) lists this bird's occurrence in all coastal counties, although SCWMRD (1983) records did not indicate any known locations for Jasper County.

Immediately east of State Highway 34, the proposed route originally crossed a mature pine forest comprised of both longleaf and loblolly pines. Two cavity trees were found along the right-of-way, one of which appeared active, the other, possibly abandoned. Resin flows covering fairly recent burn marks on the trees indicated both cavities have been active within the past few years.

Subsequent to this finding, SCE&G consulted SCWMRD biologists concerning potential impacts resulting from construction along this route. While onsite, the biologists discovered additional cavity trees and observed individual birds. A new route through this area was identified by SCE&G and surveyed by SCWMRD. No evidence of cavity trees on this route was found, so it was decided by both SCWMRD and SCE&G to be an acceptable alternative. This revised route is depicted in Figure 2. Based on available habitat, cavity trees, and observations of the birds, likelihood of occurrence for red-cockaded woodpeckers is considered high.

Wood Stork

This bird is North America's only native stork and is found fairly commonly in South Carolina's coastal counties (Zingmark, 1978). Colonial in nature, the woodstork nests in rookeries and feeds in all freshwater habitats and saltwater marshes. It is possible this bird could be found along the Savannah River or backwaters such as Coleman Lake near the proposed route, so its likelihood of occurrence is listed as medium.

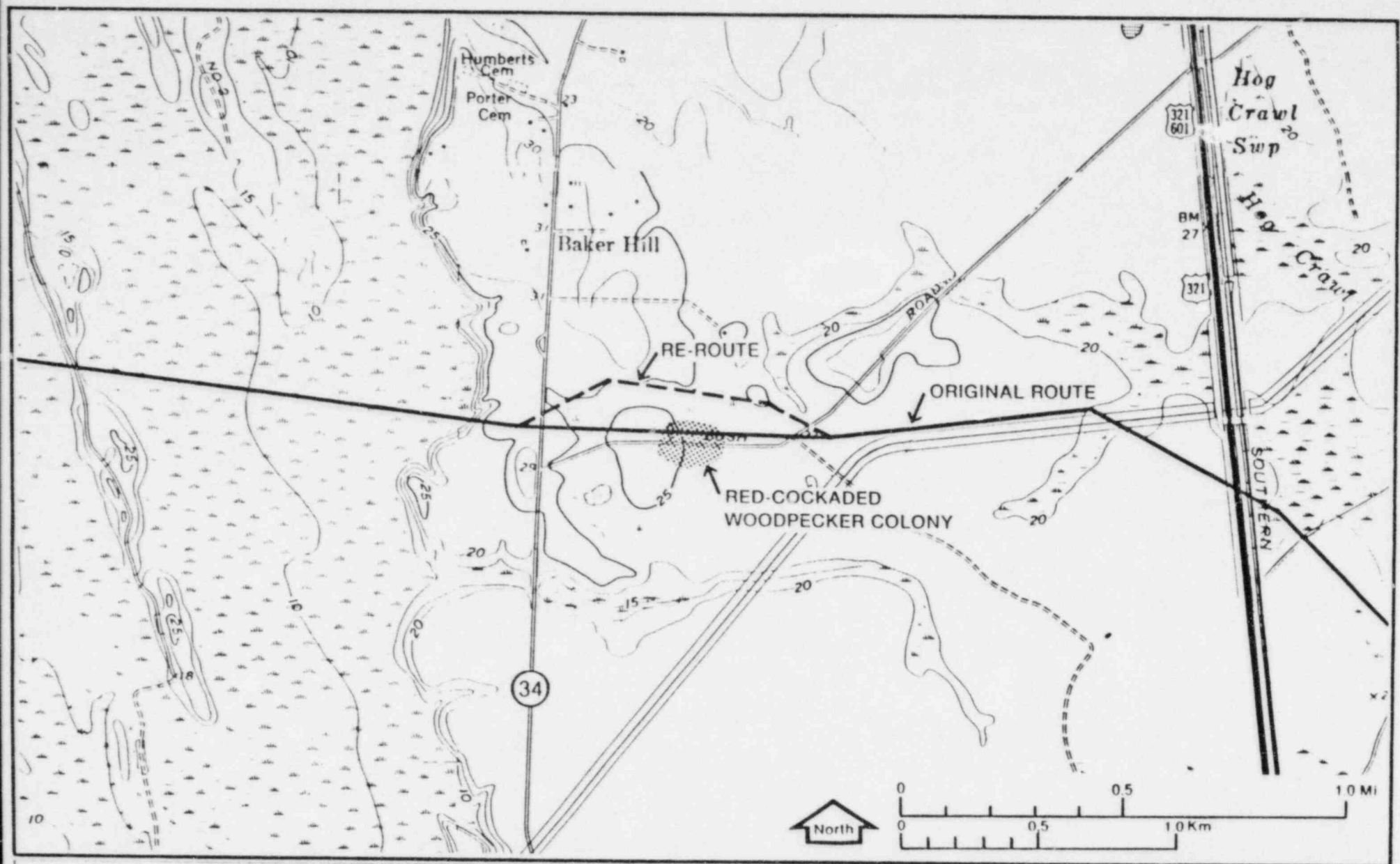


Figure 2
LOCATION OF PROPOSED RE-ROUTE AROUND RED-COCKADED
WOODPECKER HABITAT

SOURCE: ESE, 1983.

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Cooper's Hawk

This hawk inhabits ecotone situations such as forest edges or river banks. Zingmark (1978) lists this species as a permanent resident and as fairly common in South Carolina's coastal counties, although a recent decline in numbers has been observed. Suitable habitat of numerous broken pine woodlands along the proposed right-of-way provides a medium likelihood of occurrence of this bird.

American Osprey

The osprey, like the eagle, prefers forested areas near water bodies. Decline of this species is also attributed to pesticide-related egg shell thinning. Zingmark (1978) lists the osprey as an uncommon resident of the area. SCWMRD (1983) lists an osprey sighting near the Savannah River National Wildlife Refuge. Suitable habitat along the Savannah River provides a medium potential for this bird's presence.

3.0 ASSESSMENT OF POTENTIAL IMPACTS

The proposed McIntosh Tie-Line will produce both positive and negative effects on land use and environmental resources. Three major activities will accompany construction of this transmission line: route clearing, construction which includes tower construction and conductor stringing, and follow-up right-of-way maintenance. These activities will create varied impacts depending on specific methods employed.

General specifications anticipated by SCE&G include clearing to be performed both manually and by machine. The wetland area along the Savannah River will necessitate hand cutting of tall growing vegetation. It is anticipated that slash will be left as it falls. Drier, upland sites will be first cut for merchantable timber, and remaining vegetation toppled by bulldozer. Slash will be piled and burned in these areas.

Right-of-way width will be 100 ft with two structure types employed. Steel H-frame structures will be used in wetlands, whereas wooden H-frame structures will be used in dry areas. With one exception, structure height will average 85 ft. The structure to be employed for spanning the Savannah River will be 110 ft tall.

Periodic maintenance will be performed as needed. Maintenance techniques include mechanical clearing as well as chemical spraying. Spraying will be performed according to manufacturer's labels and in compliance with state and local regulations.

The anticipated effects of these activities on the environment are discussed below.

3.1 PHYSIOGRAPHIC FEATURES/TOPOGRAPHY

Since the proposed line will follow or conform to natural contours, no changes are anticipated to the topography of the area. This line will be built to the edge of the Savannah River and will not involve

bridging, damming, or other stream alterations. No other natural watercourses are crossed by the line.

3.2 SOILS

Use of heavy equipment in line clearing and construction will result in some topsoil disturbance and soil compaction. In the wetland areas, use of heavy equipment will be minimized as most clearing will be manual. Soils will not be displaced from the route, and since a patrol road will not be built along the right-of-way, introduction of fill material will be minimal.

Erosion is not anticipated to be a problem because of the nearly level topography and slopes of less than 2 percent. Wind erosion also will not be a factor because of the predominantly vegetated terrain surrounding the right-of-way. During construction, as much herbaceous and shrubby ground cover as possible will be left which will further decrease the erosion potential.

3.3 LAND USE

Impacts to land use will be minimal. No existing or planned development will be affected by the route. Existing uses will be only slightly altered. On timber company lands and other areas managed for timber production, the proposed route will result in the end of timber production within and along the edge of the right-of-way. Since a majority of the route traverses hunt club lands managed for openland and ecotonal species such as quail and deer, no significant change to this land use should occur. In fact, the right-of-way will probably be used extensively by hunters. Agriculture is a minor land use along the proposed route, but farming practices could continue after the line is built. There will be a slight loss of available productive land wherever structures are placed. Prime farmland does not appear to occur on the proposed route (USDA, 1980b); thus, no impacts to this resource would be anticipated.

Since no zoning ordinances exist for rural areas of Jasper County, the line will not require zoning changes or cause impacts to existing zoning. Only four landowners are affected by the proposed right-of-way, and appropriate easements will be obtained. Appropriate permits and approvals will be obtained for crossing state and federal highways.

Impacts to human populations will be virtually non-existent due to the remoteness of the route from any population centers. The line will be constructed in accordance to the National Electric Safety Code and SCE&G's construction safety specifications to reduce potential health and safety impacts. Construction crews and equipment may cause minor traffic inconveniences to motorists along the major highways crossed, but this activity will be temporary.

Visual impacts will be minor due to the remoteness of the route. Areas of high human interaction with the route (road crossings) will produce minimal visual intrusion due to the nearly perpendicular crossings of roadways by the line and predominant forest cover which will help screen the line from view. It is anticipated that existing vegetation along the northern boundary of the Jasper County State Park will be sufficient to screen the line from park users' view.

There should be little or no adverse socioeconomic impacts. No social services, schools, hospitals, or other emergency services will be affected by the route. A minor positive effect will be an economic gain to the local towns resulting from expenditures by construction workers on the line. The line will also enhance the area in the form of improved and more reliable electric service. Landowners crossed by the line will receive fair compensation for their affected land.

The only recreational resource that exists near the line is the new Jasper County State Park at the eastern terminus of the route. It is unlikely any adverse impacts will result to the park or its users since the line is not within the park and should be completely screened from

the park by existing vegetation. Two transmission lines currently exist along the eastern edge of the park and I-95 borders on the west, so park planning should include provisions for such existing and future bordering development.

3.4 VEGETATION

Construction and maintenance of any transmission line requires removal of all tall-growing vegetation for reliability purposes. Construction of this line will require removal of all such species within the 100-ft right-of-way in addition to any tall species along the edge, which if they fell would endanger the integrity of the structures and conductors. This practice means a net loss of woody vegetation along the route. However, herbaceous and some shrubby vegetation will increase in the absence of a canopy cover.

Most noticeable vegetation loss will occur in the Savannah River swamp where old-growth tupelo and cypress will be removed. The opened canopy will allow increased wet herbaceous and shrub species to invade what is now an area fairly devoid of ground cover. This vegetation loss will also cause some microclimate temperature increases within the right-of-way, but the tremendous size of the wetland and available moisture will help minimize this impact. Less noticeable vegetation loss will occur on the drier pine communities where, in many instances, density of tree species is low. This is especially true in the pine savannah areas along the corridor.

Maintenance will require either mechanical or chemical treatment of right-of-way vegetation. Both these treatments will select against woody species and favor herbaceous species.

Since South Carolina does not have an official endangered plant species list and since no plants found on the federal list are known to occur in Jasper County, it is unlikely any impacts will result to such species.

3.5 WILDLIFE

In general, impacts to wildlife will not be as great as to vegetation because wildlife species are mobile. A 100-ft wide right-of-way represents an insignificant change in habitat for most species. Smaller, less mobile species would feel the impact more.

Because of tree removal, tree-nesting birds and some mammals may be displaced. Woodpeckers, squirrels, raccoons, and opossums would be such examples. However, the resultant vegetative change on the right-of-way would increase habitat for shrub and ground-nesting/feeding birds and mammals.

Right-of-way vegetation in forested areas serves as an ecotone and favors the popular game species, quail and deer, of the region. Certain raptors such as the kestrel, merlin, and Cooper's hawk, hunt over ecotonal situations created by powerline rights-of-way.

The transmission line does not cross any major waterfowl nesting or staging areas thus reducing likelihood of collision with conductors. The Savannah River will be crossed by the tie-line into the McIntosh Plant. Waterfowl would be expected to use the river, although required Coast Guard height of the line will help minimize potential collision problems.

No aquatic impacts are expected because no construction will occur in any water bodies. Careful construction practices will be employed in the Savannah River swamp to reduce siltation potential.

3.6 ENDANGERED AND THREATENED SPECIES

The nine endangered/threatened species discussed in the previous chapter as possibly occurring on or along the proposed McIntosh Tie-Line are discussed in the following sections in relation to possible effects of construction or operation of the line.

Shortnose Sturgeon

The only possible impacts that could occur to the sturgeon would be excessive siltation of the Savannah River during construction. This impact will not occur since no structures will be placed in the river, and careful construction techniques will be employed along the banks.

Gopher Tortoise

Very low likelihood of occurrence due to lack of suitable habitat and failure to find existing burrows during the walkover indicate this species should not be impacted by line construction.

American Alligator

Undoubtedly present in and along the Savannah River, the alligator should not be adversely affected other than possible temporary displacement during construction. Habitat is plentiful all along the Savannah River.

Southern Bald Eagle

Although eagles may hunt over the proposed route, records and personal observations indicate that none of the birds nest anywhere near the route. Since collisions and electrocutions with power lines are more common in younger birds learning to fly, potential for impacts to the eagle seems minimal.

Shallow-Tailed Kite

The extremely low likelihood of encountering this bird along the right-of-way makes potential impacts negligible.

Red-Cockaded Woodpecker

The route as originally located would have resulted in removal of two cavity trees and in possible displacement of the birds. The re-route developed by SCE&G in cooperation with SCWMRD has reduced potential impacts to this species. The new route parallels an edge of a field, reducing the potential number of trees that must be cut. No cavity

12/19/83

trees were discovered on the new route, so displacement of the birds should not occur. The new route crosses less potential habitat and should not prevent birds from continuing to use this area.

Wood Stork

Although this bird may be found along the proposed route, SCWMRD records do not indicate a rookery in the vicinity. It is, therefore, unlikely the proposed transmission line would create any potential impacts to this bird.

Cooper's Hawk

This is one species which would probably benefit from construction of the transmission line. This bird prefers edge or ecotonal situations for hunting, and the proposed right-of-way through forested areas will create this situation. No adverse impacts are expected.

American Osprey

No osprey nests were detected along the proposed route. These birds typically build nests in transmission structures so construction of the line could have benefits in this aspect. No adverse impacts are expected.

4.0 CONCLUSIONS

The proposed McIntosh Tie-Line represents a carefully planned route which should result in minimal impacts to ecological and land use resources. With the exception of the unavoidable impacts of having to cross the Savannah River swamp and of having to remove tall-growing vegetation, as a whole adverse impacts to human welfare, land use, wildlife, and endangered species are avoided.

Potential impacts to the endangered red-cockaded woodpecker have been avoided through the joint efforts of SCWMRD and SCE&G.

BIBLIOGRAPHY

Barry, J.M. 1980. Natural Vegetation of South Carolina. Univ. of South Carolina Press, Columbia.

Lowcountry Council of Governments. 1979. County Facilities Plan-Jasper County. Lowcountry Council of Governments, Yemassee, South Carolina.

Office of the Governor. 1973. Land Use Survey and Analysis, Jasper County, South Carolina. Division of Administration Physical and Economic Development, Columbia, South Carolina.

Rayner, D.A. (Chairman). 1979. Native Vascular Plants Endangered, Threatened, or Otherwise in Jeopardy in South Carolina. South Carolina Advisory Committee on Endangered, Threatened, or Rare Plants.

South Carolina Wildlife and Marine Resources Department. 1983. Heritage Trust Program - Inventory of Natural Features of Jasper County (Computer Printout Plus Map). Columbia, South Carolina.

USDA Soil Conservation Service. 1980a. Soil Survey of Beaufort and Jasper Counties, South Carolina. USDA/SCS.

USDA Soil Conservation Service. 1980b. Important Farmlands Map, Jasper County, South Carolina.

Zingmark, R.G. (Editor). 1978. An Annotated Checklist of the Biota of the Coastal Zone of South Carolina. Univ. of South Carolina Press, Columbia, South Carolina.

Additional information supplied by:

Jasper County Development Board, Ridgeland.

Okeetee Club, Ridgeland

South Carolina Department Parks, Recreation, and Tourism, Columbia

South Carolina Electric & Gas Company, Columbia

South Carolina Wildlife and Marine Resources Department, Ridgeland and Columbia



Date: _____

No.: _____

APPLICATION FOR CERTIFICATEUTILITY FACILITY SITING AND ENVIRONMENTAL PROTECTION ACTTRANSMISSION LINES AND SUBSTATIONSNAME OF APPLICANT: South Carolina Electric & Gas CompanyNAME OF LINE: McIntosh 230kV Tie Line (Yemassee-McIntosh)EXTENDING FROM: Existing Yemassee-Hardeeville 115kV Line R/WTO: The Savannah RiverESTIMATED LENGTH 9.0 MILES WIDTH OF RIGHT-OF-WAY 100 FEETDESIGN VOLTAGE 230 KV NORMAL CAPACITY: _____ MVACONDUCTOR: 1272 KCMIL ACSR CONFIGURATION FlatTYPES OF STRUCTURES: Steel H-Frame NOMINAL HEIGHT: 75' FEETWood Pole H-Frame NOMINAL HEIGHT: 75' FEET

NAMES OF SUBSTATIONS: _____

LOCATION: _____

TECHNICAL: DESIGN KVA CAPACITY: _____

DESIGN NOMINAL OPERATING VOLTAGES: PRIMARY _____

SECONDARY _____

PHYSICAL DESCRIPTION OF SUBSTATION: _____

AREAS IN WHICH FACILITIES ARE TO BE LOCATED IN SOUTH CAROLINA

COUNTIES: Jasper _____

MUNICIPALITIES: None _____

NAMES OF NATIONAL OR STATE PARKS OR FORESTS DIRECTLY EFFECTED
OR NEAREST THE FACILITY

None _____

OTHER AREAS TO BE CONSIDERED OR CROSSED

DESIGNATED HISTORICAL,

SCENIC, RECREATIONAL: None _____

MAJOR WATERWAYS: Savannah River _____

MAJOR HIGHWAYS: US 321 _____

US 17 _____

US I-95 _____

State 34 _____

PROPOSED SCHEDULE:

Application to be submitted to PSC:	January 26, 1984
Construction to be started:	February 15, 1984
Construction to be completed:	April, 1984

WHEREFORE, the Applicant, South Carolina Electric & Gas Company, respectfully requests the Commission to inquire into the matter herein and that the Commission grant Applicant a Certificate of Environmental Compatibility & Public Convenience & Necessity on an emergency basis and for such other and further relief as the Commission may deem just and proper under the circumstances.

South Carolina Electric & Gas Company

By:

Patricia T. Marcotsis

Patricia T. Marcotsis
Vice President - Governmental &
Regulatory Affairs (108)
South Carolina Electric & Gas Co.
Post Office Box 764
Columbia, South Carolina 29218
(803) 748-3396

FOR ADDITIONAL INFORMATION CONTACT:

Fred L. Cain
South Carolina Electric & Gas Co.
Post Office Box 764
Columbia, South Carolina 29218
(803) 748-3692

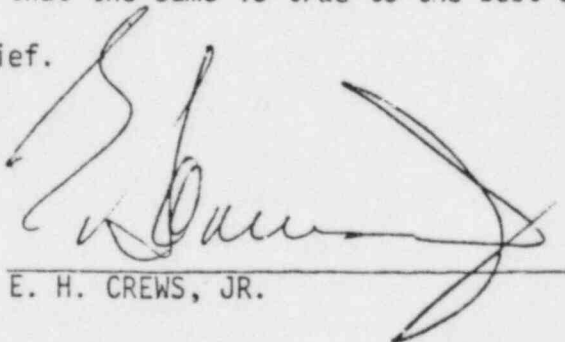
ATTACHMENTS:

Print of Route Map
Copies of Forwarding Letters to Agencies
Archeological Survey

STATE OF SOUTH CAROLINA }
COUNTY OF RICHLAND }

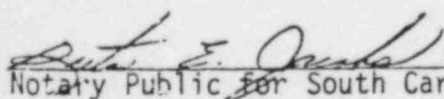
VERIFICATION

PERSONALLY appeared before me E. H. CREWS, JR., who, on oath, says that South Carolina Electric & Gas Company is a corporation and is the Applicant in the within matter; that he is Senior Vice President - Power Operations of said corporation and as such is authorized to make this verification on its behalf; that he knows the contents of the foregoing Application for a Certificate of Environmental Compatibility & Public Convenience & Necessity and that the same is true to the best of his knowledge, information and belief.


E. H. CREWS, JR.

SWORN to before me this

19th day of January, 1984.

 (L.S.)
Notary Public for South Carolina

My Commission Expires: January 16, 1990.

LIST OF AGENCIES SERVED WITH COPY OF APPLICATION:
(Copies of forwarding letters attached)

S. C. Department of Archives and History
S. C. Department of Health and Environmental Control
S. C. Department of Wildlife and Marine Resources
Institute of Archaeology and Anthropology
S. C. Water Resources Commission
S. C. Department of Parks, Recreation and Tourism
Jasper County Council

SOUTH CAROLINA ELECTRIC & GAS COMPANY

POST OFFICE BOX 764

COLUMBIA, SOUTH CAROLINA 29218

PATRICIA T. MARCOTSIS
VICE PRESIDENT, GOVERNMENTAL
AND REGULATORY AFFAIRS

January 26, 1984

Mr. Henry Simmons, Jr.
Chairman, County Council
Ridgeland, South Carolina 29936

Dear Mr. Simmons:

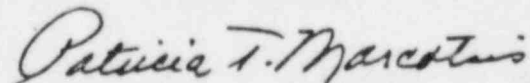
Enclosed is a copy of a Petition to the South Carolina Public Service Commission by South Carolina Electric & Gas Company for a Certificate of Environmental Compatibility & Public Convenience & Necessity on an emergency basis for the construction of the McIntosh 230 KV Tie-Line. The proposed transmission line is located in Jasper County approximately four (4) miles north of Hardeville, South Carolina, and is approximately nine (9.0) miles in length.

This Petition is being forwarded to you pursuant to §58-33-110 (6) South Carolina Code of Laws (1976), otherwise known as the "Utility Facility Siting and Environmental Protection Act." Route maps are included in the Petition and supporting data is available at South Carolina Electric & Gas Company's offices at 1426 Main Street, Columbia, South Carolina, and at Jacob Smart Boulevard (U.S. Highway 17) Ridgeland, South Carolina.

A statement setting out any comments concerning this project should be filed with the Public Service Commission no later than February 8, 1984.

If you have any questions concerning this Petition, please contact Mr. Fred L. Cain at 748-3692, or me at 748-3396.

Very truly yours,



Patricia T. Marcotsis

PTM/ggh

Enclosure

SOUTH CAROLINA ELECTRIC & GAS COMPANY

POST OFFICE BOX 764

COLUMBIA, SOUTH CAROLINA 29216

PATRICIA T. MARCOTSIS
VICE PRESIDENT, GOVERNMENTAL
AND REGULATORY AFFAIRS

January 26, 1984

Dr. Robert S. Jackson
Commissioner
SC Department of Health and
Environmental Control
2600 Bull Street Extension
Columbia, South Carolina 29201

Dear Dr. Jackson:

Enclosed is a copy of a Petition to the South Carolina Public Service Commission by South Carolina Electric & Gas Company for a Certificate of Environmental Compatibility & Public Convenience & Necessity on an emergency basis for the construction of the McIntosh 230 KV Tie-Line. The proposed transmission line is located in Jasper County approximately four (4) miles north of Hardeville, South Carolina, and is approximately nine (9.0) miles in length.

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Very truly yours,

Patricia T. Marcotsis
Patricia T. Marcotsis

PTM/ggh

Enclosure

SOUTH CAROLINA ELECTRIC & GAS COMPANY

POST OFFICE BOX 764

COLUMBIA, SOUTH CAROLINA 29218

PATRICIA T. MARCOTSIS
VICE PRESIDENT GOVERNMENTAL
AND REGULATORY AFFAIRS

January 26, 1984

Mr. Charles F. Lee
Director
SC Department of Archives and History
Post Office Box 11669
Columbia, South Carolina 29211

Dear Mr. Lee:

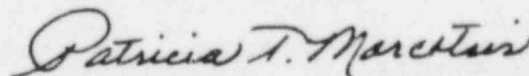
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Very truly yours,



Patricia T. Marcotsis

PTM/ggh

Enclosure

SOUTH CAROLINA ELECTRIC & GAS COMPANY

POST OFFICE BOX 764

COLUMBIA, SOUTH CAROLINA 29218

PATRICIA T. MARCOTSIS
VICE PRESIDENT GOVERNMENTAL
AND REGULATORY AFFAIRS

January 26, 1984

Dr. James A. Timmerman
Executive Director
SC Wildlife & Marine Resources Department
Post Office Box 167
Columbia, South Carolina 29202

Dear Dr. Timmerman:

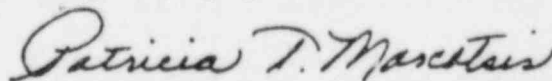
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If you have any questions concerning this Petition, please contact Mr. Fred L. Cain at 748-3692, or me at 748-3396.

Very truly yours,



Patricia T. Marcotsis

PTM/ggh

Enclosure

SOUTH CAROLINA ELECTRIC & GAS COMPANY

POST OFFICE BOX 764

COLUMBIA, SOUTH CAROLINA 29218

PATRICIA T. MARCOTSIS
VICE PRESIDENT, GOVERNMENTAL
AND REGULATORY AFFAIRS

January 26, 1984

Mr. Alfred H. Vang
Executive Director
SC Water Resources Commission
Post Office Box 50506
Columbia, South Carolina 29250

Dear Mr. Vang:

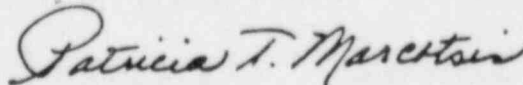
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Very truly yours,



Patricia T. Marcotsis

PTM/ggh

Enclosure

SOUTH CAROLINA ELECTRIC & GAS COMPANY

POST OFFICE BOX 764

COLUMBIA, SOUTH CAROLINA 29218

PATRICIA T. MARCOTSIS
VICE PRESIDENT GOVERNMENTAL
AND REGULATORY AFFAIRS

January 26, 1984

Mr. J. W. Lawrence
Assistant Director - Operations
SC Department of Parks, Recreation & Tourism
1205 Pendleton Street
Columbia, South Carolina 29201

Dear Mr. Lawrence:

Enclosed is a copy of a Petition to the South Carolina Public Service Commission by South Carolina Electric & Gas Company for a Certificate of Environmental Compatibility & Public Convenience & Necessity on an emergency basis for the construction of the McIntosh 230 KV Tie-Line. The proposed transmission line is located in Jasper County approximately four (4) miles north of Hardeville, South Carolina, and is approximately nine (9.0) miles in length.

This Petition is being forwarded to you pursuant to §58-33-110 (6) South Carolina Code of Laws (1976), otherwise known as the "Utility Facility Siting and Environmental Protection Act." Route maps are included in the Petition and supporting data is available at South Carolina Electric & Gas Company's offices at 1426 Main Street, Columbia, South Carolina, and at Jacob Smart Boulevard (U.S. Highway 17) Ridgeland, South Carolina.

A statement setting out any comments concerning this project should be filed with the Public Service Commission no later than February 8, 1984.

If you have any questions concerning this Petition, please contact Mr. Fred L. Cain at 748-3692, or me at 748-3396.

Very truly yours,

Patricia T. Marcotsis
Patricia T. Marcotsis

PTM/ggh

Enclosure

SOUTH CAROLINA ELECTRIC & GAS COMPANY

POST OFFICE BOX 764

COLUMBIA, SOUTH CAROLINA 29218

PATRICIA T. MARCOTSIS
VICE PRESIDENT - GOVERNMENTAL
AND REGULATORY AFFAIRS

January 26, 1984

Dr. Robert L. Stephenson
State Archaeologist
Institute of Archaeology and Anthropology
Maxcy College
University of South Carolina
Columbia, South Carolina 29208

Dear Dr. Stephenson:

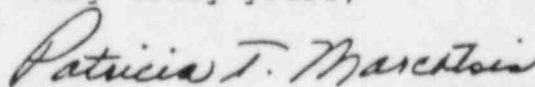
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If you have any questions concerning this Petition, please contact Mr. Fred L. Cain at 748-3692, or me at 748-3396.

Very truly yours,



Patricia T. Marcotsis

PTM/ggh

Enclosure

Consultations

The following organizations have been consulted informally on this project:

- S. C. Department of Archives and History
- S. C. Department of Health and Environmental Control
- S. C. Department of Wildlife and Marine Resources
- S. C. Water Resources Commission
- S. C. Department of Parks, Recreation and Tourism

Yemassee-McIntosh Tie Line Between
SCE&G and Savannah Electric Power Company
Statement of Need and Necessity

The Yemassee-McIntosh tie line is an extension of SCE&G's Yemassee-Hardeeville line to Savannah's McIntosh station. It is being constructed for several reasons: It will provide improved service reliability to the Hardeeville and Yemassee areas by providing SCE&G with a second, 115 kV source into Hardeeville. The tie will also improve service reliability to the McIntosh generation station by providing Savannah Power with another 115 kV source.

This tie will also establish an interconnection to facilitate power transactions between SCE&G and Savannah Power. SCE&G has contracted to sell Savannah Power approximately 20 MW of capacity. This arrangement will start when the line is completed and continue for 30 months.

The construction of this line for 230 kV will allow for future transfer capability needs between the two companies.

APL, III

1/18/84

SUMMARY OF ENVIRONMENTAL IMPACT STUDY

The McIntosh Tie Line will provide improved service reliability to the Hardeeville and Yemassee areas. The tie will also establish an interconnection to facilitate economic power transactions between SCE&G and Savannah Power.

The proposed route is a carefully planned route which should result in minimal impacts to ecological and land use resources. With the exception of the unavoidable impacts of having to cross the Savannah River Swamp and at having to remove tall-growing vegetation, as a whole, adverse impacts to human welfare, land use, wildlife, and endangered species are avoided.

Potential impacts to the endangered red-cockaded woodpecker have been avoided through the joint efforts of the South Carolina Wildlife & Marine Resources Department and South Carolina Electric & Gas Company.

All pertinent archeological sites will be marked and avoided by design and construction activities to minimize impact.

The only irreversible and irretrievable commitments of resources would be labor and moderate amounts of copper, steel, aluminum, and petroleum products used in construction.

CULTURAL RESOURCES ASSESSMENT

An archaeological study has been made on the proposed route. A preliminary summary will accompany this report. A finalized report will be issued later.

All pertinent sites will be marked and avoided by design and construction activities as recommended to avoid impacting potentially eligible sites.

Site 38JA87 (as referenced in report) is located in an open field. This area requires no clearing for construction and no structures will be located in this area. There will be only overhead conductors spanning the area. During construction this area will be marked and vehicle activity will be limited to the existing field road.

By these actions we will be avoiding any impact to this area.

BEFORE

THE PUBLIC SERVICE COMMISSION OF
OF SOUTH CAROLINA

DOCKET NO. 84-33-E, ORDER NO. 84-109

February 14, 1984

IN RE: Application of South Carolina)
Electric & Gas Company for a)
Certificate of Environmental)
Compatibility and Public)
Convenience and Necessity for)
the Yemassee-McIntosh 230 KV)
Tie-Line.)

ORDER
GRANTING
CERTIFICATE

I

INTRODUCTION

This matter comes before the South Carolina Public Service Commission (hereinafter "the Commission") by way of the Application of South Carolina Electric & Gas Company (hereinafter "SCE&G" or "the Company") for a Certificate of Environmental Compatibility and Public Convenience and Necessity, in accordance with provisions of S. C. Code Ann., §58-33-10 et seq. (1976).

The Company's Application proposed the construction of a 230 KV Tie-Line in Jasper County. This Tie-Line, known as the Yemassee-McIntosh Tie-Line, is an extension of SCE&G's Yemassee-Hardeeville line to the McIntosh station of Savannah Electric Power Company. The Company's Application asserted that construction of the proposed Tie-Line is necessary to serve the increasing power demand and to provide reliable service to Savannah Electric Power Company.

SCE&G and Savannah Electric Power Company entered into a Limited Term Capacity Contract, dated April 26, 1983, for the sale of twenty (20) megawatts of capacity and associated energy from SCE&G. Under the terms of the contract, SCE&G agreed to deliver said capacity to Savannah Electric Power Company on or about June 1, 1984. Recently, however, Savannah Electric Power Company requested that SCE&G commence delivering said capacity under contract at an earlier date, if possible. In order for the necessary construction work to be completed for erection of the transmission facilities to permit interconnection with facilities of Savannah Electric Power Company for delivery of said capacity, SCE&G requested that the Commission waive the normal notice and hearing requirements and issue a certificate on an emergency basis under §58-33-110, subparagraph six (6), of the Code of Laws of South Carolina 1976. This will allow construction to begin on or about February 15, 1984.

Accordingly, the Commission finds that no notice or public hearing is necessary and the requirements for such are hereby waived.

II

THE COMPANY

South Carolina Electric & Gas Company, organized and doing business in the State of South Carolina, is authorized by law to operate as a public utility engaged in the generation, purchase,

transmission, distribution and sale of electricity, as well as in the purchase, transmission, distribution and sale of natural gas and is, therefore, subject to the jurisdiction of this Commission.

III

BASIS OF NEED AND NECESSITY

The Yemassee-McIntosh 230 KV Tie-Line is needed to provide improved service reliability to the Hardeeville and Yemassee areas by providing SCE&G with a second, 115 KV source into Hardeeville. The tie will also improve service reliability to the McIntosh generation station by providing Savannah Power with another 115 KV source.

This tie will also establish an interconnection to facilitate capacity and energy transactions between SCE&G and Savannah Power. SCE&G has contracted to sell Savannah Power approximately twenty (20) MW of firm capacity when the line is completed.

The construction of this line for 230 KV will allow for future increases in power transfers.

IV

DESIGN AND LOCATION

The Company took into careful consideration the environmental impact of the construction of the line. This line represents a carefully planned route which should result in minimal impacts to ecological and land use resources.

Several archaeological sites were located along the route. All pertinent sites will be marked and avoided by design and construction activities.

As a whole, adverse impacts to human welfare, land use, wild life and endangered species are avoided.

V

CONSTRUCTION AND MAINTENANCE

Three major activities will accompany construction of the Yemassee-McIntosh Tie-Line: route clearing, construction which includes tower construction and conductor stringing, and follow-up right of way maintenance.

General preparation includes clearing to be performed both manually and by machine. The wetland area along the Savannah River will necessitate hand cutting of tall growing vegetation. It is anticipated that slash will be left as it falls. Drier, upland sites will be cut for marketable timber, and remaining vegetation toppled by bulldozer. Slash will be piled and burned, then buried in these areas.

Right-of-way width will be 100 feet with two structure types employed. Steel H-frame structures will be used in the wetlands, whereas wooden H-frame structures will be used in dry areas. Average structure height is approximately 75 feet.

Periodic maintenance will be performed as needed. Right-of-way maintenance techniques include mechanical clearing

as well as chemical spraying. Spraying will be performed according to manufacturer's labels and in compliance with state and local regulations.

VI

FINDINGS AND CONCLUSIONS

Based upon the foregoing considerations and the record of this proceeding, the Commission finds and determines:

1. That the Company is a public utility subject to the jurisdiction of this Commission;
2. That the proposed facilities must comply with the provisions of the Utility Facility Siting and Environmental Protection Act;
3. That the Company has made a proper application to the Commission and has carried out all the statutory requirements;
4. That a need exists for construction of the proposed facilities;
5. That construction of the proposed facilities will serve the interest of the system economy and reliability;
6. That the environmental impact of the proposed facilities is justified in light of the state of available technology and the nature and economics of the various alternative locations presented;
7. That there is a reasonable assurance that the proposed facilities will conform to all Federal, State and local laws and regulations; and,

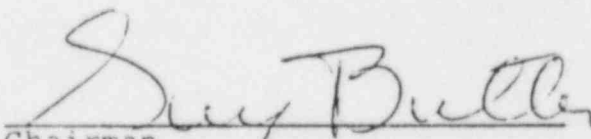
8. That public convenience and necessity require the construction of the proposed facilities.

IT IS THEREFORE ORDERED, ADJUDGED AND DECREED:

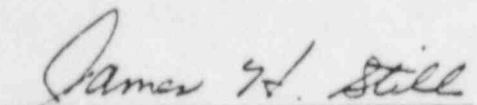
1. That a Certificate of Public Convenience and Necessity is hereby granted to South Carolina Electric & Gas Company for the Yemassee-McIntosh 230 KV Tie-Line consistent with the provisions herein.

2. That this Order remain in full force and effect until further Order of the Commission.

BY ORDER OF THE COMMISSION:


Chairman

ATTEST:


Executive Director

(SEAL)