US Army Corps of Engineers®

DRAFT ENVIRONMENTAL ASSESSMENT for ORANGEBURG-BERKELEY TRANSMISSION MAIN

Prepared by:
United States Army Corps of Engineers
Charleston District
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CHAPTER 1 INTRODUCTION

1.1 Project Authorization

This Environmental Assessment (EA) has been prepared by the U.S. Army Corps of Engineers, Charleston District (USACE), in compliance with the National Environmental Policy Act (NEPA), 42 U.S.C. §§ 4321- 4370f, and its implementing regulations, 40 C.F.R. §§ 1500-1508, and 33 C.F.R. Part 230, to evaluate the proposed construction of a water transmission line to provide potable water to parts of Orangeburg and Berkeley Counties in South Carolina.

The Water Resources Development Act (WRDA) of 1992 (Public Law 102-580), as amended, specifically authorized USACE to provide assistance to non-Federal interests for carrying out water-related environmental infrastructure and resources protection and development projects. Congress has subsequently appropriated funds for USACE to participate in the planning, design and construction of the proposed Lake Marion Regional Water System Project, which requires a non-Federal Sponsor to provide 25 percent of the total project cost. The Lake Marion Regional Water Agency is serving as the non-Federal Sponsor and has partnered with the South Carolina Public Service Authority (Santee Cooper) to serve as the Lake Marion Regional Water Agency's technical representative for the project.

1.2 Background

The Lake Marion Regional Water Agency was formed in 1995 with the goal of developing a regional water supply system that centralizes the public drinking water supplies of numerous municipalities located in Calhoun, Clarendon, Berkeley, Dorchester, and Orangeburg Counties in South Carolina. The municipalities included: Santee, Elloree, Holly Hill, Eutawville, Bowman, Branchville, St. George, Harleyville, Ridgeville, Summerton, and Manning.

The Lake Marion Regional Water Supply System was originally broken into three separate phases. Phase I consisted of the construction of a water transmission line along the U.S. Highway 301 corridor between the Town of Santee and the City of Orangeburg and the installation of two elevated storage tanks. Phase II consisted of construction of an 8 million gallon per day (MGD) drinking water treatment plant and approximately 65 miles of water transmission lines serving the municipalities of Manning, Summerton, Santee, Elloree, Holly Hill, and St. George. Phase III consisted of the future expansion of the system to other municipalities not included in Phase II. A separate EA was prepared in 2003 for Phase I and Phase II and these documents are incorporated by reference in this EA.

1.3 Project Description and Location

The current proposed project is the installation of a 20-inch potable water transmission main beginning southwest of the Town of Holly Hill and extending into Berkeley County, northeast of the Town of Ridgeville, SC, approximately 16 miles. Holly Hill is in Orangeburg County near the intersection of US-176 and SC-453. It is approximately 80 miles southeast of Columbia, SC and approximately 58 miles north-west of Charleston, SC. The proposed project parallels Boyer Road to the intersection with US Highway 176 and then continues to parallel US-176 to its southern terminus near the intersection with Center Line Road in Berkeley County, South Carolina (Figure 1).

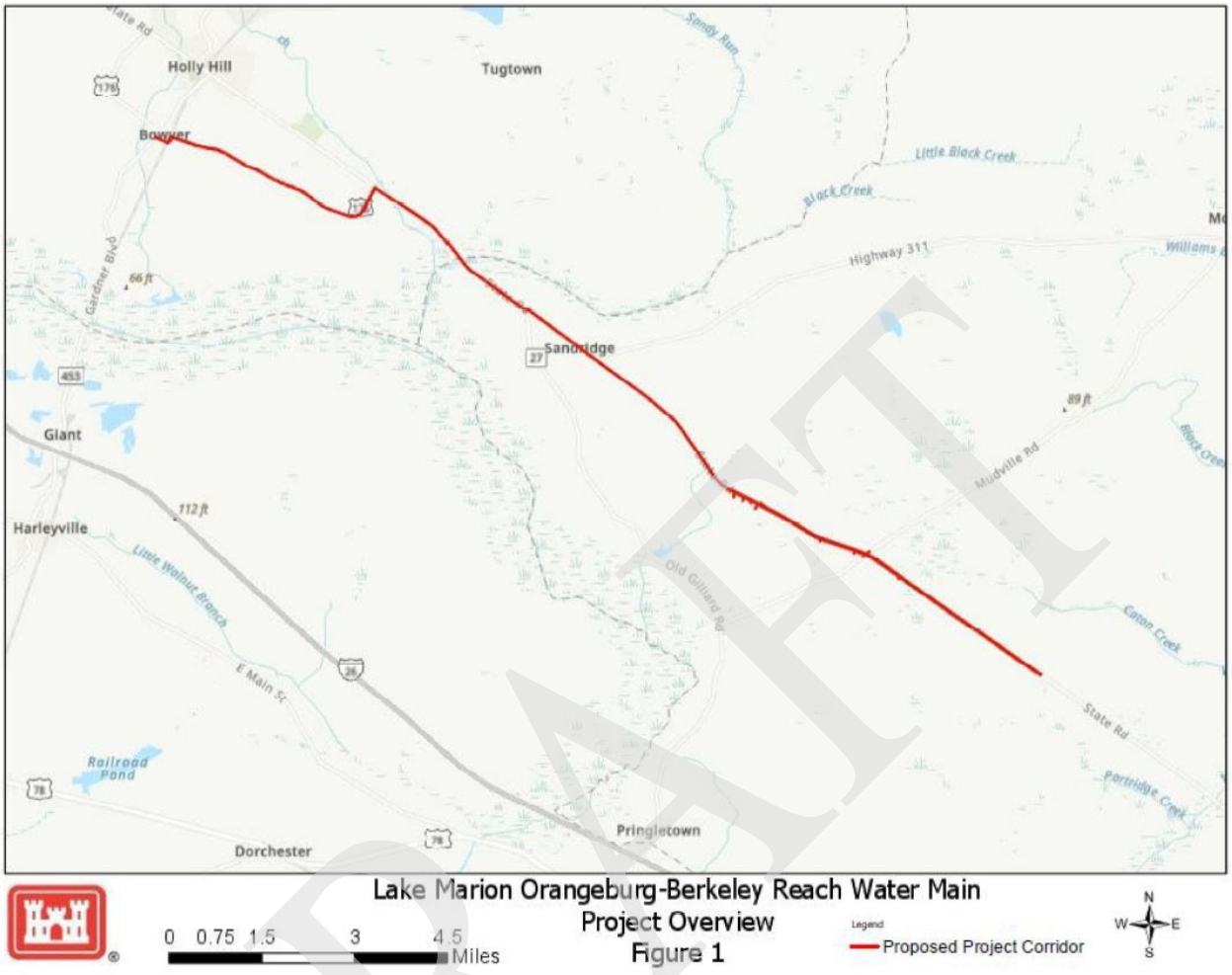

Figure 1. Orangeburg-Berkeley Reach Water Main Project Location

1.3 Purpose and Need

The water transmission line from Holly Hill to the Camp Hall area of Berkeley County will be the main connection of the Lake Marion Regional Water System to the Lake Moultrie Regional Water System. The additional capacity will support existing and future development needs that currently includes over 210,000 people located in Moncks Corner, Summerville, Goose Creek and Unincorporated Berkeley County.

The water transmission line will also serve the 3,000-acre Camp Hall Industrial Park where Volvo Cars manufacturing facility is located, as well as provide water to the western rural part of Berkeley County, bringing needed potable water to areas now served by individual wells and providing fire protection for residents in this part of the county.

With the additional water demand on this part of the system, it will drastically reduce or even eliminate the need to flush the Lake Marion system that has been necessary to maintain water quality, thus saving millions of gallons of water per year.

1.4 Related Environmental Reviews

The following environmental reviews have been completed as part of the overall Lake Marion Regional Water System:

- *Lake Marion Regional Water Supply System – Phase II Environmental Assessment* (USACE 2004). This EA was prepared to assess the construction of a raw water intake and pump station, water treatment plant, water storage and pump station, and approximately 65 miles of various sized pipelines.

- *Goodbys Regional Wastewater Treatment Plant Environmental Assessment* (USACE 2011). This EA assessed impacts associated with the construction of approximately 31 miles of wastewater transmission lines and a wastewater treatment plant in eastern Orangeburg County.

- *Harleyville Reach Water Transmission Main* (USACE 2014). This EA evaluated impacts associated with a 16-inch potable water transmission main from near the Town of Holly Hill to a point near the Town of Harleyville (approximately 6.6 miles).

- *Dorchester Reach Water Transmission Main Environmental Assessment* (USACE 2016). This EA focused on the proposed installation of a new 16- to 20-inch 10.6-mile potable water transmission main near the Town of Harleyville and the Town of Ridgeville.

- *Supplemental Information Report: Lake Marion Regional Water System Dorchester Reach Water Transmission Main Project* (USACE 2018). This SIR evaluated impacts associated with a one-mile extension of the Dorchester Reach Water Transmission Main (2016) northward along SC Highway 27, beginning at the intersection of US Highway 78 and SC Highway 27 and terminating at a new metering station approximately 1000 feet south of the intersection of SC Highway 27 and Interstate 26.

- *Supplemental Information Report: Lake Marion Regional Water System Winding Woods Reach Water Transmission Line Project* (USACE 2021). This SIR involved the construction of a 7.75-mile transmission main from the Town of St. George to the Town of Harleyville and included the construction of a water storage tank near the Town of St. George.

CHAPTER 2 ALTERNATIVES

2.1 Alternatives Analysis

Several conceptual alternatives were initially evaluated. Alternatives were evaluated based on compliance with environmental laws and regulations, compliance with executive orders, level of environmental impacts including impacts to climate, land use, water resources and aquatic habitat, terrestrial resources and wildlife, air quality and noise, cultural resources, endangered species, hazardous toxic and radioactive waste, and socioeconomics, cost effectiveness, engineering feasibility, and the ability of the Alternative to supply water to the area. Alternative plans included drilling additional wells, connecting to existing water supply systems at other locations, and a “No Action” alternative, which assessed both the immediate and long-term impacts to the region. Alternatives that were not feasible from an engineering standpoint, were not cost effective, were not compliant with environmental laws and regulations, were not compliant with executive orders, did not meet the water supply needs of the area, or had significant environmental impacts were not carried forward. As explained below, only one of these plans, the proposed project, was found to meet the criteria outlined above.

2.2 Proposed Action

The proposed project would connect a new 20-inch water transmission line to an existing 24-inch water transmission main on Highway 453 near the Town of Holly Hill and extend the water transmission main to the southeast approximately 84,300 feet (15.9 miles) to an existing line located at Volvo Cars Drive northeast of the Town of Ridgeville in Berkeley County. The proposed project parallels Boyer Road to the intersection with US Highway 176 and then continues to parallel US-176 to its southern terminus near the intersection with Center Line Road in Berkeley County (Figure 1). Most of the line occurs in the Department of Transportation (DOT) right of way (ROW) or other utility line easements.

Water would be supplied from an existing state of the art water treatment plant located on Lake Marion near the Town of Santee. The water treatment plant became operational in 2008 and has the capacity to support the increased water supply needs from construction of the proposed project.

2.3 No Action Alternative

The No Action Alternative is the same as the most probable future without constructing the proposed project. A basic alternative to any proposed plan of improvement is the "No Action" alternative. Adoption of this alternative implies acceptance of the existing conditions in the proposed project area.

2.4 Alternatives Considered but Eliminated

Lake Moultrie Extension

This alternative would provide water to the project area by extending the Lake Moultrie System to the Town of Holly Hill area. The existing Lake Moultrie infrastructure is not adequate to support the proposed additional water capacity. In addition, Orangeburg County is not a member of the Lake Moultrie Water Agency. Based thereon, the Lake Moultrie Extension

alternative was excluded from further consideration due to the policy/planning concerns associated with Orangeburg County being added into the Lake Moultrie Water Agency and additional costs to upgrade the existing infrastructure associated with Lake Moultrie

Water Wells

This alternative would provide water to Berkeley County and the surrounding areas by installing more water wells in the area. There are concerns about the increasing demand on groundwater and its effect on the capability of the aquifer to continue to produce high quality water in the area of the proposed project. These concerns have resulted in the State of South Carolina implementing a program that monitors all new groundwater wells that withdraw more than 3 million gallons per month (i.e., approximately 70 gallons/minute if operated continuously). Because of this increased demand on groundwater and the concerns about the effect on the aquifer as an additional source of potable water, groundwater is not recommended as a source of potable water for the project area. Based thereon, the Water Wells alternative was excluded from further consideration due to concerns about the viability and quality of the continued and increased use of water wells and concerns about negative long term impacts to the aquifer.

The Proposed Action and the No Action Alternative are the only Alternatives that will be evaluated further as part of this EA.

CHAPTER 3 EXISTING CONDITIONS

3.1 Climate

The climate in the Ridgeville/Harleyville area of South Carolina consists of long hot summers and cool winters. Summers are warm and humid (average July high and low temperatures are 92°F and 71°F, respectively), and winters are relatively mild (average January high and low temperatures are 58°F and 35°F, respectively). In general, the state has warmed by one-half to one degree (F) over the last century and the sea is rising about one to one-and-a-half inches every decade (USEPA 2016). Precipitation occurs chiefly as rainfall and averages about 49.5 inches per year with approximately one-third of that total occurring during the months of June, July, and August. It is expected that in the coming decades changing climate in South Carolina will lead to an increase in the number of unpleasantly hot days, an increase in heat related illness, an increase in inland flooding, a decrease in crop yields, and harm to livestock (USEPA 2016).

3.2 Land Use

The proposed route for the water transmission main generally parallels Boyer Road to the intersection with US Highway 176 and then continues to parallel US-176 to its southern terminus near the intersection with Center Line Road in Berkeley County, South Carolina (Figure 1). Much of the proposed line is within an existing DOT right-of-way. Land Use adjacent to the project area is predominantly undeveloped and consists of farmland and forested areas.

Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and which is available for these uses. Prime farmland can be cropland, pastureland, range land, forest land, or other open vegetated lands, but cannot be urban built-up land or water. Approximately 38 percent of the project area is classified as prime farmland, by the U.S. Department of Agriculture, Soil Conservation Service (USDA NRCS 2022).

3.3 Water Resources and Aquatic Habitat

The water source for this project is Lake Marion (Figure 2). Lake Marion was created through the construction of a dam on the Santee River. The Santee River is fed by the Congaree River and the Wateree Rivers. The Congaree River is fed by the Saluda/Broad Rivers with headwaters in the mountains of North Carolina. The Wateree River is fed by the Catawba River, which also has headwaters in the mountains of North Carolina. Lake Marion was completed in the 1940s as a part of a two-lake system. The largest lake, Lake Marion, is approximately 100,000 acres and the smaller lake, Lake Moultrie, is approximately 65,000 acres. The two lakes comprise one of the largest freshwater reservoirs in the southeast and have an average annual inflow of approximately 15,000 cubic feet per second.

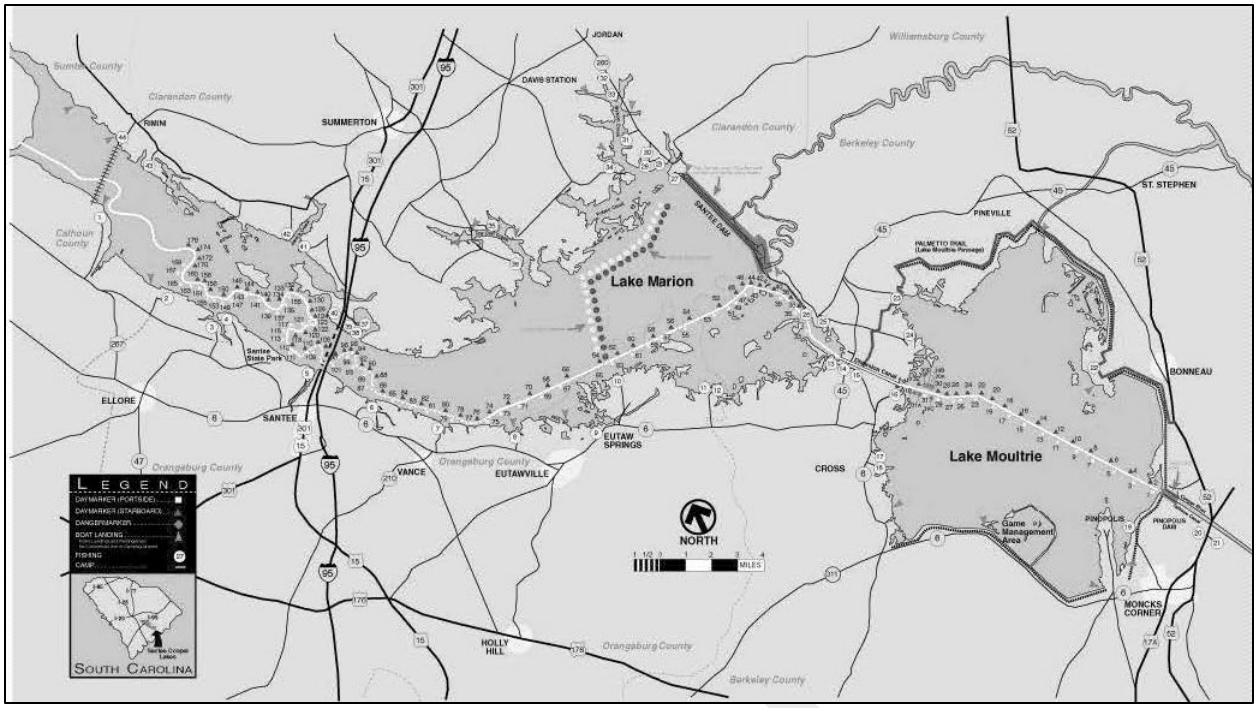

Figure 2. Map of Santee Cooper Lakes

The Santee Cooper Lake project, which began in 1933, provides more than an adequate water supply for this region of South Carolina. The first utilization of the lake for this purpose was the construction of a surface water treatment plant on Lake Moultrie in the early 1990's. A new water treatment plant was recently constructed on the Santee Cooper System during Phase II of The Lake Marion Regional Water Supply System project. There are also existing water treatment plants on the Wateree/Catawba River system and the Congaree/Saluda/Broad River system, upstream of the lakes. The raw water quality is excellent, which results in minimal treatment costs.

The majority of the proposed line is located within the 8-digit Four Hole Swamp (03050205) hydrologic unit code (HUC) and the Edisto River Basin. Approximately 3 miles (19%) of the line falls within the 8-digit Cooper River (03050201) HUC and the Santee River Basin. Four Hole Swamp is classified as "*FW*" (i.e., freshwater that is suitable for primary and secondary contact recreation and as a source of drinking water supply after treatment) (SCDHEC 2020). There are water quality concerns in portions of the project area. Four Hole Swamp is monitored as part of South Carolina Department of Health and Environmental Control (SCDHEC) statewide water quality monitoring program. Water quality monitoring sites on Four Hole Swamp in the vicinity of the project area are listed as "impaired" on the State of South Carolina 303(d) list due to either high fecal coliform levels or low dissolved oxygen (DO) levels (SCDHEC 2018). In addition, there is a fish consumption advisory for Four Hole Swamp. Four Hole Swamp is listed on the Nationwide River Inventory due to its cultural, fish, historic, recreation, scenic, and wildlife values (NPS 2022).

The water transmission main would cross eight streams (Briner Branch, Santee Branch, Merkel Branch, Mill Run, and several unnamed tributaries) and 18 wetlands. (Table 1).

Table 1. Aquatic Resources within the Project Area

Aquatic Resources ID	Size	Cowardin Class[1]	Location
Tributary A	0.01 acre	R5UB	33.3045, -80.4192
Tributary B	0.001 acre	R5UB	33.2990, -80.4017
Wetland C	0.007 acre	PEM1	33.3006, -80.4042
Wetland D	0.017 acre	PFO1	33.2876, -80.3755
Wetland E	Outside project area	PFO1	33.3039, -80.4129
Wetland F	0.71 acre	PFO1	33.29107, -803671
Wetland G (Dean Swamp)	2.38 acre	PFO1	33.2788, -80.3532
Tributary H	0.001 acre	R5UB	33.2365, -80.2997
Wetland I	0.03 acre	PEM1	33.24853, -80.3132
Tributary J	0.004 acre	R5UB	33.2474, -80.3119
Wetland K	0.07 acre	PEM1	33.2328, -80.2971
Tributary L (Merkel Branch)	0.01 acre	R5UB	33.2288, -80.2943
Wetland M	0.34 acre	PEM1	33.2223, -80.2870
Wetland N	0.16 acre	PEM1	33.2204, -80.2834
Wetland O	0.69 acre	PEM1	33.2181, -80.2789
Wetland P	0.04 acre	Open water	33.2140, -80.2720
Wetland Q	0.23 acre	Open Water	33.2135, -80.2711
Tributary R	0.01 acre	R5UB	33.2137, -80.2712
Wetland S	0.08 acre	PFO1	33.2114, -80.2665

Wetland T	0.03 acre	PFO1	33.2108, -80.2644
Santee Branch	0.01 acre	R5UB	33.2108, -80.2644
Wetland U	0.01 acre	PEM1	33.2098, -80.2618
Wetland V	0.31 acre	PEM1	33.1857, -80.2618
Wetland W	0.02 acre	PEM1	33.1828, -80.2203
Tributary X	0.005 acre	R5UB	33.1994, -80.2438
Wetland Y	0.06 acre	PFO1	33.2729. -80.3472
Wetland Z	0.11 acre	PFO1	33.2707, -80.3443

[1] PEM1 – Palustrine, Emergent, Persistent
PFO1 – Palustrine, Forested, Broadleaf
R5UB – Riverine, Unknown Perennial, Unconsolidated Bottom

3.4 Air Quality and Noise

The Clean Air Act (CAA), which was last significantly amended in 1990, requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. The CAA established two types of national ambient air quality standards, primary and secondary. Primary standards are levels established by the EPA to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards are levels established to protect the public welfare, including protection from decreased visibility and damage to animals, crops, vegetation, and buildings.

The EPA Office of Air Quality Planning and Standards has set NAAQS for six principal pollutants which are called “criteria” pollutants. Those pollutants are Carbon Monoxide, Lead, Nitrogen Oxides, Particulate Matter (PM_{10} and $PM_{2.5}$), Ozone and Sulfur Dioxide. All air pollutants are listed as in attainment for both Orangeburg and Berkeley counties (EPA 2015).

The project area is mostly undeveloped. The area is not densely populated or heavily industrialized. Traffic is the predominant source of noise in the project area. Naturally occurring noises (buzzing of insects, bird calls, etc.) are also common within the project area.

3.5 Cultural Resources

Federal agencies are required by NEPA to consider the possible effects of their actions on cultural resources. Federal agencies are also required by Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended, to consider the potential effects of their undertakings on historic properties (a subset of cultural resources). A historic property is any historic or prehistoric district, site, building structure, or object included in, or eligible for inclusion in, the National Register of Historic Places (NRHP) maintained by the Secretary of the Interior.

S&ME performed a Phase I cultural resources survey, which includes an archaeological resources survey and historic structure survey report, within the Area of Potential Effect (APE) for the proposed project, which is defined as the 15.9-mile project corridor and properties located within or directly adjacent to the corridor (Appendix A). The survey was conducted on behalf of Hazen and Sawyer at the request of the USACE Charleston District to comply with NEPA and NHPA Section 106 for construction of the water transmission main. During these investigations, 2 newly recorded archaeological sites (38BK3205 and 38OR0428), 7 isolated finds (IF-1-7), 1 newly recorded cemetery (Bethany-Breland Cemetery/SHPO Site No. 0352), and 18 newly recorded architectural resources (SHPO Site Nos. 0353-0355 and 1286-1300) were identified within the APE. Additionally, revisits were conducted at 1 archaeological site (38BK1826, Dennis' Fort 1) and 7 architectural resources (SHPO Site Nos. 410-0005, 410-0011, 454-0009, 454-0010, 454-0011, 454-0012, and 1315). Six previously recorded above ground resources (410-0005, 410-0011, 454-0010, 454-0011, and 454-0012) were also revisited. The APE includes three historic properties determined to be eligible for listing in the National Register of Historic Places (NRHP) (SHPO Site Nos. 454-0011, 1293, and 1315) and two resources requiring additional research and/or testing to determine their NRHP eligibility (Singletary General Store Historic Area and Dennis' Fort 1). Additionally, the Sandridge Baptist Church Cemetery is located within the APE. Due to its recent nature, the eligibility of this resource for listing in the NRHP was not evaluated, but it is protected under South Carolina state laws governing cemeteries.

3.6 Terrestrial Resources and Wildlife

There is a considerable diversity of habitat near the project area including swamps, early to mid-successional forested areas, and open areas. Due to the diversity of habitat in and adjacent to the project area, a variety of wildlife species are expected to occur. Species present may include deer and small mammals (e.g., various squirrels and mice, opossum, raccoon, rabbit, fox, skunk), birds (e.g., various songbirds, ducks, and wading birds, quail, turkey doves, hawks, owls), and reptiles/amphibians (e.g., frogs, toads, lizards, snakes, turtles, alligator).

Review of the U.S. Fish and Wildlife Service's (USFWS) Information for Planning and Consultation (IPaC) database (https://ecos.fws.gov/ipac/) resulted in identification of the following nine migratory birds of conservation concern that have the potential to be impacted by the proposed action: American kestrel, bald eagle, Kentucky warbler, prairie warbler, prothonotary warbler, red-headed woodpecker, rusty blackbird, swallow-tailed kite, and wood thrush. Many of these species have been spotted within the vicinity of the project area. In addition, there are no known bald eagle nests located within the project area.

3.7 Threatened and Endangered Species

The Endangered Species Act of 1973, as amended (ESA) (16 United States Code [USC] §§ 1531-1543) was passed to conserve the ecosystems upon which endangered and threatened species depend, and to conserve and recover those species. An endangered species is defined by the ESA as any species in danger of extinction throughout all or a significant portion of its range. A threatened species is likely to become endangered within the foreseeable future

throughout all or a significant part of its range. Critical habitats, essential to the conservation of listed species, also can be designated under the ESA. The ESA establishes programs to conserve and recover endangered and threatened species and makes their conservation a priority for Federal agencies. Section 7 of the ESA requires federal agencies to consult with the USFWS when their proposed actions may affect endangered or threatened species or their critical habitats.

Table 2 identifies Federally listed species under the jurisdiction of USFWS and National Marine Fisheries Service (NMFS) that are likely to occur in Orangeburg and Berkeley Counties (lists last updated August 31, 2021) (USFWS 2022).

Table 2 Listed Species within Orangeburg and Berkeley County

Scientific name	Common name	Federal status	Habitat Present?
Ambystoma cingulatum	Frosted flatwoods salamander	Threatened	No
Mycteria americana	American wood stork	Threatened	Yes
Picoides borealis	Red-cockaded woodpecker	Endangered	No
*Acipenser oxyrinchus**	Atlantic sturgeon	Endangered	No
*Acipenser brevirostrum**	Shortnose sturgeon	Endangered	No
Myotis septentrionalis	Northern long-eared bat	Threatened	Yes
Trichechus manatus	West Indian manatee	Threatened	No
Schwalbea americana	American chaffseed	Endangered	No
Oxypolis canbyi	Canby's dropwort	Endangered	Yes
Lindera melissifolia	Pondberry	Endangered	Yes

*These species are under the jurisdiction of NMFS.

3.8 Hazardous, Toxic, and Radioactive Waste

Hazardous waste is defined by the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) as any substance which may present a significant danger to public health and/or environment if released. There are no known toxic or radioactive sites located within Berkeley or Orangeburg Counties. A site inspection of the project area was conducted by USACE staff, and three old, abandoned gas stations were identified. S&ME conducted soil borings at each of the former gas station locations. No soil contamination was found at two of the sites; however, ethylbenzene, naphthalene, and xylene were detected at concentrations above several risk-based screening levels at the other site (located near the intersection of U.S. Highway 176 and Mudville Road near the Town of Ridgeville). Additional soil and groundwater sampling is planned so that the full extent of contamination within the project area can be determined. SCDHEC Bureau of Land and Waste Management has been notified, and all work at this site will be performed in compliance with DHEC regulations.

3.9 Socioeconomics and Environmental Justice

The goal of environmental justice is to ensure that all Americans are afforded the same degree of protection from environmental and health hazards and have equal access to the decision-making process to maintain a healthy environment in which to live, learn, and work. On February 11, 1994, President Bill Clinton issued Executive Order (EO) 12898, Federal Actions

to Address Environmental Justice in Minority Populations and Low-Income Populations, to focus Federal agencies' attention on the environmental and human health conditions in minority and/or low-income communities with the goal of achieving environmental justice. This EO directs Federal agencies to make environmental justice part of their mission to the greatest extent practicable and permitted by law.

EO 13045 requires the protection of children from environmental health risks and safety risks. Federal agencies are to "identify and assess environmental health risks and safety risks that may disproportionately affect children;" and "ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks."

The proposed project is located within both Orangeburg and Berkeley Counties and passes through two census block groups (45075010200 and 45015020102). As of July 1, 2021, the total population estimate for Berkeley County is 236,701 and 82,962 for Orangeburg County, which is an approximate 2.2 percent annual increase for Berkeley County and 1.2 percent annual decrease for Orangeburg County (USCB 2022). Total minority populations (i.e., all non-white and Hispanic or Latino racial groups) combined comprise approximately 26 percent of the population in Berkeley County and 63 percent of the population in Orangeburg County. Table 3 shows the detailed breakdown of the population in both counties.

Table 3. Population Demographics within Orangeburg and Berkeley County

Demographics	Berkeley County, SC	Orangeburg County, SC
Population (July 2021)	**236,701**	**82, 962**
Population (July 2020)	**231,568**	**83,958**
Population Percent Change	**2.2%**	**-1.2%**
White	**65.7%**	**34.8%**
Black or African American	**23.3%**	**61.6%**
American Indian and Alaskan Native	**0.3%**	**0.6%**
Asian	**2.4%**	**0.7%**
Native Hawaiian and Other Pacific Islander	**0.0%**	**0.1%**
Total Housing Units	**86,274**	**42,856**

Using the newly developed Climate and Economic Justice Screening Tool, both census tracts are identified as disadvantaged. Census Tract 45075010200 (Orangeburg County) is identified as disadvantaged in two categories, clean energy and efficiency and clean water and health burdens. Census tract 45015020102 (Berkeley County) is disadvantaged in the climate change category.

Communities are identified as disadvantaged in a climate change category if they are at or above the 90th percentile for expected agriculture loss rate, expected building loss rate, or expected population loss rate, above the 65th percentile for low income, and 80% or more of adults 15 or older are not enrolled in higher education.

Communities are identified as disadvantaged in the clean energy and efficiency category if at or above the 90th percentile for energy burden (average annual energy cost per household divided by average household income) or at or above the 90th percentile for $PM_{2.5}$ in the air, above the 65th percentile for low income, and 80% or more of adults 15 or older are not enrolled in higher education.

Communities are identified as disadvantaged in the health burden category if at or above the 90th percentile for asthma, diabetes, or heart disease, or at or above the 90th percentile for low life expectancy, above the 65th percentile for low income, and 80% or more of adults 15 or older are not enrolled in higher education.

CHAPTER 4 ENVIRONMENTAL CONSEQUENCES

4.1 Climate

The proposed project would not cause negative changes to the area's climate. The proposed project would increase the climate change resiliency of the area by providing a reliable, safe source of water that is more resilient to drought or other climate related impacts than the current water supply. The proposed project would also increase the resiliency of the local aquifer and the resiliency of residents who would still depend on the aquifer for water, to climate change impacts as it would lead to a decrease in water withdrawn from the aquifer. Minimal amounts of greenhouse gases would be created during construction of the proposed project. Best management practices would be followed to reduce greenhouse gas emissions. Most areas cleared for construction would be allowed to re-vegetate and those areas would be able to sequester carbon in the future.

4.2 Land Use

Temporary impacts to soils and erosion would potentially occur during construction and during the placement of the water transmission main. Erosion could increase in areas that require the clearing of vegetation. Best management practices would be implemented for construction including siltation fencing, hay bales, and directional boring or jack and boring under streams where appropriate to minimize erosion potential. In addition, the disturbed areas would be seeded and/or grassed to prevent future erosion and allowed to return to their previous conditions after installation of the water transmission main is completed. Construction of this proposed project would not change the existing geology of the area because the excavation cuts necessary to install the water transmission main are generally narrow and relatively shallow. Land use would remain largely unchanged after installation of the proposed project.

The project area would impact 21.8 acres of land classified as prime farmland, however, this land is already compromised and not currently in agricultural use; therefore, the impacts would be negligible.

4.3 Water Resources and Aquatic Habitat

Temporary changes to water quality and surface waters related to turbidity and sedimentation are anticipated during construction. These impacts would be localized, and proper erosion control and filtration control measures would be implemented during construction activities. Remediation procedures would prevent any potential long-term impacts and degradation of water quality resulting from the proposed work. The installation and use of the water transmission main would not affect water quality, water temperature, or other parameters during the installation phase or while in use. The additional water that would be taken from Lake Marion, as a result of this project, is not expected to significantly impact the lake.

The project is consistent with applicable South Carolina water quality regulations and would not impair any such standard or fail to meet anti-degradation requirements for point or non-point sources. The project would not create any shortages for or otherwise adversely affect the withdrawal capabilities of current users of the raw water supply.

Wetlands and Streams

The proposed construction and placement of the pipeline would impact eleven freshwater wetlands and two small tributaries along the route. Impacts to seven wetlands would be avoided by utilizing either directional boring or jack and bore installation methods. Directional drilling or jack and boring would be used at major stream crossings and would result in minimal impacts to streams from construction of the proposed project. Best management practices would be required for construction including siltation fencing and placement of hay bales where appropriate. All construction laydown areas and drilling pads would be located upland and not impact aquatic resources. Construction methods such as directional drilling or jack and boring would temporarily change topography; however, once the construction is complete, the topography would be restored to its original elevation. Temporary impacts would occur to two small tributaries during construction of the project. The pipeline would cross Tributary A and B (Mill Run headwaters) through trenching and backfill. Approximately 1.137 acre of freshwater wetlands would be temporarily impacted during construction. Permanent clearing and conversion of 0.267 acre of wetlands would occur as a result of the project, Table 4.

Table 4. Aquatic Resource Impacts

Waterbody ID	Impact Size	Impact Duration	Impact Type
Tributary A	0.01 acre	Temporary	Open cut and trenching
Tributary B	0.001 acre	Temporary	Open cut and trenching
Wetland C	0.007 acre	Temporary	Clearing and trenching
Wetland D	0.017 acre	Permanent	Conversion
Wetland I	0.03 acre	Temporary	Clearing and trenching
Wetland K	0.07 acre	Temporary	Clearing and trenching
Wetland O	0.69 acre	Temporary	Clearing and trenching
Wetland S	0.08 acre	Permanent	Conversion
Wetland U	0.01 acre	Temporary	Clearing and trenching
Wetland V	0.31 acre	Temporary	Clearing and trenching
Wetland W	0.02 acre	Temporary	Clearing and trenching
Wetland Y	0.06 acre	Permanent	Conversion
Wetland Z	0.11 acre	Permanent	Conversion

The proposed project has been determined to be consistent with the terms and conditions of Nationwide Permit Number (NWP) 58. NWP 58 authorizes work in waters of the United States required for the construction, maintenance, repair and removal of utility lines and associated facilities. The work to be conducted as part of the proposed project is within the types of activities authorized by NWP 58. SCDHEC issued a 401 Water Quality Certification (WQC) and a Coastal Zone Consistency (CZC) Certification with conditions for Nationwide Permit 58 on December 14, 2020. However, on March 8, 2021, USACE issued their Final Regional Conditions for the NWP 58 and denied the Section 401 Water Quality Certification as well as the CZC. A General State Certification (401 WQC and CZC) to authorize activities was issued by SCDHEC on May 13, 2021, for NWP 58 with general and special conditions. USACE is currently requesting a WQC and CZC concurrence from SCDHEC as part of the public review of the draft EA.

Permanent clearing of some of the wetlands would result in conversion of 0.267 acre of forested wetlands to herbaceous wetlands in a permanently maintained right-of-way. Impacts to these wetlands have been minimized to the greatest extent practicable. Given the existing conditions of the impacted wetlands and the minimal impacts, mitigation is not proposed, consistent with NWP 58 General Condition 23(i).

Floodplains
The placement of the proposed waterline would not adversely affect the floodplains or topography. EO 11988 deters development in the 100-year floodplain for federally funded projects unless no other practicable alternative is available. If development is planned within the 100-year floodplain and it is federally funded, there is an eight-step process that must be completed prior to release of funds; however, no development within the 100-year floodplain is planned as part of this project.

4.4 Air Quality and Noise

SCDHEC has air quality jurisdiction for the project area. The ambient air quality for Berkeley and Orangeburg counties has been determined to follow National Ambient Air Quality Standards and these counties are designated as attainment areas.

Implementation of the proposed action may cause temporary reduction of the air quality in the immediate areas of project construction. Construction activities would cause temporary increases in exhaust and dust emissions from equipment operations. However, since project construction would be conducted in relatively small areas at a particular point in time, air quality impacts would be localized and temporary. Upon completion of work activities in any area, air quality would be restored as construction equipment is moved away.

Implementation of the proposed project would cause temporary increases in noise levels in the areas of project construction; however, since project construction would be conducted in relatively small areas at a particular point in time, increases in noise pollution would be minimal. Upon completion of work activities in any area, noise levels would return to pre-project levels. To further reduce noise pollution, construction would be limited to daylight hours in areas near dwellings.

4.5 Cultural Resources

The undertaking would have no adverse effect on SHPO Site Nos. 454-0011 and 1293 as the proposed work would occur on the opposite side of the road from these historic properties. The measures for avoidance and minimization recommended for SHPO Site No. 1315, the Singletary General Store Historic Area, and 38BK1826, Dennis' Fort 1, would be incorporated into the project design to avoid an adverse effect to historic properties. The project would avoid damage to the historic fabric of SHPO Site No. 1315, Singletary General Store Historic Area and repave the right-of-way to match existing conditions following construction. Site 38BK1826 would be avoided by all construction and construction-related activities, including parking, equipment storage and staging. The site boundaries would be marked on plans and fenced off with temporary construction fencing during construction work to ensure the associated earthwork is not damaged. Additionally, in adherence with South Carolina state laws governing cemeteries, the Bethany-Breland Cemetery (SHPO Site No. 0352) would be avoided by the proposed project and no staging of materials, parking, or work would be conducted outside of the Department of Transportation (DOT) ROW adjacent to the Sandridge Baptist Church Cemetery. If any work is necessary outside of the DOT ROW in this area, archaeological monitoring would occur during construction.

In accordance with the regulations pertaining to Section 106 of the NHPA, USACE has made a determination of no adverse effect for the undertaking and is currently in consultation with SHPO regarding this determination.

4.6 Terrestrial Resources and Wildlife

The proposed project would have small but insignificant impacts on some forms of natural vegetative communities due to permanent clearing of some of the wetlands. Best management practices would be implemented to ensure the clearing process would have no impact outside the construction easement. The proposed project would have a temporary adverse impact on some forms of fauna. Reptiles, amphibians, and other small mammals may be displaced to outlying areas during construction activities due to human presence and increased noise level; however, most of the construction is adjacent to the highway or other disturbed areas. These animals are accustomed to the highway traffic noise and other unnatural noises and should return after the construction activities are complete.

Potential winter and migratory stopover habitat occur in wetlands and forests within the project area for some migratory bird species, specifically prothonotary warbler, red-headed woodpecker, Kentucky warbler, and the bald eagle. The proposed project would not remove any mature forest or bottomland forest. Therefore, the project would have no adverse effects on these species.

4.7 Threatened and Endangered Species

Suitable habitat is present within the project area for the following four federally listed species: American wood stork, Northern long-eared bat (NLEB), Canby's dropwort, and pondberry. Approximately 16.5 acres of tree removal is proposed, which may include suitable roost habitat for the NLEB. The NLEB is currently listed as a threatened species with an accompanying rule issued under section 4(d) of the Endangered Species Act. Under the section 4(d) rule, incidental take from tree removal activities is not prohibited. USACE has determined the project may

affect, but is not likely to adversely affect, the NLEB. The project would have no effect on the other three listed species as the proposed line would be installed through directional boring to avoid impacts to potential suitable habitat. This determination is being coordinated with USFWS via consultation on this document.

4.8 Hazardous, Toxic, and Radioactive Waste

Based on soil sampling and database search, there is one former gas station on site with contaminated soils. The soils from this area will be properly managed in accordance with SCDHEC regulations during construction, including appropriate disposal as necessary. No hazardous, toxic or radioactive waste would be generated as a result of installation or operation of the proposed project.

4.9 Socioeconomics and Environmental Justice

According to EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, each federal agency must conduct its programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under, such programs, policies, and activities, because of their race, color, national origin, or income level. Agencies must ensure that disproportionately adverse effects are not being imposed on minority or low-income areas by federal actions.

The proposed project is not designed to create a benefit for any group or individual, but rather provides a region-wide benefit. There are no indications that the proposed water supply project would be contrary to the goals of EO 12898 or would create disproportionate adverse human health or environmental impacts on minority or low-income populations of the surrounding communities. This project would provide safe drinking water to all residents on an equal basis and would reduce the dependence on groundwater in the future. Implementation of the proposed project would not result in adverse human health or environmental impacts to any residents located in Orangeburg County, Berkeley County, or surrounding counties, regardless of race, national origin, or level of income of residents. Disproportionate adverse effects to minority or low-income individuals would not occur. Therefore, USACE has satisfied the requirements of EO 12898.

CHAPTER 5 CUMULATIVE IMPACTS

Cumulative effects are defined in the regulations implementing NEPA as follows:

> Cumulative effects, which are effects on the environment that result from the incremental effects of the action when added to the effects of other past, present, and reasonably foreseeable actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time.

40 C.F.R. § 1508.1(g)(3). The following paragraphs summarize the cumulative impacts expected from the proposed project.

5.1 Past, Present, and Reasonably Foreseeable Future Actions

Research was conducted on past, present, and potential future actions in the Berkeley and Orangeburg County, South Carolina area. Two past actions were identified:

Harleyville Reach Water Transmission Main
A new 16-inch potable water transmission main was installed in 2015 from the Town of Holly Hill approximately 6.6 miles to the Town of Harleyville. The project resulted in impacts to 2.274 acres of freshwater wetlands. Impacts were mitigated through the purchase of mitigation credits from the Francis Beidler Forest Mitigation Bank. No other permanent impacts occurred as a result of the project.

Goodby's Regional Wastewater Treatment Plant
A wastewater treatment facility, as well as 31 miles of wastewater transmission lines, were constructed in 2013 in Orangeburg County. Impacts to wetlands were avoided and minimized through project design. The project did result in the permanent clearing of approximately 10 acres of forested area.

South Carolina Department of Transportation (SCDOT) does not list any pavement improvement program projects located along the proposed project route. SCDOT lists one foreseeable future transportation project within the project area.

US 176 and Mudville Road Safety Project
The US 176 and Mudville Road Safety Project will convert the intersection of US 176 at S-135 (Mudville Road) to a single lane modern roundabout. The intent of the SCDOT project is to improve safety and transportation and will have minimal impacts. Construction will occur in spring of 2023. Given the small scope of the project, only minimal permanent adverse impacts, if any, are anticipated.

5.2 Resource Areas Evaluated for Cumulative Effects

Implementation of the preferred alternative would have either no or negligible effects on Climate, Land Use, Air Quality, Noise, Cultural Resources, Wildlife, Threatened or Endangered Species, Hazardous Waste, Socioeconomics, or Environmental Justice.

Wetlands

The proposed action, when considered with past, present, and reasonably foreseeable future actions, would not result in significant wetland impacts. The Harleyville Reach project resulted in impacts to 2.274 acres of wetlands through conversion from forested wetlands to emergent. Impacts to these wetlands were fully mitigated. The current project would result in permanent impacts to 0.267 acre of wetlands through conversion and temporary impacts to 1.153 acre of freshwater wetlands during project construction. No other known wetland impacts, or loss is anticipated, and any unknown future projects would be required to meet federal and state regulatory permitting requirements, including mitigation requirements, therefore limiting their contribution to cumulative effects.

Vegetation

The proposed action, when considered with past, present, and reasonably foreseeable future projects, would not result in significant impacts to vegetation. The Orangeburg-Berkeley project will result in the permanent conversion of 16.5 acres of forested vegetation to herbaceous vegetation. The conversion is necessary to maintain the utility right-of-way.

Overall

As noted above in Section 1.3, the additional capacity from the proposed water transmission line will support existing and future development needs that currently includes over 210,000 people located in Moncks Corner, Summerville, Goose Creek and Unincorporated Berkeley County.

The water transmission line will also serve the 3,000-acre Camp Hall Industrial Park where Volvo Cars manufacturing facility is located, as well as provide water to the western rural part of Berkeley County, bringing needed potable water to areas now served by individual wells and providing fire protection for residents in this part of the county.

With the additional water demand on this part of the system, it will drastically reduce or even eliminate the need to flush the Lake Marion system that has been necessary to maintain water quality, thus saving millions of gallons of water per year.

Present and future development in and around the project area is controlled by management measures including control of floodplain development by zoning ordinances, subdivision regulations, and building codes. Future development in the area would be in compliance with the above listed management measures, minimizing impacts to the environment. Given current growth trends the area is expected to experience population growth and additional development.

This growth is likely to occur with or without construction of the proposed project. However construction of the water line would create a water source for the area that is more resilient to climate change. The Lake Marion Regional Water System, which the proposed project would be a part of, has the capacity to meet the current and anticipated future water supply needs of the area. The cumulative impacts of the total Lake Marion Regional Water Supply System (i.e., Phase I, Phase II, and Phase III) are small because the system is designed to mostly replace existing water supply systems and provide water for the expected population growth in the service area.

The overall minimal impacts associated with construction of the water main demonstrates the benign nature of the proposed action. Any impacts associated with the proposed action, when added to other past, present, and reasonably foreseeable future actions, are collectively insignificant as construction of the water main would ensure a safe and reliable water supply for the residents of Moncks Corner, Summerville, Goose Creek and Unincorporated Berkeley County.

CHAPTER 6 PUBLIC INVOLVEMENT AND COORDINATION

EO 12372, Intergovernmental Review of Federal Programs, states that Federal agencies shall provide opportunities for consultation by elected officials of those State and local governments that would provide the non-federal funds for or that would be directly affected by, proposed Federal financial assistance or direct Federal development. A Notice of Availability (NOA) of the Draft EA and Finding of No Significant Impact (FONSI) will be published on USACE public media outlets announcing the availability of the EA for review. The NOA will invite the public to review and comment on the Draft EA. The NOA will also be sent to Federal, State, and local government agencies having jurisdictional responsibilities, or otherwise having an interest in the project. The public and agency review period will be for 30 days after publication. Public and agency comments will be provided in Appendix A.

CHAPTER 7 COMPLIANCE WITH OTHER ENVIRONMENTAL LAWS

Clean Air Act of 1972

The Clean Air Act (CAA) sets goals and standards for the quality and purity of air. It requires the EPA to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. All counties covering the project area (Berkeley, Orangeburg) are designated as in attainment for all principal pollutants. The short-term effects from construction equipment associated with the project would not result in permanent adverse effects to air quality in the study area. Air quality permits would not be required for this project.

Clean Water Act of 1972 – Section 401 and Section 404

The Clean Water Act (CWA) sets and maintains goals and standards for water quality and purity. Section 401 requires a Water Quality Certification (WQC) from SCDHEC. USACE is currently requesting a WQC from SCDHEC as part of the public review of the draft EA.

The proposed project would result in the temporary placement of material into waters of the United States. However, the proposed project has been determined to be consistent with the terms and conditions of NWP 58.

Coastal Zone Management Act of 1972

The Coastal Zone Management Act (CZMA) requires that "each federal agency conducting or supporting activities directly affecting the coastal zone shall conduct or support those activities in a manner which is, to the maximum extent practicable, consistent with approved state management programs." Per the Coastal Tidelands and Wetlands Act (S.C. Code Ann. Section 48-39-10 et sq.), all waters within Berkeley County, South Carolina are considered within the "coastal zone." The project would be undertaken in a manner consistent to the maximum extent practicable with the enforceable policies of South Carolina's Coastal Zone Management Program. USACE is currently requesting a review and concurrence of this determination from SCDHEC as part of the public review of the draft EA.

Endangered Species Act of 1973

The ESA is designed to protect and recover threatened and endangered species of fish, wildlife, and plants. Suitable habitat is present within the project area for the following four federally listed species: American wood stork, Northern long-eared bat (NLEB), Canby's dropwort, and pondberry. Approximately 16.5 acres of tree removal is proposed, which may include suitable roost habitat for the NLEB. The Northern long-eared bat (NLEB) is currently listed as a threatened species with an accompanying rule issued under section 4(d) of the Endangered Species Act. Under the section 4(d) rule, incidental take from tree removal activities is not prohibited. USACE has determined the project may affect but is not likely to adversely affect the NLEB. The project would have no effect on the other three listed species as the proposed line would be installed through directional boring to avoid impacts to potential suitable habitat. This determination is being coordinated with the USFWS via consultation on this document.

Environmental Justice (EO 12898)

According to EO 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, each federal agency must conduct its programs, policies, and activities that substantially affect human health or the environment, in a manner that ensures that such programs, policies, and activities do not have the effect of excluding persons (including populations) from participation in, denying persons (including populations) the benefits of, or subjecting persons (including populations) to discrimination under, such programs, policies, and activities, because of their race, color, national origin, or income level. Total minority populations (i.e., all non-white and Hispanic or Latino racial groups) combined comprise approximately 26 percent of the population in Berkeley County and 63 percent of the population in Orangeburg County. The project would have a positive impact on minority populations in both counties by providing more accessible potable water.

Farmland Protection Policy Act

The Farmland Protection Policy Act minimizes the unnecessary and irreversible conversion of farmland to nonagricultural uses. There is no "farmland," as defined by this Act, that would be affected by the proposed project.

The proposed pipeline reaches would follow existing power line and highway rights-of-way, where possible, to avoid impacts on any prime farmland in accordance with the Farmland Protection Policy Act. Approximately 21.8 acres of prime farmland occur within the proposed project area. However, the majority of the prime farmland is compromised and exists within the existing ROWs. Therefore, minimal impacts to prime farmlands would occur as a result of construction of the proposed project.

Fish and Wildlife Coordination Act of 1934

The Fish and Wildlife Coordination Act (FWCA) provides authority for the USFWS involvement in evaluating impacts to fish and wildlife from proposed water resource development projects. It requires that fish and wildlife resources receive equal consideration to other project features and requires that federal agencies consult with USFWS, NMFS, and state resource agencies on the proposed project. This coordination is being conducted concurrent with the public review of the draft EA.

Floodplain Management (EO 11988)

EO 11988 deters development in the 100-year floodplain for federally funded projects unless no other practicable alternative is available. If development is planned within the 100-year floodplain and it is federally funded, there is an eight-step process that must be completed prior to release of funds; however, no development within the 100-year floodplain is planned as part of this project. The objectives of Executive Order 11988 have been considered in the formulation of plans for this project. The following determinations have been made in response to requirements of Executive Order 11988, which pertains to floodplain management.

No practicable non-floodplain alternative exists. The considered actions do not conflict with applicable state and local standards concerning floodplain protection. The considered action would not affect the natural and beneficial values of the floodplain.

Protection of Wetlands (EO 11990)

EO 11990 deters development in wetlands for federally funded projects unless no other practical alternative is available. The objectives of Executive Order 11990 have been considered in the formulation of plans for this project. The following determinations have been made in response to requirements of Executive Order 11990 which pertains to wetland management.

No practical non-wetland alternative exists. The considered actions do not conflict with applicable state and local standards concerning wetland protection and permitting and the proposed project has been determined to be consistent with the terms and conditions of NWP 58. The proposed project would not involve the permanent loss of wetlands and where possible, wetland areas would be allowed to return to a natural state after installation of the water transmission main. The proposed project would avoid and minimize wetland impacts where possible.

Migratory Bird Treaty Act and EO 13186

The Migratory Bird Treaty Act (MBTA) of 1918 is the domestic law that affirms, or implements, the United States' commitment to four international conventions with Canada, Japan, Mexico, and Russia for the protection of shared migratory bird resources. The MBTA governs the taking, killing, possessing, transporting, and importing of migratory birds, their eggs, parts, and nests. EO 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds) directs federal agencies to take certain actions to further implement the MBTA, including evaluating the effects of actions on migratory birds. The proposed project would not impact migratory birds.

National Wild and Scenic Rivers

The National Wild and Scenic Rivers System was created by Congress in 1968 (Public Law 90-542; 16 U.S.C. 1271 et seq.) to preserve certain rivers with outstanding natural, cultural, and recreational values in a free-flowing condition for the enjoyment of present and future generations. A review of the Wild and Scenic River inventory list reveals that the proposed project would not affect a stream or portion of a stream that is included in the National Wild and Scenic Rivers system.

National Historic Preservation Act of 1966

Section 106 of the National Historic Preservation Act requires Federal agencies to take into account the effects of their undertakings on historic properties and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment on such undertakings. The proposed project has been reviewed for historic properties (cultural resources listed on or eligible for listing on, the National Register of Historic Places) pursuant to the ACHP's regulations implementing Section 106 of the National Historic Preservation Act (NHPA). In accordance with 36 C.F.R. § 800.5(b), USACE has made a determination of no adverse effect for the undertaking and is currently in consultation with SHPO regarding this determination. Therefore, USACE's responsibilities under Section 106 of the NHPA will be fulfilled once consultation is complete.

CHAPTER 8 REFERENCES

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