

ENVIRONMENTAL REPORT

**CAMP HALL RAIL PROJECT
BERKELEY COUNTY, SOUTH CAROLINA
SAC: 2016-01395**

PREPARED FOR:



**PALMETTO RAILWAYS
540 EAST BAY STREET
CHARLESTON, SOUTH CAROLINA**

JULY 25, 2017

1 EXECUTIVE SUMMARY

Development within the Camp Hall Commerce Park has increased the demand for rail service to interconnect the commerce park with the existing rail network of CSX Transportation, Inc. (CSXT) in Berkeley County, South Carolina, in a manner that is logistically feasible to better serve the needs of industry within the Camp Hall Commerce Park for transportation, distribution, and logistics. To accomplish this, Palmetto Railways has determined a need to construct a rail spur from the CSXT A-line with the intent to enhance distribution for the industrial development and the tenants that locate at Camp Hall Commerce Park.

Palmetto Railways is requesting regulatory approval to locate, build, own and operate an industrial rail line between Santee Cooper's Cross Generating Station and the Camp Hall Commerce Park in Berkeley County, South Carolina. The proposed rail line will service the new Volvo Cars manufacturing facility, as well as future proposed development within the Camp Hall Commerce Park.

A detailed Alternatives Analysis was conducted to evaluate potential routes from existing CSXT rail lines into the Camp Hall Commerce Park. The alternatives analysis reviewed potential impact environmental, economic, and socioeconomic resources, as well as cultural resources. Six alternative route alignments were considered under Level 1 of the alternatives analysis, four alignments were advanced to Level 2 of the alternatives analysis. It was determined that the Cross option, beginning near Santee Cooper's Cross Generating Station and terminating at the Camp Hall Commerce Park, was the preferred project corridor. Four separate Cross Route alignments were analyzed in Level 3 of the alternatives analysis, and Cross Route 3 (Proposed Project) is proposed as the most practical route with the least amount of overall impacts, as judged by the potential impacts to environmental, economic, and socioeconomic resources.

The Proposed Project is an approximately 22.7-mile by 200-ft corridor [0.85 square mile (544 acres)] that will connect to the CSXT rail network near the Santee Cooper Cross Generating Station and travel south and west to the Camp Hall Commerce Park. The proposed rail corridor will impact a total of 83.18 acres of jurisdictional wetlands, of which 77.49 acres of impacts are located with the Cooper Watershed and the remaining 5.76 acres of impacts are located with the Four Hole Swamp Watershed. In addition, approximately 0.06 acres and 169 feet of non-wetland waters (jurisdictional streams) will be impacted.

In the absence of suitable existing wetland mitigation bank or an in-lieu fee program for the watershed, all required compensatory mitigation for impacts to wetlands and waters of the United States will be obtained through off-site landscape scale permittee-responsible mitigation activities utilizing the watershed approach.

In conclusion, the Proposed Project is expected to provide significant logistical support to the Camp Hall Commerce Park. This Environmental Report addresses and meets requirements set forth under the National Environmental Policy Act, 42 U.S.C.A. §§ 4321 *et seq.* (NEPA) and is in compliance with the guidelines promulgated by the United States Environmental Protection Agency in conjunction with the Secretary of the Army under the authority of Section 404(b)(1) of the CWA (Guidelines) and NEPA. This Environmental Report has been prepared to assist the preparation of NEPA documentation by the US Army Corps of Engineers and the Surface Transportation Board.

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ACRONYMS

AAR	Association of American Railroads
AASHTO	American Association of State Highway Officials
ACE	Ashepoo, Combahee and Edisto Rivers
ADT	Average daily traffic
AIRS	Permitted Airs Facility Listing Environmental Database
APE	Area of potential effect
BFE	Base Flood Elevation
BGEPA	Bald and Golden Eagle Protection Act
BMP	Best management practice
CBG	Census Block Group
CCD	Census County Division
CEQ	Council on Environmental Quality
C.F.R.	Code of Federal Regulations
CGP	Construction General Permit
CH	Critical Habitat
CO	Carbon monoxide
CSP	Conservation Stewardship Program
CSXT	CSX Transportation, Inc.
CWA	Clean Water Act
DA	Department of Army
dB	Decibel
dBA	A-weighted decibel
DO	Dissolved oxygen
EJ	Environmental Justice
EO	Executive Order
ESA	Endangered Species Act
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Map
FMNF	Francis Marion National Forest
FPPA	Farmland Protection Policy Act

ACRONYMS, cont'd

FR	Federal Register
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
HTC	Home Telephone Company
HUC	Hydrologic unit code
HUD	Housing and Urban Development
IPAC	Information Planning and Conservation System
LCI	United States Geological Survey Land Cover Institute
LCP	Larger common plan
Ldn	Day/Night Levels
LEDPA	Least Environmentally Damaging Practicable Alternative
LOMR-F	Letter of Map Revision based on Fill
LOS	Level of service
LUST	Leaking Underground Storage Tank
LWCF	Land and Water Conservation Fund
MBTA	Migratory Bird Treaty Act
NAAQS	National Ambient Air Quality Standards
NCED	National Conservation Easement Database
NEI	National Emission Inventory
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Programs
NGO	Non-governmental Organization
NO2	Nitrogen Dioxide
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NS	Norfolk Southern
NWI	National Wetland Inventory
O3	Ozone
PAD-US	USGS Protected Areas Database of the United States
Pb	Lead

ACRONYMS, cont'd

PM	Particulate matter
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PM-2.5	Particulate matter < 2.5 micrometers
PM-10	Particulate matter < 10 micrometers
RCW	Red-cockaded woodpecker
REC	Recognized Environmental Condition
ROW	Right-of-way
RPW	Relatively Permanent Water
SC	South Carolina
SCDAH	South Carolina Department of Archives and History
SCDHEC	South Carolina Department of Health and Environmental Control
SCDNR	South Carolina Department of Natural Resources
SCDOT	South Carolina Department of Transportation
SCIAA	South Carolina Institute of Archaeology and Anthropology
SDTSA	State Designated Tribal Statistical Area
SHPO	State Historic Preservation Office
SHWS	State Hazardous Waste Sites Database
SO ₂	Sulfur Dioxide
STB	Surface Transportation Board
SWF/LF	Solid Waste Facilities/Landfill Database
SWPPP	Stormwater Pollution Prevention Plan
TIGER	United States Census Bureau Topology Integrated Geographic Encoding and Referencing dataset
TMDL	Total maximum daily load
TSS	Total suspended solids
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geologic Survey
WMA	Wildlife Management Area

2 INTRODUCTION

This document is prepared and submitted pursuant to the permitting jurisdiction of the Department of the Army, U.S. Army Corps of Engineers (USACE or Corps) under Section 404 of the Clean Water Act (CWA) and certain requirements set forth under the National Environmental Policy Act, 42 U.S.C.A. §§ 4321 *et seq.* (NEPA). The Surface Transportation Board (STB) will act as a co-lead agency with the USACE, under requirement from NEPA 42 U.S.C. 4331-4335, to examine the environmental impacts of actions subject to the STB's jurisdiction. Palmetto Railways will submit a Section 404 application for construction of a rail spur to connect the CSX Transportation, Inc. (CSXT) A-Line to the Camp Hall Commerce Park ("Proposed Project"). The analysis contained in this Environmental Report is drafted to ensure compliance with the guidelines put forth by the United States Environmental Protection Agency (USEPA) in conjunction with the Secretary of the Army under the authority of Section 404(b)(1) of the CWA and NEPA. Thus, the purpose of this document is, primarily, three-fold:

- To present the environmental documentation and information from which the USACE can make its Section 404(b)(1) compliance determination regarding the Proposed Project;
- To present environmental documentation and information to assist the USACE and STB in making the necessary determinations pursuant to NEPA regarding the Proposed Project; and
- To inform the public of the USACE and STB's decision-making process in evaluating the Proposed Project's compliance with Section 404(b)(1) and NEPA and to invite the public to participate and provide comments relevant to that evaluation.

2.1 Applicant's Proposed Project

Palmetto Railways serves as the applicant to locate, build, own, and operate an industrial rail line connecting the CSXT A-Line and the Camp Hall Commerce Park. The Proposed Project would involve the discharge of dredge and fill material into waters of the United States. Section 404 of the CWA established a regulatory program to regulate the discharge of dredge and fill material into waters of the United States, including wetlands, through issuance of Department of Army (DA) permits.

2.2 Project Background

The Proposed Project involves the construction and operation of an industrial rail line which will connect the Camp Hall Commerce Park to an existing railroad right-of-way (ROW), near the Santee Cooper Cross Generating Station in Berkeley County, South Carolina.

The Camp Hall Commerce Park comprises approximately 6,781 acres, of which 2,880 acres have been permitted by Berkeley County for development of Volvo Cars North America's ("Volvo Cars") first North American factory (Project Soter – SAC-2015-0476-SIR). An additional 1,387 acres of the Camp Hall Commerce Park is being permitted for industrial development by Santee Cooper (SAC-2015-01764). The Proposed Project is intended to bring industrial rail service to these developments. Industrial rail service is an additional transportation mode that enhances options for distribution and logistics for the industrial development and the customers that locate at the Camp Hall Commerce Park. In addition, the proposed industrial rail service will support the State of South Carolina and Berkeley County's infrastructure needs and will help alleviate highway congestion involving large commercial trucks.

2.2.1 Proposed Project Corridor

The corridor for the Proposed Project is an approximately 22.7-mile by 200-ft corridor (0.85 square mile) that will connect to the CSXT rail network near the Santee Cooper Cross Generating Station and travel south and west to the Camp Hall Commerce Park (Figure 1).

The Proposed Project corridor is located in the Middle Atlantic Coastal Plain region of South Carolina, which is generally a flat region underlain by unconsolidated sedimentary deposits. Rivers meander through broad floodplains characterized by cut-off lakes and swamp vegetation. Elevation differences in the Middle Atlantic Coastal Plain range from 300 feet at the border of the Sandhills to sea level at the border of the coast. Soils in the Middle Atlantic Coastal Plain consist of a mixture of sand, clay and organic materials. Additionally, the Proposed Project area is located at the convergence of two distinct river basins: (1) the project area is located predominantly in the upper reaches of the Cypress Swamp Watershed of the Cooper River Basin and (2) a small portion of the project is on the lower boundary of the Lower Four Hole Swamp Watershed of the Edisto River Basin.

The climate of the Proposed Project corridor is considered temperate to subtropical, with warm, humid summers and mild winters. Average temperatures, by season, range from: (1) Spring, 58°F to 72°F; (2) Summer, 87°F to 91°F, with July being the warmest month of the year; (3) Fall, with an average temperature of 76°F in September, falling to 58°F by November; and (4) Winter, 47°F to 52°F, with January typically being the coldest average month of the year. Berkeley County has above-average levels of precipitation annually, when compared nationally, with 105 days of precipitation and an average annual rainfall of 47 inches. Freezing rain or snow occurs infrequently, with an average of 0.2 inches annually.

Land use within the project corridor is a mix of residential, commercial, silvicultural, and wetlands. The project corridor originates on Santee Cooper property adjacent to its Cross Generating Station, and crosses the Diversion Canal between Lake Marion and Lake Moultrie. South of the Diversion Canal. The project corridor includes the unincorporated rural community of Cross, with an estimated total population of 7,253 in 2015. Outside of the Cross

community, the corridor runs south through intensively managed pine plantation in short pulp rotations, and then into the Camp Hall Commerce Park.

2.3 The Federal Authority and Scope of Analysis

2.3.1 Section 404 of the Clean Water Act

The Proposed Project is subject to the jurisdiction of the USACE under Section 404 of the CWA based on its contemplated placement and discharge of dredged or fill material into navigable waters and/or wetlands of the United States. The USACE administers the Section 404 program on behalf of the Secretary of the Army. The USEPA has the authority to determine the scope of Section 404 jurisdiction, has issued guidelines on the discharge of dredged or fill material, and will generally prohibit a discharge if it determines under Section 404 that a discharge will result in unacceptable adverse effects on municipal water supplies, shellfish beds and fishery areas, wildlife, or recreational areas. The USEPA can exercise its Section 404(c) authority to veto the issuance of a Section 404 Permit of the USACE.

The USACE's review of the Proposed Project includes a determination of compliance with the guidelines contained in 40 C.F.R. Part 230, including review of four specific requirements:

- **40 C.F.R. § 230.10(a):** An evaluation of alternatives to the Proposed Project to determine whether there is a practicable alternative to the proposed discharge that would have less adverse impact on the aquatic ecosystem than of the Proposed Project, so long as the alternative does not have other significant adverse environmental consequences. The alternative identified by this test is referred to as the *least environmentally damaging practicable alternative*, or the Least Environmentally Damaging Practicable Alternative (LEDPA).
- **40 C.F.R. § 230.10(b):** Whether the discharge would violate any applicable state water quality standards, Section 307 of the CWA, the Endangered Species Act (ESA), or federal laws concerning marine sanctuaries.
- **40 C.F.R. § 230.10(c):** Whether the discharge would cause or contribute to significant degradation of waters of the United States.
- **40 C.F.R. § 230.10(d):** Whether appropriate and practicable steps have been taken that will minimize potential adverse impacts of the discharge on the aquatic ecosystem.

Evaluation of a Proposed Project under all four of the requirements set forth in the guidelines constitutes a determination of compliance with the Section 404(b)(1).

The Corps' regulations also address the relationship between the Corps and state and local land use planning agencies. The regulations expressly state that "the primary responsibility for determining zoning and local land use matters rest with state and local and tribal

authorities.” 33 C.F.R. § 320.4(j)(2). The regulations direct that upon compliance with the Corps’ rules and other applicable federal law, in the absence of “overriding national factors of the public interest” that may be revealed during a permit application, a permit “will be generally issued following receipt of a favorable state determination” 33 C.F.R. § 320.4(j)(4). While making a compliance determination, the Corps may gather information sufficient to support and make its decisions by soliciting comments from other federal, tribal, state, and local resource agencies and the public. Notwithstanding, the Corps is solely responsible for reaching a decision on the merits of the permit application, including determination of the project purpose, the extent of the alternatives analysis, which alternatives are practicable, the LEDPA, the amount and type of mitigation that is to be required, and all other aspects of the decision-making process.

2.3.2 STB Construction Authority

To build an extension of a rail line or to construct and operate a new rail line, Palmetto Railways must first apply to the STB for authority. Construction proposals are reviewed by STB under authority of the Interstate Commerce Act, and may also require an environmental review under NEPA. STB’s Office of Environmental Analysis (OEA) prepares an Environmental Assessment (EA), with the assistance of a third-party contractor. For this project, STB has selected ICF as the third-party contractor

2.3.3 National Environmental Policy Act

Because the Proposed Project will require permit authorization from the USACE for fills to waters of the US, it is considered a major federal action and therefore the federal permitting agencies, USACE and STB, must either prepare an Environmental Assessment (EA) for a determination of the significance of the environmental impacts or conduct an Environmental Impact Statement (EIS) pursuant to NEPA.

According to the guidelines, the alternatives analysis required in a NEPA evaluation is similar to that conducted for the USACE under the Section 404(b)(1):

For actions subject to NEPA, where the Corps of Engineers is the permitting agency, the analysis of alternatives required for NEPA environmental documents, including supplemental Corps NEPA documents, will in most cases provide the information for the evaluation of alternatives under these Guidelines. (40 C.F.R. § 230.10(a)(4))

Additionally, USACE program literature has recognized that “Districts should not conduct or document separate alternatives analyses for NEPA and the 404(b)(1) Guidelines.” See USACE, *Standard Operating Procedures for the USACE’s Regulatory Program* (July 2009) (USACE SOP).

To meet the requirements of the Guidelines under the USACE’s regulatory program, as well as satisfy the alternative requirements under NEPA, alternatives were developed to

determine the LEDPA, and no additional alternatives are necessary as part of the USACE's Guidelines evaluation process of the Proposed Project.

The STB will act as co-lead with the USACE in development of the NEPA documentation pursuant to their environmental rules (49 CFR 1105). The STB's environmental rules are designed to ensure adequate consideration of environmental factors in the STB's decision-making process.

3 FINDING OF PRACTICABLE ALTERNATIVES

3.1 Practicable Alternatives Framework (40 C.F.R. § 230.10 (a))

This chapter forms the basis of the USACE's analysis of practicable alternatives for the Guidelines evaluation. The first requirement of the Guidelines provides:

(a) Except as provided under Section 404(b)(2), no discharge of dredged or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.

(1) For the purpose of this requirement, practicable alternatives include, but are not limited to:

(i) Activities which do not involve a discharge of dredged or fill material into the waters of the United States or ocean waters;

(ii) Discharges of dredged or fill material at other locations in waters of the United States or ocean waters;

(2) An alternative is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes. If it is otherwise a practicable alternative, an area not presently owned by the applicant which could reasonably be obtained, utilized, expanded or managed in order to fulfill the basic purpose of the proposed activity may be considered.

(3) Where the activity associated with a discharge which is proposed for a special aquatic site (as defined in subpart E)¹ does not require access or proximity to or siting within the special aquatic site in question to fulfill its basic purpose (i.e., is not "water dependent"), practicable alternatives that do not involve special aquatic sites are presumed to be available, unless clearly demonstrated otherwise. In addition, where a discharge is proposed for a special aquatic site, all practicable alternatives to the proposed discharge

¹ *Special aquatic sites* are geographic areas, large or small, possessing special ecological characteristics of productivity, habitat, wildlife protection, or other important and easily disrupted ecological values. These areas are generally recognized as significantly influencing or positively contributing to the general overall environmental health or vitality of the entire ecosystem of a region. 40 C.F.R. § 230.3. These include sanctuaries and refuges (§ 230.40), wetlands (§ 230.41), mudflats (§ 230.42), vegetated shallows (§ 230.43), coral reefs (§ 230.44), and riffle and pool complexes (§ 230.45). Because the Proposed Project involves the discharge into and fill of wetlands, these more restrictive provisions apply to the Proposed Project.

which do not involve a discharge into a special aquatic site are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise.

3.1.1 40 C.F.R. § 230.10(a).

As provided above, the Guidelines prohibits the discharge of dredged or fill material in a special aquatic site unless it can be shown that there is no practicable alternative which would have less adverse impact on the aquatic ecosystem. A practicable alternative is subject to reasonable interpretation; however, the Guidelines generally define a practicable alternative as one that is “available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purposes.” 40 C.F.R. § 230.10(a)(2).

Under subsection (a)(3), an initial determination must be made by the USACE with respect to whether the proposed discharges are “water dependent.” The Guidelines provide that, when an activity associated with the discharge of dredged or fill material in a special aquatic site does not require access or proximity to that special aquatic site to fulfill its basic purpose, the activity is not “water dependent.” A determination by the USACE that a proposed discharge is *not* water dependent carries with it two inherent presumptions that must be rebutted by a successful applicant.

The first presumption is that practicable alternatives that do not include impacts on special aquatic sites exist and are available to the applicant. It is thus incumbent upon the applicant to clearly demonstrate otherwise. The determination of water dependency by the USACE must be preceded by a clear understanding of the purpose of the Proposed Project, both the “overall project purpose” and the “basic purpose,” taking into consideration the stated purpose and need provided herein by Palmetto Railways.

After evaluating the water dependency of a Proposed Project, the USACE must then consider the full range of practicable alternatives that are capable of achieving the overall project purpose. The second inherent presumption created by a non-water dependency determination is that all practicable alternatives (not including the proposed discharge) which do not involve a discharge of dredged or fill material into a special aquatic site (wetland), are presumed as having less of an adverse impact on the aquatic ecosystem than the proposed discharge, unless clearly demonstrated otherwise.

The evaluation of practicable alternatives is based on the range of reasonable alternatives set forth in Section 3.3. This process was developed and implemented in a manner cognizant of the requirements of the Guidelines and NEPA. See USACE (Jax. Dist.), *Information for Preparing an Alternatives Analysis Under Section 404* (June 2014); USACE (Sav. Dist.), *Guidelines For Preparation of Analysis of Section 404 Permit Applications Pursuant to the Section 404(b)(1) Guidelines of The Clean Water Act (40 C.F.R., Section 230)*. Thus, the

alternatives analysis forms the basis from which the USACE will identify practicable alternatives and determine whether Palmetto Railway's Proposed Project is the LEDPA.

3.2 Project Purpose

As discussed above, establishing the underlying purpose and need for a project is a key initial step in the USACE's process of evaluating the Proposed Project's compliance with the Guidelines. USACE regulations establish a three-part process for developing the official purpose of a project. As described below, one statement is provided by the applicant, and the other two are determined by the USACE:

- The Applicant develops and clearly states an overall purpose and need in the application to the USACE;
- The USACE determines the "basic" purpose of the project, which informs the conclusion as to whether the project is water dependent under Section 404(b)(1) of the CWA; and
- The USACE determines the "overall" purpose of the project.

These three statements of the Proposed Project's purpose and need form the basis by which the USACE will evaluate compliance of the Project with the Guidelines, including the range of practicable alternatives to the Proposed Project. These statements are also used as part of the analysis required under NEPA. Although the three statements were developed to meet distinct objectives within the USACE's evaluation of compliance with the Guidelines, it is expected that the alternatives analysis will overlap with and may, in most cases, provide the information required for the evaluation of alternatives under NEPA. Additionally, while consideration may be given to the applicant's pronouncement of the Proposed Project's basic and overall purpose, the USACE is the ultimate arbiter of that conclusion and is entitled to determine the final statements without undue influence of the Applicant's views.

3.2.1 Applicant's Stated Purpose and Need

An applicant's stated purpose and need is an expression of the underlying goals for a Proposed Project. The USACE takes an applicant's purpose and need into account when determining the USACE's overall purpose.

Palmetto Railways respectfully submits that the purpose of the Proposed Project is to locate, build, own, and operate an industrial rail line that will connect to the existing Class 1 rail line with the Camp Hall Commerce Park. The need for the Proposed Project derives from the development within the Camp Hall Commerce Park, which has increased the demand for rail service to interconnect the commerce park with an existing Class 1 rail network, in a manner that is logistically feasible to better serve the need of the future tenants and industry within the Camp Hall Commerce Park for transportation,

distribution, and logistics. These tenants include, but are not limited to, Volvo Cars, as well as any associated support industries that might desire to locate in proximity to Volvo Cars in the future.

3.2.2 The USACE's Basic Project Purpose and Determination of Water Dependency

The Guidelines require that the USACE determine whether a project is water dependent. *Water dependent* means that the project by its very nature requires access or proximity to, or siting within, a special aquatic site to fulfill its “basic purpose.”

The regulations further require that the USACE alternatives analysis identify the LEDPA.

Palmetto Railways respectfully submits that the basic purpose of the Proposed Project resulting in the discharge of dredged or fill material is:

- To build, own and operate an industrial rail line to serve a commerce park that includes an advanced manufacturing facility.

Based on the standard used by the USACE, the Proposed Project is not water dependent. Accordingly, as a part of the alternatives analysis contained herein, the application will rebut the presumptions employed by the USACE, as discussed in Section 3.1.

3.2.3 The USACE's Overall Project Purpose and Alternatives Analysis

Under NEPA regulations, alternatives to be evaluated must be reasonable. The Guidelines also require evaluation of practicable alternatives. The Corps uses the overall project purpose to identify the range of potential alternatives that will be evaluated. If an alternative does not meet the applicant's need, as determined by the Corps, it may be rejected from further consideration.

The Corps' regulatory guidelines further provide:

[T]he applicant's needs, and the type of project being proposed should be considered. The overall project purpose should be specific enough to define the applicant's needs, but not so restrictive as to constrain the range of alternatives that must be considered under the 404(b)(1) guidelines (USACE SOP).

Taking into consideration the above criteria, Palmetto Railways respectfully submits that the overall purpose of the Proposed Project is:

To build, own and operate rail service to interconnect the Camp Hall Commerce Park with an existing Class 1 rail network in a manner that is logistically feasible

to better serve the needs for transportation, distribution, and logistics of industry within the Camp Hall Commerce Park.

3.3 Alternatives Development

Having established the basic and overall purposes of the Proposed Project, it is incumbent upon the applicant to identify and evaluate a full range of alternatives in light of the overall purpose of the Proposed Project. The goal of this process is to identify and consider the broadest range of possible alternatives, working to narrow the scope of alternatives to the range of reasonable and practicable alternatives that could meet the overall purpose of the Proposed Project. Based on the requirements imposed under NEPA, regulations developed by the CEQ, and the USACE, Palmetto Railways initially considered all available alternatives for the Proposed Project.² Through the process of developing the purpose and need, as well as the overall project purpose, Palmetto Railways applied those basic project concepts to the full array of available alternatives in order to guide the identification of a “reasonable range” of alternatives as required by NEPA. Under NEPA, reasonable alternatives include those that are practical or feasible from a technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant (46 Fed. Reg. 18026 (March 23, 1981)). In identifying and developing this list of alternatives,³ Palmetto Railways has considered and included alternatives falling within the following categories:

- The proposed alternative;
- Alternatives that would involve no discharges of dredged or fill material into the waters of the United States (such as the “no action” alternative);
- Alternative alignment locations, including those that might involve less adverse impact to waters of the United States;
- On-route alternatives that would involve less adverse impact to waters of the United States (which would include modifications to the alignment or design options in the

² The NEPA alternatives analysis requires consideration of all alternatives for a project has its roots in the fact that NEPA is a procedural statute, rather than one dictating substantive analysis or mandating a particular outcome. At its core, NEPA is a “stop, look, and listen” statute that is intended to result in an informed agency decision making process. As discussed below, the Guidelines impose a stricter, substantive standard to the range of reasonable alternatives identified under NEPA that is designed to arrive at a practicable alternative that has the least adverse impact on the aquatic ecosystem.

³ This analysis considers a range of alternatives which might enhance environmental quality or have a less detrimental effect on the environment than the proposed activity and demonstrates that there is no *feasible* and *prudent* alternative that will have a less environmentally damaging effect. An alternative is *feasible* if it is available and consistent with sound engineering principles, such that the alternative can be successfully constructed or implemented. An alternative is *prudent* if it is economically reasonable in light of the benefits the activity would provide, but cost alone does not render an alternative imprudent.

physical layout and operation of the project to reduce the amount of impacts to the waters of the United States); and

- Alternatives that would involve greater adverse impact to waters of the United States but avoid or minimize other significant adverse environmental consequences including offsite and onsite options.

The range of potential reasonable alternatives that was considered also included alternative routes and alternative alignments. The range of reasonable alternatives identified in the initial NEPA analysis (through application of the above purpose and need and overall project purpose to the full panoply of alternatives) screened out unreasonable alternatives resulting in the reasonable alternatives addressed in the Level 1 analysis.

In addition to meeting the initial “reasonability” requirement under NEPA, the Guidelines impose further restrictions and deliberation on practicability considerations related to the range of reasonable alternatives. Under the Guidelines, the USACE typically only considers those alternatives that are available to the applicant and meet the overall purpose.⁴ The intent of this further iterative process is to consider the range of reasonable alternatives, but eliminate infeasible and unreasonable concepts and alternatives early in the process, in order to allow the USACE to focus on practicable alternatives that are capable of achieving the overall purpose of the Proposed Project. The range of reasonable alternatives identified below forms the starting point for the evaluation of practicable alternatives for the project and determination of the LEDPA, which will become the proposed alternative. In support of the identified alternatives, Palmetto Railways is providing documentation that demonstrates that the proposed alternative is the most practical route that requires the least amount of overall impacts, as judged by the potential impacts to environmental, economic, and socioeconomic resources. By examining the full scope of possible alternatives under NEPA and then narrowing down potential alternatives to incorporate all reasonable alternatives in this analysis, the desire is to provide the USACE with a range from which a determination can be reached that the proposed alternative of the Proposed Project is the LEDPA. Palmetto Railways believes that it has captured each reasonable alternative and component necessary for the USACE to reach its decision on the LEDPA as well as satisfy its obligations under NEPA.

⁴ See 40 C.F.R. § 230.10(a)(2) (“If it is otherwise a practicable alternative, an area not presently owned by the applicant which could reasonably be obtained, utilized, expanded, or managed in order to fulfill the basic purpose of the proposed activity may be considered.”). By contrast, a NEPA analysis often requires consideration of alternatives that are not available to the applicant. See USACE SOP. The alternatives analysis undertaken by Palmetto Railways satisfies the requirements of both the Guidelines and NEPA alternatives analyses.

Once the appropriate range of reasonable alternatives is identified, the practicability analysis of the project alternatives is conducted in three levels:

1. Level 1 Analysis is a screening process used to refine a larger number of identified reasonable alternatives with respect to consistency with the Proposed Project's purpose and need, as defined by Palmetto Railways, as well as the overall project purpose, as defined by the USACE.
2. Level 2 Analysis reviews those alternatives that survive Level 1 Analysis and employs the more rigorous practicability standards under the Guidelines, including their potential to impact environmental, economic, and socioeconomic resources, as well as cultural resources. The goal of Level 2 Analysis is to identify the preferred project corridor.
3. Level 3 Analysis reviews different route alignments within the preferred project corridor.
4. Taking into consideration all of the above, the final step of the alternatives practicability analysis is to identify the LEDPA from among the Level 3 alignments within the preferred project corridor.

3.4 Identification of Alternatives

The range of alternatives included in this analysis was generated in order to satisfy the purpose and need of the Proposed Project.

3.4.1 Proposed Project Criteria

Palmetto Railways recognizes that certain criteria are necessary specifying the minimum needs and conditions that would meet the operational requirements for rail service to advanced manufacturing facilities within the Camp Hall Commerce Park. Ultimately, the LEDPA must be able to accommodate the logistical and operational as well as budgetary needs of the end clients in order for the Proposed Project to be viable. The Proposed Project requires, at a minimum, a rail route that meets the following characteristics and criteria:

- Direct connectivity to a single Class 1 freight carrier main line, accessing the freight

carrier's inland/domestic network,⁵ as well as the Port of Charleston.⁶

- Sufficient rail access and capacity to serve both phases of the Volvo Cars site.⁷
- Sufficient rail access and capacity to service future growth and needs of additional industrial sites within the remaining portions of Camp Hall such that the portion of the proposed rail spur located within Camp Hall does not limit access to the site while in use or require grade separation.⁸

⁵ "A rail-served site is a must if you are in automotive assembly ... [t]here should be some preference for a connection to a main-line carrier..." Ed McCallum, *What's Driving Automotive Assembly Plant Locations?*, Business Facilities (July 2004); see also Mark M. Sweeney, *Covering the Ground on Transportation Issues*, Ask the Expert, Business Facilities (March 2010) ("If your project is industrial (distribution or manufacturing), then road and rail may be the most critical elements of transportation. Many industrial clients are now favoring locations with good access to all modes ... [Industrial site customers] may be served by a short line ... working through the short line may create a more competitive negotiating environment.").

⁶ "The need for water borne transportation will vary with each project depending on where your components are sourced. In some cases, power train components may be coming from either Asia or Europe. A link to a deepwater port via rail and interstate highways is important if this is the case. For international vehicle product distribution, the port must be reliable and efficient and well served for the product market. Adequate storage capability and roll on/roll off (RO/RO) containerized truck trailers capability are required as well." Ed McCallum, *What's Driving Automotive Assembly Plant Locations?*, Business Facilities (July 2004); see also Mark M. Sweeney, *Covering the Ground on Transportation Issues*, Ask the Expert, Business Facilities (March 2010) ("[U]sing water movements to source supply and/or access to end users may provide a low cost [] alternative. Water transportation resources to evaluate include access, ingress and egress, port capacity, crane capacity, container or break bulk focus, speed of entry and processing, and labor management relations. [T]he emergence and continued evolution of global supply chains calls for greater flexibility in logistics planning. It is likely that over time, your source mix for raw materials, and possibly your end market mix, will change, possibly on a continent basis. So while you may not need water commerce access now, that could change dramatically in five years.").

⁷ A rail yard and vehicle-processing center is preferred on site, or at least in very close proximity." Ed McCallum, *What's Driving Automotive Assembly Plant Locations?*, Business Facilities (July 2004); see also Mark M. Sweeney, *Covering the Ground on Transportation Issues*, Ask the Expert, Business Facilities (March 2010) ("In assessing rail service at your site, do not assume that because there is a rail line alongside your property that it is rail served. You should receive direct confirmation of service, and any limitations to service, from the rail carrier. If the site can be served, do not assume that you can do your operational run ... restrictions on these activities are common ... This in turn may impact site size, layout, product and people flow, etc.").

⁸ "Transportation infrastructure is crucial to an automotive facility for both just-in-time component delivery as well as vehicle distribution. Logistics costs are the single largest variable cost of production. Inefficiency in any one aspect of the logistics supply chain ripples throughout the entire manufacturing process, which adds delays and increased cost. Transportation cost, reliability, access, and north/ south and east/west connectivity go hand in hand." Ed McCallum, *What's Driving Automotive Assembly Plant Locations?*, Business Facilities (July 2004); see also Mark M. Sweeney, *Covering the Ground on Transportation Issues*, Ask the Expert, Business Facilities (March 2010) ("There are a number of trends that should drive you to consider all modes of transportation, including quality of rail access, competition, and dynamic global supply chains, all of which will impact your transportation costs.").

3.4.2 Range of Alternatives

The goal of providing an exhaustive list of alternatives that meet the above purpose and needs of Palmetto Railways to serve Camp Hall Commerce Park is twofold: (1) to disclose and evaluate potential environmental impacts that may result from the Proposed Project and retained alternatives; and (2) to evaluate the proposed alternative's ability to fulfill the project purpose and need consistent with criteria provided. Palmetto Railways arrived at its proposed alternative after conducting the required stages of increasingly thorough analysis, while balancing the environmental impacts discussed in this analysis with economic, technological, and safety concerns.

The following list provides the range of reasonable alternatives identified by Palmetto Railways for consideration, along with a short, descriptive identification of the alternative (Appendix A, Figure 1):

A. No-Action

- a. The Proposed Project is not constructed.

B. Soter South Route

- a. The Soter South Route runs approximately 14.9 miles through Berkeley County. It connects to the CSX Transportation (CSXT) A-Line near the Century Aluminum plant, on US Highway 52, between Moncks Corner and Goose Creek. This route runs due west, across US Highway 17, until it nears Interstate Highway I-26. The route turns northwest and parallels I-26 until it reaches the eastern border of the Camp Hall Commerce Park. This route passes through a mix of industrial, commercial, residential, and silvicultural properties. Where possible, this route roughly follows existing utility line right of way.

C. Soter North Route

- a. The Soter North Route runs approximately 16.7 miles through Berkeley County. It connects to the CSXT A-Line near the Century Aluminum plant, on US Highway 52, between Moncks Corner and Goose Creek. The route runs due west to US Highway 176, and then parallels US Highway 176 northwest until it approaches Lebanon Road, turns southwest and enters the northeastern corner of the Camp Hall Commerce Park. This route passes through a mix of industrial, commercial, residential, and silvicultural properties.

D. Moncks Corner Route

- a. The Moncks Corner Route runs approximately 17.1 miles through Berkeley County. It connects to the CSXT A-Line near the Tailrace Canal, north of Moncks Corner. The route runs west from the CSXT A-Line towards Lake Moultrie, veers southwest below Pinopolis, and runs west into the Camp Hall Commerce Park. This route passes through a mix of residential and silvicultural properties.

E. Cross Route

- a. The Cross Route runs approximately 18.5 miles through Berkeley County. It connects to an existing CSXT A-Line rail spur, which services the Santee Cooper Cross Generating Station. The route runs south southwest from the Cross Generating Station, crossing the Diversion canal between Lakes Marion and Moultrie, runs through the unincorporated community of Cross and south into the Camp Hall Commerce Park. This route passes through a mix of commercial, residential, and silvicultural properties.

F. Eutawville/Holly Hill Route

- a. The Eutawville/Holly Hill Route runs approximately 17.5 miles through Orangeburg and Berkeley Counties. It connects to a CSXT secondary service track, immediately south of Eutawville. The route runs southeast from Eutawville to Mudville Road, before shifting south, directly into the Camp Hall Commerce Park. This route passes through a mix of commercial, residential, agricultural, and silvicultural properties.

G. Ridgeville Route

- a. The Ridgeville Route runs approximately 4.1 miles through Dorchester and Berkeley Counties. It connects to the Norfolk Southern freight line running through Dorchester County. The route runs northeast through the Ridgeville Commerce Park, across Interstate I-26 and US Highway 78, and enters the Camp Hall Commerce Park from the southwest. Key components of this route would include a grade separation rail bridge crossing of Interstate 26, a grade separated road bridge of Centerline Road on Camp Hall, bridging of Timothy Creek, and at-grade crossings of U.S., State roads and local roads. This route was originally developed by Norfolk Southern as a concept proposal following the development of the WestRock (Mead Westvaco) Ridgeville Industrial Site and Camp Hall. This route passes through a mix of commercial, residential, and silvicultural properties.

3.5 Level 1 Alternatives Practicability Analysis

Level 1 of the alternatives practicability analysis evaluates the range of reasonable alternatives identified above for their ability to best satisfy the purpose and need criteria of the Proposed Project. This step of the analysis is intended to identify on a macro level which of the alternatives might reasonably meet the purpose and need; those alternatives that clearly do not meet the requisite criteria were not considered further within this analysis.

Among the goals of the Level 1 analysis is to evaluate route options connecting to the Class 1 freight carriers at the macro level in order to determine whether route proposals are capable of satisfying the purpose and need criteria, and characteristics of the Proposed Project, and thus would be carried forward for more in depth screening at Level 2. To that end, Palmetto Railways undertook a conceptual analysis that compared the route alternatives in order to determine the viability of each for the Proposed Project. This analysis involved a generalized review of, among other things:

- The access points to Camp Hall and the Volvo Cars site;
- Design alternatives for the on-site freight railyard required to support and connect to Volvo Cars and other associated automotive industrial support facilities;
- Estimation of engineering and construction costs;
- Evaluation potential environmental impacts and the availability and cost of mitigation for same; and
- Evaluation of potential property impacts along the proposed routes between Camp Hall and the existing rail infrastructure.

Based on the Level 1 analysis, including the analysis of factors described above, three (3) of the identified route alternatives were eliminated as not reasonably being able to fulfill the purpose and need of the Proposed Project. These alternatives which failed to meet the basic minimum requirements of the proposed project include:

A. No Action (No Build)

- The No-Action (No Build) Alternative fails to meet any of the purpose and need criteria of the Proposed Project. Notwithstanding, this alternative is retained for further comparison in the alternatives practicability analysis in order to ensure a complete environmental impact evaluation, as well as provide a baseline comparison to other alternatives in the Level 2 analysis.

B. Ridgeville Route

- As discussed above, Palmetto Railways undertook an analysis that compared certain factors, characteristics and criteria of the two Class 1 freight carrier route. The Ridgeville Route does meet several of the elements put forward by Palmetto Railways for the Proposed Project, including: direct connectivity to Norfolk Southern's mainline (providing direct access to its inland/domestic network, as well as the Port of Charleston); capacity to serve both phases of the Volvo Cars site and expected future growth at the Camp Hall Commerce Park; the relative estimated cost of engineering, construction, and mitigation for potential environmental impacts; and the comparative impact of the proposed route on property owners, due to its relative proximity to the Camp Hall Commerce Park as compared to the CSXT route alternative. However, in the course of the evaluation of the Ridgeville Route alternative, certain key attributes of that route were identified that rendered it an impractical alternative for the Proposed Project.

First, the Ridgeville Route does not satisfy one of the most basic characteristics set forth in the purpose and need of the proposed project: ownership and operational control by Palmetto Railways. In the course of its analysis, Palmetto Railways interfaced with the two Class 1 freight carriers with respect to certain aspects of the proposed project, including the logistics of owning and operating the rail line connection once the project was completed. While Norfolk Southern expressed support for Palmetto Railways being the applicant, financier, and construction manager of the proposed project, it desired and expected that, once the project was completed, operational control of the rail line connection would be transferred to, or within the substantial control of Norfolk Southern. However, ownership and operational control of the rail line connection is fundamental to Palmetto Railways' proposal, without which Palmetto Railways, a division of an agency of the State of South Carolina, could neither justify the cost of the proposed project nor satisfy its statutory purpose of providing safe, efficient and cost-effective rail solutions to facilitate the movement of freight within South Carolina.

Second, the Ridgeville Route within the Camp Hall Commerce Park would require a crossing of Centerline Road due to the proposed entry point of the route on the southwestern side of the site (the opposite side of Centerline Road from both phases of the Volvo Cars site). An at-grade crossing of Centerline Road has the potential to cause frequent and substantial disruption to the operational capabilities of Volvo Cars and other future industrial sites within the Camp Hall Commerce Park, as Centerline Road serves as the primary vehicular access point to Camp Hall on the northern

and southern boundaries, as well as the main thoroughfare within the site. Consequently, a grade separated bridge over Centerline Road would be required to maintain consistent access and connectivity within the Camp Hall Commerce Park, thereby altering the logistics of the site layout requirements, requiring additional engineering and construction costs, for establishing the route and interface with Volvo Cars.

Third, because the Norfolk Southern mainline is located to the west of Interstate 26, the proposed route connection of Norfolk Southern's mainline to the Camp Hall Commerce Park requires a grade separation rail bridge crossing of Interstate 26, as well as an at-grade crossing of U.S. Highway 78 north of Ridgeville. The crossings of Interstate 26 and U.S. Highway 78 would add substantial additional engineering and construction costs to the budget of the Ridgeville Route, thereby increasing the overall cost of the project. In addition, adding additional capacity to Norfolk Southern's mainline increases logistic and feasibility risks to providing adequate freight rail service to, from and between the Camp Hall Commerce Park and the Port of Charleston.

Fourth, Palmetto Railways determined that the Ridgeville Route would impact areas of identified critical importance within the environment, including wetlands and stream impacts, which render the route a less attractive option than the CSXT route. In particular, Palmetto Railways undertook a wetland and stream impact analysis as a part of its analysis that looked at whether each of the Class 1 carrier routes could be permitted, what environmental impacts would be involved with each route, what the expected mitigation would involve and cost for each route, as well as how interested consulting parties might react to the impact and proposed mitigation. Palmetto Railways identified three (3) primary environmental issues related to the Ridgeville Route. First, the roadway crossings described above to achieve required grade separation would require bridging and associated construction, which would impact the environment. Second the proposed route requires a crossing of the headwaters of Timothy Creek, near the Camp Hall Commerce Park, which have been mentioned as an area of greater concern from both Santee Cooper and WestRock (which would be impacted by such a crossing). Finally, the Ridgeville Route would impact 375 feet of linear stream in the Four Hole Swamp watershed, requiring substantial stream mitigation credits.

For all of the above-described reasons, the Ridgeville Route fails to meet the basic minimum requirements of the Proposed Project as a preferred freight carrier provider and was eliminated as a non-viable alternative by Level 1 analysis.

C. Eutawville/Holly Hill Route

- The Eutawville/Holly Hill route was included in the initial analysis to determine if a CSXT route from the northwest is viable. The Eutawville/Holly Hill Route would connect to the CSXT “AKE-Line” which runs roughly from Ellore through Eutawville and Holly Hill, and connects to the Norfolk Southern line between St. George and Dorchester. Palmetto Railways determined that this route alternative makes it logistically impractical and functionally infeasible to provide efficient direct access to the Port of Charleston by a single Class 1 freight carrier; therefore, it does not satisfy a primary characteristic and criterion identified as critical by Palmetto Railways. Because the Eutawville/Holly Hill route alternative fails to meet the basic minimum requirements of the Proposed Project, it was eliminated as a non-viable alternative by Level 1 analysis.

The Cross, Moncks Corner, Soter North, and Soter South routes have been identified as viable alternatives in Level 1 of this Alternatives Analysis. Each of these corridors allow for a new industrial rail line with direct connectivity to the CSXT A-Line, as well as and the Port of Charleston. An in-depth analysis of each of the remaining alternatives is presented in Level 2 of this Alternatives Analysis.

3.6 Level 2 Alternatives

Fine-level screening was conducted for the four remaining alignment alternatives from the initial site screening (Cross Route, Moncks Corner Route, Soter North Route, and Soter South Route). The fine-level screening essentially comprised a comparison of the four rail alignment alternatives to facilitate the anticipated review under the NEPA process. The No Build Alternative (No Action Alternative) is also presented herein as a basis for comparison as required by NEPA. During fine-level screening, the alignment alternatives were evaluated on their potential to impact environmental, economic, and socioeconomic resources, as well as cultural resources. A generalized route for each alternative has been developed, and a study area defined by a 1-mile buffer surrounding each generalized route (2-mile total width) has been evaluated (Appendix A, Figure 2). The screening criteria were selected from resources that were readily quantifiable. These resources would typically require permits or approvals under the proposed development action. Although not every resource that could be examined was considered for the fine-level screening of alternatives, the resources that were selected for this analysis were presumed to be potential key constraints to project development.

The selected resources included land use, environmental justice, potential relocations, recreational areas, historic and archaeological resources, air quality, hazardous materials, noise pollution, prime farmlands, wetlands, streams, floodplains, water quality and water resources, and threatened and endangered species.

3.6.1.1 Cross

The Cross Route runs approximately 18.5 miles through Berkeley County. It connects to an existing CSXT A-Line rail spur, which services the Santee Cooper Cross Generating Station. The route runs south southwest from the Cross Generating Station, crossing the Diversion canal between Lakes Marion and Moultrie, runs through the unincorporated community of Cross and south into the Camp Hall Commerce Park. This route passes through a mix of commercial, residential, and silvicultural properties. The route ties into the existing CSXT ALR-Line, an existing rail spur which ties into CSXT's A-Line in St. Stephen, South Carolina.

3.6.1.2 Moncks Corner

The Moncks Corner Route runs approximately 17.1 miles through Berkeley County. It connects to the CSXT A-Line near the Tailrace Canal, north of Moncks Corner. The route runs west from the CSXT A-Line towards Lake Moultrie, veers southwest below Pinopolis, and runs west into the Camp Hall Commerce Park. This route passes through a mix of residential and silvicultural properties. This route ties directly into CSXT's A-Line, which runs directly into the Port of Charleston.

3.6.1.3 Soter North

The Soter North Route runs approximately 16.7 miles through Berkeley County. It connects to the CSXT A-Line near the Century Aluminum plant, on US Highway 52, between Moncks Corner and Goose Creek. The route runs due west to US Highway 176, and then parallels US Highway 176 northwest until it approaches Lebanon Road, turns southwest and enters the northeastern corner of the Camp Hall Commerce Park. This route passes through a mix of industrial, commercial, residential, and silvicultural properties. This route ties directly into CSXT's A-Line, which runs directly into the Port of Charleston.

3.6.1.4 Soter South

The Soter South Route runs approximately 14.9 miles through Berkeley County. It connects to the CSX Transportation (CSXT) A-Line near the Century Aluminum plant, on US Highway 52, between Moncks Corner and Goose Creek. This route runs due west, across US Highway 17, until it nears Interstate Highway I-26. The route turns northwest and parallels I-26 until it reaches the eastern border of the Camp Hall Commerce Park. This route passes through a mix of industrial, commercial, residential, and silvicultural properties. Where possible, this route roughly follows existing utility line right of way. This route ties directly into CSXT's A-Line, which runs directly into the Port of Charleston.

3.6.1.5 No Build

Under the No Build Alternative (No Action Alternative), the proposed action is not implemented, i.e., no industrial rail line into the Camp Hall Commerce Park will be constructed.

3.7 Level 2 Potential Impacts

The following sections describe the various issues considered in this alternatives analysis. Where specific issues have varying degrees of impact on different alignment alternatives, quantified impacts for each route are provided.

3.7.1 Land Use

The study area for land use consists of each alternative alignment's ROW, occupying a total of 1,631 acres. According to the United States Geological Survey (USGS) Land Cover Institute (LCI) land uses within the study area include developed areas, croplands, shrublands, herbaceous areas, forests, wetlands, and open waters (USGS 2012). All of the alignment alternatives have similar land cover with the exception of Soter North, which has a much higher development percentage than the other three alignments (Appendix A, Figure 4). Table 3-1 lists the 2011 USGS land cover for a 200-ft assumed ROW for each alignment alternative.

Table 3-1. Level 2 Alternatives Land Use Analysis

Alignment Alternative	Crops, Shrubland, Herbaceous	Forested	Wetlands, Open Water	Developed
Cross	27.0%	35.8%	35.7%	1.5%
Moncks Corner	35.3%	26.1%	37.2%	1.4%
Soter North	18.2%	29.3%	24.7%	27.8%
Soter South	43.8%	18.3%	35.2%	2.7%

3.7.1.1 Cross

The Cross alignment alternative assumed 200-ft ROW is mostly covered by forests, forested wetlands, and open water. According to the LCI only 1.5% of the Cross alignment ROW is classified as developed land.

3.7.1.2 Moncks Corner

The Moncks Corner alignment alternative assumed 200-ft ROW is mostly croplands, shrublands, herbaceous understory, forests, forested wetlands, and open water. According to the LCI only 1.4% of the Moncks Corner alignment ROW is classified as developed land.

3.7.1.3 Soter North

The Soter North alignment alternative assumed 200-ft ROW is evenly distributed between crops, shrublands, herbaceous, forests, wetlands, open water, and developed lands. According to the LCI approximately 27.8% of the Soter North alignment ROW is classified as developed land.

3.7.1.4 Soter South

The Soter South alignment alternative assumed 200-ft ROW is mostly forests, forested wetlands, and open water. According to the LCI only 2.7% of the Soter South alignment ROW is classified as developed land.

3.7.1.5 No Build

The No Build alternative would have no effect on current land use.

3.7.2 Air Quality

The U.S. Environmental Protection Agency (USEPA) has established National Ambient Air Quality Standards (NAAQS) in 40 CFR 50 for the following criteria pollutants: sulfur dioxide (SO₂), particulate matter with an aerodynamic diameter of less than 10 microns (PM₁₀), particulate matter with an aerodynamic diameter of less than 2.5 microns (PM_{2.5}), carbon monoxide (CO), ozone (O₃), nitrogen dioxide (NO₂), and lead (Pb).

The study area will be located in attainment with the national standards for all six criteria pollutants (USEPA 2015). Construction and operation of the final selected rail alignment will have a minimal impact on the air quality of the immediately surrounding areas. Air quality is not expected to be a differentiating factor in comparing the rail alignment alternatives.

3.7.3 Noise

Noise is sound that is produced at levels that can be harmful and may be considered as unwanted by surrounding community, properties and residences. The Noise Control Act of 1972 (PL 92-574) and Executive Order (EO) 12088, require that federal agencies assess the impact of noise to the environment. Guidelines for noise have been established by the EPA based on a calculation of noise by the Daytime and Nighttime averages, referred to as the Day/Night Levels (L_{dn}) (FHWA 2011). The L_{dn} is reported as A-weighted decibels (dBAs) that occur within a 24 hour period (Table 3-2).

Table 3-2. USEPA Standard Noise Levels for Various Community Types

Community	Day Night Average (L_{dn} – dBA)
Rural	35 to 50

Community	Day Night Average (Ldn – dBA)
Quiet Suburb	50
Normal Suburb	55
Urban Residential	60
Noisy Urban	65
Very Noisy Urban	70

Noise levels can vary depending on setting, built environment, and distance to the noise source. Noise levels by environment can be variable with levels at 40 dB for wilderness areas and 90 dB for urban areas. Rural communities typically have lower dBs than their urban counterparts with rural communities around 50 dB or less. The minimum volume level for train horns is 96 dB; maximum volume levels for newer equipment are 110 dB (FTA 2006).

The Federal Transit Administration (FTA) is one of multiple agencies within the USDOT that is concerned with rail transportation. The FTA has established Railroad Noise Emission Compliance Regulations at 49 CFR 210, which prescribes compliance requirements for enforcing railroad noise emission standards. Additionally, in order to aid in compliance with environmental regulations and guidelines related to noise and vibration, the FTA has developed guidance documents and assessment procedures for assessing train noise, horn noise, and vibration impacts from major rail projects. Berkeley County does not have any specific exemptions or prohibitions to its local noise control ordinance.

Locomotive horn soundings are a requirement of railroad operations and can contribute to existing surrounding noise levels. For example, locomotives must begin to sound train warning horns from 15 to 20 seconds in advance of all public roadway crossings (for train speeds less than 10 miles per hour). Segments of the proposed alignments within 300 feet of sensitive receptors should be further investigated using procedures from Transit Noise and Vibration Impact Assessment (FTA, 2006).

A baseline noise-level survey has not been conducted for any of the alignment alternative ROWs; however, it is expected that the project area would have noise levels typical of a rural environment surrounded by an active transportation corridor. Ambient noise within the project area consists mainly of transportation (highway and railroad), commercial/agricultural activities, rural, and natural sounds (e.g. moderate voice, wind, wildlife, and similar sounds). Several commercial/agricultural facilities are interspersed within the rural residential landscape, and these facilities could generate noise that would be heard at nearby receptors. Noise-sensitive receptors within and adjacent to the alternative alignment ROWs include areas associated with single family housing. In addition, nearby churches and schools along the Soter North alignment are known sensitive receptors.

3.7.4 Geology and Soils

The four alternative route study areas are in the Atlantic Coastal Plain Physiographic Province. Coastal Plain soils consist of ancient marine deposits including interbedded limestones, gravels, sands, silts and clays. The Coastal Plain is a wedge-shaped deposit of Cretaceous and younger sediments which range in thickness from near zero at the contact with the Piedmont Physiographic Province (the Fall Line) to the northwest, to thousands of feet at the coast.

According to the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS), the soils within the study area are mapped as nonhydric, predominantly nonhydric, predominantly hydric, and hydric soils. Approximately 47% of the study areas are within hydric or predominantly hydric soils. The dominating soil types within the study area are Meggett loam, Goldsboro loamy sand, Lynchburg fine sandy loam, and Rains fine sandy loam (Appendix A, Figure 3).

3.7.4.1 Prime Farmland

The National Agricultural Land Study of 1980-1981 discovered millions of acres of farmland were being converted in the United States each year. Farmland includes prime farmland, unique farmland, and land of statewide or local importance. Congress passed a law creating the Farmland Protection Policy Act (FPPA), which aims to protect against projects that convert farmland directly or indirectly (USDA 2015a). In addition, the FPPA is intended to minimize the impact Federal programs have on the irreversible conversion of farmland to nonagricultural areas. Farmland such as forest land, pastureland, and cropland can be subject to FPPA requirements. Consequently, soils specifically suited to agricultural uses may be protected under the FPPA. Conversion of these soils from pastureland to non-pastureland uses may be limited.

Activities that may be subject to FPPA include highway construction projects, electric cooperative construction projects, railroad construction projects, and Federal agency projects. Project sites that are federally funded or assisted require coordination with NRCS and state FPPA contacts. NRCS determines if the potential project impacts on farmland exceed the recommended allowable level.

According to the NRCS Web Soil Survey all four alternative rail alignments include soils designated as prime farmland and farmland of statewide importance (USDA 2015b). Some of the farmland soils on all four alternative alignments consist of existing development or are not used for agricultural and would be declassified as farmland. Farmland soils will be directly impacted on all four potential alternative rail alignments. The No Build alternative would not have any impacts on farmland soils. Table 3-3 lists the farmland soils coverage as a percentage for each alignment alternative 200-ft ROW (USDA 2015b).

Table 3-3. Level 2 Alternatives Farmland Analysis

Alignment Alternative	Prime Farmland	Farmland of statewide importance	Not Prime Farmland
Cross	29.5%	52.1%	18.4%
Moncks Corner	20.9%	54.4%	24.8%
Soter North	27.8%	54.1%	18.1%
Soter South	21.8%	47.5%	30.7%

3.7.5 Surface Waters

Surface water includes streams, rivers, lakes, and reservoirs. All four rail alternative alignments are located within the Cooper River Watershed (HUC 03050201) of the Ashley River Sub-basin, with a very small portion of the Cross alignment in the Four Hole Swamp Watershed (Hydrologic Unit Code [HUC] 03050205) of the Edisto River Sub-basin, both of which are contained within the Ashepoo, Combahee and Edisto (ACE) River Basin. Major water bodies occurring within the project study area include Gants Mill Branch, Felder Branch, Sandy Run, Wassamassaw Swamp, Cypress Swamp, Rudd Branch, Caton Creek, Black Creek, Big Run, and the Diversion Canal between Lake Marion and Lake Moultrie. According to the USGS National Hydrology Dataset all of the alternative routes would cross several of these named streams, as well as numerous agricultural ditches. The Cross Route would cross the Diversion Canal, a state navigable water (Appendix A, Figure 9).

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403; 30 Stat. 1151) requires project approval by the USACE prior to the commencement of any work in or over navigable waters of the United States, or which affects the course, location, condition or capacity of such waters. Activities requiring Section 10 permits include the construction of cable or pipeline crossings. Navigable waters regulated by Section 10 are generally restricted to larger rivers and lakes; however, precise definitions of “navigable waters of the United States” or “navigability” are ultimately dependent on judicial interpretation and cannot be made conclusively by administrative agencies. A general definition of “Navigable waters of the United States” is those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.

3.7.5.1 Cross

The Cross alignment alternative is proposed to cross the Diversion Canal, a state navigable water, as well as 8 USGS named streams and 7 minor tributaries or major ditches. These named streams include Big Run, Black Creek, Caton Creek, and Mill Branch.

3.7.5.2 Moncks Corner

The Moncks Corner alignment alternative is proposed to cross 4 USGS named streams and 7 minor tributaries or major ditches. These named streams include Mill Branch, Caton Creek, and Wassamassaw Swamp

3.7.5.3 Soter North

The Soter North alignment alternative is proposed to cross four USGS named streams and 12 minor tributaries or major ditches. These named streams include Gants Mill Branch, Sandy Run, Cypress Swamp, and Mill Branch.

3.7.5.4 Soter South

The Soter South alignment alternative is proposed to cross 3 USGS named streams and 12 minor tributaries or major ditches. These named streams include Gants Mill Branch, Felder Branch, and Cypress Swamp.

3.7.5.5 No Build

The No Build alternative would have no effect on surface waters within the project corridor.

3.7.6 Floodplains

All of the proposed rail alignment alternatives would cross regulated 100-year floodplains and associated floodways at numerous creek and river crossings (Appendix A, Figure 9). Floodplain crossings must be reviewed to determine if the project increases existing flood heights. A No-Rise analysis must be conducted before any permitting can be issued. Well engineered floodplain crossing design can generate a no-rise certification.

It might be necessary to fill portions of the Federal Emergency Management Agency (FEMA) floodplain and floodway for development of the proposed rail alignment; furthermore, a Letter of Map Revision based on Fill (LOMR-F) would be required. Per FEMA, a LOMR-F is submitted for sites on which fill has been placed to raise a structure to or above the Base Flood Elevation (BFE). National Flood Insurance Programs (NFIP) regulations require that the lowest adjacent grade of the structure be at or above the BFE for a LOMR-F to be issued to remove the structure from the floodplain. As part of the proposed rail alignment development, coordination will be required between FEMA and the Berkeley County Floodplain Administrator, as well as meeting any pertinent requirements presented in the Berkeley County Floodplain Ordinance.

3.7.6.1 Cross

The Cross alignment alternative is proposed to cross no FEMA regulated floodways and five FEMA regulated 100-year floodplains.

3.7.6.2 Moncks Corner

The Moncks Corner alignment alternative is proposed to cross no FEMA regulated floodways and seven FEMA regulated 100-year floodplains.

3.7.6.3 Soter North

The Soter North alignment alternative is proposed to cross three FEMA regulated floodways (Wassamassaw Swamp, Sandy Run, and Laurel Swamp) and six FEMA regulated 100-year floodplains. Impacts to floodways will require additional coordination with the Berkeley County Floodplain Administrator and a LOMR-F.

3.7.6.4 Soter South

The Soter North alignment alternative is proposed to cross two FEMA regulated floodways (Cypress Swamp and Laurel Swamp) and three FEMA regulated 100-year floodplains. Impacts to floodways will require additional coordination with the Berkeley County Floodplain Administrator and a LOMR-F.

3.7.6.5 No Build

The No-Build alternative would not have an impact on floodway or floodplain areas.

3.7.7 Water Quality and Water Resources

The majority of the four study areas are within the USGS HUC-8 Cooper Watershed (03050201). Portions of the study area surrounding the Cross alignment are in Four Hole Swamp Watershed and Lake Marion Watershed; however, all of the proposed alignment ROWs are located within the Cooper Watershed. All states are required to develop a list of waterbodies that do not meet water quality standards (SCDHEC 2013); the 303(d) list is the list of impaired waterbodies. Three 303(d) water quality monitoring stations within the study area are impaired. Station CSTL-079, located on the Diversion Canal north of the proposed Cross alignment, is impaired for dissolved oxygen (DO) and mercury. Station SC-026, located on Waring Branch near Ranger Drive, is listed for E. coli. Station CSTL-063, located at the Wassamassaw Swamp crossing on US Highway 176, is listed for E. coli as well.

Most of the study area is located within a Total Maximum Daily Load (TMDL) watershed associated with the Charleston Harbor, Cooper River, Ashley River, and Wando River. The TMDL is listed for DO and is the only TMDL within the study area. The TMDL has many monitoring stations designated as not supporting aquatic life due to low DO levels. TMDL station CSTL-062 is associated with the aforementioned TMDL, located downstream of the study area on the Tail Race Canal, is also impaired for mercury (SCDHEC 2013). Low DO levels primarily results from excessive algae growth caused by nutrients. In addition to numerous National Pollutant Discharge Elimination System (NPDES) wastewater discharges

(continuous point sources) and NPDES stormwater discharges (non-continuous point sources) contribute to low DO levels (SCDHEC 2013). Low DO levels are also expected in the headwaters areas with numerous swamps and low-lying areas contributing to a natural high biological and chemical oxygen demand.

According to the aforementioned land use data, impervious area is minimal within the study area. Land use with high impervious area typically increases pollutant loads such as fecal coliforms, oils, and nutrients. Stormwater in the study area is typically transported by shallow surface flow due to low impervious area and associated stormwater infrastructure. The primary drainage direction in the study area is south towards Cypress Swamp.

Land clearing activities can cause lower dissolved oxygen concentrations by decreasing waterbody shading and increasing warmer water temperatures; warmer water temperatures lower DO concentrations. Often with new development, the addition of impervious areas can increase pollutant loading rates, if appropriate stormwater Best Management Practices (BMPs) are not used. Since the proposed rail line will not include a substantial amount of new impervious area, the primary water quality impacts are likely to result from the conversion of forested areas to a maintained railroad right of way and the channelization of stormwater runoff along certain areas. To mitigate potential water quality impacts from the proposed rail line, a variety of post-construction stormwater BMPs will be used to convey, filter, and dissipate runoff from the new rail line, including but not limited to: vegetated swales, vegetated filter strips, stream bank stabilization, and channelized flow dissipation.

3.7.7.1 Cross

The Cross alignment is within the aforementioned TMDL watershed that has a listing for DO. The northern half of the Cross alignment is outside of the existing TMDL watershed and would have less potential to affect DO levels. Water quality monitoring station CSTL-079 is located just north of the alignment on the Diversion Canal and is impaired for DO and mercury. The Cross alignment should not affect existing mercury levels. Station SC-026 is downgradient from the Cross alignment; however, rail activity should not contribute to existing E. coli levels.

3.7.7.2 Moncks Corner

The Moncks Corner alignment is located upstream of station CSTL-063, listed for E. coli. The Moncks Corner alternative rail activity should not contribute to E. coli levels within the impaired waterbody. The Moncks Corner alignment is also located upgradient of TMDL station CSTL-062, located on the Tail Race Canal; however should not contribute to existing mercury levels. The Moncks Corner alignment is within the aforementioned TMDL watershed and could affect existing low DO levels.

3.7.7.3 Soter North

Station CSTL-063 is located near the proposed Soter North alignment. The Soter North rail activity should not contribute to E. coli levels within the impaired waterbody. The Soter North alignment is within the aforementioned TMDL watershed and could affect existing low DO levels.

3.7.7.4 Soter South

No impaired 303(d) stations are located along the Soter South alignment; however, the alignment is within the aforementioned TMDL watershed and could affect existing low DO levels.

3.7.7.5 No Build

The No Build alternative would have no effect on water quality or water resources within the study area.

3.7.8 Wetlands

Jurisdictional waters of the U.S., including streams and wetlands, are defined by 33 CFR Part 328.3 *et al.* and are protected by Section 404 and other applicable sections of the CWA (33 USC 1344). Impacts to these regulated resources are administered and enforced by the Charleston District of the USACE, as well as other federal and state government agencies. Jurisdictional wetlands are defined in the USACE Wetland Delineation Manual and the Atlantic and Gulf Coastal Plain regional supplement. These techniques use a multi-parameter approach, which requires positive evidence of three criteria for a determination of existence of wetlands: hydrophytic vegetation, hydric soils, and wetland hydrology. Certain activities, such as construction, dredging, filling or other alterations, in jurisdictional wetlands, streams or other waters of the U.S. may require a Section 404 Clean Water Act permit which is regulated by the USACE.

Amec Foster Wheeler conducted a preliminary jurisdictional waters screening to assess the potential presence/absence of jurisdictional waters, including wetlands, and to approximate the potential jurisdictional boundaries within each of the four alternative project corridors. This desktop preliminary screening process used wetlands Inventory (NWI) mapping of the respective project corridors (Appendix A, Figure 8). A field delineation or USACE verification of jurisdictional waters was not conducted nor was information depicted on the sources list above field verified as a part of this alternatives analysis.

Unavoidable wetland impacts along the project corridor will generally include fill and clearing impacts to wetlands and culvert, piping, and shade impacts to streams and jurisdictional ditches.

Limits of jurisdictional wetlands and other waters of the U.S. within the preferred project corridor will be field delineated prior to final design and permitting.

3.7.8.1 Cross

The Cross alignment alternative is located mostly within the Cooper River watershed (8-digit HUC: 03050201), with a small portion located in the Four Hole Swamp watershed (8-digit HUC: 03050205). Based on the preliminary screening using NWI data, approximately 26.08% of the Cross alignment has been determined to be wetland. This alignment would potentially impact 1.44 acres of emergent wetlands, 97.46 acres of forested wetlands, 16.25 acres of shrub/scrub wetland, and 1.89 acres of open water (ponds & lakes), for a total potential impact of 117.04 acres.

3.7.8.2 Moncks Corner

The Moncks Corner alignment alternative is located wholly within the Cooper River watershed (8-digit HUC: 03050201). Based on the preliminary screening using NWI data, approximately 32.88% of the Moncks Corner alignment has been determined to be wetland. This alignment would potentially impact 5.05 acres of emergent wetlands, 119.11 acres of forested wetlands, 8.48 acres of shrub/scrub wetland, and 3.86 acres of open water (ponds & lakes), for a total potential impact of 136.50 acres.

3.7.8.3 Soter North

The Soter North alignment alternative is located wholly within the Cooper River watershed (8-digit HUC: 03050201). Based on the preliminary screening using NWI data, approximately 21.93% of the Soter North alignment has been determined to be wetland. This alignment would potentially impact 1.00 acres of emergent wetlands, 82.47 acres of forested wetlands, and 5.43 acres of shrub/scrub wetland, for a total potential impact of 88.89 acres.

3.7.8.4 Soter South

The Soter South alignment alternative is located wholly within the Cooper River watershed (8-digit HUC: 03050201). Based on the preliminary screening using NWI data, approximately 31.28% of the Soter South alignment has been determined to be wetland. This alignment would potentially impact 29.30 acres of emergent wetlands, 71.41 acres of forested wetlands, 0.18 acres of shrub/scrub wetland, and 12.40 acres of shrub/scrub wetland, for a total potential impact of 113.28 acres.

3.7.8.5 No Build

The No Build alternative would have no effect on the existing wetlands within the study corridors.

3.7.9 Endangered, Threatened, and other Listed Species

A current list of federally endangered and threatened plant and animal species for Berkeley County was compiled from the United States Fish and Wildlife Service (USFWS) Endangered Species List (USFWS Information, Planning, and Conservation System [IPaC], Version 1.4) was reviewed on November 23, 2016. According to the literature and records review, ten federally protected plant and animal species occur within Berkeley County (Table 3-4). The South Carolina Department of Natural Resources (SCDNR) Rare and Endangered Species Inventory website, a Geographic Information System natural resources data layer that includes the locations of all documented occurrences of federally endangered or threatened species, was reviewed for known occurrences of such species on or proximate to the subject project. There is one known red-cockaded woodpecker occurrence within one half mile of any of the corridors that is potentially still extant. There are several known bald eagle nests near Lake Moultrie.

Table 3-4. Current list of federally endangered, threatened, and candidate species in Berkeley County, South Carolina (USFWS 2016) and their habitat types.

Common Name	Scientific Name	Status	Survey Window	General Habitat Type
West Indian manatee	<i>Trichechus manatus</i>	E	May 15 - Oct 15	coastal waters
Frosted flatwoods salamander	<i>Ambystoma cingulatum</i>	T, CH	Jan 1 – Apr 30	pine areas maintained in an open state by fire with isolated ponds for breeding sites
Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA	Oct 1 – May 15	coastlines, rivers, large lakes or streams
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	Apr 1 – July 31	mature pine forests
Wood stork	<i>Mycteria americana</i>	E	Feb 15 – Sep 1	marshes, swamps, lagoons, ponds, flooded fields; depressions in marshes are important during drought; also occurs in brackish wetlands
Atlantic sturgeon	<i>Acipenser oxyrinchus</i>	E	Feb 1 – Apr 30	major river systems along the eastern seaboard
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	E	Feb 1 – Apr 30	major river systems along the eastern seaboard
Pondberry	<i>Lindera melissifolia</i>	E	Feb – mid Nov	swamp and pond margins, sandy sinks, swampy depressions, wet flats
Canby's dropwort	<i>Oxypolis canbyi</i>	E	July 15 - Sept	pond-cypress savannahs dominated by grasses, sedges or ditches next to bays; borders and shallows of cypress-pond pine ponds and sloughs
American chaffseed	<i>Schwalbea americana</i>	E	May – Aug	fire maintained open pine forest

E Federally endangered

T Federally threatened

CH Critical habitat

BGEPA Federally protected under the Bald and Golden Eagle Protection Act

A review of readily available remote sensing data was conducted to identify potential habitat for federally protected species within each of the alternative alignments.

3.7.9.1 Cross

There are seven known bald eagle occurrences within a half mile of the Cross route, near the Diversion Canal and Lake Moultrie, however, none of these nests are directly within the corridor. The closest known bald eagle nest is located 2,000 feet south of the alignment. Additional study may be required to ensure that this route will not disturb the bald eagle.

Shortnose sturgeon, Atlantic sturgeon, and West Indian manatee populations are known from Lake Marion and Lake Moultrie, however with the use of appropriate BMPs, this route would not likely adversely affect this species.

Marginal habitat for the red-cockaded woodpecker (RCW) and wood stork may be present within the project corridor, however, this habitat is of low quality and would not be a limiting factor for either of these species. There is no likely adverse effect to these species.

The Cross alignment is will have no effect on the frosted flatwoods salamander, Canby's dropwort, pondberry, and American chaffseed.

3.7.9.2 Moncks Corner

There are four known bald eagle occurrences within a half mile of the Moncks Corner route, along Lake Moultrie, however, none of these nests are directly within the corridor. Additional study may be required to ensure that this route will not disturb the bald eagle.

Marginal habitat for the RCW and wood stork may be present within the project corridor, however, this habitat is of low quality and would not be a limiting factor for either of these species. There is no likely adverse effect to these species.

The Moncks Corner alignment will have no effect on the West Indian manatee, frosted flatwoods salamander, shortnose sturgeon, Atlantic sturgeon, Canby's dropwort, pondberry, and American chaffseed.

3.7.9.3 Soter North

There no known bald eagle occurrences within a half mile of the Soter North route, therefore this route is not likely to affect the bald eagle.

There is one known occurrence of the RCW within one half mile of the Soter North route. This occurrence is located within an open pine stand, which may provide suitable habitat for both the RCW and American chaffseed. Additional study would be required to determine potential impacts to these species.

Marginal habitat for the wood stork may be present within the project corridor, however, this habitat is of low quality and would not be a limiting factor for this species. There is no likely adverse effect to this species.

The Soter North alignment is will have no effect on the West Indian manatee, frosted flatwoods salamander, shortnose sturgeon, Atlantic sturgeon, Canby's dropwort, and pondberry.

3.7.9.4 Soter South

There is one known bald eagle occurrences within a half mile of the Soter South route. Additional study may be required to ensure that this route will not disturb the bald eagle.

There is one known occurrence of the RCW within one half mile of the Soter South route. This occurrence is located within an open pine stand, which may provide suitable habitat for both the RCW and American chaffseed. Additional study would be required to determine potential impacts to these species.

Marginal habitat for the wood stork may be present within the project corridor, however, this habitat is of low quality and would not be a limiting factor for this species. There is no likely adverse effect to this species.

The Soter South alignment is will have no effect on the West Indian manatee, frosted flatwoods salamander, shortnose sturgeon, Atlantic sturgeon, Canby's dropwort, and pondberry.

3.7.9.5 No Build

The No Build alternative would have no effect on federally protected species within the study area.

3.7.10 Historic and Archaeological Resources

A general predictive model based on the location of cultural resources indicates a relationship exists between archaeological site location, relative topography, and available water sources. An Area of Potential Effect (APE), half-mile buffer around each ROW, to help identify potential areas of significance and account for indirect impacts to cultural resources. Prehistoric sites in the Coastal Plains are most often located on well drained low slope areas adjacent to water or on uplands overlooking water (Anderson 1996).

Amec Foster Wheeler conducted a desktop review for the proposed rail alignment alternatives in Berkeley County, South Carolina. The desktop study was based on available data resources reviewed at the South Carolina Institute of Archaeology and Anthropology (SCIAA) located in Columbia. The investigation was conducted to determine if previously-recorded archaeological sites or historic properties eligible for the National Register of Historic Places (NRHP) are present in the project area.

According to the records at SCIAA, 77 archaeological sites, 99 historic structures, and 6 historic areas are located within the four study areas. In addition, according to SCIAA, 77 of the historic structures within the study area are eligible for the NRHP. One of the historic areas is listed on the NRHP and one is eligible for listing. Table 3-6 lists the direct impacts (located within the ROW) of historic resources from each rail alignment alternative. In addition, Appendix A, Figure 7 shows the locations of the historic and archaeological resources.

3.7.10.1 Cross

Four archaeological sites (38BK0584, 38BK0585, 38BK0587 and 38BK0588) and no historic structures have been recorded within the ROW for the Cross alternative. Each of these archaeological sites were recommended as potentially eligible for the NRHP and would require further study to determine their eligibility. Eleven historic structures and eleven archaeological sites are located within the APE for the Cross alternative. Two of these sites are potentially eligible for the NRHP.

Impacts to known and potentially eligible archaeological sites are likely along the proposed Cross alignment; minor route adjustments to avoid these sites are possible and should be studied in order to limit or avoid effects to these resources. The portion of the alignment between the Camp Hall Site and the known archaeological sites shows limited potential for archaeological or historic impacts.

3.7.10.2 Moncks Corner

One archaeological site (38BK0102) is located within the proposed ROW of the Moncks Corner alignment. Two historic districts, the Pinopolis Dam - Jeffries Hydroelectric Plant / Navigation Lock and the Old Santee Canal are also located within proposed ROW. The Pinopolis Dam is an eligible historic district located north of the eastern portion of the proposed alignment. Old Santee Canal is listed on the NRHP and is located within close proximity of the eastern portion of the proposed alignment. Both of these sites would require further study and may limit the overall footprint for the proposed alignment. Eleven historic structures and eight archaeological sites are located within the APE for the Moncks Corner alignment. Six of these previously-recorded structures are considered eligible or potentially eligible for the NRHP.

While the potential for indirect impact to historic districts and related sites is possible along the eastern portion of the Moncks Corner alignment, the overall footprint for the rail build-in may have a limited direct effect on these sites. The portion of the alignment between the Camp Hall Site and the known historic district and other historic sites in Moncks Corner shows limited potential for archaeological or historic impacts.

3.7.10.3 Soter North

Four archaeological sites (38BK2570, 38BK2071, 38BK2078 and 38BK2130) and two known historic structures (Lewis Harvey Store and Lewis Harvey House) are located within the proposed ROW of the Soter North alignment. Both sites have been determined to be not eligible for the NRHP and would not require further study. Twenty-one historic structures and fifteen archaeological sites are located within the larger APE for the Soter North alignment. Three of these resources are considered eligible for the NRHP.

The impact to known and potentially eligible archaeological sites is negligible within the ROW for the Soter North alignment. The four known sites within the ROW should be avoided or studied further to make a determination of eligibility to the NRHP; however, slight reroutes would allow limited or no effects to these sites. The colocation of the portion of the alignment along U.S. Highway 176 has the lowest potential for impacting unknown sites.

3.7.10.4 Soter South

No historic structures, archaeological sites, or historic areas have been recorded within the proposed ROW for the Soter South alignment. On a broader scope, there have been twelve historic structures and fourteen archaeological sites recorded within the APE for the Soter South alignment. Three of these resources are eligible for the NRHP.

The lack of previously recorded cultural resources along the Soter South alignment suggests a low potential to impact cultural resources. The colocation of the portion of the alignment along existing utility corridors also lowers the potential for impacting any unknown sites.

3.7.10.5 No Build

The No Build alternative would have no effect on cultural resources.

3.7.11 Environmental Justice

Environmental Justice (EJ) was formally and legally introduced on February 11, 1994 when President Clinton signed Executive Order (EO) 12898. The EO's directive is to identify any disproportionate or adverse impacts on minority and low-income populations resulting from development or laws (USEPA 2010a). Adverse impacts may occur if a project has negative effects on the nearby economy, disrupts community cohesion, loss of community facilities, increase emergency response times, or reduce transportation mobility. Unfortunately, direct guidelines for defining EJ populations does not exist (USEPA 1999a), including the State of South Carolina. However, the EPA Region 4 defines potential EJ communities by comparing benchmark reference areas where thresholds can be applied.

The recommended threshold for use in EPA Region 4 is 1.2 times the state average for aggregate minorities and low-income populations; however, the Council on Environmental Quality (CEQ) states potential EJ communities include aggregate minority populations of the affected area that exceed 50% (CEQ 1997). Low-income populations can be defined using either 1.2 times the state poverty level or 1.2 times the percentage of households below \$15,000 annual income within the state (USEPA 1999a). Poverty data is not provided at the Census Block Group level; however, annual household income data is.

For this Level 2 analysis Amec Foster Wheeler compared minorities and percent of households below \$15,000 annual income at the Census Block Group and state level to define potential EJ communities. The thresholds used for defining potential EJ communities

are 1.2 times the South Carolina state average for aggregate minority populations and household incomes below \$15,000, as well as any aggregate minority populations exceeding 50% within each studied Census Block Group. Furthermore, the potential EJ communities found in this analysis are determined at the Census Block Group level. There are 25 Census Block Groups within the study area (USCB 2011; USCB 2010a), 23 groups within Berkeley County and 2 groups within Dorchester County (Appendix A, Figure 5).

It is important to note all data used in the analysis came from the United States Census Bureau. Census Block Groups within the study area are rather large due to sporadic populations and can create errors in defining potential EJ communities. Lastly, the rail alignments do not necessarily directly impact an EJ community since an EJ community can be smaller than the Census Block Group. Figure 3 indicates the Census Block Groups with potential EJ communities.

3.7.11.1 Cross

The Cross alignment alternative ROW intersects five U.S. Census Block Groups. Four of those Census Block Groups contain potential EJ communities. The majority of the Cross alignment is in active silviculture areas and would have minimal effects on the potential EJ communities.

3.7.11.2 Moncks Corner

The Moncks Corner alignment alternative ROW intersects seven U.S. Census Block Groups. Five of those Census Block Groups contain potential EJ communities. The Census Block Groups located within the Moncks Corner ROW area include smaller, concentrated areas. Therefore, the Moncks Corner alignment has an increased potential to adversely impact EJ communities within the proposed ROW.

3.7.11.3 Soter North

The Soter North alignment alternative ROW intersects seven U.S. Census Block Groups. None of those Census Block Groups contain potential EJ communities. The Soter North alignment would have no effect on potential EJ communities. The Soter North alignment would directly affect a State Designated Tribal Statistical Area (SDTSA). The Wassamassaw Tribe of Varnertown Indians is recognized as an Indian group by the State of South Carolina and is headquartered in Berkeley County (USCB 2010b). The Wassamassaw SDTSA is located within the proposed ROW of the Soter North alignment.

3.7.11.4 Soter South

The Soter South alignment alternative ROW intersects six U.S. Census Block Groups. None of those Census Block Groups contain potential EJ communities. The Soter South alignment

would have no effect on potential EJ communities. The Wassamassaw SDTSA is located within the proposed ROW of the Soter South alignment (USCB 2010b).

3.7.11.5 No Build

The No Build alternative would have no effect on potential EJ communities.

3.7.12 Potential Relocations

Relocations occur when a rail alignment alternative ROW directly impacts a residential home, church, or commercial business. Amec Foster Wheeler was limited to examining the potential relocations using only high-resolution aerial imagery; therefore, all potential relocations listed below are approximated and should be used for preliminary planning purposes only. The analysis estimated all four alignment alternatives would potentially directly impact residential houses or associated structures. The potential relocations consist mostly of single-family homes.

Berkeley County parcel information indicated 76 parcels could be directly impacted by the Cross alignment ROW, 55 parcels could be directly impacted by the Moncks Corner alignment ROW, 118 parcels could be directly impacted by the Soter North alignment ROW, and 58 parcels could be directly impacted by the Soter South alignment ROW. Table 3-6 lists the potential relocations from each alternative alignment.

3.7.12.1 Cross

The Cross alignment alternative has 6 residential buildings within 50-feet of the proposed ROW. No other buildings should be affected.

3.7.12.2 Moncks Corner

The Moncks Corner alignment alternative has 2 residential buildings within 50-feet of the proposed ROW. No other buildings should be affected.

3.7.12.3 Soter North

The Soter North alignment alternative has 42 residential buildings within 50-feet of the proposed ROW. In addition, 13 commercial buildings and 2 churches are located within 50-feet of the proposed ROW.

3.7.12.4 Soter South

The Soter South alignment alternative has 10 residential buildings within 50-feet of the proposed ROW. No other buildings should be affected.

3.7.12.5 No Build

The No Build alternative would have no effect on potential relocations.

3.7.13 Traffic and Transportation

According to the United States Census Bureau Topology Integrated Geographic Encoding and Referencing (TIGER) dataset the four study areas include over 1,300 roads, including one interstate, eight highways, and multiple arterial roads. The majority of the demarcated roads listed within the study area are minor agricultural and forestry roads. Table 3-6 lists the potential road crossings for each alignment alternative. The South Carolina Lowcountry is serviced by two freight rail operators, Norfolk Southern (NS) and CSX Transportation (CSXT), and Amtrak for passenger service. Existing nearby rail include the NS line connecting Charleston to Columbia, CSXT A-line, CSXT ALR-line, CSXT AKE-line, and CSXT SH-line.

Aside from Interstate 26, traffic volumes on surrounding roadways are relatively low. A general Level of Service (LOS) for each roadway is estimated based on the latest volumes and the ADT thresholds used in South Carolina Department of Transportation (SCDOT) Travel Demand Models. LOS is a measure of quality of operational conditions within a traffic stream based on service measures such as speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and the ratio of facility volume to capacity (v/c). Based on the 2013 traffic volumes within the study area no roadway received a low LOS score. Table 3-5 indicates SCDOT traffic stations located on major arterial roads and highways near the intersections with the proposed rail alignments.

Table 3-5. South Carolina Department of Transportation 2015 Traffic Point Data

SCDOT Traffic Station	Mile Point	Corridor	Number of Lanes	Volume (Vehicles/Day)	Alignments Intersected
103	7.31	South Live Oak Drive	4	19,000	Soter North, Soter South
123	3.99	US Highway 52	4	22,500	Soter South
124	8.014	US Highway 52	4	21,200	Soter South
135	8.086	US Highway 176	2	3,900	Cross, Moncks Corner, Soter North, Soter South
137	19.841	US Highway 176	2	7,800	Cross, Moncks Corner, Soter North, Soter South
140	5.185	Old Highway 6	2	1,300	Cross
143	16.72	SC Highway 6	2	3,100	Moncks Corner
145	22.819	SC Highway 6 (West Main St)	3	10,100	Moncks Corner
163	5.63	SC Highway 311	2	1,400	Cross
177	2.343	Jedburg Road	2	7,100	Soter North, Soter South
223	1.062	Old Whitesville Road	2	2,400	Moncks Corner

3.7.13.1 Cross

The Cross alignment alternative would intersect 3 arterial roads or highways, 15 secondary roads, and 21 minor forestry roads. The major highways the Cross alignment would intersect include US Highway 176, SC Highway 311, and Old Highway 6, which are all two-lane highways.

3.7.13.2 Moncks Corner

The Moncks Corner alignment alternative would intersect 4 arterial roads or highways, 10 secondary roads, and 21 minor forestry roads. The arterial roads and highways the Moncks Corner alignment would intersect include US Highway 176, Cooper Store Road, Old Whitesville Road, and SC Highway 6 (West Main Street), which are all two-lane roadways.

3.7.13.3 Soter North

The Soter North alignment alternative would intersect 5 arterial roads or highways, 36 secondary roads, and 11 minor forestry roads. The arterial roads and highways the Soter North alignment would intersect include Lebanon Road, Cypress Campground Road, Jedburg Road, US Highway 176, and South Live Oak Drive. All of the intersections of major roads for the proposed Soter North alignment are two-lane roadways except South Live Oak Drive, which is a four-lane roadway.

3.7.13.4 Soter South

The Soter South alignment alternative would intersect 5 arterial roads or highways, 9 secondary roads, and 11 minor forestry roads. The arterial roads and highways the Soter South alignment would intersect include Cypress Campground Road, Jedburg Road, US Highway 176, South Live Oak Drive, and US Route 52. All of the intersections of major roads for the proposed Soter North alignment are two-lane roadways except South Live Oak Drive and US 52, which are both four-lane roadways. US 52 is a four-lane divided highway with a 60-ft grass median strip.

3.7.13.5 No Build

The No Build alternative would have no effect on the existing traffic or transportation infrastructure.

3.7.14 Recreation and Land Stewardship

Amec Foster Wheeler reviewed numerous stewardship and protected areas sources, including the USGS Protected Areas Database of the United States (PAD-US), the National Conservation Easement Database (NCED), USDA Natural Resources Conservation Service (NRCS) Conservation Stewardship Program (CSP), SCDNR, and multiple non-governmental organizations (NGOs), to develop a database of protected and conserved lands in the study areas. It should be noted that this database is not an exhaustive list, but gives an indication of the protected areas within the study area. The readily available stewardship and protected areas are shown in Appendix A, Figure 6.

3.7.14.1 Cross

There are multiple private, protected, and public lands within the vicinity of the study area. The Cross alignment alternative directly affects two Moultrie Hunt Unit Wildlife Management Areas (WMAs), owned by Santee Cooper. This alignment has the potential to impact the Caton Creek Mitigation Bank, owned by MeadWestvaco, however alignment modifications within the corridor could eliminate impacts.

3.7.14.2 Moncks Corner

The Moncks Corner alignment has the potential to impact the Caton Creek Mitigation Bank, owned by MeadWestvaco, however alignment modifications within the corridor could eliminate impacts. No other protected lands should be impacted by the Moncks Corner alignment.

3.7.14.3 Soter North

No protected lands should be impacted by the Soter North alignment.

3.7.14.4 Soter South

No protected lands should be impacted by the Soter South alignment.

3.7.14.5 No Build

The No Build alternative would have no effect on protected land disturbance.

3.7.15 Section 6(f) Resources

Section 6(f) properties are recreation resources funded under the Land and Water Conservation Fund (LWCF) Act. The Land and Water Conservation Fund Act of 1965 was established to assist in preserving, developing, and assuring accessibility of outdoor recreation resources to all citizens of the United States (NPS 2016). Conversion of these lands for uses other than for outdoor recreation must be approved by the U.S. Department of the Interior. Direct impacts to these resources are prohibited unless there are no feasible and prudent alternatives for the use of the properties and the project incorporates all possible measures to avoid or minimize harm to such properties (NPS 2012).

According to the LWCF South Carolina has received approximately \$279 million over the past 50 years. There are no Section 6(f) properties within the four study areas.

3.7.16 Hazardous Materials

A search for potential hazardous waste sites within 100 feet of the rail alignment alternatives ROWs was performed. The results of the search are as follows:

3.7.16.1 Cross

One hazardous waste site, Cross Generating Station, was identified within 100 feet of the Cross route options. This site is the Santee Cooper electric generating plant located in Cross, South Carolina. The site is listed on the State Hazardous Waste Sites (SHWS), Underground Storage Tank (UST), Leaking Underground Storage Tank (LUST), Solid Waste Facilities/Landfill (SWF/LF), and Permitted Airs Facility Listing (AIRS) environmental databases. The proposed ROW routes adjacent to an ash disposal / landfill area at the plant site.

No other hazardous waste sites were identified within 100 feet of the proposed ROWs of the Cross alternative options.

3.7.16.2 Moncks Corner

No hazardous waste sites were identified within 100 feet of the proposed ROW of the Moncks Corner alternative.

3.7.16.3 Soter North

Five hazardous waste sites were identified within 100 feet of the proposed ROW:

1. Robert R Besok located at 1377 State Road 176 is listed on the State underground petroleum storage tank databases (UST). Two petroleum USTs were removed from this site in 1994. A petroleum release reported at this site in 1993 received “no further action” required status (NFA) from the South Carolina Department of Health and Environmental Control (SCDHEC) on 7-28-1998.
2. LC Smith Grocery (currently All In One Barber & Beauty Salon) located at 2127 State Road 176 is listed on the State UST databases. Three petroleum USTs were removed from this site in 1991. A petroleum release reported at this site in 1990 has not received an NFA.
3. Janki Food Mart located at 2412 State Road 176 is listed on the State UST databases. This site is a retail petroleum outlet with two active USTs. Two former USTs were removed at this site in 1998. A petroleum release was reported at this site in 1999. This release received an NFA on 6-14-2001.
4. Harvey’s Lucky Dollar (last occupied by D’s General Store) located at 2417 State Road 176 is listed on the State UST databases. Three petroleum USTs were removed from this site in 1997. A petroleum release was reported at this site in 1993. The release has not received an NFA.
5. Cooper’s Store located at 2418 State Road 176 is listed on the State UST databases. Three petroleum USTs were removed from this site in 2015. A petroleum release was reported at this site in 1993. The release has not received an NFA.

3.7.16.4 Soter South

No hazardous waste sites were identified within 100 feet of the proposed ROW of the Soter South alternative.

3.7.16.5 No Build

The No Build alternative would have no effect on hazardous resources.

3.7.17 Level 2 Potential Impact Summary

The following chart summarizes the potential to impact environmental, economic, and socioeconomic resources, as well as cultural resources of the four alternative rail alignments examined in Level 2 of this Alternatives Analysis.

Table 3-6. Palmetto Railways Camp Hall Commerce Park Alternatives Analysis Level 2 Potential Impact Summary

Palmetto Railways Camp Hall Industrial Park Build-in Alternatives Analysis						
	Category	Unit of Measure	Cross	Moncks Corner	Soter North	Soter South
Engineering Criteria	Design Criteria					
	Total Length	miles	18.48	17.10	16.70	14.91
	ROW Area (100-ft Buffer)	acres	448.73	415.14	405.44	362.09
	Road Crossings					
	Arterial Roads / Highways	# of crossings	4	4	5	5
	Secondary Named Roads	# of crossings	15	10	36	9
	Minor Forestry/Agricultural Roads	# of crossings	21	21	11	11
	Transmission Line Crossings	# of crossings	5	2	2	10
Environmental Features	NWI Wetlands (within ROW)					
	Emergent	acres	1.44	5.05	1.00	29.30
	Forested	acres	97.46	119.11	82.47	71.41
	Shrub / Scrub	acres	16.25	8.48	5.43	0.18
	Pond / Lake	acres	1.89	3.86	0.00	12.40
	Wetland Total	acres	117.04	136.50	88.89	113.28
	Wetland Percentage of ROW	wetland acres/ROW acres	26.08%	32.88%	21.93%	31.28%
	Stream Crossings					
	Navigable Waters Crossings	# of crossings	1	0	0	0
	USGS Named Stream	# of crossings	8	4	4	3
	Minor Tributaries / Ditches	# of crossings	7	7	12	12
	Water Quality					
	303(d) Impaired Waterbodies	# of crossings	2	1	1	0
	TMDL Waterbodies	# of waterbodies	1	1	1	1
	Floodplain Crossings	# of crossings	5	7	6	3
	Farmland (within ROW)					
	Prime Farmland	acres	132.37	86.67	112.89	78.85
	Farmland of Statewide Importance	acres	233.78	225.63	219.34	172.10
	Habitat					
	Known Threatened & Endangered Species	Present/Not Present	Present	Present	Present	Present
	Cultural Resources (within ROW)					
	National Register Properties	# of properties affected	0	1	0	0
	Historic Buildings	# of buildings affected	0	0	2	0
	Historical Areas	# of areas affected	0	2	0	0
	Known Archaeological Sites	# of sites affected	4	1	4	0
	Known Cemeteries	# of cemeteries affected	0	0	0	0
	Hazardous Materials (within 100' of ROW)	# of hazardous sites affected				
Socioeconomic Issues	Private, Public, Protected Lands, Mitigation Areas	# of areas affected	3	1	0	0
	Environmental Justice	Potential # of Census Block Groups affected	4	5	0	0
	Subdivision Impact	# of subdivisions affected	0	0	1	1
	Estimated Parcels Affected (within ROW)	# of parcels affected	78	55	118	58
	Potential Relocations (within 50' of ROW)					
	Residential	# of residential houses affected	6	2	42	10
	Apartment Buildings	# of apartment buildings affected	0	0	0	0
	Commercial	# of commercial buildings affected	0	0	13	0
	Churches	# of churches affected	0	0	2	0
	Total Buildings Affected		6	2	57	10
Boundaries	Boundaries					
	County Boundaries	Boundaries affected	1	1	1	1
	Municipal Boundaries	Boundaries affected	0	0	1	1
	Urbanized Areas	Present/Not Present	Not Present	Present	Present	Present
	Census Designated Places	Boundaries affected	0	0	0	0
	Census Block Groups	Boundaries affected	5	7	7	6

3.8 Level 2 Conclusions

Level 2 of the alternatives practicability analysis evaluates the potential of the four remaining route alternatives to impact environmental, economic, and socioeconomic resources, as well as cultural resources. The Level 2 analysis allows an informed decision when selecting a preferred project corridor.

In general, as shown on Table 3-6, environmental, economic, socioeconomic, and cultural resource impacts for each of the four alternative alignments are comparable. However, critical issues arise from the following three alternatives, which prevent these alternatives from being viable alternatives:

- Of the four remaining route alternatives evaluated in the Level 2 analysis, the Moncks Corner alignment would require the largest amount of wetland impacts, with nearly 20 additional acres of wetland impacts versus the next highest alignment, has the highest percentage of wetlands, and the largest number of potential floodplain crossings. This alignment also has the largest potential to impact potential environmental justice communities. In addition, this alignment intersects the rapidly expanding North Charleston urbanized area. Due to these considerations, the Moncks Corner route has been eliminated as a viable alternative.
- The Soter North alignment is the most developed alternative alignment with an assessment by the USGS LCI showing the route composed of 27.8% developed land. This route would impact the greatest number of parcels, require most number of road crossings, and require the largest number of relocations, including 42 residential buildings, 13 commercial buildings, and 2 churches. These impacts and relocations substantially increase the cost of this alignment alternative, while logistics of successfully executing these relocations in a cost effective and expedient manner is substantially more difficult. *Cf.* 40 C.F.R. § 230.10(a)(2). The alignment also intersects the rapidly expanding North Charleston urbanized area. Due to these considerations the Soter North route has been eliminated as a viable alternative.
- The Soter South route alternative impacts the largest amount of emergent wetlands of the route alternatives carried forward into the Level 2 analysis, at nearly six times more impacts to emergent wetlands than the second highest route alternative. This alignment also impacts the second highest overall percentage of wetlands with the ROW. The data presented above for the Soter South route was developed utilizing current, readily available remote sensing sources. These sources do not take into account future proposed development within the alternative corridor. According to the U.S. Census Bureau, the

alignment intersects the North Charleston urbanized area. Furthermore, the Nexton development, a proposed and permitted 4,500-acre mixed use development, is located within the Soter South corridor. Due to the impacts to existing and proposed development, potential socioeconomic impacts, including the cost and logistical difficulties associated with the displacement/relocations along this route (*cf.* 40 C.F.R. § 230.10(a)(2)), traffic, and noise/ vibration concerns, the Soter South route was eliminated as a viable alternative.

The Cross route alternative alignment has been identified as Palmetto Railway's preferred project corridor. The Cross route alternative provides the most practical route with the least amount of overall impacts, while still meeting the characteristics and criteria identified by Palmetto Railways for the proposed project and in light of potential impact to environmental, economic, and socioeconomic resources.

3.9 Level 3 Analysis

Following selection of the generalized Cross route as the preferred corridor alternative, Palmetto Railways developed four alternative Cross alignments for further evaluation. The four Cross alternatives are generally longer and more sinuous than the generalized Cross alternative presented in Level 2, because the generalized route was not optimized to reduce environmental, economic, and socioeconomic impacts. Level 3 of this Alternatives Analysis presents a comparison of the four Cross rail alignment alternatives to facilitate review under the NEPA process. The No Build Alternative (No Action Alternative) is also presented herein as a basis for comparison. Four Cross alignments were developed and analyzed to determine the best route connecting Camp Hall to the CSX A-line (Cross Option 1, Cross Option 2, Cross Option 3, Cross Option 4). Each alignment alternative was evaluated on its potential to impact environmental, economic, and socioeconomic resources, as well as cultural resources. A refined Cross study area was defined to include the four Cross alignment alternatives (Appendix A, Figure 10).

3.9.1 Cross Rail Alignment Option 1

The Cross Route Option 1 runs approximately 20.51 miles through Berkeley County. It connects to the existing CSXT A-Line rail spur, which services the Santee Cooper Cross Generating Station. The major difference between the Cross Option 1 and the Cross route is that Cross Option 1 spans further west at Short Cut Road to avoid smaller parcels, potential relocations, and numerous Carolina Bays. The Cross Option 1 route runs southwest from the Cross Generating Station, crossing the Diversion Canal between Lakes Marion and Moultrie, runs west of the unincorporated community of Cross and south into the Camp Hall Commerce Park. This route passes through a mix of commercial, residential, and silvicultural properties. The route ties into the existing CSXT ALR-Line, an existing rail spur which ties into CSXT's A-Line in St. Stephen, South Carolina.

3.9.2 Cross Rail Alignment Option 2

The Cross Route Option 2 runs approximately 21.13 miles through Berkeley County. It connects to the existing CSXT A-Line rail spur, which services the Santee Cooper Cross Generating Station. The major difference between the Cross Option 2 and the original Cross route is that Cross Option 2 is located further west at Short Cut Road and further east at Old Highway 6 and Ranger Road to avoid smaller parcels, potential relocations, and numerous Carolina Bays. The Cross Option 3 route runs southwest from the Cross Generating Station to Camp Hall Commerce Park with a similar overall route as the Cross Option 1 route.

3.9.3 Cross Rail Alignment Option 3 (Preferred Project Corridor)

The Cross Route Option 3 runs approximately 22.50 miles through Berkeley County. It connects to the existing CSXT A-Line rail spur, which services the Santee Cooper Cross Generating Station. The major differences between Cross Option 3 and the Cross route is Cross Option 3 arcs northwest from Camp Hall to avoid the Caton Creek Mitigation Bank, extends further west at Short Cut Road, and turns further east at Old Highway 6 and Ranger Road to avoid smaller parcels, potential relocations, and numerous Carolina Bays. The Cross Option 3 route runs southwest from the Cross Generating Station to Camp Hall Commerce Park with a similar overall route as the Cross Option 1 route.

3.9.4 Cross Rail Alignment Option 4

The Cross Route Option 4 runs approximately 21.99 miles through Berkeley County. It connects to the existing CSXT A-Line rail spur, which services the Santee Cooper Cross Generating Station. The major differences between Cross Option 4 and the Cross route is Cross Option 4 curves northwest from Camp Hall to avoid the Caton Creek Mitigation Bank and turns further west at Short Cut Road to avoid smaller parcels, potential relocations, and numerous Carolina Bays. The Cross Option 4 route runs southwest from the Cross Generating Station to Camp Hall Commerce Park with a similar overall route as the Cross Option 1 route.

3.10 Level 3 Conclusions

Level 3 of the Cross alternatives practicability analysis evaluates the potential of the four remaining Cross alternatives to impact environmental, economic, and socioeconomic resources, as well as cultural resources. The Level 3 analysis allows an informed decision when selecting a preferred project corridor. Environmental, economic, socioeconomic, and cultural resource impacts for each of the remaining Cross alternative alignments are comparable. Issues that equally affected each alignment are stream crossings, wetland impacts, farmland, potential EJ communities, water quality, transmission crossings, and road crossings. Table 3-7 shows the outstanding issues comparing the Cross alignments.

Table 3-7. Level 3 Critical Issues Alternatives Analysis

Critical Issue	Cross Option 1	Cross Option 2	Cross Option 3	Cross Option 4
NWI Wetland Percentage	22.17%	25.91%	23.82%	20.37%
Estimated Parcels Affected (within ROW)	50	39	38	49
Potential Relocations	4	1	0	4
Known Archaeological Sites	1	1	0	0
Caton Creek Mitigation Bank	Direct Impact	Direct Impact	Unaffected	Unaffected

These remaining issues eliminated three alternatives, which prevent these alternatives from being viable alternatives.

- Cross Option 1 alignment would directly impact 50 parcels, the largest number of parcels and underlying property owners. This alignment also has four residential buildings located within 50-ft of the ROW, which may require relocation. In addition, this alignment intersects the Caton Creek Mitigation Bank, an important conservation property. Lastly, Option 1 directly impacts a known archaeological site (38BK2570). Due to these considerations, the Cross Option 1 route has been eliminated as a viable alternative.
- Cross Option 2 alignment would directly impact 39 separate parcel boundaries and has the highest percentage of wetlands within the ROW. This alignment also has a residential building located within 50-ft of the ROW, which may require relocation. In addition, this alignment intersects the Caton Creek Mitigation Bank, an important conservation property. Lastly, Option 2 directly impacts a known archaeological site (38BK2570). Due to these considerations, the Cross Option 2 route has been eliminated as a viable alternative.
- Cross Option 4 alignment would directly impact 49 separate parcel boundaries. This alignment also has 4 residential buildings located within 50-ft of the ROW, which may require relocation. Due to these considerations, the Cross Option 4 route has been eliminated as a viable alternative.
- The Cross Option 3 route alternative alignment has been identified as Palmetto Railway's preferred project corridor. Level 3 of this alternatives analysis has identified this route as Palmetto Railways' preferred project corridor because it is within the range of reasonable impacts, it affects the least amount of parcels within the project ROW, it does not require any relocations, it has no known archaeological sites, and does not affect the Caton Creek Mitigation Bank. Accordingly, Palmetto Railways respectfully submits that the Cross Option 3 is

the most practical route with the least amount of overall impacts, as judged by the potential impacts to environmental, economic, and socioeconomic resources.

3.11 Cross Option 3 Impact Minimization

Following selection of Cross Option 3 as the Preferred Project corridor, minor modifications were made the final alignment to further reduce impacts to environmental, economic, and socioeconomic resources. The alignment was modified to prevent impacts to cultural resources, including the Bulltown Ditch at the northern end of the rail line and the Garrett Cemetery located near the center of the proposed rail corridor.

3.12 Identification of the LEDPA

As support for the Corps' identification of the LEDPA, Palmetto Railways provides the following synopsis of its efforts at identifying potential alternatives for the Proposed Project:

As a starting point for identification and evaluation of alternatives, the proposed rail corridor into the Camp Hall Commerce Park is to be built, owned and operated by Palmetto Railways and must tie directly into an existing Class 1 mainline, while providing direct access to the Port of Charleston, sufficient rail capacity to serve both phases of the Volvo Cars site, as well as service the future growth and needs of additional industrial sites within the remaining portion of the Camp Hall Commerce Park, and without limiting access to the site while in use or requiring localized grade separation. These requirements narrowed the range of possible alternatives to the four alternative routes analyzed in Level 2 of this Alternatives Analysis. These alternative route were analyzed for potential impacts to environmental, economic, and socioeconomic factors. Through this process, the Cross route was determined to be the preferred project corridor.

A Level 3 analysis was conducted to further investigate the preferred Cross route. Four alternative alignments, originating near Santee Cooper's Cross Generating Station and terminating in the Camp Hall Commerce Park, were analyzed in Level 3 of this Alternatives Analysis. After applying the appropriate criteria and screening levels, Palmetto Railways proposes Cross Route 3 of the Level 3 Analysis as the preferred project corridor.

A detailed evaluation of the preferred project corridor on the human and natural environment will be conducted Cross Route 3 as presented below.

4 WATERS TO BE IMPACTED

A jurisdictional waters delineation for the preferred project corridor, Cross Route 3, was performed between April, 2016 and May, 2017. The field delineation extended 100-feet on either side of the Preferred Route centerline (200-ft corridor) and identified approximately 59% wetland coverage within the Preferred Route's corridor. A jurisdictional determination was submitted to and concurred with by the USACE (USACE SAC# 2016-01395). Wetlands and relatively permanent waters (RPWs) within the Proposed Project corridor are presented below and in Appendix B.

4.1 Wetlands

Wetlands within the project corridor have been classified by type and further by their existing condition as defined in Appendix C of the USACE "Guidelines for Preparing a Compensatory Mitigation Plan." Various wetland types share habitat types with differences lying in hydrologic periods, genesis of the wetland, and landscape position.

Plantation Pine Forests

The majority, ~36% (289.7 acres), of wetlands identified within the project corridor are within bedded plantation pine forests. Plantation pine forests span both upland and wetland areas. These areas have been routinely logged with heavy equipment for decades. Bedding is the practice of using a plow to build up a raised "bed" on which the trees are planted to keep them elevated from surface water. As the trees grow, they use a substantial amount of water, lowering the water table in the area. These areas are ditched on the stand boundaries to remove excess surface water. Ditches are routed to larger canals that move water off site or into adjacent wetland features. Some Carolina bay wetland features have been converted to pine monoculture. These wetland areas are considered *Impaired* and have experienced heavy soil disturbance and compaction. In some areas, beds are constructed against the native topography, trapping water between beds.

Carolina Bays

The project corridor spans four Carolina bays identified as Skeleton Bay, Beech Island Bay, Todd Bay, and an un-named bay. These areas comprise approximately 1% of the corridor (10.5 acres). Skeleton Bay, Beech Island, and Todd Bays are all *Impaired* wetlands. They have been harvested and re-planted in loblolly pine. Within Beech Island Bay a utility easement is maintained, creating an emergent wetland habitat. Skeleton Bay and Todd Bay have been completely converted to plantation pine, thus these areas were counted as such.

The un-named Carolina bay is *Partially Impaired* due to timber harvesting up to the edges of the bay. This Carolina bay makes up just over 1% of the corridor (8.4 acres). The outer ring of cypress has been removed, and loblolly has been planted in beds adjacent to the Carolina

bay. On one border of the bay, the planted pine has been recently clear-cut, and a ditch outfalls under the road to a culvert to maintain water below flood level within the Carolina bay.

Depressional Wetlands

The project area contains multiple depressional wetlands. These comprised 2% (15 acres) of the corridor. The depressional wetlands along the corridor within industrial forestlands are considered *Impaired* due to the conversion of the landscape to pine monoculture. Minor ditching has altered the hydrology within these areas as well. The depression wetlands within the South Carolina Department of Natural Resources' (SCDNR) Hall Wildlife Management Area (WMA) are considered *Fully Functional* as they retain their natural hydrology. Although minor logging has taken place within these wetlands, they remain pristine wetlands.

Bottomland Hardwood Forests

Bottomland Hardwood forests compose 21% (~175 acres) of the corridor. These areas exhibit evidence of past logging and are often bisected by roads with adequately sized culverts to allow unimpeded flow of water through the wetland. There are no old growth stands along the corridor; all stands are considered second or third growth based on species composition and tree size. Early successional wetland species such as river birch (*Betula nigra*), sweet gum (*Liquidambar styraciflua*), black willow (*Salix nigra*), water oak (*Quercus nigra*), and red maple (*Acer rubrum*) dominate recently harvested bottomland hardwood areas. In older regeneration, bald cypress (*Taxodium distichum*), swamp white oak (*Quercus bicolor*), and swamp tupelo (*Nyssa biflora*) dominate. These areas mostly lack a defined tributary, but rather are seasonally saturated and flooded, to semi-permanently flooded wetlands. For those few bottomland hardwood forests with a defined watercourse, it often has been channelized and crossed by forestry roads. Hydrology is altered in the industrial forest lands through the extensive ditching to remove surface water. These ditches are routed into wetland areas for eventual downstream discharge into a larger named watercourse. The bottomland hardwood forests within the SCDNR Hall Wildlife Management Area (WMA) are *Partially Impaired*. The hydrology of this area is partially altered with the construction of the Bulltown Ditch, as well as ruts and soil compaction due to past logging activity. The remainder of the corridor's bottomland hardwood wetlands are considered *Impaired* due to the extensive ditches altering the hydrology within these forest areas and fragmentation of the bottomlands with interspersed planting of loblolly pine.

4.2 Relatively Permanent Waters

Open Water

The Proposed Project crosses the diversion canal between Lakes Moultrie and Marion. This navigable Open Water wetland comprises <1% (2.4 acres) within the corridor and is used for commercial and recreational purposes. The diversion canal was constructed in the 1980s by the US Army Corps of Engineers. It provides aquatic habitat for a variety of species; however, there is no vegetation associated with the open water wetland. This area is considered *Very Impaired* due to the excavated nature of the canal and the periodic dredging to remove accumulated sediment. Also, spoil has been placed adjacent to the canal on either side, filling wetlands and altering the natural hydrology of these adjacent areas.

Linear Conveyances

Linear Conveyances occur throughout the project corridor. These features are used to drain and direct water from one area to another. Some of these features hold water long enough to allow for wetland vegetation growth in the base and along the banks, while others do not. The larger linear conveyances on industrial timberland properties contain some water flow or evidence of recent flow in the form of drift deposits and scouring. Smaller linear conveyances are often dry or contain standing water. Some of these features have been dug in uplands, while others have been excavated in wetlands. All linear conveyances within the industrial timber properties are routinely maintained with a tracked excavator to promote unimpeded water flow during large storms. Often, spoil is placed adjacent to the linear conveyance or incorporated into an adjacent road. All linear conveyances within the project corridor are considered *Very Impaired* due to their excavated nature and purpose of altering or removing hydrology in the adjacent areas.

There are two areas within the corridor that exhibit characteristics of a perennial, relatively permanent water (PRPW) tributary. Of the two (see Habitat Descriptions maps, pages 1 & 8) identified PRPW Tributaries, one is considered a naturally occurring feature with a sinuous channel and well-defined bed and bank. The channel is approximately 6-8 feet wide and the water level typically occurs approximately 5 feet below top of bank. This wetland feature crosses under various forestry roads via large concrete and metal culverts that are large enough not to impede the natural flow. There is no channelization of the water course. This wetland is considered a *Partially Impaired* wetland. Due to streamside management best management practices, the adjacent forest is buffered to protect water quality. Outside of the approximately 50' buffer, loblolly pine is planted in rows for future harvest. This buffer consists of a bottomland hardwood forest, interspersed with loblolly pine with sandy soils.

The second PRPW Tributary feature consists of a channelized run named "Bulltown Ditch" and is shown on Habitat Description maps page 1 & 2. The Bulltown Ditch extends over 18,000 feet from the Santee Canal off of Lake Moultrie to the Diversion Canal, bisecting

Bulltown Bay. This feature is approximately 6 feet wide and 4 feet deep. The canal is crossed by various public and forestry roads as well as the CSX rail line serving the Cross Generating Station through large concrete and metal culverts. The Bulltown Ditch dates from sometime after the Santee Canal (circa 1793) and is a maintained watercourse. This wetland system is highly impacted and is considered a *Very Impaired* wetland feature. It removes hydrology from some areas and is an excavated feature with an adjacent spoil berm that alters hydrology in the immediate area of the ditch. In some areas, the Bulltown Ditch flows through uplands before draining back into wetlands.

4.3 Impacts to Waters of the US

Rail construction limits from the 30% design plans have been utilized to determine potential impacts to waters of the US. Disturbance widths generally vary between 42 feet to 55 feet, but extend up to 175 feet for the filled approaches to the bridge over Diversion Canal. The disturbance limits surrounding the Diversion Canal expand outwards to approximately 180 feet in order to reach required clearing heights.

Approximately 83.18 acres of jurisdictional wetlands will be impacted. Approximately 77.49 acres of impacts are located with the Cooper Watershed and the remaining 5.76 acres of impacts are located with the Four Hole Swamp Watershed. In addition, approximately 0.06 acres and 169-feet of non-wetland waters (jurisdictional streams) will be impacted. These streams include Bulltown Ditch and Williams Branch, both located within the Cooper River Watershed.

Detailed jurisdictional waters impacts will be discussed in the Individual Permit application package submitted for the joint Section 404/401 permit.

5 PROPOSED MITIGATION

Palmetto Railways is currently soliciting comprehensive mitigation packages from mitigation providers. The selected mitigation package will comprehensively address impacts described in Section 4.3, utilizing the USACE's "Guidelines for Preparing a Compensatory Mitigation Plan". A Draft Mitigation Plan will be included in Appendix G.

6 AFFECTED ENVIRONMENT AND IMPACTS

An interdisciplinary team of environmental scientists, biologists, planners, economists, engineers, archaeologists, historians, and others with knowledge or experience related to the Proposed Project, has analyzed the proposed action in light of existing conditions and has identified relevant beneficial and adverse effects associated with the proposed action. Section 6 describes baseline conditions, the expected effects of the proposed action, and baseline study recommendations. A detailed evaluation of the Proposed Project corridor (Cross Route 3) on the human and natural environment is presented below. The Proposed Project corridor consists of a 200-ft wide corridor in which detailed environmental studies were conducted and impacts were evaluated.

6.1 Land Use

6.1.1 Description of Affected Environment

Land use is defined as the way people use and develop land, including uses such as agricultural, residential, and industrial. Many municipalities develop zoning ordinances and planning documents to control the direction of development and to keep similar land uses together. Land use in the incorporated areas of Berkeley County is governed by the Berkeley County Planning and Zoning Department.

The Proposed Project corridor (Cross Route 3) passes through an area mainly designated as FLEX1. As per the Code of Ordinances, Berkeley County, South Carolina (Berkeley County Code) [16], FLEX1 is an Agricultural District, which is intended to implement the land use goals of the agriculture and resource conservation areas within rural areas in the unincorporated portions of Berkeley County. Near the intersection of the project corridor and Highway 6, the alignment will cross a zoning classified as RNC. As per Berkeley County Code this zone is for rural and neighborhood commercial district, which provides for the development of commercial uses in the county's rural areas and urban areas for the development of small-scale commercial uses designated to serve adjacent residential neighborhoods. On the portion of the project corridor north of the Diversion Canal, the alignment will cross a zone classified as HI. As per Berkeley County Code this zone is for Heavy Industrial. Within a HI zone permitted uses include agricultural, commercial, industrial, recreational and institutional uses.

The project corridor begins at the existing CSXT rail line that services Santee Cooper's Cross Generating Station. Land use in the area is undeveloped woodland adjacent to the existing Santee Cooper Industrial site. Immediately south of the Cross Generating Station is the Diversion Canal between Lake Marion and Moultrie. South of the Diversion Canal is the unincorporated community of Cross. The land use in Cross is low density rural residential, with a few retail and commercial uses. Between Cross and the Camp Hall Commerce park, the land is intensely managed for timber, resulting in heavy bedding, interconnecting drainage

ditches, and established timber stands in various stages of rotation, though there is no evidence of fire management within the stands. The primary species in rotation is loblolly pine (*Pinus taeda*) (Figure 2). Land use within the Proposed Project corridor is presented in Table 6-1.

Table 6-1. Proposed Project Surrounding Land Use.

	Crops, Shrubland, Herbaceous	Forested	Wetlands, Open Water	Developed
Preferred Route	35.7%	37.2%	25.9%	1.2%

6.1.1.1 Recreation and Land Stewardship

Numerous stewardship and protected areas sources have been reviewed, including the USGS Protected Areas Database of the United States (PAD-US), the National Conservation Easement Database (NCED), USDA Natural Resources Conservation Service (NRCS) Conservation Stewardship Program (CSP), SCDNR, and multiple non-governmental organizations (NGOs), to develop a database of protected and conserved lands in the project corridor. It should be noted that this database is not an exhaustive list, but gives an indication of the protected areas in the vicinity of the proposed rail corridor.

The corridor passes through two units of the Moultrie Hunt WMA, owned by Santee Cooper and located on both the north and south sides of the Diversion Canal. The alignment was sited to completely avoid the Caton Creek Mitigation Bank, owned by MeadWestvaco.

6.1.1.2 Section 6(f) Resources

Section 6(f) properties are recreation resources funded under the Land and Water Conservation Fund (LWCF) Act. The Land and Water Conservation Fund Act of 1965 was established to assist in preserving, developing, and assuring accessibility of outdoor recreation resources to all citizens of the United States (NPS 2016). Conversion of these lands for uses other than for outdoor recreation must be approved by the U.S. Department of the Interior. Direct impacts to these resources are prohibited unless there are no feasible and prudent alternatives for the use of the properties and the project incorporates all possible measures to avoid or minimize harm to such properties (NPS 2012).

According to the LWCF South Carolina has received approximately \$279 million over the past 50 years.

There are no Section 6(f) properties within or near the proposed rail corridor.

6.1.2 Potential Environmental Impacts

Construction and operation of the Proposed Project corridor would result in impacts to land use. Land use within the project corridor would change from undeveloped (or lightly developed) to an industrial rail line. The surrounding area, however, is largely agricultural, undeveloped, and rural residential, which would not change. The proposed disturbance associated with the rail corridor is relatively narrow (usually 42 feet to 55 feet, but up to 175 feet on the filled approaches to the Diversion Canal), so a relatively small portion of a very large land use category would be lost (FLEX1). This adverse impact would be considered minor overall.

6.2 Aesthetics and Visual Resources

6.2.1 Description of Affected Environment

The physical, biological, and cultural features of an area combine to make the visual landscape character both identifiable and unique. Scenic integrity indicates the degree of unity or wholeness of the visual character. Scenic attractiveness is the evaluation of outstanding or unique natural features, scenic variety, seasonal change, and strategic location. Where and how the landscape is viewed affect the more subjective perceptions of its aesthetic quality and sense of place.

Views of a landscape are described in terms of what is seen in foreground, middleground, and background distances. In the foreground, an area within 0.5 mile of the observer, details of objects are easily distinguished in the landscape. In the middleground, normally between 1 and 4 miles from the observer, objects may be distinguishable but their details are weak and they tend to merge into larger patterns. Details and colors of objects in the background, the distant part of the landscape, are not normally discernible unless they are especially large and standing alone. The impressions of an area's visual character can have a substantial influence on how it is appreciated, protected, and used. The general landscape character of the project corridor is described in this section.

The proposed rail corridor passes through number types of visual settings. These include forested areas, silvicultural areas, open water crossings (bridge crossing of the Diversion Canal), as well as industrial and rural residential areas. Industrial facilities include Santee Cooper's Cross Generating Station at the northern end of the route and the Camp Hall Commerce Park at the southern terminus. The proposed rail corridor passes through the unincorporated community of Cross. Views of the project area would likely be up to distances in the foreground (0 feet to 0.5 mile) or middleground (1 to 4 miles) from local roads and other nearby residential areas. Scenic attractiveness of the area within the line of rail improvement corridor is common, and scenic integrity is low because of active, intensive forestry operations and other adjacent commercial/industrial development.

Based on criteria developed by the U.S. Forest Service (1995) to rate scenic quality, overall scenic values of the project area are low because of the low relief, lack of significant visual features, and the similarity to surrounding areas.

6.2.2 Potential Environmental Impacts

Construction and operation of the proposed rail corridor would result in effects to existing scenic resources. Removal of existing trees, site grading, and rail construction would affect the scenic integrity of portions of the proposed rail corridor which have a rural or naturally appearing landscape character. Noise and/or waste light could also be generated, depending on the size and kind required for rail construction and operation.

The proposed rail corridor would cause a visual change in the landscape as a result of the construction and operation of the rail line. As described above, overall existing scenic values within the project corridor are low. Visual impacts will occur due to conversion of existing forested lands into a rail corridor. However, these impacts will be limited to adjacent property owners, at grade crossings, and the bridging of the Diversion Canal.

Light can cause pollution when it becomes a nuisance to adjacent properties. Light pollution/light trespass is best described as artificial light that is allowed to illuminate, or intrude upon, areas not intended to be lit. There are options available for future development to reduce the impacts of glare, light trespass and light pollution. Some of these options include designing outdoor lighting fixtures to be shielded, aimed, located and maintained to prevent light trespass onto adjacent properties and roadways; have shields or cut-off fixtures; or light fixture poles in parking lots that do not exceed a certain height.

The areas directly adjacent to the proposed rail corridor would be slightly impacted by the construction of the Proposed Project. These impacts would be negligible to minor, based on the existing disturbance to the landscape by intensive silvicultural activities. Visual impacts to the Diversion Canal will be minimal, as the proposed rail over the canal will be proximate to an existing highway crossing of the canal.

6.3 Air Quality

6.3.1 Description of Affected Environment

A few common air pollutants are found across the United States. The USEPA calls these pollutants “criteria air pollutants” because the agency has regulated them by first developing health-based criteria (science-based guidelines) as the basis for setting permissible levels. One set of limits (primary standard) protects health; another set of limits (secondary standard) is intended to prevent environmental and property damage. A geographic area that meets the primary National Ambient Air Quality Standards (NAAQS) is called an attainment area; areas that do not meet the primary NAAQS are called nonattainment areas.

SCDHEC operates air quality monitoring stations throughout the state. Data from these monitoring sites show that South Carolina enjoys some of the best air quality in the United States and is one of a few states that currently meet all NAAQS. Sampling data continues to show that the entire state is in attainment of the NAAQS. Table 6-2 summarizes the NAAQS and observed air quality data for Berkeley, Charleston, and Dorchester Counties.

Table 6-2 Air Quality Data Summary for Tri-County Area

Pollutant	Averaging Time	NAAQS	Maximum Observed ^(a)
Lead	Rolling 3-month	0.15 ug/m ³	0.006 ug/m ³
Carbon Monoxide	1-hr Maximum 8-hr Maximum	35 ppm 9 ppm	Not available for the 3-county area
Nitrogen Dioxide	Annual Mean	100 ug/m ³	12.4 ug/m ³
Sulfur Dioxide	1-hr Maximum 3-hr Maximum	75 ppb 1300 ug/m ³	41.9 ug/m ³ (16 ppb) 35.8 ug/m ³
Ozone	8-hr Daily Maximum	0.075 ppm	0.061 ppm
Particulate Matter (PM10)	24-hr Maximum	150 ug/m ³	49 ug/m ³
Particulate Matter (PM2.5)	Annual Mean 24-hr Maximum	15 ug/m ³ 35 ug/m ³	8.9 ug/m ³ 21 ug/m ³

(a) Maximum observed valued during the 2011-2013 time period at any SCDHEC monitor in Berkeley, Charleston, and Dorchester Counties.

(b) Data Source: <http://www.scdhec.net/baq/>

Emissions Summary

Air pollution is emitted by a variety of sources, ranging from large power plants to automobiles to household paints. The USEPA has compiled the National Emission Inventory (NEI) that contains data on all stationary and mobile sources emitting criteria air pollutants. Table 6-3 summarizes the NEI emission estimates for Berkeley, Charleston, and Dorchester Counties for the latest compiled year, 2011. There are several large industrial sources located within a 25-mile radius of the proposed corridor. These sources include electric generation stations, a pulp and paper mill, chemical plants, metal processing plants, and two cement plants. Highway vehicles and off-road equipment are also important sources of air pollution in the area.

Table 6-3 Emission Summary for Tri-County Area

Source Category	Emissions (tons per year)				
	CO	NOx	SO2	VOC	PM10
BERKELEY COUNTY					

	Emissions (tons per year)				
Source Category	CO	NOx	SO2	VOC	PM10
Fuel Combustion - Electric Utility	10,846	8,175	16,280	139	2,493
Fuel Combustion – Industrial	621	719	768	34	236
Fuel Combustion – Other	343	60	5	60	49
Chemical and Allied Products	333	0	0	302	5
Metals Processing	46,643	324	3,897	220	329
Other Industrial Processes	61	29	0	288	293
Solvent Utilization	0	0	0	1,307	0
Petroleum Storage/Transport	0	0	0	765	38
Waste Disposal	4,574	149	4	464	535
Highway Vehicles	15,627	3,461	16	1,789	223
Off-highway Vehicles	9,536	1,255	7	2,561	99
Miscellaneous	19,933	464	204	4,694	8,053
Berkeley County Totals	108,518	14,636	21,181	12,656	12,353
CHARLESTON COUNTY					
Fuel Combustion - Electric Utility	43	41	1	4	2
Fuel Combustion – Industrial	856	1,699	971	59	498
Fuel Combustion – Other	861	272	16	143	121
Chemical and Allied Products	6	0	3	129	10
Metals Processing	0	0	0	0	0
Other Industrial Processes	5,149	948	1,062	1,016	576
Solvent Utilization	0	0	0	2,747	1
Petroleum Storage/Transport	0	0	0	2,811	0
Waste Disposal	2	0	0	7	0
Highway Vehicles	34,422	7,744	38	3,845	587
Off-highway Vehicles	25,767	5,251	12,535	3,838	473
Miscellaneous	14,435	296	136	3,391	6,587
Charleston County Totals	81,541	16,250	3,760	17,989	8,856
DORCHESTER COUNTY					
Fuel Combustion - Electric Utility	0	0	0	0	0
Fuel Combustion – Industrial	296	213	69	10	163
Fuel Combustion – Other	258	46	3	46	36
Chemical and Allied Products	0	0	0	0	0
Metals Processing	5,149	228	971	78	133
Other Industrial Processes	2,982	1,413	389	377	487
Solvent Utilization	0	0	0	1,019	0
Petroleum Storage/Transport	0	0	0	564	108
Waste Disposal	68	12	2	14	0
Highway Vehicles	11,907	2,641	12	1,311	146
Off-highway Vehicles	3,774	495	3	313	46
Miscellaneous	5,202	124	54	1,217	3,830
Dorchester County Totals	29,636	5,172	1,501	4,948	4,951
Tri-County Totals	219,694	36,058	26,443	35,592	26,160

6.3.2 Potential Environmental Impacts

During construction and development of the proposed rail corridor emissions from internal combustion engines and generation of dust could temporarily increase levels of some pollutants. To reduce the emission of pollutants, appropriate construction BMPs will be observed and engines would be properly maintained. A dust mitigation program to ensure emissions and fugitive dust are kept at a minimum may be implemented during development of the site. SCDHEC Bureau of Air Quality requires an air quality permit to “build, install, alter, replace, or operate equipment that emits or controls the emission of air contaminants...prior to construction, installation, or operation.

During the operation of the proposed rail, diesel-electric engines will be utilized, which are a source of the criteria pollutants mentioned above.

The Association of American Railroads (AAR) has noted that in 2011, one gallon of diesel fuel moved a ton of freight by rail 468 miles – four times the efficiency of trucks. The US Environmental Protection Agency estimates that for every ton-mile, a typical truck emits three times more nitrogen oxides and particulates than a train (AAR 2017). Related studies suggest that trucks emit 6 to 12 times more pollutants per ton-mile than railroads, depending on the pollutant measured. The American Society of Mechanical Engineers found that 2.5 million fewer tons of carbon dioxide would be emitted into the air annually if 10% of intercity freight now moving by highway were shifted to rail (AASHTO 2003).

The American Association of State Highway Officials (AASHTO) noted that for each 1% of long-haul freight currently moving by truck, fuel savings would be approximately 111 million gallons per year if moved by rail instead; and annual greenhouse gas emissions would fall by 12 million tons. If 10% of truck traffic went by rail – via intermodal movements involving both railroads and trucks – the cumulative estimated greenhouse gas reductions from 2007 to 2020 would be 210 million tons (AASHTO 2003).

USEPA initiated a multi-step program in 2008 to reduce diesel locomotive emissions. The USEPA’s stringent Tier 4 standards for newly built and remanufactured locomotives took effect Jan. 1, 2015. The agency estimates 90% particulate matter (PM) reductions and 80% nitrogen oxide (NOX) reductions from Tier 4 engines meeting these standards compared to engines meeting the current Tier 2 standards. Further, by 2030, it is estimated the program will result in the reduction of annual emissions of NOX by about 800,000 tons and PM emissions by 27,000 tons. In addition, emission reductions will continue to grow beyond 2030 as fleet turnover is completed. Twenty-one Locomotive builders and diesel power plant suppliers are already supplying power meeting Tier 4 standards.

It is expected that Palmetto Railways and their contractors will maintain their vehicles/equipment so that carbon monoxide, ozone-producing chemicals and other emissions are kept to a minimum. Thus, impacts to air quality are expected to be minor.

On a macro-scale basis, the anticipated emissions from the proposed rail line will most likely have an immaterial impact on air quality in the North Charleston-Summerville-Charleston Metropolitan Statistical Area (MSA).

Although the Proposed Project will add emissions to the project area, it is anticipated to be within concentrations of allowable emissions for the State of South Carolina.

In summary, the Proposed Project would have negligible to minor impacts on air quality levels for criteria pollutants and would not result in adverse impacts associated with toxic air pollutants that may be emitted.

6.4 Noise and Vibration

Noise is generally defined as unwanted sound. Unwelcome sound interferes with normal activities such as sleeping, conversation, and recreation, and can have an adverse impact on human health. There are two types of noise problems: occupational and community. Occupational noise generally stems from loud machinery, while community noise is attributed to the cumulative effect of several sources of noise. The main sources of community noises are highways, railroads, and airports (U.S. Department of Housing and Urban Development [HUD], 1998).

The degree of acceptability of the noise atmosphere at a site is determined by the outdoor day-night average sound level in decibels (dB) (HUD, 1998). A decibel is defined as a unit of measurement of the loudness or intensity of sound.

6.4.1 Description of Affected Environment

Berkeley County Ordinance No. 05-08-56 and 09-04-21 implements noise regulations for the unincorporated areas of Berkeley County. The ordinance addresses maximum permissible noise levels as well as provides exemptions for certain noise sources.

Section 38.1(c)(2) of the noise ordinance exempts noise from construction or demolition activities occurring between 6:00 a.m. and 10:00 p.m. Construction activity means any site preparation, assembly, erection, repair, or similar activity and any associated equipment testing.

Section 38.1(b)(1) of the noise ordinance prohibits continuous sound levels from a facility or property in excess of the following maximum limits, as measured from the nearest property line in a non-residential area of the unincorporated areas of the County.

Hours of the Day	Maximum Sound Level in A-Weighted Decibels (dBA)
6:00 a.m. to 10:00 p.m.	75 dBA
10:00 p.m. to 6:00 a.m.	69 dBA

Existing noise and vibration levels were estimated based on the Federal Transit Authority Manual. In proximity of major roadways, the estimate existing noise level was determined based on noise level estimation with distance to the roadway. Where there are no major roadway and the noise characteristics that surround the receptors are far enough from major roadways and are dominated by local streets and local community activity, the existing noise levels were estimated based on population density. The existing condition for each potential receptor is summarized in Appendix C.

6.4.2 Potential Environmental Impacts

A limited noise and vibration screening study was conducted to comply with NEPA requirements for the proposed rail corridor, which assumes PR would operate five (5) roundtrip freight trains per week from Camp Hall Commerce Park to existing CSXT railroad ROW, near the Santee Cooper Cross Generating Station in Berkeley County (Appendix C). Maximum operating speeds are projected to be 25 miles per hour (mph).

Guidance has been developed by the Federal Transit Administration (FTA) published in “Transit Noise and Vibration Impact Assessment” (Hanson, et. al 2006) for conventional rail noise and vibration impact assessments, and FRA has developed complementary guidance for high-speed rail (Hanson, et al. 2012). Furthermore, a Screening Noise Assessment was performed using aspects of the General Noise Assessment and General Vibration Assessment in accordance with FTA guidelines as well the CREATE Program guidelines. Future anticipated rail traffic volumes were evaluated in order to assess the Project-related effects of airborne noise.

The evaluation of potential noise and vibration impacts includes two parts: screening procedure and general assessment. The screening procedure is somewhat qualitative and uses basic information about a project and the area of proposed operation to develop an inventory of sensitive sites and/or receivers. Following the screening procedure, a general assessment was completed to develop more quantitative estimates of Project-related noise levels. By calculating Project-related train noise and existing noise at each receiver, the two types of noise can be compared with specific impact criteria, based on the type of land use that best describes the receiver. The impact criteria are used to designate each receiver as being severely impacted, moderately impacted, or not impacted.

Noise

Screening distances, based on the FTA Manual, were developed to identify the potential limits of noise impact from freight and passenger activity. FTA screening distances were 750 feet

for the proposed rail corridor and 1,600-feet for grade crossings where train-mounted horns will be used. The locomotive horn shall begin to be sounded at least 15 seconds, but no more than 20 seconds, before the locomotive enters the crossing. With a project speed of 25 mph, this results in a distance of 733 feet from all public crossings.

The screening distance criteria identified 85 receptors; however, only six residential structures would be classified as having moderate impacts. Locomotive horn use at public at-grade crossings is the primary cause of the predicted noise impacts at these locations. Since use of horns at crossing is a necessary feature to protect the public at these crossings, no change or modification of the standard warning procedure is mandated by these moderate impacts to six residences.

During project track construction noise levels, will be produced by the operation of heavy-duty equipment and various other construction activities. Noise levels generated by construction activities depend on a series of variables. Such variables include the number and type of pieces of equipment, their general condition of operation, the amount of time each piece operates per day, the presence of any noise attenuating features (e.g. walls, berms) and the location of the construction activities relative to the receptors. A professional judgment of the likely means and methods that would be used by the contractor has been used to determine likely noise impacts from construction. The assessment of construction noise determined that the greatest potential for noise impacts would result from at-grade track construction and bridge construction. The assessment has determined that noise impacts to the most sensitive receptors (i.e. residential properties) during construction would be within allowable limits and therefore no noise impacts from construction would be expected. Detailed results from the Noise Assessment are presented in Appendix C.

Vibration

Taking into consideration the traffic surrounding the proposed rail corridor the project falls under the Infrequent Event Category – fewer than 30 vibration events of the same kind per day.

Based on the distance to the Preferred Route centerline, none of the 85 receptors identified during the screening are within the impact distances. The projected vibration from the project is below the impact threshold. Material vibration impacts are therefore not anticipated with this project.

In addition, during the construction phase, no vibration impacts are expected to any of the identified receptors due to vibrations from construction activities. Therefore, based on this assessment no additional study or consideration of mitigation is considered necessary. Detailed results from the Vibration Assessment are presented in Appendix C.

6.5 Geology and Soils

6.5.1 Description of Affected Environment

The proposed rail corridor is located entirely within the Atlantic Coastal Plain Physiographic Province. Coastal Plain soils consist of ancient marine deposits including interbedded limestones, gravels, sands, silts and clays. The Coastal Plain is a wedge-shaped deposit of Cretaceous and younger sediments which range in thickness from near zero at the contact with the Piedmont Physiographic Province (the Fall Line) to the northwest, to thousands of feet at the coast. The Cross project corridor contains unconsolidated sediments of the Wicomico Terrace, which underlies the Penholoway terrace, a coastal feature that formed when the shoreline of the Atlantic Ocean stood about 70 feet higher than at present. The Penholoway terrace in this area is shown to have been formed during a pause in marine regression from the Wicomico stand, when the sea stood near 100 feet. This timeframe was during the Pleistocene geologic era and the project area also contains sediments from the Holocene geologic era. The Cross project corridor sediments deposited beneath the Holocene terraces includes sink holes (shallow depressions in-filled with debris, surrounding sediments or water formed by collapse of sediments from dissolution of limestone and marl by groundwater), freshwater marsh and swamp deposits (silty clay and peat), Carolina bay deposits (quartzose clay, clayey quartz, quartzose sands) and Carolina bay sand rims (medium quartz sands). Sediments beneath the Penholoway Terrace include quartz pebble stone, quartz sands and fine micas of the Penholoway Formation. Sediments beneath the Wicomico Terrace include the Dean Swamp member (silty clay and fine to medium quartz sand), the Toney Bay member (sandy quartz gravel), Wicomico terrace or Waccamaw formation barrier island deposits (phosphatic quartz sand, coarse quartz sand, heavy minerals, shell hash and trace coarse mica) and Wicomico terrace sediments or Waccamaw formation (sandy quartz gravel, fine to coarse quartz sand and opaque minerals).

Limestone, fill soil, sand, and gravel is currently being mined at several locations near the corridor. The proposed rail is not expected to impacts these existing or planned mining sites or mineral resources.

According to the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) (USDA 2015b), the soils within the project corridor are mapped as nonhydryc, predominantly nonhydryc, predominantly hydryc, and hydryc soils. Approximately 47% of the project corridor is within hydryc or predominantly hydryc soils as shown in Table 6-4 (Figure 3).

Table 6-4. USDA NRCS Soils Map Units within the Proposed Rail Corridor

Map Series	Hydric Rating	Description
Bethera loam	Predominantly hydric	Nearly level, deep, and poorly drained soils. Located on broad, low flats and in depressional areas east of the Summerville Scarp.
Bonneau loamy sand	Nonhydric	Nearly level to gently sloping, deep, and moderately well drained. Formed in loamy Coastal Plain sediment.
Borrow Pits	Hydric	Miscellaneous areas consisting of open excavations in areas where the surface layer and subsoil have been removed.
Byars loam	Predominantly hydric	Nearly level, deep, and very poorly drained. Formed in clayey Coastal Plain sediment.
Coxville fine sandy loam	Predominantly hydric	Nearly level, deep, and poorly drained. Formed in clayey Coastal Plain sediment.
Duplin fine sandy loam	Predominantly Nonhydric	Nearly level to gently sloping, deep and moderately well drained. Formed in clayey Coastal Plain sediment.
Goldsboro loamy sand	Predominantly Nonhydric	Nearly level, deep, and moderately well drained. Formed in loamy Coastal Plain sediment.
Lenoir fine sandy loam	Predominantly Nonhydric	Nearly level, deep, and somewhat poorly drained. Formed in clayey Coastal Plain sediment.
Leon fine sand	Hydric	Nearly level, poorly drained. Formed in sandy Coastal Plain sediment.
Lynchburg fine sandy loam	Predominantly Nonhydric	Nearly level, deep, and somewhat poorly drained. Formed in loamy Coastal Plain sediment.
Meggett loam	Hydric	Nearly level, deep, and poorly drained. Formed in clayey Coastal Plain sediment.
Norfolk loamy sand	Nonhydric	Nearly level to gently sloping, deep, and well drained. Formed in loamy Coastal Plain sediment.
Ocilla loamy fine sand	Nonhydric	Nearly level, deep, and somewhat poorly drained. Formed in loamy Coastal Plain sediment.
Pantego fine sandy loam	Predominantly hydric	Nearly level, deep, and very poorly drained. Formed in loamy Coastal Plain sediment.
Rains fine sandy loam	Predominantly hydric	Nearly level, deep, and poorly drained. Formed in loamy Coastal Plain sediment.
Santee loam	Hydric	Nearly level, deep, and very poorly drained. Formed in clayey Coastal Plain sediment.
Seagate loamy sand	Predominantly Nonhydric	Nearly level, deep, and somewhat poorly drained. Formed in loamy Coastal Plain sediment.
Udorthents	Nonhydric	Consist of soil materials that were excavated and piled along the Diversional Canal during construction.
Wahee loam	Nonhydric	Nearly level, deep, and somewhat poorly drained. Formed in clayey Coastal Plain sediment.

6.5.2 Prime Farmland

The National Agricultural Land Study of 1980-1981 discovered millions of acres of farmland were being converted in the United States each year. Farmland includes prime farmland,

unique farmland, and land of statewide or local importance. Congress passed a law creating the Farmland Protection Policy Act (FPPA), which aims to protect against projects that convert farmland directly or indirectly (USDA 2015a). In addition, the FPPA is intended to minimize the impact Federal programs have on the irreversible conversion of farmland to nonagricultural areas. Farmland such as forest land, pastureland, and cropland can be subject to FPPA requirements. Consequently, soils specifically suited to agricultural uses may be protected under the FPPA. Conversion of these soils from pastureland to non-pastureland uses may be limited.

Activities that may be subject to FPPA include highway construction projects, electric cooperative construction projects, railroad construction projects, and Federal agency projects. Project sites that are federally funded or assisted require coordination with NRCS and state FPPA contacts. NRCS determines if the potential project impacts on farmland exceed the recommended allowable level.

According to the NRCS Web Soil Survey, the proposed rail corridor includes soils designated as prime farmland, 23% of ROW, and farmland of statewide importance, 54% of ROW (USDA 2015b) (Figure 4), and shown on Table 6-5. Some of the farmland soils within the corridor consist of existing development or are not used for agricultural.

Table 6-5. USDA NRCS Farmland Classification.

Map Series	Farmland Classification	Percentage within right-of-way
Bethera loam	Farmland of statewide importance	0.24%
Bonneau loamy sand	Farmland of statewide importance	3.14%
Borrow pits	Not prime farmland	0.57%
Byars loam	Farmland of statewide importance	3.87%
Coxville fine sandy loam	Farmland of statewide importance	10.65%
Duplin fine sandy loam	All areas are prime farmland	2.71%
Goldsboro loamy sand	All areas are prime farmland	18.82%
Lenoir fine sandy loam	Farmland of statewide importance	1.27%
Leon fine sand	Not prime farmland	0.32%
Lynchburg fine sandy loam	Not prime farmland	17.38%
Meggett loam	Farmland of statewide importance	20.20%
Norfolk loamy sand	All areas are prime farmland	1.38%
Ocilla loamy fine sand	Farmland of statewide importance	5.34%
Pantego fine sandy loam	Not prime farmland	1.13%
Rains fine sandy loam	Farmland of statewide importance	8.79%
Santee loam	Farmland of statewide importance	0.57%
Seagate loamy sand	Not prime farmland	2.44%
Udorthents	Not prime farmland	0.47%
Water	Not prime farmland	0.32%
Wahee loam	Farmland of statewide importance	0.39%

6.5.3 Potential Environmental Impacts

The proposed rail corridor would have minor direct impacts to soil resources on-site as a result of construction and operation of the rail line, but no material adverse impact on the geology of the region. It is anticipated that minor impacts on soils would occur. These impacts would mostly occur during the construction phase, when excavation or fill activities are underway. This would cause minor impacts to geology and soils including minor, localized increases in erosion and sedimentation. Should borrow material be required, sand and gravel aggregate may be obtained either from on-site activities, or from local, off-site sources. The creation of new impervious surface would result in an increase in stormwater runoff and potential increase in soil erosion. Use of BMPs, such as soil erosion and sediment

control measures, would minimize the potential for increased soil erosion and runoff. A National Pollutant Discharge Elimination System (NPDES) Permit for discharges of stormwater associated with construction activities would likely be required. Application for the permit would require submission of a Stormwater Pollution Prevention Plan (SWPPP) describing the management practices that would be utilized during construction to site. Following construction, implementation of soil stabilization and vegetation management measures and proper maintenance of BMPs would reduce the potential for erosion impacts during site operations.

The proposed rail corridor would result in conversion of potential Prime Farmland soils and natural soils being converted to developed areas and/or impervious surfaces than under current conditions. A Prime Farmland analysis specified at 7 C.F.R. § 658.5 has not been completed for this project.

6.6 Water Resources/Floodplains

6.6.1 Description of Affected Environment

Surface Waters and Streams

Surface water includes streams, rivers, lakes, and reservoirs. The large majority of the proposed rail corridor is located within the Cooper River Watershed (Hydrologic Unit Code [HUC] 03050201). A minimal portion is located within the Four Hole Swamp Watershed (HUC 03050205).

In order to better categorize the existing streams within the proposed rail corridor, Berkeley County's Ordinance No. 89-04-09, titled "An Ordinance to Establish Regulations and Standards for Storm Drainage Facilities" was reviewed. It provides definitions for major, primary and secondary drainage channels.

The USACE Hydrologic Engineering Center Geospatial Hydrologic Modeling Extension (HEC Geo-HMS) model and readily available elevation data determined 43 watersheds drain towards the proposed rail alignment. The watersheds were organized into three Berkeley County categories; eight major channels, twelve primary channels, and twenty-three secondary channels. In addition to the 43 modelled drainage watersheds, the preferred route crosses the Diversion Canal between Lake Marion and Lake Moultrie. The majority of the modelled drainages are agricultural ditches draining large Carolina Bays and existing silvicultural land. Black Creek and Williams Branch (both major channels) are the only natural stream channels within the proposed rail ROW.

Wetlands

Jurisdictional waters of the U.S. located within the project corridor have been described above in Section 4.

Floodplains

Federal Emergency Management Agency (FEMA) Floodplain Insurance Rate Maps (FIRM) were used to determine if areas within the project site are located within the designated 100-year floodplain. FIRM Community-Panel Numbers 45015C 0075D, 0100D, 0200D, 0225D, 0350D, 0365D, and 0375D (10/16/2003) for Berkeley County indicate the Preferred Route intersect the existing Zone A floodplain at two separate occurrences. First, a tributary of Black Creek on FIRM panel 45015C0375D has an existing Zone A floodplain of approximately 455 feet wide. Second, the Diversion Canal on FIRM panel 45015C0200D has an existing Zone A floodplain approximately 430 feet wide. Zone A floodplains are those areas that have been determined to be within the 100-year flood, but no base flood elevations have been determined. The remainder of the Preferred Route is located in Zone X, or areas determined to be outside of the 500-year floodplain. There are no regulatory floodways within the project corridor.

The construction of the Proposed Project will require fill within portions of FEMA Zone A floodplains; therefore, a Letter of Map Revision based on Fill (LOMR-F) will be necessary. Per FEMA, a LOMR-F is submitted for properties on which fill has been placed to raise a structure or lot to or above the Base Flood Elevation (BFE). For Zone A floodplains, a 100-year base flood elevation will need to be determined as part of development and prior to any fill placement within this area. As part of the Preferred Route development, coordination will be required between FEMA and the Berkeley County Floodplain Administrator, as well as meeting any pertinent requirements presented in the Berkeley County Floodplain Ordinance.

Water Quality Regulations

Although all waters of the State are protected for swimming, SCDHEC requires closer monitoring on certain waters and watersheds. Regulation 61-69 Classified Waters, classifies the Cooper River Watershed as “FW” (freshwaters) and “SB” (tidal saltwaters). However, the Preferred Route is only within the freshwater portion of the Cooper Watershed. Freshwaters are waters that are suitable for primary and secondary contact recreation and as a source for drinking water supply after conventional treatment (SCDHEC 2005).

South Carolina Regulation 61-69(B), Tributaries to Classified Waters, states that where surface waters are not classified by name (unlisted) in the regulation, the use classification and numeric standards of the class of the stream to which they are a tributary apply, disregarding any site-specific numeric standards for the named waterbody. Therefore, the

streams and creeks to which the Preferred Route contributes are classified as Freshwater (FW).

Regulation 61-69(A), Criteria for Classes, states that all adopted classifications must conform to the standards and rules contained in Regulation 61-68 Water Classifications and Standards. Regulation 61-69(G) 10, Freshwaters (FW), state that freshwaters are suitable for primary and secondary contact recreation and as a source for drinking water supply after conventional treatment. It further states that Freshwaters are suitable for fishing and the survival and propagation of a balanced indigenous aquatic community of fauna and flora and is also suitable for industrial and agricultural uses. Regulation 61-69(G) 10 list the Quality Standards for Freshwaters per Table 6-6 below.

Table 6-6 South Carolina Quality Standards for Freshwaters [R. 61-69 (G)(10)]

Items	Standards
a. Garbage, cinders, ashes, oils, sludge, or other refuse	None allowed.
b. Treated wastes, toxic wastes, deleterious substances, colored or other wastes except those given in a. above.	None alone or in combination with other substances or wastes in sufficient amounts to make the waters unsafe or unsuitable for primary contact recreation or to impair the waters for any other best usage as determined for the specific waters which are assigned to this class.
c. Toxic pollutants listed in the appendix.	Any discharge into waters of the State must be permitted by the Department and receive a degree of treatment and/or control which shall produce an effluent which is consistent with the Clean Water Act.
d. Stormwater, and other nonpoint source runoff, including that from agricultural uses, or permitted discharge from aquatic farms, concentrated aquatic animal production facilities, and uncontaminated groundwater from mining.	Allowed if water quality necessary for existing and classified uses shall be maintained and protected consistent with antidegradation rules.
e. Dissolved oxygen.	Daily average not less than 5.0 mg/l with a low of 4.0 mg/l.
f. E. coli	Not to exceed a geometric mean of 126/100 ml based on at least four samples collected from a given sampling site over a 30 day period, nor shall a single sample maximum exceed 349/100 ml.
g. pH.	Between 6.0 and 8.5.
h. Temperature.	As prescribed in E.12. of this regulation.
i. Turbidity. Except for Lakes. Lakes only.	Not to exceed 50 Nephelometric turbidity units (NTUs) provided existing uses are maintained. Not to exceed 25 NTUs provided existing uses are maintained.

Water Quality Monitoring

SCDHEC has three impaired water quality monitoring stations near the Preferred Route. Monitoring Station CSTL-079 is located on the Diversion Canal approximately 6,800 feet upstream of the Preferred Route's proposed Diversion Canal crossing. Monitoring Station CSTL-079 is listed on the current (2014) 303(d) list as not meeting water quality standards

for aquatic life and fishing, and is listed as impaired for dissolved oxygen and mercury. Note that the SCDHEC recently transitioned from monitoring fecal coliform to E. coli for freshwaters. A total maximum daily load (TMDL) has been established for fecal coliform (or E. Coli) for the Charleston Harbor, Cooper, Ashley, and Wando Rivers; approximately the southern half of the Preferred Route drains into this TMDL.

Monitoring Station SC-026 is located on Waring Branch, approximately 3,000 feet upstream of the Preferred Route's crossing of Waring Branch. Monitoring Station SC-026 is listed on the current (2014) 303(d) list as not meeting water quality standards for fecal coliform. In addition, monitoring station CSTL-063 is listed for not meeting water quality standards for fecal coliform. Monitoring station CSTL-063 is located on Wassamassaw Swamp at US Highway 176.

The Cooper River Watershed is included in the TMDL for the Charleston Harbor, Cooper, Ashley and Wando Rivers for dissolved oxygen (DO). However, this TMDL is mainly associated with major point source dischargers (i.e. municipal and industrial wastewater treatment plants) at a critical low flow condition (when oxygen demanding substances assimilative capacity is lowest). The TMDL document concluded "non-point sources are a very minor contributor of oxygen consuming load under critical low flow conditions because of the absence of stormwater runoff" (SCDHEC 2013). The TMDL document also reported that wet-weather sampling and modeling determined that "developed areas currently contribute no more oxygen demanding pollutants to the TMDL segments than forested areas." Therefore, the TMDL does not include a load allocation for or a target reduction of, non-point source pollution or loads from regulated NPDES municipal separate storm sewer systems (MS4s) and other stormwater related discharges.

Palmetto Railways is committed to establishing various construction site stormwater BMPs during construction to address erosion prevention and sediment control and other water quality parameters.

6.6.2 Potential Environmental Impacts

Surface Waters and Wetlands

Approximately 83.18 acres of jurisdictional wetlands will be impacted. Approximately 77.49 acres of impacts are located with the Cooper Watershed and the remaining 5.76 acres of impacts are located with the Four Hole Swamp Watershed. In addition, approximately 0.06 acres and 169-feet of non-wetland waters (jurisdictional streams) will be impacted. These streams include Bulltown Ditch and Williams Branch, both located within the Cooper River Watershed. Wetland fragmentation will likely occur as a result of the proposed rail corridor. The impact of this fragmentation will be minor, as the wetlands that the corridor runs through have historically been fragmented by past and current land uses.

Compensatory mitigation will be required to offset the permanent impacts. The permanent impacts for this project fall into three categories: fill, dredge, and flood/impound. "Fill" refers to depositing material used for the primary purpose of replacing an aquatic area with dry land. "Dredge" means to dig or excavate. "Flood/Impound," means to collect or confine the flow of a riverine system by means of a dike, embankment, or other man made barrier. For a more detailed discussion of wetland impacts and compensatory mitigation, please refer to Sections 4 & 5 above.

Floodplains

Since a portion of the proposed rail corridor would be located within the regulated FEMA 100-year floodplain of the Diversion Canal (2.3 acres) and Black Creek (2.1 acres), appropriate rail design measures will be implemented to ensure minimal impact to this regulated resource. This will likely include placement of appropriately sized bridges or culverts under the road crossings to allow water and aquatic organisms to pass relatively unhindered. The appropriate permits will be obtained to address this work. The current design has been modeled and an opinion of probable no-rise has been made. See the Preliminary Hydraulic report for more information on potential impacts to regulatory floodplains.

State of South Carolina. Land disturbing activities (including the construction of roads, residential neighborhoods, commercial areas, etc.) are required to apply for and receive coverage under the NPDES Phase II Construction General Permit (CGP). The permit addresses water quality and quantity using thresholds based on the project's land disturbance footprint, distance to receiving water, and proximity to sensitive areas. Generally, a permit is required if a land disturbing project is:

- ≥ 1 acre and not within $\frac{1}{2}$ mile of a receiving water or
- if a project is $> \frac{1}{2}$ acre and within $\frac{1}{2}$ mile of a receiving water.

However, a permit could be required even if the project is $\leq \frac{1}{2}$ acres and within $\frac{1}{2}$ mile of a receiving water if it meets defined criteria that are outlined in the regulations. Also, projects within or part of a larger common plan (LCP) that will disturb more than one acre are subject to the NPDES requirement. All construction associated with the proposed rail corridor would be subject to these regulations as they will be part of the LCP and disturb areas greater than the thresholds listed above.

In addition to the above water quality regulations for the permanent stormwater management system for proposed rail corridor, the NPDES Phase II CGP also requires the implementation of various construction site stormwater BMPs be implemented during construction to address erosion prevention and sediment control (and other water quality parameters). The current NPDES Phase II CGP requires that a SWPPP be developed for the project site. The overall design consideration for the SWPPP is that it must provide for 80% total suspended solids (TSS) removal efficiency from the construction site under disturbed soil conditions.

In addition to erosion prevention and sediment control, the SWPPP must address various other components, including:

- project narrative;
- stormwater management and sediment control;
- sequence of conduction;
- identification of site features and sensitive areas (*i.e.* wetlands);
- buffer zone management compliance and plan;
- identification of potential sources of pollution;
- identification of BMPs to be implemented;
- site maps;
- engineering reports;
- construction plans (with phased control plan);
- velocity and volume control measures to be implemented to meet non-numeric effluent limits;
- management of non-stormwater discharges; and
- special considerations for TMDL watersheds.

Berkeley County, SC. Berkeley County's stormwater regulations reinforce the state's regulations and provide for some additional regulations mainly associated with the specific implementation of various stormwater management facilities. (*i.e.* ditches, culverts, secondary collection systems, etc.). The County's design regulations are summarized in its Stormwater Design Standards Manual (December 1, 2009).

The County has adopted the state's requirements related to water quality; see the discussion above.

The County's requirements for the design of stormwater collection and conveyance systems vary based on the type of system and the areas being drained. In general, minor (or secondary) collections systems (closed pipe systems and drainage ditches) shall be designed for the 10-year storm event. Road culverts (pipes crossing under roads) should be design to the 25-year storm event. Major drainage systems (large ditches and canals draining more than 200 acres) shall be design to carry the 50-year storm event within its banks.

Water Quality

Land clearing activities along the proposed ROW could cause lower dissolved oxygen concentrations by decreasing waterbody shading and increasing warmer water temperatures; warmer water temperatures lower DO concentrations. Often with new development, the addition of impervious areas can increase pollutant loading rates, if appropriate stormwater BMPs are not used. Since the proposed rail line will not include substantial amounts of new impervious area, the primary water quality impacts are likely to result from the conversion of forested areas to a maintained railroad right of way and the channelization of stormwater runoff along certain areas. To mitigate potential water quality impacts from the proposed rail line, a variety of post-construction stormwater BMPs will be used to convey, filter, and dissipate runoff from the new rail line, including but not limited to: vegetated swales, vegetated filter strips, stream bank stabilization, and channelized flow dissipation.

Water Quality Mitigation Strategies

During construction, the project site will be subject to the implementation of a detailed, phased SWPPP. As discussed above, the SWPPP will provide for the layout, implementation, details, sequencing, operation and maintenance of various temporary construction BMPs to mitigate the potential off-site release of pollutants (particularly sediment). The SWPPP will include the implementation of three types of temporary construction BMPs including erosion prevention BMPs, runoff control and conveyance BMPs, and sediment control BMPs.

Erosion prevention BMPs that may be implemented include:

- Dust control;
- Mulching;
- Blown Straw;
- Hydro-mulching/seeding;
- Erosion control blankets;
- Turf reinforcement mats; and
- Outlet protection (*i.e.* rip-rap).

Runoff control and conveyance BMPs that may be implemented include:

- Diversion ditches/dikes;
- Pipe slope drains;

- Drainage swales; and
- Level spreader.

Sediment control BMPs that may be implemented include:

- Sediment basins;
- Sediment traps;
- Silt fences;
- Ditch checks;
- Stabilized construction entrances;
- Storm drain inlet protection; and
- Sediment tubes.

All construction BMPs will be designed, implemented and maintained per the guidance in the SCDHEC Storm Water Management BMP Handbook (August 2005).

6.7 Biotic Communities

6.7.1 Description of Affected Environment

The proposed Palmetto Railway Corridor occurs completely within the Atlantic coastal plain physiographic province (USEPA 2013).

Wildlife

The proposed corridor provides suitable habitat for common wildlife species. During the field investigations, a variety of wildlife species or their scat was observed, including white-tailed deer (*Odocoileus virginianus*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), gray squirrel (*Sciurus carolinensis*), great blue heron (*Ardea herodias*), wild turkey (*Meleagris gallopavo*), red-shouldered hawk (*Buteo lineatus*), bald eagle (*Haliaeetus leucocephalus*), turkey vulture (*Cathartes aura*), black vulture (*Coragyps atratus*), pileated woodpecker (*Dryocopus pileatus*), downy woodpecker (*Picoides pubescens*), Eastern phoebe (*Sayornis phoebe*), American crow (*Corvus brachyrhynchos*), blue jay (*Cyanocitta cristata*), golden-crowned kinglet (*Regulus satrapa*), yellow-rumped warbler (*Dendroica coronata*), and Northern cardinal (*Cardinalis cardinalis*).

Other mammal species that are potentially present along the corridor include: bats, fox, bobcat (*Lynx rufus*), mice, rats, armadillo (*Dasypus novemcinctus*), and Eastern cottontail (*Sylvilagus floridanus*).

Additional bird species that are likely to occur in these habitats are: Mississippi kite (*Ictinia mississippiensis*), red-tailed hawk (*Buteo jamaicensis*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*A. cooperii*), osprey (*Pandion haliaetus*), barred owl (*Strix varia*), mourning dove (*Zenaida macroura*), red bellied woodpecker (*Melanerpes carolinus*), Eastern kingbird (*Tyrannus tyrannus*), Carolina chickadee (*Parus carolinensis*), tufted titmouse (*P. bicolor*), Carolina wren (*Thryothorus ludovicianus*), Northern mockingbird (*Mimus polyglottos*), Eastern bluebird (*Sialia sialis*), American robin (*Turdus migratorius*), white eyed vireo (*Vireo griseus*), solitary vireo (*Vireo solitaries*), and Northern parula (*Setophaga americana*).

Wading bird colonies are known to occur within a half mile of the corridors (SCDNR 2016). Species included in these colonies include but are not limited to: black-crowned night-heron (*Nycticorax nycticorax*), yellow-crowned night-heron (*Nycticorax violaceus*), great blue heron (*Ardea herodias*), snowy egret (*Egretta thula*), and great egret (*Casmerodius albus*).

Habitats

Ten basic habitat types were identified within the proposed rail corridor. A description of each habitat type is provided below and is representative of conditions at the time of evaluation.

The upland mixed hardwood and pine forest (U43) comprised 25.8 acres of the corridor and is characterized by an overstory composed primarily of loblolly pine (*Pinus taeda*) with some interspersed longleaf pine (*Pinus palustris*), southern red oak (*Quercus falcata*), pignut hickory (*Carya glabra*), and some interspersed live oaks (*Quercus virginiana*). Cover ranged from 40-70% in the overstory. The midstory is composed of loblolly pine, southern red oak, pignut hickory, longleaf pine, and sweetgum with a cover ranging from 10-30%. The shrub layer is sparse, with 10-20% cover consisting of wax myrtle (*Morella cerifera*), farkleberry (*Vaccinium arboreum*), redbay (*Persea borbonia*), and deerberry (*Vaccinium stamineum*). The herbaceous layer is healthy, at approximately 30-50% cover, and was composed primarily of bracken fern (*Pteridium aquilinum*), broomstraw (*Andropogon virginicus*), longleaf woodoats (*Chasmanthium sessiliflorum*), dogfennel (*Eupatorium capillifolium*), panic grass (*Panicum sp.*), and slender lespedeza (*Lespedeza virginica*). Vine species include muscadine (*Vitis rotundifolia*), greenbriar (*Smilax sp.*), and sawtooth blackberry (*Rubus argutus*) making up approximately 10% of the cover.

The upland hardwood forest (U43) is similar to the mixed hardwood and pine forest and comprised 8.5 acres of the corridor; however, it is generally present only within ecotones between upland and wetland areas. While there is an occasional loblolly or longleaf pine in these areas, the overstory composition is primarily composed of hardwoods including: white oak (*Quercus alba*), post oak (*Quercus stellata*), live oak, southern red oak, and pignut

hickory, with water oak found on the lower slopes leading to the wetlands. Overstory closure ranges from 40-60%. The midstory (10-25% cover) consists of pignut hickory, sweetgum, red oak, red maple, American hornbeam (*Carpinus caroliniana*), and American holly (*Ilex opaca*). Shrub layers are sparse (0-10% cover), and consist of redbay and wax myrtle. The herbaceous layer is sparse, approximately 0-10% cover, and is composed primarily of bracken fern, cinnamon fern (*Osmunda cinnamomea*), broomstraw, and longleaf woodoats.

The upland and wetland plantation pine forests (U42P, PFO4B) comprised approximately 494 acres of the corridor and is characterized by an overstory composed primarily of loblolly pine. Plantation pine forests span both upland and wetland areas, as well as some former Carolina bay features that were converted to pine monoculture. These areas are intensively managed for silviculture with a first thinning typically at ages 12-15 years old, followed by a clear cut at 25-30 years old. These areas are bedded and extensively ditched. The planted pine forest habitat covers 61% of the corridor. The corridor spans multiple stands of pines, ranging from open thinned (70-80 Basal Area) stands to dense, pre-merchantable stands (140 Basal Area). As a result of recent clear cuts there are areas with no overstory or midstory. In thinned pine areas (70-80 BA), there is a midstory of sweet gum and red maple with approximately 10-20% cover. In denser pine areas (140 BA) there is no midstory or shrub layer due to 90-100% overstory cover. In open thinned pine stands the shrub layer consists of wax myrtle, redbay, fetterbush (*Lyonia lucida*), and deerberry, with 10-30% cover. The herbaceous layer is also somewhat sparse, approximately 0-10% cover, and is composed primarily of dwarf palmetto (*Sabal minor*), longleaf woodoats, plume grass (*Saccharum giganteum*), giant cane (*Arundinaria gigantea*), Virginia chain fern (*Woodwardia virginiana*), cinnamon fern, and netted chain fern (*Woodwardia areolata*). Sphagnum moss (*Sphagnum sp.*) is also present within some of the wetland areas.

Four Carolina bay (PFO2C, PFO1H) depressional wetlands are located within the project corridor comprising approximately 10.5 acres. These wetlands are seasonally to perennially inundated based upon their size. The genesis of this depressional habitat has been debated, although Piovan and Hodgeson (Piovan & Hodgeson 2016) found nine distinct qualities are common to all Carolina bays: 1) oval shaped; 2) oriented northwest to southeast; 3) parallelism of the long axis; 4) sand rims above general elevation; 5) interior surface below the general elevation; 6) different soils within sand rim and outside of sand rim; 7) shallow; 8) flat sandy bottom; 9) naturally isolated features. Within the corridor there are four Carolina bays, three of which are named, including Skeleton Bay, Beech Island Bay and Todd Bay shown on Habitat Descriptions map pages 1, 5, 6, & 7, respectively. A large portion of these bays are ditched and either partially or entirely planted in loblolly pine. Within the remnant habitat, red maple, swamp tupelo, and pond cypress (*Taxodium ascendens*) dominate the overstory at 30-40% cover. The midstory is sparse, consisting of the same species found in the overstory. Within more seasonally wet Carolina bays, a shrub and herbaceous layer is present consisting of redbay, dwarf palmetto (*Sabal minor*), and fetterbush in the shrub layer, with various grasses and sedges making up the herbaceous layer. Perennial flooded bays have no shrub or herbaceous vegetation present.

Plantation Pine Converted Carolina Bays were once Carolina bays but have been completely harvested, ditched, and planted in plantation pine for future harvest. This comprised 32.3 acres within the project corridor. This habitat type mirrors the wetland plantation pine habitat type.

Several depression pond (PFO1C) wetlands are interspersed along the corridor, covering approximately 15 acres. These wetlands are characterized as isolated depression features that are seasonally inundated. The overstory is composed of black gum (*Nyssa sylvatica*), sweet gum, red maple, and in larger gum ponds that are semi-permanently flooded, pond cypress are found. The overstory cover ranges from 20-40% in the overstory. The midstory is sparse, approximately 10% cover, consists of black gum, sweet gum, and red maple. The shrub stratum is composed of fetterbush and redbay. The understory cover is variable, ranging from open water to 100% cover. Species in this stratum include smartweed (*Polygonum* spp.), arrowhead (*Sagittaria lancifolia*), soft rush (*Juncus effusus*), giant cane, netted chain fern, and various other grasses and sedges.

The bottomland hardwood forested wetland (PFO1C, PFO2C, PFO1B) habitat comprised 175.4 acres and is characterized by an overstory composed of bald cypress (*Taxodium distichum*), water oak, black gum, swamp tupelo and swamp chestnut oak (*Quercus michauxii*). Overstory closure ranges from 30-50%. The midstory is composed of bald cypress, black gum, sweetgum, and swamp tupelo characterized by a cover ranging from 10-20%. The shrub and herbaceous layer ranges from sparse to heavy, approximately 10-60% cover, and is composed primarily of dwarf palmetto, giant cane, sphagnum moss, Virginia chain fern and cinnamon fern based on the hydrologic regimen of the wetland. Areas that are seasonally flooded are characterized by a sparse understory due to flooding. Areas that are characterized as temporarily flooded or saturated contain a well-developed understory. Defined stream channels occur within a few of the bottomland hardwood forests within the project area.

The project corridor crosses open water (L1UBHh) at the diversion canal between the Santee-Cooper lakes. This area comprised 2.4 acres of the corridor. The canal was excavated in 1941. It is 7.5 miles long, approximately 500 feet wide and approximately 12 feet deep. The bottom consists of sand and clay, with some sediments washed downstream from the Santee River. There is very little organic material or vegetation in this part of the canal and it was last dredged in 2014 to remove accumulated silt and sediments on the Lake Moultrie side of the canal. The diversion canal was once an important access for inland maritime trade, but today is used primarily for recreational access between the lakes.

Several small agricultural fields (U21) exist within the project corridor (1.3 acres), primarily as wildlife food plots. Commonly planted vegetation included chufa, wheat, peas and soybeans. In areas that are not planted, a variety of native grasses dominate, including: broomstraw, chalky bluestem (*Andropogon capillipes*), dog fennel, switchgrass (*Panicum virgatum*), and

tapered rosette grass (*Dichanthelium acuminatum*). These areas are routinely disked and cultivated.

Various Roads and Utilities cross the corridor, comprising approximately 6% of the project area (48.1 acres). The roads are filled, either paved or gravel, and are culverted over wetland crossings. Utility right of ways are maintained throughout the project area, from large transmission lines to smaller distribution lines.

Habitat descriptions and maps are provided in Appendix B.

6.7.2 Potential Environmental Impacts

Implementation of the Proposed Project would result in direct impacts to habitats. An approximately 23-mile long corridor of forested area would be cleared. This would result in the long-term conversion of the majority of the corridor to a mix of raised track and ballast bordered by maintained grass and herbaceous vegetation. This also would contribute to the fragmentation of some forest habitat types. Based on preliminary disturbance limits Table 6-7 presents the impacts to each habitat type.

Table 6-7. Preliminary Impacts to Habitats along the Proposed Rail Corridor

Habitat Type	Acreage Impacted
Agricultural Fields	0.19 acres
Bottomland Hardwood Forested Wetlands	15.37 acres
Carolina Bays	1.11 acres
Depressional Ponds	1.02 acres
Open Water	0.07 acres
Plantation Pine Converted Carolina Bays	5.63 acres
Roads & Utilities	5.77 acres
Upland Mixed Hardwood and Pine Forests	3.23 acres
Upland Plantation Pine	35.82 acres
Wetland Plantation Pine	35.50 acres

Direct impacts to forested areas would occur under the Proposed Project; however, the acreage of wooded area that would be permanently cleared for this project is minimal compared to the amount of similar habitat present in the project vicinity. USGS LCI was utilized to quantify wooded habitats within the Cooper and Four Hole watersheds and compare the total wooded area to impacts from the proposed rail corridor. The USGS LCI indicated that approximately 183,416 acres of wooded land are located within the Cooper Watershed, the proposed rail corridor will impact 134.6 acres of forested land, or approximately 0.07% of the total forested land within the Cooper Watershed. USGS LCI indicated that approximately 86,636 acres of forested land are located within the Four Hole Watershed, the proposed rail corridor will impact 21.9 acres of forested land, or approximately 0.03% of the total forested land within the Four Hole Watershed.

Taking into consideration the large amount of similar habitats in the area regionally and locally, the loss of the existing vegetation would be considered a minor impact. The surrounding area consists of very similar vegetative habitats and approximately 0.06% of the total forested area within the Cooper and Four Hole Watersheds would be impacted. The percentage loss or transformation of vegetation within the corridor in this context would be relatively small. Indirect impacts are possible if the existing vegetation is part of a larger system which relies on these particular plant communities for regional propagation and genetic diversity. Due to the large amount of similar habitat and plant communities surrounding the corridor; however, this impact is minor.

Direct impacts to wildlife are also anticipated following construction of the proposed rail corridor. Some wildlife living within the proposed rail corridor would be displaced by construction activities. Most species, especially those requiring more extensive, relatively unfragmented areas, would find the converted areas unsuitable. Species occupying the forested areas that would be cleared would be permanently displaced. Other species that depend on unfragmented habitats, would also be displaced. Forested habitats within the proposed rail corridor have been fragmented due to historical land uses, including agriculture (historically row crops, currently silviculture), rural development, and infrastructure to support these uses (roads, utilities, etc.). This historical fragmentation has previously limited the diversity of wildlife that the forested habitats will support. In addition, direct impacts from the proposed rail corridor will make up a small portion of the forested habitat in the surrounding areas.

Overall, direct impacts to wildlife would be permanent but minor. The existing forest habitats within the proposed rail corridor have historically been fragmented due to existing land uses. These impacts will consist of the displacement of habitat for the rail infrastructure. The impact will be minimized by the ability of mobile species to colonize adjacent similar habitat. Indirect impacts would be temporary and very minor as species colonize adjacent habitats.

6.8 Protected Species

6.8.1 Description of Affected Environment

Plants and animals listed as federally threatened and endangered are protected under the Endangered Species Act (P.L. 92-205) (ESA) which is administered and enforced by the USFWS. The bald eagle is federally protected under the Bald and Golden Eagle Protection Act (BGEPA) and the Migratory Bird Treaty Act (MBTA).

A current list of federally protected species for Berkeley County was compiled from the USFWS Charleston Field Office website accessed in November 2016 (dated August 8, 2016) and the USFWS Information Planning and Conservation System (IPAC) (November 2016). The SCDNR Rare and Endangered Species Inventory website, a Geographic Information System natural resources data layer that includes the locations of all documented

occurrences of federally endangered or threatened species, was reviewed for known occurrences of such species on or proximate to the subject project. There are three known endangered species occurrences within one half mile of the proposed corridor (2 occurrences of Canby's dropwort (within adjacent Carolina bays, not impacted by the rail) and one occurrence of shortnose sturgeon near Lake Moultrie) and one bald eagle occurrences near Lake Moultrie (SCDNR 2016). Federally protected species and their general habitat types are presented in Table 6-8.

Table 6-8. Current List of Federally Endangered, Threatened, and Candidate Species in Berkeley County, South Carolina (USFWS 2016) and their Habitat Types.

Common Name	Scientific Name	Status	Survey Window	General Habitat Type
West Indian manatee	<i>Trichechus manatus</i>	E	May 15 - Oct 15	coastal waters
Frosted flatwoods salamander	<i>Ambystoma cingulatum</i>	T, CH	Jan 1 – Apr 30	pine areas maintained in an open state by fire with isolated ponds for breeding sites
Bald eagle	<i>Haliaeetus leucocephalus</i>	BGEPA	Oct 1 – May 15	coastlines, rivers, large lakes or streams
Red-cockaded woodpecker	<i>Picoides borealis</i>	E	Apr 1 – July 31	mature pine forests
Wood stork	<i>Mycteria americana</i>	E	Feb 15 – Sep 1	marshes, swamps, lagoons, ponds, flooded fields; depressions in marshes are important during drought; also occurs in brackish wetlands
Atlantic sturgeon	<i>Acipenser oxyrinchus</i>	E	Feb 1 – Apr 30	major river systems along the eastern seaboard
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	E	Feb 1 – Apr 30	major river systems along the eastern seaboard
Pondberry	<i>Lindera melissifolia</i>	E	Feb – mid Nov	swamp and pond margins, sandy sinks, swampy depressions, wet flats
Canby's dropwort	<i>Oxypolis canbyi</i>	E	July 15 - Sept	pond-cypress savannahs dominated by grasses, sedges or ditches next to bays; borders and shallows of cypress-pond pine ponds and sloughs
American chaffseed	<i>Schwalbea americana</i>	E	May - Aug	fire maintained open pine forest

E Federally endangered

T Federally threatened

CH Critical habitat

BGEPA Federally protected under the Bald and Golden Eagle Protection Act

A pedestrian survey was conducted on April 20 to June 3, 2016, September 16-29, 2016, and April 28-May 3, 2017 to identify potential habitat for the above referenced species. The habitats identified are presented in Section 6.7 and Appendix B.

6.8.2 Potential Environmental Impacts

Based on review of the literature, SCDNR database, and on-site assessments, we have determined that the Proposed Project will (1) have no effect on the West Indian manatee, frosted flatwoods salamander, RCW, Atlantic sturgeon, and pondberry; 2) may affect, but not likely to adversely affect the wood stork, short-nose sturgeon, Canby's dropwort, and American chaffseed, and (3) is not likely to disturb the bald eagle. These results are summarized below in Table 6-9, and in Appendix B.

Table 6-9. Federally Protected Species Determination of Effect.

Common Name	Scientific Name	Determination of Effect	Comments
West Indian manatee	<i>Trichechus manatus</i>	No Effect	West Indian manatees navigate the locks entering the Santee-Cooper lakes. If manatees are identified, they are removed from the lakes, as they cannot survive winters in the lakes.
Frosted flatwoods salamander	<i>Ambystoma cingulatum</i>	No Effect	Lack of suitable quality habitat. Closest known population approx. 25 miles east of the project corridor.
Bald eagle	<i>Haliaeetus leucocephalus</i>	Not likely to disturb.	Corridor crosses the Diversion Canal, which is known foraging habitat for bald eagles. The bridge could potentially provide roost or nesting habitat to bald eagles or other birds of prey.
Red-cockaded woodpecker	<i>Picoides borealis</i>	No Effect	Lack of suitable habitat. Pine forests within the corridor are of the wrong age class and density for suitable habitat. Heavy midstory and lack of fire throughout.
Wood stork	<i>Mycteria americana</i>	May affect, not likely to adversely affect.	Ample alternative foraging and nesting habitat outside of the proposed corridor.
Atlantic sturgeon	<i>Acipenser oxyrinchus</i>	No Effect	Atlantic sturgeon primarily use deep channel habitats. There are no documented occurrences of Atlantic sturgeon within the project area. If they do enter the area, noise caused by pile-driving during construction is expected to discourage sturgeon from approaching the construction site.
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	May affect, not likely to adversely affect.	Shortnose sturgeon primarily use deep channel habitats. There are known populations of shortnose sturgeon in the Santee Cooper Lakes. If they do enter the area, noise caused by pile-driving during construction is expected to discourage sturgeon from approaching the construction site.
Pondberry	<i>Lindera melissifolia</i>	No Effect	Extensive ditching and water management on industrial forestlands have likely removed the wetland parameters pondberry requires. Lack of suitable quality habitat.
Canby's dropwort	<i>Oxypolis canbyi</i>	May affect, not likely to adversely affect.	History of industrial forestry, infrequent burning on the Cross WMA, lack of suitable quality habitat.
American chaffseed	<i>Schwalbea americana</i>	May affect, not likely to adversely affect.	History of industrial forestry, infrequent burning on the Cross WMA, lack of suitable quality habitat.

6.9 Cultural Resources

6.9.1 Description of Affected Environment

A Phase I cultural resource survey of the proposed rail corridor was completed between November 8 and December 21, 2016. Additional survey of the proposed Camp Hall Railroad Build-in was conducted in April 2017 due to a slight shift in the proposed alignment. The proposed rail corridor is located in northern Berkeley County and extends from its northern terminus, where it ties in to the existing CSX A-line approximately 5 kilometers (km) southwest of the community of Pineville, to its tie in with the Camp Hall tract at Fish Road, approximately 9 km northeast of the town of Ridgeville. The proposed study corridor is approximately 23 miles (37.01 km) long and 200 feet (60.96 meters) wide.

The investigation was conducted in order to comply with the permitting requirements of the USACE with respect to Section 106 of the National Historic Preservation Act (NHPA [Public Law 89-665; 80 Stat. 915; 16 U.S.C. 470]). The goals of this investigation were to identify cultural resources within the project corridor, make recommendations about the National Register of Historic Places (NRHP) eligibility status of each resource, and determine if the proposed undertaking will have adverse effects on properties eligible for the NRHP. Criteria used for assessing NRHP eligibility and project effects are set forth in 36 CFR, Part 60.4 (NRHP eligibility criteria) and 36 CFR Part 800 (project effects). Regarding the Area of Potential Effects (APE), the archaeological fieldwork was confined to the APE for direct impacts, or the 23-mile by 200-ft wide proposed rail corridor. Given the project description, the historic architecture survey included the APE for direct impacts as well as areas of potential indirect impacts within a zone of around one half mile from the centerline of the proposed corridor.

Prior to fieldwork, a search of the official records maintained by the South Carolina Institute of Archaeology and Anthropology (SCIAA) and the South Carolina Department of Archives and History (SCDAH) was conducted in order to identify previously recorded cultural resources within the APE of the proposed undertaking or its vicinity. Based on this search, it was determined that no archaeological sites have been recorded within the APE for the archaeological survey; however, 13 archaeological sites (38BK586, 38BK587, 38BK588, 38BK589, 38BK584, 38BK585, 38BK2346, 38BK583, 38BK590, 38BK346, 38BK387, 38BK610, and 38BK611) have been recorded within a 1-km radius. All but one of these resources (38BK2346) were listed as potentially eligible for NRHP listing, meaning that further information is needed to determine their eligibility status. None of these previously recorded sites have official SHPO NRHP determinations. The search also determined that there have been eight architectural, or aboveground, resources within the APE for the historic architectural survey. These included five structures (115-0004, 115-0006, 0806, 0807, 0808), one historic canal (0786), and two historic cemeteries (497-0002 and 115-0011). Seven of these resources were recommended as ineligible for NRHP listing; however, the diversion canal that connects Lakes Marion and Moultrie (0786) was recommended as eligible for

NRHP listing and as a contributing element to the NRHP eligible Santee-Cooper Hydroelectric Project Historic District. This resource is discussed in greater detail in Appendix E.

Fieldwork methodology was discussed with the South Carolina State Historic Preservation Office (SHPO) and determined to reflect an adequate survey approach. Archaeological methodology included pedestrian inspection and regular interval shovel testing throughout the survey corridor. Shovel testing was conducted along two survey transects that span the entire 23 mile by 200-ft wide corridor. Tests were placed at 30 meter intervals within locations mapped as uplands with relatively good soil drainage. Areas that were mapped as hydric or poorly drained were confirmed through subsurface investigation and subjected to visual inspection.

As a result of the archaeological survey, it was determined that much of the project area was characterized by hydric or frequently flooded soils, despite the fact that they were mapped as well drained. Perusal of historic topographic maps indicated that many of the areas mapped as upland were historically wetlands. Ditches and channelized streams have been used to drain many of these areas for silviculture. No archaeological sites or isolated finds were encountered within the proposed rail corridor and no further archaeological investigation is recommended for the proposed survey corridor.

As a result of the historic architecture survey, eight previously recorded aboveground resources were revisited and 54 previously unrecorded structures were documented. Details of these resources are presented in Table 6-10. Of the eight previously recorded resources, seven were originally recommended as ineligible for the NRHP. These recommendations were confirmed as a result of the present study. The diversion canal that connects Lakes Marion and Moultrie (0786) was recommended as eligible for the NRHP under Criterion A and C and was determined to contribute to the Santee-Cooper Hydroelectric Project Historic District (Mead and Hunt 2002). This recommendation was confirmed as part of the present study and the proposed rail line has the potential to cause an adverse effect to the diversion canal, as it will cross the canal near its central point. Consultation with SHPO and other consulting parties will be necessary to identify ways to minimize and/or mitigate any possible adverse effects.

Fifty-four previously unrecorded architectural resources were also documented during the study. All but two of these resources are recommended as not eligible for NRHP listing. One previously unrecorded cemetery, the Garrett Cemetery (1263), was identified adjacent to the proposed railroad corridor. This resource represents a small, African-American family cemetery with grave markers that are unique in their composition. Because it is a rare example of a rural, African American Cemetery with extant markers and because those markers are of unique construction and materials, this resource is recommended as eligible for NRHP listing under Criteria A, C, and D. Cemeteries are protected from disturbance and

desecration under South Carolina state law. It is recommended that a 50-ft buffer be established around the resource. Avoidance of the cemetery and this buffer is recommended.

The Bulltown Ditch (1270) was also identified within the northern portion of the study corridor. This resource was identified on the 1921 Chicora topographic map; however, it was noted in an 1881 report as part of the Santee Canal system, which was constructed in the late eighteenth century. Prior to the construction of Lake Moultrie, the Bulltown Ditch served as a feeder canal for the Santee Canal, draining water from Bulltown Swamp towards the canal. Due to its association with the Santee Canal, this resource is recommended eligible for NRHP listing under Criterion A and C.

Table 6-10. Historic Architectural Resources within the APE

Resource Number	Address	Year Built	Description	NRHP Eligibility Status
497-0002		ca 1831	Blackmon-Shuler Cemetery	Not Eligible
115-0004	1133 Highway 311	ca 1900	J. L. Williams House	Not Eligible
115-0006	Old Mudville Road	ca 1905	Peagler House	Gone
115-0011	Short Cut Road	ca 1915	Winningham Cemetery	Not Located, Erroneously Mapped
0786		1942	Lakes Marion and Moultrie Diversion Canal	Contributes to NRHP district
0806	2988 Mudville Road	ca 1925	House	Not Eligible
0807	Highway 311 and Mudville Road	ca 1930	R.L. Singletary Grocery	Not Eligible
0808	south of Highway 6	ca 1930	House	Gone
1212	1569 Thirty-Five Mile Road	ca 1965	House	Not Eligible
1213	1573 Thirty-five Mile Road	ca 1960	House	Not Eligible
1214	2290 Mudville Road	ca 1965	House	Not Eligible
1215	2341 Mudville Road	ca 1967	House	Not Eligible
1216	2817 Mudville Road	ca 1965	House	Not Eligible
1217	2818 Mudville Road	ca 1940	House	Not Eligible
1218	2924 Mudville Road	ca 1964	House	Not Eligible
1219	2982 Mudville Road	ca 1965	House	Not Eligible
1220	2991 Mudville Road	ca 1940	House	Not Eligible
1221	1226 Highway 311	ca 1960	House	Not Eligible
1222	1119 Highway 311	ca 1960	House	Not Eligible
1223	1030 Highway 311	ca 1965	House	Not Eligible
1224	2667 Highway 6	ca 1945	House	Not Eligible
1225	1015 Ranger Drive	ca 1965	House	Not Eligible
1226	276 George Wigfall Drive	ca 1948	House	Not Eligible

Resource Number	Address	Year Built	Description	NRHP Eligibility Status
1227	264 George Wigfall Road	ca 1950	House	Not Eligible
1228	246 George Wigfall Road	ca 1950	House	Not Eligible
1229	222 George Wigfall Road	ca 1945	House	Not Eligible
1230	210 George Wigfall Road	ca 1945	House	Not Eligible
1231	104 Hoppy Lane	ca 1967	House	Not Eligible
1232	157 George Wigfall Road	ca 1965	House	Not Eligible
1233	129 Wigfall Road	ca 1965	House	Not Eligible
1234	1063 Ranger Drive	ca 1965	House	Not Eligible
1235	1098 Short Cut Road	ca 1945	House	Not Eligible
1236	1120 Short Cut Road	ca 1960	House	Not Eligible
1237	1124 Short Cut Road	ca 1965	The Galilee Pentecostal Holiness Church	Not Eligible
1238	1209 Short Cut Road	ca 1950	House	Not Eligible
1239	1212 Short Cut Road	ca 1950	House	Not Eligible
1240	1389 Short Cut Road	ca 1965	House	Not Eligible
1241	1259 Old Highway 6	ca 1920	House	Not Eligible
1242	1138 Old Highway 6	ca 1935	House	Not Eligible
1243	245 Harley Circle	ca 1960	House	Not Eligible
1244	184 Harley Circle	ca 1960	House	Not Eligible
1245	1060 Old Highway 6	ca 1940	House	Not Eligible
1246	148 Lovers Lane	ca 1945	House	Not Eligible
1247	2179 Ranger Drive	ca 1965	House	Not Eligible
1248	2193 Ranger Drive	ca 1960	House	Not Eligible
1249	2243 Ranger Drive	ca 1940	House	Not Eligible
1250	2249 Ranger Drive	ca 1950	House	Not Eligible
1251	388 St. Julian Drive	ca 1950	House	Not Eligible
1252	271 St. Julian Drive	ca 1950	House	Not Eligible
1253	265 St. Julian Drive	ca 1965	House	Not Eligible
1254	254 St. Julian Drive	ca 1945	House	Not Eligible
1255	252 St. Julian Drive	ca 1945	House	Not Eligible
1256	393 Holy Avenue	ca 1955	House	Not Eligible
1257	367 Holy Avenue	ca 1960	House	Not Eligible
1258	331 Holy Avenue	ca 1960	House	Not Eligible
1259	325 Holy Avenue	ca 1960	House	Not Eligible
1260	1356 Springwood Road	ca 1960	House	Not Eligible

Resource Number	Address	Year Built	Description	NRHP Eligibility Status
1261	1350 Springwood Road	ca 1960	House	Not Eligible
1262	1332 Springwood Road	ca 1960	House	Not Eligible
1263	East of Mudville Road	ca 1876	Garrett Cemetery	Recommended Eligible
1270	North of Santee Cooper		Bulltown Ditch	Recommended Eligible

6.9.2 Potential Environmental Impacts

As designed, the proposed Camp Hall Railroad Build-in will not have an adverse effect on any NRHP-eligible archaeological resources. No further archaeological investigation is recommended for the current proposed corridor. Significant architectural resources were identified during this investigation. These include the diversion canal between Lakes Marion and Moultrie (0786), the Garrett Cemetery (1263), and the Bulltown Ditch (1270) (Figure 7). The proposed alignment will cross the Diversion Canal (0786) approximately 2.75 miles from its northern terminus. While the Highway 45 Bridge also crosses the canal, this newly proposed crossing is located more than one mile from the existing crossing. Based on this, the portion of the Diversion Canal that will be crossed by the Camp Hall Build-in retains its integrity of location, design, setting, materials, workmanship, feeling, and association. The proposed rail project has the potential to cause an adverse effect to the Diversion Canal. Consultation with SHPO and other parties should be undertaken to identify ways to minimize and mitigate these possible adverse effects. The Garrett Cemetery (1263) was also identified during this investigation. The western edge of the survey corridor is approximately 75 feet outside of the cemetery boundaries; however, proposed impacts associated with the rail line itself will only occur within a zone approximately 175 feet from the cemetery boundary. Cemeteries are protected from disturbance and desecration under South Carolina state law. It is recommended that a 50-ft buffer be established around the resource. Avoidance of the cemetery and this buffer is recommended. The proposed undertaking, as planned, will not impact the cemetery or its buffer. If the cemetery cannot be avoided, consultation with the SHPO to determine how to minimize potential impacts will need to be conducted.

The Bulltown Ditch (1270) was identified north and east of the Santee Cooper power plant and was determined to be eligible for NRHP listing under A and C. The current alignment of this rail project will cross this resource at its northern end adjacent to the existing CSX A-line rail line. The section of the Bulltown Ditch has already been impacted by the construction of the existing CSX A-line and a transmission easement, both of which allow the ditch to pass beneath them through a culvert system. It is recommended that steps be taken to minimize this potential damage during construction and that measures be put in place to stabilize the bank of Bulltown Ditch near where the rail line would cross the ditch. In addition to the proposed crossing, a portion of the rail line near the existing Santee-Cooper Power Plant, runs parallel to the ditch approximately 150 feet away; this distance is sufficient to avoid

impacts during construction. Measures should be put in place to ensure impacts do not occur outside of the proposed APE in the vicinity of Bulltown Ditch, Garrett Cemetery and the Diversion Canal. These are general recommendations for ways to minimize the potential to adversely affect the three significant historic resources; specific measures to minimize adverse effects should be developed in consultation with the SC SHPO.

The complete Phase 1 Cultural Resources Survey is presented in Appendix E.

6.10 Socioeconomic and Environmental Justice Impacts

6.10.1 Methods and Description of Affected Environment

Socioeconomic and Environmental Justice (EJ) impacts were evaluated based on a comparison of large and small scale readily available Census data, labor statistics, aerial photography, and site reconnaissance. Nearby residences and businesses adjacent to the proposed rail corridor were identified to determine potential direct and indirect impacts. Negative and positive affects to the local population surrounding the proposed project were evaluated using the aforementioned datasets.

Community and neighborhood cohesion is relatively unaffected by the proposed rail alignment. Minimal grade crossings allow for little increases in commute and emergency response times, and insignificant impacts to community safety. As mentioned in Section 6.4.2 there are also no assumed major impacts regarding noise and vibration. In addition, it is not anticipated that the proposed rail corridor would require any relocations.

6.10.1.1 Population and Race

South Carolina has had higher population increases than the national average, with even higher increases in the South Carolina Lowcountry. The population of Berkeley County, as reported in the 2010 U.S. Census of Population, is 177,842. There are five Census Block Groups (CBG) within the proposed rail corridor: 450150201012, 450150201021, 450150201022, 450150202023, and 450150205032 (Figure 8). Each CBG is fairly large, with dispersed populations, ranging from 64 square miles to 1 square mile. The majority of the CBGs are greater than 10 square miles.

Racial demographics within the Cross project corridor are dominated by minorities in the northern portion of the project corridor near the Cross Census County Division (CCD) and Cross Generating Station. The southern portion of the Cross project corridor is majority Caucasian. Table 6-11 indicates the racial statistics within the area.

6.10.1.2 Employment, Education, and Income

According to the United States Bureau of Labor Statistics South Carolina unemployment rate in October 2016 was 4.7%. However, the unemployment rate for Berkeley County was

reported at 9.9% and 17.2% for Cross CCD (USCB 2016). Furthermore, unemployment rates in each affected CBG are significantly higher than the reported state unemployment rate.

Approximately 15% of South Carolina residents between the age of 18 and 24 did not graduate from high school (USCB 2016); approximately 22% between the age of 18 and 24 did not graduate high school in Cross CCD. However, over 40% of Cross CCD residents completed some form of higher education.

The CBGs located near Cross CCD typically have lower median household incomes than the CBGs located near Camp Hall Commerce Park. Local median household incomes are relatively similar to the state and Berkeley County averages. As mentioned previously in the level two analysis, poverty rates are not available at the CBG level so percent households below \$15,000 was used for income statistics. Local percent households below \$15,000 are higher than the state and Berkeley County average near Cross CCD and lower near Camp Hall Commerce Park. Table 6-11 indicates the income statistics for South Carolina, Berkeley County, Cross CCD, and the affected CBGs.

6.10.2 Potential Environmental Justice Impacts

Environmental Justice attempts to reduce adverse impacts on human health and the environment on low-income and minority populations. EO 12898 is intended to identify any disproportionate or adverse impacts on minority or low-income populations resulting from development or laws. Adverse impacts may occur if a project has negative effects on the nearby economy, disrupts community cohesion, loss of community facilities, increase emergency response times, or reduce transportation mobility. Unfortunately, direct guidelines for defining EJ populations does not exist, including the State of South Carolina. However, the EPA Region 4 defines potential EJ communities by comparing benchmark reference areas where thresholds can be applied.

Minorities and percent of households below \$15,000 annual income at the CBG level were compared to state levels to define potential EJ communities. The thresholds used for defining potential EJ communities are 1.2 times the South Carolina state average for aggregate minority populations and household incomes below \$15,000, as well as any aggregate minority populations exceeding 50% within each studied CBG. It is important to note all data used in the analysis came from the United States Census Bureau, and potential EJ communities were determined at the CBG level. CBGs within the proposed rail corridor are rather large due to sporadic populations, which can cause error in defining potential EJ communities. Lastly, the proposed rail corridor does not necessarily directly impact an EJ community since an EJ community can be smaller than the CBG.

Four of the five CBGs directly affected by the proposed rail corridor route are listed for having potential EJ communities. These EJ communities could be exposed to noise and aesthetic impacts. These minor to moderate impacts are discussed in detail in Section 6.2 (Aesthetics

and Visual Resources) and Section 6.4 (Noise). The adverse impacts associated with the proposed rail corridor would be predominantly endured by minority and low-income populations; however, the affected CBGs data is extremely granular and disperse due to low populations and larger tracts of land within the project corridor. In addition, the proposed alignment has increased sinuosity to best avoid sensitive communities. Lastly, it is not anticipated that any relocations will occur.

It is also expected the proposed rail corridor will provide economic connectivity to the expanding urbanized area associated with North Charleston and Summerville. The benefits of the Proposed Project would extend to populations throughout the South Carolina Lowcountry and primarily the Cross CCD, whereas the impacts would largely be endured by the communities adjacent to the proposed alignment. The construction of the proposed alignment would result in major short-term benefits to the local and regional economy. Long-term economic benefits could occur as well from employment opportunities directly or indirectly created by the construction of the rail and connection to Camp Hall Commerce Park. Employment opportunities could directly increase the need for higher education and stimulate the local economy.

Table 6-11 Socioeconomic Impacts and Environmental Justice

U.S. Census Bureau Study Level	South Carolina	Berkeley County	Cross CCD	Census Tract 201.01 Block Group 2	Census Tract 201.02 Block Group 1	Census Tract 201.02 Block Group 2	Census Tract 202.02 Block Group 3	Census Tract 205.03 Block Group 2
Race (2015)	4,777,576	193,613	7,253	2,258	1,608	1,760	1,432	2,500
White	3,210,708	130,379	3,641	939	912	1,183	211	1,405
Black	1,315,058	47,440	3,396	1,252	634	517	1,210	1,009
American Indian	14,966	1,001	29	29	18	20	2	15
Asian	66,982	4,815	0	1	1	1	1	2
Hawaiian	2,588	169	0	0	0	0	0	3
Other Race	73,324	4,402	45	19	4	7	4	16
Some other Race	93,950	5,407	142	35	22	31	12	36
% Minority	32.8%	32.7%	49.8%	58.4%	43.3%	32.8%	85.3%	43.8%
1.2 times South Carolina % Minority	39.4%	39.4%	39.4%	39.4%	39.4%	39.4%	39.4%	39.4%
Median Household Income	\$45,483	\$52,506	\$36,382	\$45,373	\$39,510	\$48,092	\$18,661	\$25,489
Total Households:	1,815,094	69,030	2,457	890	568	661	591	981
Household Income less than \$10,000	160,030	4,613	291	132	8	72	84	53

U.S. Census Bureau Study Level	South Carolina	Berkeley County	Cross CCD	Census Tract 201.01 Block Group 2	Census Tract 201.02 Block Group 1	Census Tract 201.02 Block Group 2	Census Tract 202.02 Block Group 3	Census Tract 205.03 Block Group 2
Household income between \$10,000 to \$14,999	116,567	2,926	184	74	48	38	81	117
Percent households below \$15,000	15.2%	10.9%	19.3%	23.1%	9.9%	16.6%	27.9%	17.3%
1.2 times South Carolina % households below \$15,000	18.3%	18.3%	18.3%	18.3%	18.3%	18.3%	18.3%	18.3%

6.10.2.1 Potential Relocations

The Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally-Assisted Programs rule (49 CFR Part 24) established minimum standards for federally funded programs and project that require the acquisition of real property or displace persons from their homes, businesses, or farms. A relocation would be required if a residence or business would be located within the ROW of the proposed rail corridor. Based on high-resolution aerial review, it is not anticipated that the proposed rail corridor would require any relocations. Smaller buildings such as barns and sheds were not addressed in the analysis.

6.11 Traffic and Transportation

6.11.1 Description of Affected Environment

The South Carolina Lowcountry is serviced by two freight rail operators, Norfolk Southern (NS) and CSXT, and Amtrak for passenger service. Existing nearby rail include the NS line connecting Charleston to Columbia, CSXT A-line, CSXT ALR-line, CSXT AKE-line, and CSXT SH-line. The proposed rail corridor will connect with the CSXT ALR-line and connect further to the CSXT A-line.

According to the United States Census Bureau Topology Integrated Geographic Encoding and Referencing (TIGER) dataset the proposed rail corridor intersects 18 minor forestry roads, 8 secondary roads, 1 arterial road, and 3 highways.

SCDOT maintains traffic stations to record annual traffic volume. A general Level of Service (LOS) for each roadway is estimated based on the latest volumes and the Annual Average Daily Traffic (AADT) thresholds used in SCDOT Travel Demand Models. According to a

recent study (Project Soter 2015) in the surrounding area, no roadways received low LOS scores for the roads near the proposed rail corridor. The lowest score for the surrounding roads was on US Highway 176 (US-176). Traffic at US-176 is expected to have stable flow with the ability for drivers to maneuver fairly easily, and maintain a minimum vehicle spacing of about 220 feet. Traffic at the minor roads intersecting the Preferred Route are expected to have reasonably free flow to free flow with the ability to easily avoid incidents. Minimum vehicle spacing for the minor roads is expected to be between 300 feet and 550 feet (TRB 2010).

The aforementioned AADT count data is the best readily available data for analyzing daily traffic volume. Table 6-12 indicates available SCDOT traffic stations at roads and highways that intersect with the proposed rail corridor. Further study will need to be conducted to determine the comprehensive long term roadway needs, which may include widening projects, intersection improvements and signal additions.

Table 6-12. South Carolina Department of Transportation 2015 Traffic Point Data

SCDOT Traffic Station	Mile Point	Corridor	Number of Lanes	2010 Volume (Vehicles/Day)	2015 Volume (Vehicles/Day)	Percent Change
135	8.086	US Highway 176	2	3,100	3,900	25.81%
139	3.31	Trojan Road	2	4,000	3,900	-2.50%
140	5.185	Old SC Highway 6	2	1,050	1,300	23.81%
141	10.738	Ranger Drive	2	4,000	3,700	-7.50%
143	16.72	SC Highway 6	2	3,800	3,100	-18.42%
163	5.63	SC Highway 311	2	1,350	1,400	3.70%
173	1.27	Ranger Drive	2	1,450	1,550	6.90%
277	2.016	Old SC Highway 6	2	1,150	800	-30.43%
293	4.851	Mudville Road	2	1,250	1,350	8.00%

According to SCDOT, AADT data from 2010 and 2015 traffic counts have remained fairly consistent surrounding the Preferred Route. However, traffic volumes have increased along US-176 and Old SC-6 towards Moncks Corner, Pinopolis, and North Charleston. Conversely, traffic volumes have slightly decreased near Cross and the Diversion Canal.

6.11.2 Potential Environmental Impacts

The current build out anticipates an expected five trains per week will access the Camp Hall Commerce Park. Each train will consist of approximately 30 railcars traveling at 25 mph or less. It is expected that daily commute times could increase depending on train arrival and

departure times; however, due to the limited number of railcars, and decreasing traffic trends surrounding Cross, commute time increases are expected to be minimal.

Additional traffic impacts could occur during construction of at-grade crossings. Traffic control will be administered in accordance with SCDOT's "2017 Work Zone Traffic Control Manual" (SCDOT 2017) to mitigation traffic impacts to the greatest practicable extent.

6.12 Utilities

6.12.1 Description of Affected Environment

A preliminary utilities assessment was completed to identify existing utilities that may encroach upon the proposed rail corridor. The utility records collected in this report serve as a planning tool that compared features of the proposed rail project to existing utilities. Six (6) utility owners were identified in the area of the project (See Table 6-13 below for a summary of the owners identified). The preliminary Utilities Report is presented in Appendix F.

Table 6-13. Preliminary Listing of Utility Owners

Notes:	Preliminary Listing of Utility Owners ¹
	1) Santee Cooper Electrical Transmission
	2) Berkeley Electric Cooperative Electrical Distribution
	3) Santee Cooper Electrical Distribution
	4) Home Telephone Company
	5) Berkeley County Water and Sanitation
	6) TDS Telecom
1) Utility owners were identified during site reconnaissance and by contacting utility owners. The utilities, and any mention in the utilities report, is approximate and not deemed as complete (including exhibits and locations of utilities). The list of the utilities presented herein is for preliminary planning purposes only.	

Utility records were obtained from the identified utility owners and compared to the proposed rail corridor. Area of potential conflict were identified, and are presented in Table 6-14.

Table 6-14. Preliminary Listing of Utility Owners and Approximate Locations of Utilities

Preliminary Listing of Utility Owners ¹	Approximate Locations of Utilities
Santee Cooper Electrical Transmission ²	Santee Cooper has several Electrical Overhead Transmission lines that intersect the proposed rail alignment: 1. 0.83 mile NE of US 176 along the railroad alignment at coordinates 33°12'30.0" N 80°14'05.3" W; 2. 2.32 miles NE of US 176 along the railroad alignment at coordinates 33°13'28.0" N 80°13'00.2" W; 3. 0.96 mile south from SC 6 along the meandering railroad alignment at coordinates 33°16'04.2" N 80°10'28.3" W;

	4. 440 feet NW of SC 311 along the railroad alignment at coordinates 33°17'00.0" N 80° 10' 24.1" W; 5. 0.64 mile east of Ranger Drive along the power line at coordinates 33°21'39.9" N 80° 07' 30.9" W 0.45 mile south from Springwood Road along the power line at coordinates 33°23'59.6" N 80° 06' 07.5" W . 6. 0.45 mile south from Springwood Road along the power line at coordinates 33°23'59.6" N 80° 06' 07.5" W
Berkeley Electric Cooperative (BEC) Electrical Distribution	1. Fish Road (S-8-309); 2. State Road (US 176); 3. Mudville Road (S-8-135); 4. SC 311; 5. Mikey Road; 6. Short Cut Road (S-8-60); 7. Old Highway 6; 8. Ranger Drive/Hwy 6 (S-8-132); and 9. Viper Road (S-8-708).
Santee Cooper Electrical Distribution	1. South of Springwood Road, parallel to the existing railroad
Home Telephone Company (Hometelco) ³	1. Fish Road (S-8-309); 2. State Road (US 176) 3. Mudville Road (S-8-135); 4. SC 311; 5. Mikey Road; 6. Short Cut Road (S-8-60); 7. Old Highway 6; 8. Ranger Drive/Hwy 6 (S-8-132); and 9. Viper Road (S-8-708).
Berkeley County Water and Sanitation (BCW&S)	1. Mudville Road (S-8-135); 2. SC 311; 3. Short Cut Road (S-8-60); 4. Old Highway 6; and 5. Ranger Drive/Hwy 6 (S-8-132).
TDS Telecom (TDS)	1. Viper Road (S-8-708).

Notes:

- 1) Utility owners were identified during site reconnaissance and by contacting utility owners. The utilities, and any mention in the utilities report, is approximate and not deemed as complete (including exhibits and locations of utilities). The list of the utilities presented herein is for preliminary planning purposes only.
- 2) The proposed rail system relative to the existing Santee Cooper Electrical Overhead Transmission lines are difficult to list in a tabular format. This overlap is shown in the Utilities Report in Appendix F. Please note that all of the exhibits in this report are preliminary in nature.
- 3) Hometelco's facilities are buried unless otherwise noted along the nine roadways in the vicinity of the proposed rail corridor.
- 4) No gas mains were identified during field visits.

6.12.2 Potential Environmental Impacts

Known and readily available utility records, along with field investigations, were used to identify utilities located within the proposed rail corridor. Following completion of 30% design plans, potential conflicts with existing utilities will need to be discussed between utility owners and PR. In addition, planned utility improvements along with proposed rail corridor will need to be identified. However, it is anticipated that utility improvements will occur within the proposed ROW, and additional wetland impacts and land disturbance will not be required.

6.13 Hazardous Materials/Toxic Substances

6.13.1 Description of Affected Environment

A Phase I Environmental Site Assessment (ESA) was performed for the proposed rail alignment ROW (the “subject property”). The purpose of the ESA was to identify, pursuant to ASTM E 1527-13, recognized environmental conditions (REC) in connection with the subject property. A REC is defined as the presence or likely presence of hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. The term includes hazardous substances or petroleum products even under conditions in compliance with laws.

The majority of the subject property was observed to route through land used for timber cultivation. Unpaved roads are present on some of the parcels through which the subject property routes, primarily on the forested parcels. The route of the subject property was observed to cross several major and secondary paved two-lane roadways including Fish Road, Highway 176, Mudville Road, Highway 311, Short Cut Road, Ranger Drive (Hwy 6), Old Highway 6, and Viper Road. The proposed route of the subject property will also cross the Diversion Canal water body between Lake Marion and Lake Moultrie. The north end of the subject property will route through a portion of the Santee Cooper Cross Generating Station property, connecting with an existing rail line that delivers coal to the power plant. No structures were observed on the subject property; however, according to information provided by the client, six residential buildings are located within a close proximity to the proposed ROW.

A search for environmental database listed sites of potential concern along the proposed ROW and within a specified radius of the subject property was conducted. In addition, a site reconnaissance was performed along the proposed ROW to identify potential hazardous waste sites within 100 feet of the rail alignment ROW. The results of the database search and site reconnaissance identified one site, Santee Cooper electric generating plant (Cross Generating Station) located in Cross, South Carolina as a REC. The site is listed on the State Hazardous Waste Sites (SHWS), Underground Storage Tank (UST), Leaking Underground

Storage Tank (LUST), Solid Waste Facilities/Landfill (SWF/LF), and Permitted Airs Facility Listing (AIRS) environmental databases. The proposed rail alignment ROW routes adjacent to an ash disposal / landfill area at the power plant site. The Santee Cooper Cross Generating Station is considered a REC because the operations performed at the facility represent a potential source for soil and groundwater contamination on and under an area of the subject property.

No other hazardous waste sites were identified within a proximity of concern to the proposed rail corridor. The Phase 1 ESA is available upon written request.

6.13.2 Potential Environmental Impacts

Construction and operation of the Proposed Project has a low potential to generate hazardous waste. Heavy construction equipment will be used to construct the rail corridor and diesel locomotives will be utilized to haul freight. A Spill Prevention, Control and Countermeasures Plan (SPCCP); SWPPP; and Oil and Hazardous Substance Contingency Plan (OHSCP) would be developed to show locations and quantities of waste material generated and provide disposal requirements.

6.14 Cumulative Impacts

This section includes a brief discussion of cumulative impacts that may occur as a result of the Proposed Project. Cumulative impacts are those impacts that result from the incremental impact of an action added to other past, present, and reasonably foreseeable actions in the future. NEPA requires that federal projects undergoing NEPA analysis consider cumulative impacts. The Council on Environmental Quality (CEQ) has provided a framework for addressing cumulative effects as part of an environmental assessment, "Considering Cumulative Effects Under the National Environmental Policy Act" (CEQ, 1997). This guidance places a priority on "counting what counts" within a defined geographic (spatial) and time (temporal) boundary when considering cumulative impacts.

6.14.1 Description of Affected Environment

As described in the sections above, development within and directly adjacent to the Proposed Project corridor has historically been utilized for low-density residential development (Unincorporated Community of Cross) and intensive commercial silviculture.

Resources Affected

The 2010 Berkeley County Comprehensive Plan (BCCP 2010) was reviewed to determine if any known future projects could have the potential to, when combined with the Proposed Project, result in an additional cumulative impact. The Comprehensive Plan indicates that the Proposed Project is located outside of a growth allocation area, and in an area designated

as “constrained residential growth”. These uses do not allow for additional large population or commercial centers without amendment of the Land Use Plan. Therefore, it is unlikely that uses within the 2010 Berkeley County Comprehensive Plan would combine with the Proposed Project to result in material cumulative impacts.

Additional industrial development along the rail corridor is not reasonably foreseeable, as the cross-country route does not have easy access to existing infrastructure, and the extensive wetlands are not conducive to additional industrial development. Therefore, this cumulative impacts assessment will focus broadly on air quality, noise & vibration, water resources, biotic communities, socioeconomic impacts, and traffic & transportation. The existing condition for each of these resources has been described in Sections 6.3, 6.4, 6.6, 6.7, 6.10, and 6.11.

Spatial Scope

Due to the nature of the Proposed Project, as a rail line connecting an industrial site with an existing freight rail network, cumulative impacts across a large geographical area would be limited or non-existent. Industrial development at the Camp Hall Commerce Park has already begun and freight is being shipped on the CSXT A-Line. Because of the existing commercial and transportation For the purpose of this cumulative impacts assessment, the Proposed Project could potentially have effects across the unincorporated areas of northwestern Berkeley County, between the Orangeburg County line and the main run of the Wassamasaw Swamp.

Temporal Scope

The Proposed Project will run cross country, through areas that have historically been used for rural residential uses and commercial agriculture (i.e. silviculture). The historic silviculture along the Proposed Project has previously resulted in habitat conversion and fragmentation ditching of wildlife habitats and water resources.

Initial development of the Camp Hall Commerce Park, at the southern end of the Proposed Project, was approved by the SCDHEC and the USACE in July of 2015 for construction of the Volvo Cars facility, and permitting for development of the remainder of the Camp Hall Commerce Park has recently been approved by the USACE. Build-out of the Camp Hall Commerce Park can reasonably be expected to be completed within 20 years. For these reasons, the timeframe for this cumulative impacts assessment will begin will include past impacts due to commercial silviculture in the region and extend 20 years into the future.

6.14.2 Potential Environmental Impacts

Cumulative Impacts associated with the Proposed Project could result from increased development within the Camp Hall Commerce Park due to access to an industrial rail line and increased habitat and water resources fragmentation. These impacts, in both temporal and

spatial scope, can broadly be interpreted as cumulative impacts to the human and natural environment. Cumulative impacts to the human environment can include air quality, noise & vibration, socioeconomic impacts, and traffic and transportation impacts due to potential future increases in rail traffic. Cumulative impacts to the natural environment can include water resources and biotic community impacts due to rail corridor introducing additional fragmentation of habitat impacts to an area that has already been impacted.

Human Environment

Cumulative Impacts to the human environment could occur due to development within the Camp Hall Commerce Park requiring more rail service over time than can be expected at this time. Additional development outside of the Camp Hall Commerce Park cannot be reasonably foreseen, as the landforms adjacent to the Propose Project are not conducive to industrial development and the 2010 Berkeley County Comprehensive Plan does not allow for high density development outside of the Camp Hall Commerce Park.

Should rail demand within the Camp Hall Commerce Park be greater than expected, additional cumulative impacts to the human environment may occur due to increased rail traffic on the proposed rail line. These potential impacts would likely not be substantial, as rail traffic above what is anticipated in this report would be minimal.

Additional air quality impacts would not be anticipated, as emissions from construction and exhaust from diesel locomotives would be considered minor. Socioeconomic impacts are anticipated to be minor as well. Additional development at the Camp Hall Commerce Park could bring higher paying jobs into an economically depressed area such as the unincorporated community of Cross. These job opportunities and increased tax base could help off-set additional cumulative impacts to residents of the area.

Natural Environment

The Proposed Project corridor runs through an area that has historically been utilized for intensive silvicultural production. To make the area suitable for pine production, the landscape has been extensively modified to allow for successful growth of pine trees and to allow for ease of harvesting of the trees. The landscape has been extensively altered by ditching, forestry roads, and bedding of the pine areas. This historical landscape alteration has resulted in fragmentation of forest habitat and extensive modification of natural drainage systems.

The Proposed Project has been studied to determine if the rail corridor could act cumulatively with this historic landscape fragmentation to increase habitat and surface water degradation further. The proposed rail corridor will introduce additional forest and wetland fragmentation, beyond what has occurred from previous land uses. However, the rail corridor will generally follow or parallel other uses that have previously introduced fragmentation, including roads (both paved and forestry) and utility line easements. By paralleling these existing impacts, the cumulative fragmentation impact from the proposed rail corridor will be minor.

Surface waters within the proposed rail corridor have been extensively altered both upstream and downstream of the rail corridor. The rail line will be designed to prevent additional surface water impairment, through the use of appropriately sized bridges and culverts.

6.15 Summary and Conclusions

Environmental Report Summary

Project Location:	Berkeley County, South Carolina
Project Title:	Palmetto Railways Camp Hall Commerce Park Rail Spur
Assessed By:	Amec Foster Wheeler Environment & Infrastructure, Inc.

Summary of Environmental Impact of the Proposed Project:

This environmental report was prepared for the construction and operation of a proposed rail corridor by Palmetto Railway. The Proposed Project is an approximately 22.7-mile by 200-ft corridor (0.85 square mile) that will connect to the CSXT rail network near the Santee Cooper Cross Generating Station and travel south and west to the Camp Hall Commerce Park. The proposed rail corridor will impact a total of 83.18 acres of jurisdictional wetlands, 55.7 acres of jurisdictional wetlands and 169-feet (0.06 acres) of non-wetlands waters (jurisdictional streams).

Recommendation:

- Finding of No Significant Impact (FONSI). (This project will not result in a significant adverse impact on the environment and will not result in highly controversial adverse public reaction; therefore an environmental impact statement is not required.)
- ☒ Mitigated FONSI. (Use of mitigation may allow the federal agencies to comply with NEPA's procedural requirements by issuing an EA and FONSI, or 'mitigated FONSI', based on the agency's commitment to ensure the mitigation that supports the FONSI is performed, thereby avoiding the need to prepare an environmental impact statement.)
- An Environmental Impact Statement is required.

Table 6-15. Effects Summary

Attributes (ER Section)	Alternatives	
	No Action	Proposed Project (Cross Route 3)
Land Use (6.1)	0	-
Aesthetics and Visual Resources (6.2)	0	-
Air Quality (6.3)	0	0
Noise & Vibration (6.4)	0	-
Geology & Soils (6.5)	0	-
Water Resources/Floodplains (6.6)	0	-- (0 with mitigation plan)
Biotic Communities (6.7)	0	-
Protected Species (6.8)	0	0
Cultural Resources (6.9)	0	0
Socioeconomic Impacts (6.10)	0	0
Traffic & Transportation (6.11)	0	-
Utilities (6.12)	0	0
Hazardous Waste (6.13)	0	0
Cumulative Impacts (6.14)	0	-

Note: + = Beneficial Effect -- = Moderate Effect
 - - - = Severe Effect - = Minimal Effect
 0 = No Significant Effect

Definitions of Impacts

1. Beneficial - No adverse effect anticipated. Effect would provide a favorable, advantageous and/or improved condition.
2. Severe - Complete destruction, disruption, violation of standards, incompatibility, disturbance, or surpassing capability of the attribute under consideration.
3. Moderate - Considerable destruction, disruption, violation of standards incompatibility, disturbance or surpassing of capability of the attribute. However, the effect can be minimized through further study and mitigation.
4. Minimal - Temporary or minor destruction, disruption, violation of standards, incompatibility, disturbance or surpassing of capability of the attribute. This effect can be mitigated through standard design, construction or operational procedures.
5. No Significant Effect No effect anticipated.

Project Description:

Refer to Section 2 of the Environmental Report.

Alternatives Considered:

Refer to Section 3 of the Environmental Report.

Environmental Impacts:

Refer to Sections 4 and 6 of the Environmental Report.

Mitigative Actions:

Mitigation packages for wetland and waters of the US impacts are currently being evaluated by Palmetto Railways. The selected mitigation package will completely cover the project impacts, utilizing the USACE's "Guidelines for Preparing a Compensatory Mitigation Plan".

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7 LIST OF PREPARERS AND CONTRIBUTORS

Amec Foster Wheeler Environment & Infrastructure, Inc. (Amec Foster Wheeler) served as lead consultant for preparation of the Environmental Report and supporting documents. Amec Foster Wheeler served as primary author for the sections related to *Alternatives Analysis, Land Use, Aesthetics and Visual Resources, Air Quality, Noise & Vibration, Geology and Soils, Water Resources/Floodplains, Cultural Resources, Socioeconomic and Environmental Justice, Traffic & Transportation, Utilities, and Cumulative Impacts*.

TranSystems served as the primary civil engineers for this project. They have completed all necessary rail design work, including 30% design drawings, wetlands impacts and fill calculations.

GEL Engineering, LLC and Sabine & Waters completed the wetland delineation of the project route and served as the primary author for sections related to *Waters to be Impacted (including wetland type and existing condition), vegetative Biotic Communities, and Protected Species Biological Assessment*.

S&ME, Inc. served as the primary author for the section related to *Hazardous Material and Toxic Substances*.

Randolph Lowell with Willoughby & Hoefer, PA served as secondary author for the *Alternatives Analysis* and *Purpose and Need* sections of this Environmental Report.

CDM Smith Inc. provided project management, oversight, and review.

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