

Decision ID No. 46695

Service Date: November 30, 2018

Comment Due Date: December 30, 2018

Draft Environmental Assessment

STB Docket No. FD 36095

Camp Hall Rail Line

Joint Lead Agencies



US Army Corps
of Engineers ®

Cooperating Agencies



U.S. Department of Transportation
Federal Railroad Administration



SURFACE TRANSPORTATION BOARD
Washington, DC 20423

Office of Environmental Analysis

November 30, 2018

Re: STB Docket No. FD 36095, Palmetto Railways---Construction and Operation Exemption---
In Berkeley County, South Carolina

Dear Reader:

The Surface Transportation Board's (Board) Office of Environmental Analysis (OEA) and the U.S. Army Corps of Engineers (Corps), as joint lead agencies, and the U.S. Coast Guard (Coast Guard) and the Federal Railroad Administration (FRA), as cooperating agencies, are pleased to provide you with the Draft Environmental Assessment (Draft EA) for the proposed construction and operation of approximately 28 miles of rail line by Palmetto Railways (Applicant). The proposed rail line is intended to bring industrial rail service to the Volvo Cars facility, as well as the areas being developed by Santee Cooper. In addition, the proposed rail line would support the State of South Carolina and Berkeley County's infrastructure needs and help alleviate highway congestion involving large commercial trucks.

This Draft EA discusses the potential environmental impacts that could result from the construction and operation of the proposed rail line and includes OEA's preliminary recommendations for mitigating possible environmental impacts. The Draft EA reflects the joint lead agencies' independent analysis and considers the views of federal, state, and local agencies.

Availability of the Draft Environmental Assessment

OEA and the Corps have distributed this Draft EA to all parties of record for this docket and the environmental distribution list, which includes key governmental agencies, federally recognized tribes, and other appropriate entities. The Draft EA is available through the Board's website (www.stb.gov; search the decisions link).

The Draft EA is also available on the joint lead agencies' project website (www.CampHallRailNEPA.com). Alternatively, a hard copy of the Draft EA is available for review in the following Berkeley County public libraries:

Saint Stephen Library
113 Ravenell Drive
Saint Stephen, SC 29479

Moncks Corner Library
1003 Highway 52
Moncks Corner, SC 29461

Hanahan Library
1216 Old Murray Court
Hanahan, SC 29406

Sangaree Library
595 Sangaree Parkway
Summerville, SC 29483

Goose Creek Library
325 Old Moncks Corner Road
Goose Creek, SC 29445

Daniel Island Library
2301 Daniel Island Drive
Daniel Island, SC 29492

Public Comment and Review of the Draft Environmental Assessment

OEA and the Corps invite and encourage the public and any interested parties to submit written comments on all aspects of the Draft EA. The joint lead agencies will consider all such comments in preparing the Final EA. All comments on this Draft EA must be submitted within the published comment period, which will close 30 days after the Notice of the Availability of the Draft EA appears in the *Federal Register*. The Final EA will include the joint lead agencies' conclusions on potential impacts of the proposed rail line as well as OEA's final recommendations, including its final recommended mitigation measures. The Board will then make its final decision regarding this project and any environmental conditions it might impose. The Corps will use the EA to inform its decision on the Applicant's U.S. Department of the Army (DA) permit application.

When submitting comments, please be as specific as possible and substantiate your concerns and recommendations. Please mail written comments on the Draft EA and the recommended environmental mitigation to the following contact and address:

Ms. Diana Wood
Surface Transportation Board
Docket No. FD 36095
c/o ICF
9300 Lee Highway
Fairfax, VA 22031

Comments on this Draft EA may also be submitted electronically on the joint lead agencies' project website (www.CampHallRailNepa.com) or emailed to CampHallRailLineNEPA@icf.com. Please refer to Docket No. FD 36095 in all correspondence, including electronic. The comment period will close on December 30, 2018 and all comments must be post-marked by this date.

If you would like additional information about the environmental review process, please contact Diana Wood of my staff at (202) 245-0302 or by email at Diana.Wood@stb.gov, or David Bauer of ICF, our third-party contractor, at (703) 934-3697 or by email at David.Bauer@icf.com. Thank you for your interest and your participation in the environmental review process.

Sincerely,



Victoria Rutson
Director, Office of Environmental Analysis

cc: Elizabeth Williams, U.S. Army Corps of Engineers
William Tate, U.S. Coast Guard
John Winkle, Federal Railroad Administration

DRAFT ENVIRONMENTAL ASSESSMENT

CAMP HALL RAIL LINE

STB DOCKET No. FD 36095

PREPARED BY:

Surface Transportation Board
Office of Environmental Analysis
U.S. Army Corps of Engineers

COOPERATING AGENCIES:

Federal Railroad Administration
U.S. Coast Guard

November 2018

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Acronyms and Abbreviations

AADT	Average annual daily vehicle traffic
Applicant	Palmetto Railways
Board	Surface Transportation Board
CEQ	Council on Environmental Quality
C.F.R.	Code of Federal Regulations
Coast Guard	U.S. Coast Guard
Corps	U.S. Army Corps of Engineers
Cross Generating Station	Santee Cooper Cross Generating Station
CSXT	CSX Transportation, Inc.
CWA	Clean Water Act
DA	U.S. Department of the Army
dBA	A-weighted decibels
DHEC	South Carolina Department of Health and Environmental Control
DNL	Day-night average noise level
EA	environmental assessment
EFH	essential fish habitat
EO	Executive Order
ESA	Endangered Species Act or Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
FPPA	Farmland Protection Policy Act
FR	<i>Federal Register</i>
FRA	Federal Railroad Administration
FTA	Federal Transit Administration
GHG	greenhouse gas
GIS	geographic information system
HUC	Hydrologic Unit Code
I-26	Interstate 26
mph	miles per hour
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NMFS	National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NRCS	U.S. Department of Agriculture, Natural Resources Conservation Service
NWI	National Wetland Inventory
PEM	Emergent wetlands

PFO	Forested wetlands
PRM	Permittee-responsible mitigation
PSS	Scrub-shrub wetlands
REC	recognized environmental conditions
SC 45	South Carolina Highway 45
SCDNR	South Carolina Department of Natural Resources
SHPO	State Historic Preservation Officer
SPCC	spill prevention, control, and countermeasures plan
SWAP	State Wildlife Action Plan
SWPPP	stormwater pollution prevention plan
TMDL	total maximum daily load
Uniform Act	Uniform Relocation Assistance and Real Property Acquisition Policies Act, as amended
US 17	U.S. Route 17
US 52	U.S. Route 52
US 78	U.S. Route 78
US 176	U.S. Route 176
U.S.C.	United States Code
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey's
VdB	velocity decibels
Volvo Cars	Volvo Cars of North America
WMAs	wildlife management areas

Introduction

This summary addresses the key elements of the development of this Draft Environmental Assessment (EA), the alternatives screening process, the proposed action and the no-action alternative, and major conclusions regarding potential environmental impacts.

Purpose and Need and Proposed Action

The proposed action is the request by Palmetto Railways (Applicant) for authority to construct and operate the proposed rail line. The proposed action is not a federal government-sponsored project, and, therefore, the project's purpose and need should be defined by the Applicant's goals in conjunction with the agency's enabling statutes.

The Applicant intends for the proposed rail line to bring industrial rail service to the Volvo Cars of North America (Volvo Cars) facility and others in the Camp Hall Commerce Park, thus enhancing distribution and logistics for current and future tenants. In addition, the proposed rail line would support infrastructure needs in South Carolina and Berkeley County and would help alleviate highway congestion involving large commercial trucks.

Project Setting

The proposed rail line would be located entirely within Berkeley County, South Carolina. The proposed rail line would connect the Camp Hall Commerce Park to the CSX Transportation, Inc. (CSXT) main line north of the Santee Cooper Cross Generating Station (Cross Generating Station). The project area is a mix of industrial, commercial, residential, and silvicultural lands.

Draft EA and Final EA Process

This Draft EA was prepared by the Surface Transportation Board's (Board) Office of Environmental Analysis (OEA) in coordination with the U.S. Army Corps of Engineers, Charleston District (Corps) as joint lead agencies. The Federal Railroad Administration (FRA) and the U.S. Coast Guard (Coast Guard) are cooperating agencies. The joint lead agencies independently analyzed environmental data and OEA is making environmental recommendations to the Board as part of the Board's licensing process. The Corps will use this environmental review process to inform its decision on the Applicant's U.S. Department of the Army (DA) permit application (Appendix D, *Agency Notices and Comment Letters*). FRA will use the EA to inform its National Environmental Policy Act (NEPA) decision in order to make the project eligible for U.S. Department of Transportation funding. The Coast Guard will use the EA to inform its work and decision on a bridge permit.

The joint lead agencies will consider all comments received on this Draft EA and will respond to substantive comments in the Final EA, which will include final recommended environmental mitigation.

The Board will consider the entire environmental record, the Draft and Final EAs, all comments received, and OEA's environmental recommendations in making its final decision on the Applicant's request for authority to construct and operate the proposed rail line.

Alternatives

Alternatives Screening

The Applicant conducted alternatives screening to identify a preferred alternative for analysis. The joint lead agencies independently reviewed the Applicant's information, developed and applied independent screening criteria to each of the Applicant's alternatives, and carried the Applicant's preferred alternative forward for analysis, in addition to the no-action alternative.

The Applicant's process for developing and evaluating alternatives is described in its *Environmental Report* (Appendix B, *Environmental Report*). The Applicant developed six alternatives¹ for meeting the purpose and need for the proposed rail line. These alternatives were subjected to screening criteria, revised, and re-evaluated according to refined criteria. In this iterative process, the Applicant analyzed alternatives at three stages, first eliminating two alternatives,² then eliminating three alternatives,³ then expanding the remaining alternative into four options,⁴ and finally identifying and refining a preferred alternative (Cross Option 3).

The joint lead agencies implemented a two-phase screening process to evaluate the alternatives proposed and considered by the Applicant. This process incorporated information from the *Environmental Report* (Appendix B), information provided by the Applicant, and input from agencies and the public. The joint lead agencies first determined that the Applicant's initial six alternatives represented a reasonable range of alternatives that could potentially meet the stated purpose and need. The joint lead agencies suggested modifications to two of these alternatives to ensure a robust exploration of alternatives.⁵ In the second phase, the joint lead agencies screened the initial six alternatives (including the modified routes) and the four refinements of the Cross Route using criteria that focused on the key impact issues of wetlands, potential relocations, parcels affected, and known archaeological sites.

Ultimately, the joint lead agencies carried forward the refined Cross 3 Option, the Applicant's preferred alternative, for analysis.

Preferred Alternative

The Applicant's preferred alternative for the proposed rail line would extend 28.01 miles to connect the CSXT Cross Subdivision to Camp Hall Commerce Park. The proposed rail line would run south-southwest from the Cross Generating Station, cross the Diversion Canal between Lake Marion and Lake

¹ The initial six alternatives were the Soter South Route, Soter North Route, Moncks Corner Route, Cross Route, Eutawville/Holly Hill Route, and Ridgeville Route.

² The Eutawville/Holly Hill Route and Ridgeville Route were eliminated at the first screening level.

³ The Moncks Corner Route, Soter North Route, and Soter South Route were eliminated at the second screening level.

⁴ The Cross Route was expanded into four routes: Cross Option 1 through Cross Option 4.

⁵ The Applicant subsequently modified the Moncks Corner Route and Soter South Route.

Moultrie (via a proposed bridge), traverse the unincorporated community of Cross, and extend south through pine plantations into Camp Hall Commerce Park. One terminus would be in the Volvo Cars facility and adjacent to Volvo Cars Drive and the other would be approximately 10,000 feet south of the crossing of Fish Road.

The Applicant would construct the proposed rail line within a 100-foot-wide right-of-way⁶ during daytime hours over a period of 18 to 20 months (Appendix A, *Applicant Correspondence with Agencies*, Information Request #3). The following features would be constructed:

- One bridge crossing over the Diversion Canal approximately 845 feet long (520 feet over water), which would provide a 100-foot-wide navigation channel and a 50-foot vertical clearance.
- At-grade rail crossings for 10 public roads and 55 private roads.
- Relocation of seven private roads to avoid rail crossings of those roads.
- A small maintenance and office facility, anticipated to be located to the west of the track fork in the Camp Hall Commerce Park.

The Applicant anticipates transporting approximately 50,000 automobiles per year on five round trips (10 transits or *passbys*) on the proposed rail line per week, for an average of 1.4 train passbys per day.

No-Action Alternative

If the Board was to deny the Applicant's request to construct and operate a rail line to serve the Camp Hall Commerce Park or the Corps was to deny the DA permit application to fill waters of the United States, the Applicant would not construct and operate the rail line as proposed. Instead, automobiles produced by Volvo Cars at Camp Hall Commerce Park and destined for the North American market would be shipped by truck approximately 80 miles, primarily on Interstate 26, to CSXT's Dixiana auto distribution facility near Columbia, South Carolina (Appendix A, *Applicant Correspondence with Agencies*, Information Request #3).

Summary of Impacts

The potential impacts of the proposed rail line are summarized in Table S-1. As noted, impacts on the resources evaluated in this EA were all considered minimal, with the exception of impacts on two resources, wetlands and noise/vibration. The joint lead agencies assessed potential impacts on these two resources both quantitatively and qualitatively and, in turn, do not believe that the impacts on these resources are significant. Additionally, the Applicant has proposed mitigation to ensure that the potential adverse impacts on resources are adequately avoided, minimized, and/or replaced.

⁶ The 100-foot project right-of-way reflects the outer boundary of the construction limits for the proposed rail line; however, the Applicant's actual property purchase or condemnation may be larger than 100 feet in certain locations along the project corridor, depending on negotiations with the current landowners (Appendix B, *Environmental Report*).

Table S-1. Impact Summary

Resource	Impacts of Preferred Alternative	Level of Impact	Mitigation
Transportation	Rail safety: No construction impacts. Operations could result in an accident risk rate of 0.17 per year, or one per every 6 years.	Minimal	VMs will address rail safety issues through implementation of Operation Lifesaver, safety training and contact for emergency response personnel, active and early warning systems, community workshops, coordination with emergency services, and compliance with regulations governing the transport of hazardous materials.
	Vehicle safety: Construction would increase vehicle traffic, which would be distributed over many roads. Operations-related accidents would be based on traffic levels and train speeds. At the busiest intersection, a predicted accident interval would be one vehicle/rail incident every 33 years. This compares with an estimated 0.1% increase in daily truck traffic on Interstate 26.	Minimal	VMs will provide passive and active warning systems; community workshops; emergency coordination; hazardous materials regulatory compliance.
	Vehicle delay: Construction could cause temporary vehicle delay for diversions. Operations-related delay could affect from 1 to 10 vehicles at proposed new grade crossings (0.2% of vehicles), with total delay ranging from 1.5 to 12 minutes. This compares with an increase in truck traffic under the no-action alternative.	Minimal	VMs will present community workshops about the safety program.
	Navigation: Construction impacts of the proposed bridge spanning the Navigation Canal could temporarily affect boaters. The bridge would provide sufficient clearance (50 vertical feet) for continued navigation of the canal.	Minimal	NA
Water Resources	Surface waters: Construction may alter surface water flow and quality, including one 303(d) impaired water body, but impacts would be local and addressed with voluntary mitigation. Culverts required for operation could alter channel hydraulics but this would be addressed by voluntary mitigation. Potential water quality impacts from fugitive dust and maintenance chemicals would be addressed by voluntary measures.	Minimal	VMs will implement appropriate BMPs for stormwater, erosion control, runoff, and sediment control consistent with SDHEC handbook; implement a SWPPP; comply with NPDES conditions; use appropriate design measures, adhere to county stormwater regulations, and obtain a permit to discharge fill.

Resource	Impacts of Preferred Alternative	Level of Impact	Mitigation
	Wetlands: During construction, wetlands would be filled and permanently cleared of vegetation. This could fragment habitat, alter hydrology, and change vegetation through deposition of fugitive dust. Fill would cause loss of habitat function and railbeds could fragment flow, affecting water quality. Placement of materials temporarily and permanently could limit stormwater and floodwater retention. Operations maintenance could result in incidental emissions affecting water quality.	103 acres permanently filled; 17 acres permanently cleared of vegetation	Compensated by Applicant's mitigation plan that includes mitigation in the Francis Marion National Forest and purchase of mitigation credits.
	Floodplains: The proposed rail line would cross two 100-year floodplains. Bridge bents would be installed in the canal, potentially constricting flows. A small area would be cleared. Area of impact would be 0.005% of all 100-year floodplains mapped in the watershed.	Minimal	VMs: See surface waters
	Groundwater: Potential spills during construction or operations could infiltrate and contaminate groundwater but this would be limited to the alignment footprint.	Minimal	VMs: See surface waters
Vegetation	During construction, clearing and fill placement could disturb or displace vegetation; heavy equipment could compact soil and impede germination and growth; noxious weeds could be introduced or spread on heavy equipment or in fill; dust deposition could affect plant growth; and accidental spills could damage vegetation. Operations impacts could include vegetation trimming or clearing and potential leaks or spills.	Minimal	VM will implement an SPCC plan to minimize potential spill impacts. MM will require preparation of a plan to control the spread of noxious weeds.
Wildlife	Construction could remove or alter habitat, causing wildlife displacement; cause direct injury or mortality; or result in contact with contaminants. Operations could result in wildlife injury or mortality; cause habitat fragmentation and create a barrier to movement; and cause habitat degradation and wildlife displacement.	Minimal	VM will implement an SPCC plan to minimize potential spill impacts.
Fish and Other Aquatic Species	Construction and culvert placement could cause sedimentation and turbidity, affecting juvenile fish and altering diet and behavioral responses; impede fish movements and harm fish; result in spills affecting water quality and fish habitat; result in removal or alteration of instream and riparian habitats. During operations, culverts could impede fish movement.	Minimal	VMs: See surface waters and vegetation. MMs: See wetlands; additional MM will ensure appropriate culvert sizing and placement.
Special-Status Species	A small area of red-cockaded woodpecker foraging habitat is within 140 feet of the right-of-way and may be affected by construction and operations. Atlantic sturgeon and shortnose sturgeon have been documented in or near the Diversion Canal and may be affected by construction and operations.	Not likely to adversely affect	VMs will minimize over-water footprint, comply with the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act, implement a construction plan incorporating wildlife measures and staff training; and implement vessel operation BMPs.

Resource	Impacts of Preferred Alternative	Level of Impact	Mitigation
Noise and Vibration	Noise: Construction noise would exceed the FTA threshold at one sensitive receptor (91 dBA; threshold is 90 dBA). The same receptor could be affected by wayside noise (horn) during operations.	One sensitive receptor within the 65 DNL noise curve	VMs will require use of noise-dampening rail materials; support community-initiated establishment of Quiet Zones.
	Vibration: Construction vibration levels would be below the FTA fragile building damage threshold of 0.20 inch per second. Operations vibration levels would not affect receptors within the noise contour for FTA's infrequent event criterion.	Minimal	NA
Cultural and Historical Resources	Archaeological resources: None in the study area	NA	MM will require a stop work order and further coordination should artifacts or remains be discovered during construction.
	Historical resources: Diversion Canal's association with the Santee Cooper Hydroelectric Project and its eligibility for listing would not be affected. Bulltown Ditch's association with the Santee Canal and its significance would be maintained through engineering measures to protect the canal's structural integrity. Neither resource would be affected by operations. Garrett Cemetery's setting could be affected by construction and operation but construction would not affect grave markers.	No adverse effect	VM will maintain a 50-foot buffer around Garrett Cemetery.
Land Resources	Land use, utilities, and recreation: construction could temporarily disrupt access o facilities; the small number of passbys would not affect ongoing use of resources.	Minimal	NA
	Section 6(f) and Section 4(f): Lake Moultrie Passage route would change during construction. Diversion Canal and Bulltown Ditch would not be affected. Operations would change the setting of Garrett Cemetery. No 6(f) resources.	No adverse effect	VM will maintain a 50-foot buffer around Garrett Cemetery. MM will maintain access to Lake Moultrie Passage trail during construction.
Visual Resources and Aesthetics	Visual character and quality: Both construction and operations impacts would be consistent with timber and maintenance activities. Views would be limited in most locations except for a few residences closer to the alignment.	Minimal	NA
	Light and glare: No nighttime lighting; new bridge surface would not create a new source of glare but could reduce glare from the water.	Minimal	NA
Hazardous Waste Sites	The Cross Generating Station located in the study area would not affect construction or operation of the proposed rail line. Operations of the rail line could cause the release of hazardous substances but best management practices and regulatory compliance would minimize impacts.	Minimal	NA

Resource	Impacts of Preferred Alternative	Level of Impact	Mitigation
Air Quality and Climate Change	Proposed rail line would be constructed in an attainment area and emissions would not cause the area to exceed NAAQS. Operations would result in lower GHG emissions than the no-action alternative.	Minimal and beneficial	VMs will implement construction BMPs, a dust mitigation program, require proper equipment maintenance, ensure compliance with state regulations, and require operation of equipment in compliance with permits.
Energy	Construction would require minimal and temporary consumption of fuel. Operations would consume about 78,000 gallons of fuel annually, or less than 1% of distillate fuel consumption for the state. This would be less than the 203,718 gallons of fuel consumed under the no-action alternative.	Minimal and beneficial	NA
Geology and Soils	Construction could affect soils, causing small, local, and temporary increases in erosion and sedimentation. New impervious surfaces could increase runoff.	Minimal	VM will implement soil stabilization and revegetation measures.
Socioeconomics	Construction would require acquisition of land, most zoned for agricultural use. Landowners would be compensated. Construction would provide temporary employment benefits; operations would improve capacity at Camp Hall Commerce Park. Operations would not affect community cohesion.	Minimal and beneficial	VMs will develop a public, agency, and stakeholder coordination plan; find financial assistance for a broadband infrastructure; and provide financial assistance for improvements to community facilities.
Environmental Justice	Although all five of the census tracts are considered low-income populations and one has a minority population of 67%, project impacts would not meet the criteria for a high and adverse environmental justice impact.	No impact	NA
VM = voluntary mitigation measure; BMP = best management practice; SDHEC = South Carolina Department of Health and Environmental Control; SWPPP = stormwater pollution prevention plan; NPDES = National Pollutant Discharge Elimination System; SPCC = spill prevention, control, and countermeasure plan; MM = preliminary recommended mitigation measure; FTA = Federal Transit Administration; dBA = A-weighted decibel; DNL = day-night sound level; NAAQS = National Ambient Air Quality Standards; GHG = greenhouse gas			

Cumulative Impacts

The majority of impacts on resources were assessed qualitatively and determined to be minimal. The project area was reviewed to determine if there were other relevant projects in the past, present, or reasonably foreseeable future that could be combined with these minimal impacts to result in cumulative impacts. Noise and wetlands were assessed both quantitatively and qualitatively. After examining various data for noise, population growth projections, past permitting actions, and Berkeley County development trends, the joint lead agencies determined that the proposed rail line would not cause major impacts on resources that would be expected to combine with major impacts from other relevant past, present, and reasonably foreseeable projects to create significant cumulative effects.

Furthermore, construction and wayside noise impacts on one sensitive receptor would be mitigated by the Applicant's use of noise-dampening rail materials. The Applicant would also work with FRA and communities that wished to establish Quiet Zones around at-grade crossings. Mitigation is proposed in the form of wetland mitigation bank credits and the establishment of a permittee-responsible mitigation site (Fairlawn-C-1) to compensate for the loss of wetland resources.

Mitigation

As noted in the summary of impacts, impacts on all resources would be minimal with two exceptions: wetlands and noise. The impacts on these two resources were measured both quantitatively and qualitatively. Mitigation is proposed in the form of purchasing wetland mitigation bank credits and establishing a permittee-responsible mitigation site (Fairlawn-C-1) to compensate for the loss of wetlands. The Applicant's voluntary mitigation measures of using noise-dampening materials for the rail line and supporting community Quiet Zone initiatives, should they be implemented, would mitigate noise impacts on the single residence within the 65 day-night sound level (DNL) noise curve.

The Applicant has proposed voluntary measures incorporating best management practices, regulatory compliance, and design features to further reduce minimal impacts on other resources. OEA has also proposed preliminary recommended mitigation measures to address these impacts.

Conclusion and Request for Comments

Based on the information provided from all sources to date and the analysis presented in this Draft EA, the joint lead agencies anticipate that the proposed action, which includes the Applicant's voluntary mitigation and OEA's recommended mitigation, would have no significant impacts. Therefore, the preparation of an EA for this case is appropriate and there is no need to prepare an environmental impact statement.

OEA and the Corps invite comments on all aspects of this Draft EA and will consider all timely comments received. All comments on this Draft EA must be submitted within the published comment period, which will close 30 days after the Notice of Availability of the Draft EA is published in the *Federal Register*. When submitting comments on this Draft EA, the joint lead agencies encourage commenters to be as specific as possible and substantiate concerns and recommendations.

Written comments on this Draft EA may be mailed to the following contact and address.

Diana Wood
STB-Environmental Filing Docket No. FD 36095
c/o ICF
9300 Lee Highway
Fairfax, VA 22031

Alternatively, comments on this Draft EA may also be submitted electronically on the joint lead agencies' project website (www.CampHallRailNEPA.com) or emailed to CampHallRailLineNEPA@icf.com. Please refer to Docket No. FD 36095 in all correspondence addressed to the joint lead agencies.

The Draft EA is available for viewing and downloading on the Board's website (www.stb.gov; follow the links for Decisions and FD 36095) and on the joint lead agencies' project website (www.CampHallRailNEPA.com). The Draft EA is also available at Berkeley County public libraries.

Date made available to the public: **November 30, 2018.**

Comment due date: **December 30, 2018.**

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Chapter 1

Introduction

On August 3, 2017, Palmetto Railways (Applicant) filed an exemption petition with the Surface Transportation Board (Board) under 49 United States Code (U.S.C.) Section 10502 to construct and operate a 22.7-mile¹ rail line between the Cross Subdivision of CSX Transportation, Inc. (CSXT) rail network near the Santee Cooper Cross Generating Station (Cross Generating Station) and the Camp Hall Commerce Park in Berkeley County, South Carolina. The Applicant has stated that the Camp Hall Commerce Park comprises approximately 6,781 acres, of which 2,880 acres have been permitted for development of the Volvo Cars of North America (Volvo Cars) facility in Berkeley County. An additional 1,387 acres of the Camp Hall Commerce Park have been permitted for industrial development by the South Carolina Public Service Authority (Santee Cooper). The Applicant has stated that the need for the proposed rail line derives from development in the Camp Hall Commerce Park, which has increased the demand for rail service to connect the park with an existing Class I rail network in a manner that is logistically feasible to better serve the need of the future tenants and industry in the Camp Hall Commerce Park for transportation, distribution, and logistics. The proposed rail line will also help alleviate highway congestion involving large commercial trucks. The Applicant estimates its projected train traffic at five round trips (10 train passbys) per week.

The Applicant prepared an *Environmental Report* (Appendix B, *Environmental Report*) analyzing six potential alternative routes to determine its preferred alternative.² As described in Chapter 2, *Purpose and Need, Proposed Action, and Alternatives*, the Applicant evaluated each alternative according to two sets of criteria: whether an alternative would meet the purpose and need of the project and would be practicable; and the potential environmental impacts of each alternative. After applying the criteria, receiving public comments, including comments received on a project website established by the Applicant and at public meetings organized by the Applicant, and refining the original alternatives, the Applicant identified its preferred alternative.

Although the Board normally requires an environmental impact statement (EIS) for rail line construction projects (49 Code of Federal Regulations [C.F.R.] § 1105.6(b)), it is permitted to reclassify a proposal to one requiring an environmental assessment (EA) if the proposal is not likely to have a significant impact on the environment (49 C.F.R. § 1105.6(d)).³ As discussed in Section 1.4.2, *Determination to Prepare and Environmental Assessment*, the Board and the U.S. Army Corps of Engineers (Corps) (together, the joint lead agencies), determined that, based on available information provided by the Applicant, construction and operation of the Applicant's preferred alternative would not likely result in significant impacts. Furthermore, the Applicant has proposed mitigation to ensure that the potential adverse impacts on resources are adequately avoided, minimized, or replaced.

¹ The Applicant originally calculated the mileage of Cross Option 3 to be 22.5 miles, as reported in the *Environmental Report* (Appendix B). The Applicant subsequently amended it to 22.7 miles and then 26.1 miles. The most recent mileage calculation of 28.01 miles includes both spurs in Camp Hall Commerce Park. The analysis in this EA is based on the 28.01-mile alignment.

² The Applicant named the six potential routes as follows: Soter South, Soter North, Moncks Corner, Cross, Eutawville/Holly Hill, and Ridgeville.

³ The Corps typically prepares an environmental assessment (rather than an environmental impact statement) for proposed projects with pending U.S. Department of the Army (DA) permit applications.

Therefore, the joint lead agencies concluded that the preparation of an EA is the appropriate level of environmental documentation for the NEPA process (Appendix A, *Applicant Correspondence with Agencies*, Surface Transportation Board response to waiver request).

This chapter describes the roles of the joint lead agencies, cooperating agencies, and other selected federal agencies, as well as outreach conducted in the preparation of this Draft EA. A Final EA will be prepared to address comments on this Draft EA, as discussed further in Section 1.1, *Joint Lead Agencies for the NEPA Process*.

1.1 Joint Lead Agencies for the NEPA Process

The Board is the agency responsible for granting the authority to construct and operate proposed rail lines and associated facilities (49 U.S.C. §§ 10901 and 10502). The Corps, under Section 404 of the Clean Water Act of 1977 (33 U.S.C. § 1251), has jurisdiction over the discharge of dredge or fill material into waters of the United States. Activities that affect these systems require a U.S. Department of the Army (DA) permit from the Corps. Construction of the proposed rail line would affect waters of the United States; therefore, the Applicant would have to obtain a DA permit prior to commencing project construction.

Accordingly, the Board, through its Office of Environmental Analysis (OEA), and the Corps have agreed to be joint lead federal agencies responsible under the National Environmental Policy Act (NEPA) and Council on Environmental Quality (CEQ) regulations (40 C.F.R. § 1501.5(b)) for preparing this Draft EA to identify and evaluate potential environmental impacts associated with the proposed action and alternatives. The proposed action is for authority to construct and operate a rail line from the Camp Hall Commerce Park to an existing Class I railroad.⁴

The U.S. Department of Transportation's Federal Railroad Administration (FRA) and the U.S. Coast Guard (Coast Guard) are cooperating agencies in the preparation of this Draft EA pursuant to CEQ NEPA implementing regulations (40 C.F.R. § 1501.6). CEQ regulations emphasize agency cooperation early in the NEPA process and allow a lead agency (in this case, the Board and the Corps as joint lead agencies) to request the assistance of the other agencies with jurisdiction by law or special expertise in matters relevant to preparing the EA.

OEA and the Corps, with the cooperating agencies, prepared this Draft EA in accordance with NEPA, CEQ regulations (40 C.F.R. Parts 1500–1508), the Board's environmental regulations (49 C.F.R. Part 1105), and the Corps' NEPA-implementing regulations (33 C.F.R. Part 230) to provide the Board and the Corps; the cooperating agencies; other federal, state, and local agencies; tribes; and the public with information on the potential environmental impacts of the proposed action and reasonable and feasible alternatives, including the no-action alternative.

This Draft EA conforms to FRA NEPA guidance at 64 *Federal Register* (FR) 28545 (May 26, 1999) and Coast Guard COMDTINST M16475.1D—*NEPA-Implementing Procedures and Policy for Considering Environmental Impacts*.

⁴ The Board defines a Class I railroad as "having annual carrier operating revenues of \$250 million or more in 1991 dollars." CSXT and Norfolk Southern are Class I freight railroads that operate near the Camp Hall Commerce Park.

The Board will consider the entire environmental record, including the Draft EA and the Final EA, all public and agency comments, and OEA's environmental recommendations, in making its final decision on whether to authorize the construction and operation of the proposed rail line. The Corps will use the same record in making its final decision on the DA permit application. The EA will provide the cooperating agencies that could issue individual decisions concerning the proposed action with the information they will need for their own decision-making purposes.

1.2 Cooperating Agencies

1.2.1 Federal Railroad Administration

FRA administers federal rail line assistance programs and consolidates government support of rail transportation activities. FRA also has primary responsibility for developing and enforcing rail line safety regulations and would enforce the regulations that apply to the Applicant's proposed rail line. FRA anticipates that the Applicant might apply for a grant to help fund the proposed rail line; therefore, it has become a cooperating agency. The Section 4(f) process (23 C.F.R. Part 774)⁵ under the U.S. Department of Transportation Act of 1966 (49 U.S.C. § 1653[f], later recodified as 49 U.S.C. § 303) has been undertaken and applied in the environmental analysis for this EA because of this potential grant request and the involvement of FRA as a cooperating agency.⁶ Based on the provisions of Section 4(f), FRA would not be permitted to provide funding for any Board-authorized alternative affecting the use of a Section 4(f) property unless the impacts would be *de minimis* or no prudent and feasible alternatives would avoid Section 4(f) properties. FRA intends to use the Draft and Final EAs to fulfill its NEPA responsibilities related to this project and anticipates issuing a separate Finding of No Significant Impact (FONSI).

1.2.2 U.S. Coast Guard

The Coast Guard, under Section 9 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 401), the General Bridge Act of 1946, as amended (33 U.S.C. § 525), and the U.S. Department of Transportation Act of 1966 (49 U.S.C. §§ 1651–1659), has authority for approval of bridges over navigable waters of the United States. The Coast Guard is responsible for assessing the potential navigational and environmental impacts of constructing, maintaining, and operating any proposed bridge that would be associated with the proposed rail line. This assessment would be a component of the Coast Guard review of whether to issue a bridge permit under Section 9 of the Rivers and Harbors Act. The Coast Guard intends to use the Draft and Final EAs to fulfill its NEPA responsibilities associated with deciding whether to grant a bridge permit related to the proposed rail line.

⁵ While FRA follows 49 U.S.C. § 303, it uses this Federal Highway Administration regulation as guidance.

⁶ Section 4(f) does not apply to the Board or the Corps.

1.3 Other Federal Agencies

1.3.1 U.S. Environmental Protection Agency

The U.S. Environmental Protection Agency (USEPA) has broad oversight and implementing responsibility for the following federal environmental laws.

- Clean Air Act
- Clean Water Act
- Comprehensive Environmental Response, Compensation, and Liability Act
- Toxic Substances Control Act
- Resource Conservation and Recovery Act

USEPA also provides guidance on compliance with certain executive orders (EOs), including *Federal Actions To Address Environmental Justice in Minority Populations and Low- Income Populations*, EO 12898, 59 FR 7629 (February 16, 1994); *Protection of Wetlands*, EO 11990, 42 FR 26961 (May 25, 1977); and *Floodplain Management*, EO 11988, 42 FR 26951 (May 25, 1977).

1.3.2 Advisory Council on Historic Preservation

The Advisory Council on Historic Preservation is an independent federal agency created under the authority of the National Historic Preservation Act (16 U.S.C. § 470), which requires federal agencies to consider the effects of their actions on historic and cultural resources. The council is responsible for advocating consideration of historic values in agency decision-making, issuing regulations to implement Section 106 of the National Historic Preservation Act (Section 106), and reviewing federal programs and policies to further historic preservation. The council is also responsible for ensuring that projects comply with other requirements concerning historic and cultural resources. These include the Archaeological Resource Protection Act (16 U.S.C. § 470), the Native American Graves Protection and Repatriation Act (25 U.S.C. § 3001), the American Indian Religious Freedom Act (42 U.S.C. § 1996), and EOs requiring consultation with Native American tribes.

Under the National Historic Preservation Act, the joint lead agencies have consulted and will continue to consult with the State Historic Preservation Officer (SHPO) at the South Carolina Department of Archives and History. In this case, the Board and FRA have designated the Corps as the lead agency for Section 106 consultation.

1.3.3 U.S. Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) is the federal agency with primary expertise in fish, wildlife, and natural resources issues. USFWS is responsible for implementation of the Endangered Species Act (16 U.S.C. § 1531) and, through its field offices, for consulting with other federal agencies on potential impacts on threatened and endangered species. It is also responsible for implementation of the Migratory Bird Treaty Act (16 U.S.C. §§ 703–712) and the Bald and Golden Eagle Protection Act (16 U.S.C. §§ 668–668d).

Under Section 7 of the Endangered Species Act, federal agencies must consult with USFWS when any action the agency carries out, funds, or authorizes (such as through a permit) *may affect* a listed endangered or threatened species. As joint lead agencies, the Board and the Corps initiated informal

Section 7 consultation with USFWS because it was determined that the proposed action *may affect, but was not likely to adversely affect* a listed endangered or threatened species. As part of that process, the joint lead agencies consulted with USFWS during the development of the EA, and USFWS concurred with the joint lead agencies' determination (Appendix B, *Agency Consultation Correspondence*). The joint lead agencies are providing USFWS with the Draft EA for review and comment and will consider USFWS comments in the Final EA.

1.3.4 National Marine Fisheries Service

Under Section 7(a)(2) of the Endangered Species Act, federal agencies must consult with the National Marine Fisheries Service (NMFS) on activities that may affect a listed species. These interagency, or Section 7, consultations are designed to assist federal agencies in fulfilling their duty to ensure any action they authorize, fund, or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat. The joint lead agencies are responsible for initiating Section 7 consultation with NMFS, and did initiate consultation on April 23, 2018. OEA consulted with NMFS during the preparation of this Draft EA on behalf of the joint lead agencies.

The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801) requires that federal agencies consult with NMFS on federal actions that could adversely affect Essential Fish Habitat (50 C.F.R. §§ 600.905–930). The Magnuson-Stevens Fishery Conservation and Management Act requires coordination between the joint lead agencies and NMFS to protect, conserve, and enhance Essential Fish Habitat. The joint lead agencies coordinated with NMFS, and NMFS agrees that there is no Essential Fish Habitat in the project area (Appendix B, *Agency Consultation Correspondence*).

1.4 Consultation and Outreach

1.4.1 Initial Consultation with Agencies and Tribes

In August 2017, OEA, working with the Corps and Coast Guard, began consultation with approximately 55 Native American tribes and federal, state, and local agencies. OEA sent each entity a letter that described the project area and requested information on environmental resources that could be affected by the proposed rail line, as well as what approvals and permits might be required. Commenters indicated that construction of the proposed rail line had the potential to affect federally listed threatened and endangered species and state-listed species of concern, prime agricultural farmland, wetlands, floodplains, water quality, and cultural resources (Appendix B, *Agency Consultation and Correspondence*).

The letter included a questionnaire asking for responses about the level of involvement the tribe or agency desired. Two tribes, the Catawba Indian Nation and the Muscogee (Creek) Nation, requested involvement in government-to-government consultation. Accordingly, during preparation of this Draft EA, the joint lead agencies coordinated with the Catawba Indian Nation and Muscogee (Creek) Nation and provided them with archeological and historic properties information developed for the proposed rail line. As documented in Appendix B, the Muscogee (Creek) Nation indicated their concurrence with the cultural resource information provided to them and stated that they had no objection to the project. The Catawba Indian Nation indicated that they had no immediate concerns with regard to traditional cultural properties, sacred sites, or Native American archaeological sites within the boundaries of the

proposed project area but requested that they be notified if Native American artifacts and/or human remains are located during the ground disturbance phase of this project.

On March 7, 2018, the Corps hosted an interagency meeting in Charleston, South Carolina, to allow the Applicant to present an overview of the proposed rail line to a number of federal and state agencies. OEA, the Coast Guard, and the joint lead agencies' third-party independent consultant for this project, ICF, also participated in the meeting. Agencies were able to become familiar with the project, ask questions, and explain their review processes.

1.4.2 Determination to Prepare an Environmental Assessment

After reviewing the *Environmental Report* (Appendix B, *Environmental Report*) covering the Applicant's six potential alternative routes and responses to the initial consultation letters, OEA, the Corps, the Coast Guard, and ICF conducted a site visit to the project area on October 24, 2017. The Applicant also attended the site visit. The site visit participants were able to observe area geomorphology, topography, vegetation, wildlife, water resources, traffic, and land use in the project area. The joint lead agencies did not identify any potential significant issues during this visit.

Following the site visit, the joint lead agencies used the available information to screen the alternatives identified to this point, as described in Chapter 2, *Purpose and Need, Proposed Action, and Alternatives*. As a result, the joint lead agencies do not believe that construction and operation of the Applicant's preferred alternative would result in significant environmental impacts. Additionally, the Applicant has proposed mitigation to ensure that the potential adverse impacts on resources are adequately avoided, minimized, and/or replaced (Appendix A, *Applicant Correspondence with Agencies*, Surface Transportation Board response to waiver request). Specifically, based on the *Environmental Report* and the information sources noted previously, the joint lead agencies identified potential impacts of the Applicant's preferred alternative on the following resources:

- **Traffic delay.** Based on traffic estimates at road crossings and expected train frequency, traffic delays would be few and would last less than 5 minutes.
- **Safety.** To minimize potential safety risks, the Applicant would implement active and passive warning and control devices at rail crossings and would implement public awareness and safety programs.
- **Noise and vibration.** Six of 85 noise-sensitive receptors would have moderate noise impacts, based on the Applicant's application of a Federal Transit Administration assessment method, due to locomotive horn sounding during railroad operation at public at-grade road/rail crossings. No vibration impacts were identified.
- **Water resources.** Unavoidable impacts would result from fill and clearing of wetlands, as well as culvert, piping, and shade impacts. The proposed line would cross 100-year floodplains as well as the navigable Diversion Canal and several tributaries and ditches. Water resource impacts would be minimized with engineering design and construction best management practices as well as compensatory mitigation.
- **Air quality.** There would be a minimal incremental impact on air quality, and ambient air quality would remain within allowable concentrations.
- **Land use.** The preferred alignment has the support of local or regional planning agencies and is consistent with land use plans.

- **Cultural resources.** No archaeological sites and three architectural historic properties are present within the study area. The joint lead agencies found that there would be no adverse effect on the three architectural historic properties (Appendix G, *Cultural Finding of Effect*). Should unexpected archaeological resources be discovered during construction, the Applicant would issue a stop work order and the joint lead agencies would pursue additional consultation with the SHPO to assess effects and resolve any adverse effects. The SHPO has concurred with these findings (Appendix C, *Interagency and Tribal Correspondence*).
- **Biological resources.** USFWS requested consultation regarding special-status species that may occur in the project vicinity, as documented in this Draft EA (Appendix E, *Biological Resources*).

Given these determinations, OEA concluded that preparation of an EIS would be waived and concluded that an EA is the appropriate level of environmental documentation. The Corps concurred with this conclusion. The joint lead agencies further agreed that, should significant impacts be identified during the preparation of the EA, an EIS would be prepared. On February 20, 2018, OEA issued an EIS waiver to the Applicant (Appendix A, *Applicant Correspondence with Agencies*).

Following the issuance of the EIS waiver letter, Norfolk Southern Railway submitted a letter dated February 26, 2018, indicating that it had been involved early on in the development of the Ridgeville Alternative, an approximately 4.1-mile connection from the Norfolk Southern line to the Camp Hall Commerce Park (Appendix A, *Applicant Correspondence with Agencies*, Norfolk Southern's response to Information Request #1). While Norfolk Southern does not object to the Applicant's selection of a different preferred alternative (Cross Option 3), it provided clarification on certain statements the Applicant made regarding Norfolk Southern operations. As explained in Chapter 2, *Purpose and Need, Proposed Action, and Alternatives*, the Applicant undertook a screening process based on, among other things, its purpose and need statement as well as engineering, construction, and environmental costs in determining that Cross Option 3 is its preferred alternative. The joint lead agencies verified the Applicant's screening process and eliminated the Ridgeville Alternative from further consideration in the first level screening process. The Applicant provided further clarification on its interpretation of Norfolk Southern's response in a letter dated September 26, 2018 (Appendix A).

1.4.3 Public Comments on the DA Permit Application

On April 4, 2018, the Corps issued a Public Notice in response to the Applicant's DA permit application to discharge fill material into waters of the United States and wetlands associated with Bulltown Ditch, the Diversion Canal (between Lake Marion and Lake Moultrie), and tributaries to Caton Creek and Black Creek for the purpose of constructing the proposed rail line (Appendix D, *Agency Notices and Comment Letters*). The Public Notice comment period ended May 4, 2018. The Corps received 10 utility, agency, tribal, and citizen comments pertaining to potential environmental impacts and benefits. The agency comments identified concerns about jurisdictional responsibilities for wetlands and endangered species. Two citizens identified concerns about impacts on their properties as well as safety. One citizen advocated for the project, as did Santee Cooper. The Catawba Indian Nation had no immediate concerns with regard to traditional cultural properties, sacred sites, or Native American archaeological sites but requested to be notified if Native American artifacts or remains were to be found during construction (Appendix D). The Applicant provided responses to the comments on the DA permit application (Appendix D). The Corps will consider the public comments on the Public Notice, the Applicant's responses, and comments on this Draft EA in making a permit decision following issuance of the Final EA.

1.4.4 Public Comments on the Coast Guard Notification

On July 27, 2018, the Coast Guard issued a Preliminary Public Notice to solicit comments on the Applicant's proposal to construct a fixed railroad bridge over the Santee Cooper Diversion Canal. The notice requested that mariners express their views on navigation access and safety issues, including the need for clearance gauges and extended nighttime navigation through the proposed bridge. The Coast Guard received three responses to the notice. One respondent asked about the location of the rail line and one respondent asked about the potential for the proposed rail line to cross local roads thus affecting emergency response. One respondent has not been available to indicate specific views. (Appendix D, *Agency Notices and Comment Letters*)

1.4.5 Outreach

The joint lead agencies developed and maintain a project website where information about the project is publicly available.⁷ Contents of the project website include relevant maps, agency and tribal correspondence, information requests from the joint lead agencies to the Applicant and the Applicant's responses, project updates, and an option to join the joint lead agencies' mailing list for the project. In addition, filings, decisions, and correspondence related to the project are posted on the Board's website.⁸ As part of its review of the DA permit application, the Corps mailed a letter to all adjacent landowners notifying them of the proposed project and published a Public Notice to its distribution list. The list comprises various federal, state, and local agencies, nonprofit organizations and groups, and any citizen specifically requesting to be notified of all Public Notices issued by the Charleston District Corps. This Public Notice included a description of the proposed project, the overall project purpose, the anticipated impacts on the aquatic environment, potential effects on resources protected under the Endangered Species Act, the National Historic Preservation Act, and the Magnuson-Stevens Fishery Conservation and Management Act (i.e., essential fish habitat). The Public Notice also solicited comments on the proposed work and provided information on how to submit comments (Appendix D, *Agency Notices and Comment Letters*).

As the project concept was being developed and prior to its applications to the joint lead agencies, the Applicant engaged with communities and organizations in the project area and agencies of jurisdiction and expertise, and developed and updated project information on its own project website.⁹ The Applicant also conducted two public meetings regarding the proposed rail line. The initial meeting was held at the Cross Community Center on April 5, 2016, in an open house format. Maps of the study area and schedule were available for review by the public. An online meeting, displaying the same information, was available from March 29 through April 19, 2016. The Applicant reports that there were 247 attendees at the in-person meeting and 288 attendees for the online meeting.

The second meeting was held at Cross High School on July 11, 2017, in an open house format to present updated project information, including rail alignment options that have been considered, as well as the Applicant's preferred alignment. Maps with the preferred route options and alternatives considered were available for review. Attendees were able to watch a 4-minute project video about the alternatives

⁷ www.CampHallRailNEPA.com

⁸ The Board's website is <https://www.stb.gov/stb/index.html>. Search for environmental correspondence at [https://www.stb.gov/Ect1/ecorrespondence.nsf/SearchInDocketNumber/\\$searchForm?SearchView](https://www.stb.gov/Ect1/ecorrespondence.nsf/SearchInDocketNumber/$searchForm?SearchView) using case number 36095.

⁹ <http://www.palmettorailwayscamphallrail.com>

process and environmental evaluation. The Applicant reports that there were 143 attendees at the in-person meeting and 227 online meeting attendees.

1.5 Request for Comments

This Draft EA examines existing social, economic, and environmental conditions and serves as the baseline for comparing the potential impacts that construction and operation of the proposed rail line and the no-action alternative would have on the area, consistent with NEPA and other relevant statutes and regulations. OEA has placed a Notice of Availability in the *Federal Register* and made this Draft EA available to the public for a 30-day comment period. Once the comment period has concluded, the joint lead agencies and cooperating agencies will prepare a Final EA discussing the comments received on the Draft EA and including any appropriate modifications to its existing analysis or additional analysis. The Final EA will also set forth OEA's final recommended mitigation measures. The Board will then consider both the Draft EA and Final EA, the public comments, the Applicant's voluntary mitigation measures, OEA's final environmental and mitigation recommendations, and the Corps' compensatory mitigation requirements before making its final decision in this proceeding.

The public and any interested parties are encouraged to submit written comments on all aspects of this Draft EA. The joint lead agencies will consider all such comments in preparing the Final EA. All comments on this Draft EA must be submitted within the published comment period, which will close 30 days after the Notice of Availability of the EA is published in the *Federal Register*. When submitting comments on this Draft EA, commenters are encouraged to be as specific as possible and substantiate concerns and recommendations.

Written comments on this Draft EA may be mailed to the following contact and address.

Diana Wood
STB-Environmental Filing Docket No. FD 36095
c/o ICF
9300 Lee Highway
Fairfax, VA 22031

Alternatively, comments on this Draft EA may also be submitted electronically on the joint lead agencies' project website (www.CampHallRailNEPA.com) or emailed to CampHallRailLineNEPA@icf.com. Please refer to Docket No. FD 36095 in all correspondence addressed to the joint lead agencies.

The Draft EA is available for viewing and downloading on the Board's website (www.stb.gov, search the decisions link) and on the joint lead agencies' project website (www.CampHallRailNEPA.com). The Draft EA is also available at the following Berkeley County public libraries.

Saint Stephen Library
113 Ravenell Drive
Saint Stephen, SC 29479

Sangaree Library
595 Sangaree Parkway
Summerville, SC 29483

Moncks Corner Library
1003 Highway 52
Moncks Corner, SC 29461

Goose Creek Library
325 Old Moncks Corner Road
Goose Creek, SC 29445

Hanahan Library
1216 Old Murray Court
Hanahan, SC 29406

Daniel Island Library
2301 Daniel Island Drive
Daniel Island, SC 29492

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Chapter 2

Purpose and Need, Proposed Action, and Alternatives

This chapter describes the purpose and need for the construction and operation of a new rail line, the action proposed by the Applicant, the alternatives screening process, and the alternatives being considered in this Draft EA, including the no-action alternative.

2.1 Purpose and Need

Under the Council on Environmental Quality (CEQ) regulations implementing NEPA (40 C.F.R. § 1508.9(b)), an agency's environmental analysis must include a brief discussion of the proposed project's purpose and need. The Applicant has stated that the purpose of the proposed project is to locate, build, own, and operate an industrial rail line that will connect an existing Class I rail line with the Camp Hall Commerce Park. The Applicant has further stated that the need for the proposed rail line derives from development in the Camp Hall Commerce Park, which has increased the demand for rail service to connect the park with an existing Class I rail network, in a manner that is logistically feasible, to better serve the needs of future park tenants and industry for transportation, distribution, and logistics.

The Camp Hall Commerce Park comprises 6,781 acres, of which 2,880 acres have been permitted¹ for development of the first North American factory for Volvo Cars. An additional 1,387 acres are being permitted for industrial development by Santee Cooper.² The proposed rail line would bring industrial rail service to these developments, enhancing distribution and logistics for the new Volvo Cars factory and future tenants. In addition, although not part of the Applicant's purpose and need for the project, the proposed rail line would support infrastructure needs in South Carolina and Berkeley County and would help alleviate highway congestion caused by large commercial trucks.

The joint lead agencies note that the analysis of purpose and need depends on the type of federal action involved in the particular project. Here, the proposed action for OEA is the request for authority for the proposed rail line and the Corps' proposed action is the request for a U.S. Department of the Army (DA) permit for the discharge of fill material into waters of the United States. The proposed action is not a federal government-sponsored project and, therefore, the project's purpose and need should be defined by the applicant's goals, in conjunction with the lead agencies' enabling statutes. The federal action for this Draft EA is the construction and operation of the proposed Camp Hall rail line.

2.2 Alternatives Analysis

The NEPA implementing regulations (40 C.F.R. Parts 1500–1508) require that agencies critically evaluate alternatives to a proposed action, including a no-action alternative. The Applicant's *Environmental Report* (Appendix B, *Environmental Report*) details its work on developing and analyzing

¹ Project Soter—SAC-2015-0476-SIR.

² SAC-2015-01764. Santee Cooper is the South Carolina Public Service Authority.

alternatives that could meet the purpose and need for the project. The joint lead agencies independently reviewed the Applicant's information, developed and applied independent screening criteria to each of the Applicant's alternatives, and identified a build alternative to carry forward for analysis, in addition to the no-action alternative.

2.2.1 Applicant's Screening Process

The Applicant's process for developing and evaluating alternatives is described in its *Environmental Report* (Appendix B) and summarized here. The Applicant developed six alternatives that could potentially meet the purpose and need for the proposed rail line. These alternatives were subjected to screening criteria, revised, and re-evaluated according to refined criteria. As part of this process, the Applicant analyzed alternatives at Level 1, Level 2, and Level 3 stages, ultimately identifying and refining a preferred alternative.

2.2.1.1 Level 1

The Applicant's Level 1 screening process focused on meeting the following criteria.

- Rail service to and from the Camp Hall Commerce Park with direct connections to a Class I rail freight main line that would access the rail network serving other states and the Port of Charleston.
- Sufficient access and capacity to meet requirements of the Volvo Cars development.
- Sufficient access and capacity to meet future growth in the Camp Hall Commerce Park without constraining access to the park or requiring grade separation.
- Likely engineering and construction costs.
- Evaluation of potential environmental impacts and associated mitigation.

Based on the Level 1 screening process, the Applicant determined that the following alternatives would be feasible (Figure 2-1).

- **Soter South Route.** This 14.9-mile alignment would connect to the CSXT A-Line on U.S. Route 52 (US 52) between Moncks Corner and Goose Creek. The alignment would run west, cross U.S. Route 17 (US 17), then turn northwest and run parallel to Interstate 26 (I-26) to the border of Camp Hall Commerce Park. It would traverse Berkeley County. The alignment would generally follow the existing utility line right-of-way, passing through industrial, commercial, residential, and silvicultural lands.
- **Soter North Route.** The 16.7-mile alignment would connect to the CSXT A-Line on U.S. Route 52 (US 52) between Moncks Corner and Goose Creek. The alignment would run west to U.S. Route 176 (US 176), turn northwest, and run parallel to US 176. At Lebanon Road it would turn southwest and enter the northeastern corner of Camp Hall Commerce Park. It would traverse Berkeley County. The alignment would pass through industrial, commercial, residential, and silvicultural lands.
- **Moncks Corner Route.** This 17.1-mile alignment would connect to the CSXT A-Line near the Tailrace Canal, north of Moncks Corner. The alignment would run west toward Lake Moultrie, turn southwest below Pinopolis, then west to Camp Hall Commerce Park. It would traverse Berkeley County. The alignment would pass through residential and silvicultural lands.
- **Cross Route.** This 18.5-mile route would connect to the CSXT A-Line rail spur that services the Cross Generating Station. The alignment would run southwest from the station, crossing the Diversion Canal between Lake Marion and Lake Moultrie, through the unincorporated community of

Cross, then south into Camp Hill Commerce Park. It would traverse Berkeley County. The alignment would pass through commercial, residential, and silvicultural lands.

- **Eutawville/Holly Hill Route.** This 17.5-mile alignment would connect to a CSXT secondary service track south of Eutawville. The alignment would run southeast from Eutawville to Mudville Road, then south into Camp Hill Commerce Park. It would traverse Orangeburg County and Berkeley County. The alignment would pass through commercial, residential, agricultural, and silvicultural lands.
- **Ridgeville Route.** This 4.1-mile alignment (shown as the NS route in Figure 2-1) would connect to a Norfolk Southern freight line. The alignment would run through the Ridgeville Commerce Park, cross I-26 and U.S. Route 78 (US 78), then into Camp Hill Commerce Park from the southwest. This alignment would require a grade-separated bridge over Centerline Road in the commerce park, a bridge over Timothy Creek, and at-grade crossings of federal, state, and local routes. It would traverse Dorchester County and Berkeley County. The alignment would pass through commercial, residential, and silvicultural properties.

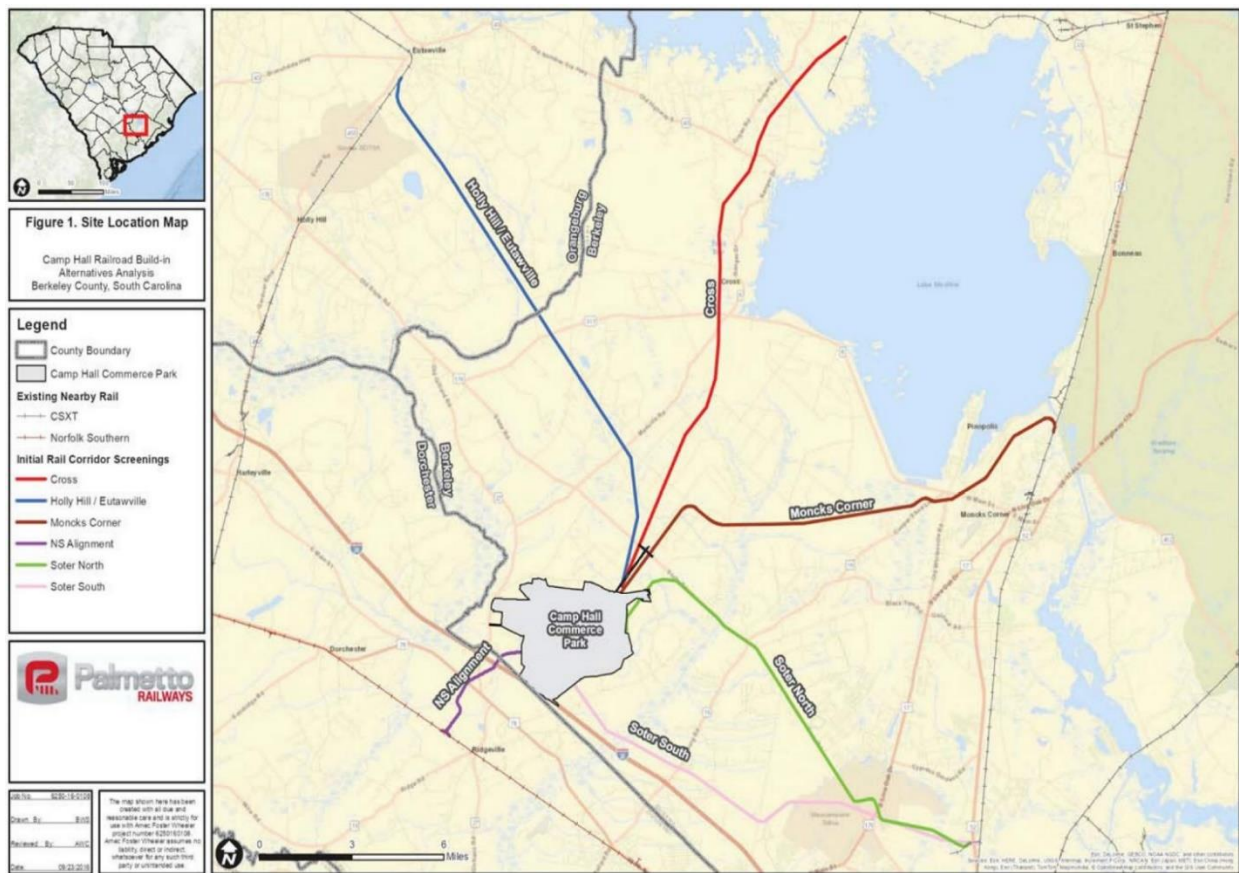


Figure 2-1. The Applicant's Level 1 Alternatives

The Applicant then reviewed these alternatives in the context of the requirements of the Clean Water Act Section 404(b)(1) guidelines³ and specifically considered the following issues:

- Ownership and operation of the proposed rail line.
- Access points at Camp Hall Commerce Park and at Volvo Cars.
- Connection between Volvo Cars and other support facilities with the on-site freight railyard.
- Estimated engineering and construction costs for each alternative.
- Potential property impacts along each alignment.

As a result of this practicability analysis and preliminary review of potential environmental impacts, the Applicant eliminated two alternatives.

The Applicant eliminated the **Ridgeville Route** from further consideration because the additional analysis it had conducted showed it would not meet the purpose and need for this project for the following reasons:

- The Applicant will develop, finance, construct, and operate the proposed rail line. However, the Applicant understood from initial negotiations that Norfolk Southern would require full or substantial operational control of this route.
- The Norfolk Southern main line is located to the west of I-26. The proposed route connection of Norfolk Southern's main line to the Camp Hall Commerce Park would require a grade-separated rail bridge crossing of I-26, as well as an at-grade crossing of US 78 north of Ridgeville. The crossings of I-26 and US 78 would increase engineering and construction requirements for the project. In addition, the Norfolk Southern main line serves as the primary northwest-to-southeast freight rail line in South Carolina and carries a significant daily traffic volume. The Applicant asserts that the incremental addition of rail traffic from this project to Norfolk Southern's main line would increase logistic and feasibility risks to providing adequate freight rail service to, from, and between the Camp Hall Commerce Park and the Port of Charleston.
- This alignment would require a crossing of Centerline Road to enter the southwestern side of the Camp Hall Commerce Park (the opposite side of Centerline Road from both phases of the Volvo Cars site). An at-grade crossing of Centerline Road could cause frequent and substantial disruption to the operational capabilities of Volvo Cars and other future industrial sites in the park, as Centerline Road serves as the primary vehicular access point on the northern and southern boundaries of the park and is the main thoroughfare within the park. Consequently, a grade-separated bridge over Centerline Road would be required to maintain consistent access and connectivity within the park. This bridge would alter the logistics of the site layout.
- A preliminary environmental review by the Applicant determined that this alignment would affect wetlands and streams, including a crossing of the headwaters of Timothy Creek and streams in the Four Hole Swamp watershed. It would also be located near or adjacent to an Important Bird Area for a number of priority neotropical migratory birds and a Ramsar Wetlands Site of International Importance.
- In response to the Corps' Public Notice on the DA permit application, one citizen (Citizen Williams) questioned why the proposed rail line could not be constructed from the closest rail access to the Camp Hall Commerce Park (which would be the Ridgeville Route). In response, the Applicant reiterated that ownership and operational control of the rail line is fundamental to the proposal, without which it could not justify the cost of the proposed rail line nor satisfy its statutory purpose

³ Pursuant to the Clean Water Act 404(b)(1) Guidelines, "[a]n 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" (40 C.F.R. § 230.10(a)(2)).

of providing a safe, efficient, and cost-effective rail solution to facilitate freight movement in South Carolina (Appendix D, *Agency Notices and Comment Letters*).

The Applicant eliminated the **Eutawville/Holly Hill Route** from further consideration because it would not meet the purpose and need for this project.

- This alignment would connect to a CSXT secondary service track and would not provide the Camp Hall Commerce Park with direct connectivity to the domestic rail network of a Class I rail line and, secondarily, the Port of Charleston. This route would require switching or a connection to multiple carriers or secondary freight lines, which could make it difficult to provide timely and efficient service. Therefore, the Applicant concluded that this route alternative would not be logistically feasible and thus did not meet the project's purpose and need to provide efficient access to customers in the Camp Hall Commerce Park by a single Class I freight carrier and, secondarily, to provide access to the Port of Charleston. (Appendix A, *Applicant Correspondence with Agencies, Information Request #1*).

2.2.1.2 Level 2

The Applicant carried forward four alternatives for further screening: Soter South, Soter North, Moncks Corner, and Cross Routes. In anticipation of the NEPA analysis, this Level 2 screening compared potential impacts of the four routes and the no-action alternative on land use, air quality, noise, geology and soils, prime farmland, surface waters, floodplains, water quality and resources, wetlands, endangered and threatened species, historical and architectural resources, low-income and minority communities,⁴ potential relocations, traffic and transportation, recreation and land stewardship, Section 6(f) resources, and hazardous materials (Appendix B, *Environmental Report*). The analysis showed that most environmental, economic, socioeconomic, and cultural resource impacts would be comparable for the four alternatives. For example, all alignments would require road crossings and transmission crossings. All alignments would affect wetlands. All alignments would cross prime farmland or farmland of state importance. Special-status species are documented in the rights-of-way for all alignments. All alignments except for Soter South Route would affect cultural resources in all rights-of-way. All alignments would affect private parcels. All alignments except for Cross Route would traverse urban areas.

Therefore, the Applicant focused on impacts on the key resources of wetlands, relocations, low-income and minority communities, and transportation, and subsequently eliminated three alternatives based on the results of this Level 2 screening.

Moncks Corner Route was eliminated for the following reasons.

- This alignment would have the highest percentage of wetlands within the right-of-way and would have the most floodplain crossings.
- This alignment would have the greatest potential to affect low-income and minority communities and would intersect the rapidly growing North Charleston urban area.

Soter North Route was eliminated for the following reasons.

- This alignment would cross the most developed land, affect the most parcels, and require the most relocations. This route would affect the most parcels, require the most road crossings, and require the most relocations, including 42 residential buildings, 13 commercial buildings, and 2 churches. It would also intersect the rapidly growing North Charleston urban area.

⁴ While the Applicant refers to environmental justice communities in its *Environmental Report*, the joint lead agencies distinguish between low-income and minority communities.

- This alignment would require the most road crossings. Road crossings and relocations would substantially increase the cost of this alignment alternative.
- This alignment would intersect the rapidly expanding North Charleston urbanized area.

Soter South Route was eliminated for the following reasons.

- This alignment would have the second highest percentage of wetlands within the right-of-way. It would cross the most acres of emergent wetlands by a substantial amount relative to other routes.
- This alignment would intersect the growing North Charleston urban area and would affect the 4,500-acre permitted Nexton development. It would also affect the second-most number of residences.

As a result of the Level 2 screening, the Applicant identified the Cross Route as the preferred alternative.

2.2.1.3 Level 3

During its Level 3 screening analysis, the Applicant refined the Cross Route by developing four alignment options. Although each is slightly longer than the Cross Route considered at Level 2, each alignment would further reduce environmental, economic, and socioeconomic impacts. All options would traverse Berkeley County and ultimately connect to the CSXT Cross Subdivision that services the Cross Generating Station. Figure 2-2 shows the four Cross Route alignment options. (This figure was also used by the joint lead agencies during preliminary consultation with the agencies and tribes; Appendix C, *Interagency and Tribal Correspondence*.) All options would reduce crossings of smaller parcels, potential relocations, and numerous Carolina bays⁵ relative to the original Cross Route.

The cross options would differ from the Cross Route as follows.

- **Cross Option 1.** This 20.5-mile alignment would be located further west at Short Cut Road.
- **Cross Option 2.** This 21.1-mile alignment would be further west at Short Cut Road and further east at Old Highway 6 and Ranger Road.
- **Cross Option 3.** This 22.5-mile⁶ alignment would run northwest from Camp Hall Commerce Center to avoid the Caton Creek Mitigation Bank,⁷ extend further west at Short Cut Road, and further east at Old Highway 6 and Ranger Road. The Applicant has identified this option as the preferred alternative; it is also referred to as the *proposed rail line*.
- **Cross Option 4.** This 22-mile alignment would curve northwest from Camp Hall Commerce Center to avoid the Caton Creek Mitigation Bank and extend further west at Short Cut Road.

As with the Level 2 screening, the Applicant compared the impacts of these four options and the no-action alternative on stream crossings, wetlands, farmland, low-income and minority communities, water quality, transmission crossings, and road crossings.

⁵ Carolina bays are coastal ponds or depressions that occur across the Atlantic seaboard.

⁶ The Applicant originally calculated the mileage of Cross Option 3 to be 22.5 miles, as reported in the *Environmental Report*. The Applicant subsequently amended it to 26.1 miles. The most recent mileage calculation of 28.01 miles includes both spurs in the Camp Hall Commerce Park. The environmental review undertaken for this Draft EA encompasses the 28.01-mile length.

⁷ The Caton Creek Mitigation Bank is a 479-acre stream and wetland mitigation bank in a channel of Caton Creek, Berkeley County, SC.

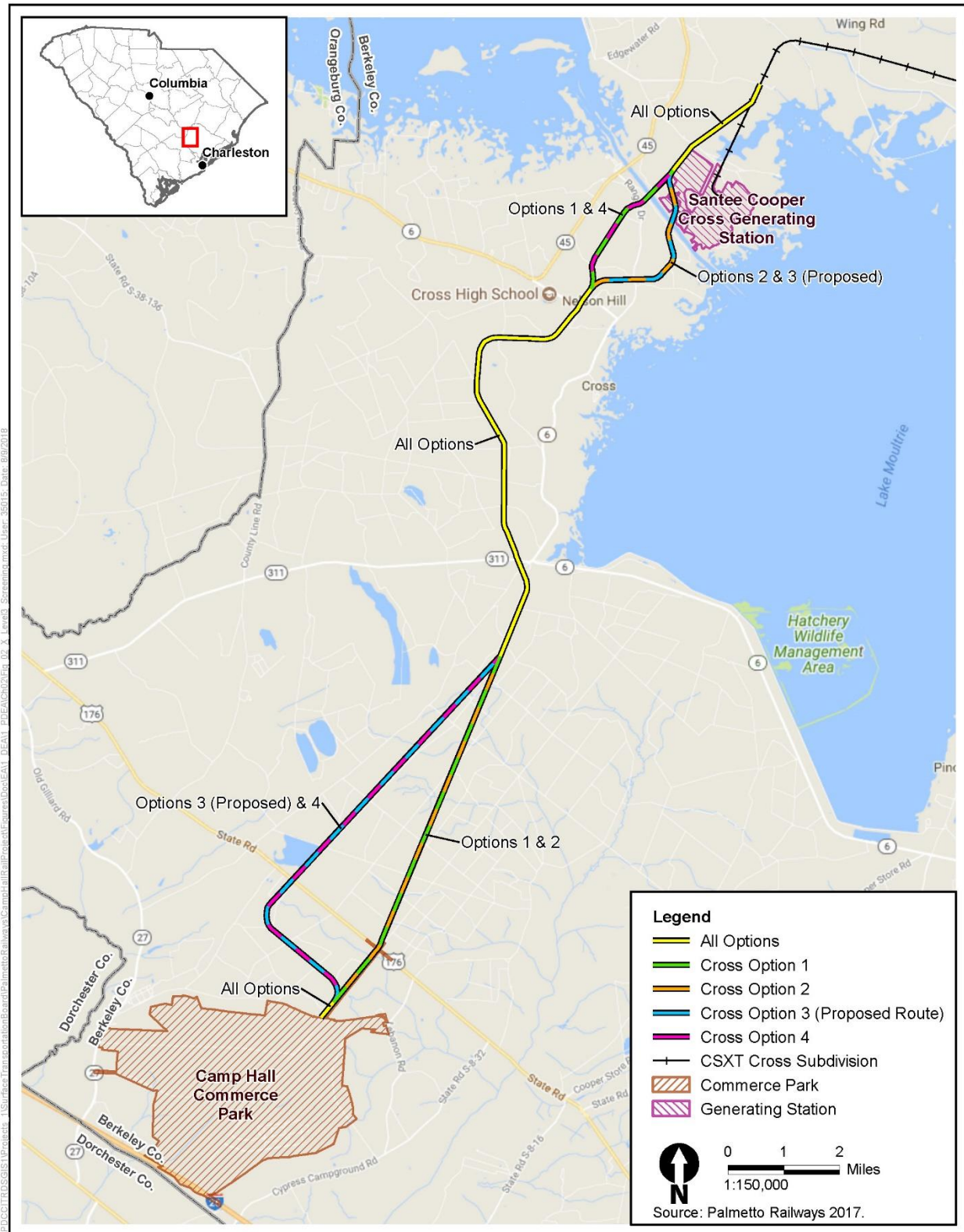


Figure 2-2. Cross Route Options

As shown in the *Environmental Report* (Appendix B), the Applicant focused on impacts on wetlands, properties in the right-of-way and associated relocations, known archaeological sites, and the Caton Creek Mitigation Bank to further refine the original Cross Route. Quantitative data on these impacts are shown in Table 2-1.

Table 2-1. Cross Option Impacts

Resource	Cross Option 1	Cross Option 2	Cross Option 3	Cross Option 4
NWI wetlands (%)	22.17%	25.91%	23.82%	20.37%
Parcels affected in right-of-way	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
Source: Appendix B, <i>Environmental Report</i> NWI = National Wetlands Inventory				

Although the analysis showed that the impacts on wetlands would be similar for all four options, the Applicant eliminated three options for the following reasons.

- **Cross Option 1** was eliminated because it would affect the most properties in the right-of-way and cause four relocations. It would also affect one known archaeological site and the Caton Creek Mitigation Bank.
- **Cross Option 2** was eliminated because it would affect the third-most properties in the right-of-way and cause one relocation relative to the other cross options. It would also affect one known archaeological site and the Caton Creek Mitigation Bank.
- **Cross Option 4** was eliminated because it would affect the second-most properties in the right-of-way and cause one relocation relative to the other cross options. It would not affect known archaeological sites or the Caton Creek Mitigation Bank.

As a result of the Level 3 screening, the Applicant identified **Cross Option 3** as its preferred alternative (proposed rail line). This option would affect the fewest properties in the right-of-way, would not require relocations, and would not affect known archaeological sites or the Caton Creek Mitigation Bank.

The Applicant further refined the Cross Option 3 alignment to reduce impacts on cultural resources; specifically, on the Bulltown Ditch and the Garrett Cemetery.

2.2.2 Joint Lead Agencies' Screening Process

The joint lead agencies implemented a two-phase screening process to independently evaluate the alternatives proposed and considered by the Applicant. This process incorporated information from the *Environmental Report* (Appendix B), additional information provided by the Applicant through four information requests (Appendix A, *Applicant Correspondence with Agencies*), and input from agencies during OEA's preliminary consultation process (Appendix C, *Interagency and Tribal Correspondence*). The joint lead agencies suggested modifications to two routes to ensure a comprehensive analysis of potential alternatives. The Applicant subsequently adjusted the Moncks Corner Route and Soter South Route (Appendix A, *Applicant Correspondence with Agencies*, Information Request #2) (Figure 2-3).⁸ These modified routes were carried forward, along with the Eutawville/Holly Hill, Ridgeville, Soter North, and Cross Route for screening by the joint lead agencies.

⁸ The Monck's Corner Route was adjusted to avoid crossing the proposed Caton Creek stream and wetland mitigation bank. The Soter South Route was adjusted to reduce potential impacts.

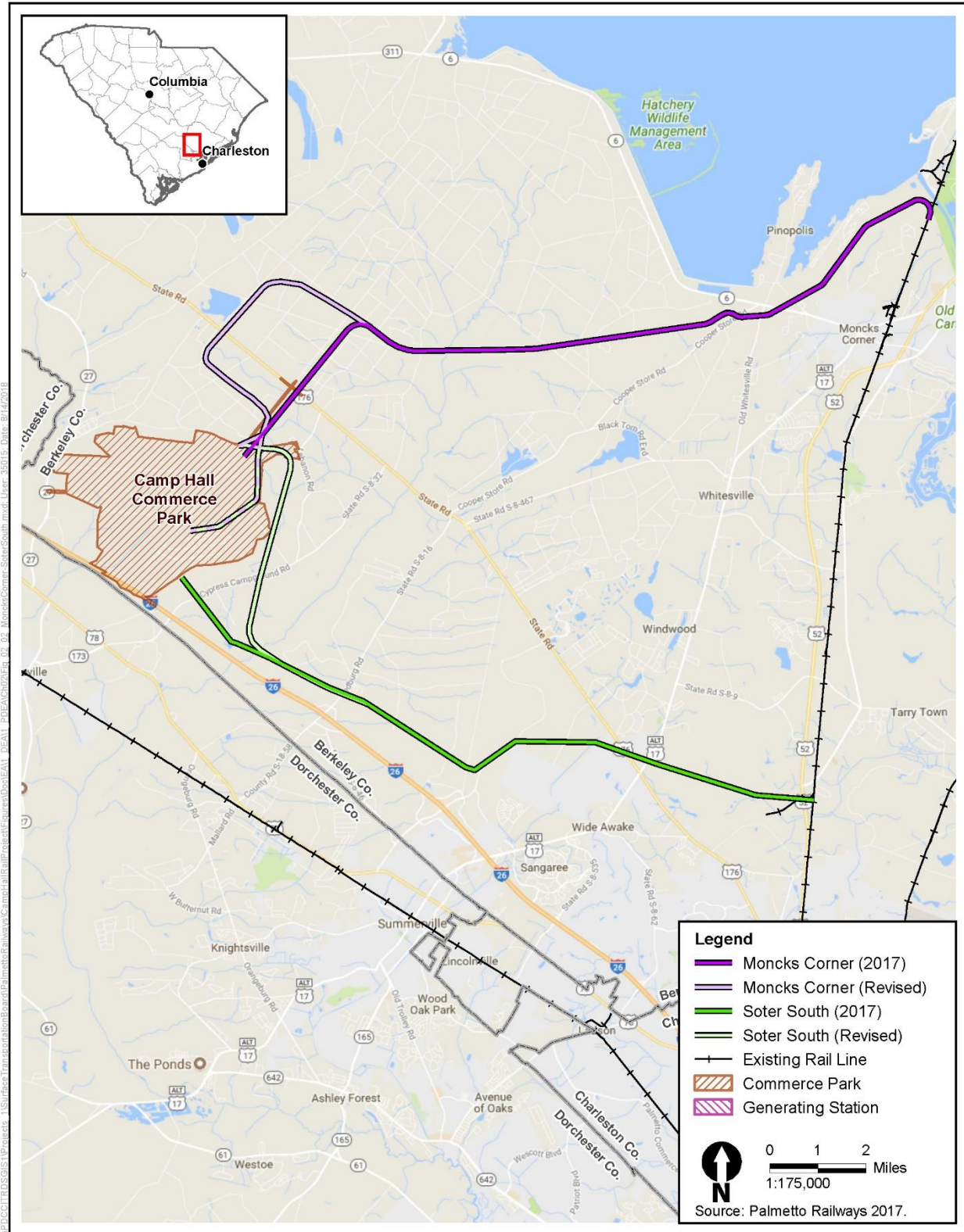


Figure 2-3. Modified Moncks Corner and Soter South Routes

2.2.2.1 Level 1

The joint lead agencies' Level 1 screening process focused on whether each alternative carried forward for screening could satisfy the purpose and need of the proposed rail line. The joint lead agencies used the same criteria as the Applicant (Section 2.2.1.1, *Level 1*). The joint lead agencies concurred with the Applicant's conclusion that the Ridgeville Route and the Eutawville/Holly Hill Route did not meet the criteria for purpose and need and eliminated these alternatives from further consideration. As noted in Table 2-2, the Ridgeville Route did not meet the purpose and need criterion of the Applicant's ownership and operation. The Eutawville/Holly Hill Route would not be logistically feasible because it did not meet the criterion of direct connectivity to a Class I main line with access to the carrier's inland/domestic network, as well as the Port of Charleston. In addition to the discussion in the Environmental Report and in Section 2.2.1.1, the criterion of full ownership and operation was addressed in correspondence between Norfolk Southern, the Applicant, and the joint lead agencies (Appendix A, *Applicant Correspondence with Agencies*). The Applicant explained the importance of maintaining full operational control, as indicated in the purpose and need statement. It made clear that, as an entity of the South Carolina Department of Commerce, the Applicant requires full control of project funding, construction, maintenance, and rail operations to ensure that its state-funded rail assets have the proper utilization and investment return.⁹ Furthermore, because the Ridgeville Route would not meet the purpose and need for operational control, the joint lead agencies did not need to consider the Applicant's additional reasons for eliminating this alternative.

The joint lead agencies further determined that the remaining four alternatives and the cross options potentially met the purpose and need criteria based on the information relied on by the Applicant in its initial Level 1 screening, as summarized previously. The analysis of the joint lead agencies also incorporated new information from the Applicant that was not available during the Applicant's screening and *Environmental Report* preparation. By the time the joint lead agencies completed their analysis, Volvo Cars had indicated that the Soter South Route would enter the Camp Hall Commerce Park at a location that would make connection to rail lines in the Volvo Car facility infeasible. The Soter South Route was planned to enter the park at the south end, on the opposite side of Volvo Car's subsequently determined rail/automotive facility interface and rail spur now located north of the Volvo Cars site (Appendix A, *Applicant Correspondence with Agencies*, Information Request #2). As a result, this route did not meet the criterion of sufficient access and capacity to meet requirements of the Volvo Cars development. Therefore, the joint lead agencies eliminated the Soter South Route from further

⁹ In a letter dated February 26, 2018, Norfolk Southern stated that while working with the Applicant on development of the Ridgeville Alternative, the Applicant never informed Norfolk Southern of its desire to have full control of the proposed rail line. In addition, Norfolk Southern stated that had it known, it would have developed a different operating proposal. In a response letter dated September 26, 2018, the Applicant indicated that Norfolk Southern, having collaborated with Applicant on development of the Ridgeville Route, was in a position to know that Palmetto Railways, an entity of the South Carolina Department of Commerce, needed full operational control of the proposed line and would not only serve as the short-line operator and switching entity, but would also be responsible for securing the funding for this project. Applicant also reiterates that Palmetto Railways' requirement for operational control of the Camp Hall Rail Line facilities is clearly stated in its purpose and need statement for this project. Applicant points out that full operational control will ensure that its state-funded rail assets have the proper utilization and investment return for its rail infrastructure, which includes yards, switching functions, and interconnecting track. For these reasons, Palmetto Railways states, it requires full control of project funding, construction, maintenance, and rail operations that will serve the Camp Hall Commerce Park. Finally, Palmetto Railways states in its letter that it appreciates Norfolk Southern's interest in working with Palmetto Railways and Norfolk Southern's commitment in the railroad's February 2018 letter not to contest or challenge the Camp Hall project.

consideration and did not include it in their Level 2 screening. The joint lead agencies' Level 1 screening is summarized in Table 2-2.

Table 2-2. Joint Lead Agencies Level 1 Screening

Criterion	Level 1 Alternatives					
	Eutawville/ Holly Hill	Cross	Moncks Corner	Soter North	Soter South	Ridgeville
Provide rail service to Camp Hall Commerce Park	Y	Y	Y	Y	Y	Y
Rail line owned and operated by Palmetto Railways	Y	Y	Y	Y	Y	N ¹
Direct connectivity to a Class I main line, the inland/domestic network, as well as the Port of Charleston	N	Y	Y	Y	Y	Y
Sufficient rail access ² and capacity to serve both phases of the Volvo Cars site	Y	Y	Y	Y	N	Y
Logistically feasible rail service for additional industrial sites within Camp Hall Commerce Park	Y	Y	Y	Y	Y	Y
Retain for further screening?	N	Y	Y	Y	N	N

¹ See Section 2.2.1.1, *Level 1*, for further discussion of the Ridgeville Route.
² Sufficient rail access is defined as the ability to connect to defined endpoints within the Volvo Cars site.

2.2.2.2 Level 2

The joint lead agencies ultimately advanced the Soter North Route (as included in Level 1), Moncks Corner Route (as refined by the Applicant) and the Cross Route (original, as included in Level 1) for further evaluation under the Level 2 criteria (Figure 2-4). Additionally, in the Applicant's Level 3 evaluation of alternatives, four additional variations of the Cross Route were identified. The joint lead agencies decided to bring them into the Level 2 screening in order to compare them with the other practicable alternatives. These additional alternative routes are identified as the Cross Option 1, Cross Option 2, Cross Option 3 (Applicant's preferred alternative and the proposed rail line),¹⁰ and Cross Option 4. Because the four additional Cross alternatives were variations of the original Cross Route and were developed within the Cross corridor, they were presumed to meet the Level 1 criteria.

The joint lead agencies' Level 2 screening differentiated among the seven alternatives based on impacts on select resources. The joint lead agencies identified the following criteria and metrics for evaluating construction and operations impacts of each alternative. While the criteria identified below are similar to the criteria the Applicant used to screen and analyze alternatives, the means for quantifying potential impacts varies for some criteria. For example, the Applicant used National Wetlands Inventory (NWI) mapping to identify a percentage of wetlands for an identified corridor, while the joint lead agencies used a combination of soils and NWI mapping to quantify the acreage of wetlands in a corridor.

¹⁰ When the Applicant identified the refined Cross Option 3 as its preferred alternative, as published in its *Environmental Report*, it proceeded with preliminary engineering of this route. The joint lead agencies used this preliminary engineering as the most current information in their Level 2 screening.

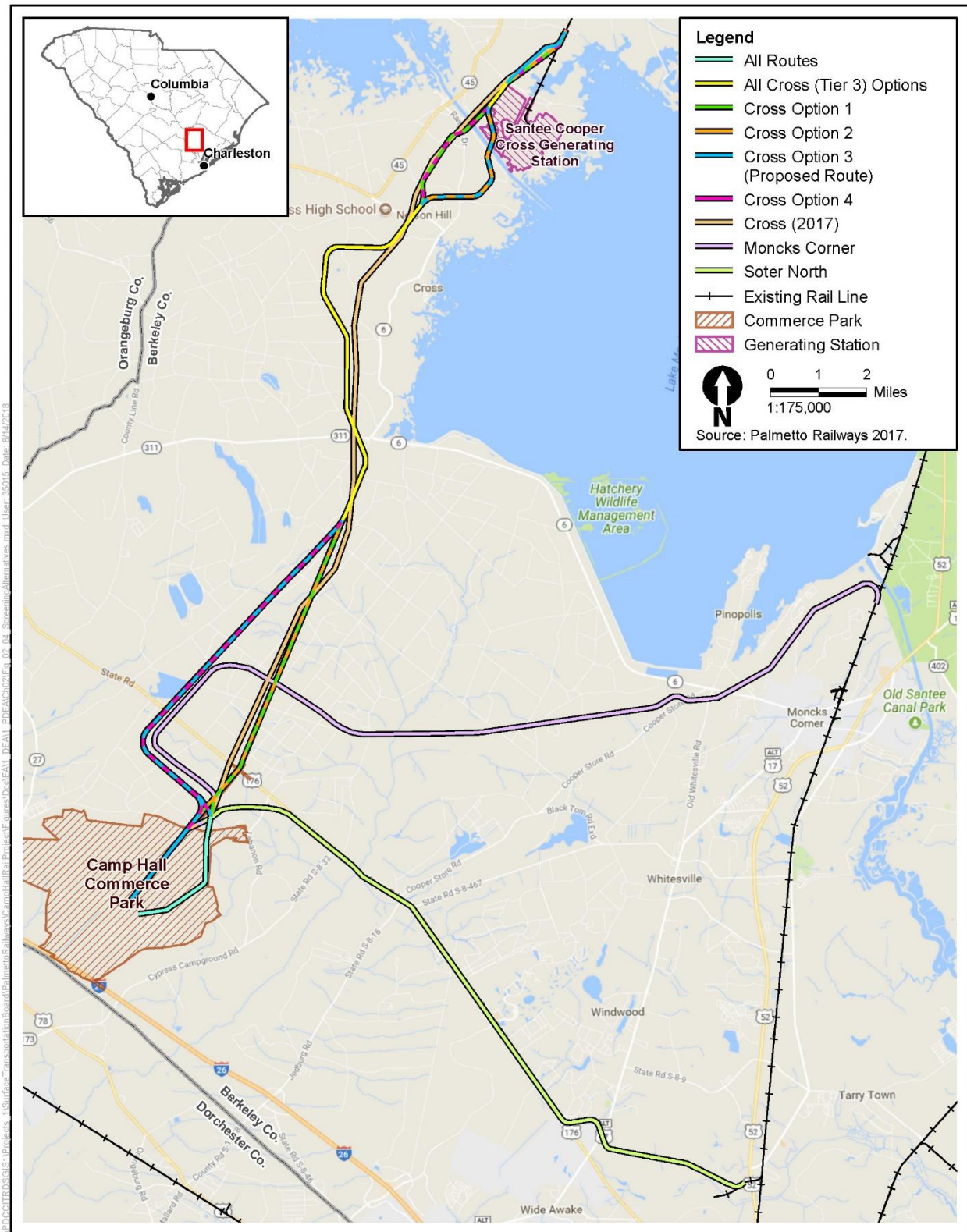


Figure 2-4. Joint Lead Agencies' Level 2 Alternatives

Additionally, while the Applicant identified the number of floodplain crossings, the joint lead agencies identified the acreage of floodplains and floodways crossed by an alternative.

- Number of grade crossings and cumulative vehicle traffic on public roads crossed by the right-of-way.
- Acres of wetlands within the right-of-way.
- Acres of floodplains and floodways crossed by the right-of-way.
- Number of streams intersected by the right-of-way.
- Acres of farmland within the right-of-way.
- Number of archaeological and cultural resources within the right-of-way.
- Number of noise-sensitive receptors within the designated noise contour.
- Number of potential relocations in the right-of-way.
- Number of census block groups intersected by the right-of-way.
- Number of stewardship and protected lands intersected by the right-of-way.

Based on the impact metrics shown in Table 2-3, the joint lead agencies determined that, while the routes would have comparable impacts on some resources, they could be distinguished as follows.

Soter North Route. Although this alignment would be the shortest and thus would affect the smallest area of right-of-way, it would have the following impacts.

- The alignment would traverse a relatively populated area, thus resulting in substantial impacts on the built environment. Compared to other alignments, it would require substantially more relocations of buildings in the right-of-way. It is the only alignment that would cross planned and permitted developments.
- This alignment would affect a comparable number of grade crossings as other alignments but would affect substantially more traffic at those crossings.
- This alignment would have substantially more noise impacts on sensitive receptors within the 65-decibel LDN noise contour than the other alignments.
- This alignment could affect substantially more historic buildings and known archeological resources than other alignments.
- This alignment would cross a moderate amount of floodplains relative to the other alignments, but would be the only alignment that would cross floodways.
- This alignment would affect the fewest low-income and minority communities. It has fewer acres of wetlands within the corridor and its stream crossings would be comparable to other alignments. It would not affect protected areas.

Moncks Corner Route. Although this alignment would have a distance and right-of-way area comparable to other alignments, it would have the following impacts.

- The alignment would affect relatively few grade crossings compared to other alignments but would affect substantially more traffic at the affected crossings, second only to the Soter North Route.
- The alignment has the most wetland acres in the right-of-way and would cross substantially more acres of floodplains—more than double the number of acres of the alignment (Soter North) with the next to the highest amount of floodplains.

- This alignment would cross two historic districts, the Pinopolis Dam—Jeffries Hydroelectric Plant/Navigation Lock and the Old Santee Canal.
- This alignment would require fewer stream crossings than other alternatives and would not require any relocations. It would not affect protected areas.

Table 2-3. Joint-Lead Agencies Alternatives Screening Summary

Criteria ¹	Metrics ²	Alternatives ³						
		Original Cross	Cross 1	Cross 2	Applicant Preferred (refinement of Cross 3)	Cross 4	Moncks Corner	Soter North
ROW	Length (miles)	21.8	23.9	24.6	26.1	25.5	23.3	18.2
	Acres of 100-foot right-of-way	270.4	294.9	304.6	322.6	313.6	282.1	220.8
	Acres of 200-foot right-of-way	528.9	579.4	594.4	630.0	616.3	563.9	441.4
Grade Crossings	Number of at-grade crossings of public roads	14	12	10	10	12	11	11
	Number of at-grade crossings of private roads	39	42	44	55	52	30	42
Vehicle Traffic at Grade Crossings	Sum of AADT for at-grade crossings of highways, arterial and collector roads	12100	12100	12100	12100	12100	18700	48350
Wetlands	Acres total wetlands within right-of-way (based on NWI and hydric soils data)	291.8	281.7	304.1	336.5	316.1	345.9	226.0
Floodplains	Acres total FEMA-regulated 100 year floodplains within right-of-way	23.1	9.0	9.4	4.4	4.1	54.0	26.6
Floodways	Acres total FEMA-regulated floodways within right-of-way							13.2
Streams								
	Navigable waterways	1	1	1	1	1	0	0
	USGS named streams	9	7	7	4	4	2	6
Farmland								
	Prime Farmland	142.7	136.2	143.5	143.4	139.6	94.2	133.8
	Farmland of Statewide Importance	276.9	270.4	285.3	337.0	323.4	306.3	208.4
Cultural and Historic Resources								
	National Register Properties ⁴	2	2	2	2	2	1	0
	Historic Buildings	0	0	0	0	0	0	2
	Historical Areas ⁵	0	0	0	0	0	2	0
	Known Archeological Sites	4	1	1	0	0	1	8
Noise	Number of sensitive receptors outside of 100 foot- right-of-way and within the 65 LDN noise contour	9	5	2	2	5	4	15
Potential Relocations	Number of residences, commercial buildings, churches, and other institutional structures (e.g., schools and government buildings) within 100-foot right-of-way	5	2	2	0	1	0	27
Planned Development	Number of recent/future developments	0	0	0	0	0	0	2
Low Income and Minority Communities								
	Low Income Communities	0	0	0	0	0	0	0
	Minority Communities	4	4	4	4	4	4	1
Stewardship and Protected Area Resources⁸	Impact type ⁹	Direct	Direct	Direct	Direct	Direct	Unaffected	Unaffected

¹ Criteria included in the Applicant's Level 2 Analysis and omitted from this table: design criteria, transmission line crossings, water quality, habitat, hazardous waste sites, estimated parcels, and boundaries.

² Right-of-way width of 200 feet, unless otherwise indicated, or required for crossing Diversion Canal connecting Lake Marion and Lake Moultrie.

³ The Applicant deemed the initial Cross Route to have the least environmental impacts in its *Environmental Report* (Palmetto Railways 2017a) and subsequently developed additional alignment options within the Cross corridor. Those cross options met all criteria related to purpose and need, and thus are included as alternatives (Cross Options 1, 2, 3, and 4) for screening.

⁴ For all of the cross options, the properties counted are the Bulltown Ditch and the Lakes Marion and Moultrie Diversion Canal, consistent with a letter dated August 28, 2017 from the South Carolina Department of Archives & History. For the Moncks Corner Route, the Old Santee Canal is counted three times—as a national register property, historical area, and archeological site—because it appears in three data sets in separate locations within a 200-foot right-of-way; no overlap with the 100-foot right-of-way.

⁵ Includes the Old Santee Canal and the David Hare House. There is a slight overlap of the polygons with the 200-foot right-of-way; no overlap with the 100-foot right-of-way.

⁶ Low-income: census block groups in which the average household incomes are below \$15,000 per American Community Surveys for 2011-2015

⁷ Minority: census block groups in which the minority population either exceeds 50% or is 1.2 times the state average

⁸ Wildlife Management Units, Conservation Easements, and Mitigation Banks

⁹ Direct Impact, Indirect Impact, or Unaffected

Cross Route and Options. The original Cross Route and its subsequent options would generally have longer distances and more right-of-way area than the Moncks Corner and Soter North Routes. Collectively, they would have the following impacts compared to the Moncks Corner and Soter North Routes.

- These alignments would have approximately the same number of public road crossings as the other alignments but would affect substantially less vehicle traffic at those crossings.
- These alignments have fewer wetland acres in the right-of-way compared to the Moncks Corner Route but more than the Soter North Route. They would cross substantially fewer acres of floodplains and would not cross any floodways.
- These alignments would cross the Diversion Canal, requiring additional acreage to accommodate fill to raise the elevation of the rail line to connect with the bridge.

Cross Option 3. This alignment would have the longest distance and the most right-of-way area of all of the alignments. It would have the following impacts compared to the other cross options. The joint lead agencies' comparison to the other cross options is included in Table 2-3.

- This alignment would have the most acres of wetlands in the right-of-way. However, it would cross the second-fewest acres of floodplains and would have the second-fewest stream crossings.
- This alignment would traverse a route with the least residential and commercial development and correspondingly would affect the most acres of prime farmland or farmland of state importance in the right-of-way.
- This alignment would affect the fewest sensitive noise receptors within the 65-decibel LDN noise contour.
- This alignment would not require any relocations, unlike the other cross options.

2.2.3 Conclusion

The joint lead agencies independently reviewed the Applicant's findings and found that the original Cross Route would have fewer overall environmental impacts compared to the Soter North Route and Moncks Corner Route. The joint lead agencies further verified that Cross Option 3 would reduce the potential impacts associated with the Cross Route and would have the fewest overall impacts of the four cross options.

In conclusion, the joint lead agencies carried forward the refined Cross Option 3 for examination in this environmental assessment as the proposed rail line. The refined Cross Option 3 is the Applicant's preferred alternative.

2.3 Proposed Action

As noted in Section 2.1, *Purpose and Need*, the proposed action before the Board is the petition for authority to construct and operate the proposed rail line (Cross Option 3); for the Corps, it is the request for a DA permit for the discharge of fill material into waters of the United States. Cross Option 3, the Applicant's preferred alternative, would extend 28.01 miles to connect the CSXT Cross Subdivision to the existing Camp Hall Commerce Park. The entire rail corridor would be within Berkeley County, South Carolina. The proposed route would run south-southwest from the Cross Generating Station, cross the Diversion Canal between Lake Marion and Lake Moultrie (via a proposed bridge), traverse the

unincorporated community of Cross, and extend south through pine plantations into Camp Hall Commerce Park. The proposed rail line would have two termination points within the Camp Hall Commerce Park—one in the Volvo Cars facility and one adjacent to Volvo Cars Drive and approximately 10,000 feet south of the crossing of Fish Road (Figure 2-5).

2.3.1 Construction

The Applicant proposes to construct the proposed rail line within a 100-foot-wide right-of-way¹¹ during daytime hours (6 a.m. to 10 p.m.) over a period of 18 to 20 months (Appendix A, *Applicant Correspondence with Agencies*, Information Request #3).

2.3.1.1 Waterway Crossings

The proposed rail line would require construction of one bridge crossing over the Diversion Canal. The bridge would be approximately 845 feet long (approximately 520 feet over water) and would provide a 100-foot-wide navigation channel and a 50-foot vertical clearance.¹² The bridge would be supported by seven new bents (support structures). Four of the bents would be placed in the canal. The bridge surface would consist of 3-foot-wide open-grating walkways on either side of a 16-foot-wide concrete ballast trough. The main span would be a steel through girder with a reinforced concrete ballast trough (Appendix A, *Applicant Correspondence with Agencies*, Information Request #4). Appendix I, *Bridge Drawings*, provides a plan and profile view of the bridge. The Applicant would install culverts for crossings of other waterways, including two Berkeley County-maintained blue-line ditches. These culverts would also provide hydrologic connectivity in wetland areas and water drainage in other areas.

2.3.1.2 Roads and Infrastructure

The Applicant would construct at-grade rail crossings for 10 public roads and 55 private roads. The Applicant would relocate seven private roads to avoid rail crossings of those roads. The proposed rail line would cross other existing infrastructure, such as water mains and electrical transmission lines. The Applicant would construct a small maintenance and office facility, anticipated to be located to the west of the track fork within the Camp Hall Commerce Park (Appendix B, *Environmental Report*).

¹¹ The 100-foot project right-of-way reflects the outer boundary of the construction limits for the project; however, the Applicant's actual property purchase or condemnation may be larger than 100 feet in certain locations along the project corridor, depending on negotiations with the current landowners (Appendix A, *Applicant Correspondence with Agencies*, Information Request #2).

¹² It is possible that the U.S. Coast Guard would determine that a 40-foot vertical clearance would be sufficient for safe ship passage. However, for a conservative analysis, the joint lead agencies chose to analyze a 50-foot clearance.

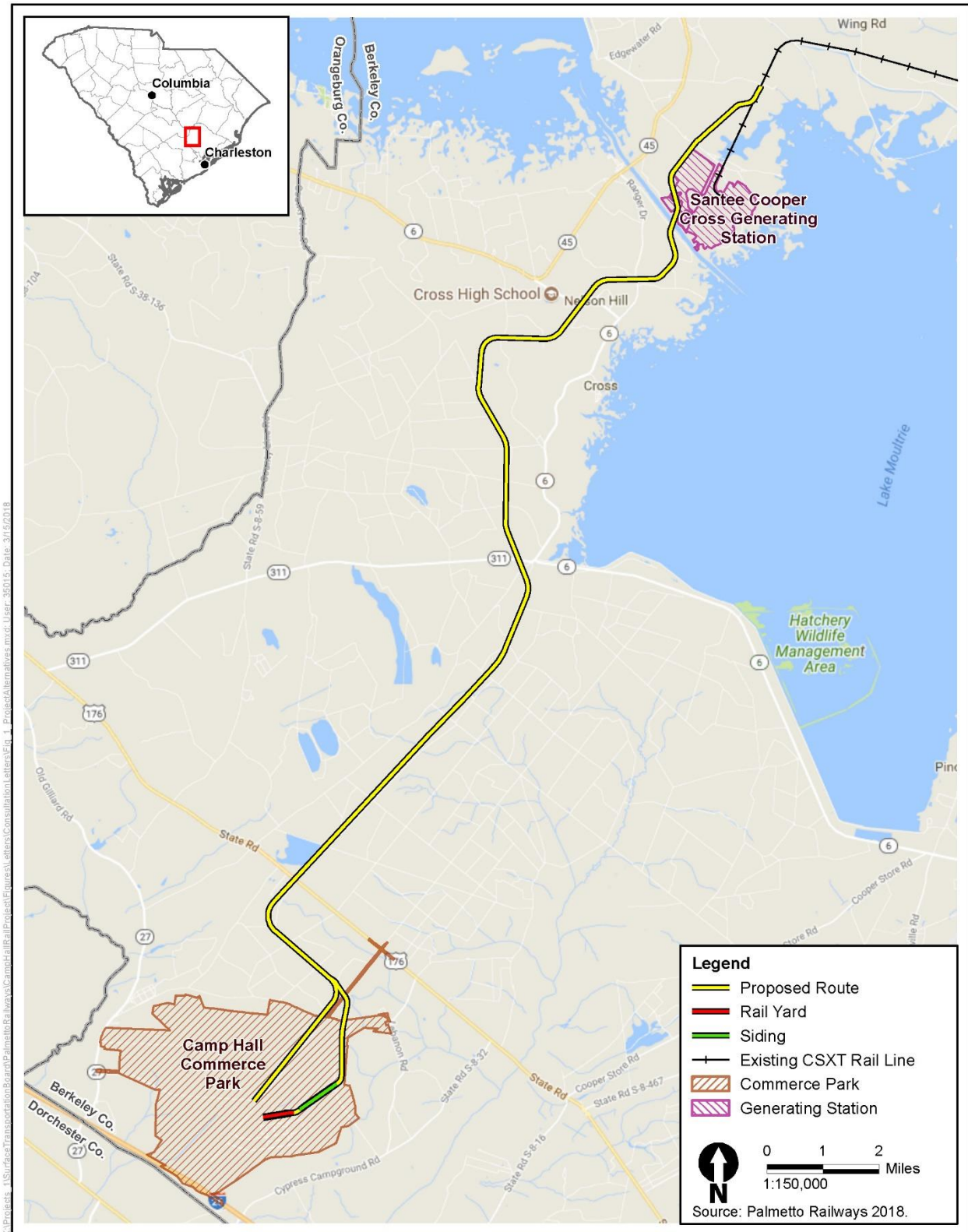


Figure 2-5. Proposed Rail Line: Cross Option 3

2.3.2 Operations

The Applicant would maintain the rail line to Class II standards and thereby would allow trains to operate at a maximum speed of 25 miles per hour (Appendix A, *Applicant Correspondence with Agencies*, Information Request #2). The Applicant anticipates transporting approximately 50,000 automobiles per year on five round trips (10 transits or *passbys*) on the proposed rail line per week (five passbys loaded with freight [automobiles] and five passbys of unloaded trains), for an average of 1.4 train passbys per day. The 30-car trains with an approximate length of 3,000 feet would operate with two GP-40-2 locomotives and both bilevel and trilevel auto racks (Appendix A, *Applicant Correspondence with Agencies*, Information Request #2, #3). As the Camp Hall Commerce Park develops and if additional tenants request rail service, the Applicant would increase train length before increasing train frequency. Other than Volvo Cars, no tenants of the Camp Hall Commerce Park that would use rail service have been identified at this time.

2.4 No-Action Alternative

If the Board was to deny the Applicant's request for authority to construct and operate a rail line to serve the Camp Hall Commerce Park or the Corps was to deny the DA permit application to fill waters of the United States, the Applicant would not construct and operate the rail line as proposed. Instead, automobiles produced by Volvo Cars at Camp Hall Commerce Park and destined for the North American market would be shipped by truck approximately 80 miles, primarily on I-26, to CSXT's Dixiana auto distribution facility near Columbia, South Carolina (Appendix B, *Environmental Report*). The potential impacts of the no-action alternative on specific resources are described in Chapter 3, *Affected Environment and Environmental Consequences*.

In conclusion and as noted in Section 2.2.3, *Conclusion*, the joint lead agencies verified that Cross Option 3, the preferred alternative, would have the fewest overall impacts of the routes screened. Therefore, this alternative is carried forward for analysis and comparison to the No-Action Alternative in this Draft EA.

Chapter 3

Affected Environment and Environmental Consequences

This chapter describes the affected environment and environmental consequences for each resource of concern in the project area. For each resource, the joint lead agencies took the following steps:

- Reviewed regulations and guidance relevant to the resource (Chapter 6, *Regulations*).
- Defined a study area.
- Developed an analysis method.
- Reviewed the current conditions of the resource in the study area.
- Identified the impact mechanisms that would affect the resource.
- Determined the level of potential impact that the construction and operation of the proposed rail line could have on the resource.
- Identified mitigation that would minimize or compensate for impacts, if required. The Applicant has proposed voluntary mitigation and OEA has made preliminary recommendations for mitigation in this Draft EA. The mitigation measures will be finalized after comments are received on the Draft EA and presented in the Final EA (Chapter 4, *Proposed Mitigation*). The Board has the authority to impose these conditions to mitigate environmental impacts. The Corps may add mitigation as special conditions to the U.S. Department of the Army (DA) permit sought by the Applicant.

All impacts of the proposed action were compared to the impacts of the no-action alternative. Under the no-action alternative, the proposed rail line would not be constructed or operated. In most cases, the no-action alternative would not affect the environmental resources, so there is no further comparison for those resources. However, the no-action alternative would result in impacts related to transportation, air quality, and energy; those impacts are compared with the impacts of the proposed rail line.

3.1 Transportation

This section addresses rail, vehicle, and vessel (i.e., navigation) transportation in the project area and the potential impacts of the proposed action and the no-action alternative.

3.1.1 Affected Environment

The study area for transportation includes the immediate vicinity of the proposed rail line, the CSXT Cross Subdivision, and Interstate 26 between Camp Hall Commerce Park and Dixiana, South Carolina. One Class I railroad—CSXT—provides freight rail service in Berkeley County. The CSXT rail infrastructure in Berkeley County includes the Cross Subdivision, which extends from the Cross Generating Station to St. Stephen, South Carolina, where it connects to the CSXT Charleston Subdivision (also known as the A-line), as well as other rail lines in the eastern part of the county. Other railroads, including the Applicant, provide connecting service between shipper locations and CSXT. The A-line, which is used for Amtrak rail service as well as freight rail service, has average rail traffic of approximately 20 trains per day (Federal Railroad Administration 2018c). The Cross Subdivision is used for two trains per day—one loaded coal train and one empty train—between the main line and the Cross Generating Station (Appendix A, *Applicant Correspondence with Agencies*).

Vehicle travel in Berkeley County occurs over a network of federal, state, county, and private roads with a total of 70 public rail/highway crossings (South Carolina Department of Transportation 2018), including 10 on the Cross Subdivision. Total vehicle miles traveled in the county in 2016 (the most recent year for which data were available) were approximately 5.1 million per day (South Carolina Department of Public Safety 2016). Vehicle traffic on public roads in the project area ranges from approximately 600 vehicles per day on local roads (Viper Road) to approximately 5,000 on U.S. Route 176 (US 176), an arterial road (Table 3.1-1).

The Diversion Canal between Lake Marion and Lake Moultrie is the only navigable water that would be crossed by the proposed rail line. The Diversion Canal is currently used by recreational boats and occasionally by commercial traffic.¹ The height and width limitations for existing boat use of the Diversion Canal are established by the existing bridge that carries South Carolina Highway 45 (SC 45) over the canal and bridges on connected waterways.²

3.1.2 Environmental Consequences

3.1.2.1 Rail Safety

No project-related impacts on rail safety are anticipated during construction of the proposed rail line. Operations would result in an increase in operating train miles in Berkeley County (and South Carolina) and, thus, would increase the likelihood of a rail accident/incident such as a collision or derailment. The Federal Railroad Administration (FRA) compiles data on railroad accidents/incidents based on required

¹ Quantitative data on boat use of the canal are not available. Santee Cooper operates locks at the south end of Lake Moultrie but does not keep records of the types of boats that pass through the locks. Similarly, CSXT does not log the types of vessels that require them to raise their bridge on the Tailrace Canal (Appendix A, *Applicant Correspondence with Agencies*). No information on navigation use of the Diversion Canal was submitted in response to the U.S. Coast Guard preliminary public notice published July 27, 2018.

² The SC 45 bridge provides 100 feet of horizontal clearance and 50 feet of vertical clearance, which is typical of other bridges on the water system (South Carolina State Highway Department 1965).

reporting by railroads, and these data show that for 2017 the accident/incident rate for all railroads nationwide was 2.34 accidents per million train miles (Federal Railroad Administration 2018a). State-level accident data in units of accidents per million train miles are not available from FRA data; therefore, the national rate is used in this analysis.

Accident rates have been shown to vary considerably by track class, with higher accident rates occurring on lower track classes that require lower train speeds and less frequent inspections, among other differences. Liu et al. (2011) derived derailment rates by track class, using the baseline rates provided by Anderson and Barkan (2004). They found that the derailment rates for Track Class III were twice the overall average and derailment rates for Track Class II were six times the overall average (accident rates generally increase with lower track classes due to lower track quality and less frequent inspection). Therefore the 2.34 accidents per million train miles rate has been adjusted for this analysis to account for the difference in rate by track class.

For the 10-year period ending in 2017, accident/incident data reported by the Applicant to FRA show two rail accident events not related to grade crossings—one in 2015 and one in 2016. Accident rates for those 2 years were 10.97 and 9.1 accidents per million train miles, respectively, and accident rates for the other years with reported data (2008 through 2017) were zero. The accident in 2015 involved damage to a new (higher) locomotive cab because of collision with the coal dumper at the Cross Generating Station. The accident in 2016 involved a collision between two pieces of maintenance equipment operating in the right-of-way and did not involve a train.

Operations of the proposed rail line (Track Class II) are anticipated to result in approximately 12,000 train miles per year (Appendix A, *Applicant Correspondence with Agencies*, Information Request #2). Based on the overall national rail accident rate and the additional research of Liu et al., approximately 0.17 accident per year, or one accident every 6 years, would be predicted for operation of the proposed rail line. This is generally consistent with the available data for the Applicant's operating experience. Shipment of hazardous materials on the proposed rail line is not anticipated. Thus, the joint lead agencies anticipate that potential impacts on rail safety from operation of the proposed rail line would be minimal. Nevertheless, the Applicant has proposed voluntary mitigation measures to further reduce rail safety risks (Chapter 4, *Proposed Mitigation*). Under these measures the Applicant would offer the Operation Lifesaver program to communities; provide instruction for emergency response personnel; provide-hour emergency contact for first responders; install active and passive warning systems as appropriate; provide early warning systems at Shortcut Road, Old Highway 6, and Ranger Road; conduct community workshops in the Cross community; and coordinate with emergency services.

3.1.2.2 Vehicle Safety

Construction of the proposed rail line would result in a temporary (18- to 20-month) increase in vehicle traffic for transportation of construction materials, equipment, and workers (Appendix A, *Applicant Correspondence with Agencies*, Information Request #3). The Applicant has estimated that 95 to 116 workers would be needed for construction (Appendix A, Information Request #3). Because the commuting distances of construction workers as well as the sources and quantities of construction equipment and materials are not known at this time, a quantitative estimate of project-related construction traffic is not available. The construction traffic would be distributed over the proposed rail

line. In the context of the existing traffic levels in Berkeley County, the joint lead agencies anticipate that the increased likelihood of construction-related vehicle accidents would be small.

Operation of the proposed rail line between the Volvo Cars plant and the proposed connection to the existing CSXT Cross Subdivision would involve transit of an average of 1.4 trains per day over nine at-grade rail/roadway crossings (Figure 3.1-1).³ Average annual daily vehicle traffic (AADT) on these nine local, collector, and arterial roads (escalated to year 2020) ranges from approximately 600 vehicles per day to 4,800 vehicles per day (South Carolina Department of Transportation 2018). FRA has developed tools for predicting the frequency of vehicle/train incidents at grade crossings to aid in prioritizing safety-related improvements, but they require inputs, such as location-specific accident history, that are not available for the proposed new crossings. However, the range of rail and vehicle traffic characteristics anticipated for the proposed grade crossings are similar to those on the existing CSXT Cross Subdivision, which has an average of two trains per day and 10 grade crossings with AADT ranging from approximately 100 to 7,500. Based on the FRA Web Accident Prediction System, the predicted annual accident frequency for these existing grade crossings ranges from 0.000121 to 0.030382. The crossing with the highest annual accident frequency among these grade crossings is the Byrnes Drive (U.S. Route 52 [US 52]) crossing, located approximately 0.5 mile east of the junction of the Cross Subdivision with the A-line in St. Stephen, with a predicted interval of approximately one vehicle/rail incident every 33 years. This crossing also has the highest AADT of all of the existing crossings included in the subdivision (Federal Railroad Administration 2018b). Considering the additional trains that would result from the proposed action, the predicted interval between vehicle/rail incidents at the US 52 crossing would be one incident every 25 years. The likelihood of a vehicle/rail incident at a private crossing would generally be less due to the much less frequent use of the crossing by vehicle traffic.

One variable affecting at-grade crossing safety is the type of passive (e.g., crossbucks) or active (e.g., gates and/or flashing lights) safety equipment provided at the crossing. On the CSXT Cross Subdivision, four crossings have flashing lights and the others have crossbucks and/or stop signs (Federal Railroad Administration 2018c). All nine of the roads at which grade crossings would be constructed are state-maintained roads. Volvo Drive is currently a county-maintained road but it is anticipated to be transferred to state maintenance. Prior to constructing a grade crossing of any of the nine state roads that would be crossed by the proposed rail line, the Applicant would be required to obtain an encroachment permit from the South Carolina Department of Transportation (Young pers. comm.). The type of crossing safety protection required to be provided would be determined during the encroachment permits process. The Applicant has stated that it would provide active safety protection devices at the crossings of all nine of the public roads; implement early warning systems at the crossings of Shortcut Road, Old Highway 6, and Ranger Road; and initiate the use of Operation Lifesaver to increase public awareness of the hazards at grade crossings and in railroad rights-of-way (Appendix D, *Public and Agency Notices and Comment Letters*, DA permit application; Palmetto Railways 2018a). Based on the safety information available for crossings on the CSXT Cross Subdivision, the planned crossing protection at new crossings on the proposed rail line, and the voluntary safety measures proposed by the Applicant (Chapter 4, *Proposed Mitigation*), the joint lead agencies anticipate that potential impacts on vehicle safety from operation of the proposed rail line would be minimal.

³ The proposed action includes construction of nine at-grade crossings as well as construction of an additional crossing of Fish Road on a branch of the proposed rail line that would serve future development other than the Volvo Cars plant within the Camp Hall Commerce Park if such development would use rail service. Rail traffic on this branch line is not reasonably foreseeable at this time; therefore, it has not been analyzed in this EA.

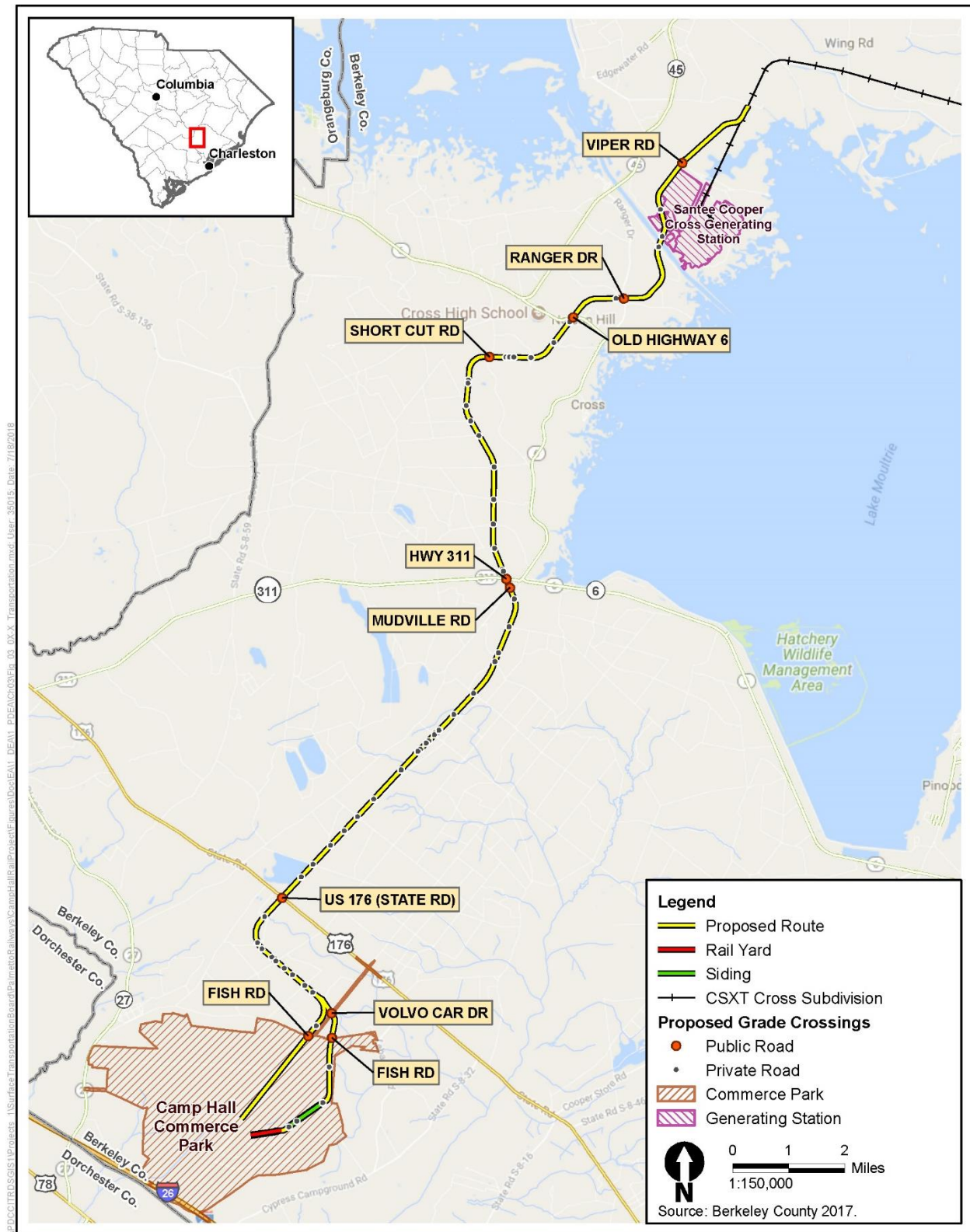


Figure 3.1-1. Proposed At-Grade Road/Rail Crossings

In response to the Corps' Public Notice on the U.S. Department of the Army (DA) permit application, one citizen (Citizen Williams) expressed concern about at-grade crossings near her residence. The Applicant responded that all crossings will be designed, protected, and signalized with gates and lights in accordance with FRA and South Carolina Department of Transportation requirements, as noted previously. Another citizen (Citizen Leitch) noted that removing 42,000 trucks from the roads is a "good thing" (Appendix D, *Public and Agency Notices and Comment Letters*).

Under the no-action alternative, operations would involve trucking of vehicles produced by the Volvo Cars plant that will be distributed within North America to the CSXT auto loading facility in Dixiana, South Carolina (Appendix A, *Applicant Correspondence with Agencies*, Information Request #3). The joint lead agencies estimate that trucking to Dixiana would require an average of approximately 20 daily round trip truck trips, mostly on Interstate 26, which would represent an approximately 0.1 percent increase in daily vehicle traffic on the highway (South Carolina Department of Transportation 2016). Interstate 26 is within approximately 1 mile of the Volvo Cars plant and therefore the trucks would be traveling on local roads for only a short period before entering the interstate. The joint lead agencies anticipate that the increased likelihood of vehicle accidents involving the increased truck traffic under the no-action alternative would be very small.

3.1.2.3 Vehicle Delay

During the 18- to 20-month anticipated construction period, vehicle traffic could experience delay because of increased construction-related vehicle traffic for transport of materials, equipment, and workers. However, existing traffic on roadways in the project area is well below road capacity, so the modest increase in vehicle traffic for project construction would not be anticipated to result in vehicle delay. Temporary vehicle delay could occur when traffic is diverted around new at-grade crossings while they are under construction. The potential duration of such diversions and the associated delay, if any, would depend on the detailed constructions plans, including final design and construction contracts.

During operations, vehicles that arrive at a grade crossing while a train is passing by would incur some delay because trains have the right-of-way at at-grade rail/roadway crossings. The likelihood that a vehicle would be delayed and the length of the delay would depend on variety of factors, primarily train length and speed and roadway characteristics, including AADT. The Applicant has stated that the maximum train speed on the proposed rail line would be 25 miles per hour and that trains would typically consist of up to two locomotives and 30 cars (Appendix A, *Applicant Correspondence with Agencies*, Information Request #2,) with an approximate length of 3,000 feet. To evaluate the extent of project-related vehicle delay, the joint lead agencies conservatively assume that the average train speed over the proposed line would be 20 miles per hour, so the average time required for a project-related train to transit a grade crossing would be 2.2 minutes, including time for gates (if present) to lower prior to train arrival and raise following train departure. Based on the anticipated average train frequency of 1.4 trains per day, the joint lead agencies estimate that the average number of vehicles delayed per day at one of the proposed new grade crossings would range from 1 to 10 and the estimated total vehicle delay per day would range from approximately 1.5 to 12 minutes, depending on the crossing. The joint lead agencies did not develop quantitative estimates of delay for crossings of Volvo Cars Drive and Fish Road because traffic count data were not available. The joint lead agencies anticipate that traffic volumes and thus delay at these crossings would be less than for most of the other proposed crossings, which are shown in Table 3.1-1.

Table 3.1-1. State Roadway Traffic and Estimated Vehicle Delay

Roadway	Estimated 2020 Average Daily Traffic in Both Directions (vehicle/day) ¹	Average Delay Per Stopped Vehicle (min/vehicle)	Average Number of Vehicles Delayed per Day	Average Delay per Vehicle in a 24-Hour Period (sec/vehicle)	Total Delay in a 24-Hour Period (min)
Viper Road	620	1.12	1	0.14	1.49
Ranger Drive	1930	1.15	4	0.15	4.77
Old Highway 6	1147	1.12	2	0.14	2.76
Short Cut Road	1565	1.14	3	0.15	3.84
SC Highway 311	1356	1.14	3	0.15	3.31
Mudville Road	1825	1.15	4	0.15	4.50
State Road (176)	4798	1.19	10	0.15	12.21
Volvo Car Drive	Not available				
Fish Road	Not available				

¹ Estimated based on South Carolina Department of Transportation traffic count data from 2013 and 1.06% annual increase based on increase in vehicle miles traveled in Berkeley County between 2013 and 2015 (South Carolina Department of Public Safety 2015), excepting Viper Rd, which is based on FRA 2018c.

² All nine of the roads at which grade crossings would be constructed are state-maintained roads (Volvo Drive is currently a county-maintained road but it is anticipated to be transferred to state maintenance).

Trains that would operate over the proposed rail line would continue on the CSXT Cross Subdivision and A-line, thus increasing the average frequency of train transits across existing at-grade crossings from 2 per day to 3.4 per day. The resulting increase in project-related delay on the Cross Subdivision, where the range in vehicle traffic at crossings is similar to that shown in Table 3.1-1, would be similar to the vehicle delay estimated for the proposed rail line. How trains would move on the A-line would be subject to CSXT operating plans, which are subject to change, but increased vehicle delay at grade crossings would be minimal in the context of the extensive current operations on the A-line.

Vehicles delayed by a passing train at a grade crossing could include emergency medical and fire protection vehicles. Given that approximately 0.2 percent of vehicles using a crossing would be stopped by a train at a crossing on an average day and that less than 0.5 percent of the vehicle trips across any of those crossings would be emergency vehicles on an average day,⁴ the likelihood of project-related delay for an emergency vehicle would be quite small. In light of the above findings related to vehicle delay, the joint lead agencies anticipate that potential impacts on vehicle delay from operation of the proposed rail line would be minimal.

As discussed in Section 3.1.2.2, *Vehicle Safety*, under the no-action alternative there would be an increase in vehicle traffic due to trucking of vehicles from the Volvo Cars plant to Dixiana. As discussed in Section 3.1.2.2, the increase in traffic in the context of existing traffic on Interstate 26 would be very small and the joint lead agencies anticipate that the likelihood of increased vehicle delay resulting from the no-action alternative would also be very small.

⁴ Responses to emergency events, such as fires and accidents, in the project area would come primarily from Cross Fire District facilities. On average, the district responds to between 30 and 40 calls for assistance per month (Coal pers. comm.). Viper Road has the lowest AADT of the roads that would be crossed by the rail line, and thus the potential proportion of trips made by emergency vehicles on an average day would be highest at this crossing. Based on 40 round trips per month and the Viper Road AADT of 620, less than 0.5% of the daily trips across Viper Road would be emergency vehicle trips on days when an emergency response required that an emergency vehicle cross Viper Road.

One unidentified citizen responded to the Coast Guard's Preliminary Notice with a question about whether the proposed rail line could cause delays for emergency vehicles. The Coast Guard responded that a temporary delay could occur at a railroad crossing, but it would not differ from any other crossing (Appendix D, telephone record dated September 6, 2018).

3.1.2.4 Navigation

The proposed action would include construction of a bridge over the Diversion Canal that could limit navigation on the canal. However, the U.S. Coast Guard (Coast Guard) has determined that a permit would be required to authorize construction of the bridge in order to ensure protection of navigation uses of the canal. The Applicant has proposed to construct a multi-span bridge to provide 50 feet of vertical clearance and 100 feet of horizontal clearance, and the Coast Guard has indicated that this would be appropriate for the navigation uses of the waterway.⁵ During construction, delays to boat traffic on the canal could occur while bents are constructed and/or girders are installed. The Coast Guard would require advance notification of any interference to navigation during construction, and this information would be made available to boaters via a Coast Guard Local Notice to Mariners and Coast Guard Marine Safety Information Broadcasts. If delays were to occur, they would be temporary. Thus, the joint lead agencies anticipate that the proposed rail line would have a minimal impact on navigation.

3.2 Water Resources

This section describes water resources—surface waters, wetlands, floodplains, and groundwater—in the study area and the potential impacts of the proposed action. The following sections address impacts on other resources that may be associated with water resources: Section 3.3, *Vegetation*; Section 3.4, *Wildlife*; Section 3.5, *Fish and Other Aquatic Species*; and Section 3.6, *Special-Status Species*. Appendix E, *Biological Resources*, provides data tables. The Applicant's U.S. Department of the Army (DA) permit application, which contains wetland maps, is provided in Appendix D, *Agency Notices and Comment Letters*.

3.2.1 Affected Environment

The water resources study area consists of the four watersheds—Cypress Swamp, Lake Moultrie, Dean Swamp, and Lower Four Hole Swamp—in the two hydrologic basins crossed by the proposed project (Cooper River basin and Four Hole Swamp basin) (Figure 3.2-1). Surface waters, wetlands, floodplains, and groundwater are distinct resources, but they function as a single, integrated natural system. Therefore, disruption of any part of these resources may affect the functioning of the entire system (Federal Emergency Management Agency 2007).

⁵ As noted in Chapter 2, Section 2.3.1.1, *Waterway Crossings*, the U.S. Coast Guard may determine that the bridge crossing of the Diversion Canal would require a 40-foot clearance rather than a 50-foot clearance for safe ship passage.

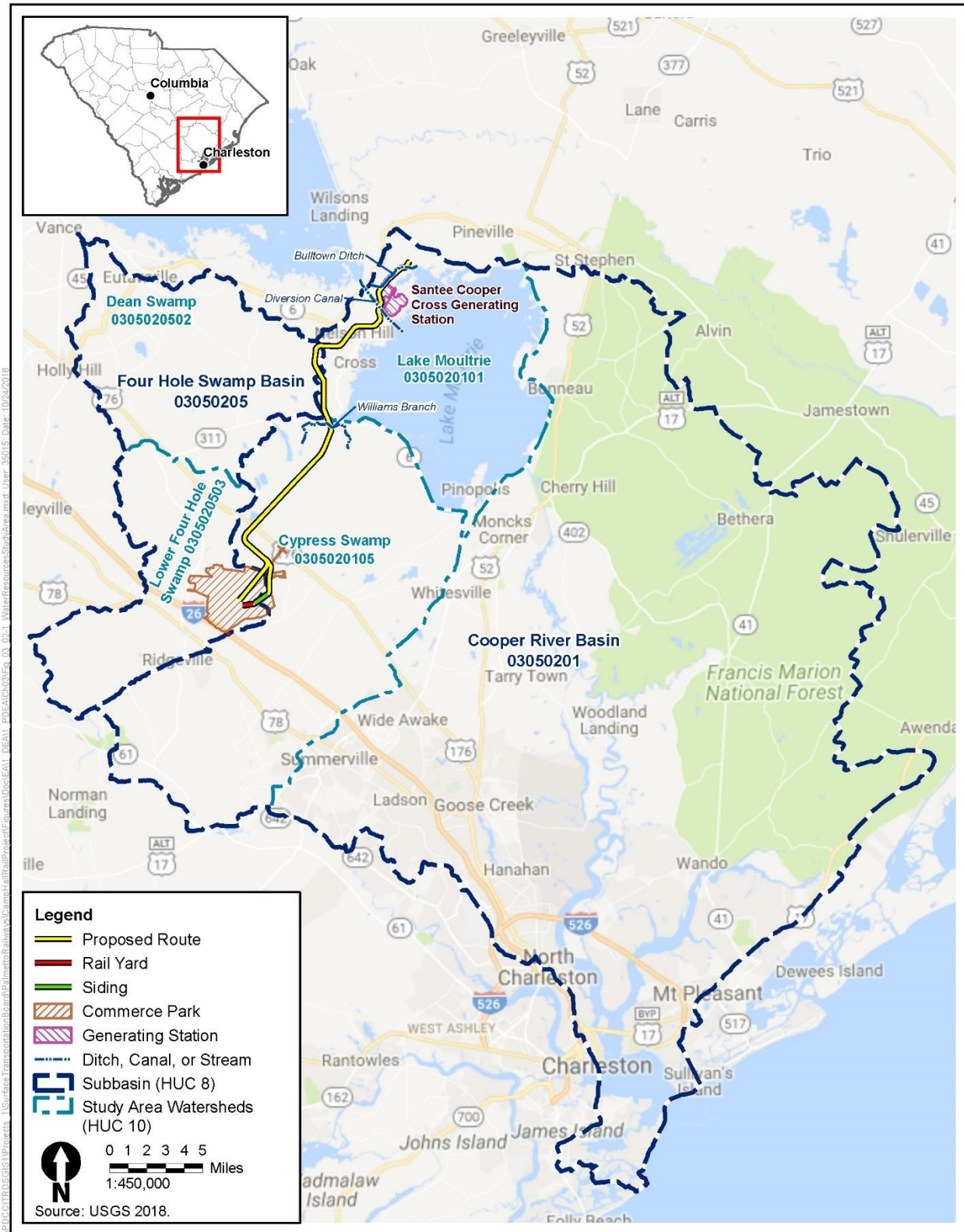


Figure 3.2-1. Water Resources Study Area

3.2.1.1 Surface Waters

Surface waters include rivers, streams, lakes, and ponds, as well as engineered features such as canals, ditches, and reservoirs.

Hydrologic Basins of the Study Area Watersheds

The joint lead agencies used hydrologic information provided by the South Carolina Department of Health and Environmental Control (DHEC) and the South Carolina Department of Natural Resources (SCDNR) State Water Assessment (2009) to identify and describe the hydrologic basins and watersheds in the study area. The proposed rail line would be located almost entirely in the Cooper River basin (18 miles) with a smaller area in the Four Hole Swamp basin (4.7 miles).

The **Cooper River basin** (Hydrologic Unit Code [HUC] 03050201) extends inland approximately 45 miles and encompasses Lake Moultrie, which was created for hydroelectric power development in 1941 and is one of the largest surface waters in South Carolina. The total area of the basin is 1,545 square miles. The Cooper River is the main stream draining the basin, which discharges into Charleston Harbor. Surface waters uses in the basin include power generation, recreation, and water supply, as well as industrial and agricultural uses. Water quality in the basin is generally good but with some impairments throughout, mostly from low oxygen levels, high metal concentrations, and presence of fecal coliform. The proposed rail line would traverse two of the seven watersheds of the Cooper River basin: the Cypress Swamp watershed and Lake Moultrie watershed. The Cypress Swamp watershed encompasses 358 miles of streams and 220 acres of open water. The Lake Moultrie watershed encompasses 15 miles of streams and 56,760 acres of open water, of which most is Lake Moultrie.

The **Four Hole Swamp basin** (HUC 03050205) extends inland approximately 80 miles and has a total area of approximately 653 square miles. Four Hole Swamp is the major stream draining the basin to the Edisto River, which eventually discharges into the Atlantic Ocean. Most of the surface waters in the Four Hole Swamp basin have been designated for recreational, drinking water, fish, and agricultural uses. Water quality impairments are caused mostly by low dissolved oxygen and presence of fecal coliform. The proposed rail line would traverse two of the three watersheds in the Four Hole Swamp basin: the Dean Swamp watershed and Lower Four Hole Swamp watershed. The Dean Swamp watershed encompasses 158 miles of streams and 398 acres of open water. The Lower Four Hole Swamp watershed encompasses 501 miles of streams and 932 acres of open water.

Surface Water Quality in Study Area Watersheds

Under Section 303(d) of the Clean Water Act (CWA), states, territories, and authorized tribes are required to develop lists of impaired surface waters, which are those that do not meet established water quality standards. The CWA requires that these jurisdictions establish priority rankings and develop total maximum daily loads (TMDLs) of pollutants for these listed surface waters. Sometimes broad watershed-based TMDLs are developed to address combined cumulative impacts on specific water quality parameters. A TMDL is a calculation of the maximum amount of a pollutant that a surface water body can receive and still safely meet water quality standards. In South Carolina, DHEC has been delegated authority by the U.S. Environmental Protection Agency (USEPA) to assess water quality of South Carolina surface waters and to develop the state's Section 303(d) list of impaired surface waters. Every 2 years, DHEC reviews and assesses the water quality of surface waters statewide and issues a new Section 303(d) list of impaired surface waters. The 2016 South Carolina Section 303(d) list of impaired surface waters was approved by the USEPA and published in June 2017.

The joint lead agencies described the existing surface water quality conditions in the study area using the DHEC 2016 303(d) list of impaired waters. Table 3.2-1 summarizes and Figure 3.2-2 shows the locations of the eight 303(d)-listed impaired surface waters in the study area. All impairments are from the bacterium *Escherichia coli* and heavy metal mercury. Most of the affected designated uses are recreation (swimming) and fish consumption.

Table 3.2-1. 303(d) Impaired Waters in the Study Area

Watershed (basin)	Surface Water	Impairment	Designated Use Affected
Cypress Swamp (Cooper basin)	Wassamassaw Swamp	E. coli	REC
Lake Moultrie (Cooper basin)	Lake Moultrie	Mercury	FISH
	Diversion Canal	Mercury	FISH
	Unnamed Tributary to Lake Moultrie	E. coli	REC
	Duck Pond Creek	E. coli	REC
Dean Swamp (Four Hole Swamp basin)	Sandy Run	E. coli	REC
	Dean Swamp	E. coli	REC
Lower Four Hole Swamp (Four Hole Swamp basin)	Four Hole Swamp	E. coli, mercury	FISH

Source: South Carolina Department of Health and Environmental Control 2018

E. coli = *Escherichia coli*; REC = Recreational Use (swimming); FISH = Fish Consumption; AL = Aquatic Life

DHEC has established a TMDL for dissolved oxygen in the Cypress Swamp watershed. All TMDLs include a wasteload allocation for all National Pollutant Discharge Elimination System (NPDES)-permitted discharges. The TMDL states that for future NPDES construction stormwater permittees, such as the Applicant, compliance with the terms and conditions of its NPDES permit would be effective implementation of the wasteload allocation to ensure dissolved oxygen levels would not be further impaired (South Carolina Department of Health and Environmental Control 2013).

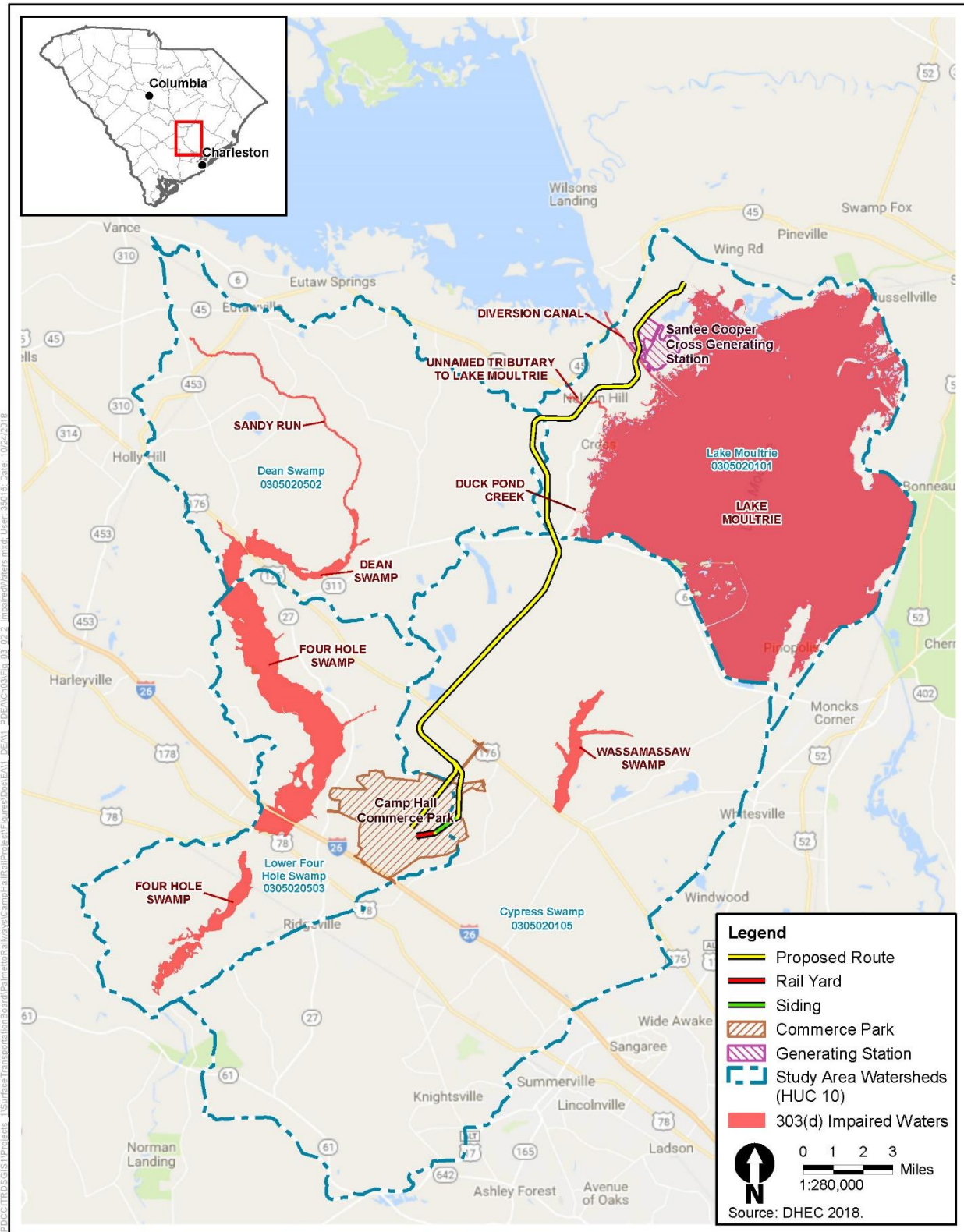


Figure 3.2-2. 303(2) Impaired Waters in the Study Area

Surface Waters and Water Quality along the Rail Corridor

The joint lead agencies used the Applicant's U.S. Army Corps of Engineers (Corps)-approved surface waters and wetlands delineation and the *Environmental Report* (Appendix B) to identify and describe surface waters in the rail corridor. The joint lead agencies used the Applicant's preliminary rail design and preliminary hydraulic study information provided in the DA permit application (Appendix D, *Agency Notices and Comment Letters*) to summarize the number of culverts and bridges proposed at these surface water crossings, and to qualitatively describe the potential impacts at these crossings.

The proposed rail line would cross three surface waters: Bulltown Ditch, Williams Branch, and the Diversion Canal (Figure 3.2-1). None of these surface waters has DHEC-designated surface water protection areas. The proposed rail line would not cross the surface water protection area around Lake Moultrie.

- **Bulltown Ditch** extends more than 18,000 feet from the Santee Canal off of Lake Moultrie to the Diversion Canal, bisecting Bulltown Bay. This ditch is approximately 6 feet wide and 4 feet deep. Bulltown Ditch crosses under various public and forestry roads as well as the CSXT rail line serving the Cross Generating Station through large concrete and metal culverts. Bulltown Ditch dates from sometime after the Santee Canal (circa 1793) and is a maintained watercourse. It removes water from some areas and is an excavated feature with an adjacent spill berm that alters hydrology in the immediate areas of the ditch. In some areas, the Bulltown Ditch flows through uplands before draining back into wetlands.
- **Williams Branch** is a perennial, relatively permanent stream. The channel is approximately 6 to 8 feet wide and the water level is typically 5 feet below top of bank. Williams Branch crosses under various forestry roads via large concrete and metal culverts that are large and do not impede natural flow. The watercourse is not channelized. The adjacent forest is managed as a buffer that protects water quality. This buffer consists of a bottomland hardwood forest, interspersed with loblolly pine with sandy soils. Outside of the approximately 50-foot buffer, loblolly pine is planted in rows for future harvest.
- **The Diversion Canal** is a 7.5-mile-long, 500-foot-wide canal that was excavated to connect Lake Moultrie and Lake Marion. The canal is approximately 12 feet deep with a bottom of sand and clay, with some sediments washed downstream from the Santee River. There is very little organic material or vegetation in the canal at the site of the proposed rail line crossing and it was last dredged in 2014 to removed 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 it is used for recreation access between the lakes. The Diversion Canal is listed on the DHEC 2016 303(d) list of impaired waters for mercury (Figure 3.3-2).

The proposed rail line would also cross an unnamed tributary to Lake Moultrie that is listed on the DHEC 2016 303(d) list of impaired waters for *Escherichia coli* (Figure 3.3-2). At the time of wetland delineation, the area of this unnamed tributary was identified as a wetland with no discernable bed and bank that would represent a tributary within the wetland.

3.2.1.2 Wetlands

Wetlands are important features in the landscape that provide numerous beneficial services for people and for fish and wildlife. Some of these services, or functions, include protecting and improving water quality, providing fish and wildlife habitats, storing floodwaters, providing aesthetic value, ensuring biological productivity, filtering pollutant loads, and maintaining surface water flow during dry periods. Functions are the result of the inherent and unique natural characteristics of wetlands. Wetland functions can also reflect a measurable value to society. For example, a value can be determined by the

revenue generated from the sale of fish that depend on the wetland, by the tourist dollars associated with the wetland, or by public support for protecting fish and wildlife. Although large-scale benefits of functions can be valued, determining the value of an individual wetland is difficult because wetlands differ widely and do not all perform the same functions or perform functions equally well (U.S. Environmental Protection Agency 2002).

Wetlands in the Study Area Watersheds

The joint lead agencies used the U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) (U.S. Fish and Wildlife Service 2017) to describe wetlands in the study area. The joint lead agencies used the Applicant's wetland delineation, approved by the U.S. Army Corps of Engineers (Corps), to further describe the wetlands along the rail corridor (Section 3.2.1.4, *Wetlands Along Rail Corridor*). Based on USFWS NWI data, there are approximately 73,711 acres of palustrine wetlands in the study area (Figure 3.2-3). Most inland (nontidal) wetlands are in the palustrine system. Classes in the palustrine system include forested, emergent, and scrub-shrub wetlands.

- **Emergent wetlands (PEM).** Emergent wetlands are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens. This vegetation is present for most of the growing season in most years. These wetlands are usually dominated by perennial plants.
- **Forested wetlands (PFO).** Forested wetlands are characterized by woody vegetation that is 20 feet tall or taller.
- **Scrub-shrub wetlands (PSS).** Scrub-shrub wetlands are dominated by woody vegetation less than 20 feet tall. The species include true shrubs, young trees (saplings), and trees or shrubs that are small or stunted because of environmental conditions.

Table 3.2-2 summarizes NWI wetlands in the study area by watershed. Figure 3.2-3 shows the NWI-mapped wetlands.

Table 3.2-2. Acres of NWI-Mapped Wetlands in the Study Area

Watershed (basin)	PFO	PSS	PEM	Total
Cypress Swamp (Cooper basin)	29,069	3,721	730	33,520
Lake Moultrie (Cooper Basin)	5,201	1,865	809	7,875
Dean Swamp (Four Hole Swamp basin)	10,282	1,281	228	11,791
Lower Four Hole Swamp (Four Hole Swamp basin)	19,005	1,271	249	20,525
Total	63,557	8,138	2,016	73,711

Source: U.S. Fish and Wildlife Service 2018

Note: Wetland classification based on Cowardin et al. 1979

PFO = palustrine forested; PSS=palustrine scrub-shrub; PEM = palustrine emergent

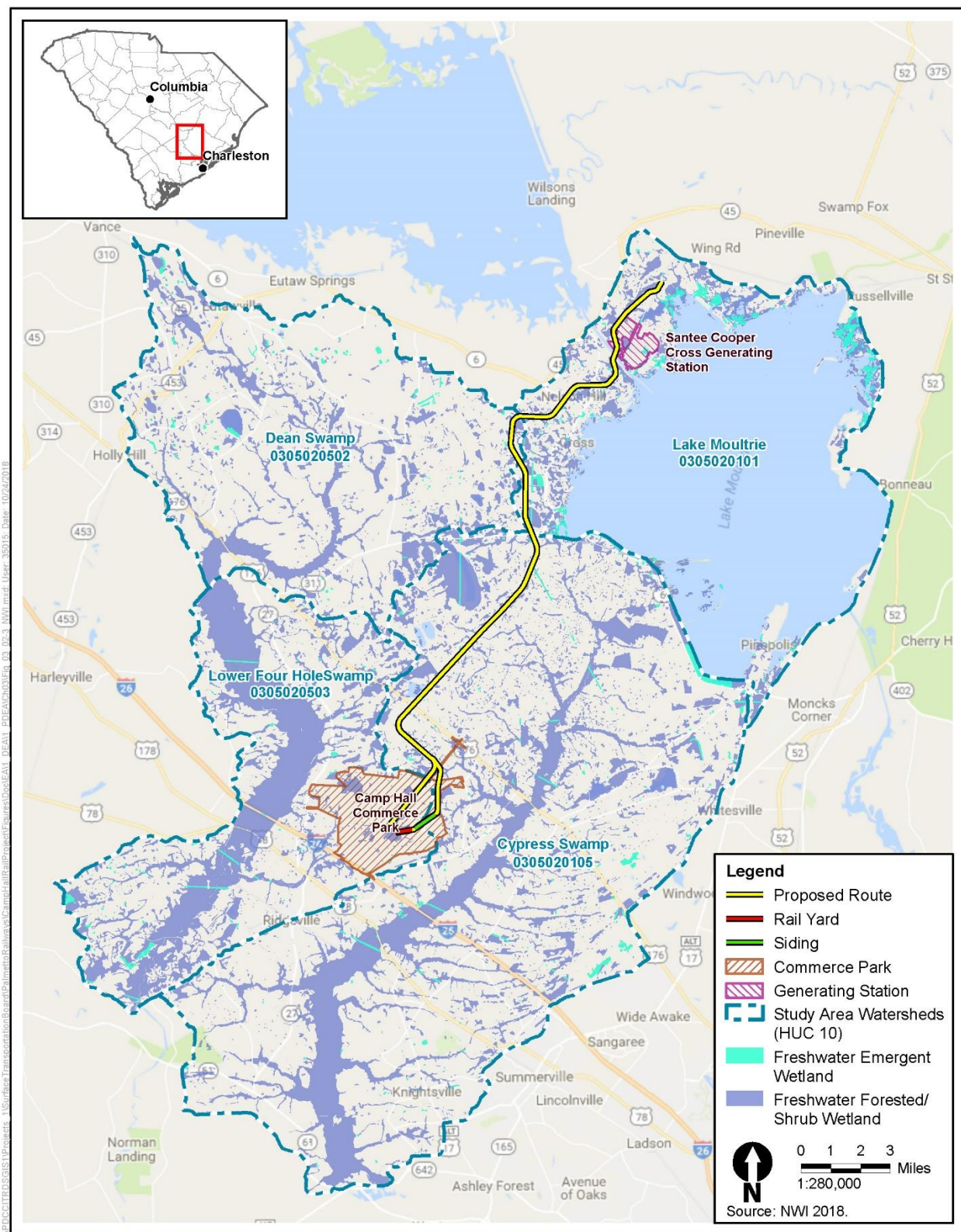


Figure 3.2-3. NWI Wetlands in the Study Area

Wetlands along the Rail Corridor

The joint lead agencies further defined wetlands along the rail corridor based on the Applicant's wetland delineation, which identified and mapped the following five wetland types based on habitat type for this area of South Carolina; all are considered PFO wetlands under the Cowardin classification system (Cowardin 1979) (Figure 3.2-4a, b, c). The Applicant used the Corps *Guidelines for Preparing a Compensatory Mitigation Plan* (U.S. Army Corps of Engineers 2010) to describe functional attributes of the wetlands they delineated along the rail corridor. The wetland condition is the degree of disturbance relative to the ability of a wetland to perform its physical, chemical, and biological functions. Wetland conditions are defined as *fully functional*, *partially impaired*, *impaired*, and *very impaired* (U.S. Army Corps of Engineers 2010).

- **Wetland plantation pine forest.** These wetlands are characterized by an overstory composed primarily of loblolly pine (*Pinus taeda*). These areas are intensively managed (bedded and ditched) for silviculture. The pine stands range from open thinned stands to dense, pre-merchantable stands. Because of recent clear cuts, there are areas with no overstory or midstory. In thinned pine areas, there is a midstory of sweet gum and red maple with approximately 10 to 20 percent cover. In denser pine areas the 90 to 100 percent overstory cover displaces the midstory or shrub layer. In open, thinned pine stands the shrub layer consists of wax myrtle (*Morella cerifera*), redbay (*Persea borbonia*), fetterbush (*Lyonia lucida*), and deerberry (*Vaccinium stamineum*) with 10 to 30% cover. The herbaceous layer is also somewhat sparse at less than 10 percent cover, and is composed primarily of dwarf palmetto (*Sabal minor*), longleaf woodoats (*Chasmanthium sessiliflorum*), plume grass (*Saccharum giganteum*), giant cane (*Arundinaria gigantea*), Virginia chain fern (*Woodwardia virginiana*), cinnamon fern (*Osmunda cinnamomea*), and netted chain fern (*Woodwardia areolata*). Sphagnum moss (*Sphagnum sp.*) is also present within some of the wetland areas.

These wetland areas have been routinely logged for decades and have experienced heavy soil disturbance and compaction; they are considered *impaired*. In some areas, beds have been constructed against the native topography, trapping water between beds.

- **Carolina bay.** These depressional wetlands are inundated seasonally or perennially based on size. There are five Carolina bays along the rail corridor, four of which are named: Bulltown Bay, Skeleton Bay, Todd Bay, and Beech Island Bay. A large portion of these bays are ditched and either partially or entirely planted in loblolly pine. In the remnant habitat, red maple (*Acer rubrum*), swamp tupelo (*Nyssa biflora*), and pond cypress (*Taxodium ascendens*) dominate the overstory at 30 to 40 percent cover. While the oldest trees approach 50 years, no areas are considered old growth. The midstory is sparse, consisting of the same species found in the overstory. In more seasonally wet Carolina bays, a shrub and herbaceous layer may consist of redbay, dwarf palmetto, 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.

The condition of these wetlands ranges from *very impaired* to *impaired* to *partially impaired*. Part of Bulltown Bay is considered *very impaired* due to fill material and lack of hydrologic connections associated with an existing railroad grade. Skeleton Bay, Todd Bay, and Beech Island Bay are all *impaired* because they have been harvested and replanted in loblolly pine. In Beech Island Bay, a utility easement is also maintained, creating an emergent wetland habitat. Skeleton Bay and Todd Bay have been completely converted to plantation pine. The unnamed Carolina bay is *partially impaired* due to timber harvesting up to the edge of the bay.

- **Plantation pine converted Carolina bay.** These wetlands were once Carolina bays but have been completely harvested, ditched, and planted in plantation pine for future harvest. Timber in this wetland type is approximately 10 to 30 years of age. This wetland habitat type and vegetation is similar to the wetland plantation pine forest habitat.

- **Depressional pond.** These wetlands are seasonally inundated and characterized by age classes ranging from new growth to approximately 30 years old. No old growth was documented in this habitat type. The overstory is composed of black gum (*Nyssa sylvatica*), sweet gum (*Liquidambar styraciflua*), red maple, and, in larger gum ponds that are semipermanently flooded, pond cypress is present. The overstory cover ranges from 20 to 40 percent. The midstory is sparse at approximately 10 percent cover and 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 percent 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 condition of these wetlands range from *impaired* to *fully functional*. Wetlands in the industrial forestlands are considered *impaired* by the conversion of the landscape to pine monoculture and minor ditching that has altered hydrology. Wetlands in the SCDNR Hall Wildlife Management Area are considered *fully functional* as they retain their natural hydrology and have largely avoided logging practices.

- **Bottomland hardwood forested wetland.** These wetlands are characterized by an overstory composed of bald cypress (*Taxodium distichum*), water oak (*Quercus nigra*), black gum, swamp tupelo and swamp chestnut oak (*Quercus michauxii*). Overstory closure ranges from 30 to 50 percent, with an age class of 10 to 50 years old. No old growth was documented in or immediately adjacent to the rail corridor. The midstory is composed of bald cypress, black gum, sweetgum, and swamp tupelo characterized by a cover ranging from 10 to 20 percent. The shrub and herbaceous layer ranges from sparse to heavy, approximately 10 to 60 percent, 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 in a few of the bottomland hardwood forests within the rail corridor.

The condition of these wetlands ranges from *partially impaired* to *impaired*. The wetlands in the SCDNR Hall Wildlife Management Area are *partially impaired* due, in part, to the alteration of hydrology in the area by the construction of the Bulltown Ditch. These wetlands are further affected by the CSXT rail line, which crosses and fragments wetlands, as well as ruts and soil compaction caused by past logging activity. The remainder of these wetlands along the rail corridor are considered *impaired* due to the extensive ditches that alter hydrology and fragment the wetlands, as well as the interspersed planting of loblolly pine.

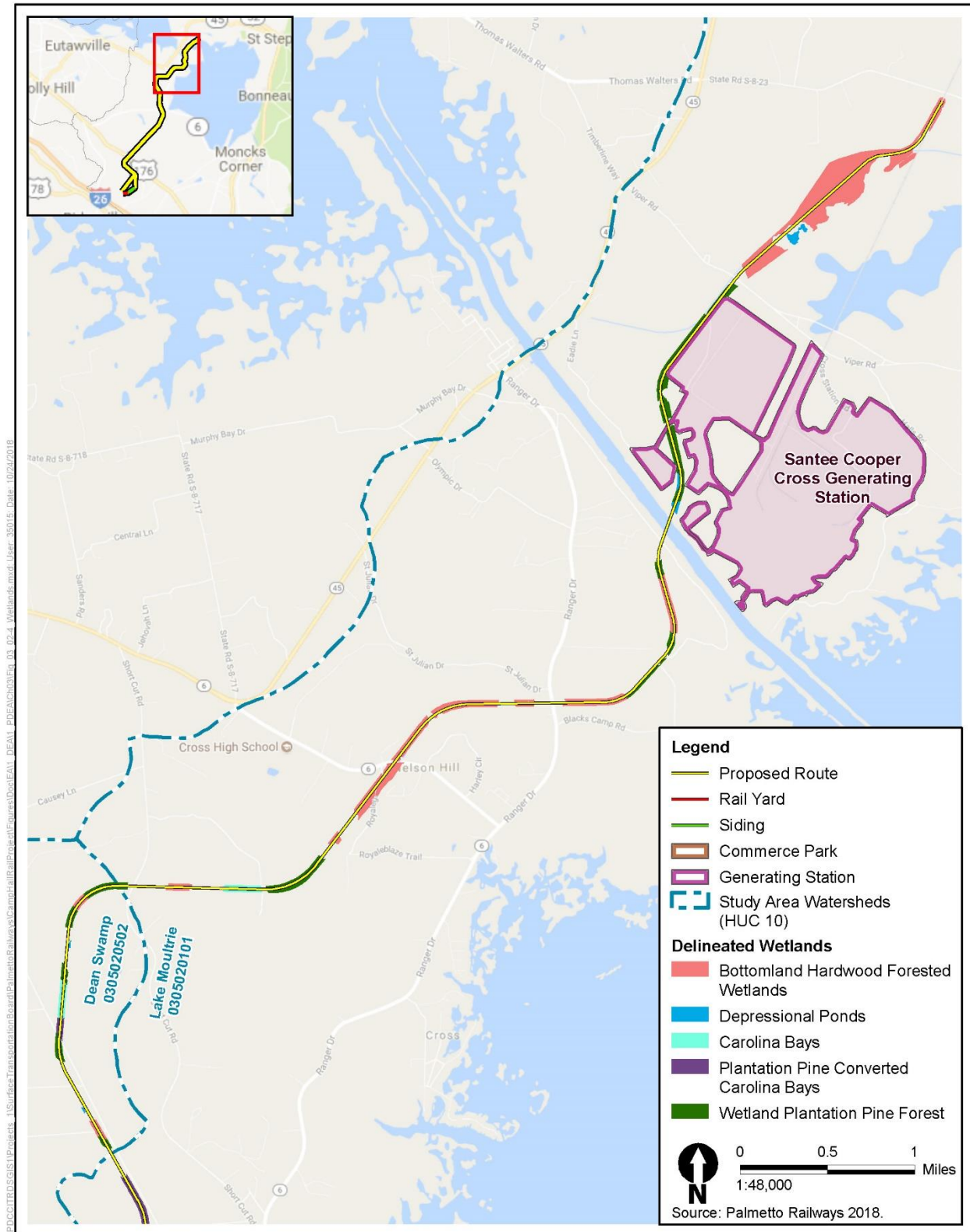


Figure 3.2-4a. Delineated Wetlands along the Rail Corridor

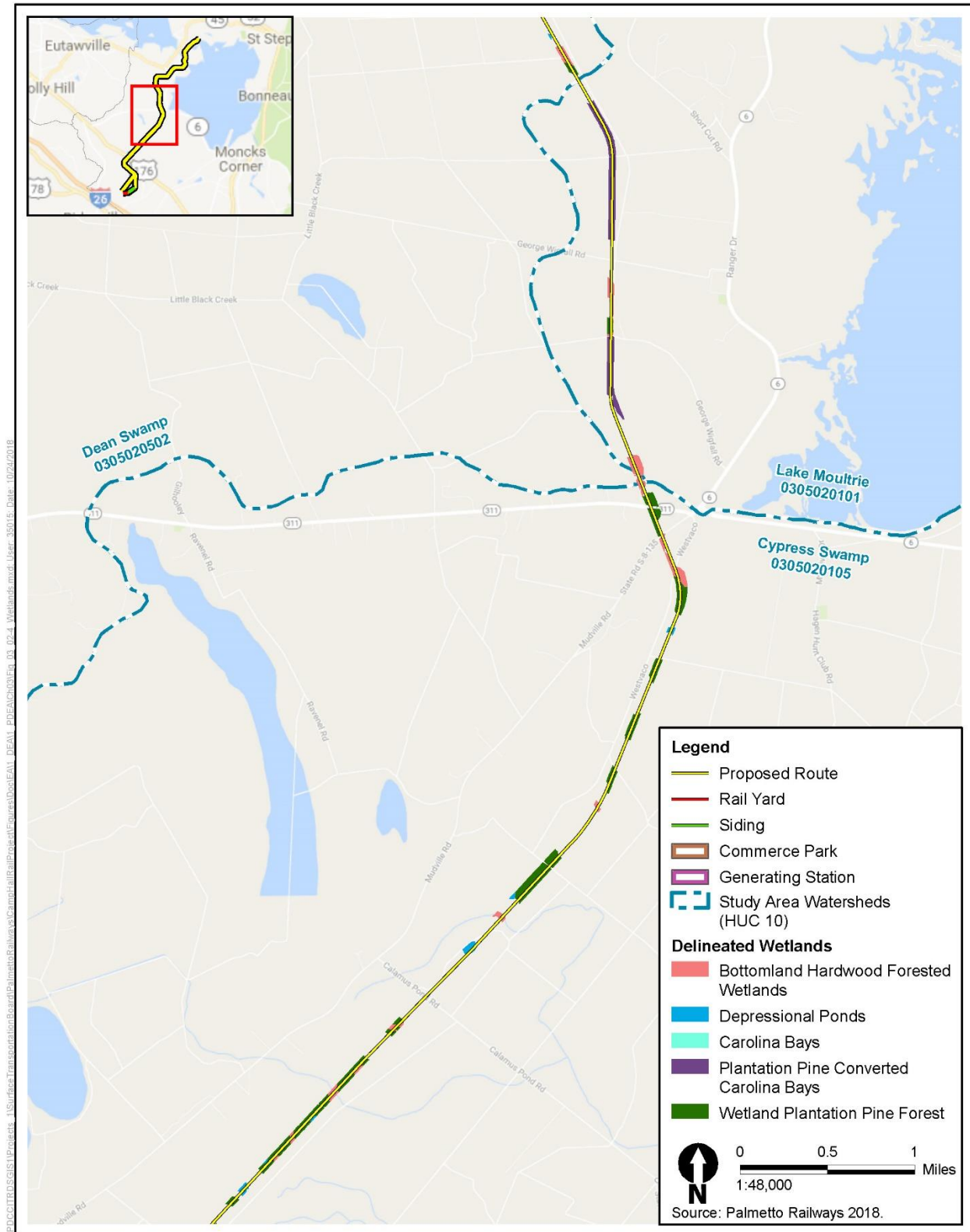


Figure 3.2-4b. Delineated Wetlands along the Rail Corridor

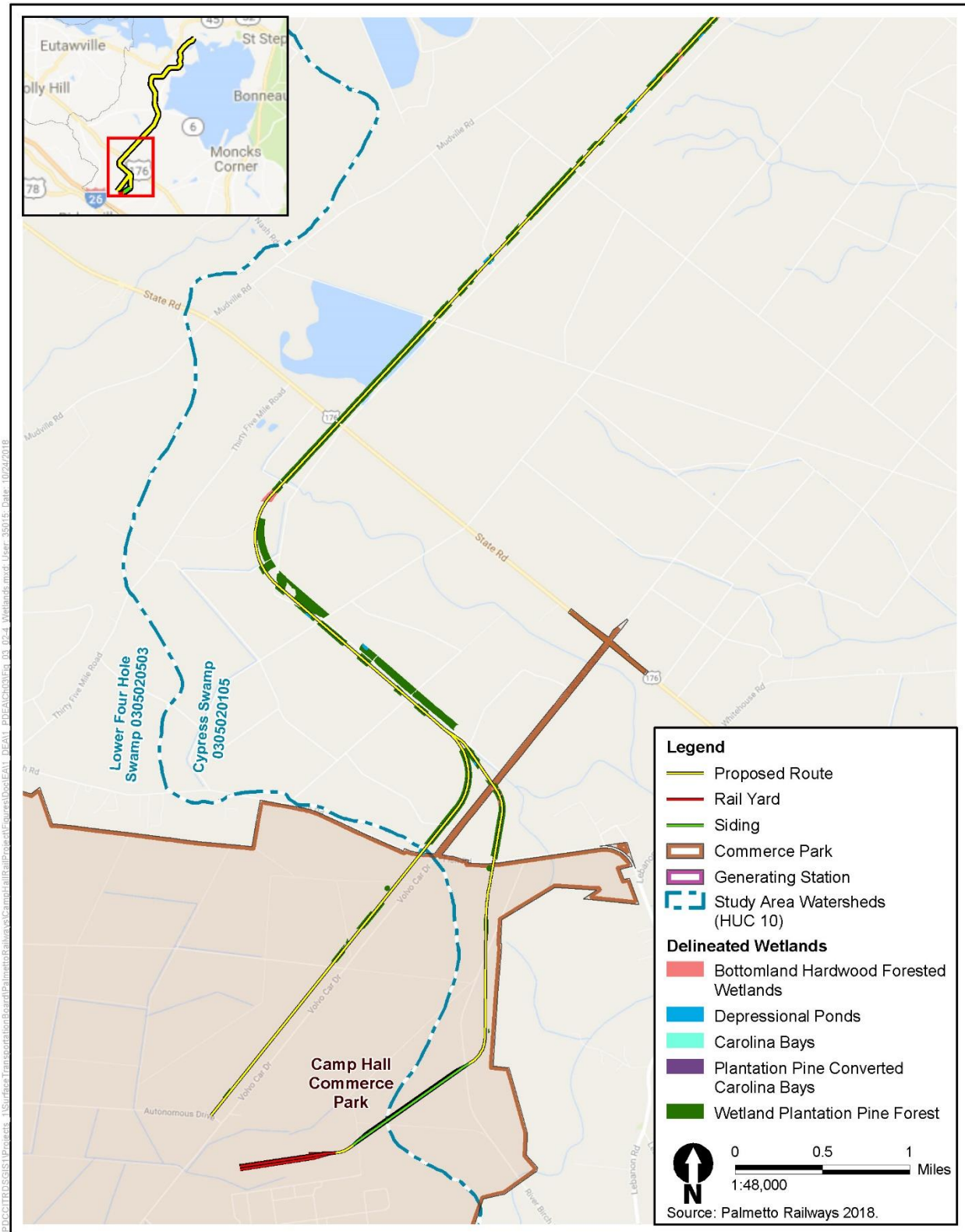


Figure 3.2-4c. Delineated Wetlands along the Rail Corridor

3.2.1.3 Floodplains

Floodplains are defined as any land area susceptible to being inundated by waters from any source (44 C.F.R. 59.1) and are often associated with surface waters and wetlands. Floodplains are valued for their contribution to natural flood and erosion control, enhancement of biological productivity, and socioeconomic benefits and functions. For human communities, however, floodplains can be considered a hazard area because buildings, structures, and properties located in floodplains can be inundated and damaged during floods.

Floodplains that are relatively undisturbed or that have been restored to a nearly natural state provide a wide range of benefits to both human and natural systems. The Federal Interagency Floodplain Management Task Force (1994) groups these potential benefits into three categories—water resources, biological resources, and societal resources—labeled according to the primary recipient of the benefit or its relationship to a larger system. Table 3.2-3 summarizes potential floodplain benefits in the context of water resources.

Table 3.2-3. Potential Floodplain Benefits to Water Resources

Natural Flood and Erosion Control	Water Quality Maintenance	Groundwater Recharge
• Flood storage and conveyance • Reduce flood velocities • Reduce flood peaks • Reduce sedimentation	• Filter nutrients and impurities from runoff • Process organic wastes • Moderate temperature fluctuations	• Promote infiltration and aquifer recharge • Reduce frequency and duration of low surface flows

Source: Federal Interagency Management Task Force 1994

The joint lead agencies used the Federal Emergency Management Agency (FEMA) floodplain geographic information system (GIS) data (Federal Emergency Management Agency 2017) to identify floodplains in the study area. FEMA develops Flood Insurance Rate Maps (FIRM), the official maps on which FEMA delineates special flood hazard areas for regulatory purposes under the National Flood Insurance Program (NFIP). Special flood hazard areas are also known as 100-year floodplains, or areas that have a 1 percent annual chance of flooding. FEMA also delineates 500-year floodplains, which are floodplains that have a 0.2 percent annual chance of flooding; these areas are not subject to the requirements of the NFIP but do provide additional information on flood potential.

FEMA has mapped approximately 102,171 acres of 100-year floodplains and 1,369 acres of 500-year floodplains in the study area watersheds (Figure 3.2-5, Table 3.2-4). The proposed rail line would cross two FEMA mapped 100-year floodplains associated with the Diversion Canal and a tributary stream/wetland complex to Black Creek; both of these are in the Cooper basin. The mapped floodplain at the Diversion Canal covers the open water width of the channel and very little, if any, adjacent upland areas, likely due to dams that control water levels in the Lake Moultrie and Lake Marion system. The proposed rail line would not cross any FEMA mapped 500-year floodplains or FEMA mapped floodways.

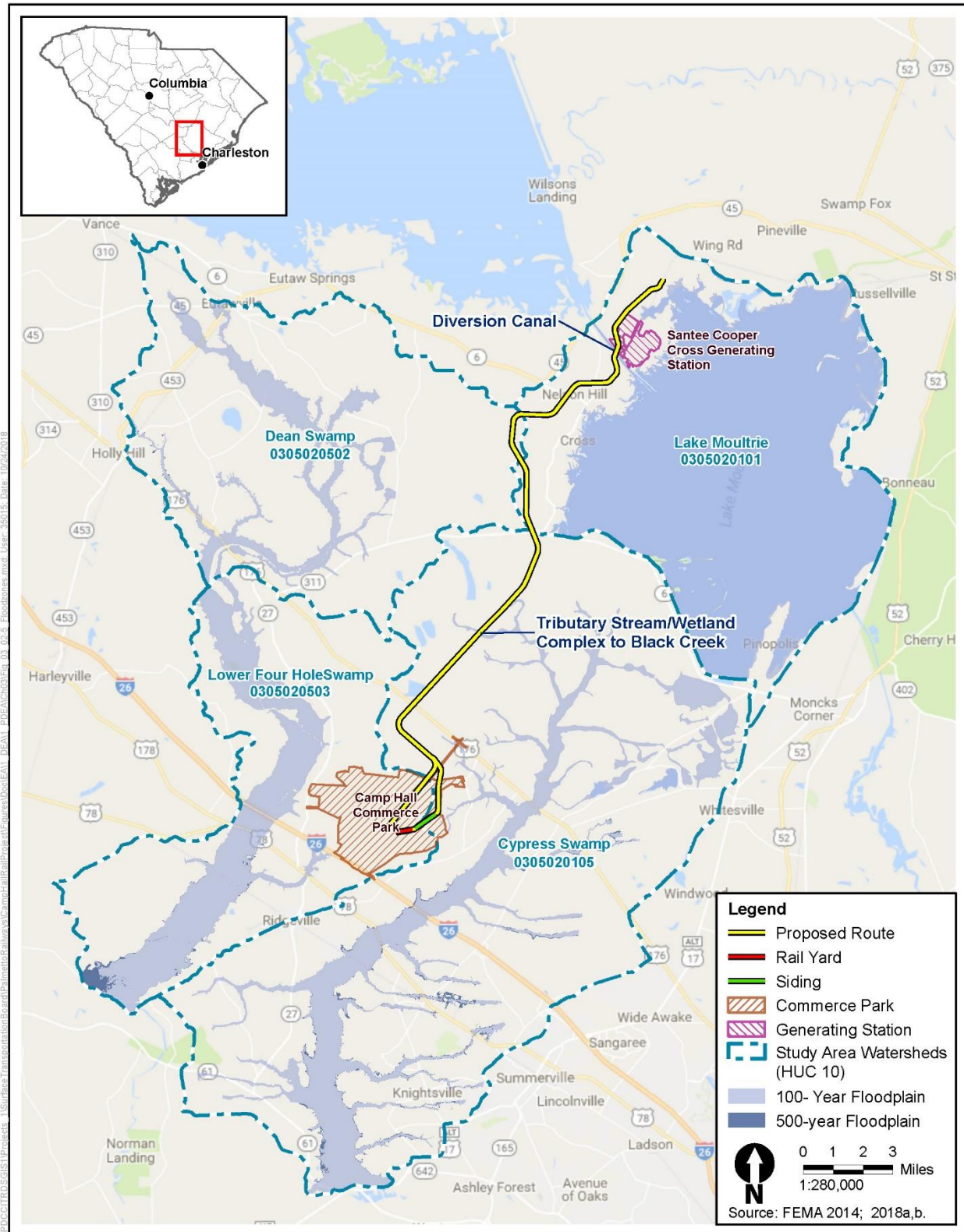


Figure 3.2-5. FEMA 100 and 500 Year Floodplains in the Study Area

Table 3.2-4. FEMA-Mapped 100-Year and 500-Year Floodplain in the Study Area

Watershed (basin)	100-Year (acres)	500-Year (acres)
Cypress Swamp (Cooper basin)	20,967	836
Lake Moultrie (Cooper basin)	59,255	0
Dean Swamp (Four Hole Swamp basin)	7,669	32
Lower Four Hole Swamp (Four Hole Swamp basin)	14,280	501
Total	102,171	1,369
Source: Federal Emergency Management Agency 2014, 2018a, 2018b		

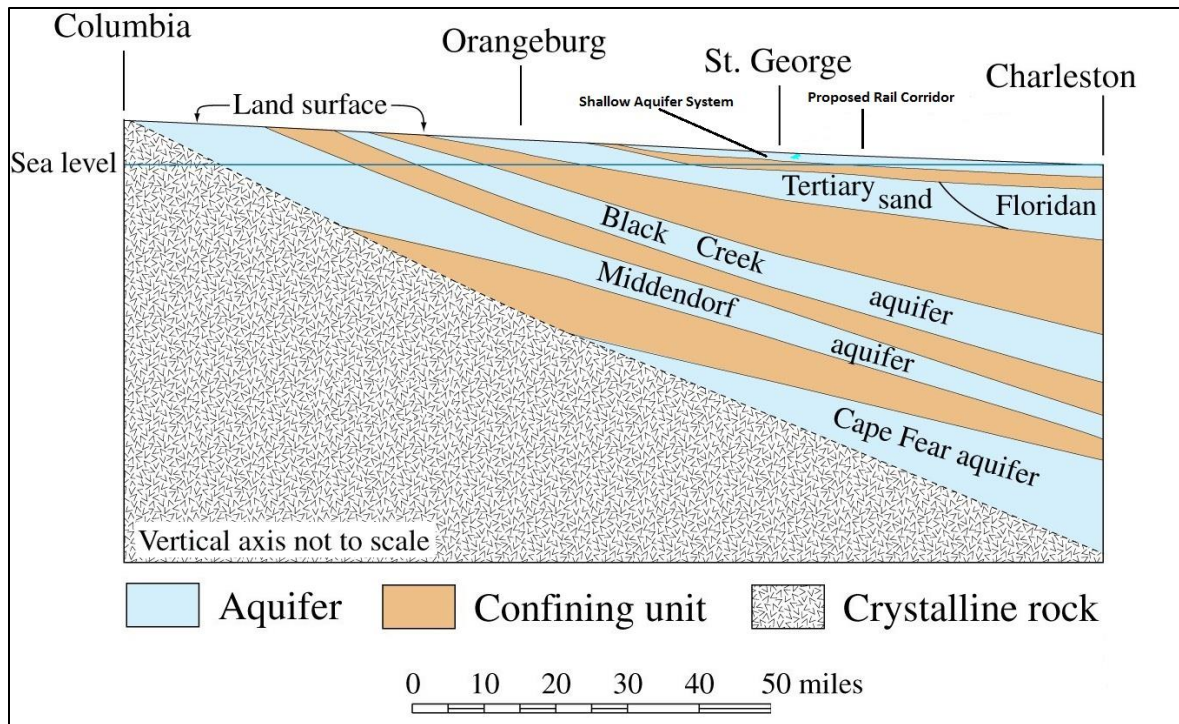
3.2.1.4 Groundwater

Groundwater is the subsurface water that saturates the pores and cracks in soil and rock and is transmitted via geologic layers called aquifers. An unconfined aquifer (or water-table aquifer) is recharged directly by infiltration of precipitation or surface water (e.g., streams). Confined aquifers are overlain by low-permeability material (e.g., clay or rock) that limits the vertical flow of water into or out of the aquifer. Aquifers that are at or near the land surface are called surficial aquifers; these aquifers are unconfined and are recharged by precipitation and surface water. The water that seeps into an aquifer is called groundwater recharge, and places where recharge occurs are called recharge areas. Landowners, municipalities, and industries access groundwater from wells that tap into an aquifer.

A sole-source aquifer is defined by USEPA as an aquifer that supplies at least 50 percent of the drinking water consumed in an area overlying the aquifer (U.S. Environmental Protection Agency 2012). These areas may have no alternative drinking water source that could physically, legally, and economically supply all those who depend on the aquifer for drinking water. There are no sole-source aquifers in the study area (U.S. Environmental Protection Agency 2017).

The joint lead agencies used the South Carolina Department of Natural Resources State Water Assessment (2009), South Carolina Water Resources Commission groundwater assessment of Berkeley County (1985), and the U.S. Geological Survey's (USGS) estimated use of groundwater in the United States county-level data (2005) to characterize aquifers, groundwater quality, and groundwater use in the study area. The joint lead agencies used SCDNR (2015) groundwater well inventory data for Berkeley County and DHEC (2018) public water supply well and protection area GIS data to characterize wells in the study area.

There are six principal aquifers in the study area: Cape Fear, Middendorf, Black Creek, Tertiary Sand, Floridan, and a shallow aquifer (Figure 3.2-6). The sediments range from 1,700 to 2,800 feet thick. The principal sources of groundwater supply are the Middendorf Aquifer, the Black Mingo Formation of the Tertiary Sand Aquifer, and the Santee Limestone section of the Floridan Aquifer. The Middendorf Aquifer has been the primary groundwater source for public supply, with wells ranging from 1,580 feet to 2,510 feet below the surface. The Tertiary Sand and Floridan Aquifers are the most commonly used groundwater sources; well depths range from 250 feet to 400 feet below the surface. These groundwater sources are mainly used for domestic and light-commercial purposes. Use of the shallow aquifer, a surficial aquifer, is scattered throughout the eastern end of the basin, generally where the Floridan Aquifer and Tertiary Sand Aquifer are brackish and where public water supply is absent (South Carolina Department of Natural Resources 2009).



Source: South Carolina Department of Natural Resources 2014

Figure 3.2-6. Aquifers (Cross Section) in the Study Area

The shallow aquifer is the focus of this analysis because it is most vulnerable to contamination from surface activities. Unlike the five underlying confined aquifers, the shallow aquifer is not protected from surface contaminants by layers of impervious material and is much closer to the surface. In most areas, the land surface is the principal interface between anthropogenic activities and shallow groundwater (South Carolina Water Resources Commission 1985).

In general, groundwater in the shallow aquifer in the study area occurs under water-table conditions. Although the shallow system locally may receive some recharge from deeper aquifers, most recharge is supplied from rainfall. The water moves by gravity from areas of high elevation to areas of lower elevation at a rate that depends on the slope of the water table and the permeability of the aquifer. Groundwater levels are typically 3 to 155 feet below the land surface, and in part, reflect the variations in local topography. Wetlands result where the water table is at or very near the land surface much of the time (South Carolina Water Resources Commission 1985).

The shallow aquifer groundwater quality varies widely and is generally good for domestic, industrial, and irrigation use. It is usually low in total dissolved solids, acidic to slightly alkaline, and can contain high iron concentrations and hardness (South Carolina Water Resources Commission 1985, South Carolina Department of Natural Resources 2009).

Groundwater in Berkeley County is used primarily for industrial (52 percent) and domestic self-supplied (34 percent) uses. The remaining 14 percent of groundwater withdrawals in the county are for public supply, irrigation, livestock, and thermoelectric uses (U.S. Geological Survey 2005). Based on groundwater well inventory data (South Carolina Department of Natural Resources 2015) and public water supply well and associated protection area GIS data (South Carolina Department of Health and Environmental Control 2018), there are groundwater wells throughout the study area, including public

water supply wells with associated protection areas. However, the proposed rail line would not cross any private groundwater wells or public water supply wells. The nearest public water supply well is approximately 900 feet from the rail corridor. The northern terminus of the proposed rail line would cross 1.5 acres of a DHEC designated groundwater protection zone associated with the Quattlebaum Mobile Home Park. However, groundwater in this protection zone is taken from the deeper and confined Middendorf Aquifer and not the shallow aquifer.

3.2.2 Environmental Consequences

3.2.2.1 Surface Waters

The joint lead agencies used the Applicant's surface water delineation and preliminary rail design, including preliminary hydraulic study information, to quantitatively and qualitatively assess impacts on surface water hydrology and water quality. The preliminary hydraulic study identified the number and size of culverts proposed at surface water crossings along the rail corridor, as well as the preliminary design of the bridge crossing of the Diversion Canal. This study was conducted in accordance with applicable local, state, federal, and railway standards.

Impacts on surface waters could result from construction and operation of the proposed rail line through vegetation removal, excavation, fill placement, use of equipment, and installation of surface water crossing structures (e.g., culverts). Construction and operation of the proposed rail line would result in both physical and chemical alteration of surface waters crossed by or adjacent to the rail corridor. Potential physical alterations would include changes in sediment transport and deposition, modification of channel configuration and morphology, and changes in streamflow characteristics (e.g., volume, velocity). Potential chemical alterations are primarily related to water quality. The proposed rail line would be designed to meet or exceed local, state, federal, and railway standards for quantities and sizes of culverts along the rail corridor. All culverts would convey either a minimum 25-year rainfall event with reasonable amount of freeboard below the base of the rail or a 100-year rainfall event with a head of 2 feet or greater below the base of the rail. Design features would ensure that the proposed rail line would not significantly impede the existing stormwater drainage patterns and efficiencies. Therefore, the following potential impacts should be considered in the context of these design standards.

Construction

Surface Water Flow during Culvert and Bridge Installation

The proposed rail line would cross three surface waters: Bulltown Ditch, Diversion Canal, and Williams Branch. The proposed crossing structure at Bulltown Ditch is a three-barrel culvert and at Williams Branch a two-barrel culvert. A short length of Williams Branch near the proposed culvert would be realigned. Table 3.2-5 summarizes the proposed rail line's direct impact on these surface waters from installation of the culverts and stream realignment.

A proposed six-span bridge would cross the Diversion Canal with an overwater area of approximately 11,730 square feet. The overwater distance of the bridge would be approximately 520 linear feet. The bridge would be supported by seven new bents (i.e., support structures) that each consist of two 8-foot, 6-inch-diameter supports. Four of the bents totaling 453.6 square feet would be placed in the canal (Table 3.2-5). No other structures (e.g., riprap or bank armoring) would be constructed below the canal's ordinary high water mark.

Table 3.2-5. Proposed Rail Line Direct Surface Water Impacts

Surface Water	Impact Distance/Area	Impact Cause
Bulltown Ditch	194.2 linear feet	Culvert installation
Williams Branch	121 linear feet	Culvert installation
Williams Branch	222 linear feet	Stream realignment
Diversion Canal	453.6 square feet	Bridge support installation

Culvert installation may require surface water alterations during construction, including temporary channel blockage or stream rerouting to isolate in-water worksites, channel straightening to achieve the proper culvert alignment, channel and streambank excavation and fill placement for culvert installation, and placement of engineered stream bank structures for erosion protection. Such activities could temporarily alter stream configuration and hydraulics, resulting in higher discharge velocities. These alterations could cause increased streambed erosion and sediment loads, changes in pool, riffle and run structure, and increased transport of nutrients and other pollutants (U.S. Environmental Protection Agency 2007). However, these potential impacts would occur locally around the culvert installation site and the stream distance affected compared to overall stream distance in the study area (373 miles) is extremely small and would not be anticipated to affect the overall surface water hydrology of the watershed. The Applicant has proposed numerous voluntary mitigation measures to maintain flow and hydrology around culverts (Chapter 4, *Proposed Mitigation*). Further, OEA has recommended preliminary mitigation measures to ensure that culvert installations would not cause surface water flows to back up and flood the area, and would, if necessary, ensure flow is maintained around the culvert installation site (e.g., piped stream diversion) (Chapter 4, *Proposed Mitigation*). Therefore, if the mitigation set forth in the Draft EA is implemented, construction impacts on surface water flows during culvert installations would be minimal. Installation of the bridge supports in the Diversion Canal may cause some local water flow alterations, but given the small area of the bridge supports compared to the surface area and volume of water and the controlled nature of the water levels in the canal from the dam system, it would be unlikely that flow velocities would be altered enough to adversely affect the flow in the canal. Should installation of bridge supports require isolating an in-water worksite around the supports during construction, then pumping water from around the bridge support and discharge into canal waters may be needed, which could alter flow locally in the canal. However, given the size and water volume of the canal, it is unlikely that this short-term and temporary discharge of water would result in adverse impacts on flow in the canal. Therefore, impacts on surface water flows during the Diversion Canal bridge construction would be minimal.

Water Quality

The erosion and transport of sediment caused by clearing, excavation, and fill placement to construct the proposed rail line could degrade water quality. The three surface waters that would be crossed by the proposed rail line have the greatest potential to be directly affected. Sediment deposition into surface waters can affect water quality by increasing turbidity, which can directly affect aquatic species and habitats. Turbidity can decrease light penetration and lead to higher water temperatures because darker sediment particles absorb more heat from solar radiation; and higher water temperatures can decrease dissolved oxygen levels (U.S. Environmental Protection Agency 2007). Sediment deposition into surface waters can also increase pollutant and nutrient levels (e.g., phosphorous) which can alter water quality conditions. For example, excess nutrients in a surface water may enhance the growth of algae, which can affect the availability of oxygen in water.

The use of construction equipment could result in accidental spills or leaks of petrochemicals (e.g., gasoline, hydraulic fluids) directly into a surface water or onto the ground surface, which could reach surface waters if not contained and cleaned up. Although the risk of a major spill and contamination of surface waters is low, accidental spills may degrade surface water quality, which could adversely affect aquatic habitat or limit the beneficial use of waters (e.g., recreation).

Although the degradation of water quality in surface waters could occur during the construction period, this impact would be short-term and temporary. Any turbid surface waters caused by construction activities would return to baseline conditions once the fine sediment material settled. The Applicant would implement voluntary measures to avoid and minimize water quality impacts during construction, including development of a stormwater pollution prevention plan (SWPPP) as required by the NPDES permit (CWA Section 402), a spill prevention and control, and countermeasures plan (SPCC), and implementation of measures from DHEC's *Storm Water Management BMP Handbook*. The Applicant would also be required to obtain a Section 401 water quality certification from DHEC before the Corps can issue a DA permit and before DHEC can issue an NPDES permit. The 401 water quality certification, SPCC, SWPPP, and NPDES permit conditions would contain site-specific measures to avoid and minimize erosion and sedimentation and petrochemical spills that could cause water quality impacts. Therefore, with the protections and mitigation provided by these permit requirements, water quality impacts during construction would be minimal.

Water Quality in 303(d)-Listed Impaired Waters

The proposed rail line would cross Williams Branch, which is in a watershed that has a watershed-wide TMDL developed for dissolved oxygen impairment. As stated in the TMDL, obtaining an NPDES permit and adherence to the NPDES permit conditions would ensure that dissolved oxygen levels in surface waters would not be further impaired during construction.

The proposed rail line would cross two 303(d)-listed impaired waters: the Diversion Canal and an unnamed tributary to Lake Moultrie. The Diversion Canal is impaired by mercury and the unnamed tributary to Lake Moultrie is impaired by the bacterium *Escherichia coli*. The proposed rail line would not contribute to existing *Escherichia coli* or mercury levels.

The Applicant would implement voluntary measures to avoid and minimize water quality impacts during construction, including development of a SWPPP as required by the NPDES permit, an SPCC, and implementation of measures from DHEC's *Storm Water Management BMP Handbook*. The SPCC, SWPPP and NPDES permit conditions would contain site-specific measures to avoid and minimize water quality impacts, including to 303(d)-listed impaired waters. Therefore, as mitigated, water quality impacts on 303(d)-listed impaired waters during construction would be minimal.

Operations

Surface Water Flow

Culverts would alter channel hydraulics because they would confine the flow, which could increase flow velocity (U.S. Environmental Protection Agency 2007). This could result in increased channel scour and erosion processes, which could lead to increased sediment loads and downstream sedimentation. Impacts caused by increased flow velocity from culverts would most likely continue until dynamic equilibrium in the stream channel is reestablished with these structures in place. Dynamic equilibrium refers to the ability of the stream to persist within a range of conditions. The installation of a culvert can disrupt the equilibrium, which triggers a process of stream adjustments and self-correcting mechanisms

in order to reestablish the balance (Vermont Department of Environmental Conservation 2011). This potential disruption and process to reestablish balance would be reduced by the Applicant's voluntary mitigation measure (Chapter 4, *Proposed Mitigation*) to install culverts designed to maintain existing surface water drainage patterns and prevent erosion, thus maintaining stream and drain connectivity. Impacts therefore would be minimal.

In response to the Corps' Public Notice on the DA permit application, Santee Cooper commented on project embankments, culverts, and bridges and the importance of maintaining stormwater drainage patterns and eliminating risk to properties. For example, Santee Cooper commented on the ditch draining the Cross Generating Station, the canal draining the solid waste landfill, Federal Energy Regulatory Commission lands on both sides of the Diversion Canal, the drainage ditch that runs parallel to a road crossing, and multiple ditches on the undeveloped portion of the commerce park. USFWS recommended installing additional culverts—double box culverts every 200 feet along the rail line—to improve hydrologic flows and wildlife connectivity. The National Marine Fisheries Service (NMFS) concurred with this comment. The Applicant responded to all such by referencing its preliminary hydraulic study, which addresses existing and planned stormwater conveyance for the current engineering design. The Applicant stated that they prepared a preliminary hydraulic study that addresses applicable local, state, federal, and railway standards for the current engineering design. This preliminary hydraulic study identified major, primary, and secondary drainages and designed to convey, at a minimum, the 25-year rainfall event. The proposed rail alignment is approximately 28.01 miles and the installation of culverts every 200 feet along the rail corridor, as requested by USFWS, would equate to the installation of approximately 739 culverts. The preliminary hydraulic study identified the need for approximately 136 culverts to satisfy the local, state, and federal requirements. The Applicant believes that the current culvert design adequately conveys flow and allows reasonable movement of wildlife for this infrequently traveled rail corridor. The Applicant's selected engineering firm will review all the relevant data, update accordingly, and coordinate with Santee Cooper and federal, state, and local agencies to ensure that the design will not impede stormwater drainage, as required (Appendix D, *Agency Notices and Comment Letters*).

Deposition of soils and debris could obstruct culverts and block flows. Such obstructions would reduce the conveyance capacity of the culvert and could lead to increased flooding near the culvert crossing. However, OEA has recommended a preliminary mitigation measure (Chapter 4, *Proposed Mitigation*) to ensure all culverts are sufficiently clear of debris to avoid flow blockages, flow alteration, and increased flooding. Therefore, with this mitigation, impedance or blockage of surface water flows from culvert obstructions would be minimal.

Water Quality

Operation and maintenance activities could result in water quality impacts on surface waters. Stormwater runoff from the railbed and access road surface may transport fine-grained sediments and other pollutants from trains and maintenance vehicles into surface waters where they could alter water chemistry. Fugitive dust generated by rail operation and maintenance vehicles could also affect water quality by depositing fine sediments into surface waters. Maintenance associated with tracks, access roads, ditches, bridges, culverts, and other rail infrastructure could disturb the ground surface, require the use of chemicals (such as herbicides), or result in petroleum leaks and spills from maintenance vehicles and equipment. Such impacts would typically be limited to those portions of the rail line that are near surface waters. The Applicant has proposed voluntary mitigation measures (Chapter 4, *Proposed Mitigation*) to employ a variety of post-construction best management practices (e.g., vegetated swales/filter strips), as appropriate, to convey, filter, and dissipate runoff from the proposed

rail line to mitigate potential water quality impacts during operations and to implement an SPCC to address spills of hazardous materials. In addition, the Applicant's implementation of a dust mitigation program would ensure dust impacts are kept at a minimum. Therefore, as mitigated, operations impacts on water quality would be minimal.

3.2.2.2 Wetlands

The Applicant identified the potential impacts on waters of the United States, including wetlands, in the Applicant's DA permit application (Appendix D, *Agency Notices and Comment Letters*), which the joint lead agencies used to quantify impacts on wetlands. The joint lead agencies used the wetland delineation and preliminary design, including the preliminary hydraulic study, to qualitatively analyze impacts on wetlands from specific features of the proposed rail line, such as culverts crossing wetlands.

As noted in Chapter 2, Section 2.3.1.1, *Waterway Crossings*, the U.S. Coast Guard (Coast Guard) may determine that the bridge crossing of the Diversion Canal would require a 40-foot clearance, rather than a 50-foot clearance for safe ship passage. If so, the joint lead agencies anticipate that wetland impacts would be reduced. Due to the location and configuration of the wetlands in the area immediately adjacent to the Diversion Canal, a reduction in the height of the bridge itself would lower the bridge approach heights and, in turn, the footprint of the approaches constructed in wetlands. While the change in bridge height should further minimize impacts on wetlands, the Applicant would be required to coordinate any design modifications with the Corps.

Construction of the proposed rail line would require clearing, excavating, and filling of the right-of-way, which would result in the loss or alteration of wetland areas and affect wetland water quality, flood and storage capacity, general habitat, and natural hydrologic functions. For any proposed discharge in waters of the United States, including wetlands, all appropriate and practicable steps must first be taken to avoid and minimize impacts on aquatic resources. For unavoidable impacts, compensatory mitigation is required to replace the loss of wetland. In addition, the Applicant conducted a preliminary hydraulic study to approximate the appropriate number and size of culverts to be installed along the proposed rail line in accordance with applicable local, state, federal, and railway standards. As the Applicant continues to progress to final design, it will coordinate with appropriate local, state, and federal agencies to ensure the proposed rail line is designed and constructed to meet these standards, and ensure quantities and sizes of culverts would meet or exceed these standards. Therefore, the following impacts should be considered in the context of these regulatory requirements and design standards.

Construction

Wetland Fill and Clearing

Construction of the proposed rail line would permanently fill 103.12 acres of wetlands (Table 3.2-6). This area of wetland impact is approximately 0.14 percent of all NWI wetlands and 0.16 percent of all forested wetlands mapped in the four watersheds of the study area. An additional 16.89 acres of wetland would be permanently cleared of vegetation but not permanently filled; these wetlands are mostly plantation pine and bottomland hardwood forest wetlands and would remain wetland with permanently altered vegetation structure and functions.

All affected wetlands are currently impaired on some level. The Applicant's proposed compensatory mitigation for these wetland impacts includes a combination of permittee-responsible mitigation and mitigation bank credits. For impacts in the Cooper River basin, the Applicant proposes permittee-responsible mitigation at a 1,550-acre site in Francis Marion National Forest that would both preserve

and enhance wetlands and streams (Appendix J, *Permittee-Responsible Mitigation Plan*). For impacts in the Four Hole Swamp watershed, the Applicant proposes to purchase wetland credits from the Francis Beidler Forest Mitigation Bank.⁶ The Applicant's mitigation approach considers all affected wetlands as fully functional to conservatively address compensatory mitigation to more than offset wetland functions. Therefore, if this mitigation is implemented, the overall loss of wetland functions and values in the respective watersheds from fill and vegetation alteration would be minimal. Further information regarding the proposed mitigation can be found in Section 4.2.2, Compensatory Mitigation, and the proposed permittee responsible mitigation plan for the Fairlawn C-1 tract can be found in Appendix J, *Permittee-Responsible Mitigation Plan*.

Table 3.2-6. Proposed Rail Line Permanent Fill Wetland Impacts

Wetland Type	Impact Area (Acres)
Wetland plantation pine	56.49
Carolina bay	2.16
Plantation pine converted Carolina bays	6.78
Depressional ponds	3.90
Bottomland hardwood forest	33.79
TOTAL	103.12

Note: 0.04 acre of wetland impact is on wetlands not considered jurisdictional under Section 404 the Clean Water Act; the proposed mitigation is sufficient to cover this wetland impact.

In response to the Corps' Public Notice on the DA permit application, SCDNR and USEPA noted that the Water Flowacreage of wetlands affected had grown significantly between the *Environmental Report* (83 acres) and the permit application (120 acres). The Applicant responded that, since the publication of the *Environmental Report*, it has continued to conduct a finer level of engineering design, hydrologic analysis, and onsite review of the rail corridor. As a result, the estimate of affected wetlands has increased. Additionally, SCDNR, NMFS, USEPA, and the South Carolina Mitigation Association noted that the draft wetlands mitigation plan is insufficient and that a final permittee-responsible mitigation plan should follow the guidance provided by the Corps, Charleston District and include the 12 elements of the 2008 Compensatory Mitigation Rule (30 C.F.R. Part 230).⁷ The Applicant has since provided a compensatory mitigation plan, which can be found in Appendix J, *Permittee-Responsible Mitigation Plan* (Appendix D, *Agency Notices and Comment Letters*).

Wetland Habitat

Fill material placed in wetlands during construction would result in the permanent loss of wetland and associated vegetation communities, and any habitat that the wetland currently may provide for fish and wildlife. If a wetland were completely filled, these functions would be lost entirely. If a wetland were partially filled and fragmented or if wetland vegetation were trimmed or cleared, vegetation communities and habitat would be altered and degraded. Any fragmentation or interruption of wetland habitat and vegetation communities could affect wildlife use of the wetland area. Wetland habitat and

⁶ The Francis Beidler Forest Mitigation Bank is a proposed mitigation bank currently under review by the Charleston District of the Corps. Prior to issuing a DA permit decision, the Corps will require the Applicant to identify a source of credits from an approved mitigation bank, should Beidler Forest Mitigation Bank not be approved prior to commencement of construction.

⁷ The 12 elements defined in a compensatory mitigation plan are the objectives, site selection, site protection instruments, baseline information, determination of credits, mitigation work plan, maintenance plan, performance standards, monitoring requirements, long-term management plan, adaptive management plan, and financial assurances.

vegetation communities could also be affected if the hydrology of the wetland system is altered by construction of the proposed railbed, which could result in wetland draining or ponding on either side of the rail or access road embankments. For example, if the railbed were built through the middle of a wetland, the interruption and fragmentation of the wetland's hydrology could result in the draining or ponding of water in the remaining wetland fragments on either side of the rail embankment. This hydrology alteration could affect vegetation and wetland habitat by changing plant species' composition (i.e., from wetland to upland plants if the wetland were to dry up over time). Depending on the extent of the wetland affected and the hydrologic regime of the wetland, this impact could extend outside of the right-of-way, which would alter wetland vegetation and habitat adjacent to the right-of-way. However, the area of wetlands that would be affected is a small percentage of all wetlands in the study area, and wetland fragmentation impacts would be reduced by placement of culverts in the railbed in wetland areas. The Applicant's preliminary design proposes 31 culverts across several wetlands to maintain hydrologic connection. As stated in the Applicant's voluntary mitigation measures (Chapter 4, *Proposed Mitigation*), these culverts will be designed to maintain existing wetland flow/exchange and hydrology to prevent flooding. Therefore, fragmentation impacts would be localized and minimal.

During rail construction, fugitive dust from loose soil could be generated by heavy equipment operation. Any accumulation of fugitive dust on wetland vegetation could affect plant growth by inhibiting photosynthesis, which could result in reduced vegetation density and plant diversity. This could also allow invasive plant species to take hold and colonize wetland areas, which could reduce plant species' richness. However, this potential impact would be temporary, lasting only the duration of construction, and the Applicant has proposed voluntary measures (Chapter 4, *Proposed Mitigation*), as appropriate, to keep fugitive dust to a minimum during construction. Therefore, fugitive dust accumulation would be temporary and minimal, and impacts on vegetation are anticipated to be minimal.

Wetland Water Quality

Fill material placed in a wetland during rail construction would result in the permanent loss of the wetland's ability to improve water quality; on a watershed level, any permanent wetland loss could reduce the capacity of regional wetlands to improve water quality. Any alteration of wetland hydrology could also reduce a wetland's ability to improve water quality by changing the natural hydrologic flows. For example, if a wetland with a high ability to retain water were channelized to direct flow through a culvert under the railbed, the amount of time water remained in the wetland could be reduced, thereby affecting the ability of the wetland to retain and filter sediments and other contaminants. Conversely, railbeds could fragment the normal flow through wetlands, leading to the creation of surface water impoundments that would decrease water circulation and lead to water stagnation. Decreased water circulation can result in increased water temperature, lower dissolved oxygen levels, changes in salinity and pH, the prevention of nutrient outflow, and increased sedimentation (U.S. Environmental Protection Agency 1997). However, the area of wetlands that would be affected is a small percentage of all wetlands in the study area, and wetland fragmentation impacts would be reduced by placement of culverts in the railbed in wetland areas. The Applicant's preliminary design proposes 31 culverts across several wetlands to maintain hydrologic connection. As stated in the Applicant's voluntary mitigation measures (Chapter 4, *Proposed Mitigation*), these culverts would be designed to maintain existing wetland flow/exchange and hydrology which would prevent ponding and water stagnation. Therefore, with this mitigation, wetland water quality impacts from fragmentation would be localized and minimal.

Ground disturbance in or near wetlands could result in degraded water quality of the wetland itself. The primary concerns would be potential impacts associated with sedimentation and petroleum products. Soil disturbance and exposure to rain and surface runoff during rail construction could increase

sediment in nearby wetlands, potentially increasing surface water turbidity, smothering vegetation, reducing water oxygen levels, and reducing water storage capacity. Petroleum leaks and accidental spills from rail construction equipment are other potential sources of wetland water contamination. While many wetlands act to filter out sediment and contaminants, any significant increase in sediment or contaminant loading could exceed the capacity of a wetland to perform its normal water quality functions. The Applicant would implement various measures to avoid and minimize wetland water quality impacts during construction (Chapter 4, *Proposed Mitigation*), including development of a SWPPP as required by the NPDES permit (CWA Section 402), an SPCC, and implementation of measures from the DHEC's *Storm Water Management BMP Handbook*. The Applicant would also be required to obtain a Section 401 water quality certification from DHEC before the Corps can make a DA permit decision and before DHEC can issue an NPDES permit. The 401 water quality certification, SPCC, SWPPP and NPDES permit conditions would contain site-specific measures to avoid and minimize erosion and sedimentation and petrochemical spills that could cause wetland water quality impacts. Therefore, wetland water quality impacts during construction would be localized and minimal.

Wetland Stormwater and Floodwater Storage Capacity

Fill material placed in a wetland during rail construction would result in the permanent loss of the wetland's ability to impede and retain stormwater and floodwater; on a watershed level, any permanent wetland loss could reduce the capacity of regional wetlands to impede and retain these flows. Any alteration of wetland hydrology could also reduce a wetland's ability to retain water by changing the natural hydrologic flows. For example, if a wetland with a high ability to retain stormwater and floodwater were channelized to flow directly through a culvert under the railbed, the volume of water that the wetland would have otherwise been able to retain could be reduced. Clearing and trimming of wetland vegetation would also reduce the capacity of wetlands to impede and retain stormwater and floodwater. Densely vegetated wetlands have a greater ability to slow down and retain stormwater and floodwater; clearing or removing wetland vegetation for rail construction would reduce this functional capacity. However, the area of wetlands that would be affected are a small percentage of all wetlands in the study area and impedence of stormwater and floodwater flows would be reduced by placement of culverts in the railbed in wetland areas. The Applicant's preliminary design proposes 31 culverts across several wetlands to maintain hydrologic connection. As stated in the Applicant's voluntary mitigation measures (Chapter 4, *Proposed Mitigation*), these culverts would be designed to maintain existing wetland flow/exchange and hydrology, which would prevent ponding and water stagnation. In addition, the Applicant's compensatory mitigation plan would help offset lost wetland functions, including stormwater and floodwater storage capacity. Therefore, a decrease in wetland stormwater and floodwater storage capacity from construction of the proposed rail line would be localized and minimal.

Operations

Maintenance Activities

Most wetland impacts would occur during construction of the proposed line. However, potential impacts on wetlands also could occur during rail operation because of maintenance activities and incidental pollutant discharges from train operation. Maintenance activities would include vegetation maintenance in the right-of-way and repairs and maintenance associated with tracks, access roads, ditches, bridges, culverts, and other associated rail infrastructure. These activities would be infrequent and brief. In accordance with 49 CFR § 213.37, vegetation would be periodically cleared or trimmed in the right-of-way to ensure safe rail operation. Clearing or trimming could permanently alter a wetland vegetation

community and structure (e.g., a scrub/shrub wetland that is continuously cleared for maintenance could convert an existing wetland to an emergent wetland). Any change in wetland vegetation structure could alter the habitat, water quality, and hydrology functions that the wetland provides. However, the area of wetland affected would be a small percentage of all wetlands in the study area, and the initial impact on these wetlands during construction would be mitigated as part of the Applicant's compensatory mitigation plan. Therefore, impacts on wetland vegetation and associated impacts from maintenance activities would be infrequent and brief, localized, and minimal.

Maintenance associated with tracks, access roads, ditches, bridges, culverts, and other rail infrastructure could disturb the ground surface, require the use of chemicals (such as herbicides), or result in petroleum leaks and spills from maintenance vehicles and equipment. Any mobilized sediment, spilled chemicals, or petroleum products could reach wetlands, which could degrade vegetation communities, habitat, water quality, and overall wetland productivity. However, the area of wetlands that would be affected is a small percentage of all wetlands in the study area. The Applicant has proposed voluntary mitigation measures (Chapter 4, *Proposed Mitigation*) such as post-construction best management practices (e.g., vegetated swales/filter strips) to convey, filter, and dissipate runoff from the proposed rail line to mitigate potential water quality impacts during operations and would implement an SPCC to address spills of hazardous materials. Therefore, impacts on wetland water quality from maintenance activities would be infrequent and brief, localized, and minimal.

3.2.2.3 Floodplains

The joint lead agencies used a GIS analysis overlaying the proposed rail line with the FEMA floodplain map to quantify floodplain impacts from the proposed rail line. The joint lead agencies also examined the preliminary design to qualitatively analyze impacts on flood flows from the features of the proposed project, such as culverts proposed in floodplain crossings.

Impacts on floodplains and flood flows could result from construction and operation of the proposed rail line, potentially resulting in changes in floodplain capacity and diversion of flows, constriction of flows, and reduced floodwater retention. The proposed rail line would be designed to meet the requirements of the Berkeley County floodplain regulations, and all conveyance structures in FEMA 100-year floodplains would be designed to obtain a no-rise certification and carry the 100-year storm event. In addition, the proposed rail line would be designed to meet or exceed local, state, federal, and railway standards for quantities and sizes of culverts. Therefore, the impacts should be considered in the context of these regulatory requirements and design standards.

Construction

Storage Capacity and Flows with Fill Placement

The proposed rail line would cross two 100-year floodplains: one associated with the Diversion Canal and one associated with an unnamed tributary/wetland that drains to Black Creek, which is located in the Cypress Swamp watershed; both of these are in the Cooper River basin. No fill would be placed in the Diversion Canal floodplain, but four bridge bents (i.e., eight 8-foot, 6-inch-diameter supports totaling 453.6 square feet) would be installed in the open water of the canal, which is mapped as floodplain. Construction across the other floodplain would affect approximately 1 acre of floodplain, most of which would be fill for the rail bed and a small area for installation of a culvert. A very small area of floodplain within the 1 acre of impact and along the edges of the fill would be cleared of vegetation but not filled. This floodplain crossing is entirely within delineated wetlands. Placement of fill in a floodplain can

reduce the overall floodplain system storage capacity, resulting in an increase of flooding in areas that would normally not flood. Placement of fill material would also constrict flood flow paths and increase floodwater elevation upstream of the constriction, resulting in a backup of floodwaters and potential upstream flooding. Placement of fill would redirect flood flows to existing channels, leading to channel erosion and the potential alteration of channel alignment. However, this area of floodplain impact accounts for just 0.005 percent of all 100-year floodplain mapped in the Cypress Swamp watershed. The Applicant's voluntary mitigation measures (Chapter 4, *Proposed Mitigation*) would ensure minimal impact on floodplains and compliance with FEMA or FEMA-approved local floodplain construction requirements. Therefore, impacts on floodplain storage capacity and flows in the watershed would be minimal.

The proposed rail line would not cross any FEMA-mapped 500-year floodplains or FEMA-mapped floodways.

Flows with Bridge and Culvert Construction

Construction of the culvert at the unnamed tributary/wetland to Black Creek floodplain could affect floodplains and flood flows. At this floodplain crossing, the Applicant proposes to install a three-barrel culvert. Placement of the culverts would require building up to the edges of the culvert with fill as the proposed rail line approaches the culverts. Water flow during a flood is restricted at the culvert because of the artificially narrowed streambank. This restriction would result in two impacts: flow would back up behind the culvert and sediments would drop in the streambed, upstream of the structure, and water flow would accelerate as it passes through the culvert in the narrow channel, which could increase the flow's erosive force downstream of the structure. These impacts could lead to changes in channel alignment, increased erosion, increased channel migration, and the potential for increased flooding upstream. However, the area of floodplain impact accounts for just 0.005 percent of all 100-year floodplain mapped in the Cypress Swamp watershed and the Applicant's voluntary mitigation measures (Chapter 4, *Proposed Mitigation*) would ensure minimal impacts on flood flows and floodplains through culvert design and compliance with FEMA or FEMA-approved local floodplain construction requirements. Therefore, any impact on the floodplain system in the watershed would be minimal.

The joint lead agencies do not anticipate that construction of the proposed bridge across the Diversion Canal would constrict flood flows. The buildup to the bridge and the bridge abutments on each of the canal are outside of the canal and floodplain. There would be no narrowing of the canal at the crossing, and the placement of the four bents within the canal are not anticipated to significantly affect any flows, including flood flows because water levels in the canal and associated lake system are highly controlled by dams.

Floodwater Retention

Clearing floodplain vegetation in the right-of-way that does not include placement of fill material in the floodplain would remove a floodplain's capacity to slow down, retain, and absorb floodwaters. Denser floodplain vegetation has a greater ability to provide this function. Vegetation removal would lead to increased downstream flood flows, sedimentation, channel erosion, and flooding. However, the areas of floodplain that would be cleared and maintained in the right-of-way would be a very small percentage of the total floodplain area in the watershed and any impact would be minimal.

Operations

Flood Dynamics

Most potential floodplain impacts would occur during construction of the proposed rail line, but potential impacts on flood flows could occur from the presence of the rail infrastructure. The proposed rail line, bridge, and culvert that would be placed in floodplains could change floodplain hydraulics, which could alter channel alignment and channel erosion. Channel stabilization measures, such as riprap, designed to protect the proposed rail line from channel migration, could increase channel migration upstream and downstream by altering flow velocities and erosive forces. However, the area of floodplain impact accounts for just 0.005 percent of all 100-year floodplain mapped in the Cypress Swamp watershed and the Applicant's voluntary mitigation measures (Chapter 4, *Proposed Mitigation*) would ensure minimal impact on flood flows and floodplains through culvert design and compliance with FEMA or FEMA-approved local floodplain requirements. Therefore, any impact on the floodplain system in the watershed would be minimal.

Deposition of soils and debris could obstruct culverts and block flows. Such obstructions would reduce the conveyance capacity of the culvert and lead to increased flooding near the culvert crossing. However, implementation of OEA's recommended preliminary mitigation measures would ensure all culverts are sufficiently clear of debris to avoid flow blockages, flow alteration, and increased flooding. Therefore, impedance or blockage of flood flows from culvert obstructions would be minimal.

3.2.2.4 Groundwater

The joint lead agencies assessed groundwater impacts by identifying construction and operations impact mechanisms that could affect infiltration and recharge, and groundwater quality of the shallow aquifer; these impacts are qualitatively described.

Impacts on groundwater could result from construction and operation of the proposed rail line through clearing, fill placement, and use of equipment, potentially altering infiltration and degrading groundwater quality.

Construction

Infiltration and Recharge Characteristics and Water Quality

Construction of the proposed rail line would alter infiltration and recharge characteristics and permanently reduce or impede infiltration due to surface soil compaction. These impacts would be limited to the footprint of the proposed rail line. The total project footprint represents a small fraction of the total recharge area because the shallow aquifer system is extensive throughout the study area. Therefore, significant alterations to infiltration and recharge would not be anticipated. Any accidental contaminant released to the ground during construction could infiltrate and temporarily degrade groundwater quality if the contaminant were to reach groundwater in the surficial aquifer. However, by implementing best management practices during construction, the likelihood of a large contaminant spill is low. In addition, the Applicant's voluntary mitigation measures (Chapter 4, *Proposed Mitigation*) would ensure that clean-up procedures commence immediately after a spill. Therefore, it would be unlikely that a large amount of contaminants would reach groundwater and impair quality. No long-term impacts are anticipated.

As noted in the affected environment discussion for groundwater, the proposed rail line would not affect the public water supply in the DHEC-designated groundwater protection zone of the Quattlebaum Mobile Home Park.

Operations

Groundwater Quality

Any accidental contaminant (e.g., diesel fuel) released to the ground during operation could infiltrate into the ground and temporarily degrade groundwater quality if the contaminate were to reach groundwater. However, by implementing best management practices during operations, the likelihood of a large contaminant spill is low. In addition, the Applicant's voluntary mitigation measures (Chapter 4, *Proposed Mitigation*) would ensure that cleanup procedures commence immediately after a spill. Therefore, it would be unlikely that a large amount of contaminants would reach groundwater and impair quality. No long-term impacts are anticipated.

3.3 Vegetation

This section describes the vegetation in the project area and the potential impacts of the proposed action.

3.3.1 Affected Environment

The study area for vegetation is the right-of-way for the proposed rail line plus the area adjacent to the right-of-way where construction and operations effects (e.g., dust) could affect vegetation. The specific distance would depend on factors such as wind, temperature, weather, and vegetation present at the time of construction or operations.

3.3.1.1 Habitats and Vegetation

The Applicant conducted a pedestrian survey of vegetation in the study area (Appendix B, *Environmental Report*). The survey identified habitat types and provided lists of common trees, shrubs, and herbaceous vegetation found in each habitat type. Six habitat types were identified (Table 3.3-1).

Table 3.3-1. Vegetation along the Proposed Rail Corridor

Habitat Type	Vegetation
Upland mixed hardwood and pine forest	Loblolly pine (<i>Pinus taeda</i>) with some interspersed longleaf pine (<i>Pinus palustris</i>), southern red oak (<i>Quercus falcata</i>), pignut hickory (<i>Carya glabra</i>), and some interspersed live oaks (<i>Quercus virginiana</i>). The midstory is composed of loblolly pine, southern red oak, pignut hickory, longleaf pine, and sweetgum (<i>Liquidambar styraciflua</i>). The shrub layer consists of wax myrtle (<i>Morella cerifera</i>), farkleberry (<i>Vaccinium arboreum</i>), redbay (<i>Persea borbonia</i>), and deerberry (<i>Vaccinium stamineum</i>). The herbaceous layer is composed primarily of bracken fern (<i>Pteridium aquilinum</i>), broomstraw (<i>Andropogon virginicus</i>), longleaf woodoats (<i>Chasmanthium sessiliflorum</i>), dogfennel (<i>Eupatorium capillifolium</i>), panic grass (<i>Panicum sp.</i>), and slender lespedeza (<i>Lespedeza virginica</i>). Vine species include muscadine (<i>Vitis rotundifolia</i>), greenbriar (<i>Smilax sp.</i>), and sawtooth blackberry (<i>Rubus argutus</i>).

Habitat Type	Vegetation
Upland hardwood forest	Occasional loblolly or longleaf pine, but the overstory composition is primarily composed of hardwoods including white oak (<i>Quercus alba</i>), post oak (<i>Quercus stellata</i>), live oak, southern red oak, and pignut hickory, with water oak (<i>Quercus nigra</i>) found on the lower slopes leading to the wetlands. The midstory consists of pignut hickory, sweetgum, red oak, red maple (<i>Acer rubrum</i>), American hornbeam (<i>Carpinus caroliniana</i>), and American holly (<i>Ilex opaca</i>). Shrub layers consist of redbay and wax myrtle. The herbaceous layer is composed primarily of bracken fern, cinnamon fern (<i>Osmunda cinnamomea</i>), broomstraw, and longleaf woodoats.
Upland plantation pine forest	Primarily loblolly pine. In thinned pine areas, there is a midstory of sweet gum and red maple with approximately 10 to 20% cover. The shrub layer consists of wax myrtle, redbay, fetterbush (<i>Lyonia lucida</i>), and deerberry. The herbaceous layer is composed primarily of dwarf palmetto (<i>Sabal minor</i>), longleaf woodoats, plume grass (<i>Saccharum giganteum</i>), giant cane (<i>Arundinaria gigantea</i>), Virginia chain fern (<i>Woodwardia virginiana</i>), cinnamon fern, and netted chain fern (<i>Woodwardia areolata</i>). Sphagnum moss (<i>Sphagnum sp.</i>) is also present in some of the wetland areas.
Agricultural field	Primarily as wildlife food plots. Commonly planted vegetation includes chufa, wheat, peas, and soybeans. In areas that are not planted, native grasses dominate, including broomstraw, chalky bluestem (<i>Andropogon capillipes</i>), dog fennel, switchgrass (<i>Panicum virgatum</i>), and tapered rosette grass (<i>Dichanthelium acuminatum</i>).
Roads and utilities	Impervious surfaces associated with roads and maintained or mowed vegetation associated with utility rights-of-way.
Wetlands	Wetland vegetation is detailed in Section 3.2, <i>Water Resources</i> .

Source: Appendix B, *Environmental Report*

3.3.1.2 Invasive and Noxious Weeds

The joint lead agencies reviewed South Carolina state literature on invasive and noxious weed species to determine if such species occur in the study area. Invasive plants are typically nonnative weed species that, when introduced, are likely to cause economic or environmental harm or harm to human health (Executive Order 13112; Chapter 5, *Regulations*). Invasive plants can have a harmful impact on vegetation communities by outcompeting native vegetation, leading to a reduction in biodiversity and degradation of habitats. Humans are the primary source of invasive plant introduction, and once established, invasive plants are often difficult to contain, control, and eradicate. South Carolina has identified 97 invasive plant species that could occur in the study area (Table 3.3-2). Appendix E, *Biological Resources*, provides the full list of invasive plant species potentially occurring in the study area.

Table 3.3-2. Invasive Plants Potentially Occurring in the Study Area

Invasive Plant ^a	Number of Species
Trees	13
Shrubs	17
Vines	14
Grass/Sedge	14
Herbs	12
Ferns	1
Aquatic	26
Total	97

Sources: South Carolina Exotic Pest Council 2014; South Carolina Department of Natural Resources 2010
^a Includes invasive plants potentially occurring in the Coastal Plain ecoregion.

3.3.2 Environmental Consequences

As noted, the joint lead agencies identified the presence of habitats and plant species in the study area. Potential construction and operation impacts on vegetation are qualitatively described. The joint lead agencies overlaid available habitat geographic information system (GIS) data with the proposed rail line right-of-way to quantify the potential impacts of the proposed rail line on the different habitat types.

3.3.2.1 Construction

Clearing and Fill Placement

Construction of the proposed rail line would require clearing, excavating, and filling, which would result in temporary and permanent loss or alteration of vegetation. Placement of fill material would result in the permanent loss of existing vegetation. Clearing of shrub and forest vegetation would alter and likely permanently change the vegetation cover class to nonwoody herbaceous cover classes. Some natural vegetation regrowth would occur, but construction would alter vegetation, and regrowth would likely be sparse in areas that would be continually disturbed by railroad maintenance. Vegetation restoration could occur in temporarily disturbed areas, as could revegetation by natural succession. Table 3.3-3 summarizes the potential vegetation impacts by habitat type. The majority of these impacts would be permanent due to the conversion of natural areas to rail line. Upland and wetland vegetation in these habitat types is abundant in the project area and, therefore, the proposed rail line would have a minimal impact on permanent vegetation loss.

Table 3.3-3. Potential Vegetation Impacts in the Rail Corridor

Habitat Type	Vegetation Impact (acres)
Upland mixed hardwood and pine forest	5.9
Upland hardwood forest	1.8
Upland Plantation Pine	80.4
Agricultural field	0.4
Roads and utilities	11.0
Wetlands ^a	120.0
Total	219.5

^a All wetland impacts are detailed in Section 3.2, *Water Resources*.

Plant Germination and Growth

The movement of heavy equipment and supplies during construction could compact the soil, affecting vegetation germination and growth within the proposed right-of-way. Compaction is caused when soil particles are squeezed together, making soils denser, oxygen-deprived, and less able to absorb water (Alabama Cooperative Extension System 2013). This condition would inhibit seed germination and root penetration in the soil surface and could result in bare soil or sparsely vegetated areas. Vegetation removal and soil compaction would expose soil to the erosive forces of rain and overland stormwater runoff, which could reduce vegetation within and possibly beyond the right-of-way, especially in areas with steep terrain. However, the area of vegetation potentially affected by soil compaction would be small compared to the area of vegetation in the study area and vegetation restoration could occur in temporarily disturbed areas. In addition, the implementation of mitigation measures should minimize the duration and extent of activity at temporary construction facilities (e.g., staging areas) and provide

surface treatments to minimize soil compaction and promote vegetation growth after the facilities are no longer needed to support construction. Therefore, potential plant germination and growth impacts would be minimal.

Noxious Weeds

Rail construction could introduce and increase the spread of noxious weeds in the following ways.

- Construction equipment could carry noxious weed seeds or plant parts from infested areas from outside of the rail construction area into the rail construction area.
- Construction equipment could disturb existing noxious weed infestations in the right-of-way and cause the spread of these infestations.
- Overburden and cut materials containing noxious weeds could be transferred to offsite locations.
- Fill material could contain noxious weeds.
- Seed mixtures containing noxious weed seeds could be used for revegetation.

Noxious weeds introduced during rail construction activities could compete with native vegetation. Noxious weeds are often more aggressive than native vegetation, and the disturbed conditions of a construction site create an environment (e.g., bare and compact soil, disturbed surfaces) where some noxious weeds thrive. Noxious weeds that encroach beyond the right-of-way could out-compete native vegetation and result in altered vegetation structure, a reduction in plant species richness, and overall disruption of the plant ecosystem. With the implementation of preliminary recommended mitigation to limit the establishment and spread of noxious weeds, it is anticipated that potential noxious weed impacts on native vegetation would be minimal.

Dust Deposition

The operation of construction equipment could generate fugitive dust from loose soil. Accumulation of fugitive dust on vegetation could affect plant growth by inhibiting photosynthesis and reducing vegetation density and plant diversity. More tolerant native plant species could benefit from decreased competition. However, noxious weeds could colonize and disrupt the overall plant ecosystem. The magnitude and duration of dust exposure, tolerance of native vegetation, and aggressiveness of noxious weeds would determine vegetation response and the intensity of impacts. However, any dust accumulative on vegetation would be temporary and last only the duration of construction. The Applicant's voluntary implementation of a dust mitigation program during construction would ensure dust impacts are kept at a minimum. Therefore, potential dust deposition impacts on vegetation are anticipated to be minimal.

Accidental Spills of Hazardous Materials

Accidental release of hazardous materials during construction, such as an inadvertent spill of gasoline or oil when fueling or storing construction equipment, could damage vegetation and affect plant growth. The extent of the impact would depend on the type and volume of the material spilled, the location, and vegetation affected. However, an uncontained spill would likely be small and affect a limited area because the volume of these materials at a construction site would be small. There would be no long-term storage of hazardous materials at the construction site. In addition, the Applicant's voluntary implementation of spill prevention and response plans and stormwater pollution prevention plans

would avoid and minimize impacts of hazardous materials spills. Therefore, potential vegetation impacts from accidental spills of hazardous materials are anticipated to be minimal.

3.3.2.2 Operations

Maintenance activities would include controlling vegetation and maintaining tracks and other features in the right-of-way. These activities would be infrequent and brief. Vegetation would be periodically cleared or trimmed in the right-of-way, which could permanently alter vegetation (e.g., shrub vegetation that is continuously cleared for maintenance could convert to herbaceous vegetation). Maintenance activities could disturb the ground surface, require the use of chemicals (such as herbicides), or result in petroleum leaks and spills from maintenance vehicles and equipment. Any mobilized sediment, spilled chemicals, or petroleum products could reach adjacent vegetation, affecting plant density and diversity and degrading the plant ecosystem. However, the area of vegetation that could be affected would be small, and maintenance activities would be infrequent, brief, and localized. In addition, the Applicant's voluntary implementation of spill prevention and response plans would avoid and minimize potential impacts of hazardous materials spills. Therefore, potential impacts on vegetation from maintenance activities are anticipated to be minimal.

3.4 Wildlife

This section describes wildlife in the project area and the potential impacts of the proposed action.

3.4.1 Affected Environment

The study area for wildlife is the right-of-way for the proposed rail line plus the area adjacent to the right-of-way where construction and operations effects (e.g., noise, dust) could affect wildlife. The specific distance would depend on factors such as wind, temperature, weather, and wildlife species present at the time of construction or operations.

3.4.1.1 Habitats and Common Wildlife

The Applicant conducted fieldwork to identify wildlife species potentially present in the study area and suitable habitat for those species (Section 3.3, *Vegetation*, and Appendix B, *Environmental Report*). The Applicant documented a variety of wildlife species or their sign, 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 potentially present along the proposed rail line include bats, fox, bobcat (*Lynx rufus*), mice, rats, armadillo (*Dasypus novemcinctus*), and Eastern cottontail (*Sylvilagus floridanus*). Bird species that may be present include Mississippi kite (*Ictinia mississippiensis*), red-tailed hawk (*Buteo jamaicensis*), sharp-shinned hawk (*Accipiter striatus*), Cooper's hawk (*Accipiter 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*).

3.4.1.2 Species of Greatest Conservation Need

The joint lead agencies assessed species of management concern that are not considered special-status species (i.e., listed as threatened or endangered) with a review of South Carolina's State Wildlife Action Plan (SWAP). States develop SWAPs to conserve wildlife and habitat before they become too rare or costly to restore. The SWAPs consider all wildlife species in a state, identify those species for which there is a conservation concern due to population trends and threats to habitat and the species (i.e., Species of Greatest Conservation Need), and describe strategies and actions that, if implemented, would stabilize or reverse the declines of those species.

Table 3.4-1 summarizes by animal class the number of Species of Greatest Conservation Need identified in the Coastal Plain Ecoregion, where the study area is located. Appendix D, *Biological Resources*, provides the full list of these species. The state agency responsible for developing and leading the plan is the South Carolina Department of Natural Resources.

Table 3.4-1. Number of Species of Greatest Conservation Need in the Study Area

Animal Class	Coastal Plain Ecoregion
Mammals	14
Reptiles and amphibians	30
Birds	95
Insects	14
Total	153
Source: South Carolina Department of Natural Resources 2014	
Note: Table does not include federal or state-listed threatened or endangered species or bald eagles. These species are listed as Species of Greatest Conservation Need in the SWAP but are addressed in Section 3.6, <i>Special-Status Species</i> .	

3.4.1.3 Migratory Birds

The joint lead agencies identified migratory birds that may occur in the study area by consulting the birds listed under the Migratory Bird Treaty Act, with attention to the Birds of Conservation Concern identified by the U.S. Fish and Wildlife Service in Berkeley County.

The Migratory Bird Treaty Act prohibits take, possession, transportation, and importation of all migratory native birds (plus their eggs and active nests) occurring in the wild in the United States. Some of these migratory birds are also protected by endangered species legislation at federal and state levels (Section 3.6, *Special-Status Species*) and have been identified in SWAPs (Section 3.4.1.2, *Species of Greatest Conservation Need*), or identified as a Bird of Conservation Concern (a species likely to become a candidate for listing under the Endangered Species Act without further conservation action). Twenty such bird species occur or potentially occur in Berkeley County (U.S. Fish and Wildlife Service 2018) (Appendix D, *Biological Resources*). The breeding period for these birds spans from March 10 to October 31, although most breed between early April and late August/early September.

3.4.2 Environmental Consequences

As noted, the joint lead agencies identified the presence or likely presence of wildlife species in the study area. Potential construction and operations impacts on wildlife are qualitatively described.

In response to the Corps' Public Notice on the DA permit application (Appendix D, *Agency Notices and Comment Letters*), SCDNR commented that several species listed in the State Wildlife Action Plan have been documented in the study area and recommended that measures be taken to protect these species. As noted in Section 3.4.1.2, *Species of Greatest Conservation Need*, the joint lead agencies have considered species in the State Wildlife Action Plan and have considered impacts to those species, as described below.

3.4.2.1 Construction

Habitat Loss/Alteration and Wildlife Displacement

Construction of the proposed rail line would remove or alter habitat, resulting in permanent habitat loss or alteration in the right-of-way and in areas for road relocations. Habitats that would be affected by construction are summarized in Section 3.4, *Vegetation*, Table 3.4-1. Habitat removal could affect every species group (birds, mammals, reptiles, amphibians, and invertebrates).

Wildlife occupying habitat that is cleared may be affected by this loss of habitat, causing wildlife displacement to other habitat areas. Construction noise and presence of humans could also displace wildlife. Displacement can affect normal foraging, migratory, and breeding behaviors. For example, displacement can reduce survival and productivity because individuals may need to expend more energy to locate suitable replacement habitat, which may be of lower value. Wildlife less familiar with new habitat areas may be more susceptible to predation, which can affect survival of adults or offspring. Habitat clearing and related effects on wildlife would be permanent in those areas with permanent rail components (e.g., railbed) and temporary where habitats would be restored (e.g., temporary workspaces). In some areas of the right-of-way, habitat would be permanently altered from forested habitat to herbaceous or low shrub habitats. This habitat alteration can lead to a change in species composition because of the abrupt change in habitat type (habitat edge conditions); some species avoid edge habitats while others seek out these habitats.

Disturbed wildlife would likely occupy the forested habitats along the rail corridor and would likely return to the area after construction is completed and workers and equipment are no longer present. The magnitude of these impacts on wildlife would largely depend on the timing of construction activities relative to seasonal or diurnal occurrences. However, the large areas of suitable habitats around the proposed rail line would be sufficient to allow for wildlife movement and dispersal, and therefore, it is anticipated that habitat loss and wildlife displacement would have a minimal impact on wildlife populations.

Wildlife Injury or Mortality

Construction of the proposed rail line could result in wildlife mortality or injury from construction-related collisions or crushing. Collisions or crushing would more likely affect smaller, less mobile species not able to move away quickly from construction equipment. Collisions would be less likely to occur with larger animals and birds that would have a better line of sight and ability to move more quickly and vacate a construction area. Construction vehicles typically move at slow speeds, and it is anticipated that

fatalities or injury from operating construction equipment would be infrequent. While some species may be more susceptible to collisions or crushing, many species would likely vacate a construction area once land clearing starts and associated noise and construction equipment presence are perceptible to wildlife. This potential impact would be short-term and temporary, lasting only the duration of construction. Therefore, wildlife injury or mortality impacts are anticipated to have a minimal impact on wildlife populations.

Contact with Contaminants or Hazardous Materials

An accidental release of a hazardous material during construction (e.g., spill of gasoline, oil, or lubricants) could affect individual animals if they are exposed to the contaminant. However, an uncontained spill of a hazardous material would likely be relatively small and affect a limited area because the volume of these materials at a construction site would be relatively small and there would be no long-term storage of hazardous materials. In addition, the Applicant's implementation of a spill prevention and response plan will limit the chance of a spill occurring and would facilitate a rapid cleanup should one occur. Therefore, wildlife contact with contaminants and hazardous materials would be minimal.

3.4.2.2 Operations

Wildlife Injury or Mortality

Operation of the proposed rail line could increase mortality of wildlife species because of collisions with trains and maintenance equipment and increased predation risk. Higher mortality rates would occur where the density of wildlife is higher. Species that feed on carrion (flesh of dead animals), use the right-of-way as a movement corridor, or use habitats adjacent to the rail line would have an increased incidence of collision mortality. Operation impacts could disrupt predator-prey relationships in the short term. As species adapt to disturbances associated with operation, predator-prey relationships would stabilize. It is anticipated that most wildlife would habituate to the noise of an operating train and maintenance equipment and would likely avoid the area for the short period that a train or equipment is present. In addition, the large areas of suitable habitats around the proposed rail line would be sufficient to allow for wildlife movement and dispersal during a train pass or maintenance activities. Therefore, potential wildlife injury and mortality impacts during operations are anticipated to have a minimal impact on wildlife populations.

Habitat Fragmentation and Barrier to Movement

The proposed rail line would split large areas of contiguous forest habitat into smaller areas. This habitat fragmentation and train operations would not greatly impede large animals (e.g., deer) from moving across the right-of-way, but smaller, less mobile species (e.g., frogs) may find it more difficult to cross the right-of-way due to the physical and visual obstructions of trains or the railbed itself. This could affect their ability to disperse into other areas to breed, which can affect population genetics (gene flow). On a landscape level along the proposed rail line, much of the habitat is already fragmented by highways, roads, utility rights-of-way, and other development. Nevertheless, localized impacts from fragmentation would result in vegetation changes, increased habitat edge, and changes in species composition along the right-of-way. However, even with habitat fragmentation the large areas of suitable habitat around the proposed rail line would be sufficient to allow for wildlife movement and dispersal. In addition, USFWS, in their comments on the Section 404 permit application (Appendix D, Appendix D, *Agency Notices and Comment Letters*) expressed concern with the rail line posing a barrier

to wildlife movement and suggested installation of specific culvert types every 200 feet (up to 596 culverts) to improve hydrologic flows and wildlife connectivity. The preliminary hydraulic analysis conducted by the Applicant identified the need for approximately 136 culverts to satisfy federal, state, and local requirements. These culverts would maintain hydrologic flows and provide wildlife crossing locations underneath the rail line for small animals. Therefore, it is anticipated that habitat fragmentation and barrier to movement would have a minimal impact on wildlife populations.

Habitat Degradation and Wildlife Displacement

Operation of the proposed rail line would degrade habitat because of increased noise, dust, and potential spills of contaminants. Increased noise levels would cause species to avoid or expend more energy nearer the rail line. This would result in fright responses, such as flushing and escaping, as well as increased communications, such as louder or more extended periods of birdsong or begging vocalizations from young. Noise could cause birds to abandon their nests with the subsequent demise of young, especially nearby nesting raptors. Displacement could result in reduced survival and productivity because displacement requires species to expend energy to locate replacement habitat, which may have fewer resources and be of a lower value. Wildlife would be less familiar with new areas and at greater risk of predation, thus limiting survival of offspring or adults. Dust would lower the quality of forage. Spills of petrochemicals or other toxic substances during maintenance activities could degrade habitats and prevent use for forage or refuge. However, the large areas of suitable habitats around the proposed rail line would be sufficient to allow for wildlife movement and dispersal. The Applicant's implementation of a spill prevention and response plan would avoid and limit the effects of contaminant spills; therefore, it is anticipated that degradation loss and wildlife displacement would be localized and minimal.

3.5 Fish and Other Aquatic Species

This section describes the fish and other aquatic species in the project area and the potential effects of the proposed action.

3.5.1 Affected Environment

The study area for fish and other aquatic species is all surface waters that cross or are adjacent to the right-of-way for the proposed rail line. Surface waters crossed by the proposed rail line are described in Section 3.2, *Water Resources*, and include Bulltown Ditch, Williams Branch, and the Diversion Canal.

The joint lead agencies reviewed state and federal fish and surface water literature to identify common fish species that potentially occur in the study area. The joint lead agencies identified aquatic species of management concern that are not considered special-status species (i.e., listed as threatened or endangered) through a review of South Carolina's State Wildlife Action Plan (SWAP). See Section 3.4, *Wildlife*, for a discussion of SWAPs. The joint lead agencies also reviewed essential fish habitat (EFH) maps to determine the presence of EFH along the rail corridor. Essential fish habitat is defined as those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (16 U.S.C. 1802(10)).

3.5.1.1 Fish and Aquatic Species

Fish species in the study area are primarily fish in the Santee-Cooper Lake System. Common fish in this system include black crappie (*Pomoxis nigromaculatus*), bluegill (*Lepomis macrochirus*), flier (*Centrarchus macropterus*), warmouth (*Lepomis gulosus*), pumpkinseed (*Lepomis gibbosus*), yellow perch (*Perca flavescens*), chain pickerel (*Esox niger*), redbfin pickerel (*Esox americanus*), largemouth bass (*Micropterus salmoides*), redeye bass (*Micropterus coosae*), yellow bullhead (*Ameiurus natalis*), white bass (*Morone chrysops*), redear sunfish (*Lepomis microlophus*), blue catfish (*Ictalurus furcatus*), channel catfish (*Ictalurus punctatus*), flathead catfish (*Pylodictus olivaris*), bluefin killifish (*Lucania goodie*), and threadfin shad (*Dorosoma petenense*) (South Carolina Department of Natural Resources n.d.).

South Carolina's SWAP identifies 14 fish Species of Greatest Inventory Need (excluding threatened and endangered species, which are covered in Section 3.6, *Special Status Species*) in the Santee Basin within the Coastal Plains ecoregion. These fish species are American shad (*Alosa sapidissima*), blueback herring (*Alosa aestivalis*), hickory shad (*Alosa mediocris*), American eel (*Anguilla rostrata*), white catfish (*Ameiurus catus*), flat bullhead (*Ameiurus platycephalus*), swampfish (*Chologaster cornuta*), blackbanded sunfish (*Enneacanthus chaetodon*), banded sunfish (*Ennaecanthus obesus*), sawcheek darter (*Etheostoma serrafer*), striped bass (*Morone saxatilis*), bridle shiner (*Notropis bifrenatus*), ironcolor shiner (*Notropis chalybaeus*), and lowland shiner (*Pteronotropis stonei*). American shad, hickory shad, blueback herring, and American eel are diadromous fish in the lake system, meaning they migrate between freshwater and saltwater. The American shad is the largest member of the herring family in the United States and is highly valued as a commercial fish for the quality of its meat and eggs; the blueback herring is of considerable importance to commercial and sport fishers in South Carolina (South Carolina Department of Natural Resources n.d.). The striped bass is also diadromous throughout its range, except in South Carolina (South Carolina Department of Natural Resources n.d.).

South Carolina's SWAP also identifies five crustacean Species of Greatest Inventory Need in the Santee Basin within the Coastal Plains ecoregion. The South Carolina Department of Natural Resources (SCDNR), in their comments on the U.S. Department of Army (DA) Public Notice of permit application (Appendix D, *Agency Notices and Comment Letters*), indicated that three of these species have been documented in the project vicinity but not in the study area: the Cedar Creek crayfish (*Procambarus chacei*), black mottled crayfish (*Procambarus enoplosternum*), and Santee crayfish (*Procambarus blandingii*). Based on the department's state ranking system, the Cedar Creek and Santee crayfishes are considered *apparently secure/uncommon but not rare*. The black mottled crayfish has not been assessed or ranked in South Carolina although the global ranking system considers the species *secure*.

No EFH would be crossed by the proposed rail line or is close to the proposed rail line. The nearest EFH is in the Edisto River, approximately 17 miles southwest from the southern terminus of the proposed rail line. The National Marine Fisheries Service (NMFS) agreed in their comments on the Corps' Public Notice that EFH would not be affected by the proposed rail line (Appendix D, *Agency Notices and Comment Letters*).

3.5.2 Environmental Consequences

The joint lead agencies used the Applicant's proposed rail preliminary design to qualitatively analyze impacts on surface waters that support fish, including impacts of the proposed surface water crossing structures (i.e., culverts at Bulltown Ditch and Williams Branch and Diversion Canal bridge). Potential construction and operation impacts on fish and other aquatic species are also qualitatively described.

3.5.2.1 Construction

Sedimentation and Turbidity

Construction of the proposed rail line could increase sedimentation and turbidity in streams crossed or adjacent to the proposed rail line. High turbidity levels can directly affect the physical health of fish and alter fish behavior, but the severity of these impacts would vary depending on species susceptibility. High turbidity affects gill function, blood sugar levels, and osmoregulatory⁸ function in fish. Behavior impacts associated with increases in turbidity include altered responses to predation risk and predator avoidance, changes in foraging ability, and reduced territoriality. Species adapted to high turbidity levels would be less susceptible to elevated turbidity, particularly if the impacts were to be short term and did not cause permanent habitat degradation.

Increased sediment in streams would affect juvenile fish through behavioral changes and/or reductions in food sources. Diets of many juvenile fish consist mostly of macroinvertebrates, which depend on suitable substrate that could be compromised by fill and sediment. Excessive sediment delivery to a stream could decrease the depth and number of pools and the physical space available for rearing fish. Such changes would reduce the survival of juvenile fish.

Although construction would cause sedimentation and turbidity in surface waters, this impact would be short-term and temporary. The Applicant would implement various measures to avoid and minimize water quality impacts during construction, including development of a stormwater pollution prevention plan (SWPPP) as required by the National Pollutant Discharge Elimination System (NPDES) permit (Clean Water Act Section 402), and implementation of measures from the South Carolina Department of Health and Environmental Control *Storm Water Management BMP Handbook*. The Applicant would also be required to obtain a Section 401 water quality certification from the South Carolina Department of Health and Environmental Control (DHEC) before the Corps can make a DA permit decision and before DHEC can issue an NPDES permit. The 401 water quality certification, SWPPP, and NPDES permit conditions would contain site-specific measures to avoid and minimize erosion and sedimentation that could cause turbidity in surface waters. Therefore, turbidity impacts on fish would be minimal.

Fish Movement

In response to the Corps' Public Notice on the DA permit application, SCDNR commented that construction of the rail bridge in the Diversion Canal could affect movement of multiple diadromous species and recommended that construction activities be limited to winter months. They further recommended consultation with the Atlantic States Marine Fisheries Commission on blueback herring and American shad. NMFS commented that anadromous fish would be affected and recommended limiting the staging area and avoiding in-water work between February 16 and June 15. SCDNR commented that in-water work should not occur between January and April to protect anadromous fish. The Applicant responded by identifying best management practices that would be implemented, as required, during construction, including avoiding in-water work between January and June to the maximum extent practicable (Appendix D, *Agency Notices and Comment Letters*).

Culvert installation could temporarily impede fish movement if temporary pipe and pump system streamflow diversions are required to bypass streamflow around the culvert work area. A cofferdam may be needed to isolate a dry, instream work area. This would temporarily prevent fish migration

⁸ Osmoregulation is the process of maintaining salt and water balance across membranes.

through the culvert installation area and inhibit access to upstream and downstream habitat. This impact would be temporary, lasting only the duration of the culvert installation. In addition, implementation of the mitigation in the Draft EA to ensure culverts are appropriately sized, installed, and managed would ensure fish passage of any migratory fish that may be present during culvert installation. Therefore, impacts on fish movement from culvert installation would be minimal.

Bridge construction could temporarily alter fish movement from underwater noise associated with vessel movement and installation of bridge supports. However, construction would be temporary and short-term; installation of bridge supports would not involve impact hammers, a major source of underwater noise; and water flow in the channel would be maintained (i.e., no water would be rerouted or diverted, or otherwise taken out of the channel). In addition, the Applicant would require its contractors to limit in-water work between January and April to the maximum extent practicable to reduce impacts on anadromous fish. Therefore, impacts on fish movement from bridge construction would be minimal.

Instream Construction

Construction could cause direct mortality of fish and other aquatic organisms if these species are present. Use of construction equipment in active stream channels could injure or crush eggs, larvae, and juvenile fish in the construction site. Construction equipment could compact soils and substrate in the streambed, resulting in the death of larvae and eggs in or on substrate material. Where there is a soft sediment bottom, equipment movement could redirect streamflow. Portions of the streambed could become dry and isolated, resulting in mortality of fish and other aquatic organisms. If water diversions and temporary dewatering are needed, developing eggs and pre-emergent larvae could be affected through desiccation. Eggs, larvae, and juvenile fish would be more susceptible to harm from instream construction because they are immobile or less mobile. Adult and larger juvenile fish are capable of moving away from disturbance and would likely avoid exposure where possible. Eggs and larvae of nest-guarding species (i.e., fish that guard their eggs and young against predation) may face increased risk of mortality if adults are driven away by disturbance. Potential fish mortality impacts would be localized and temporary, lasting only the duration of the in-water construction. Therefore, mortality from instream construction would be minimal.

Water Quality

Construction would require the use of common construction materials (e.g., concrete, paint, and wood preservatives) and petroleum products (e.g., fuels, lubricants, and hydraulic fluids) that may be toxic to fish. These materials may be stored along the right-of-way or in staging areas during construction. An accidental spill of hazardous materials in or near a water body could reach a stream or other surface water and degrade water quality, thereby affecting the health or survival of fish and fish habitat. The nature and extent of these impacts would depend on the type and amount of material that would reach the surface waters, the timing of spill, and the ecological sensitivity of the affected habitat. Spills during the spawning season would be particularly detrimental for nest-spawning species or species with immobile (nondrifting) eggs, but dilution by high-flow conditions, typically during the spring spawning period, could limit the duration and severity of exposure downstream in the event of an accidental spill. Spills in low-energy environments (e.g., pool and backwater habitats) could result in long-term impacts because these environments lack flushing flows, making them less suitable for fish species.

Although construction could result in hazardous materials reaching surface waters, which could affect fish, this potential impact would be temporary and avoided or minimized through the site-specific measures required of the SWPPP and NPDES permit conditions and implementation of a spill prevention, control, and countermeasures plan (SPCC) as well as the Applicant's voluntary mitigation measures and the preliminary recommended mitigation measures that protect water quality (Chapter 4, *Proposed Mitigation*). Therefore, hazardous material effects on fish would be minimal.

Instream and Riparian Habitats

Construction would most likely require some removal or alteration of riparian vegetation, which would influence the quality of fish habitat by reducing streambank stability; food production; and instream cover, complexity, and temperature. Woody debris from streamside trees provides cover and habitat complexity, essential components of fish habitat. Riparian zones are also sources of terrestrial nutrients that are transported to the aquatic system, such as terrestrial insects and plant matter. Riparian vegetation also provides shade and an insulating canopy that moderates water temperatures, and creates a natural filter that reduces the transport of fine sediment to the stream. Riparian vegetation stabilizes stream banks through root cohesion, providing foraging habitat and cover for rearing fish. The removal of riparian vegetation would accelerate the natural processes of streambank erosion and channel meandering, increasing streambank, stream channel, and floodplain erosion as the channel migrates within its floodplain. Such an impact would most likely occur with the removal of high-quality, established riparian vegetation or a substantial quantity of riparian vegetation. Loss of riparian cover would most likely result in a small, localized reduction in habitat complexity. In addition, implementation of the mitigation in the Draft EA for culvert placement would result in the smallest disturbance area practicable around streams. As soon as practicable following construction, disturbed areas would be revegetated with native vegetation. Therefore, impacts on instream and riparian habitats would be minimal.

3.5.2.2 Operations

Fish Movement

Culverts could impede fish movement if not designed properly. Common issues with culverts that restrict fish movement include increased water velocity, decreased water depth, and culvert outlet drop heights. However, culverts would be designed to allow aquatic organisms to pass relatively unhindered and implementation of preliminary recommended mitigation measures would ensure all culverts are sufficiently clear of debris to avoid flow blockages and that all culverts are functioning properly. Therefore, culvert impacts on fish and aquatic organisms' movement would be minimal.

The presence of the eight supports (totaling 453.6 square feet) in the open water of the Diversion Canal is unlikely to affect fish movement during operations as these supports account for a very small area of the Diversion Canal by volume and by surface area.

3.6 Special-Status Species

This section describes the special-status species in the project area and the potential impacts of the proposed action.

3.6.1 Affected Environment

The study area for special-status species is the right-of-way for the proposed rail line plus the area adjacent to the right-of-way where construction and operations effects (e.g., noise, dust) could affect special-status terrestrial species. The specific distance would depend on factors such as wind, temperature, weather, and species present at the time of construction or operations. For aquatic species, the study area includes surface waters that cross or are adjacent to the proposed right-of-way.

3.6.1.1 Listed Species

Special-status species in the study area include federal and state-listed threatened and endangered species. To determine the presence of these species, the joint lead agencies reviewed the U.S. Fish and Wildlife Service (USFWS) threatened and endangered species list for Berkeley County and consulted with USFWS regarding federally listed species under their jurisdiction in the study area. The joint lead agencies consulted with the National Marine Fisheries Service (NMFS) and reviewed their list of threatened and endangered species to determine the potential presence of listed species under their jurisdiction in surface waters in the study area. The joint lead agencies consulted with the South Carolina Department of Natural Resources (SCDNR) to determine the potential presence of state-listed threatened and endangered species in the study area.

The joint lead agencies also reviewed the Applicant's protected species field assessment and SCDNR's 2018 bald eagle nest geographic information system (GIS) data (South Carolina Department of Natural Resources 2018).

Federally Listed Species and Bald Eagles

Ten federally listed threatened or endangered species and one delisted species occur or potentially occur in Berkeley County (Table 3.6-1). Under Endangered Species Act (ESA) Section 7, the joint lead agencies must consult with USFWS and NMFS if federally listed species are affected by the proposed action to ensure the action is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.

While bald eagles have been delisted under the ESA, the Bald and Golden Eagle Protection Act prohibits the take of bald eagles unless authorized by a permit. Take includes actions that would pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest or disturb bald eagles (16 U.S.C. § 668c; 50 C.F.R. § 22.3). Take can include the removal of an active or inactive bald eagle nest.

Table 3.6-1 shows the federally listed species and their current status. The agency consultations are summarized after the table and the effects determinations are stated in Section 3.6.2, *Environmental Consequences*.

Table 3.6-1. Federally Listed Threatened and Endangered Species that Occur or Potentially Occur in Berkeley County, South Carolina

Species	Federal Status
Mammals	
Northern long-eared bat (<i>Myotis septentrionalis</i>)	T
West Indian manatee (<i>Trichechus manatus</i>)	T
Birds	
Red-cockaded woodpecker (<i>Picoides borealis</i>)	E
Wood stork (<i>Mycteria Americana</i>)	T
Bald eagle (<i>Haliaeetus leucocephalus</i>)	DL; BGEPA
American swallow-tailed kite (<i>Elanoides forficatus</i>)	--
Amphibians and Reptiles	
Frosted flatwoods salamander (<i>Ambystoma cingulatum</i>)	T (CH)
Fish	
Atlantic sturgeon (<i>Acipenser oxyrinchus</i>)	E
Shortnose sturgeon (<i>Acipenser brevirostrum</i>)	E
Plants	
American chaffseed (<i>Schwalbea Americana</i>)	E
Canby's dropwort (<i>Oxypolis canbyi</i>)	E
Pondberry (<i>Lindera melissifolia</i>)	E
Source: U.S. Fish and Wildlife Service 2018 E=Endangered; T=Threatened; BGEPA = Bald and Golden Eagle Protection Act; CH = Critical Habitat designated; DL = Delisted	

As part of their ESA Section 7 consultation with USFWS, the joint lead agencies provided a species assessment based on field survey information collected by the Applicant to determine the potential presence of suitable threatened and endangered species' habitats in the study area. Based on feedback from USFWS, the joint lead agencies determined that one species under USFWS jurisdiction—the red-cockaded woodpecker—may occur along the proposed rail line because there is suitable habitat in a small, isolated area close to the right-of-way. The area is approximately 130 to 140 feet from the right-of-way at its nearest point. The Applicant conducted additional surveys to determine presence of red-cockaded woodpeckers in the area, and no vocalizations, red-cockaded woodpeckers, natural starts, cavities, or any evidence of the species were observed. Per the USFWS red-cockaded woodpecker recovery plan, no nesting habitat is present, but the area would be considered foraging habitat. This area of suitable foraging habitat is surrounded by unsuitable habitat, including fields, houses, wetlands, industrial timberlands, and roads.

Based on consultation with USFWS, the joint lead agencies determined that no other federally listed species under USFWS jurisdiction are likely to be present in the study area because of the absence of suitable habitat or because of the disturbed nature of habitat that may otherwise be considered suitable (e.g., wetlands in transmission line rights-of-way that are regularly cleared and maintained).

Two federally listed species under NMFS jurisdiction are potentially present in the study area: the endangered Atlantic sturgeon and shortnose sturgeon. Both sturgeons have been documented in the Santee-Cooper Lakes but their occurrence in the study area (at the Diversion Canal bridge crossing) is rare, particularly the Atlantic sturgeon. With the construction of the Santee-Cooper Lakes and associated navigational lock and dam systems, the vast majority of the Santee and Cooper River system is closed to anadromous fish, including the Atlantic and shortnose sturgeons. However, there is a dam-locked

subpopulation of shortnose sturgeon currently present in the Santee-Cooper Lakes and in the Diversion Canal. Between 2011 and 2016, the SCDNR hydrophone monitoring system detected nine shortnose sturgeon with residence times ranging from 1 to 2 days (South Carolina Department of Natural Resources pers. comm. 2018). The presence of Atlantic sturgeon in the Santee-Cooper Lakes is extremely rare and little information supports the existence of a land-locked subpopulation in the Santee-Cooper Lakes (South Carolina Department of Natural Resources n.d.). In 1997, three adult Atlantic sturgeon carcasses were found in the Santee-Cooper Lakes and, in 2017, SCDNR found a tagged Atlantic sturgeon in the upper reach of the Cooper River that had entered Lake Moultrie through the Pinopolis Dam Navigation Lock on a presumed spawning run (South Carolina Department of Natural Resources 2017). This was the first tagged Atlantic sturgeon documented in the Santee-Cooper Lakes. The fish, which remained close to the dam and lock (about 11.5 miles from the proposed rail crossing of Diversion Canal), was presumably not able to exit and was relocated by SCDNR.

Bald eagles are found throughout South Carolina, including Berkeley County. The joint lead agencies' review of SCDNR's 2018 bald eagle nest data indicates that no bald eagle nests are in the study area. The nearest bald eagle nest (ID No. N835-Y2018) is 0.5 mile from the study area in a wetland on the south side of the Diversion Canal (South Carolina Department of Natural Resources 2018). Intensive silviculture is practiced throughout the vicinity, preventing timber from growing to the size required for nest trees. The past disturbance associated with silviculture practices in the study area may have deterred nesting bald eagles. Forested areas near the study area not as intensively managed for silviculture could provide nesting and foraging habitat.

State-Listed Species

Nine state-listed threatened or endangered species occur or potentially occur in Berkeley County (Table 3.6-2). Under the South Carolina endangered species statute (50 South Carolina Code of Laws §§ 15–30), there is no consultation process like Section 7 of the federal ESA. However, the Applicant must comply with the statute directive that it is unlawful to take endangered wildlife, where take is defined as harass, hunt, capture, or kill or attempt to harass, hunt, capture, or kill wildlife.

Table 3.6-2. State Listed Threatened and Endangered Species that Occur or Potentially Occur in Berkeley County, South Carolina

Species	State Status
Mammals	
Rafinesque's big-eared bat (<i>Corynorhinus rafinesquii</i>)	E
Birds	
Red-cockaded woodpecker (<i>Picoides borealis</i>)	E
Least tern (<i>Sterna antillarum</i>)	T
Bald eagle (<i>Haliaeetus leucocephalus</i>)	T
American swallow-tailed kite (<i>Elanoides forficatus</i>)	E
Amphibians and Reptiles	
Frosted flatwoods salamander (<i>Ambystoma cingulatum</i>)	E
Gopher frog (<i>Lithobates capito</i>)	E
Spotted turtle (<i>Clemmys guttata</i>)	T
Fish	
Shortnose sturgeon (<i>Acipenser brevirostrum</i>)	E
Source: South Carolina Department of Natural Resources 2015	
E=Endangered; T=Threatened	

The joint lead agencies consulted with SCDNR requesting input on resources under their jurisdiction that could potentially be affected by the proposed rail line, which include state-listed threatened and endangered species. The joint lead agencies also provided SCDNR with the Applicant's *Environmental Report* and the protected species field assessment, which was based on field survey information collected by the Applicant. SCDNR also provided input on the proposed rail line following the U.S. Department of Army [DA] Public Notice for the Department of Army permit application (Appendix D, *Agency Notices and Comment Letters*). Based on SCDNR's review of project information and feedback, the joint lead agencies determined that two state-listed species—red-cockaded woodpecker and shortnose sturgeon—may occur in the study area. The potential locations of these two species and their habitats are the same as described for the USFWS and NMFS species reviews. SCDNR did not express concern with any other state-listed endangered or threatened species in the study area as part of the NEPA consultation or in its comment on the Corps' DA Public Notice on the permit application.

3.6.2 Environmental Consequences

As noted, the joint lead agencies consulted with USFWS, NMFS, and SCDNR to determine the potential presence of federal and state listed threatened and endangered species and their habitats in the study area. Potential construction and operations impacts on these species are qualitatively described.

3.6.2.1 Construction and Operations

The potential construction and operations impact types and mechanisms for special-status species are the same as described in Section 3.4, *Wildlife*, and Section 3.5, *Fish and Other Aquatic Species*.

Federally Listed Species

After consulting with USFWS, the joint lead agencies determined that the proposed rail line *may affect* the red-cockaded woodpecker in a small, isolated area of foraging habitat near the right-of-way. This habitat would not be removed, but if a red-cockaded woodpecker was using this habitat during construction, temporary noise impacts from construction equipment and human presence could affect the species. A passing train or maintenance and repair vehicles could cause similar impacts. However, surveys did not detect red-cockaded woodpeckers in this habitat area, and it is unlikely the species would use this habitat because it is isolated and surrounded by disturbed habitats. Therefore, any potential construction and operation impacts on red-cockaded woodpecker would be insignificant and discountable and, therefore, are *not likely to adversely* affect the red-cockaded woodpecker. USFWS concurred with this determination and stated that the requirements of ESA Section 7 have been fulfilled and no further consultation on federally listed species is necessary (Appendix B, *Agency Consultation Correspondence*).

In response to the Corps' Public Notice on the DA permit application, NMFS stressed the importance of ongoing communication with their Protected Resources Division (Appendix D, *Agency Notices and Comment Letters*). After consulting with NMFS, the joint lead agencies determined that the proposed rail line *may affect* the Atlantic sturgeon and shortnose sturgeon during construction of the proposed rail bridge across the Diversion Canal. In-water work to install bridge supports could affect these species by generating underwater noise and temporarily degrading water quality. During the consultation process, the Applicant committed to measures that they did not originally propose in order to avoid and reduce potential impacts on the sturgeon, including the commitment to avoid in-water pile driving and limiting in-water work when species may be present. It is likely that any potential impact on the species would be insignificant and discountable because the presence of the species at the bridge crossing would be

rare, construction would be temporary, and the following measures would be implemented to avoid and minimize noise and water quality impacts if species were present: no pile driving in the diversion canal, in-water work windows to avoid the times when species could be present, and best management practices to address water quality impacts. Therefore, the proposed rail line is *not likely to adversely affect* the Atlantic and shortnose sturgeons. NMFS has concurred with this determination and stated that the joint lead agencies' ESA Section 7 responsibilities have been concluded for species under their purview (Appendix B, *Agency Consultation Correspondence*, letter of concurrence dated October 4, 2018).

State-Listed Species

SCDNR initially expressed concern about the proposed rail line's potential impact on potentially suitable red-cockaded woodpecker habitat (and use of that habitat) at two locations along the alignment (Appendix B, *Agency Consultation Correspondence*). However, upon further review of Applicant and agency correspondence SCDNR stated they have no further concerns with the red-cockaded woodpecker (Appendix D, *Agency Notices and Comment Letters*, letter dated October 10, 2018).

SCDNR also expressed concern with potential impacts on shortnose sturgeon during in-water construction in the Diversion Canal (Appendix D, *Agency Notices and Comment Letters*). For the reasons described for this species under *Federally Listed Species* (e.g., pile driving no longer proposed, limit in-water work to avoid species) and the rationale for the concurrence from NMFS on this species under ESA Section 7, the proposed rail line is not likely to have adverse impacts on the shortnose sturgeon.

3.7 Noise and Vibration

This section addresses noise in the project area and the potential impacts of the proposed action. Appendix F, *Noise and Vibration*, presents the equations and methods used in the noise and vibration analysis.

3.7.1 Affected Environment

The study area is defined as the area within 1 mile of the right-of-way centerline (Figure 3.7.1). Within this area, the proposed rail line would pass through residential, commercial, agricultural, industrial, recreational, and institutional uses.

The measurements used for noise are defined as follows.

- A-weighted decibels (dBA): A measure of noise level used to compare noise from various sources. A-weighting approximates the frequency response of the human ear.
- Day-night average noise level (DNL): The energy average of dBA sound level over a 24-hour period; includes a 10-decibel adjustment factor for noise between 10 p.m. and 7 a.m. to account for the greater sensitivity of most people to noise during the night. The effect of nighttime adjustment is that one nighttime event, such as a train passing by between 10 p.m. and 7 a.m., is equivalent to 10 similar events during the daytime.

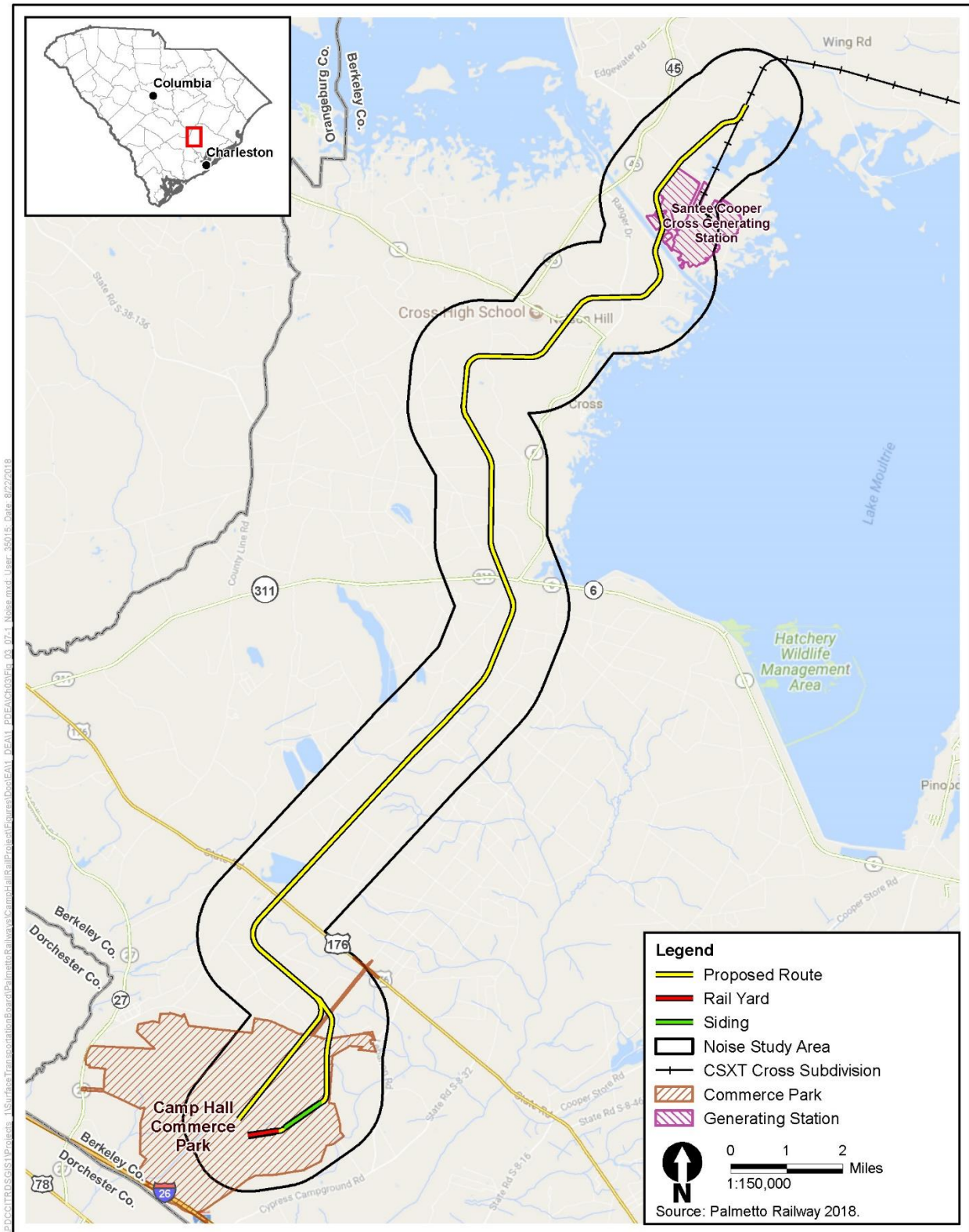
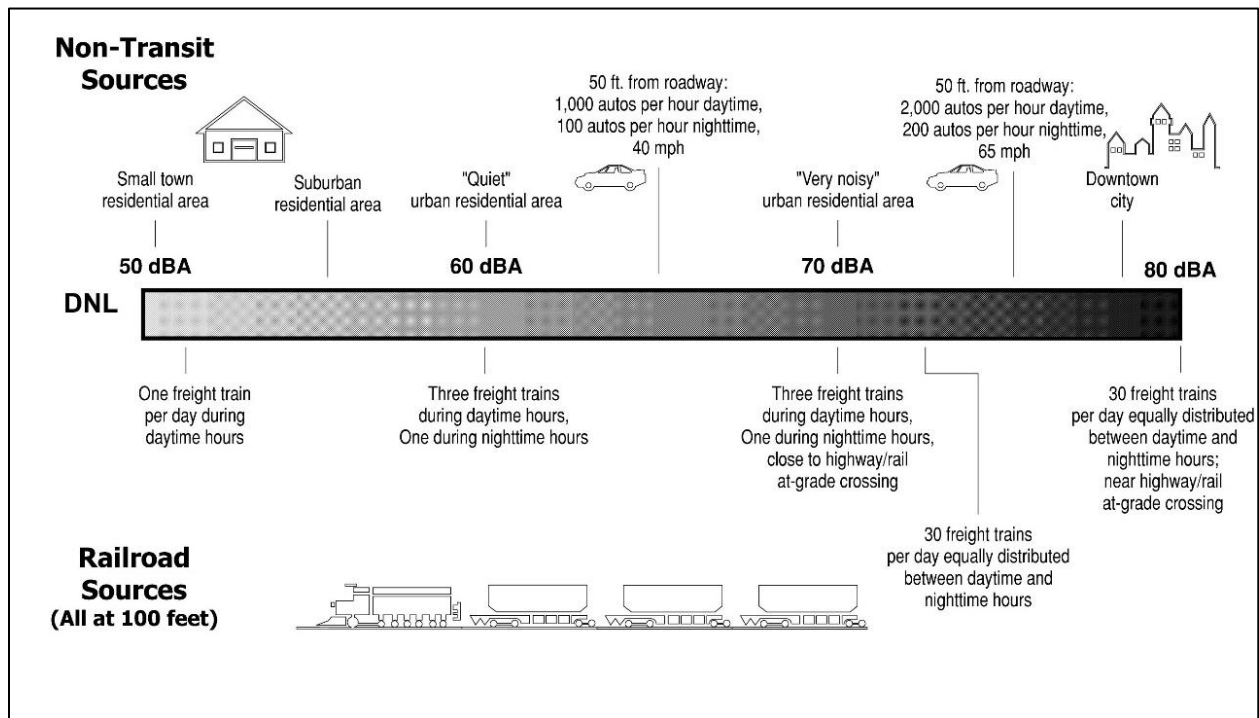


Figure 3.7-1. Noise Study Area

Ambient noise is the sum of all noise (from human and naturally occurring sources) at a specific location over a specific time. Existing ambient noise conditions in the study area vary considerably depending on population density, vehicular traffic noise, and other noise sources. In general, the lower the population density, the lower the ambient noise level. Noise is audible at further distances from the source in quiet areas compared to areas with higher ambient noise.

Based on a review of area maps and given the relatively low population densities along portions of the alignment, the study area is generally categorized as “small town residential,” corresponding with ambient noise levels in the 50 DNL range, as indicated by Figure 3.7.2.



Source: U.S. Environmental Protection Agency 1974

Figure 3.7-2. Typical Day-Night Average Noise Levels (DNL) for Residential Areas

3.7.2 Environmental Consequences

3.7.2.1 Construction

The joint lead agencies used the Federal Transit Administration's (FTA's) general assessment method to evaluate potential construction noise and vibration impacts. This method is used when the details of the construction methods and schedule are not known. The two noisiest pieces of equipment are identified, and it is assumed that both pieces of equipment would be operating simultaneously at any location along the alignment. Table 3.7-1 shows the assumed two noisiest construction pieces of equipment, corresponding noise levels, and combined noise level.

Table 3.7-1. Construction Equipment Noise Levels

Equipment	Noise Level (Leq, dBA) at 50 feet
Heavy Truck	88
Bulldozer	85
Equipment Combined	90
Source: Federal Transit Administration 2006	

The FTA criteria for construction noise effect thresholds are presented in Table 3.7.2.

Table 3.7-2. FTA Construction Noise Criteria (FTA 2006)

Land Use	Daytime One- hour Leq (dBA)	Nighttime One-hour Leq (dBA)
Residential	90	80
Commercial	100	100
Industrial	100	100
Source: Federal Transit Administration 2006		

Following the FTA method, the joint lead agencies estimated the combined noise level at the sensitive receptor nearest the alignment. The two types of equipment that produce the greatest vibration also produce the greatest noise and, based on FTA data, the joint lead agencies estimated the corresponding vibration levels at the nearest receptor. A bulldozer was selected for this analysis because it is common for rail construction projects and produces relatively high vibration levels. Table 3.7-3 shows estimated construction (combined) noise levels and bulldozer vibration levels at the nearest receptor location.

Table 3.7-3. Estimated Construction Noise and Vibration Levels

Location	Type	Distance (feet)	Dozer Vibration (Peak Particle Velocity [in/sec])	Construction Noise Level (dBA)
-8924836, 393250	Residential	46	0.035738	91

Assuming daytime construction, as the Applicant has proposed, the estimated construction noise levels shown in Table 3.7-3 would be slightly higher than the daytime limit of 90 dBA at one location.

Estimated construction vibration levels (based on bulldozing activities) would be below FTA's 0.20-inch-per-second fragile building damage criterion; therefore, no building damage due to vibration from construction of the proposed rail line is expected. Construction vibration might be perceptible in some locations, but the frequency of vibration events would be low (and temporary) and below annoyance standards.

3.7.2.2 Operations

The joint lead agencies used the following methods to determine if operations of the proposed rail line would result in a 3 dBA increase in noise levels, railroad noise levels (due to wayside noise and locomotive warning horn) that would equal or exceed a 65 decibel DNL, or vibration impacts. Appendix F, *Noise and Vibration*, provides the equations and methods used in the noise and vibration analysis.

- **Noise models.** The wayside noise model used is based on past OEA noise studies including the *Conrail Acquisition Environmental Impact Statement* and the *Draft Environmental Assessment for the Canadian National Railway Company* (Surface Transportation Board 1998a, 1998b). The overall noise model results are sensitive to horn noise, locomotive and rail car noise, train length, and train speed. The individual components of the overall noise model were selected because of the size of the noise measurement database, statistical reliability, and other factors.
- **Ambient noise levels.** The joint lead agencies assumed an ambient noise level of 50 DNL to estimate distances to the 3 dBA increase contour distance.
- **Noise exposure.** The joint lead agencies estimated noise exposure for a combination of ambient noise and project-related noise in terms of DNL using information on distances and noise propagation paths to sensitive receptors and proposed/anticipated rail operations.
- **Noise-sensitive receptors.** The joint lead agencies estimated the number of noise-sensitive receptors within the 65 DNL noise contours for the alignment and estimated the distances to the + 3 dBA (above ambient) contour. The joint lead agencies used digital aerial photographs and geographic information systems software to estimate the number of noise-sensitive receptors, including residences, schools, and places of worship within the 65 DNL noise contour for anticipated train volumes. The final result of this analysis was an estimate of the total number of sensitive receptors likely to be exposed to 65 DNL or greater and the number of receptors where the DNL would increase by at least 3 dBA because of operations of the proposed rail line.
- **Vibration exposure.** The joint lead agencies estimated vibration levels from proposed rail operations using published train vibration data. Rail operations noise comprises diesel locomotive engine and wheel/rail noise (collectively referred to as wayside noise) as well as the sounding of locomotive warning horns at public at-grade rail/roadway crossings. Wayside noise is primarily a function of train speed, train length, and number of locomotives. For the proposed rail line, the joint lead agencies estimated rail-related noise levels based on a train with two locomotives pulling 30 cars at an average train speed of 20 miles per hour (mph). Each locomotive was assumed to be 75 feet long, with car length of 95 feet and overall train length of 3,000 feet. Given these assumptions and the Applicant's projection of 1.4 train trips per day (which could occur at any time during a 24-hour period), the estimated distance from the rail line to the 65 DNL wayside noise contour would be 45 feet, and the distance to the 65 DNL horn noise contour near public at-grade crossings would be 170 feet.

Figures 3.7-3 through 3.7-7 show 65 DNL contours (where estimated noise levels would be at or above 65 DNL) for locations near the alignment. The broader bands of the contours (in blue) indicate noise levels from horns at at-grade crossings. Sensitive receptors are indicated by blue dots.

The joint lead agencies used geographic information system software to count receptors identified (based on aerial photographs) within the calculated noise contours. One receptor was identified within the noise contour (Table 3.7-4).

Table 3.7-4. Noise Receptor Counts for the Preferred Alternative

Lat/Long	65 DNL	Horn/Wayside
-8924836, 393250	Residence	Horn

The residential receptor identified in Table 3.7-4 and shown in Figure 3.7-5, which is located on Mudville Road, would be exposed to greater than 65 DNL horn noise. This receptor would also be exposed to estimated project-related daytime construction noise levels of 91 dBA.

Assuming a generalized ambient noise level of 50 DNL, the distance to the + 3 dBA horn noise contour would be 1,730 feet near at-grade crossings and the distance to the + 3 dBA wayside noise contour would be 450 feet. However, noise levels at receptors within this proximity to the proposed rail line, with the exception of the receptor on Mudville Road, would be below 65 DNL; therefore, increased project-related noise would have a minimal noise impact. Train noise within the 3 dBA increase contour would be more noticeable than in areas further away from the alignment or other areas with higher ambient noise levels.

In response to the Corps' Public Notice on the U.S. Department of the Army (DA) permit application, one citizen (Citizen Williams) expressed concerns about the proximity of train operations to their residence. The Applicant responded that its preliminary noise analysis indicated that no adverse impacts would be expected. Furthermore, the alternatives analysis was conducted to identify the alternative with the fewest overall impacts (Appendix D, *Agency Notices and Comment Letters*). As stated in the previous paragraph, the joint lead agencies found that project-related noise would have a minimal noise impact. This impact would be further reduced if the Applicant's voluntary mitigation measure of working with FRA and local communities, if requested, to establish Quiet Zones results in a Quiet Zone at the crossing of Mudville Road where one noise-sensitive receptor would otherwise be anticipated to experience adverse levels of horn noise. Noise during project-related rail operations would also be limited by the Applicant's voluntary mitigation measure requiring the use of continuously welded rail.



Figure 3.7-3. 65 Day Night Average Noise (DNL) Contours and Receptors

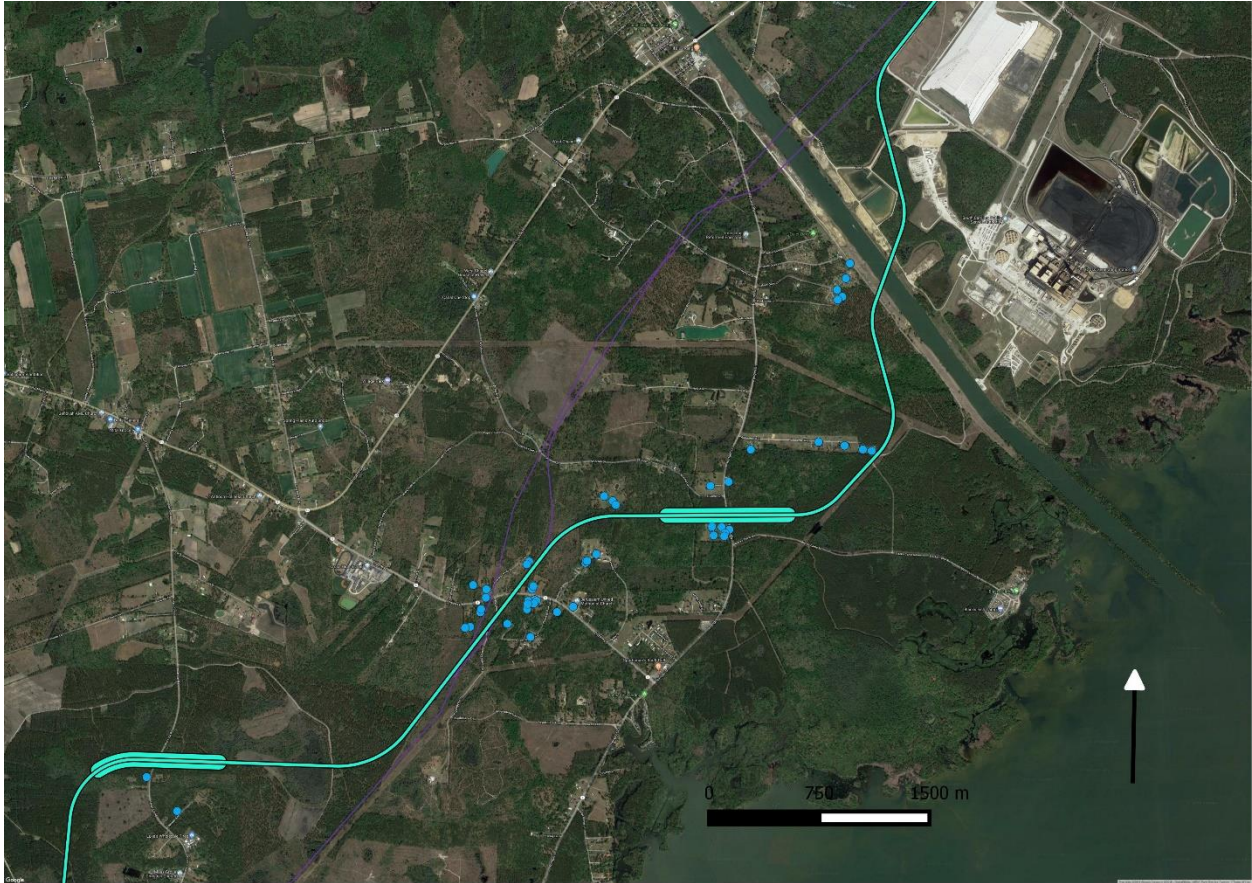


Figure 3.7-4. 65 Day Night Average Noise (DNL) Contours and Receptors



Figure 3.7-5. 65 Day Night Average Noise (DNL) Contours and Receptors

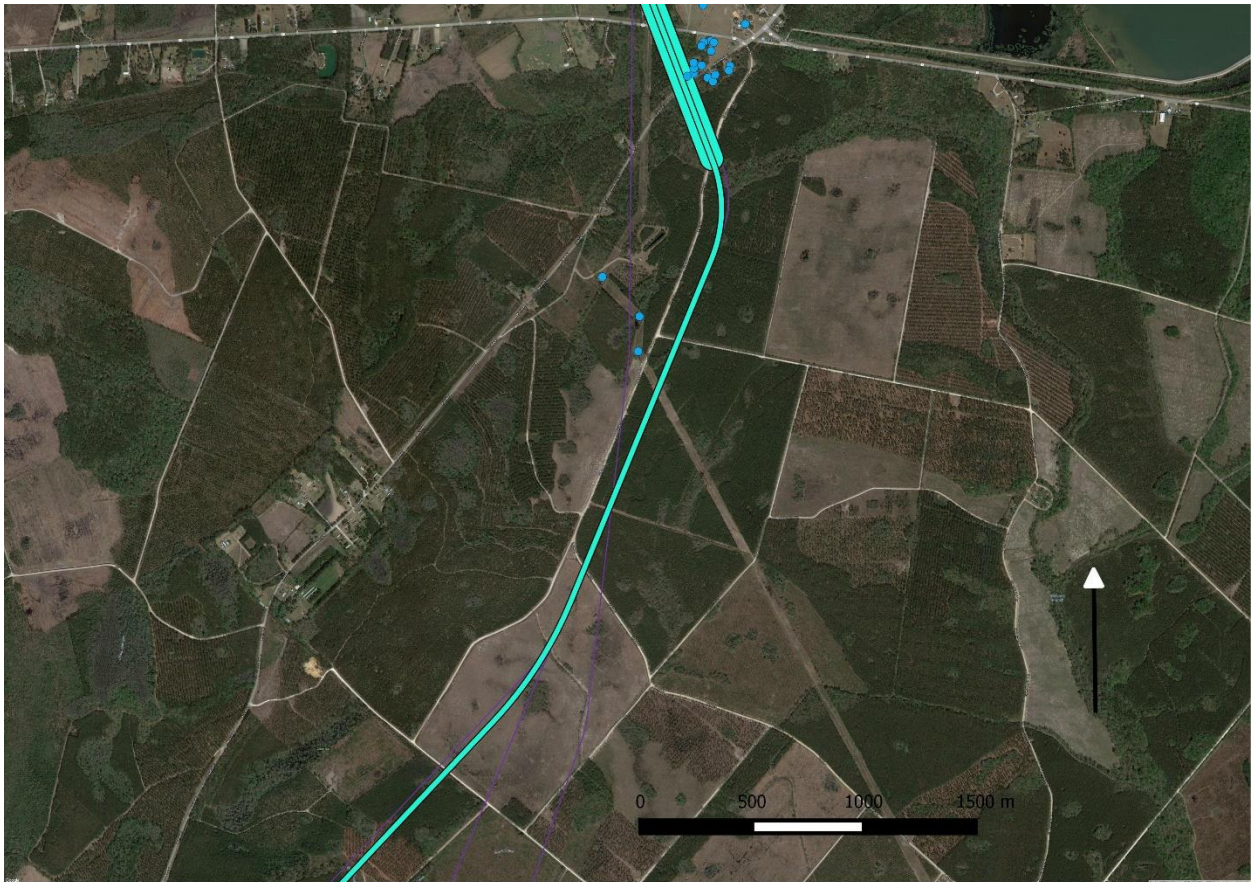


Figure 3.7-6. 65 Day Night Average Noise (DNL) Contours and Receptors



Figure 3.7-7. 65 Day Night Average Noise (DNL) Contours and Receptors

Rail operations would also increase vibration near the proposed rail line. There are two types of potential impacts from rail-related ground vibration: annoyance to humans and damage to buildings. Two different measures are used to evaluate these two types of potential impacts: peak particle velocity for building damage and root-mean square velocity for human annoyance. See Appendix F, *Noise and Vibration*, for a description of the measures. Based on an anticipated average train speed of 20 mph and assuming a crest factor (the difference between average and peak vibration levels) of four, the building damage contour for the FTA's fragile building damage criterion of 0.20 inch per second would be less than 10 feet wide (less than 5 feet on each side of the track centerline). No buildings would be located within 5 feet of the rail line, so no building damage is expected.

For an average speed of 20 mph, the vibration annoyance contour along the proposed rail line, using FTA's infrequent event criterion of 80 velocity decibels (VdB), would be 45 feet from the track centerline. There would not be any receptors within that distance, which would be within the right-of-way, and no vibration impacts from operation of the proposed rail line would be expected.

The Applicant has proposed voluntary measures to mitigate potential noise and vibration impacts from operations (Chapter 4, *Proposed Mitigation*). The Applicant would use continuously welded rail to reduce operations noise. Although FRA has jurisdiction over horn sounding at road crossings, the Applicant would work with FRA and local communities, if requested, to explore the feasibility of establishing Quiet Zones at some future at-grade road crossings.

Under the no-action alternative, operations would instead involve trucking the cars produced by the Volvo Cars plant that will be distributed within North America to the CSXT auto loading facility in Dixiana, South Carolina (Appendix A, *Applicant Correspondence with Agencies*, Information Request #3)). The joint lead agencies estimate that trucking vehicles to Dixiana would require an average of approximately 20 daily round trip truck trips, mostly on Interstate 26, which would represent an approximately 0.1 percent increase in daily vehicle traffic on the highway (South Carolina Department of Transportation 2016). The joint lead agencies anticipate that this increase in traffic would not result in a perceptible difference in noise or vibration.

3.8 Cultural and Historical Resources

This section addresses cultural and historical resources and the potential impacts of the proposed rail line.

3.8.1 Affected Environment

3.8.1.1 Definitions

Cultural resources are resources associated with human occupation or activity related to history, architecture, archaeology, engineering, and culture. Historic properties, as defined by 36 C.F.R Part 800 and the implementing regulations of the National Historic Preservation Act (NHPA) (54 U.S.C. § 300101 et seq.), are a subset of cultural resources that are eligible for inclusion in the National Register of Historic Places (NRHP). Historic properties may be districts, sites, buildings, structures, artifacts, ruins, objects, or works of art; natural features important in human history at the national, state, or local level; or properties of traditional religious and cultural importance to an Indian tribe.

3.8.1.2 Identification and Evaluation

To determine the cultural resources potentially affected by the proposed rail line, the Applicant conducted a cultural resources survey consisting of an archaeological and an aboveground built environment survey and prepared a cultural resources survey report that included conducting background research, a pedestrian reconnaissance, and regular interval subsurface testing throughout the 200-foot survey area (Palmetto Railways 2017) (2017 Survey). The aboveground resources survey area extended 0.5 mile from the proposed railroad centerline, which included the 200-foot survey area for archaeological resources.

No archaeological sites or isolates were identified as a result of the investigations conducted in conjunction with the 2017 Survey. The 2017 Survey recommended no further archaeological investigation for the rail alignment as it is currently proposed. The aboveground resources survey identified three historic properties in the study area: the Diversion Canal, Bulltown Ditch, and the Garrett Cemetery (Palmetto Railways 2017). No traditional cultural properties were identified in the survey area based on the results of the 2017 investigations and tribal consultation. Therefore, no project-related impacts on traditional cultural properties are anticipated. The historic properties identified in the 2017 Survey are cultural resources subject to impacts analysis under NEPA.

3.8.1.3 Study Area

The joint lead agencies prepared a NHPA Section 106 Finding of Effect (Appendix G, *Cultural Finding of Effect*) for the proposed project describing the area of potential effects (APE), defined at 36 C.F.R. section 800.16(d) for archaeological resources, as the project footprint⁹ plus a 100-foot-wide buffer zone on either side of the edge of the project footprint. The APE for aboveground historic properties is defined as the project footprint plus a 200-foot buffer on either side of the project footprint measured from its outermost edge. The APE for NHPA Section 106 analysis is identical to the study area for the NEPA analysis. See Appendix G, *Cultural Finding of Effect*, for the full text of the Finding of Effect.

3.8.1.4 Finding of Effect Criteria

The Section 106 Finding of Effect analysis assessed potential impacts on historic properties. Each proposed project component was considered to determine if the undertaking would alter, directly or indirectly, any of the characteristics of a historic property that qualifies it for inclusion in the NRHP. For any properties within the APE that are listed in or are eligible for inclusion in the NRHP, the Section 106 Criteria of Adverse Effect were applied in accordance with 36 C.F.R. Part 800.5.

Under both Section 106 and NEPA, adverse impacts could result from but would not be limited to the following activities.

- Physically damaging, destroying, or moving historic properties within the path of construction or staging by preparing previously undisturbed land for staging and construction of railroad right-of-way—including grading, cuts, and excavating earth and rock.
- Alterations that are inconsistent with the Standards for Rehabilitation resulting from the rerouting of linear historic roads, trails, and water conveyance, drainage, or irrigation features.
- Physical damage to or destruction of subsurface historic properties by soil compaction resulting from construction of access roads or railbed.
- Change to the character or use of a historic property whose setting contributes to its significance due to the relocation of roads.
- Diminishing the integrity of historic properties by the use of heavy construction equipment near properties sensitive to temporary visual, noise, vibration, or atmospheric effects.
- Flooding of eligible buildings or water features caused by changes in water flow resulting from introduction of new structures or features associated with railroad (such as culverts or railbeds).
- New visual elements introduced to the landscape such as tracks, sidings, trestles, bridges, communication towers, and power lines that affect historic properties that rely on viewsheds to convey significance.
- New noise effects from the operation of a railroad that affect historic properties that rely on a quiet setting to convey significance.
- Vibratory effects from the operation of a new railroad that affect historic properties whose construction or materials render them vulnerable to such effects.

⁹ The project footprint includes multiple aspects of the project that may or may not be completely in the right-of-way. The project footprint is a compilation of the right-of-way, disturbance footprint, bridge, rail yard, sidings, and the rail alignment.

3.8.1.5 Coordination and Consultation

OEA and the Corps, as joint lead agencies, analyzed the potential impacts of the proposed rail line on cultural resources and conducted preliminary consultation with agencies and tribes, including those with jurisdiction over, or a potential interest in, cultural resources. Appendix C, *Interagency and Tribal Correspondence*, includes copies of the preliminary consultation letters, forms soliciting interest in the Section 106 consultation process, and replies. The Corps, in their Public Notice, also solicited interest in the Section 106 consultation process. Of the responses received to that Public Notice, only the U.S. Fish and Wildlife Service (USFWS) requested to be involved as a consulting party. OEA, a lead agency, and FRA, a cooperating agency, designated the Corps as the lead federal agency responsible for fulfilling the agencies' collective responsibilities under Section 106 of the NHPA. The Corps determined there was no adverse effect on historic properties and sent that determination and the Finding of Effect to the State Historic Preservation Officer (SHPO) and USFWS on August 8, 2018 (Appendix G, *Cultural Finding of Effect*). The SHPO concurred with the finding of *no adverse effect* on August 24, 2018, and USFWS, acting as a consulting party on the Section 106 review, concurred with the finding of *no adverse effect* in their email dated September 20, 2018.

3.8.2 Environmental Consequences

3.8.2.1 Construction

Construction equipment would include heavy machinery and various types of construction vehicles in the study area. General construction activities for the proposed rail line would include excavation, clearing and grubbing, construction staging and stockpiling, and the presence of staged construction equipment.

Archaeological Resources

Construction of the proposed rail line and facilities would not affect archaeological sites or isolates because no archaeological sites or isolates were identified in the study area. However, as discussed further, if cultural resources are encountered during ground-disturbing activities, all work near the find would immediately cease and the Corps would be notified.

Diversion Canal

While the construction of the proposed rail infrastructure (including installation of railbed, signaling apparatus, bridge,¹⁰ and culverts) has the potential to directly affect the structural integrity of the Diversion Canal, current plans include stabilization measures and best management practices designed to avoid effects of this nature (Appendix C, *Interagency and Tribal Correspondence*). The Diversion Canal relies on its functionality and relationship to other Santee Cooper Hydroelectric Project components to convey significance. Because of this, the canal's significance would not be adversely affected by auditory or vibratory effects. The aesthetic qualities of the Diversion Canal are not among the features that convey its significance; therefore, indirect temporary or permanent visual effects introduced by construction of the new bridge proposed to cross the Diversion Canal would not be adverse.

¹⁰ As noted in Chapter 2, Section 2.3.1.1, *Waterway Crossings*, the U.S. Coast Guard may determine that the bridge crossing of the Diversion Canal would require a 40-foot clearance rather than a 50-foot clearance for safe ship passage. If so, it is anticipated that the impacts of a 40-foot clearance would be similar to those of a 50-foot clearance.

Bulltown Ditch

The proposed crossing structure at Bulltown Ditch would be a three-barrel culvert. The Bulltown Ditch relies on its association with the Santee Canal for its significance, which is tied to its role as a transportation corridor and an engineering achievement. Temporary or permanent visual or noise effects would, therefore, not be adverse because neither the ditch's visual qualities nor a quiet setting is essential to understanding the historic property. While the proposed rail line would cross a section of the Bulltown Ditch already affected by an existing CSXT railroad line and a transmission easement, construction of new railroad infrastructure would have the potential to affect the structural integrity of the canal. An existing culvert system is proposed to be extended. The ditch's bank would be stabilized as a feature of project construction, which would avoid a direct adverse impact on the physical and structural integrity of the ditch (Appendix C, *Interagency and Tribal Correspondence*, letter from J. McWhorter to FRA dated July 13, 2018). The ditch would run parallel to the proposed rail alignment at a distance of approximately 150 feet. This distance is adequate to buffer the ditch from other construction impacts per the August 24, 2018 SHPO letter of concurrence (Appendix C, *Interagency and Tribal Correspondence*).

Garrett Cemetery

Because of the distance of the Garrett Cemetery from the construction of the proposed rail line, the grave markers that convey the cemetery's significance would not be directly affected. Visual and auditory settings are not essential to conveying the Garrett Cemetery's significance but constitute important aspects of its integrity. Temporary and permanent changes of setting, including the construction of the railroad, have the potential to affect the Garrett Cemetery. In order to avoid any potential effects, the Applicant would maintain a 50-foot buffer around the cemetery, as described in Chapter 4, *Mitigation Measures*. The proposed project design indicates that the Garrett Cemetery is located outside of the area where construction activities would occur and would be protected by the 50-foot buffer maintained around the resource per the August 24, 2018 SHPO letter of concurrence (Appendix C, *Interagency and Tribal Correspondence*).

3.8.2.2 Operations

Archaeological Resources

Operations of the proposed rail line and facilities would not affect archaeological sites or isolates because no archaeological sites or isolates were identified in the study area.

Diversion Canal

Operations of the new railbed, signaling apparatus, bridge, and culverts would not affect the historical significance of the Diversion Canal. The Diversion Canal's significance would not be adversely affected by auditory, vibratory, or visual changes caused by railroad operations.

Bulltown Ditch

Operations of the proposed rail line would cross a section of the Bulltown Ditch already affected by an existing CSXT railroad line and a transmission easement. The existing culvert system would be extended and stabilized. The proposed rail line would run parallel to the ditch at a distance of approximately 150 feet, which is adequate to buffer the ditch from operations impacts.

Garrett Cemetery

Operations of the proposed rail line would be sufficiently distant and would not directly affect the grave markers of the Garrett Cemetery. Temporary and permanent changes of setting, including the operation of the railroad, have the potential to affect the Garrett Cemetery. In order to avoid any potential effects, the Applicant would maintain a 50-foot buffer around the cemetery, as described in Chapter 4, *Mitigation Measures*. The proposed project design indicates that the Garrett Cemetery is located outside of alignment and would be protected by the 50-foot buffer maintained around the resource per the August 24, 2018 SHPO letter of concurrence (Appendix C, *Interagency and Tribal Correspondence*).

Section 106 Conclusions

The Corps, designated as the lead agency to fulfill Section 106 responsibilities for OEA and FRA, determined that the proposed rail line would have *no adverse effect* on historic properties, including the Diversion Canal, Bulltown Ditch, and the Garrett Cemetery. As noted in Section 3.8.1.5, *Coordination and Consultation*, the Corps submitted their determination with the Finding of Effect to the SHPO on August 8, 2018 and the SHPO concurred with this finding on August 24, 2018. As a consulting party, USFWS also concurred with this finding on September 20, 2018. (Appendix C, *Interagency and Tribal Correspondence*). Should artifacts or remains be discovered during construction, the Applicant would implement an immediate stop work order and coordinate next steps with the joint lead agencies, SHPO, and the tribes (Chapter 4, *Mitigation Measures*). No objections to the project were received from tribal outreach and invitations to Section 106 consultation. Therefore, the joint lead agencies determined no additional cultural resource survey work was necessary.

3.8.2.3 NEPA Conclusions

In accordance with the analysis detailed in Appendix G, *Cultural Finding of Effect*, and in correspondence between the Corps and the SHPO, no adverse direct or indirect impacts on known cultural resources are anticipated. A preliminary recommended mitigation measure in this Draft EA addresses the potential discovery of unknown resources during construction (Chapter 4, *Mitigation Measures*).

3.9 Land Resources

This section addresses existing land use, future land use, zoning, utilities, and special land use designations and the potential impacts of the proposed action.

3.9.1 Affected Environment

The study area for land resources is the right-of-way for the proposed rail line and the immediate vicinity. The proposed right-of-way traverses the northwestern-most portion of Berkeley County, where land uses are primarily residential, industrial, and agricultural uses.

3.9.1.1 Land Use

At the northern extent of the study area, existing land uses consist of rural residential areas, overhead electrical transmission lines, the CSXT Cross Subdivision, the Santee Cooper Cross Generating Station, and the Diversion Canal connecting Lake Moultrie and Lake Marion. Areas of undeveloped woodlands surround the generating station. South of the Diversion Canal, the proposed rail line would pass through

areas of low-density rural residences, including the unincorporated community of Cross, where there are existing retail and commercial uses. The proposed rail line would pass just west of the 85-acre West Farm, a conservation easement area managed by the Lord Berkeley Conservation Trust. South of West Farm, the proposed rail line would pass east of the Garrett Cemetery. In the surrounding area, the land is managed for timber with established timber stands consisting primarily of loblolly pine (*Pinus taeda*) (Appendix B, *Environmental Report*). The proposed rail line would end in the Camp Hall Commerce Park where the Volvo Cars facility is located.

Land ownership in the proposed right-of-way is primarily private, including approximately 290 acres owned by private parties and 83 acres owned by Santee Cooper.

The following zones are included in the right-of-way: Flex1: Agricultural District (286 acres), Heavy Industrial District (47 acres), Office or Industrial Park Planned Development District (36 acres), and Rural and Neighborhood Commercial District (4 acres) (Berkeley County 2010). Flex1 zoning is intended to implement the goals of the agriculture and resource conservation areas within rural areas in the unincorporated portions of Berkeley County. The Heavy Industrial District zone is associated with the Santee Cooper Cross Generating Station, and allowable land uses include agricultural, commercial, industrial, recreational, and institutional uses. Located near where the proposed rail line would cross South Carolina Highway 6, the Rural and Neighborhood Commercial District allows for commercial uses in rural and urban areas that serve adjacent residential neighborhoods. The Office or Industrial Park Planned Development District is associated with the Camp Hall Commerce Park.

According to the *Berkeley County Comprehensive Plan*, planned land uses along the proposed rail line call for constrained residential growth to maintain the low density and rural characteristics of the area (Berkeley County 2010). Figure 3.9-1 shows Berkeley County's Proposed Primary Growth Areas and Developments. Camp Hall Commerce Park is located in a planned industrial/employment node designated to accommodate large, labor-intensive industrial and commercial uses.

3.9.1.2 Utilities

Six utility rights-of-way cross the study area, including overhead electrical transmission and distribution lines, and buried communication lines and water mains. The utility owners and number of crossings are as follows (Appendix B, *Environmental Report*).

- Santee Cooper Electrical Transmission: six locations
- Santee Cooper Electrical Distribution: one location
- Berkeley Electric Cooperative Electrical Distribution: nine locations
- Home Telephone Company (telephone, cable and fiber optic): nine locations
- TDS Telecom (telephone, cable and fiber optic): one location
- Berkeley County Water and Sanitation: five locations

3.9.1.3 Recreation

Palmetto Trail, Lake Moultrie Passage

The Palmetto Trail is a multi-use trail that traverses South Carolina from the Blue Ridge Mountains to the Intracoastal Waterway near Awendaw. The trail connects state and county parks, national forests, nature preserves, wildlife management areas, Revolutionary War battlefields, Native American paths, urban and rural areas, swamps and mountains, maritime zones and sandhills and piedmont, and much more. The existing 350-mile trail consists of 26 passages of 1.3 to 47 miles in length. The trail is closed to motorized vehicles but open to hiking, backpacking, mountain biking, horseback riding, and camping, depending on the specific passage. The Palmetto Trail is one of 16 cross-state trails in the United States and is designated a Millennium Legacy Trail (Palmetto Conservation Foundation 2018a).

The Palmetto Trail, Lake Moultrie Passage is 26.9 miles long, extending from the southern trailhead at Swamp Fox near Moncks Corner to the northwestern trailhead on Eadie Lane near Eutaw Springs. This passage is open to hiking and mountain biking. Figure 3.9-2 shows the trail near the proposed alignment. The western-most portion of the trail segment is approximately 4 miles long, extending south from the bridge crossing near Springwood Road, then crossing the CSXT Cross Subdivision, and continuing southwest through the forest until it meets Viper Road. At Viper Road the trail turns northwest, traveling along the roadway to South Carolina Highway 45 (SC 45), where it turns south to the trailhead at Eadie Lane. The two trailheads are the primary access points for trail users.

The Lake Moultrie Passage was developed by Santee Cooper. The majority of the trail segment travels on Santee Cooper's service roads on the levees around the western and northern shores of Lake Moultrie (Palmetto Conservation Foundation 2018b), which are owned and maintained by Santee Cooper.

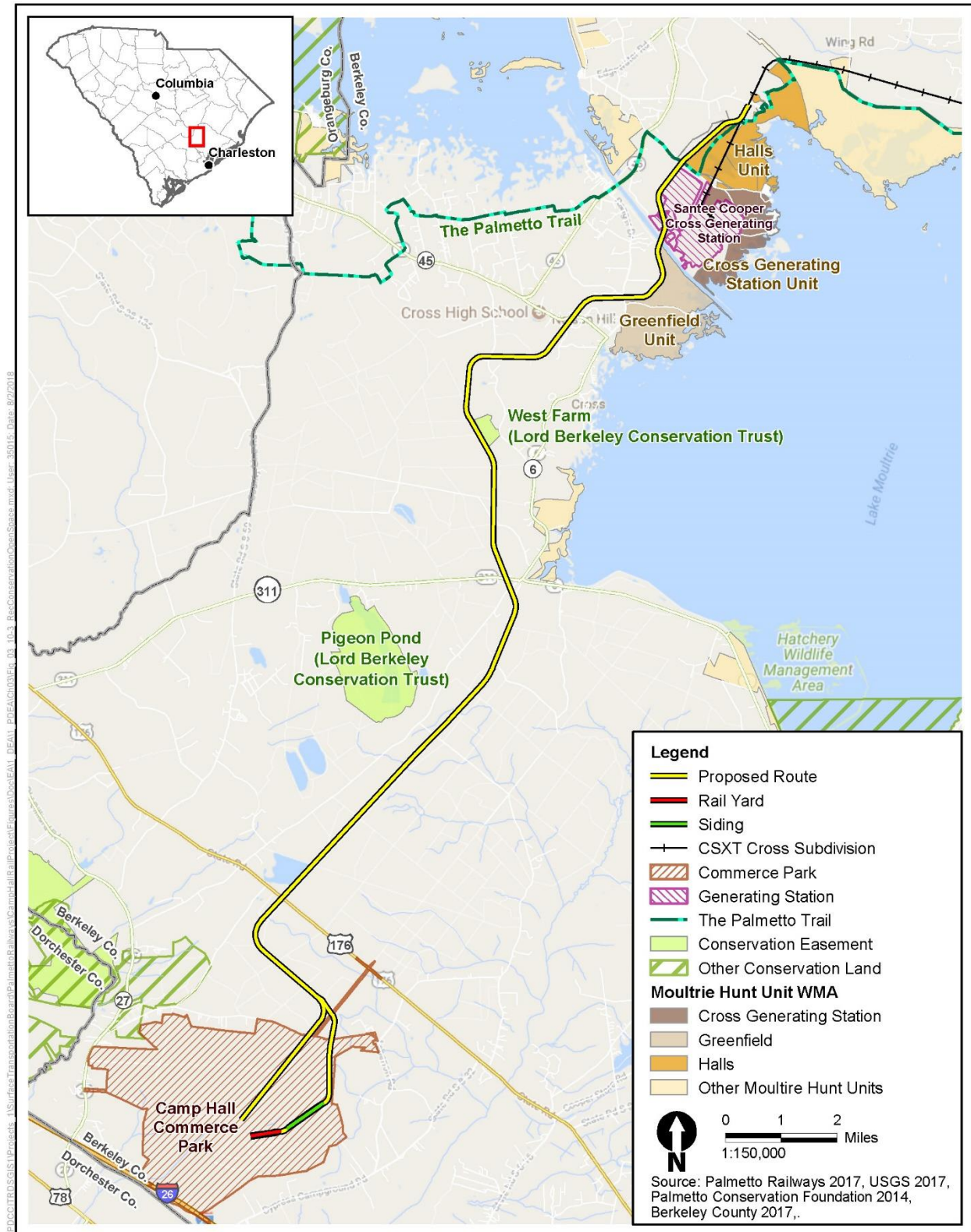


Figure 3.9-2. Recreation, Conservation, and Wildlife Management Areas

Moultrie Hunt Unit Wildlife Management Areas

The South Carolina Department of Natural Resources leases portions of the Moultrie Hunt Unit from Santee Cooper for public hunting. Other recreation activities available include biking, camping, hiking, fishing, and wildlife viewing, primarily associated with the Palmetto Trail. The Moultrie Hunt Unit is comprised of six wildlife management areas (WMAs) along the shores of Lake Marion and Lake Moultrie (Figure 3.9-2). Two WMAs in the unit, the Hall WMA and Greenfield WMA are located north and south of the Cross Generating Station. The Hall WMA is open for archery-only deer hunting, except for the area between Viper Road and the Diversion Canal around the generating station, which is closed except for youth-only draw hunts. The Greenfield WMA is open to still-gun hunting for deer (South Carolina Department of Natural Resources 2018). Santee Cooper leases the lands under an at-will agreement that provides limited public access for hunting, which is permitted to manage local deer populations. Hunting must be compatible with the primary purpose of generating hydroelectric power (Appendix C, Interagency and Tribal Correspondence, July 13, 2018 letter from Applicant to FRA).

Diversion Canal

The Diversion Canal connects Lake Marion on the west and Lake Moultrie on the east (Figure 3.9-2). Together the two lakes form the Santee Cooper Reservoir, created by the Santee Cooper Hydroelectric Project. The lakes are popular for boating, freshwater fishing, and other water-related activities. The Diversion Canal is a navigable water that is used by recreational boats as well as occasional commercial traffic. Information on the number or types of boats that use the canal is not available (Palmetto Railways 2018).

3.9.1.4 Coastal Zone Management

The study area is in Berkeley County, one of eight coastal counties within the state's coastal zone, which includes all coastal waters and submerged lands within the state's boundary as well as all lands and waters that contain critical areas (South Carolina Department of Health and Environmental Control 2018). Critical areas are coastal waters, tidelands, beaches, and primary oceanfront sand dunes. While the entire county is within the state's coastal zone, the study area is not located in any critical area, as shown on Figure 3.9-3. As such, a coastal zone consistency determination indicating consistency with the policies of the South Carolina Coastal Zone Management Program would be required of any proposed project.

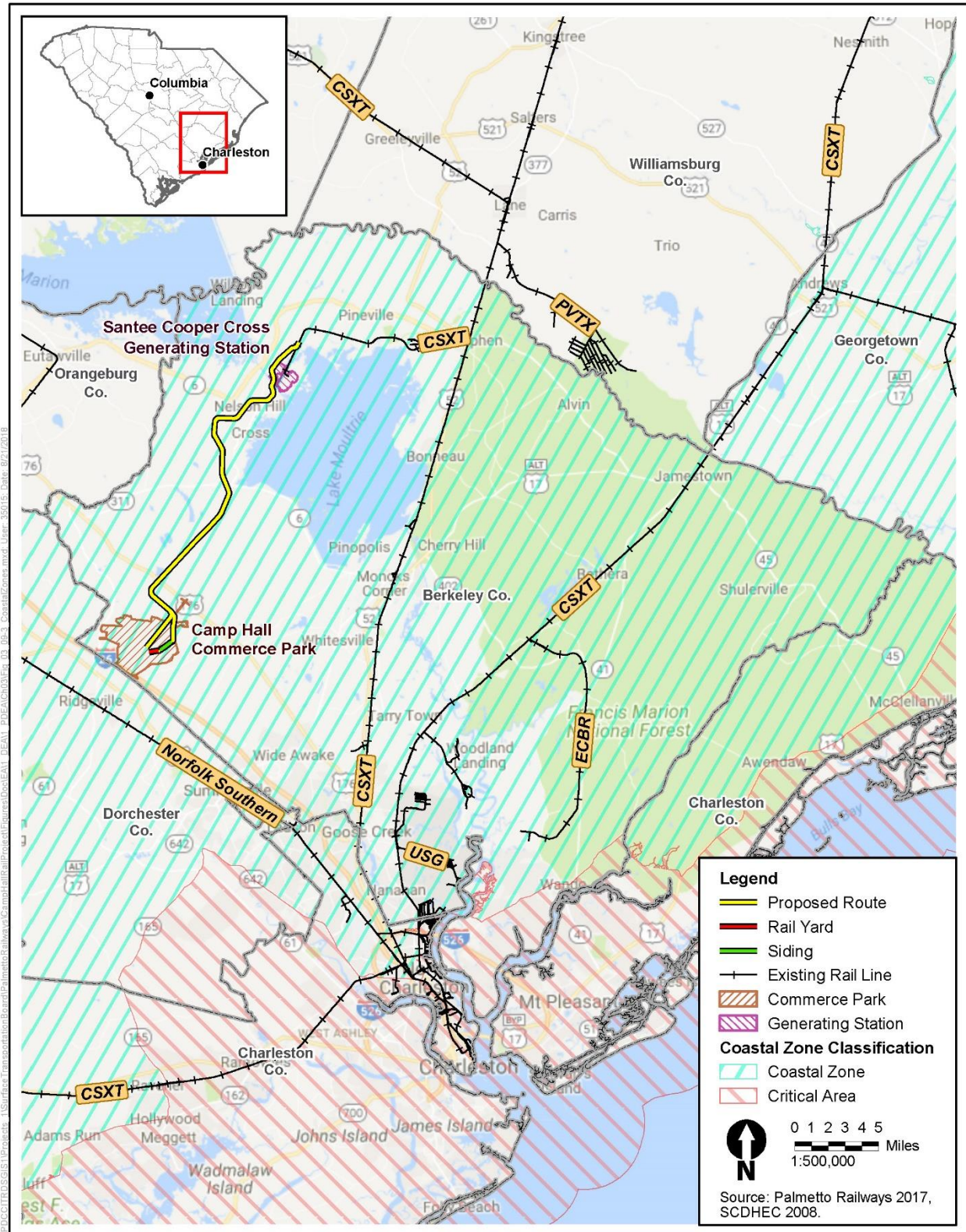


Figure 3.9-3. Coastal Zone Classifications

3.9.2 Environmental Consequences

3.9.2.1 Land Use

Construction and operation of the proposed rail line would not have an appreciable effect on land use in the study area. The proposed rail line would cross agricultural, residential, and industrial land. The proposed rail line would be constructed within a generally 100-foot-wide right-of-way and would permanently change existing land uses within the right-of-way to a rail line use.¹¹ Approximately 373 acres of land would be acquired but no displacements or relocations of residences or businesses would be necessary. Areas temporarily cleared for construction but not needed for the rail line would be maintained consistent with the needs of rail line operations. The surrounding land uses and/or zoning, described in Section 3.9.1.1, *Land Use*, would remain unchanged.

As shown on Figure 3.9-1, the proposed rail line would not affect planned development in this portion of the county and the proposed rail line would support development in Camp Hall Commerce Park. No passenger service is proposed and construction of the new rail line would not stimulate changes in existing land uses or shift development patterns. The West Farm is located east of the proposed rail line and would not be affected.

All road crossings, including crossings at public and private roads, are proposed to be at grade. Construction activities at road crossings could temporarily affect access to agricultural lands and residential areas, and/or delay traffic. As part of construction best management practices, the Applicant would provide detours around construction zones at road crossings, to ensure that impacts from restrictions in access or delays would be temporary and short term.

In summary, the construction and operation of the proposed rail line would have minor impacts on land use and no mitigation is required.

In response to the Corps' Public Notice on the U.S. Department of the Army (DA) permit application, two citizens raised concerns about the impact of the proposed rail line on their properties. In one case the alignment would bisect the property (Citizen Cohen); in the other, it would run within 300 feet of the residence (Citizen Williams). The Applicant responded that every effort would be made to minimize the amount of right-of-way required. For the right-of-way that is needed, appraisals would be conducted to determine the fair market value of the needed property as well as any damages to remainders. (Appendix D, *Agency Notices and Comment Letters*).

3.9.2.2 Utilities

The proposed rail line would cross six utility right-of-ways, as described in Section 3.9.1.2, *Utilities*. The identified utility corridors are preliminary and potential utility crossings would be verified upon final design of the rail line. As part of construction best management practices, the Applicant would contact each utility owner to coordinate any alterations. In addition, the Applicant would ensure that industry standards are met and disruptions are minimized if any relocations or alterations to utilities or pylons (the towers supporting the lines) were required. These impacts would be minor and no mitigation is required.

¹¹ The 100-foot project right-of-way reflects the outer boundary of the construction limits for the project; however, the Applicant's actual property purchase or condemnation may be larger than 100 feet in certain locations along the project corridor, depending on negotiations with the current landowners (Appendix A, *Applicant Correspondence with Agencies*, Information Request #2).

3.9.2.3 Recreation

Impacts of the construction and operation of the proposed rail line would vary according to each recreation facility, as described in the following sections. In summary, the impacts would be short-term, temporary, and minor, and no mitigation is required.

Palmetto Trail, Lake Moultrie Passage

The proposed rail line would cross the Lake Moultrie Passage once at Viper Road on an at-grade crossing. At this location, the trail exits the forest and turns west along the roadway to SC 45, as shown on Figure 3.9-2. During construction of the rail line at Viper Road, traffic and trail users would be detoured around the construction zone. As noted in Section 3.1, *Transportation*, prior to construction, the Applicant would be required to obtain an encroachment permit from the South Carolina Department of Transportation and specific details related to the detours would be included in the construction plans developed during final design. Trail users would be excluded from the construction zone to ensure their safety and signs would be posted directing trail users along the detour route. Once construction of the crossing at Viper Road is completed, use of the trail would resume along its existing route within the Viper Road right-of-way.

Trail users would experience temporary construction-related impacts, including temporary changes in views and noise levels. As described in Section 3.10, *Visual Resources and Aesthetics*, views from the Lake Moultrie Passage toward the proposed rail line would be limited because of the surrounding vegetation and development. Direct views would be available on the north where the trail crosses the transmission line right-of-way that parallels the CSXT Cross Subdivision and where the proposed rail line would join the CSXT Cross Subdivision, as well as at Viper Road, and the bridge on SC 45 that crosses the Diversion Canal. Trail users would have direct views of the construction activities while passing through these areas and partial views through the trees where the trail would be closest to the proposed rail line. Similarly, increased noise levels from construction equipment would also be most apparent at the same locations. These temporary construction-related effects would not affect use of the trail or the experience of trail users as they pass through the area. Access to the trail is from areas outside the study area and there would be no change in access.

During operations, additional train passbys would occur between the Diversion Canal and point where the two rail corridors merge. However, the CSXT Cross Subdivision generally parallels the existing trail along the western and northern shores of Lake Moultrie so noise and views of trains passing are existing elements along this segment of the trail. The addition of 1.4 passbys per day on average would not affect the use or enjoyment of the trail.

Moultrie Hunt Unit Wildlife Management Areas

The proposed rail line would run parallel to the WMA to the west, but would not cross it. While hunting is limited at this WMA, hunters would experience some of the same types of construction-related impacts as described for Lake Moultrie Passage. Hunters close to the construction zone could hear construction noise and have views of the equipment and workers. However, the majority of the hunt units would be east of the proposed rail line and the forested nature of the units would help minimize construction-related impacts on views and noise. The addition of up to 1.4 train passbys per day would not affect hunting on the units, in particular, on the Hall Unit where the CSXT Cross Subdivision already operates.

Diversion Canal

The proposed rail line would require the construction of a new bridge over the Diversion Canal. Temporary construction-related impacts would be similar to those described for the Lake Moultrie Passage. Recreational boaters traveling between the two reservoirs would have views of the new bridge construction, including the bents and bridge deck. Construction noise would also be apparent as boaters pass the construction zone. Boaters could be delayed while the bents are being constructed and/or girders installed. Advance notification of any interference to navigation during construction would be required by the U.S. Coast Guard (Coast Guard) permit authorizing construction of the bridge. This information would be made available to boaters via a Coast Guard Local Notice to Mariners and Coast Guard Marine Safety Information Broadcasts. If delays were to occur, they would be short-term and temporary.

During rail operations, boaters using the canal would be already familiar with views of the SC 45 bridge, and the new bridge would not detract from the overall quality of views along the canal. Train operations on the bridge over the canal, 1.4 crossings per day on average, are not anticipated to affect boaters in the canal.

3.9.2.4 Coastal Zone Management

The proposed rail line would not be constructed or operate in a designated critical area (Figure 3.9-3) and a critical area permit would not be required (Appendix C, *Interagency and Tribal Correspondence*). The South Carolina Department of Health and Environmental Control (DHEC) is responsible for the review and certification that the proposed rail line is consistent with applicable provisions of the South Carolina Coastal Zone Management Act. The Applicant must obtain approval from DHEC certifying that the proposed rail line would be consistent with the policies of the South Carolina Coastal Zone Management Program.

3.9.3 Section 4(f) and 6(f) Evaluation Summary

This section summarizes the findings of the evaluation of the potential impacts on resources protected under Section 4(f) of the Department of Transportation Act of 1966, as amended (49 U.S.C. § 1653(f)) and Section 6(f) of the Land and Water Conservation Fund Act. See Appendix H, *Section 4(f) and Section 6(f) Evaluation*, for additional information.

The U.S. Department of Transportation statute commonly referred to as Section 4(f) does not apply to the Surface Transportation Board (Board) or Corps actions. However, it could apply to the proposed rail line through the involvement of the Federal Railroad Administration (FRA). The Section 4(f) process has been applied in this Draft EA because of a potential grant request to FRA and the resulting involvement of FRA as a cooperating agency. Based on the provisions of Section 4(f), FRA would not be permitted to provide funding for any Board-authorized alternative that would involve the use of a Section 4(f) property unless FRA were to determine that the impacts would be *de minimis*, or there were no prudent and feasible alternatives that avoided use of the Section 4(f) properties. FRA intends to use the Draft and Final EAs to fulfill its NEPA responsibilities related to this project.

3.9.3.1 Section 4(f) Evaluation

Protected resources under Section 4(f) include public parks, recreation facilities, and wildlife or waterfowl refuges and historic sites that must be considered *significant*. Public parks, recreation facilities, and wildlife or waterfowl refuges are presumed to be significant unless the official having jurisdiction over the resource concludes that the entire site is not significant (U.S. Department of Transportation 2012). Historic sites are significant if they are officially listed on or eligible for inclusion on the National Register of Historic Places (NRHP), or contribute to a historic district that is eligible for or listed on the NRHP. The WMA and Diversion Canal are not considered *significant* because their primary purpose is not for public recreation or as a wildlife or waterfowl refuge. See Appendix H, *Section 4(f) and Section 6(f) Evaluation*, for more information on recreation resources subject to protection under Section 4(f). In consultation with FRA, the joint lead agencies determined that four properties are subject to Section 4(f) regulations: the Lake Moultrie Passage and the Diversion Canal, Bulltown Ditch, and the Garrett Cemetery.

Figure 3.9-4 shows the location of recreational and cultural resources in relation to the proposed rail line.

Palmetto Trail, Lake Moultrie Passage

As described in Section 3.9.1, *Affected Environment*, and shown on Figure 3.9.4, the proposed rail line would cross the trail once at Viper Road on an at-grade crossing. At this location, the trail is generally within the road right-of-way, which functions as part of the local transportation system and is not a recreational resource. Further, no land from the trail would be permanently incorporated into the proposed rail line. As a result, there would be no Section 4(f) use of the Lake Moultrie Passage. During construction of the at-grade crossing at Viper Road, trail users and vehicle traffic would be detoured around the construction zone. While the route would change temporarily during construction, the trail's route would not permanently change nor would it become discontinuous. Trail users could experience temporary construction-related impacts from construction noise and changes in views, but these impacts would be minor and would not impair the use of the trail or the experience of trail users as they pass through the area. However, under the joint lead agencies' preliminary recommended mitigation measure (Chapter 4, *Mitigation Measures*), the Applicant would maintain access to the trail at all times during construction of the proposed rail line and post signs directing trail users along the detour route at Viper Road.

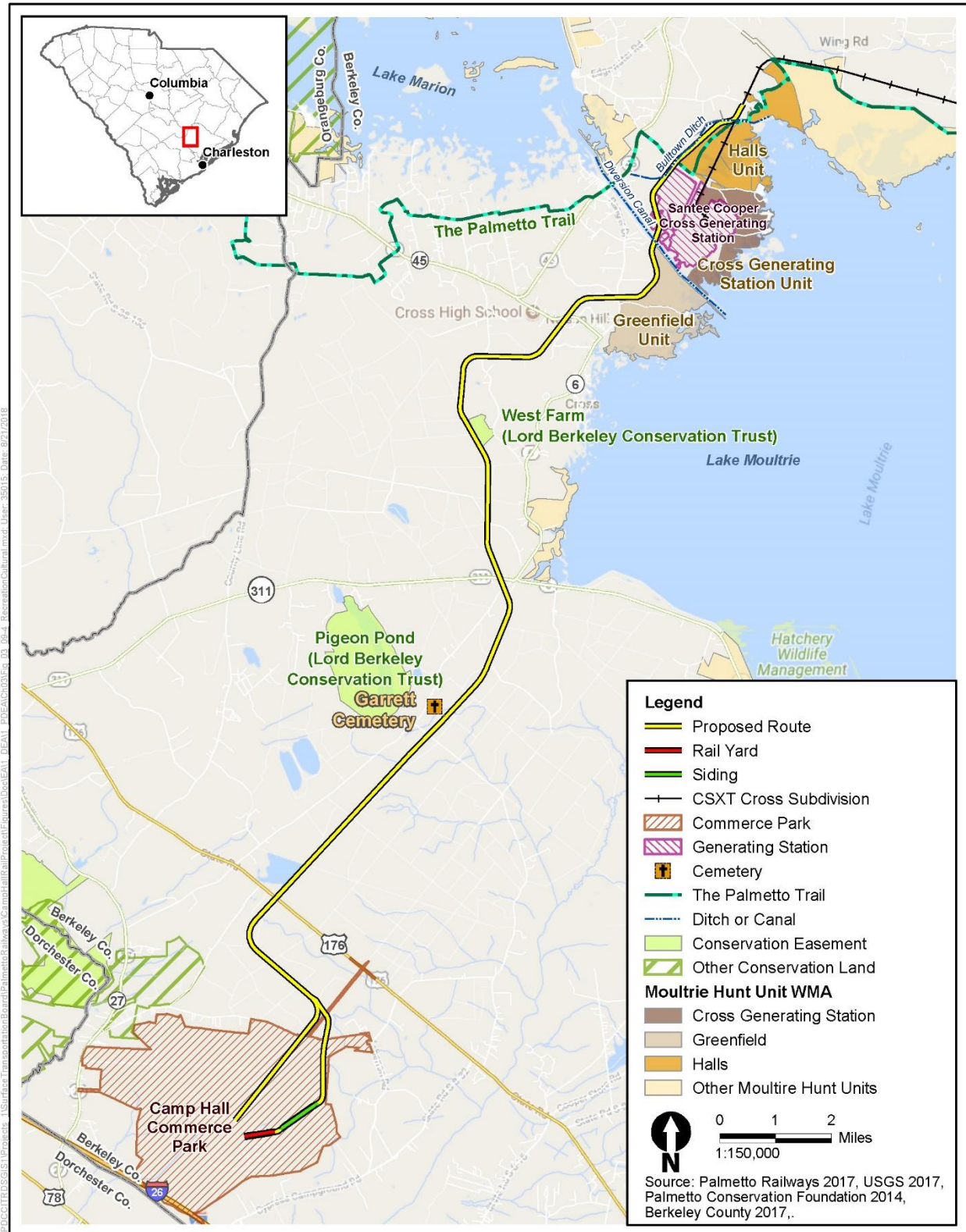


Figure 3.9-4. Recreation and Cultural Resources

Diversion Canal

The Diversion Canal has been determined eligible for listing on the NRHP as a contributor to the NRHP-eligible historic district associated with the Santee Cooper Hydroelectric Project (Appendix G, *Cultural Finding of Effect*). Therefore, the Diversion Canal qualifies as a Section 4(f) property.

While the construction of new railroad infrastructure could affect the structural integrity of the canal, the Applicant's current plans include stabilization measures and best management practices designed to avoid effects of this nature.¹² Because of its engineering, the canal's significance would not be adversely affected by auditory or vibratory effects. Nevertheless, the Applicant would implement best management practices and stabilization techniques to avoid affecting the structural integrity of the canal, as described in the Applicant's DA permit application (Appendix D, *Agency Notices and Comment Letters*). Because aesthetic qualities of the Diversion Canal are not among the features that convey its significance, indirect temporary or permanent visual effects introduced by the proposed bridge would not be adverse. The Diversion Canal relies on its functionality and relationship to other Santee Cooper Hydroelectric Project components to convey significance.

The proposed rail line would not have an adverse effect on the Diversion Canal and a Section 106 finding of *no adverse effect* would meet the requirements for a *de minimis* impact. The State Historic Preservation Office (SHPO) has concurred that there would be *no adverse effect* on the Diversion Canal (Appendix C, *Interagency and Tribal Correspondence*). Based on the SHPO's concurrence, FRA has notified the SHPO that it intends to make a determination that the proposed rail line would result in a *de minimis* use of the Diversion Canal (Appendix C, email dated August 29, 2018).

Bulltown Ditch

The Bulltown Ditch has been determined NRHP-eligible (Appendix G, *Cultural Finding of Effect*). Therefore, the Bulltown Ditch qualifies as a Section 4(f) property.

The proposed rail line would cross a section of the Bulltown Ditch that is already crossed by an existing rail line (with a culvert) and an electrical transmission line. Nevertheless, construction of new railroad infrastructure still has the potential to affect the structural integrity of the ditch. Current conditions include an existing culvert system, which the Applicant proposes to extend to a three-barrel culvert. The Applicant has proposed stabilizing the ditch's bank during construction, which would avoid a direct adverse effect on the physical and structural integrity of the ditch. The Applicant would implement best management practices and stabilization measures designed to avoid affecting the structural integrity of the ditch. Additionally, the Applicant would design culverts to maintain existing surface water drainage patterns and would not cause or exacerbate flooding, as described in the Applicant's DA permit application ((Appendix D, *Agency Notices and Comment Letters*).

The proposed rail line would not have an adverse effect on the Bulltown Ditch and a Section 106 finding of *no adverse effect* would meet the requirements for a *de minimis* impact finding. The SHPO has concurred that there be no adverse effect on the ditch (Appendix C, *Interagency and Tribal Correspondence*). Based on the SHPO's concurrence, FRA has notified the SHPO that it intends to make a determination that the proposed rail line would result in a *de minimis* use of the Bulltown Ditch (Appendix C, email dated August 29, 2018).

¹² As noted in Chapter 2, Section 2.3.1.1, *Waterway Crossings*, the U.S. Coast Guard may determine that the bridge crossing of the Diversion Canal would require a 40-foot clearance rather than a 50-foot clearance for safe ship passage. If so, it is anticipated that the impacts of a 40-foot clearance would be similar to those of a 50-foot clearance.

Garrett Cemetery

The Garrett Cemetery has been determined NRHP-eligible (Appendix G, *Cultural Finding of Effect*). Therefore, the Garrett Cemetery qualifies as a Section 4(f) property.

The closest edge of the right-of-way for the proposed rail line would be located approximately 120 feet from the Garrett Cemetery and its character-defining features. Because of the distance of the historic property from the construction and operation of the proposed rail line, the grave markers that convey the cemetery's significance would not be directly affected. Temporary and permanent changes of setting, including the construction and operation of the railroad, therefore have the potential to affect the Garrett Cemetery. Visual and auditory settings are not essential to conveying the Garrett Cemetery's significance but constitute important aspects of its integrity. Nevertheless, the Applicant has designed measures for the design and construction of the proposed rail line to avoid adverse effects in accordance with South Carolina law. In order to avoid any potential impacts, the Applicant will maintain a 50-foot buffer around the cemetery, a measure with which the SHPO concurred (Appendix C, *Interagency and Tribal Correspondence*). This voluntary mitigation measure is described in Chapter 4, *Mitigation Measures*, and in the Applicant's DA permit application (Appendix D, *Agency Notices and Comment Letters*). Based on the Applicant's current project design, the "Garrett Cemetery is located outside the area where construction and operation activities would occur and ... [proposed project activities] would more than comply with the 50-foot buffer established around the resource."

The proposed rail line would not have an adverse effect on the Garrett Cemetery and a Section 106 finding of *no adverse effect* would meet the requirements for a *de minimis* impact. The SHPO has concurred there would be no adverse effect on the Garrett Cemetery (Appendix C, *Interagency and Tribal Correspondence*). Based on the SHPO's concurrence, FRA has notified the SHPO that it intends to make a determination that the proposed rail line would result in a *de minimis* use of Garrett Cemetery (Appendix C, email dated August 29, 2018).

3.9.3.2 Section 6(f) Evaluation

Section 6(f) applies to parks and recreation areas that have been acquired or improved with grants obtained through the Land and Water Conservation Fund Act (16 U.S.C. § 460l-8[f] and 36 C.F.R. Part 59.1). Conversion of these properties to a non-recreational purpose or use is prohibited and requires approval of the U.S. Department of the Interior's National Park Service. Section 6(f) directs the Department of the Interior to ensure that replacement lands of comparable value and function, location, and usefulness are provided as conditions to such conversions.

No recreational facilities in the project vicinity were found to have been developed or improved with grants from the Land and Water Conservation Fund Act (Appendix B, *Environmental Report*). Therefore, no Section 6(f) evaluation is required.

3.10 Visual Resources and Aesthetics

This section describes visual resources in the project area and the potential impacts of the proposed action.

3.10.1 Affected Environment

The study area for aesthetics and visual resources is the area within 0.5 mile of the rail alignment. Portions of the study area may be smaller where development, vegetation, or topography confine and limit available views of the proposed rail line. The study area may also be larger where elevated or more expansive views are present.

Identifying a study area's aesthetic resources and conditions involves understanding the visual character of the area's visual features and the regulatory context, including identifying the presence of designated scenic routes. A study area's aesthetic resources are further defined by documenting the visual character of the environmental setting, including the natural and cultural environments. The study area may also contain scenic vistas that contribute to the visual setting. Scenic vistas generally encompass a wide area with long-range, high-quality views of elements in the landscape. Such vistas are often available to viewers on unobstructed, flat agricultural lands and from elevated vantages with views over the landscape. In addition, vistas have a directional range: some areas have scenic vistas with a 360° view in all directions, while others may be limited in one direction in a manner that reduces the line-of-sight angle and available vista. The affected viewers are defined by their relationship to the study area, their visual preferences, and their sensitivity to changes associated with the proposed rail line. Visual preferences define visual quality, which is the baseline for determining the degree of visual impacts.

3.10.1.1 Project Setting

As described in Section 3.9, *Land Use*, the proposed rail line would traverse a landscape characterized by evergreen timber plantations, cleared lands, and flat, open, grassy lands supporting low-density, rural land uses. Although it would pass through mostly timber lands, the proposed rail line would also pass by a few single-family residences near U.S. Route 311 (US 311) and Mudville Road, west of Dora Way, to the north and south of South Carolina Highway 6 (SC 6), to the west of Ranger Drive, and at the eastern end of Airbourne Way.

Lake Marion, Lake Moultrie, and the Diversion Canal connecting the two lakes, the primary water bodies in the project vicinity, are all used for recreation. The Palmetto Trail—a Section 4(f) resource— would be crossed by the proposed rail line. As indicated on the Natural Resources map in Appendix D of the *Berkeley County General Plan*, these features are Berkeley County natural and scenic resources that offer viewpoints for recreationists (Berkeley County 2010). The trail's Eutaw Springs Passage alignment shares the South Carolina Highway 45 (SC 45) bridge crossing over the Diversion Canal, and the Lake Moultrie Passage has a trailhead, parking area, and information kiosk off Eadie Lane. The Lake Moultrie Passage also follows Viper Road, southeast from SC 45 and then heads northeast through forested lands before crossing over the CSXT Cross Subdivision. The proposed rail line would parallel the Lake Moultrie Passage where the proposed rail line would travel northeast through forested lands to connect to the CSXT Cross Subdivision.

Many private and public roadways would be crossed by the proposed rail line. However, most of the private roadways are used for timber harvest and maintenance, and access is restricted by gates, greatly limiting public views of the proposed rail line to public roadways. These public views are typically narrow and confining and are generally limited by the tall evergreen trees and bordering hedgerows associated with timber production or by the gated utility corridors common throughout the project vicinity. Vegetation along roadways is also restrictive. Overall, the visual quality of most of the study area is moderate. However, the SC 45 bridge crossing the Diversion Canal is elevated and provides scenic vista views along both sides of the canal. The visual quality here is considered moderately high because there are few visual distractions and the setting is both harmonious and interesting. Views from the Palmetto Trail are limited by vegetation or developed areas, such as roadways and the SC 45 bridge. The visual quality of views from the trail is based on the viewer's location on the trail. Visual quality is moderately high where the setting is more natural with few visual distractions but moderate where the natural setting is disrupted by visual distractions.

Much of the study area is unlit, including along the highways and local roadways where the proposed rail line would cross, and nighttime lighting is associated with rural residences and commercial and industrial development.

No roadways in or near the study area are designated in federal, state, or local plans as a scenic highway or route worthy of protection for maintaining and enhancing scenic views (South Carolina Department of Transportation 2018).

3.10.1.2 Viewers

The primary viewer groups in the study area are people living or conducting business in developed areas; motorists driving on arterials and smaller local roads; and recreationists (e.g., boaters and anglers using the Diversion Canal, trail users, bicyclists, joggers). The joint lead agencies evaluated and described the sensitivity of each viewer group using five ratings: *low*, *moderately low*, *moderate*, *moderately high*, and *high* (Table 3.10-1).

Table 3.10-1. Affected Viewer Groups in the Study Area and Associated Sensitivities

Viewer Group	Sensitivity	Reasoning
Rural residential viewers	High	Rural residents have longer-term exposure to views that would be affected by the proposed rail line. Residential viewers tend to have an invested interest and sense of ownership over nearby visual resources.
Recreational viewers	High	Recreational viewers using parks, waterways, roadways, trails, and levees are likely to seek out natural areas and scenic views that would be affected by the proposed rail line for both shorter and longer durations. Recreationists are more likely to value the natural environment, appreciate the visual experience, and have a strong sense of ownership over the waterways and corridors they use for recreation and that are highly valued in the region.
Motorists	Moderate	Motorists on local roadways pass areas that would be affected by the proposed rail line. Motorists use roadways at varying speeds; normal roadway speeds differ based on the traveler's familiarity with the route and roadway conditions (e.g., rain, curvature, and condition of the road). Single views are typically short but may last longer on straighter stretches. The passing landscape becomes familiar to viewers who travel routes frequently, and their attention typically is not focused on the passing views but on the roadway, roadway signs, and surrounding traffic.

Viewer Group	Sensitivity	Reasoning
Industrial viewers	Moderately low	Viewers from industrial facilities at either end of the rail corridor have semi-permanent views of areas that would be affected by the proposed rail line. Workers and visitors are generally focused on the tasks at hand.

3.10.2 Environmental Consequences

The joint lead agencies analyzed the potential visual impacts of the proposed rail line to views within the study area based on guidance outlined in the *Guidelines for the Visual Impact Assessment of Highway Projects* (Federal Highway Administration 2015).¹³ The analysis evaluated changes to visual character and quality, in addition to changes in light and glare. The joint lead agencies also considered potential impacts on scenic roadways and scenic vistas. The joint lead agencies determined visual impacts by assessing changes to the visual resources and predicting viewer responses to those changes. An impact would be considered *adverse*¹⁴ if construction or operation of the proposed rail line would have any of the following consequences.

- Substantially degrade the existing visual character or quality of the proposed rail line surroundings, including scenic vistas.
- Substantially damage scenic resources on a designated scenic highway.
- Create a new source of substantial light or glare that would interfere with day or nighttime views near the proposed rail line.

As noted previously, there are no officially designated scenic roadways within or near the rail corridor, and construction and operation of the proposed rail line would not damage scenic resources along a scenic highway.

3.10.2.1 Visual Character and Quality

Construction

Construction equipment would include heavy machinery and various types of construction vehicles. General construction activities, construction staging/stockpiling, the presence of construction equipment, and temporary traffic barricades would alter the views seen by motorists, recreationists, and nearby rural residential viewers. A few residences would be close to construction activities, where construction might be directly visible from yards and within the home, and residents could experience a sense of invaded privacy from the proximity of construction workers. However, because the proposed rail line would be constructed in less than 2 years and the duration of active construction at specific location would be far less, the visual presence of construction activities would be temporary. In addition, all viewer groups are generally accustomed to seeing heavy equipment in the study area because such equipment is required for roadway projects and timber harvests that are common in the study area.

¹³ The Federal Highway Administration's methods of visual impact assessment were established to analyze visual impacts resulting from linear transportation facilities, and the proposed rail line would be a linear corridor for transporting goods. In comparison, the U.S. Forest Service's and Bureau of Land Management's methods of analyzing visual impacts relate more to programmatic, broader-scale visual changes and site-specific visual changes that often do not traverse the landscape.

¹⁴ The Federal Highway Administration guidance characterizes impacts as *adverse*, *beneficial*, or *neutral*.

The construction and staging areas would be located on undeveloped, mostly forested lands, and the proposed rail line right-of-way and staging areas would be cleared of trees. However, tree clearing for timber harvest is common in the study area. Tree clearing and other construction activities would create fugitive dust that could be visible at times but would be limited through use of best management practices. Visual changes from construction signaling and signage would occur, but they would be typical of roadway construction activities and temporary.

The Applicant's proposed railway office and maintenance facility southwest of U.S. Route 176 (US 176), within the Camp Hall Commerce Park boundaries shown in Figure 2-1, would not be visible to public viewers outside of the park because tall trees surrounding the site would buffer views from any public vantages. Therefore, the most visible changes to permanent features would be the conversion of the existing forested or cleared land use to a permanent linear corridor that would include the rail tracks and culverts in the right-of-way. These changes would mostly be visible where the alignment would have at-grade crossings of public roads and the cleared right-of-way would slightly alter the visual character. The Applicant has stated that the road crossings would have pavement markings, crossbars, and flashing red safety lights that would be activated when a train passes (Chapter 4, *Proposed Mitigation*). These features would not dominate views, and pavement markings, roadway signage, and other vertical elements like utility poles are already common elements in the roadside visual landscape. On either side of the roadway crossing, the cleared corridor would be largely consistent with the existing visual character because right-of-way clearings for private dirt roadways associated with timberlands and for transmission corridors are common elements in the project vicinity. In addition, the rail line would conform to the existing ground plane and would not stand out in the visual landscape. Because the proposed rail line would have a low profile, views of the alignment would be limited and visible to motorists and recreationists only on approach and when crossing the at-grade crossing.

Most residents would not have views of the proposed rail line because dense vegetation would prevent views of the cleared right-of-way and tracks. However, the train tracks may be partially visible at the few residences closer to the rail corridor and where there is little vegetative buffer to screen views of the tracks. The train tracks would be low-profile, however, and would not greatly stand out in the visual environment.

As described in Section 3.10.1.1, *Project Setting*, views of the rail corridor are very limited from the Palmetto Trail. The tracks and the cleared right-of-way would not be visible to recreational viewers from most of the trail. Portions of the proposed rail line would be visible where Viper Road crosses the transmission line right-of-way paralleling the CSXT A-Line rail spur and where the CSXT A-Line rail spur would converge with the proposed rail line. Similar to other at-grade crossings, the at-grade crossing at Viper Road would not greatly alter views associated with Viper Road or the trail, which shares the roadway and crosses the rail corridor at this location. From Viper Road, the trail heads northeast through forested land to cross the existing CSXT Cross Subdivision. Lastly, the proposed rail line would tie into an existing rail line and would conform to the existing visual conditions outside of the rail corridor. Overall, construction of the proposed rail line would not affect the study area's moderate visual quality or affect the existing visual quality of the Palmetto Trail.

Scenic vistas looking southeast down the Diversion Canal (a historical resource; see Section 3.8, *Cultural and Historical Resources*) from the SC 45 bridge, which is also part of the Palmetto Trail, would not likely be limited by construction of the bridge for the proposed rail line. The bridge would be located 1.25 miles away from the existing bridge. Erection of the support piers and decking would be temporarily visible and result in short-term disturbances to boating traffic and water-based recreational viewers. Once built, the bridge would have a profile that is similar to the SC 45 bridge and would consist of a

series of concrete piers in the canal and a rail deck. When seen from the SC 45 bridge, this new bridge would blend with the horizon line consisting of the vegetated banks along the canal, which curve further east as the canal enters Lake Moultrie, so that the canal appears to dead-end. Therefore, the new bridge would not disrupt or detract from scenic vistas and the visual quality of views from the SC 45 bridge over the canal would remain moderately high.¹⁵ Visual access to the Diversion Canal from Canal Lakes Fish Camp and Hill's Landing would not be negatively affected by the proposed rail bridge because these facilities are at a distance from the proposed bridge and are immediately adjacent to and on either side of the existing SC 45 bridge. Therefore, boaters accessing the canal at this location are already accustomed to views associated with a bridge and the proposed bridge would not constitute an inconsistent feature that would detract from the overall quality of views associated with the canal. In addition, the proposed bridge would not substantially degrade the scenic qualities associated with the historical nature of the Diversion Canal. Anthropogenic features are common along the Diversion Canal and include the existing SC 45 bridge, gravel piles on both banks, industrial smokestacks and the canal docks associated with the Cross Generating Station, a transmission corridor crossing, and development associated with Canal Lakes Fish Camp and Hill's Landing.

The Bulltown Ditch is another historical resource (Section 3.8, *Cultural and Historical Resources*) that would be crossed by the proposed rail line. The ditch does not stand out in the visual environment and the proposed crossing would occur in between the existing transmission line and CSXT Cross Subdivision crossings of the ditch. Because of these existing visual elements, the proposed crossing would be consistent with existing visual conditions.

Operations

Operations at the proposed office and maintenance facility would not be visible from public vantages, as described under *Construction*. The rail bed would have a low profile and views of the proposed rail line would be limited during operation to when trains are in transit. Trains would be mostly seen by recreationists, such as boaters on the Diversion Canal and users of the Palmetto Trail, motorists passing at-grade crossings on public roadways, and by a limited number of residents.

At-grade roadway crossings and the cleared right-of-way would slightly alter the visual character at those locations during operations, but the changes would be consistent with the existing visual character. The passing train would create a brief disruption in views seen by recreationists and motorists on public highways and local roadways as the train crosses the roadway. Operations such as routine vegetation maintenance in the right-of-way and along the rail line footprint may be visible to viewers. These activities would be consistent with current timber and maintenance activities in the right-of-way and would not likely constitute an adverse visual effect. Trains may also be partially visible at the few residences closer to the proposed rail line. Views of the train would be rare, especially if the train were to pass when residents are away from home. However, more direct views of the passing train may be visible from a few residences that have cleared or sparsely vegetated properties and would be near the proposed right-of-way.

Views of the proposed rail line and passing trains from the Palmetto Trail would also be limited but partially visible to the northwest, through the trees, where the rail corridor would be closer to the trail. Direct views would only be available where SC 45 crosses the Diversion Canal, the proposed rail line

¹⁵ As noted in Chapter 2, Section 2.3.1.1, *Waterway Crossings*, the U.S. Coast Guard may determine that the bridge crossing of the Diversion Canal would require a 40-foot clearance rather than a 50-foot clearance for safe ship passage. If so, it is anticipated that the visual impacts of a 40-foot clearance would be similar to those of a 50-foot clearance.

would cross Viper Road, the transmission line right-of-way that parallels the CSXT Cross Subdivision, and the proposed rail line would connect to the CSXT Cross Subdivision. This existing rail corridor passes southeast of the trail, at a similar distance, making trains an existing visual element along the trail. Anticipated train traffic on the proposed rail line would not constitute a substantial change to the existing visual environment.

Scenic vistas seen from the SC 45 bridge and the historic nature of the Diversion Canal and Bulltown Ditch would not be materially affected during operations because the proposed rail line would not introduce features that would block or degrade such views and train passbys on the rail bridge would be brief and infrequent, as would maintenance activities such as track inspection.

3.10.2.2 Light and Glare

Construction

Nighttime construction would not occur; therefore, high-intensity nighttime lighting would not be used and there would be no effect.

Operations

The proposed rail line could cause a nominal increase in daytime glare by removing trees and slightly increasing the amount of cleared land. The proposed Diversion Canal bridge would introduce a concrete structure over the waterway; however, the façade would not introduce enough surface area to create a substantial new source of reflected sun and resulting glare. In fact, the bridge structure would provide shade, reducing reflective glare from the water.

New lighting associated with the rail line would be at the at-grade crossings where crossbars and flashing red safety lights would be activated when a train passes. Because this lighting would be activated less than twice a day for approximately 2 minutes each time, often if not always during daytime hours, contribution to light and glare would be negligible. Safety lighting associated with the proposed office and maintenance facility would be minimal and buffered by tall trees surrounding the site. The proposed rail line would also introduce a source of light from the locomotive headlight. However, rail traffic would be limited to five round-trip (10 one-way) trains along the alignment each week through undeveloped, forested areas. The trains would briefly pass by developed areas and train headlights would nominally increase passing light for a few moments. Vehicle lights on local roadways at night are common, especially near developed areas, and are a source of moving nighttime light in the study area. Train lights, in a similar fashion, would move through the study area and would not introduce a fixed source of new lighting that would affect sensitive viewer groups. Lighting levels in the study area would remain low, and the proposed rail line would not create a new source of substantial light or glare that would materially affect daytime or nighttime views in the study area.

3.11 Hazardous Waste Sites

This section describes the hazardous waste sites in the project area and the potential impacts related to hazardous waste sites from the proposed action.

3.11.1 Affected Environment

The study area for hazardous wastes is the 200-foot rail corridor that includes a 9,000-foot siding at the north end of the corridor and a spur to a rail yard at the Volvo Cars facility. The environmental documents reviewed for this analysis were limited to this proposed corridor and adjacent properties.

The joint lead agencies assessed hazardous wastes in the study area by performing a review of the following documents:

- Phase I Environmental Site Assessment (ESA), June 16, 2017 (S&ME 2017).
- Phase I ESA, June 26, 2015 (Newkirk Environmental 2015).
- *Environmental Report* prepared by the Applicant, July 25, 2017 (Appendix B, *Environmental Report*).
- South Carolina Department of Health and Environmental Control (DHEC) website (2018a).

According to Phase I ESA analysis (S&ME 2017), the majority of the property is currently used for timber cultivation with approximately 1.5 percent of the rail corridor classified as developed land. The proposed rail line would cross several paved roads and the Diversion Canal between Lake Marion and Lake Moultrie. While no structures were observed in the proposed corridor, six residential buildings are located within 50 feet of the proposed right-of-way (S&ME 2017). The historical and current uses of the proposed rail corridor are not expected to have generated or created any recognized environmental conditions (REC).¹⁶

As part of their Phase I ESA, S&ME contracted Environmental Data Resources to conduct an environmental database search of the subject property and the surrounding area. One facility, the Cross Generating Station (a coal-fired power-generating facility) was identified on the State Hazardous Waste Sites, Underground Storage Tank, Leaking Underground Storage Tank, Solid Waste Facility/Landfill, and AIRS (air emissions) databases (S&ME 2017).

According to the S&ME report, “The Santee Cooper Cross Generating Station is considered a recognized environmental condition 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.” The generating station has been listed as an REC, has a known previous release (which received a No Further Action status in 1999), and operates landfill areas in association with their operations (S&ME 2017). The proposed rail line would run along the western portion of the generating station near one of the facility’s landfill areas and continue to the north to an existing railroad system that delivers coal to the power facility. No other RECs were identified during Environmental Data Resources’ radius search (S&ME 2017).

¹⁶ Per ASTM, a recognized environmental condition 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 (ASTM E 2013, 1527-13).

A search of the DHEC website shows no U.S. Environmental Protection Agency (USEPA) National Priority List sites in Berkeley County, South Carolina. The search found one site on the State Remediation Projects list, Georgia-Pacific Resins. This site is located 15 miles away from the proposed rail corridor and is far outside the study area for hazardous materials (South Carolina Department of Health and Environmental Control 2018b).

3.11.2 Environmental Consequences

3.11.2.1 Construction

Based on the current sites and former uses and following a review of the above-referenced environmental documents, the joint lead agencies identified one REC in the study area, the Cross Generating Station. Given the work of the Cross Generating Station, air emissions would be monitored frequently, so any exceedance would be mitigated rapidly. Any air emissions from the station would have a limited impact on the proposed rail line. Any other existing or future contamination released from this REC would likely affect soil and/or groundwater but such impacts would be minimal due to the location of the site and the construction techniques that would be used. However, should any contaminated media be encountered in the area of the Cross Generating Station, work on the proposed rail line would be halted and DHEC would be notified. Therefore, given the location and type of development proposed, hazardous materials from the Cross Generating Station are not expected to affect the proposed rail line during construction or operations.

Construction of the proposed rail line would require the use of heavy construction equipment, including excavators, trucks, bulldozers, and cranes to perform tasks such as clearing and grubbing, grading, and infrastructure and track construction. These activities have a low potential to generate hazardous wastes and any hazardous materials would be in small quantities for vehicle operation and repairs. Therefore, construction impacts related to hazardous wastes would be minimal.

3.11.2.2 Operations

During operations, the proposed rail line would transport assembled automotive vehicles from the Volvo Cars facility. Minimal impacts would be associated with the use of locomotives to move the freight.

Best management practices would minimize the chances of a release of a hazardous substance during operations (as well as construction). According to state and local regulations, a spill prevention, control and countermeasures plan; stormwater pollution prevention plan; and an oil and hazardous substance contingency plan would be prepared and used to ensure all required precautions are taken and appropriate response actions are documented and understood. DHEC has mandated their response to hazardous materials and oil spills under the South Carolina Pollution Control Act, Hazardous Waste Management Act, and Oil and Gas Act (South Carolina Department of Health and Environmental Control 2018c). Therefore, because the proposed rail line would comply with state and local regulations, impacts would be minimal.

3.12 Air Quality and Climate Change

This section discusses air quality and climate change in the project area and the potential impacts of the proposed action.

3.12.1 Affected Environment

The U.S. Environmental Protection Agency (USEPA) designates geographic areas in which the National Ambient Air Quality Standards (NAAQS) are met as “attainment,” and areas in which the NAAQS are not met as “nonattainment.” The proposed rail line would be located in an attainment area for all criteria air pollutants. The South Carolina Department of Health and Environmental Control (DHEC) measures ambient pollutant concentrations at a number of monitoring sites throughout the state. Historical concentrations have met the NAAQS, and no violations of the NAAQS were recorded in 2016 (South Carolina Department of Health and Environmental Control 2017a).

The climate of the project region 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 annual precipitation above the national average, with 105 days of precipitation per year and an average annual rainfall of 47 inches. Freezing rain or snow occurs infrequently, with an average of 0.2 inch annually (Appendix B, *Environmental Report*).

3.12.2 Environmental Consequences

The joint lead agencies evaluated the potential impacts of increased emissions of criteria pollutants in three steps. First, the joint lead agencies identified and characterized the emission sources that would result from construction and operation of the proposed rail line. Second, they aggregated these emission sources to obtain estimated total emissions for construction and estimated total emissions per year of operations for each pollutant. Third, they compared the increase in emissions to existing emissions levels for the three-county region of Berkeley, Charleston, and Dorchester Counties.

3.12.2.1 Construction

Because only limited preliminary engineering information was available for the types of construction equipment to be used and their associated activity levels, the joint lead agencies estimated construction-related emissions based on construction emission estimates developed in the detailed analysis conducted for another similar railway construction project (Sierra Research 2006). The analysis assumptions were selected to provide a conservative (high) estimate of emissions. Table 3.12-1 presents the estimated construction emissions of criteria pollutants, which affect air quality, and greenhouse gases (GHGs), which affect climate. These emissions would be temporary (lasting through the estimated 18- to 20-month construction period) and would be spread out along the length of the proposed rail line. The Applicant has proposed voluntary mitigation measures to minimize exhaust emissions and fugitive dust during construction (Chapter 4, *Proposed Mitigation*). Under these measures the Applicant and its contractors would implement best management practices, implement a dust mitigation program, ensure that equipment is maintained, comply with state regulations and permit conditions, and operate air pollution equipment in accordance with permit requirements. Thus, the joint lead agencies anticipate

that construction-related air emissions would be unlikely to lead to pollutant concentrations that would exceed the NAAQS and impacts would be minimal.

Table 3.12-1. Estimated Construction Emissions for Proposed Rail Line

Pollutant	Criteria Pollutants (U.S. Tons)						GHGs (Metric Tons)
	CO	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC	CO ₂ e
Emissions	30.78	48.12	25.70	12.94	6.27	4.45	10,267

GHG = greenhouse gas; CO = carbon monoxide; NO_x = nitrogen oxides; PM₁₀ = particulate matter less than 10 microns in diameter; PM_{2.5} = particulate matter less than 2.5 microns in diameter; SO₂ = sulfur dioxide; VOC = volatile organic compounds; CO₂e = carbon dioxide equivalent

Any asbestos-containing materials identified during demolition activities would be handled and disposed of in accordance with DHEC requirements (South Carolina Department of Health and Environmental Control 2017b).

3.12.2.2 Operations

Emissions during project operations were estimated for transportation of vehicles from the Volvo Cars plant by rail or truck. Locomotive emissions were based on projected diesel fuel usage and USEPA emission factors (U.S. Environmental Protection Agency 2009). Table 3.12-2 presents the estimated emissions of criteria pollutants and GHGs from project operations for the proposed rail line, compared to the total emissions from the three-county region. The locomotive emissions for the proposed rail line represent only a small proportion of three-county regional emissions and would be unlikely to lead to pollutant concentrations that would exceed the NAAQS. Estimated project-related GHG emissions during operations would be less than under the no-action alternative and the proposed rail line would have a beneficial impact on GHG emissions.

Table 3.12-2. Estimated Operations Emissions for Proposed Rail Line

Alternative	Transport Mode	Criteria Pollutants (U.S. Tons Per Year)						GHGs (Metric Tons Per Year)
		CO	NO _x	PM ₁₀	PM _{2.5}	SO ₂	VOC	CO ₂ e
Proposed Action	Rail	2.39	13.85	0.30	0.29	0.008	0.78	879
Three-County Region		231,542	34,051	21,588	10,852	15,784	36,514	94,100,000 (Statewide)

Sources: U.S. Environmental Protection Agency 2017; Center for Climate Strategies 2008
GHG = greenhouse gas; CO = carbon monoxide; NO_x = nitrogen oxides; PM₁₀ = particulate matter less than 10 microns in diameter; PM_{2.5} = particulate matter less than 2.5 microns in diameter; SO₂ = sulfur dioxide; VOC = volatile organic compounds; CO₂e = carbon dioxide equivalent

Under the no-action alternative, there would be no project-related construction emissions. Emissions would occur from the trucks that would transport finished vehicles from the Volvo Cars plant to the Dixiana, South Carolina rail terminal, as shown in Table 3.12-3, along with the total emissions from the three-county region. Truck emissions were based on 160-mile round trips between the Volvo Cars plant and the Dixiana intermodal rail terminal, and emission factors were based on USEPA methods as used by the National Highway Transportation Safety Administration (2016). The truck emissions levels presented in Table 3-12-3 for the no-action alternative represent only a small fractional percentage of emissions in the three-county area and would be unlikely to lead to pollutant concentrations that would

exceed the NAAQS. Under the no-action alternative, the incremental impact of project-related GHG emissions on climate change also would be minimal.

Table 3.12-3. Estimated Operations Emissions for No-Action Alternative

Alternative	Transport Mode	Criteria Pollutants (U.S. Tons Per Year)						GHGs (Metric Tons Per Year)
		CO	NOx	PM10	PM2.5	SO ₂	VOC	CO ₂ e
No Action	Truck	2.35	7.70	0.31	0.30	0.019	0.61	2,078
Three-County Region		231,542	34,051	21,588	10,852	15,784	36,514	94,100,000 (Statewide)

Sources: U.S. Environmental Protection Agency 2017; Center for Climate Strategies 2008

GHG = greenhouse gas; CO = carbon monoxide; NOx = nitrogen oxides; PM10 = particulate matter less than 10 microns in diameter; PM2.5 = particulate matter less than 2.5 microns in diameter; SO₂ = sulfur dioxide; VOC = volatile organic compounds; CO₂e = carbon dioxide equivalent

3.13 Energy

This section describes energy resources in the project area and the potential of the proposed action.

3.13.1 Affected Environment

The study area for energy is Berkeley County and its energy distribution infrastructure. Energy utilities that would be crossed by the proposed rail line and potential impacts are described in Section 3.10, *Land Resources*.

The study area for analysis of energy requirements and transportation of energy resources and recyclables is the state of South Carolina because the source of fuel to be consumed by the proposed rail line would not be limited to the project corridor or Berkeley County. Construction and operation of the proposed rail line would require the consumption of diesel fuel for construction equipment and for operation of locomotives. In 2016, South Carolina's consumption of distillate fuel (including diesel fuel used in diesel vehicles, locomotives, and agricultural machinery and fuel oil used for space heating and electric power generation) was approximately 20 million gallons, which accounts to 1.9 percent of 2016 U.S. consumption of fuel (Energy Information Administration 2016).

3.13.2 Environmental Consequences

Construction of the proposed rail line would require the consumption of diesel fuel for construction equipment. The construction period is expected to last 18 to 20 months, during which the Applicant would use various forms of equipment, such as excavators, trucks, bulldozers, and cranes to perform such activities as clearing and grubbing, grading, infrastructure and track construction, and site cleanup. Energy consumption during the construction period would be temporary and would place minimal additional demand on the local energy supply. Therefore, the joint lead agencies expect that construction impacts on energy availability or supply would be minimal.

Energy requirements during rail line operation would primarily be fuel for the operation of trains. Additionally, electricity would be required for associated operation and communication facilities. The joint lead agencies estimate, based on information provided by the Applicant, that approximate fuel consumption for train operation would be 300 gallons per day, 5 days per week, 52 weeks per year. Travel both ways would consume 78,000 gallons per year, or less than 1 percent of the total annual

distillate fuel consumption for the state of South Carolina. This would be a reduction in fuel use when compared to the no-action alternative and impacts on energy efficiency would be beneficial. Operation of the proposed rail line would not involve transport of energy resources, recyclables, or ozone-depleting materials.

Under the no-action alternative, the Applicant would not construct and operate the proposed rail line. Truck-to-rail diversion of freight and any associated reduction in fuel consumption would not occur. Instead, finished vehicles would be moved by truck from the Volvo Cars plant to an existing CSXT auto handling facility in Dixiana, South Carolina. An estimated 7,143 car-carrier trucks trips per year would be required, resulting in an estimated 203,718 gallons of diesel fuel use per year based on estimated 2018 tractor-trailer fuel economy of 5.61 miles per gallon (National Highway Traffic Safety Administration 2016).

3.14 Geology and Soils

This section describes geology and soil resources in the project area and the potential impacts related to the proposed action.

3.14.1 Affected Environment

The study area for geology and soil resources consists of the proposed rail corridor. The 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.

As reported in the Applicant's *Environmental Report* (Appendix B, *Environmental Report*), the 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 nearly 100 feet above current sea level. 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 include 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 tracecourse 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 line is not expected to impact these existing or planned mining sites or mineral resources.

According to the U.S. Department of Agriculture, Natural Resources Conservation Service (NRCS) (Appendix B, *Environmental Report*), the soils within the project corridor are mapped as nonhydic, predominantly nonhydic, predominantly hydric, and hydric. Approximately 107 acres of the project corridor are within hydric or predominantly hydric soils, as shown in Table 3.14-1.

The National Agricultural Land Study of 1980–1981 discovered that 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 (Appendix B, *Environmental Report*). 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 48.5 acres of soils designated as prime farmland and 119.7 acres of soils designated as farmland of statewide importance. These soil designations are shown in Table 3.14-1. Some of the farmland soils within the corridor consist of existing development or are not used for agriculture.

Table 3.14-1. Natural Resources Conservation Service Farmland Classification

Map Series	Farmland Classification	Hydric Rating	Acres Within Right-of-Way
Bethera loam	Farmland of statewide importance	Predominantly hydric	0.7
Bonneau loamy sand, 0 to 2 percent slopes	Farmland of statewide importance	Nonhydric	2.6
Bonneau loamy sand, 2 to 6 percent slopes	Farmland of statewide importance	Nonhydric	4.3
Borrow pits	Not prime farmland	Hydric	1.9
Byars loam	Farmland of statewide importance	Predominantly hydric	9.6
Coxville fine sandy loam	Farmland of statewide importance	Predominantly hydric	26.0
Duplin fine sandy loam, 0 to 2 percent slopes	All areas are prime farmland	Predominantly hydric	2.0
Duplin fine sandy loam, 2 to 6 percent slopes	All areas are prime farmland	Predominantly hydric	4.7
Goldsboro loamy sand, 0 to 2 percent slopes	All areas are prime farmland	Predominantly nonhydric	38.8
Lenoir fine sandy loam	Farmland of statewide importance	Predominantly nonhydric	2.1
Leon fine sand, 0 to 2 percent slopes	Not prime farmland	Hydric	0.7
Lynchburg fine sandy loam, 0 to 2 percent slopes	Prime farmland if drained	Predominantly nonhydric	37.2

Map Series	Farmland Classification	Hydric Rating	Acres Within Right-of-Way
Meggett loam	Farmland of statewide importance	Hydric	41.4
Norfolk loamy sand, 0 to 2 percent slopes	All areas are prime farmland	Nonhydric	0.8
Norfolk loamy sand, 2 to 6 percent slopes	All areas are prime farmland	Nonhydric	2.2
Ocilla loamy fine sand	Farmland of statewide importance	Nonhydric	13.2
Pantego fine sandy loam	Not prime farmland	Predominantly hydric	1.4
Rains fine sandy loam	Farmland of statewide importance	Predominantly hydric	18.1
Santee loam	Farmland of statewide importance	Hydric	1.3
Seagate loamy sand	Not prime farmland	Predominantly nonhydric	6.2
Udorthents	Not prime farmland	Nonhydric	1.4
Wahee loam	Farmland of statewide importance	Nonhydric	0.4

3.14.2 Environmental Consequences

Construction of the proposed rail corridor would cause potential impacts on soils when excavation or fill activities are underway and could include small, 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 be limited, but where it occurs, it would result in an increase in stormwater runoff and potentially increase in soil erosion. Best management practices 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 be required (Appendix C, *Interagency and Tribal Correspondence*, South Carolina Department of Health and Environmental Control comments dated October 5, 2017). Application for the permit would require submission of a stormwater pollution prevention plan (SWPPP) describing the management practices that would be used during construction per the requirements of the Clean Water Act Section 402. Following construction, the Applicant has proposed a voluntary mitigation measure to implement soil stabilization and vegetation management measures (Chapter 4, *Proposed Mitigation*). In addition, best management practices would reduce the potential for erosion impacts during site operations. Impacts on soil and regional geology would be minimal.

Construction of the proposed rail line would result in conversion of potential prime farmland soils and natural soils to developed areas and/or impervious surfaces (Section 3.9, *Land Use*).

Operation of the proposed rail line would not result in direct impacts on geology or soil resources as long as the Applicant implements its voluntary mitigation to stabilize and revegetate erodible soils following construction (Chapter 4, *Proposed Mitigation*).

3.15 Socioeconomics

This section discusses populations and communities in the study area and the potential impacts of the proposed action.

3.15.1 Affected Environment

The study area for socioeconomics is the five census blocks and local communities that the proposed rail line would traverse. The proposed rail line would run south-southwest from the Cross Generating Station, cross the Diversion Canal between Lake Marion and Lake Moultrie (via a proposed bridge), through the unincorporated community of Cross, and south through pine plantations into Camp Hall Commerce Park (Chapter 2, *Purpose and Need, Proposed Action and Alternatives*, Figure 2-1). The route would avoid the developed residential areas of Cross on the shore of Lake Moultrie, traversing this area approximately 1 mile to the west. Some farms and rural residences are located near the rail corridor in agricultural districts between the northern and southern terminus of the proposed rail line. Agricultural lands are predominantly used for silviculture and consist of pine plantations intensively managed for short pulp rotations.

3.15.1.1 Population Characteristics

The proposed rail line would cross five census block groups with a combined population of fewer than 10,000 individuals. Overall, the population in these groups is estimated to be 53.7 percent Caucasian and 42.7 percent African American with substantially fewer individuals who identify as Hispanic (1.7 percent), American Indian or Alaska Native (0.3 percent), Some Other Race (0.4 percent), or Two or More Races (1.0 percent) (U.S. Census Bureau 2016a).¹⁷ Race and ethnicity within census block groups crossed by the proposed rail line are described in Section 3.16, *Environmental Justice*.

Median household income in these five census block groups ranges from \$33,053 to \$42,355 annually (U.S. Census Bureau 2016b). Between 14.1 percent and 39.7 percent of families and between 19.0 percent and 41.5 percent of individuals report incomes below poverty level in these census block groups (U.S. Census Bureau 2016b). These poverty rates are described in Section 3.16, *Environmental Justice*.

3.15.1.2 Local Economy

Berkeley County has an employed civilian population of 89,136 (age 16 years and older). The percentage of civilian employment by occupation are management, business, science, and arts occupations (33.2 percent); service occupations (17.1 percent); sales and office occupations (24.3 percent); production, and natural resources, construction, and maintenance occupations (11.6 percent); and transportation, and material moving occupations (13.8 percent). Of the employed civilian population age 16 years and older, 77.3 percent are private wage and salary workers, 18.3 percent are government

¹⁷ Values do not add to 100% due to rounding.

workers, and 4.3 percent are self-employed.¹⁸ Median earnings for workers are \$31,188 annually. The unemployment rate in the civilian labor force is 8 percent (U.S. Census Bureau 2016b).

3.15.2 Environmental Consequences

3.15.2.1 Land Acquisition, Displacement, and Relocation

Table 3.15-1 summarizes the land acreage that would be acquired for the proposed rail line and the number of parcels affected by zoning classification. A total of 29 parcels ranging in size from less than 1 acre to more than 12,000 acres would be affected. The majority of land to be acquired would be zoned Flex 1: Agricultural District (Figure 3.15-1). Two unoccupied smaller (less than 1.5 acres) agricultural parcels would be full acquisitions. Overall, approximately 250.9 acres of the 286.5 acres zoned Flex 1: Agricultural District (87.6 percent of agricultural lands) would be acquired from larger agricultural parcels with parcel sizes of more than 100 acres. The acreage in three parcels zoned Heavy Industrial District and Office or Industrial Park Planned Development District is associated with the northern and southern termini of the proposed rail line, respectively.

Table 3.15-1. Land Acquisition by Zoning Classification

Zoning Classification	Total Acreage	Number of Parcels
Flex 1: Agricultural District	286.5	25
HI: Heavy Industrial District	47.0	1
PD-OP/IP: Office or Industrial Park Planned Development District	35.5	2
RNC: Rural and Neighborhood Commercial District	3.8	1
Total	372.8	29

The provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act, as amended (Uniform Act) would apply to all acquisitions of real property or displacements of persons resulting from a federally assisted project. The Uniform Act was created to provide for fair and equitable treatment of all affected persons. Additionally, the Fifth Amendment of the U.S. Constitution provides that private property may not be taken for a public use without payment of “just compensation.”

Land owners affected by right-of-way acquisition for the proposed rail line would be compensated in accordance with the Uniform Act. Based on review of aerial imagery, land acquisition for the proposed rail line would not displace any residences or businesses, and residential or business relocation would not be necessary. Therefore, the impact on displacement and relocation would be minimal.

¹⁸ Values do not add to 100% due to rounding.

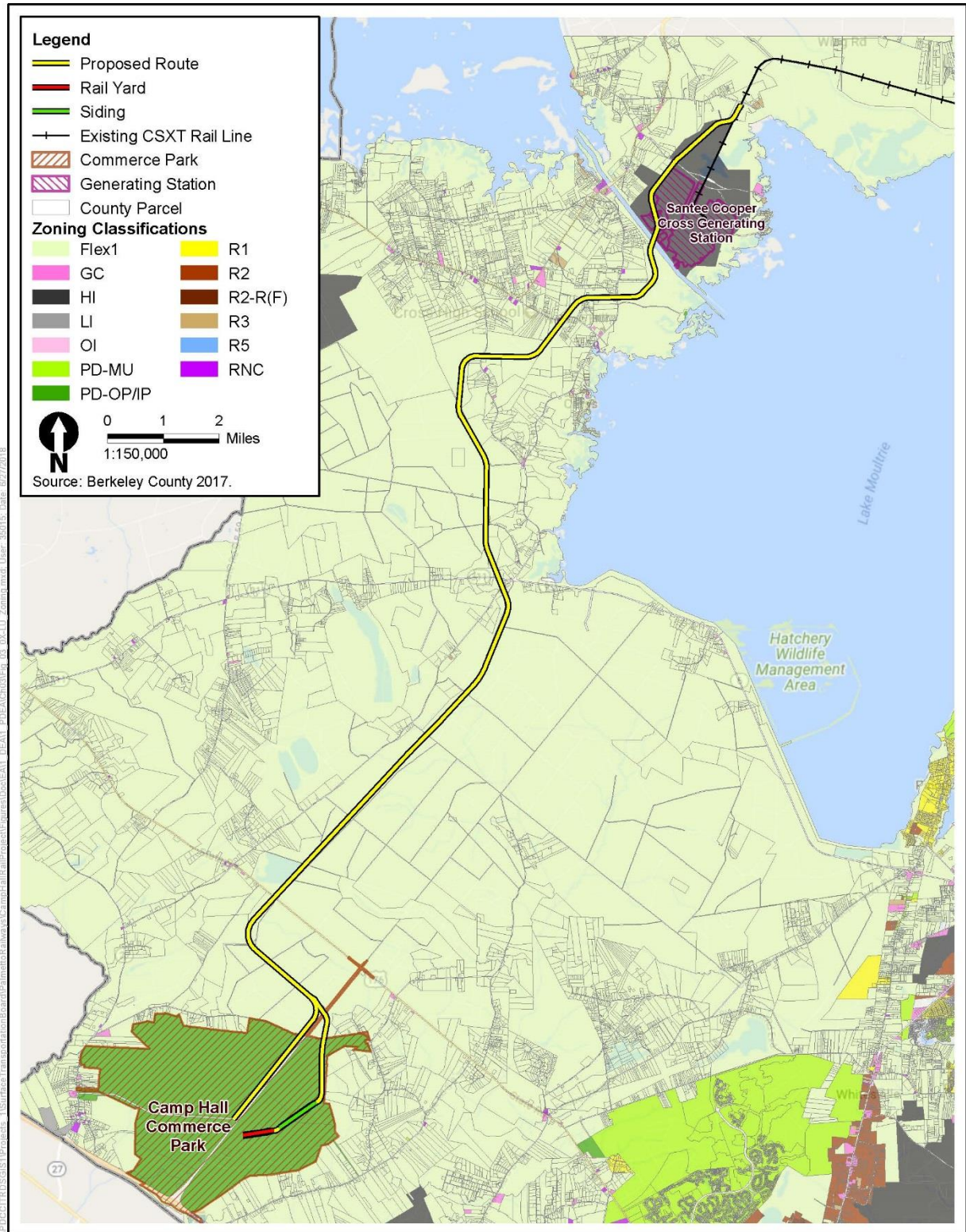


Figure 3.15-1. Berkeley County Zoning Classifications

3.15.2.2 Economic Effects

Economic benefits of construction of the proposed rail line would include temporary construction employment, induced spending by the construction workforce, and sales and use tax gains from construction expenditures. Operation of the rail line would expand transportation options and improve distribution capacity at the Camp Hall Commerce Park, with long-term economic benefits to future tenants and suppliers that use rail transportation. The economic impact of the proposed rail line would be beneficial.

3.15.2.3 Community Cohesion

Community cohesion refers to the degree of interaction among the individuals, groups, and institutions that make up the community. Community cohesion takes into consideration access and connectivity, community facilities, and local businesses in the surrounding area that provide opportunities for residents to gather and interact.

To assess whether the proposed rail line would disrupt or divide established communities or change community cohesion, the joint lead agencies considered whether construction and operation of the proposed rail line would result in any of the following impacts.

- Physical division of an established neighborhood that could isolate one part of a community from another through the physical removal of homes or businesses or construction of physical barriers to social interaction, circulation, and access (e.g., through closure of roads).
- Physical removal or disruption in access to community facilities or services.
- Physical deterioration of communities due to residential migration out of the community, extensive changes to the business environment of the community, or substantial reductions in revenue sources for local governments.
- Changes to the overall quality of life in a community or community character due to secondary effects related to, for example, traffic, noise and vibration, ambient air quality, induced population growth, or aesthetic changes.

Construction and operation of the proposed rail line would not displace residences, businesses, or community facilities, or create a physical barrier to social interaction, circulation, or access. Specifically, the proposed rail line would not create any barriers for the physically disabled or the elderly. The proposed action would require construction of 10 public road crossings and approximately 40 private road crossings; additionally, it would relocate eight private roads. The proposed rail line would not result in road closures or restrict access to residences, businesses, or community facilities in the study area.

The proposed rail line would not cause the physical deterioration of communities due to residential migration out of the community, extensive changes to the business environment of the community, or substantial reductions in revenue sources for local governments. Economic effects would be largely beneficial because of increased construction expenditures and employment, increased revenue for local governments through sales and use taxes, and improved distribution capacity for tenants of the Camp Hall Commerce Park.

The proposed rail line would not cause changes to the overall quality of life or character of communities in the study area due to secondary effects related to other resources. The proposed rail line would not have significant adverse effects on transportation (Section 3.1), noise and vibration (Section 3.7), land resources (Section 3.9), visual resources and aesthetics (Section 3.10), or air quality (Section 3.12).

Based on their review of all impacts disclosed in this Draft EA, the joint lead agencies have determined that the proposed rail line would not adversely affect community cohesion in the study area. While no community facilities in the Cross community would be affected by the proposed rail line, the Applicant has proposed voluntary mitigation measures (Chapter 4, *Proposed Mitigation*) to mitigate for potential community impacts. Under these measures, the Applicant would develop a public, agency, and stakeholder coordination plan for local engagement, team with a local telecommunications company to provide financial assistance for broadband infrastructure, and provide financial assistance for improvement of Cross community facilities.

3.16 Environmental Justice

This section discusses minority and low-income communities in the project area and the potential disproportionately high and adverse human health and environmental impacts of the proposed action.

3.16.1 Affected Environment

Race, ethnicity, and poverty rates in the census block groups crossed by the proposed rail line are summarized in Table 3.16-1. Demographic data for Berkeley County and the state of South Carolina are also provided as a point of comparison.

For the purpose of this environmental justice analysis, minority and low-income populations are defined as follows.

- **Minority.** Minority individuals are census respondents that: (1) reported their race as Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Pacific Islander and their ethnicity as not Hispanic or (2) reported their ethnicity as Hispanic, regardless of race (Council on Environmental Quality 1997).
- **Minority population.** Minority populations are identified where either: (1) the minority population of the affected area exceeds 50 percent or (2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis (Council on Environmental Quality 1997).
- **Low-income population.** Low-income populations in an affected area are identified using the annual statistical poverty threshold from the U.S. Census Bureau (Council on Environmental Quality 1997).

Based on these criteria, a minority population is identified in Census Tract 020202, Block Group 3, where 67.2 percent of the population is minority and identify as Black or African American. All five of the census block groups that would be crossed by the proposed rail line have poverty rates for individuals and families that exceed the county or state averages and are considered low-income populations for the purpose of this analysis.

Table 3.16-1. Race, Ethnicity, and Poverty Level

	South Carolina	Berkeley County	CT 020101 BG 2	CT 020102 BG 1	CT 020102 BG 2	CT 020202 BG 3	CT 020503 BG 2
Population (%)							
White	3,087,207 (63.9)	127,620 (64.1)	1,114 (51.8)	1,095 (62.0)	757 (48.4)	519 (32.5)	1,429 (69.1)
Black or African American	1,311,344 (27.1)	47,945 (24.1)	957 (44.5)	620 (35.1)	692 (44.2)	1,075 (67.2)	565 (27.3)
American Indian or Alaska Native	14,087 (0.3)	860 (0.4)	0 (0)	11 (0.6)	0 (0)	0 (0)	19 (0.9)
Asian	67,865 (1.4)	4,618 (2.3)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Native Hawaiian or Pacific Islander	2,614 (0.1)	211 (0.1)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Some Other Race	6,746 (0.1)	335 (0.2)	0 (0)	0 (0)	0 (0)	0 (0)	35 (1.7)
Two or More Races	86,381 (1.8)	5,366 (2.7)	0 (0)	9 (0.5)	82 (5.2)	5 (0.3)	0 (0)
Hispanic of All Races	258,361 (5.3)	12,126 (6.1)	78 (3.6)	30 (1.7)	33 (2.1)	0 (0)	19 (0.9)
Total Population	4,834,605	199,081	2,149	1,765	1,564	1,599	2,067
% Minority¹	34.2	33.0	48.2	37.5	46.4	67.2	29.2
% Individuals Below Poverty	17.2	13.2	20.3	29.5	24.2	41.5	19.0
% Families Below Poverty	12.8	10.1	14.8	26.3	25.2	39.7	14.1

Source: U.S. Census Bureau, American Community Survey 2016, 5-year estimates.

Notes:

¹ Calculated as the sum of census respondents that identified as Black, American Indian or Alaska Native, Asian, Hawaiian or other Pacific Islander (not Hispanic), or Hispanic (all races).

3.16.2 Environmental Consequences

To determine whether effects on minority and low-income populations are disproportionately high and adverse, the Council on Environmental Quality (CEQ) recommends that agencies consider whether these effects meet any of the following criteria.

- Are significant (as determined through a NEPA analysis) or above generally accepted norms.
- Appreciably exceed the effect on the general population or other comparison group.
- Would occur in populations affected by cumulative or multiple adverse exposures.

Environmental and human health impacts of construction and operation of the proposed rail line are discussed in Section 3.1 through Section 3.15. To determine whether the proposed rail line would have disproportionately high and adverse effects on minority or low-income populations, the joint lead agencies first reviewed each resource analysis to identify any adverse effects that are significant, or high and adverse. Only these effects would be further reviewed to determine whether there would be a disproportionate effect on minority or low-income populations. Because impact analyses in Section 3.1 through Section 3.15 did not disclose any significant or high and adverse effects of the proposed rail line, there would be no high and adverse effects on minority or low-income populations and no further analysis is warranted.

3.17 Cumulative Impacts

The Council on Environmental Quality (CEQ) regulations implementing NEPA define a cumulative impact as “the impact on the environment, which results from the incremental consequences of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions” (40 C.F.R. §1508.7). This ensures that the range of actions considered in the NEPA document includes not only the project proposed but also relevant actions that could contribute to cumulative impacts in the project area.

To identify potential cumulative impacts, the joint lead agencies employed the following method.

- Identified potential impacts from the proposed rail line.
- Identified relevant past, present, and reasonably foreseeable projects in the area of the impacts of the proposed rail line.
- Considered whether the impacts of the proposed rail line could combine with impacts from other relevant projects to result in cumulative impacts.

As noted in Chapter 3, *Affected Environment and Environmental Consequences*, and in the *Summary*, no impacts on any resources were considered significant. The majority of impacts on resources were assessed qualitatively and determined to be minimal. These resources were reviewed to determine if there would be impacts from other relevant projects in the past, present or reasonably foreseeable future that could be combined with these minimal impacts to result in cumulative impacts. The joint lead agencies determined that, where there was a potential for these types of impacts, the projects would be regulated by similar laws, policies, and regulations that the proposed rail line would be subject to and would also result in minor impacts. For example, water quality impacts on the Cooper River watershed from additional development would be reviewed by the South Carolina Department of Health and Environmental Control (DHEC) and, with imposed conditions and implementation of best management practices required by state agencies, would remain minor. Similarly, these projects, combined with the proposed rail line, should not result in significant cumulative impacts. Two resource areas, noise and wetlands, were assessed both quantitatively and qualitatively, and those resources are discussed further in the context of the potential for cumulative impacts.

3.17.1 Noise

With regard to noise, the joint lead agencies anticipate that operation of the proposed rail line would result in exposure of one sensitive noise receptor to a noise level above 65 dBA day-night sound level (DNL). The proposed rail line noise impact would be caused by train horns sounding safety warnings at an at-grade road crossing. The impact would be localized to noise on private property close to the at-grade crossing. No additional projects could be constructed in the project right-of-way at the at-grade crossing; therefore, the localized noise impact from the proposed rail line could not combine with localized noise impacts from any other project to result in significant cumulative impacts.

3.17.2 Wetlands

With regard to wetlands, construction and operation of the proposed rail line would permanently fill 103 acres of wetlands and permanently clear an additional 17 acres of vegetation. As discussed in Section 3.2, *Water*, the proposed rail line would affect wetlands in two watersheds, the Cooper River watershed (HUC 03050201) and the Four Hole Swamp watershed (HUC 03050205). Based on the Corps’

database, the OMBIL Regulatory Module, in the past 5 years, the Corps has issued approximately 1,100 permits authorizing impacts on approximately 500 acres in HUC 03050201 and approximately 40 permits authorizing impacts on approximately 420 acres in HUC 03050205. The Corps projects that future authorizations in the region will continue at the current rate.

While Berkeley County has experienced development, such development has occurred outside the project area. Also, as noted by the Applicant, the 2010 Berkeley County Comprehensive Plan does not include growth allocation areas in the project area (Palmetto Railways 2017). The joint lead agencies verified that there have not been updates to the comprehensive plan (Berkeley County Government 2010). Nevertheless, development pressure is increasing around the watersheds where this project is proposed. The population of Berkeley County is projected to increase over from the 2010 census to 2030 (the years for which data are available) (South Carolina Revenue and Fiscal Affairs Office 2010). Table 3.17-1 presents population data and projections for Berkeley, Charleston, and Dorchester Counties as of the 2010 census. Based on the population data in Table 3.17-1, Table 3.17-2 shows the values for average growth and percent population increase for each county.

Table 3.17-1. Census Numbers and Population Projections for the Project Area

County	2010 Census	2015 Projection	2020 Projection	2025 Projection	2030 Projection
Berkeley	177,843	202,776	228,930	256,840	286,250
Charleston	350,209	389,291	429,490	470,050	509,320
Dorchester	136,555	152,536	169,150	187,220	206,100

Table 3.17-2. Growth Projections and Percentage Growth for the Project Area

Data Years	Berkeley		Charleston		Dorchester	
	Growth	% Growth	Growth	% Growth	Growth	% Growth
2010–2015	24,933	14.0	39,082	11.2	15,981	11.7
2015–2020	26,154	12.9	40,199	10.3	16,614	10.9
2020–2025	27,910	12.2	40,560	9.4	18,070	10.7
2025–2030	29,410	11.5	39,270	8.4	18,880	10.1
Averages	27,102	12.7	39,778	10.5	17,386	10.9

Source: calculations of growth based on data in Table 3.17-1

Based on population numbers and projected population growth in the three counties near the project area, as well as the past 5-year history of permits to allow fill in jurisdictional wetlands in the watershed where the rail line is proposed, it is reasonable to conclude that the need for authorizations will continue at the same level.

Corps U.S. Department of the Army (DA) permits issued for infrastructure development or improvements in the two watersheds over the past 10 years include improvements to Interstate 26, U.S. Highway 17A, U.S. Highway 78, Sheep Island Parkway, Bacons Bridge Road, Long Point Road, Henry Brown Boulevard, Palmetto Commerce Parkway, West Ashley Traffic Circle and Bees Ferry Road. Among infrastructure projects, the Corps has also issued DA permits for large-scale projects to include Boeing Commercial Airplanes South Carolina, Volvo Car USA, Camp Hall Commerce Park, as well as for residential developments, schools, port facilities, and other commercial developments. Besides the Corps' authorized projects, other activities that can have indirect and secondary impacts on wetlands include residential, commercial, and industrial activities that are constructed in uplands, construction

and operation of upland borrow pits to obtain fill material, and exempt activities such as silviculture or farming practices.

As compensatory mitigation to offset impacts to wetlands and waters of the United States, the Applicant has proposed to purchase mitigation bank credits and to implement a permittee-responsible mitigation (PRM) plan (Appendix J). For impacts in the Four Hole Swamp watershed, the Applicant is proposing to purchase 80 wetland credits from the Beidler Forest Mitigation Bank or another approved mitigation bank. For impacts in the Cooper River watershed, the Applicant has proposed a PRM site, specifically, Fairlawn C-1. The Fairlawn C-1 site, approximately 1,300 acres, is located in Francis Marion National Forest and will provide both enhancement and preservation of wetlands. Following implementation of the mitigation activities and documentation of project success, the mitigation site will be transferred to the U.S. Forest Service, which will assume long-term management of the PRM site.

In conclusion, no major impacts resulting from the proposed rail line would be expected to combine with major impacts from other past, present, and reasonably foreseeable projects to create significant cumulative effects. Therefore, no additional cumulative impacts analysis is warranted.

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4.1 Introduction and Approach

This chapter describes mitigation measures that could be imposed to minimize the environmental impacts resulting from construction and operation of the proposed rail line. If the Board makes a favorable decision granting the Applicant authority to construct and operate the proposed rail line, if the Corps issues a U.S. Department of the Army (DA) permit to impact waters of the United States, and/or if FRA issues a Finding of No Significant Impact (FONSI), the proposed mitigation measures set out in this chapter that would avoid, minimize, or compensate for environmental impacts could become conditions to the federal decisions. The regulations implementing NEPA require that agencies consider mitigation to reduce environmental impacts of a project. If the Board decides to require specific mitigation measures, it will do so as part of the Board decision to grant a license, if the Board decides to issue the license. The Applicant has proposed, and incorporated into the project design, a number of voluntary mitigation measures, which include regulatory-related requirements and associated best management practices. OEA has recommended additional preliminary mitigation measures. OEA developed these preliminary mitigation measures after environmental analyses, agency consultation, and consideration of mitigation suggested by the public and agencies during consultation. In developing these mitigation measures, OEA also considered the January 14, 2011 Council on Environmental Quality (CEQ) memorandum on the appropriate use of mitigation and monitoring. The preliminary mitigation measures developed by OEA described in this chapter are not final and could be modified based on the comments received on this Draft EA.

4.2 Limits of the Surface Transportation Board's Conditioning Power

The Board has the authority to impose conditions to mitigate environmental impacts that relate directly to the transaction before the Board, are reasonable, and are supported by the record before the Board. The Board's consistent practice has been to mitigate only those impacts that result directly from the proposed action. The Board typically does not require mitigation for preexisting environmental conditions.

4.2.1 U.S. Army Corps of Engineers' Use of Special Conditions

District Engineers may add special conditions to DA permits when necessary to satisfy legal requirements or to otherwise satisfy the public interest requirements. District Engineers may also add special conditions at the applicant's request or to clarify the permit application (33 C.F.R. § 325.4(b)). Legal requirements that may be satisfied by means of Corps permit conditions include compliance with the Clean Water Act 404(b)(1) guidelines, the U.S. Environmental Protection Agency ocean dumping criteria, the Endangered Species Act, and requirements imposed by conditions on Section 401 water

quality certifications. Special conditions may also be used to require appropriate and practicable compensatory mitigation to offset impacts on the aquatic environment (33 C.F.R. § 320.4(r) and 33 C.F.R. Part 332). If the Corps grants a DA permit, an applicant's proposed mitigation measures can be incorporated into special conditions to the Corps' DA permit.

4.2.2 Voluntary Mitigation and Negotiated Agreements

The Board encourages applicants to propose voluntary mitigation. In some situations, voluntary mitigation could replace, supplement, or reach farther than mitigation measures the Board might otherwise impose. Because applicants gain a substantial amount of knowledge about the issues associated with a proposed rail line during project planning, and because they consult with regulatory agencies during the permitting process, they are often in a position to offer relevant voluntary mitigation. Here, the Applicant has proposed voluntary mitigation for many potentially affected resources.¹

The Board encourages applicants to negotiate mutually acceptable agreements with affected communities and other government entities to address potential environmental impacts, if appropriate. Negotiated agreements could be with neighborhoods, communities, counties, cities, regional coalitions, states, and other entities. If the Applicant submits to the Board any such negotiated agreements, the Board would require compliance with the terms of such agreements as environmental conditions in any final decision authorizing construction and operation of the proposed rail line. Any potential negotiated agreement would supersede any environmental conditions for that particular community or other entity that the Board might otherwise impose.

4.2.3 Preliminary Nature of Environmental Mitigation

OEA and the Corps request that commenters review the preliminary mitigation measures in this Draft EA and submit comments modifying, adding, or deleting mitigation measures. OEA will make its final recommendations on mitigation to the Board in the Final EA after considering all comments on this Draft EA. The Board will then make its final decision on whether to approve the proposed rail line and any conditions it might impose, including environmental mitigation conditions. These conditions would include the Applicant's voluntary mitigation. In making its decision, the Board will consider this Draft EA, the Final EA, public and agency comments, and OEA's final mitigation recommendations. The Corps will use the same environmental record in making its final decision on granting a DA permit and any special conditions that it might impose as part of that permit.

Some mitigation measures may be relevant to more than one resource area. When this occurs, the measure is presented under the first resource and simply referenced in the subsequent resource(s).

¹ The Applicant first proposed these voluntary mitigation measures in its *Environmental Report* (Appendix B). OEA has since worked with the Applicant to refine and clarify the voluntary mitigation measures that are included in this Draft EA. The revisions occurred in May 2018, September 2018, and November 2018.

4.3 Transportation

4.3.1 Applicant's Voluntary Mitigation Measures

The Applicant proposes the following voluntary measures for mitigating potential project-related impacts on transportation.

- **VM-01.** Prior to initiating operations, the Applicant shall offer instructional programs from Operation Lifesaver to the communities impacted by the new rail line. These will include in person, written, and online materials.
- **VM-02.** Prior to initiating operations, the Applicant shall offer rail safety training for all emergency response personnel in the impacted project area.
- **VM-03.** Prior to initiating operations, the Applicant shall provide a 24-hour emergency contact to first responders in the service area for use in the event of an emergency involving the new rail line.
- **VM-04.** The Applicant shall provide active warning systems with lights and gates at crossings of public roads by the new rail line. The Applicant shall provide appropriate passive warnings, such as crossbucks, yield or stop signs and pavement markings, at crossings of private roads by the new rail line.
- **VM-05.** Prior to initiating operations, the Applicant shall provide early warning systems at Shortcut Road, Old Highway 6, and Ranger Road. This will consist of an illuminated W10-1 warning sign and railroad pavement markings to be placed approximately 700 feet from the at-grade crossing, which will be activated similar to the gates and lights in the grade crossing system.
- **VM-06.** Prior to initiating operations, the Applicant shall conduct community workshops within the Cross community to educate residents about rail and rail crossing safety and to answer questions about the project.
- **VM-07.** Prior to initiating operations, the Applicant shall coordinate with emergency services to address concerns with delays and train local first responders on train operations. The Applicant shall partner with the Berkeley County Emergency Services Division and the Cross Rural Fire District to develop specific plans to upgrade equipment and/or facilities to improve emergency services for the Cross community.
- **VM-08.** If a shipper requests that the Applicant transport hazardous materials on the new rail line, the Applicant shall conduct any such shipments in compliance with the requirements established by the U.S. Department of Transportation, the U.S. Department of Homeland Security, the U.S. Transportation Security Administration, the Federal Railroad Administration, and the Pipeline and Hazardous Materials Safety Administration.

4.3.2 Preliminary Recommended Mitigation

OEA has not recommended additional measures for mitigating potential project-related impacts on transportation.

4.4 Water Resources

4.4.1 Applicant's Voluntary Mitigation Measures

The Applicant proposes the following voluntary measures for mitigating potential project-related impacts on water resources.

- **VM-09.** To mitigate potential water quality impacts from the new rail line, the Applicant shall use a variety of post-construction stormwater best management practices to convey, filter, and dissipate runoff from the new rail line, which may include but would not be limited to vegetated swales, vegetated filter strips, stream bank stabilization, and channelized flow dissipation.
- **VM-10.** The Applicant shall implement a stormwater pollution and prevention plan as required by the National Pollutant Discharge Elimination System permit, including management of sediment and erosion control.
- **VM-11.** The Applicant shall implement erosion prevention best management practices, which may include dust control, mulching, blown straw, hydro-mulching/seeding, erosion control blankets, turf reinforcement mats, and outlet protection (i.e., riprap), temporary seeding, sediment tubes, sediment tube slope breaks (slopes greater than 50 feet in length), flexible growth medium or engineered fiber medium (i.e., Flexterra), and/or other devices as prescribed by the design engineer.
- **VM-12.** The Applicant shall implement runoff control and conveyance best management practices that may include diversion ditches/dikes, pipe slope drains, drainage swales, and level spreader and/or other devices as prescribed by the design engineer.
- **VM-13.** The Applicant shall implement sediment control best management practices that may include sediment basins, sediment traps, silt fences, ditch checks, stabilized construction entrances, storm drain inlet protection, and sediment tubes and/or other devices as prescribed by the design engineer.
- **VM-14.** The Applicant shall design, implement, and maintain all construction best management practices per the guidance in the South Carolina Department of Health and Environmental Control *Storm Water Management BMP Handbook* (August 2005).
- **VM-15.** The Applicant shall obtain a National Pollutant Discharge Elimination System Phase II Construction General Permit to address water quality and quantity.
- **VM-16.** The Applicant shall implement appropriate rail design measures to ensure minimal impact to floodplains and compliance with all Federal Emergency Management Administration (FEMA) or FEMA-approved local floodplain construction requirements.
- **VM-17.** The Applicant shall design culverts and/or bridges to maintain existing surface water drainage patterns and not cause or exacerbate flooding on adjacent properties.
- **VM-18.** The Applicant shall adhere to Berkeley County's stormwater regulations associated with the specific implementation of various stormwater management facilities where applicable and under Berkeley County's jurisdiction (i.e., ditches, culverts, secondary collection systems, etc.).
- **VM-19.** The Applicant shall design culverts and bridges to maintain existing flow and hydrology for wetland areas and to prevent flooding upstream.
- **VM-20.** The Applicant shall design drainages located within Federal Emergency Management Agency (FEMA) regulated floodplains (Zone A Special Flood Hazard Area) in accordance with all FEMA or FEMA-approved local floodplain construction requirements.

- **VM-21.** The Applicant shall design culverts and bridges to maintain existing flow/exchange and hydrology for wetland areas.
- **VM-22.** The Applicant shall obtain a Department of the Army permit authorization to discharge fill material into waters of the United States.

4.4.2 Preliminary Recommended Mitigation

OEA recommends the following measures as additional mitigation for potential project-related impacts on water resources.

- **MM-1.** The Applicant shall design, construct, and operate the rail line and associated facilities to maintain existing water patterns and flow conditions and provide long-term hydrologic stability by conforming to natural stream gradients and stream channel alignment and avoiding altered subsurface flow to the extent practicable. Project-related supporting structures (e.g., bridge piers) shall be designed to minimize scour (sediment removal) and increased flow velocity, to the extent practicable.
- **MM-2.** The Applicant shall construct project-related water crossings in a manner that minimizes disturbances to streambeds, stream banks, and flow.
- **MM-3.** The Applicant shall abandon project-related geotechnical boreholes in compliance with the reasonable requirements of South Carolina Department of Health and Environmental Control's R.61-71, Well Standards regulation.
- **MM-4.** During project-related construction, the Applicant shall minimize, to the extent practicable, the duration and extent of activity at temporary construction facilities such as staging areas, and provide surface treatments to minimize soil compaction (e.g., break up compacted soils during reclamation to promote infiltration) and promote vegetation regrowth after the facilities are no longer needed to support construction.
- **MM-5.** The Applicant shall ensure that all project-related culverts and bridges are sufficiently clear of debris to avoid flow blockages, flow alteration, and increased flooding. The Applicant shall inspect all project-related bridges and culverts semi-annually (or more frequently, as seasonal flows dictate) for debris accumulation and shall remove and properly dispose of debris promptly.
- **MM-6.** The Applicant shall comply with the reasonable requirements of the South Carolina Department of Health and Environmental Control regarding the composition of embankment and surface materials used in project-related construction.
- **MM-7.** During project-related construction, the Applicant shall use temporary barricades, fencing, and/or flagging in sensitive habitats to contain project-related impacts to the construction area. The Applicant shall locate staging areas in previously disturbed sites to the extent practicable, avoiding sensitive habitat areas whenever possible.

4.4.3 Compensatory Mitigation

The proposed rail line would require compensatory mitigation for unavoidable adverse impacts on waters of the United States that result from activities authorized under Section 404 of the Clean Water Act, provided such activities have met all applicable requirements and are authorized by the appropriate authority. Specifically, the proposed rail line would require approximately 1,400 freshwater wetland mitigation credits. The proposed rail line would be located at the convergence of two river basins. The majority of the impacts on waters of the United States would be in the upper reaches of the Cypress Swamp watershed of the Cooper River basin and a small portion of impacts would be in the lower

boundary of the Lower Four Holes Swamp watershed of the Edisto River basin. Land use surrounding the project alignment is a mix of residential and commercial development, silviculture, and wetlands.

Compensatory mitigation to offset adverse impacts on wetlands and waters of the United States would be provided by a combination of mitigation bank credits and a permittee-responsible mitigation (PRM) plan (Appendix J, *Permittee-Responsible Mitigation Plan*). For impacts in the Four Holes Swamp watershed, the Applicant is proposing to purchase 80 wetland credits from the Beidler Forest Mitigation Bank. As of the time of the publication of this Draft EA, the Beidler Forest Mitigation Bank is not yet approved. If this bank is not approved at the time construction is slated to begin, appropriate mitigation credits would be purchased from an approved mitigation bank with a service area that includes the Four Holes Swamp watershed.

For impacts in the Cooper River watershed, the remainder of the required mitigation would be satisfied through a PRM plan at the Fairlawn C-1 site. This site, an approximate 1,380-acre site within Francis Marion National Forest, will consist of both enhancement and preservation of wetlands. The PRM site is part of an inholding strategically located in the Francis Marion National Forest proclamation boundary in Berkeley and Charleston Counties and is close to Cape Romain National Wildlife Refuge. Francis Marion National Forest and Cape Romain National Wildlife Refuge have been recognized as areas of international significance for wildlife and wetlands, including recognition by the United Nations as a Culturally Significant Biosphere Reserve and listing as a Ramsar Wetland of International Significance. Following implementation of the mitigation activities and documentation of project success, the mitigation site would be transferred to the U.S. Forest Service, which would assume long-term management and ownership obligations in accordance the Conservation Land Use Agreement between the U.S. Forest Service and the Corps.

4.5 Vegetation

4.5.1 Applicant's Voluntary Mitigation Measures

The Applicant proposes the following voluntary measure for mitigating potential project-related impacts on vegetation.

- **VM 23.** The Applicant shall implement a spill prevention, control, and countermeasures plan during construction and operations to minimize the impact of a potential spill.

4.5.2 Preliminary Recommended Mitigation

OEA recommends the following measures as mitigation for potential project-related impacts on vegetation.

- **MM-8.** Prior to any project-related construction, the Applicant shall develop and implement a mitigation plan to address the spread and control of nonnative invasive plants during project-related construction. This plan shall address and designate the following elements: (1) planned seed mixes, (2) weed prevention and eradication procedures, (3) equipment cleaning protocols, (4) revegetation methods, and (5) protocols for monitoring revegetation. The Applicant shall submit this plan to OEA.

4.6 Wildlife

4.6.1 Applicant's Voluntary Mitigation Measures

The Applicant proposes the following voluntary measure for mitigating potential project-related impacts on wildlife.

- **VM 23.** (See measure referenced in Section 4.4, *Vegetation*.)

4.6.2 Preliminary Recommended Mitigation

OEA has not recommended additional measures for mitigating potential project-related impacts on wildlife.

4.7 Fish and Other Aquatic Species

4.7.1 Applicant's Voluntary Mitigation Measures

The Applicant proposes the following voluntary measure for mitigating potential project-related impacts on fish and other aquatic species.

- **VM 10 through VM 15.** (See measures referenced in Section 4.3, *Water Resources*.)
- **VM 23.** (See measure referenced in Section 4.4, *Vegetation*.)
- **VM-24.** The Applicant shall design culverts and/or bridges to allow aquatic organisms to pass relatively unhindered.

4.7.2 Preliminary Recommended Mitigation

OEA recommends the following additional measure as mitigation for potential project-related impacts on fish and other aquatic species.

- **MM-2.** (See measure referenced in Section 4.3, *Water Resources*.)
- **MM-5.** (See measure referenced in Section 4.3, *Water Resources*.)

4.8 Special-Status Species

4.8.1 Applicant's Voluntary Mitigation Measures

The Applicant proposes the following voluntary measures for mitigating potential project-related impacts on special-status species.

- **VM 23.** (See measure referenced in Section 4.4, *Vegetation*.)
- **VM-25.** The Applicant shall align structures over water and/or other benthic resources (organisms that live in the sediments) so as to minimize the over-water footprint as much as possible.

- **VM-26.** The Applicant shall protect bald eagles by adhering to the Bald and Golden Eagle Protection Act even though eagles have been delisted under the Endangered Species Act.
- **VM-27.** The Applicant shall comply with the Migratory Bird Treaty Act of 1918 by following all laws and regulations pertaining to the removal/take of nests within the limits of the project construction area.
- **VM-28.** The Applicant shall implement the following best management practices during project-related construction by the contractor responsible for the execution of the work. These are required in addition to conditions set forth in regulatory permit(s).
 - **28a.** Prior to project-related construction, the contractor shall prepare a work plan describing its proposed construction approach, methodology, and equipment to be used. The Applicant shall review this plan to ensure compliance with applicable regulatory requirements and mitigation and best management practices. The contractor shall also be required to attend and document his/her attendance at a pre-construction conference meeting with the Applicant.
 - **28b.** Once construction is initiated, the contractor shall complete the project in an expeditious manner in order to minimize the period of disturbance to environmental resources.
 - **28c.** Land-disturbing activities shall not encroach into any wetland areas outside of the permitted impact area.
 - **28d.** The contractor shall implement best management practices to minimize erosion and migration of sediments on and off the upland project site, including reclaimed lands, during and after project-related construction. The contractor shall conduct inspections at a minimum of at least once every calendar week or within 24 hours of the end of a storm event of 0.5 inch or more, until final stabilization is reached on all areas of the construction site.
 - **28e.** The contractor shall ensure that oil, tar, trash, debris, and other pollutants do not enter the adjacent waters or wetlands during project-related construction.
 - **28f.** The contractor shall instruct all construction personnel on the potential presence of protected species in the construction area and the need to prevent entrapment, harm, or other impacts on these animals.
 - **28g.** The contractor shall advise all construction personnel that there are civil and criminal penalties for harming, harassing, or killing protected species.
 - **28h.** The contractor shall complete all in-water construction activities during daylight hours.
- **VM-29.** The Applicant shall implement the following best management practices related to vessel operations during project-related construction by the contractor responsible for the execution of the work:
 - **29a.** The Applicant shall use shallow draft vessels that maximize the navigational clearance between the vessel and the river bottom (e.g., "jon boats", flat-bottomed barges) where possible.
 - **29b.** The Applicant shall operate all vessels associated with the rail construction project at "no wake/idle" speeds whenever possible while in the construction area and while in water depths where the draft of the vessel provides less than a 4-foot clearance from the bottom.
 - **29c.** If a protected species is seen within 300 feet of the active daily construction/dredging operation or vessel movement, the Applicant shall implement all appropriate precautions to ensure its protection. These precautions shall include cessation of operation of any moving equipment closer than 50 feet of a protected species. Operation of any mechanical construction equipment shall cease immediately if a protected species is seen within a 50-foot radius of the equipment. Activities may not resume until the protected species has departed the project area

of its own volition. The Applicant shall immediately contact the U.S. Fish and Wildlife Service, Charleston Field Office, (843) 727-4707, upon sighting of a protected species.

- **29d.** The Applicant shall immediately report any collision with and/or injury to a West Indian manatee to the U.S. Fish and Wildlife Service, Charleston Field Office, (843) 727-4707.

4.8.2 Preliminary Recommended Mitigation

OEA recommends the following additional measure as mitigation for potential project-related impacts on special-status species.

- **MM-9.** To the extent practicable, the Applicant shall minimize project-related ground disturbance, clearing of established vegetation, and removal of wildlife habitats and riparian vegetation during project-related construction.

4.9 Noise and Vibration

4.9.1 Applicant's Voluntary Mitigation Measures

The Applicant proposes the following voluntary measure for mitigating potential project-related impacts related to noise and vibration.

- **VM-30.** The Applicant shall use continuously welded rail to minimize noise associated with operation of the rail line.
- **VM-31.** The Applicant shall work with FRA and local communities, if requested, to establish Quiet Zones at the crossings of Ranger Road, Mudville Road, Shortcut Road, SC 311, and Old Highway.

4.9.2 Preliminary Recommended Mitigation

OEA has not recommended additional measures for mitigating potential project-related impacts related to noise and vibration.

4.10 Cultural and Historical Resources

4.10.1 Applicant's Voluntary Mitigation Measures

The Applicant proposes the following voluntary measure for mitigating potential project-related impacts on cultural and historical resources.

- **VM-32.** The Applicant shall maintain at least a 50-foot buffer between the right-of-way for the new rail line and the Garrett Cemetery.

4.10.2 Preliminary Recommended Mitigation

OEA recommends the following additional measure as mitigation for potential project-related impacts on cultural and historical resources.

- **MM-10.** The Applicant shall issue a stop work order should previously unknown or unevaluated buildings, objects, districts, archeological sites, human remains, funerary artifacts, or associated artifacts be discovered during project-related construction. The Applicant will stop all work near the find and immediately notify the Corps and OEA. The Corps will begin re-initiation of the Section 106 process, including consultation with State Office of Historic Preservation, interested parties, and interested federally recognized tribes to determine whether the discovery constitutes a National Register of Historic Places-eligible historic property, to analyze whether an adverse effect is posed by the undertaking, and to develop appropriate resolution. Construction at the site shall not resume in the vicinity of the discovery until a determination is made on any appropriate mitigation or protection of the resource. All procedures will comply with federal regulations at 36 C.F.R. § 800.13.

4.11 Land Resources

4.11.1 Applicant's Voluntary Mitigation Measures

The Applicant proposes the following voluntary measure for mitigating potential project-related impacts on land resources.

- **VM-32.** (See measure referenced in Section 4.9, *Cultural and Historical Resources*.)

4.11.2 Preliminary Recommended Mitigation

OEA recommends the following additional measure as mitigation for potential project-related impacts on land resources.

- **MM-11.** The Applicant shall maintain access to the Palmetto Trail at Lake Moultrie Passage at all times during construction of the new rail line and post signs directing trail users along the detour route at Viper Road.

4.12 Visual Resources

Neither the Applicant nor OEA has proposed measures for mitigating potential project-related impacts on visual resources.

4.13 Hazardous Waste Sites

Neither the Applicant nor OEA has proposed measures for mitigating potential project-related impacts on hazardous waste sites.

4.14 Air Quality and Climate Change

4.14.1 Applicant's Voluntary Mitigation Measures

The Applicant proposes the following voluntary measures for mitigating potential project-related impacts on air quality and climate change.

- **VM-33.** To reduce the emission of pollutants during project-related construction, the Applicant and its contractors shall observe appropriate construction best management practices.
- **VM-34.** The Applicant shall implement a dust mitigation program during the construction of the new rail line to ensure emissions and fugitive dust are kept at a minimum, such as spraying water or other established measures. The Applicant shall also operate water trucks on haul roads as necessary to reduce dust.
- **VM-35.** To limit project-related construction emissions, the Applicant shall work with its contractor(s) to ensure that construction equipment is properly maintained and that required pollution-control devices are in working condition.
- **VM-36.** The Applicant shall comply with applicable air quality state construction and operating permit requirements, conditions, and reporting.
- **VM-37.** The Applicant shall operate and maintain air pollution control equipment in accordance with applicable permit requirements.

4.14.2 Preliminary Recommended Mitigation

OEA has not recommended additional measures for mitigating potential project-related impacts on air quality and climate change.

4.15 Energy

Neither the Applicant nor OEA has proposed measures for mitigating potential project-related impacts on energy.

4.16 Geology and Soils

4.16.1 Applicant's Voluntary Mitigation Measures

The Applicant proposes the following voluntary measure for mitigating potential project-related impacts related to geology and soils.

- **VM-38.** Following construction of the rail line, the Applicant shall implement appropriate soil stabilization and vegetation management measures.

4.16.2 Preliminary Recommended Mitigation

OEA has not recommended additional measures for mitigating potential project-related impacts related to geology and soils.

4.17 Socioeconomics

4.17.1 Applicant's Voluntary Mitigation Measures

The Applicant proposes the following voluntary measures for mitigating potential project-related impacts on socioeconomics.

- **VM-39.** Prior to initiating project-related construction, the Applicant shall develop a public, agency, and stakeholder coordination plan to ensure that outreach to diverse groups takes place throughout the project area to improve public awareness and education about the project.
- **VM-40.** The Applicant shall team with a local telecommunications company to provide financial assistance for a broadband infrastructure improvement program for the communities surrounding the project area. The extent and mechanism for implementing this assistance will be finally determined after input with local community leaders to ensure that the assistance meets the greatest need.
- **VM-41.** The Applicant shall provide financial assistance for renovations and improvements to the existing Community Center and Spiers Landing recreational facility that are utilized by the Cross community. Again, the extent and mechanism for implementing this assistance will be finally determined after input with local community leaders.

4.17.2 Preliminary Recommended Mitigation

OEA has not recommended additional measures for mitigating potential project-related impacts on socioeconomics.

4.18 Environmental Justice

Neither the Applicant nor OEA has proposed measures for mitigating potential project-related impacts on environmental justice.

4.19 General Monitoring and Enforcement

4.19.1 Preliminary Recommended Mitigation

OEA recommends the following preliminary measures for monitoring and enforcement of the final approved mitigation measures.

- **MM-12.** The Applicant shall comply with the voluntary mitigation measures and all reasonable requirements of permits and approvals required under applicable federal and state regulations.
- **MM-13.** Prior to initiation of project-related construction activities, and for a period of 1 year following start-up of operations on the rail line, the Applicant shall establish a community liaison to consult with affected communities, businesses, and appropriate agencies; develop cooperative solutions to local concerns; be available for public meetings; and conduct periodic public outreach. The Applicant shall provide the name and phone number of the community liaison to mayors and other appropriate local officials in each community through which the rail line passes.

- **MM-14.** If there is material new evidence, or substantially changed circumstances, that differ from the information upon which the joint lead agencies relied on in imposing specific environmental mitigation conditions, and upon petition by any party that demonstrates such material change, the joint lead agencies may revise their final mitigation, if warranted and appropriate.
- **MM-15.** The Applicant shall submit quarterly reports to OEA on the progress of, implementation of, and compliance with all Board-imposed mitigation measures. The reporting period for these quarterly reports shall begin on the date of a Final Decision authorizing the project and continue until 1 year after the Applicant has completed project-related construction activities. The Applicant shall submit copies of the quarterly reports within 30 days following the end of each quarterly reporting period to OEA.

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Chapter 5

Regulations

Different federal, state, and local entities are responsible for the regulation of impacts on environmental resources. The regulations and guidance related to impacts are described in Table 5-1.

Table 5-1. Regulations and Guidance Related to Impacts

Regulation, Statute, Guideline	Explanation
Transportation	
Federal	
OEA regulations (49 C.F.R. § 1105.7(e))	Require consideration of effects of the proposed action on transportation systems and patterns as well as public health and safety, including grade crossings and hazardous materials transport.
OEA regulations (49 C.F.R. Parts 200–209)	Provides requirements for highway-rail grade crossings.
OEA regulations (49 C.F.R. Parts 234–236)	Provides rules, standards, and instructions governing the installation, inspection, maintenance, and repair of signal and train control systems, devices, and appliances.
FHWA, Railroad-Highway Grade Crossing Handbook (2007)	Provides general information on highway-rail crossings, characteristics of the crossing environment and users, and the physical and operational improvements that can be made at highway-rail grade crossings to enhance the safety and operation of both highway and rail traffic over grade crossings.
U.S. Coast Guard, under Section 9 of the Rivers and Harbors Act of 1899 (33 U.S.C § 401)	Prohibits the construction of any bridge, dam, dike, or causeway over or in navigable waterways of the United States without Congressional approval.
General Bridge Act of 1946, as amended, (33 U.S.C. § 525)	Authorizes the construction, maintenance, and operation of bridges and approaches over the navigable waters of the United States upon plan approval by the Secretary of Transportation.
Department of Transportation Act of 1966, (49 U.S.C. §§ 1651–1659)	Delegates authority for approval of bridges over navigable waters of the United States.
Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. § 403)	Requires any entity proposing to perform work or place a structure in, over, or under a navigable water obtain a permit from the U.S. Coast Guard prior to commencing the activity.
State	
South Carolina Code of Laws, Title 58, Chapter 15, Section 58-15-2120	Allows the Department of Transportation to make specifications and enter into agreements concerning grade crossings of state highways.
Local	
No local statutes, regulations, or guidelines apply to transportation.	
Water Resources	
Federal	
Clean Water Act (33 U.S.C)	Establishes the basic structures for regulating the discharge of pollutants into waters of the United States.
Clean Water Act, Section 401	Requires a water quality certificate to ensure that a project does not violate state or tribal water quality standards.

Regulation, Statute, Guideline	Explanation
Clean Water Act, Section 402	Establishes the NPDES program to regulate point-source discharges of pollutants into waters of the United States.
Clean Water Act, Section 404	Establishes a program to regulate the discharge of dredged or fill material into waters of the United States.
National Flood Insurance Act	Establishes the NFIP, which is a voluntary floodplain management program for participating communities (cities, towns, or counties).
Executive Order 11990, Protection of Wetlands	Minimizes the destruction, loss, or degradation of wetlands to preserve and enhance the natural and beneficial values of wetlands.
Executive Order 11988, Floodplain Management	Reduces the risk of flood loss to minimize impacts of floods on human safety, health, and welfare and to restore and preserve the natural and beneficial values served by floodplains.
State	
South Carolina Pollution Control Act	Establishes a system and rules for managing and protecting the quality of South Carolina's surface and groundwater. Establishes the state's official classified water uses for all waters of the state, general rules and specific numeric and narrative criteria for protecting classified and existing water uses, and procedures for classifying waters of the State.
Local	
Berkeley County Stormwater Management Program (Ordinance No. 14-11-36)	Ordinance states to protect, maintain, and enhance water quality and the environment of the County.
Vegetation	
Federal	
No federal statutes, regulations, or guidelines apply to vegetation.	
State	
South Carolina Noxious Weed Act	Establishes the criteria to control and manage noxious weeds and to deter spreading of noxious weeds.
Local	
No local statutes, regulations, or guidelines apply to vegetation.	
Wildlife	
Federal	
Migratory Bird Treaty Act (16 U.S.C § 703)	Protects birds that migrate between the United States, Canada, Mexico, Japan, or Russia.
Fish and Wildlife Coordination Act of 1934 (16 U.S.C. § 661)	Evaluates impacts on vegetation, fish, and wildlife species and considers mitigation for proposed water resource development projects.
State	
South Carolina Nongame and Endangered Species Conservation Act	Provides for the protection of nongame and state-listed endangered wildlife species.
Local	
No local statutes, regulations, or guidelines apply to wildlife resources.	
Fish and Other Aquatic Species	
Federal	
Fish and Wildlife Coordination Act of 1934 (16 U.S.C. § 661)	Evaluates impacts on vegetation, fish, and wildlife species and considers mitigation for proposed water resource development projects.

Regulation, Statute, Guideline	Explanation
Magnuson-Stevens Fishery Conservation and Management Action (16 U.S.C. § 1801 et seq.)	Governs marine fisheries management and requires federal agencies to consult with NMFS for actions that may affect Essential Fish Habitat
State	
South Carolina Nongame and Endangered Species Conservation Act	Provides for the protection of nongame and state-listed endangered fish and wildlife species.
Local	
No local statutes, regulations, or guidelines apply to fish and other aquatic species.	
Special-Status Species	
Federal	
Endangered Species Act (16 U.S.C. § 531)	Protects all vegetation, fish, and wildlife species that are in danger of extinction as well as the habitats critical to their survival.
Bald and Golden Eagle Protection Act of 1940 (16 U.S.C § 608)	Protects bald and golden eagles, their nests, and their eggs from harm or disturbance.
Fish and Wildlife Coordination Act of 1934 (16 U.S.C. § 661)	Evaluates impacts on vegetation, fish, and wildlife species and considers mitigation for proposed water resource development projects.
State	
South Carolina Nongame and Endangered Species Conservation Act	Provides for the protection of nongame and state-listed threatened and endangered wildlife species.
Local	
No local statutes, regulations, or guidelines apply to special-status species resources.	
Noise and Vibration	
Federal	
OEA regulations (49 C.F.R. § 1105.7)	Sets noise and vibration thresholds for analyzing the anticipated effect of a proposed rail project.
Noise Control Act of 1972 (42 U.S.C. § 4910)	Establishes a national policy to promote an environment free from noise that jeopardizes their health and welfare.
FRA Guidelines (Report Number 293630-1, December 1998)	Provides guidance on noise analysis and impact assessment.
OSHA Occupational Noise Exposure	Addresses specific standards for noise and hearing conservation.
U.S. Environmental Protection Agency Railroad Noise Emission Standards (40 C.F.R. Part 201)	Sets noise emission standards for transportation equipment and interstate rail carriers.
FRA Railroad Noise Emission Compliance Regulations (49 C.F.R. Part 210)	Describes minimum compliance regulations for enforcement of the rail noise emission standards.
Hearing Conversation Amendment (<i>Federal Register</i> 48 (46), 9738—9785)	Requires hearing conservation programs for all employees whose noise exposures equal or exceed an 8-hour time-weighted average of 85 decibels.
FRA Final Rule on the Use of Locomotive Horns at Highway-Rail Grade Crossings (49 C.F.R. Parts 222 and 229)	Provides for safety rail grade crossings by requiring locomotive horn use at public highway-rail grade crossings except in quiet zones established and maintained in accordance with this part.
FTA Transit Noise and Vibration Impact Assessment (FTA-VA-90-1003-06, May 2006)	Provides guidance for preparing and reviewing the noise and vibration sections of environmental documents.
State	
No state statutes, regulations, or guidelines apply to noise and vibration.	

Regulation, Statute, Guideline	Explanation
Local	
Berkeley County Noise Control Ordinances (Ordinance No. 05-08-56 amended by Ordinance No. 09-04-21)	Establishes noise control ordinances for Berkeley County.
Cultural and Historical Resources	
Federal	
Antiquities Act of 1906 16 U.S.C. §§ 431 – 433; 54 U.S.C. Subtitle III, §§ 320101–320303; 18 U.S.C. § 1866(b)	Gives the President of the United States the authority to, by presidential proclamation, create national monuments from federal lands to protect significant natural, cultural, or scientific features.
Historic Sites Act of 1935, as amended (16 U.S.C. §§ 461–467; 54 U.S.C. §§ 320101–320106; §§ 102303, 102304, 309101)	Establishes as a national policy to preservation for public use of historic sites, buildings, and objects.
Section 106 of the NHPA (54 U.S.C. § 300101 et seq.), as amended	Requires federal agencies to take into account the effects of their undertakings on historic properties and to provide the ACHP with a reasonable opportunity to comment.
Archaeological Data Preservation Act of 1974 (16 U.S.C. § 469 a–c), (54 U.S.C. §§ 312501–312508)	Amends the 1960 Reservoir Salvage Act by providing for the preservation of significant scientific, prehistoric, historic and archaeological materials and data that might be lost or destroyed as a result of flooding, the construction of access roads, relocation of railroads and highways, or any other federally funded activity that is associated with the construction of a dam or reservoir.
Archaeological Resources Protection Act of 1979 (16 U.S.C. § 470aa–mm), as amended	Defines archaeological resources as any material remains of past human life or activities that are of archaeological interest and at least 100 years old, requires federal permits for their excavation or removal and sets penalties for violators.
Native American Graves Protection and Repatriation Act (25 U.S.C. § 3001 et seq.)	Gives ownership and control of Native American human remains, funerary objects, sacred objects and objects of cultural patrimony that are excavated or discovered on federal land to federally recognized American Indian tribes or Native Hawaiian organizations. The law also establishes criminal penalties for trafficking in human remains or cultural objects and requires agencies and museums that receive federal funding to inventory those items in their possession, identify the descendants of, and repatriate those items.
American Indian Religious Freedom Act of 1978 (42 U.S.C. § 1996, 1996a)	States that it is a policy of the United States to protect and preserve for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions of the American Indian, Eskimo, Aleut, and Native Hawaiians, including but not limited to access to sites, use and possession of sacred objects, and the freedom to worship through ceremonial and traditional rites.
State	
No state statutes, regulations, or guidelines apply to cultural and historical resources.	
Local	
No local statutes, regulations, or guidelines apply to cultural and historical resources.	
Land Resources	
Federal	
Farmland Protection Policy Act (Public Law 97-98/ 7 U.S.C. § 4201 et seq.).	Requires federal agencies to coordinate with NRCS if their activities may irreversibly convert farmland (directly or indirectly) to nonagricultural use.

Regulation, Statute, Guideline	Explanation
Coastal Zone Management Act of 1972 (16 U.S.C. §§ 1451–1466)	Requires federal agency activities that could affect coastal zones to be consistent with state programs approved under federal coastal management programs.
Section 4(f) (49 U.S.C. § 1653(f))	Denies USDOT, FHWA, and other USDOT agencies right of approval of transportation projects under their jurisdiction requiring the use of publicly owned parks, recreation areas, wildlife and waterfowl refuges, or public and private historical sites unless there is no prudent or feasible alternative; or the action includes all possible planning to minimize harm to the Section 4(f) property resulting from the transportation use.
Safe, Accountable, Flexible, Efficient Transportation Equity Act of 2003 (SAFETEA-LU), Section 6009(a) (23 U.S.C. § 138).	Amends Section 4(f) legislation to simplify the approval of projects that have de minimis impacts on resources protected by Section 4(f).
Land and Water Conservation Fund Act (16 U.S.C. § 460l-8[f] and 36 C.F.R. § 59.1)	Provides state and local government grants to acquire or make improvements to parks and recreation areas.
State	
South Carolina’s Coastal Tidelands and Wetlands Act (S.C. Code Ann. § 48-39-10 et seq.)	Responsible for reviewing effects of projects on the state’s coastal resources.
Local	
Berkeley County Comprehensive Plan 2010	Guides development in the county; the Berkeley County Code of Ordinances implements those goals and policies.
Visual Resources and Aesthetics	
Federal	
National Scenic Byways Program (23 U.S.C § 162)	Designates roads to be recognized as having outstanding scenic, historic, cultural, natural, recreational, and archaeological qualities.
State	
No state statutes, regulations, or guidelines apply to visual or aesthetic resources.	
Local	
No local statutes, regulations, or guidelines apply to visual or aesthetic resources.	
Hazardous Waste Sites	
Federal	
The U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration (49 C.F.R. Parts 171–177)	Regulates the transport of hazardous materials, including the packaging and shipment of such materials by rail, air, vessel, and public highway.
State	
South Carolina Code of Laws (Title 14, Chapter 56)	Addresses the provisions of the Hazardous Waste Management Act for determining hazardous waste, issuing permits, and containing and transporting hazardous wastes. Chapter 96 addresses the provisions of the South Carolina Hazardous Waste Management Act.
South Carolina Code of Laws (Title 48, Chapter 1 and Chapter 43)	Chapter 1 addresses the Pollution Control Act; Chapter 43 addresses oil and gas exploration, drilling, transportation and production.
Local	
No local statutes, regulations, or guidelines apply to hazardous waste sites.	

Regulation, Statute, Guideline	Explanation
Air Quality and Climate Change	
Federal	
Clean Air Act Amendments of 1990 (42 U.S.C. § 7409)	Sets national primary and secondary ambient air quality standards.
National Ambient Air Quality Standards (40 C.F.R. Part 50)	Sets limits to protect public health, and secondary standards set limits to protect public welfare. USEPA has set NAAQS for six common, or "criteria" pollutants.
State	
South Carolina Department of Health and Environmental Control ambient air quality standards (Regulation 62.5)	Sets air pollution control regulations and standards for the state of South Carolina.
Local	
No local statutes, regulations, or guidelines apply to air quality and climate change.	
Energy	
Federal	
National Environmental Policy Act of 1969 (40 C.F.R. § 1502.16 (e))	States that proper consideration must be given to the energy requirements and conservation potential of various alternatives of a proposed project as well as mitigation measures.
Surface Transportation Board procedures for implementing environmental laws (49 C.F.R. § 1105.7)	Requires an analysis of a project's potential impacts to transportation of energy resources, recyclable commodities, overall energy efficiency, and diversions from rail to motor carrier.
State	
No state statutes, regulations, or guidelines apply to energy resources.	
Local	
No local statutes, regulations, or guidelines apply to energy resources.	
Geology and Soils	
Federal	
Farmland Protection Policy Act of 1981 (7 U.S.C. §§ 4201(c)(1)(A), (B), and (C))	Minimizes the extent to which federal programs contribute to the unnecessary and irreversible conversion of farmland to nonagricultural uses. Addresses prime and unique farmland and farmland of statewide or local importance.
State	
No state statutes, regulations, or guidelines apply to geology and soils.	
Local	
No local statutes, regulations, or guidelines apply to geology and soils.	
Socioeconomics	
Federal	
Uniform Relocation Assistance and Real Property Acquisition Policies Act (42 U.S.C. § 61)	Encourages and expedites the acquisition of real property by agreements with owners, to avoid litigation and relieve congestion in the courts, to assure consistent treatment for owners in the many federal programs, and to promote public confidence in federal land acquisition practices.
State	
South Carolina Eminent Domain Procedure Act, Title 28 Chapter 2, South Carolina Code of Laws	Provides the eminent domain laws of the state.
Local	
No local statutes, regulations, or guidelines apply to socioeconomic resources.	

Regulation, Statute, Guideline	Explanation
Environmental Justice	
Federal	
Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low Income Populations	Directs federal agencies to identify and address disproportionately high and adverse human health and environmental effects of its programs, policies, and activities on minority and low-income populations.
Council on Environmental Quality Environmental Justice Guidance Under the National Environmental Policy Act	Provides guidance to assist federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and addressed.
State	
No state statutes, regulations, or guidelines apply to environmental justice communities.	
Local	
No local statutes, regulations, or guidelines apply to environmental justice communities.	
Notes:	
^a A water of the United States is considered a jurisdictional surface water or wetland under the CWA; the regulatory definition is found at 33 C.F.R. § 328.3(a), and further guidance is found in the USEPA/USACE Memorandum “Clean Water Act Jurisdiction Following the U.S. Supreme Court’s Decision in <i>Rapanos v. United States & Carabell v. United States</i> .” Any surface water not meeting this definition is considered non-jurisdictional, and therefore has no statutory protection under the CWA.	
OEA = Office of Environmental Analysis; C.F.R. = Code of Federal Regulations; FHWA = Federal Highway Administration; U.S.C. = United States Code; NPDES = National Pollutant Discharge Elimination System; NFIP = National Flood Insurance Program; NMFS = National Marine Fisheries Service; FRA = Federal Railroad Administration; OSHA = Occupational Safety and Health Administration; FTA = Federal Transit Administration; NHPA = National Historic Preservation Act; ACHP = Advisory Council on Historic Preservation; NRCS = Natural Resources Conservation Service; USDOT = U.S. Department of Transportation; USEPA = U.S. Environmental Protection Agency; NAAQS = National Ambient Air Quality Standards; NEPA = National Environmental Policy Act; CWA = Clean Water Act; USACE = U.S. Army Corps of Engineers	

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No references.

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