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ENVIRONMENTAL ASSESSMENT

Dorchester Reach Water Transmission Main

Dorchester County, South Carolina

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Prepared by:
United States Army Corps of Engineers
Charleston District
2016

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CHAPTER 1 INTRODUCTION

This Environmental Assessment (EA) has been prepared by the U.S. Army Corps of Engineers, Charleston District (Corps) 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 installation and operation of a potable water transmission main from Harleysville, SC to near Ridgeville, SC.

The Water Resources Development Act (WRDA) of 1992 (Public Law 102-580), as amended, specifically authorized the U.S. Army Corps of Engineers (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 (LMRWA) is serving as the non-Federal Sponsor and has partnered with Santee-Cooper (a.k.a., South Carolina Public Service Authority) to serve as the agency's technical representative for the project.

The LMRWA 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 Clarendon, 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. This current EA focuses on part of Phase III of the proposed project and addresses impacts from installation and use of a water transmission main from Harleyville, SC to just outside of Ridgeville, SC.

Harleyville is located in Dorchester County near the intersection SC Highway 453 and Interstate 26 (i.e., Exit 177 on I-26). It is approximately 78 miles south-east of Columbia SC and approximately 47 miles north-west of Charleston SC.

Ridgeville is located in Dorchester County and is approximately 11 miles southeast of Harleyville. The proposed project generally follows Highway 178 (East Main Street) to US-78 to US – 27 from Harleyville to near Ridgeville (Figure 1).

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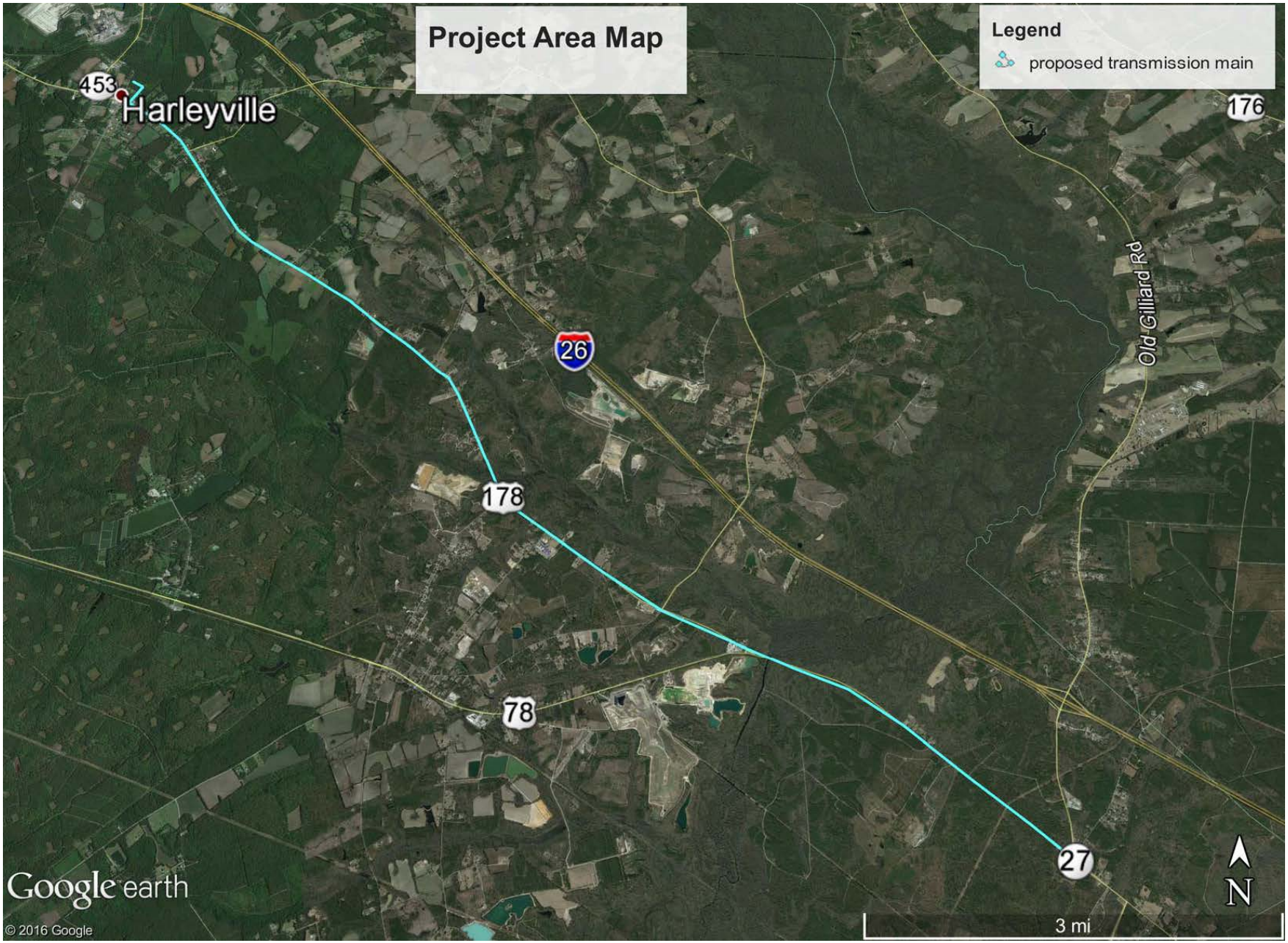

Figure 1 - Project Area Map. Proposed water transmission main placement shown in blue

CHAPTER 2 PURPOSE AND NEED

The water transmission main from Harleysville to just outside Ridgeville would be a continuation of the Lake Marion System into Dorchester County. Once the line is constructed to Ridgeville, the system is expected to be expanded to several other smaller communities in Dorchester County. The system is also expected to serve schools in the Harleysville/Ridgeville area (Dorchester County Career and Technology Center technical school and Harleyville-Ridgeville Middle School), the Ridgeville Commerce Park, the proposed Timothy Lakes subdivision and several local businesses. The line will also serve as either a backup water source or future primary water source for the Camp Hall Industrial Campus and provide water to a residential subdivision being developed along the route of the proposed water transmission main.

Ridgeville currently gets its potable water from groundwater wells. These wells are currently struggling to meet growing demands in the area. The only treatment performed on their water is chlorination. Construction of the proposed project would satisfy the current and future water supply needs for a portion of Dorchester County in the Harleyville/Ridgeville corridor. Specifically, needs related to health and safety, system operations and maintenance are key benefits for the future of the area.

CHAPTER 3 BASELINE ENVIRONMENTAL SETTING

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). 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.

Land Use

Land use within the project area is varied. The proposed route water transmission main generally follows the shoulder of Highway 178 (East Main Street) to US-78 to US 27 where it ends (Figure 1). Land Use adjacent to the project area includes a mix of residential areas, industrial areas, forested areas, and farm lands. Several named soil types exist in the project area. The majority of soils within the project area are characterized as nearly level, well drained to very poorly drained and strongly acidic.

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

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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 1940's 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 fresh water reservoirs in the southeast and have an average annual inflow of approximately 15,000 cubic feet per second.

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

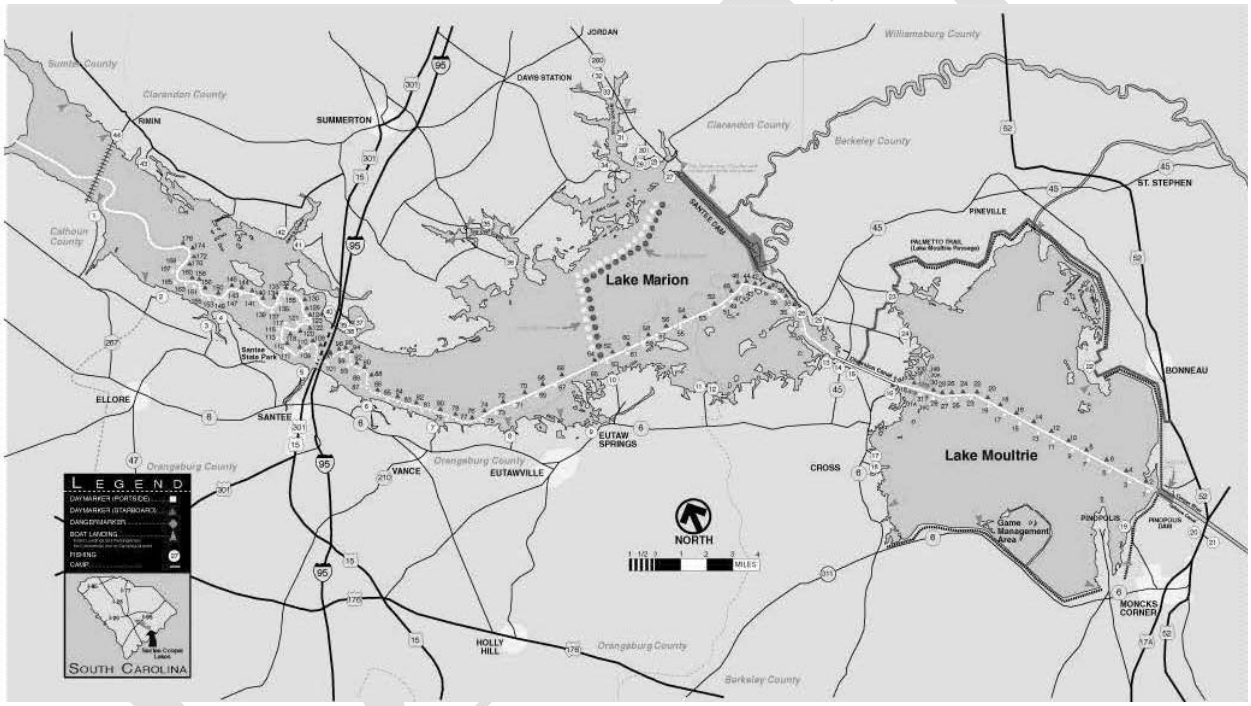

Figure 2. Map of Santee Cooper Lakes

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 proposed project is entirely within Dorchester County. The water transmission main would cross small streams (i.e., Walnut Branch, Lang Branch), Four Hole Swamp, and other small unnamed wetlands. All small stream crossing would be carried out using the jack and boring process or directional drilling. This process involves drilling down and then across so the pipe can be placed under the stream without impacting the stream.

The project area encompasses part of Four Hole Swamp, which is a part of the Edisto River watershed. 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 with a site specific classification that requires a dissolved oxygen (DO) level not less than 4.0 mg/L and pH between 5.0 and 8.5). Four Hole Swamp is monitored as part of South Carolina DHEC 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 DO levels. Additionally, both the Edisto River and Four Hole Swamp are listed on the Nationwide River Inventory.

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 near or within the project area. 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).

PRIME AND UNIQUE FARMLAND

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.

Prime farmland usually has an adequate and dependable supply of moisture from precipitation. It also has favorable temperature and growing season, acceptable acidity or alkalinity. It has few or rocks and is permeable to water and air. Prime farmland is not excessively erodible or saturated with water for long periods and is not frequently flooded during the growing season. The slope ranges mainly from 0 to 6 percent.

Unique farmland is land other than prime farmland used for the production of specific high value food and other fiber crops. Unique farmlands can economically produce sustained high quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods.

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The U.S. Department of Agriculture, Soil Conservation Service has not classified any prime or unique farmland within the project area.

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}), Particulate Matter ($PM_{2.5}$), Ozone and Sulfur Dioxide. All air pollutants are listed as in attainment for Dorchester County (EPA 2012).

The project area includes a mixture of residential, industrial and commercial areas. Generally the area is not densely populated or heavily industrialized, though surface mines and other industry exist near the project area. 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.

Cultural Resources

From September 28 to October 19, 2015 archaeologist with Brockington and Associates, Inc., conducted a survey of the proposed Dorchester Reach water transmission main (cover page and abstract of report are shown in Appendix A, full cultural resources report is available online at*http://www.sac.usace.army.mil/Missions/CivilWorks/NEPADocuments.aspx*). The survey was conducted at the request of the USACE Charleston District to comply with Section 106 of the National Historic Preservation Act for the construction of the water transmission main. Archaeological survey through surface inspection and systematic shovel testing at 100-foot intervals identified four sites and one isolated finds.

Brockington and Associates, Inc. also conducted an architectural reconnaissance of the proposed route of the Dorchester Reach water transmission main. Since the pipeline will be underground when complete, it presents no opportunity to affect any aboveground resources that might be eligible for the NRHP unless they have associated landscapes. An architectural historian from Brockington and Associates, Inc. conducted a reconnaissance survey along the roads adjacent to the pipeline corridor to see if such landscapes are present. A section of the project is located with the Harleysville Historic Area.

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Endangered Species

Table 1 contains a list of species that have been listed by the U.S. Fish and Wildlife Service as occurring or possibly occurring in Dorchester County (lists last updated October 23, 2013) (USFWS 2014).

Table 1. Federally threatened species (T), federally endangered species (E), federal candidate species (C), species protected under the bald and golden eagle protection act (BGEPA) for Dorchester County.

County	Category	Common Name	Scientific Name	Federal Status
Dorchester	Bird	Bald eagle	*Haliaeetus leucocephalus*	BGEPA
	Bird	Red-cockaded woodpecker	*Picoides borealis*	E
	Bird	Wood stork	*Mycteria americana*	E
	Fish	Atlantic sturgeon	*Acipenser oxyrinchus*	E
	Fish	Shortnose sturgeon	*Acipenser brevirostrum*	E
	Plant	Canby's dropwort	*Oxypolis canbyi*	E
	Plant	Pondberry	*Lindera melissifolia*	E
	Plant	Bog Asphodel	*Narthecium americanum*	C
	Reptile	Gopher tortoise	*Gopherus polyphemus*	C

Hazardous Toxic and Radioactive Waste

A site inspection of the project area was conducted by USACE staff. The inspection revealed no signs of HTRW within the project area. Additionally the Environmental Protection Agency (EPA) EnviroMapper was quarried on August 05, 2016. Several businesses near the project area report to the EPA, for various categories of pollutants, but none are within the footprint of the project area.

Socioeconomics

Table 2. Select U.S. Census Bureau statistics for the town of Ridgeville, SC. Estimates are from 2010 Census Data unless otherwise noted.

Subject	Estimate
Population estimate (as of July 1 2013)	1,979 persons
Percent of total population that is a minority	60.4%
Median household income	$32,639
Percent of residents living in poverty	16.2%

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CHAPTER 4 ALTERNATIVES

Alternative 1 (Proposed Project)

Alternative 1 (proposed project) would connect new 20 to 16-inch potable water transmission main to an existing 16-inch water transmission main near the Town of Harleyville and extend the water transmission main to the southeast approximately 56,000 feet (10.6 miles) to a point near the Town of Ridgeville (Figure 1). The new line would terminate at the junction of US Highway 78 and SC Highway 27. From its junction with Highway 178 the water transmission main is located within Department of Transportation right of way. Parts of the directional drill temporary platforms extend beyond the Department of Transportation right of way.

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 become operational in 2008 and has the capacity to support the increased water supply needs from construction of the proposed project.

Alternative 2

Alternative 2 would provide water the corridor between Ridgeville and Harleyville by extending the Lake Moultrie System to this area. Currently Dorchester County is not member of the Lake Moultrie Water Agency.

Alternative 3

Alternative 3 would provide water to the Ridgeville area 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 Ridgeville area.

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.

CHAPTER 5 ANALYSIS OF ALTERNATIVES

A number of conceptual plans were initially evaluated based on established criteria that considered engineering feasibility, cost effectiveness, environmental impacts, and socioeconomic benefits. Alternative plans included, drilling additional wells, attaching to existing water supply

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systems at other locations and a "No-Action" alternative, which assessed both the immediate and long-term impacts to the region. However, only one of these plans, the proposed project, was found to satisfy the region's water supply needs. Alternative 2 was excluded due to the increased distance of water transmission main required to transport water to the area from the Lake Moultrie System, policy/planning concerns associated with Dorchester County being added into the Lake Moultrie Agency and increased implementation cost. Alternative 3 was excluded 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 no action alternative was excluded due to its failure to address the areas need for clean reliable water. Excluded alternatives were no longer considered.

CHAPTER 6 ENVIRONMENTAL IMPACTS

Climate

No changes in climate would occur as a result of this project.

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. 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 was 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 is generally narrow and relatively shallow. Land use would remain largely unchanged after installation of the proposed project.

Water Resources and Aquatic Habitat

Temporary changes to water quality and surface waters related to turbidity and sedimentation are anticipated during construction. These impacts will 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. Additionally 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 will 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 other present users of the raw water supply.

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Wetlands
The proposed route for the new water transmission line would require crossing Walnut Branch, Lang Branch, Four Hole Swamp and other smaller streams. Stream channel crossings would be constructed using directional drilling or jack and boring. Using these construction techniques would greatly reduce impacts to stream channels.

The proposed construction and placement of the pipeline would temporarily impact 1.17 acers of wetland and permanently clear 3.64 acers along the route (see Table 3). Construction in these wetlands would be by either directional drilling, jack and bore or "cut and cover" following the guidelines in U.S. Army Corps of Engineers Nationwide Permit Number 12. Best management practices would be implemented for construction including siltation fencing, and hay bales where appropriate. After construction, the fill will be removed and the area restored to the existing grade. Permanent clearing of some of the wetlands will necessitate mitigation. In order to calculate mitigation requirements for damage to wetlands from construction of the proposed project the wetland mitigation worksheet was used (Appendix B). Based on the work sheet and data, included in Appendix B, it was determined that **38.22** wetland mitigation credits would be needed to mitigate for the wetland impacts. Mitigation for impacts to wetlands will be performed by purchasing mitigation credits from an approved source.

Stream Crossings and Floodplains
The placement of the proposed waterline would not affect the floodplains or topography. Directional drilling or jack and boring would be used at all stream crossings and would result in no 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. 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. Executive Order 11988 deters development in the 100-year floodplain for federally funded projects unless no other practical 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.

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 will be implemented to ensure the clearing process will 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 animals may be displaced to outlying areas during the pipeline placement and 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.

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Table 3. Wetland Impacts

Wetland ID Number	Affected Acres	Type of Impact	Description of Impacts	Notes
W-1	0.07	Temporary	No permanent impact. Temporary clearing of a construction easement	All impacts are within the temporary construction easement that will be initially cleared but allowed to re-vegetate. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed.
W-2a	0.11	Temporary	No permanent impact. Temporary clearing of a construction easement.	Walnut Branch stream crossing All impacts are within the temporary construction easement that will be initially cleared but allowed to re-vegetate. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed.
W-2b	0.04	Clearing	Permanently cleared easement.	Walnut Brach stream crossing The area impacted is a fairly mature forested area. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed.
W-3	0.01	Temporary	No permanent impact. Temporary clearing of a construction easement.	All impacts are within the temporary construction easement that will be initially cleared but allowed to re-vegetate. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed.
W-4a	0.21	Clearing	Permanently cleared easement.	The area impacted is a fairly mature forested area. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed.
W-4b	0.19	Temporary	No permanent impact. Temporary clearing of a construction easement.	All impacts are within the temporary construction easement that will be initially cleared but allowed to re-vegetate. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed.
W-5	1.2	Clearing	Permanently cleared easement.	4-Hole Swamp (between two main stream channels) The area impacted is a fairly mature forested area. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed.
W-6a	0.2	Temporary	No permanent impact. Temporary clearing and temporary fill of a construction easement.	4-Hole Swamp (east of eastern stream channel) All impacts are within the temporary construction easement that will be initially cleared but allowed to re-vegetate. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed.
W-6b	0.44	Clearing	Permanently cleared easement.	4-Hole Swamp (east of eastern stream channel) The area impacted is a fairly mature forested area. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed.
W-7a	0.16	Temporary	No permanent impact. Temporary clearing and temporary fill of a construction easement.	All impacts are within the temporary construction easement that will be initially cleared but allowed to re-vegetate. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed. Fill is associated with the construction of the pad for directional drilling operations.
W-7b	0.34	Clearing	Permanently cleared easement.	The area impacted is a fairly mature forested area. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed.

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W-8a	0.25	Temporary	No permanent impact. Temporary clearing and temporary fill of a construction easement.	All impacts are within the temporary construction easement that will be initially cleared but allowed to re-vegetate. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed. Fill is associated with the construction of the pad for directional drilling operations.
W-8b	0.18	Clearing	Permanently cleared easement.	The area impacted is a fairly mature forested area. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed.
W9	.05	Clearing	Permanently cleared easement.	The area impacted is a fairly mature forested area. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed.
W-10	0.14	Clearing	Permanently cleared easement.	The area impacted is a fairly mature forested area. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed.
W-11	0.34	Clearing	Permanently cleared easement	The area impacted is a fairly mature forested area. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed.
W-12	0.4	Clearing	Permanently cleared easement	The area impacted is a fairly mature forested area. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed.
W-13	0.09	Clearing	Permanently cleared easement	The area impacted is a fairly mature forested area. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed.
W-14	0.02	Clearing	Permanently cleared easement	The area impacted is a fairly mature forested area. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed.
W-15a	0.18	Temporary	No permanent impact. Temporary clearing and temporary fill of a construction easement.	All impacts are within the temporary construction easement that will be initially cleared but allowed to re-vegetate. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed. Fill is associated with the construction of the pad for directional drilling operations.
W.15b	0.19	Clearing	Permanently cleared easement	The area impacted is a fairly mature forested area. Work will be performed following the guidelines of NWP12. Area will be restored to existing grade after construction is completed.

TOTAL WETLAND ACREAGE IMPACTED:	**~3.64 acres of fairly mature wetland forest will be permanently. All impacted wetlands will be restored to original grade. Mitigation required (see Appendix B).**
	~1.17 acres of wetlands will be temporarily cleared and/or filled but restored to original grade and allowed to revegetate, which will result in no permanent impact. No mitigation required

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Air Quality and Noise

The South Carolina Department of Health and Environmental Control (SCDHEC) has air quality jurisdiction for the project area. The ambient air quality for Dorchester, Calhoun, Clarendon, Orangeburg, and Sumter counties has been determined to be in compliance with 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 increase 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.

Cultural resources

Intensive survey of the route of the proposed project by Brockington and Associates, Inc., identified three archaeological sites and one isolated artifact find (cover page and abstract of report are shown in Appendix A, full cultural resources report is available online at *http://www.sac.usace.army.mil/Missions/CivilWorks/NEPADocuments.aspx*). The proposed water transmission main also passes through the Harleyville Historic District. Brockington and Associates, Inc. recommended three archaeological sites and the isolated find not eligible for the NRHP. At one archaeological site the water transmission main passes through a small portion of an archaeological site. However, there are no deposits or features within the water transmission main easement that would contribute to its NRHP eligibility; the project will not affect the site. The project will also not affect the Harleyville Historic District. None of these resources contains the kinds of artifact deposits or features from which we can gain important information about the past. Thus, there are no historic properties within or immediately adjacent to the proposed project. Therefore, the project as currently designed would not affect historic properties (cover page and abstract of report are shown in Appendix A, full cultural resources report is available online at *http://www.sac.usace.army.mil/Missions/CivilWorks/NEPADocuments.aspx*).

Endangered Species

Based on site inspections of the project area, conducted by Corps staff, the Corps has determined that the proposed project would not have significant impacts to listed species. During site inspections, no suitable habitat for listed species was observed nor were any listed species observed. The project is within the range of several of the species listed in Table 1. However, the Corps has determined that these species and appropriate habitat for them are not present with

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the project area and therefore there will be no effect to listed species. This determination is being coordinated with the USFWS via consultation on this document.

Hazardous Toxic and Radioactive Waste

There are no known hazardous or toxic waste sites within the immediate vicinity of the treatment plant or any of the transmission lines. No hazardous toxic or radioactive waste would be generated as a result of installation or operation of the proposed project.

Socioeconomics

According to Executive Order 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 Executive Order 12898, or would create disproportionate adverse human health or environmental impacts on minority or low-income populations of the surrounding community. This project will provide safe drinking water to all residents on an equal basis and will reduce the dependence on groundwater in the future. Implementation of the proposed project would cause no significant adverse environmental impacts to any of the residents in Orangeburg County, Dorchester 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, the Corps has satisfied the requirements of the Environmental Justice Executive Order 12898.

CHAPTER 7 CUMULATIVE IMPACTS

Cumulative impacts are defined under section 1508.7 of NEPA as: "…the impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time." The following paragraphs summarize the cumulative impacts expected from the proposed project.

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. The cumulative impacts of the total Lake Marion Regional Water Supply System (i.e., Phase I, Phase II, and

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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 impacts of the proposed project, when considered along with past, present and future actions, are cumulatively insignificant. The overall lack of impacts associated with the proposed project, as documented here, demonstrates both the benign nature and limited impacts of this project. No negative impacts would occur from implementation of the selected alternative, as it would maintain the status quo. Continued positive impacts to recreation would occur with construction of the preferred alternative. Any impacts associated with the proposed project, when added to other past, present and reasonable foreseeable future actions are collectively insignificant.

CHAPTER 8 PUBLIC INVOLVEMENT AND COORDINATION

Executive Order 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. The proposed project is being coordinated with Federal, State, and local government agencies having jurisdictional responsibilities, or otherwise having an interest in the project. A list of all parties that received a notice via mail of the issuance of the Draft EA and FONSI are attached in Appendix C. All comments received and responses will be include in the Final EA in Appendix D.

CHAPTER 9 COMPLIANCE WITH OTHER ENVIRONMENTAL LAWS

Clean Water Act

The proposed project would result in the placement of dredged or material into Waters of the United States. However, these activates are covered under Army Corps of Engineers Nationwide Permit Number 12.

A National Pollutant Discharge Elimination System (NPDES) permit is required for this project. Construction activities such as clearing, grading, excavating, grubbing, or filling will result in the disturbance of more than one acre of land. A storm water pollution prevention plan (SWPPP) has been prepared for the project and incorporated into the plans and specifications and will be implemented during construction. Also, to obtain coverage under a general permit for South Carolina, a Notice of Intent (NOI) application has been sent to the state. A Notice of termination will be provided when the project is completed.

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Clean Air Act

The proposed project has been analyzed for conformity applicability pursuant to regulations implementing Section 176(c) of the Clean Air Act. It has been determined that the activities proposed under the proposed project are exempt by 40 C.F.R. Part 93.153.

Endangered Species Act

The requirements of Section 7 of the Endangered Species Act of 1973 will be fulfilled. Project Documentation is being provided to the USFWS for their review and comment.

Farmland Protection Policy Act

The Farmland Protection Act minimizes the unnecessary and irreversible conversion of farmland to nonagricultural uses. There is no "farmland," as defined by this Act, impacted by any of the recommended alternatives.

The project involves the construction of water transmission main in counties with a large agricultural and rural base. The proposed pipeline reaches will 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. No unnecessary and irreversible conversion of farmlands would occur as a result of construction of the proposed project.

Fish and Wildlife Coordination Act

The alternatives are being provided to the USFWS, in order to fulfill the requirements of the Fish and Wildlife Coordination Act. A Fish and Wildlife Coordination Act report is not considered necessary for this project.

Floodplain Management (EO 11988)

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 practical non-floodplain alternative exists. The considered actions do not conflict with applicable state and local standards concerning floodplain protection. The considered action will not significantly affect the natural and beneficial values of the floodplain.

Protection of Wetlands (EO 11990)

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.

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No practical non-wetland alternative exists. The considered actions do not conflict with applicable state and local standards concerning wetland protection and permitting and are covered under USACE nationwide permit number 12. The proposed project will not significantly affect the natural and beneficial values of the impacted wetlands as, where possible, areas will be allowed to return to a natural state after installation of the water transmission main and no wetlands will be permanently filled. The proposed project has avoided and minimized wetland impacts where possible. All permanent impacts will be mitigated for to ensure no net loss of wetlands.

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 will not affect a stream or portion of a stream that is included in the National Wild and Scenic Rivers system.

National Historic Preservation Act (NHPA)

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 regulations implementing Section 106 of the National Historic Preservation Act (NHPA). In accordance with 36 C.F.R. §800.4(d)(1), it was determined that there will be no effect to historic properties and documentation of this determination has been provided to the South Carolina State Historic Preservation Officer. Therefore, in accordance with 36 C.F.R. §800.4(d)(1)(i), the Corps' responsibilities under Section 106 of the NHPA have been fulfilled.

Coastal Zone Management Act

Dorchester County is part of the 9 counties in South Carolina under the jurisdiction of the Federal Coastal Zone Management Act and the South Carolina Coastal Zone Management Program (SCCZMP). A Coastal Zone Consistency Certification (CZCC) has been applied for and construction will not commence until the certification is issued. There are no technical concerns from construction of the proposed project that would impact the issuance of a CZCC.

CHAPTER 10 REFERENCES

U.S. Census Bureau
2012. *2010 Census*. http://2010.census.gov. Search conducted June 15, 2016.

U.S. Department of Agriculture.
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U.S. Environmental Protection Agency
2012 *Green Book Non-attainment Areas for Criteria Pollutants*. http://www.epa.gov/oar/oaqps/greenbk/index.html. Search conducted June 15, 2016.

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U.S. Fish and Wildlife Service
2012A *Online-Wetlands Mapper*. http://www.fws.gov/wetlands/Data/Mapper.html. Search conducted June 15, 2016.

U.S. Fish Wildlife Service South Carolina Field Office
Endangered, Candidate and At-Risk Species County Listings. http://www.fws.gov/charleston/EndangeredSpecies_County.html. Accessed June 15, 2016.

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APPENDIX A

Cultural Resources Report

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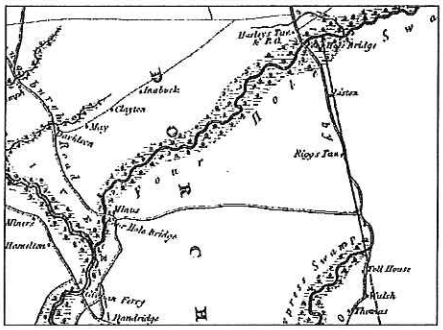
Cultural Resources Survey of the Proposed Dorchester Orangeburg Reach Water Transmission Main

Dorchester and Orangeburg Counties, South Carolina



January 2016

Brockington®
CULTURAL RESOURCES CONSULTING

Cultural Resources Survey of the Proposed Dorchester Orangeburg Reach Water Transmission Main

Dorchester and Orangeburg Counties, South Carolina

January 2016

Final Report

Prepared for:
Lake Marion Regional Water Agency
South Carolina Public Service Authority
Moncks Corner, South Carolina

and
Hazen and Sawyer, PC
Charlotte, North Carolina

Prepared by:
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Archaeologist

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Principal Investigator

Brockington and Associates, Inc.

Atlanta • Charleston • Elizabethtown • Jackson • Savannah

Abstract

Archaeologists and architectural historians with Brockington and Associates, Inc. (Brockington), conducted an intensive survey of the proposed Dorchester Orangeburg Reach Water Transmission Main, in Dorchester and Orangeburg counties, South Carolina, in September and October 2015. The proposed water transmission main will extend for 12.81 miles, with a 1.21-mile segment in southern Orangeburg County and an 11.6-mile segment in Dorchester County. The easement for the water pipeline is 30 feet wide throughout its length and lies within existing rights-of-way (ROW) of US Highways 78, 176, and 178; SC Route 27; and various streets in the Town of Harleyville. Portions of the easement within the US Highway 78 ROW were surveyed by Salo et al. (2007). This water pipeline will join other elements of the Lake Marion Regional Water Agency's water transmission system.

The survey identified five new archaeological sites (38DR448-38DR449 and 38OR361-38OR363) and one isolated find and revisited one archaeological site (38DR347). The easement also passes through a portion of Harleyville Historic Area. Archaeological sites 38DR448-38DR449 and 38OR361-38OR363 are diffuse scatters of Pre-Contact or Post-Contact materials. We recommend sites 38DR448-38DR449 and 38OR361-38OR363 and the isolated find not eligible for the National Register of Historic Places (NRHP).

We revisited 38DR347 and examined intensively a portion of the easement that passes through the site that lies outside the US Highway 78 ROW. Salo et al. (2007) originally identified the site; they found no archaeological deposits within the US Highway 78 ROW that could contribute to the NRHP eligibility but did not investigate portions of the site beyond the ROW to develop a definitive NRHP evaluation for the entire site. Close interval shovel testing and intensive metal detecting recovered no artifact or archaeological deposits within the proposed water pipeline easement that can contribute to the NRHP eligibility of 38DR347.

The proposed water pipeline will be installed underground within the ROW of streets within the Harleyville Historic Area. The setting of the Historic Area and its individual elements will not be altered such that their NRHP eligibility will be compromised or degraded. Also, we inspected the entire water pipeline route for potential historic landscapes that might be affected by the removal of trees or the alteration of other features during the installation of the water transmission main. We identified no such landscapes.

As currently designed, the proposed Dorchester Orangeburg Water Transmission Main will affect no historic properties. Should the project be redesigned such that additional portions of 38DR347 fall within the easement or that portions of the Harleyville Historic Area outside existing ROW are within the easement, then additional cultural resources investigations may be necessary to determine the redesigned Project's effect on historic properties.

APPENDIX B

Wetland Mitigation Worksheet

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Wetland Mitigation Factor Scoring Definitions

FACTORS		OPTIONS					
Type of Wetland Lost	Type	Type C (Type C wetlands include the following: man-made lakes and ponds; impoundments; vegetated lake littoral; and shallow cove areas)	Type B (Type B wetlands include the following: seeps and bogs; depressions; savannahs and flatwoods; and pocosins and bays)	Type A (Type A wetlands include the following: tidal vegetated systems; shallow subtidal bottoms; riverine systems including headwaters and riparian zones; bottomland hardwoods; and intertidal flats)			
	Score	0.2	2.0	3.0			
Wetland Priority Category	Category	Tertiary (Tertiary priority areas include the following categories of aquatic systems that do not fall into the designated primary priority category: bald cypress-tupelo gum swamp; non-alluvial swamp forest; swamp tupelo pond; pond pine woodland; pocosin (other than seepage or swale); pine flatwoods; and bottomland hardwood)	Secondary (Secondary priority areas include the following categories of vulnerable or uncommon aquatic systems that do not fall into the designated primary priority category: Carolina bay; swale pocosin; high elevation seep; pond cypress pond; bay forest; seepage pocosin; salt shrub thicket; upland depression swamp forest; and waters on the 303(d) list.)	Primary (Primary priority areas include the following: National Estuarine Sanctuaries; anadromous fish spawning waters; Wild and Scenic Rivers; State Heritage Trust Preserves; designated shellfish grounds; National Wildlife Refuges; Outstanding Resource Waters; waters officially designated by State or Federal agencies as high priority areas; Essential Fish Habitat; trout waters; old growth climax communities that have unique habitat structural complexity likely to support rare communities of plants or animals; all tidal waters; and rare aquatic systems (i.e.,: hillside herb bog, piedmont seepage forest, upland bog, limestone sink, Atlantic white cedar bog, pine savannah, depression meadow, and interdune pond))			
	Score	0.5	1.5	2.0			
Existing Wetland Condition	Condition	Very Impaired (Site disturbances have resulted in the loss of most functions typically attributed to the aquatic resource type and functional recovery would require a significant restoration effort. Examples include: filled areas, excavated areas, or effectively drained wetlands (hydrology removed or significantly altered))	Impaired (Site disturbances have resulted in the loss of one or more functions typically attributed to the aquatic resource type and functional recovery is unlikely to occur through natural processes. Restoration activities are required to facilitate recovery. Examples include: areas that have been impacted by surface drainage and converted to pine monoculture or agriculture, areas that are severely fragmented, or wetlands within maintained utility corridors)	Partially Impaired (Site disturbances have resulted in partial or full loss of one or more functions typically attributed to the aquatic resource type but functional recovery is expected to occur through natural processes. Examples include: clear-cut wetlands, aquatic areas with ditches that impair but do not eliminate wetland hydrology, or temporarily cleared utility corridors)	Fully Functional (Typical suite of functions attributed to the aquatic resource type are functioning naturally. Existing disturbances do not substantially alter important functions. Examples include: pristine (undisturbed) wetlands, aquatic resources with nonfunctional ditches or old logging ruts with no effective drainage, or minor selective cutting)			
	Score	0.1	1.0	2.0	2.5		
Duration of Impact	Duration	0 to 1 year	1 to 3 years	3 to 5 years	5 to 10 years	Over 10 years	
	Score	0.2	0.5	1.0	1.5	2.0	
Dominant Type of Impact*	Impact	Shade (shelter or screen by intercepting radiated light or heat. Examples of projects causing shading impacts include bridges, piers, and buildings on pilings)	Clear (remove vegetation without disturbing the existing topography of the soils)	Drain (ditching, channelization, or excavation that results in the removal of water from an aquatic area causing the area, or a portion of the aquatic area, to change over time to a non-aquatic area or a different type of aquatic area)	Dredge (dig, gather, pull out, or excavate from waters of the United States)	Impound/Flood (collect or confine the flow of a riverine system by means of a dike, embankment, or other man made barrier. Impoundments may result in the formation of ponds, lakes, reservoirs, detention basins, etc, or they may limit the reach of high waters, such as levees or flood dikes)	Fill (depositing material used for the primary purpose of replacing an aquatic resource with dry land or changing the bottom elevation of a water body or wetland)
	Score	0.2	1.0	2.0	2.5	2.5	3.0
Cumulative Impact	Acres Impacted	< 0.25 acre	0.25 to 0.99 acre	1.0 to 2.99 acres	3.0 to 9.99 acres	≥ 10.0 acres	
	Score	0.1	0.2	0.5	1.0	2.0	

** Multiple impacts may occur with the project. For example, the construction of a recreational pond may include both fill impacts for the construction of the embankment and impound/;flood impacts associated with impounding water for the pond itself.*

Cumulative Impact: defined by the National Environmental Policy Act as the impact on the environment which results from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The total acreage of permanent and temporary wetland impacts are added together to determine the value (0.1 -2.0) of the cumulative impact factor for a proposed project. The same value is used to calculate the required mitigation credits for each adverse impact associated with the proposed project.

Existing Condition: the degree of disturbance relative to the ability of a site to perform its physical, chemical, and biological functions. This factor evaluates site disturbances relative to the existing functional state of the system.

Duration: the length of time the adverse impacts are expected to last. For example, if a forested wetland is cleared to construct a temporary access road it will take more than 10 years for a similar forested canopy to develop

Wetland Mitigation Credit Calculation		
Factor		**Widening Existing Cleared Corridor Areas**
Type of Wetland Lost	Type	Type A
	Score (see above)	3.0
Wetland Priority Category	Category	Secondary
	Score (see above)	1.5
Existing Wetland Condition	Condition	Partially Impaired
	Score (see above)	2.0
Duration of Impact	Duration	Over 10 Years
	Score (see above)	2.0
Dominant Type of Impact	Impact	Clear
	Score (see above)	1.0
Cumulative Impact	Acres	3.0 to 9.99 acres
	Score (see above)	1
Sum of Factors (S)		10.5
Actual Acres Impacted (A)		3.64 acres
Required Credits (S x A)		38.22
Total Mitigation Credits Required		**38.22 credits**

APPENDIX C

List of Addresses for EA and Draft FONSI

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List of Addressees for Draft EA and FONSI

Berkeley County Supervisor	Berkeley County Water and Sewer
Calhoun County Council	Calhoun County Administrator
Dorchester County Administrator	Dorchester County Council
Orangeburg County Council Member	Orangeburg County Council
Waste Water Manager Town of Santee	Mayor Town of Santee
National Marine Fisheries Services	Water Quality Cert. and Wetlands Section SC Dept. of Health and Env. Control
Environmental Programs, SC Depart of Natural Resources	SC Office of Ocean and Coastal Resource Management
US Environmental Protection Agency	South Carolina Department of Commerce
SC Department of Archives & History	Bureau of Air Qualit - DAAIR SC Dept. of Health and Env. Control
Environmental Review Program Manager SC Depart of Natural Resources	Bureau of Water SC Dept. of Health and Env. Control
Office of Ocean and Coastal Resource Management	US Fish and Wildlife Service
Berkeley-Charleston-Dorchester COG	Audubon South Carolina
SC Department of Transportation	SC Coastal Conservation League
U.S. House of Representatives	SC Nature Conservancy
South Carolina Sierra Club	United States Senate
South Carolina Wildlife Federation	Kialegee Tribal Town
Catawba Indian Nation	Muscogee (Creek) Nation
Poarch Band of Creek Indians	Thlopthlocco Tribal Town
The Chickasaw Nation	Shawnee Tribe
Seminole Tribe of Florida	Cherokee Nation
Tuscarora Nation of New York	United Keetoowah Band of Cherokee Indians
The Eastern Band of the Cherokee	Alabama-Quassarte Tribal Town
Absentee-Shawnee Tribe of Indians of Oklahoma	Eastern Shawnee Tribe of Oklahoma

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APPENDIX D

Comments

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