



U.S. Department
of Transportation
**Federal Highway
Administration**

South Carolina

December 22, 2016

1835 Assembly Street, Suite 1270
Columbia, South Carolina 29201
803-765-5411
803-253-3989

In Reply Refer To:
HDA-SC

Mr. Chad Long
NEPA Division Manager
South Carolina Department of Transportation (SCDOT)
955 Park Street, P.O. Box 191
Columbia, South Carolina 29202

Dear Mr. Long:

The FHWA has received your letter requesting a Finding of No Significant Impact (FONSI) determination for the proposed US21 Bridge Replacement over the Harbor River in Beaufort County, South Carolina (Federal Project No. P026862). Based on the information provided to complete the environmental process the FHWA finds that the project will have no significant impacts; therefore a FONSI determination is justified. Please proceed accordingly with the publication of the notice of availability of location and preliminary design approval and availability of the FONSI. The final documentation is to be made available to the public upon request. A notice of the FONSI approval shall be sent to the affected units of Federal, State, and local governments. A notice shall also be sent to the State inter-governmental review contacts established under Executive Order 12372.

By our adoption of the FONSI and completion of the public comment/hearing requirements of 23 U.S.C. 128, the SCDOT is authorized to proceed with further project development. Please address any questions to Mr. J. Shane Belcher at jeffrey.belcher@dot.gov or 803-253-3187.

Sincerely,

(for) Emily O. Lawton
Division Administrator

Enclosure

December 22, 2016

Ms. Emily O. Lawton
Division Administrator
Federal Highway Administration
1835 Assembly St., Suite 1270
Columbia, South Carolina 29201

SUBJECT: Request for a Finding of No Significant Impact Determination
Proposed US 21 Bridge Replacement over the Harbor River in Beaufort County,
South Carolina (Project ID: P027114)

Dear Ms. Lawton:

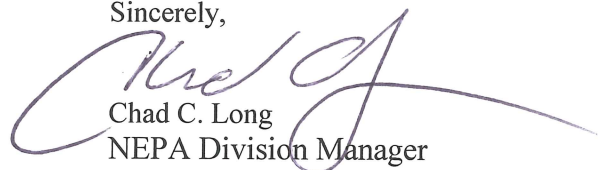
The Department received approval of an Environmental Assessment (EA) on the above referenced project from the Federal Highway Administration (FHWA) on September 19, 2016. The approved document was made available for review in accordance with 23 CFR 771.110(d) and distributed to the resource and regulatory agencies.

Following availability of the environmental document, a Design Public Hearing was duly advertised by the SCDOT via the *The Island Packet/Beaufort Gazette* on October 31, 2016 and subsequently conducted on Tuesday November 15, 2016 at the Lady's Island Elementary School, 73 Chowan Creek Bluff, Beaufort, South Carolina. Approximately 57 interested individuals were in attendance, of which 15 were minorities – 14 white females and one black female. The public hearing certification package is attached for your review and records.

Written comments were received at the public hearing or during the subsequent 15-day comment period from a total of 17 people. A copy of these comments and the Department's responses are included in the attached public hearing certification package.

Based on the administrative and environmental documentation to date, it is the Department's recommendation that the project be processed as a Finding of No Significant Impact (FONSI). Please contact me should you require additional information.

Sincerely,


Chad C. Long
NEPA Division Manager

Enclosures

cc: Mr. Tyke Redfearn, P.E.



Project ID: <input style="width: 85%;" type="text" value="P026862"/>	County: <input style="width: 85%;" type="text" value="Beaufort"/>	District: <input style="width: 85%;" type="text" value="District 6"/>	Doc Type: <input style="width: 85%;" type="text" value="EA"/>	Total # of Commitments: <input style="width: 85%;" type="text" value="20"/>
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Project Name:

The Environmental Commitment **Contractor Responsible** measures listed below **are to be included in the contract and must be implemented**. It is the responsibility of the Program Manager to make sure the Environmental Commitment **SCDOT Responsible** measures are adhered to. If there are questions regarding the commitments listed please contact:

CONTACT NAME: Chad Long **PHONE #:** (803) 737-1396

ENVIRONMENTAL COMMITMENTS FOR THE PROJECT

Water Quality	Responsibility: <input style="width: 85%;" type="text" value="CONTRACTOR"/>
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The contractor will be required to minimize possible water quality impacts through implementation of construction BMPs, reflecting policies contained in 23 CFR 650B and the Department's Supplemental Specifications on Seeding and Erosion Control Measures (Latest Edition). Other measures including seeding, silt fences, sediment basins, etc., as appropriate, will be implemented during construction to minimize impacts to Water Quality. See Section 5.3 of Environmental Assessment (EA).

Stormwater	Responsibility: <input style="width: 85%;" type="text" value="CONTRACTOR"/>
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Stormwater control measures, both during construction and post-construction, are required for SCDOT projects with land disturbance and/or constructed in the vicinity of 303(d), TMDL, ORW, tidal, and other sensitive waters in accordance with the SCDOT's MS4 Permit. The selected contractor would be required to minimize potential stormwater impacts through implementation of construction best management practices, reflecting policies contained in 23 CFR 650 B and SCDOT's Supplemental Specifications on Seed and Erosion Control Measures (latest edition). See Section 5.3 of EA.

Floodplains	Responsibility: <input style="width: 85%;" type="text" value="CONTRACTOR"/>
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The selected contractor will send a set of final plans and request for floodplain management compliance to the local County Floodplain Administrator. See Section 5.6 of EA.

Project ID : P026862

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Migratory Bird Treaty Act (all bridge and box culvert projects)

Responsibility: SCDOT

The Department will comply with the Migratory Bird Treaty Act of 1918 in regard to the avoidance of taking of individual migratory birds and the destruction of their active nests. At least four (4) weeks prior to construction/demolition of the bridges, the Resident Construction Engineer (RCE) will coordinate with SCDOT Environmental Services Compliance Office to determine if there are any active nests on the bridge. After this coordination, it will be determined whether construction/demolition can begin. After construction/demolition has begun, measures can be taken to prevent birds from nesting, such as screens, noise producers, and deterrents etc. If during construction or demolition a nest is observed on the bridge that was not discovered during the biological surveys, the contractor will cease work and immediately notify the RCE, who will contact SCDOT Environmental Services Compliance Office. SCDOT biologists will determine whether the nest is active and the species utilizing the nest. After this coordination, it will be determined whether construction/demolition can resume or whether a temporary moratorium will be put into effect. All costs for determining the need for, the placing of deterrents, and applying of all special actions including, but not limited to, removing nests and any costs associated with conducting work in compliance with the Migratory Bird Treaty Act as stated herein will not be paid for separately but will be considered to have been included with other items of work. See Section 5.8 of EA.

Individual Permit

Responsibility: SCDOT

Impacts to jurisdictional waters will be permitted under a Department of the Army Section 404 permit from the U.S. Army Corps of Engineers. Based on preliminary design, it is anticipated that the proposed project would be permitted under an Individual Army Corps of Engineers Permit (IP). SCDOT will provide the Army Corps with information regarding any proposed demolition activities during the Section 404 permitting process. The required mitigation for this project will be determined through consultation with the USACE and other resource agencies. See Section 5.5 of EA.

Noise

Responsibility: SCDOT

SCDOT will inform local planning officials of future, generalized noise levels expected to occur in the project vicinity after FHWA has made a final decision on the Environmental document. See Section 5.14 of EA.

Project ID: P026862

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ENVIRONMENTAL COMMITMENTS FOR THE PROJECT

USTs/Hazardous Materials

Responsibility: SCDOT

If avoidance of hazardous materials is not a viable alternative and soils that appear to be contaminated are encountered during construction, the South Carolina Department of Health and Environmental Control (SCDHEC) will be informed. Hazardous materials will be tested and removed and/or treated in accordance with the United States Environmental Protection Agency and the SCDHEC requirements, if necessary. See Section 5.15 of EA.

Cultural Resources

Responsibility: CONTRACTOR

The contractor and subcontractors must notify their workers to watch for the presence of any prehistoric or historic remains, including but not limited to arrowheads, pottery, ceramics, flakes, bones, graves, gravestones, or brick concentrations during the construction phase of the project, if any such remains are encountered, the Resident Construction Engineer (RCE) will be immediately notified and all work in the vicinity of the discovered materials and site work shall cease until the SCDOT Archaeologist directs otherwise. See Section 5.16 of EA.

Displacements

Responsibility: SCDOT

The SCDOT will acquire all of new right-of-way and process relocations in compliance with the Uniform Relocation Assistance and Real Property Acquisition policies Act of 1970, as amended (42 U.S. C. 460 et seq.). The purpose of these regulations is to ensure that owners of real property to be acquired for Federal and federally-assisted projects are treated fairly and consistently, to encourage and expedite acquisition by agreements with such owner, to be minimize litigation and relieve congestion in the courts, and to promote public confidence in Federal and federally-assisted land acquisition programs. See Section 5.18 of EA.

Project ID: P026862

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ENVIRONMENTAL COMMITMENTS FOR THE PROJECT

Essential Fish Habitat

Responsibility: **CONTRACTOR**

The selected contractor will be required to minimize impacts of siltation and erosion through implementation of Best Management Practices (BMPs). The contractor would develop an EFH Mitigation Plan during the Section 404 phase of the project. SCDOT will require the contractor to reduce the amount of permanent fill in salt marsh habitat from the currently proposed 3.032 acres. SCDOT will require the contractor to remove some portion of the existing causeway and grade the removal areas to match elevations in adjacent marsh where marsh vegetation occurs. SCDOT commits to mitigating for the unavoidable impacts to EFH (shellfish habitat) by implementing a mitigation plan that would restore at least 0.1 acre of oyster habitat. SCDOT will coordinate the mitigation plan and final design changes with FHWA and NOAA-NMFS. See Section 5.11 of EA.

Non-standard Commitment

Responsibility: **SCDOT**

Other Environmental Permits

The SCDOT will obtain authorization for the project construction activities under the SCDHEC National Pollutant Discharge Elimination System (NPDES) program, pursuant to Section 402 of the Clean Water Act. The NPDES permit application will include a Stormwater Pollution Prevention Plan.

The construction of the proposed Harbor River Bridge will require a USCG Bridge Permit in compliance with Section 9 of the Rivers and Harbors Act of 1899 and the General Bridge Act of 1946. Permit coordination will be carried out with the U.S. Coast Guard for the design and construction of the Harbor River Bridge. See Section 5.5 of EA.

Non-standard Commitment

Responsibility: **SCDOT**

Bald Eagle

Qualified personnel hired by the contractor would survey the project area for bald eagle nests prior to initiating construction. Construction personnel would be qualified to identify eagles and nests, and instructed to report any sightings of potential nests to SCDOT. If a bald eagle nest is identified within 660 feet of the project prior to or during construction, SCDOT would re-initiate consultation with the USFWS in accordance with the BGEPA and MBTA and would adhere to the USFWS National Bald Eagle Management Guidelines. The contractor will work with the SCDOT and USFWS to develop a Bald Eagle Zone Management Plan that would restrict construction work within 660 feet of the active nest during the nesting season, where practicable, and require the contractor to minimize noise, lighting, and night time work within the management zone. See Section 5.9 of the EA.

Project ID: P026862

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ENVIRONMENTAL COMMITMENTS FOR THE PROJECT

Non-standard Commitment

Responsibility: **CONTRACTOR**

Stormwater runoff

Stormwater runoff from the proposed bridge and roadway would be treated prior to discharge into the waters surrounding Harbor River. Untreated stormwater runoff would not be discharged within 1,000 feet of a shellfish bed. SCDOT would submit a drainage plan to SCDHEC and OCRM prior to finalizing construction plans. See Section 5.3 of EA.

Non-standard Commitment

Responsibility: **CONTRACTOR**

Section 4(f)

If construction, including materials staging or stockpiling, would result in partial or full temporary closure of the boat ramp, the contractor would be responsible for coordinating the 4(f) use with the SCDOT, FHWA, and Beaufort County. See Section 5.17 of EA.

Non-standard Commitment

Responsibility: **CONTRACTOR**

Threatened and Endangered Species

Equipment and materials used during the construction of the bridge would not obstruct or impede passage through more than 50 percent of the channel. During construction, the potential effect of in-water noise impacts would be minimized through the use of vibratory hammers, where practicable, and "slow starts", where pile-driving ramps up slowly in an effort to deter marine species from the work area. The contractor would stop in-water work at night for a minimum of 8 hours.

If explosives are used for demolition, the contractor would be required to hire qualified personnel to evaluate the potential effect on protected species to submit to SCDOT. SCDOT would be responsible for re-initiating consultation with USFWS and NOAA-NMFS. The contractor would develop a blasting plan to include a marine wildlife watch plan to submit to SCDOT. See Section 5.10 of EA.

Project ID : P026862

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ENVIRONMENTAL COMMITMENTS FOR THE PROJECT

Non-Standard Commitment

Responsibility: **CONTRACTOR**

Threatened and Endangered Species - Sea Turtles

The contractor would implement NOAA-NMFS *Sea Turtle and Smalltooth Sawfish Construction Conditions*. These conditions can be found in Appendix H of the EA. All environmental commitments, guidelines, and conditions will be outlined in Design Build contract. The proposed bridge would not contain permanent roadway lighting. During the sea turtle nesting season (May 1 through October 31), the contractor would restrict in-water work at night to the maximum extent practicable. Nighttime is defined as 30-minutes after sunset to 30-minutes before sunrise.

Between May 1st and October 31st (turtle nesting season), the contractor would use the minimum number and lowest wattage of lights that are necessary for construction. Lights would be positioned to focus on the work area to minimize the amount of light on the water surface. The contractor would turn off all lights when not needed during construction. See Section 5.10 of EA.

Non-Standard Commitment

Responsibility: **CONTRACTOR**

Threatened and Endangered Species - West Indian (Florida) Manatees

The contractor would adhere to the established USFWS *Manatee Protection Guidelines*. See Section 5.10 of EA and Appendix G of EA. All environmental commitments, guidelines, and conditions will be outlined in Design Build contract.

Non-Standard Commitment

Responsibility: **CONTRACTOR**

A Memorandum of Agreement (MOA) has been executed between FHWA, SCDOT, SHPO, and South Carolina Department of Parks, Recreation, and Tourism (SCPRT). See Section 5.16 of EA and Appendix M. FHWA and SCDOT will ensure that the following stipulations are implemented:

- To mitigate adverse effects to the Harbor River Bridge, SCDOT will work with the SHPO, SCPRT, and the Hunting Island State Park manager to develop and fund a public interpretation plan related to the impact of Depression-era work programs on Hunting Island State Park and its associated landscape. The interpretation plan should include elements that relate to the construction of the US 21 roadway and bridge over Harbor River as well as the history of the Civilian Conservation Corps at Hunting Island State Park.
- The draft public interpretation plan shall be developed within 6 months after the execution of the MOA. Copies of the draft interpretation plan shall be provided to the FHWA, SHPO, and Hunting Island State Park Manager for review and comment. A final public interpretation plan that incorporates comments received from FHWA, SHPO, and the Hunting Island State Park Manager shall be developed within 60 days after receipt of comments.
- The components of the interpretation plan shall be developed and installed at the Hunting Island State Park within one year of the production of the final interpretation plan.
- Bridge Placard: SCDOT will remove the existing bridge placard on the US 21 Bridge and provide it to SCPRT to be used as part of the interpretive plan developed for the park.
- SCDOT will consider options for reuse of the bridge through advertisement, relocation, or salvaging a section of the bridge for display within Hunting Island State Park.

Project ID: P026862

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ENVIRONMENTAL COMMITMENTS FOR THE PROJECT

Non-Standard Commitment

Responsibility: **CONTRACTOR**

Marine Mammals (Bottlenose Dolphins and West Indian Manatees)

The contractor would adhere to the established USFWS *Manatee Protection Guidelines*. Guidelines can be found in Appendix G of EA. All environmental commitments, guidelines, and conditions will be outlined in Design Build contract. Equipment and materials used during the construction of the bridge would not obstruct or impede passage through more than 50 percent of the channel. During construction, the potential effect of in-water noise impacts would be minimized through the use of vibratory hammers, where practicable, and "slow starts", where pile-driving ramps up slowly in an effect to deter marine species from the work area. The contractor would stop in-water work at night for a minimum of 8 hours. If explosives are used for demolition, the contractor would be required to hire qualified personnel to evaluate the potential effect on protected species to submit to SCDOT. SCDOT would be responsible for re-initiating consultation with USFWS and NOAA-NMFS. The contractor would develop a blasting plan to include a marine wildlife watch plan to submit to SCDOT. See Section 5.12 of EA.

Non-Standard Commitment

Responsibility: **CONTRACTOR**

Hazardous Materials

A survey for asbestos containing materials (ACM) and lead-based paint(LBP) will be conducted on the US 21 bridge over the Harbor River. Survey findings and the potential removal of ACM or LBP would be coordinated with the SCDHEC Bureau of Air Quality, Asbestos Section prior to demolition of existing bridge. See Section 5.15 of EA.

Responsibility:





Finding of No Significant Impact

US 21 Bridge Replacement over Harbor River
(SCDOT Project ID P026862)

Beaufort County, South Carolina

December 22, 2016



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Contents

1	Type of Action	3
2	Project Description	3
3	Purpose of and Need for Project.....	5
4	Revisions since Approval of the EA	5
5	Alternatives Considered	5
	5.1 Alternatives Considered but Eliminated	6
	5.2 Reasonable Build Alternatives	6
	5.3 Preferred Alternative	11
6	Navigation.....	12
7	Summary of Probable Impacts of the Project on the Environment	13
	7.1 Land Use	13
	7.2 Farmlands	14
	7.1 Wetlands and Waters of the U.S.	14
	7.2 Water Quality.....	15
	7.3 Environmental Permits	16
	7.4 Floodplains	16
	7.5 Wildlife and Plant Communities	17
	7.6 Migratory Birds	17
	7.7 Bald Eagle	18
	7.8 Threatened and Endangered Species	18
	7.9 Essential Fish Habitat.....	22
	7.10 Marine Mammals.....	22
	7.11 Air Quality	24
	7.11.1 Greenhouse Gases and Climate Change	24
	7.12 Noise	27
	7.13 Hazardous Waste and Underground Storage Tanks	28
	7.14 Cultural Resources.....	28
	7.15 Section 4(f) and Section 6(f) Resources	30
	7.16 Displacements.....	31
	7.17 Social and Economic Conditions.....	31
	7.18 Visual Resources	31
	7.19 Indirect and Cumulative Impacts.....	32
8	Comments and Coordination.....	34
	8.1 Public Involvement	34
	8.1.1 Public Information Meeting.....	34
	8.1.2 Harbor Island Drop-In Community Meeting.....	34
	8.1.3 Public Hearing.....	35
	8.2 Agency Coordination	36
	8.2.1 Letter of Intent	36
	8.2.2 Meetings and Coordination	36

9 Basis for Finding of No Significant Impact 36

Tables

Table 1. Environmental Matrix 10
Table 2. Conservation measure summary 21
Table 3. Project CO₂e emissions and fuel cycle emissions 25
Table 4. Annualized energy use (mmBTUs) (per year over 60 years) 26
Table 5. Annual GHG emissions (MT CO₂e)^a (per year over 60 years) 26

Figures

Figure 1. Project Location Map 4
Figure 2. Reasonable build alternatives 8
Figure 3. Typical section of proposed bridge 12

Appendices

- Appendix A –Traffic Study
- Appendix B – GHG Inputs
- Appendix C – Public Hearing Certification Package

1 Type of Action

This is a Federal Highway Administration (FHWA) Administrative Action, Finding of No Significant Impact. FHWA has determined that this project will have no significant impact on the human and natural environment. This Finding of No Significant Impact (FONSI) is based on the Environmental Assessment (EA) and other supporting information, which have been independently evaluated by the FHWA and determined to adequately and accurately discuss the need, environmental issues, and impacts of the proposed project and appropriate mitigation measures.

The EA provided sufficient evidence and analysis for determining that an Environmental Impact Statement is not required. FHWA takes full responsibility for the accuracy, scope, and content of the EA and other environmental documentation for this project.

To maintain brevity, supporting project information (i.e., background information on the purpose of and need for the project, discussion of the affected environment, a complete description of the anticipated impacts of each preliminary alternative) contained in the EA, dated September 19, 2016 is incorporated by reference.

2 Project Description

The South Carolina Department of Transportation (SCDOT), in coordination with FHWA, proposes to replace and realign an approximately ½-mile-long bridge on US Route 21 (US 21) over the Harbor River in Beaufort County. SCDOT evaluated a corridor that is approximately 2 miles long and 1,200 feet wide, centered on the existing US 21 between St. Helena Island and Harbor Island (Figure 1). The project involves the replacement of the US 21 bridge, as well as the construction of new approach roadways.

FHWA is the lead federal agency for the project; the U.S. Coast Guard (USCG) is a cooperating agency. As federal agencies, FHWA and the USCG must consider a project's potential impacts to the human and natural environment to comply with the National Environmental Policy Act of 1969 (NEPA), as amended.

The bridge replacement is listed in the 2017-2022 Statewide Transportation Improvement Program (STIP). The project would be funded by FHWA through the Federal-aid Highway Program and state funding. The previous STIP allocated \$4,340,000 for engineering design and environmental analysis in fiscal year 2014 and the current STIP allocated \$56,634,000 for construction, beginning in fiscal year 2017.



Figure 1. Project Location Map

3 Purpose of and Need for Project

The purpose of the project is to correct structural and functional deficiencies of the US 21 bridge over the Harbor River and to upgrade the bridge and its approaches to current design standards. During recent SCDOT inspections, the existing bridge was found to be structurally deficient and functionally obsolete. The existing bridge is currently load restricted to a maximum of 26 tons gross vehicle weight. The existing bridge section does not meet current design standards for rural arterial roads. Sufficiency rating is a percentage in which 100 represents an entirely sufficient bridge and 0 represents an entirely insufficient or deficient bridge. The existing US 21 bridge has been inspected by SCDOT and received a sufficiency rating of 44.2.

The project is needed because US 21 provides the only vehicle access between mainland Beaufort County and Harbor Island, Hunting Island, and Fripp Island. US 21 also serves as a designated hurricane evacuation route for coastal Beaufort County. SCDOT's maintenance efforts for the existing bridge are ongoing and will continue until the proposed bridge is completed and the existing bridge is no longer needed for transportation.

4 Revisions since Approval of the EA

Since signature of the EA, Hurricane Matthew affected the project area. Qualified personnel visited the project area on November 15, 2016 and the raptor nest that was at US 21 and Harbor Drive was no longer present. The environmental commitment regarding bald eagles has changed since signature of the EA.

In the EA, the lower portion of the proposed bridge barrier was described as concrete, with the upper portion constructed of metal rail. This design criterion has been changed to allow for a variety of materials and railing types, as long as the barrier height is a minimum of 42 inches high and meets SCDOT design criteria.

On August 2, 2016, the Council on Environmental Quality (CEQ) issued Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews. This analysis has been included in the FONSI.

5 Alternatives Considered

SCDOT evaluated five reasonable "build" alternatives that include shifting the US 21 bridge to the north or south side of the existing route. The "No-build" alternative, which consists of SCDOT making no improvements, was considered as a baseline for comparison.

5.1 Alternatives Considered but Eliminated

During project development, SCDOT considered several alternatives that were eliminated from further review during the EA. Alternatives considered but eliminated from further review include the following:

- closing the bridge;
- rehabilitation of the existing bridge;
- replacing the bridge at its current location and using a temporary bridge for vehicle access;
- replacing the existing causeway and bridge;
- constructing a new bridge to Hunting or Fripp Island;
- constructing a tunnel between the existing causeway and Harbor Island.

SCDOT also considered replacing the existing swing-span bridge with a similar bridge including a movable main-span. Constructing a movable-span bridge was eliminated from further review because of the higher construction, operations and maintenance (O&M) costs, and potential constructability issues. Additional details about alternatives considered but eliminated can be found in Appendix C of the EA.

5.2 Reasonable Build Alternatives

SCDOT identified five reasonable build alternatives that involved constructing US 21 with a new fixed-span bridge on parallel alignments to the existing bridge. All of the reasonable build alternatives would shift the proposed bridge to either the north or south and would be constructed nearly parallel to the existing bridge. During construction, all of the reasonable build alternatives would allow the existing bridge to remain open to vehicles and the existing swing-span to operate for boats.

During the initial alternatives development, three reasonable build alternatives were identified and presented to the public during a public information meeting on September 15, 2015.

- Alternative 1, located approximately 122 feet to the north
- Alternative 2, located approximately 200 feet to the south
- Alternative 3, located approximately 65 feet to the south

Based on concerns brought forward by the Harbor Key community in regards to noise and visual impacts, Alternative 1 was modified into Alternative 1A and 1B to minimize potential impacts on the Harbor Key community. Studies were conducted during the alternatives development process that identified environmentally sensitive areas, including essential fish habitat (EFH) and a tidal creek on the southeast side of the existing bridge. After reviewing these studies, Alternative 2 was refined into two alternatives (Alternative 2A and 2B) to shift the proposed bridge and minimize potential impacts to these resources.

Based on these modifications, five reasonable build alternatives were identified and considered (Figure 2). The five reasonable build alternatives were presented at the

Harbor Island Drop-In Community meeting on May 20, 2016 and the public hearing on November 15, 2016.

Each reasonable build alternative would result in no relocations of homes or businesses, and would have no effects on hazardous materials sites, archaeological sites, or noise levels. All of the reasonable build alternatives would result in an impact to the historic swing-span bridge. Each build alternative would also require the same permits, including a U.S. Army Corps of Engineers (USACE) Individual Permit and a USCG Bridge Permit. Therefore, these resources were not deciding factors in the selection of the Preferred Alternative.

The reasonable build alternatives vary in their effects on critical area (salt marsh), EFH, shellfish restoration areas, utilities, estimated cost, and right-of-way. SCDOT considered the alternatives' potential impact on the Open Land Trust conservation easement as part of the right-of-way effects.

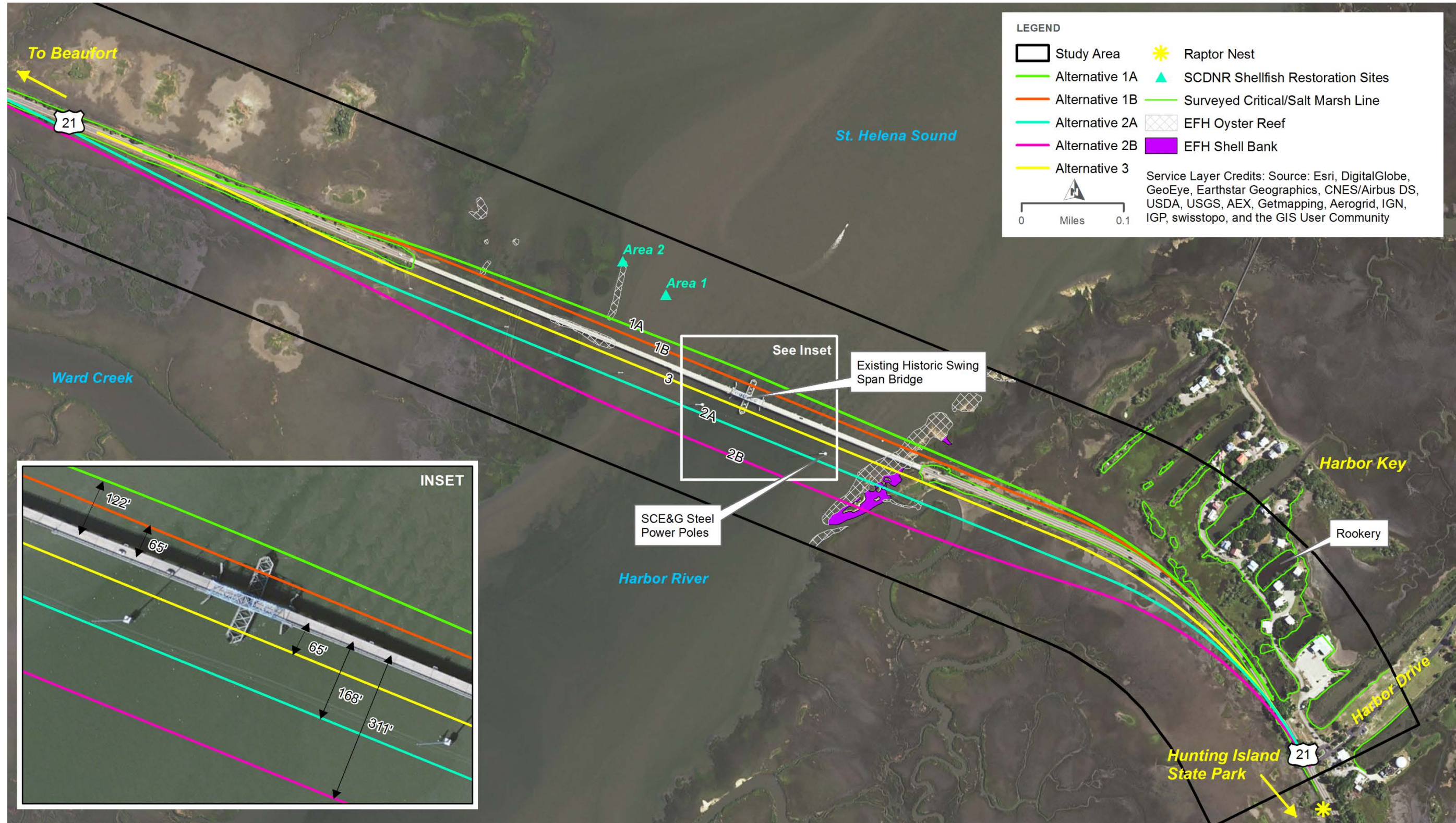


Figure 2. Reasonable build alternatives

Alternative 1A involves construction of a new bridge approximately 122 feet north of the existing alignment. The length of the proposed bridge and roadway for Alternative 1A is 7,206 feet. Alternative 1A would impact 6.2 acres of salt marsh and EFH, which are greater than those proposed under Alternative 1B. Alternative 1A would also impact a South Carolina Department of Natural Resources' (SCDNR) Shellfish Restoration Area. Alternative 1A would be the closest alternative to the Harbor Key community and, based on feedback from the public information meeting, raised concerns from the community about potential visual effects and noise impacts. Therefore, Alternative 1A was not selected as the Preferred Alternative.

Alternative 1B involves construction of a new bridge approximately 65 feet north of the existing alignment. The length of the proposed bridge and roadway for Alternative 1B is 7,198 feet. Alternative 1B has the least amount (5.9 acres) of salt marsh and EFH impacts as compared to the other build alternatives. Efforts to minimize visual effects to the Harbor Key community were undertaken by shifting Alternative 1 closer to the existing bridge and away from Harbor Key. Alternative 1B was selected as the Preferred Alternative because it meets the Purpose and Need of the proposed project and minimizes impacts to both the human and natural environments.

Alternative 2A involves construction of a new bridge approximately 168 feet south of the existing alignment. The length of the proposed bridge and roadway for Alternative 2A is 8,556 feet. Alternative 2A would impact 13.9 acres of salt marsh and EFH, which is greater than Alternatives 1A, 1B, and 3. Therefore, Alternative 2A was not selected as the Preferred Alternative.

Alternative 2B involves construction of a new bridge approximately 311 feet south of the existing alignment. The length of the proposed bridge and roadway for Alternative 2B is 8,928 feet. Alternative 2B would impact 15.5 acres of salt marsh and EFH, which is the most acreage of all the build alternatives. While the Alternative 2B would be the farthest from the Harbor Key community, the proposed bridge would have a visual effect on the community and may block views to the south of Harbor River. Alternative 2B is also expected to be the most expensive to construct, with an expected construction cost of \$49.7 million. Therefore, Alternative 2B was not selected as the Preferred Alternative.

Alternative 3 involves construction of a new bridge approximately 65 feet south of the existing alignment. The new bridge would be constructed between the existing bridge and SCE&G powerlines. The length of the proposed bridge and roadway for Alternative 3 is 7,398 feet. Alternative 3 would result in greater impacts (7.6 acres) to salt marsh and EFH compared to Alternative 1A and 1B. Based on a constructability review, construction of Alternative 3 would be constrained by its proximity between the existing bridge and SCE&G powerlines. The construction of Alternative 3 would require either relocation of the SCE&G powerlines at SCDOT's expense, or the use of nonstandard construction methods. Nonstandard construction methods may include top-down construction or girder launching, which are also typically more expensive than standard methods. Therefore, Alternative 3 was not selected as the Preferred Alternative.

The results of the preliminary impacts analysis for the five reasonable alternatives and the No-build Alternative are summarized in Table 1.

Table 1. Environmental Matrix

	No-build	Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B	Alternative 3
Offset from the existing bridge (feet)	0	122 (North)	65 (North)	168 (South)	311 (South)	65 (South)
Right-of-way acquisition (acres)	0	5.1	4.2	7.9	6.3	5.7
Farmland	None	None				
Fill in salt marsh/critical area (acres)	0	6.2	5.9	13.9	15.5	7.6
Permits	0	USACE Individual Permit; OCRM ^a Critical Area Permit; SCDHEC ^a 401 Water Quality Certification, USCG Bridge Permit				
Floodplains	No effect	Yes, No Adverse Effect Anticipated				
Protected species	No effect	May affect, Not likely to adversely affect, Atlantic and shortnose sturgeon; West Indian (Florida) manatee; green, Kemp's ridley, and loggerhead sea turtles; piping plover; wood storks; red knots; and bald eagles.				
Essential Fish Habitat (Direct Impacts, in Acres) ^a	0	4.0	3.7	8.5	9.7	4.9
SCDNR shellfish restoration areas	0	Impact to Area 2	0	0	0	0
Impacted noise receivers	0	0				
Hazardous materials sites	0	0				
Archaeological site 38BU113	No effect	No Effect				
Historic Harbor River bridge	Continued disrepair	Adverse Effect; see Programmatic 4(f) Evaluation and Section 106 MOA ^d in Section 7.0 of EA				
Beaufort County boat ramp	No effect	No adverse effect				

	No-build	Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B	Alternative 3
Relocations	0	0				
Viewshed	No effect	Visual Effect on Harbor Key Community (see Section 6.18)				
Project cost (\$ millions)						
Preliminary engineering (10% of construction costs)		4.65	4.59	4.84	4.97	4.73
Right-of-way		0.12	0.1	0.15	0.14	0.11
Construction		46.5	45.9	48.4	49.7	47.3
CE&I (10% of construction costs)		4.65	4.59	4.84	4.97	4.73
SCE&G powerline relocation (approx.)						1.00
Total		55.92	55.18	58.23	59.78	57.87

Notes:

- a. Ocean and Coastal Resource Management
- b. South Carolina Department of Health and Environmental Control
- c. See Section 6.9 for impacts to specific EFH habitats
- d. Memorandum of Agreement

5.3 Preferred Alternative

FHWA and SCDOT selected Alternative 1B as the Preferred Alternative because it meets the purpose and need of the project and minimizes impacts to the human and natural environments. As a result, further detailed analyses of transportation and environmental factors were conducted on Alternative 1B.

The design and proposed posted speed limit of the proposed bridge and roadway is 55 mph, which would decrease to the existing 45 mph near Harbor Drive. The proposed bridge would be constructed of reinforced concrete and would have one 12-foot-wide travel lane in each direction, and a 10-foot-wide shoulder in each direction of travel (Figure 3). The width of the proposed bridge would be approximately 47 feet. No permanent lighting would be installed on the proposed bridge roadway. The proposed

bridge would contain navigational lights in accordance with 33 CFR § 118 and as approved by the USCG.



Figure 3. Typical section of proposed bridge

The proposed roadway approaches would have 4-foot-wide paved shoulders to match the existing roadway conditions on US 21. During the EA, a 10-foot-wide paved shoulder was proposed on US 21 south bound between the bridge and Harbor Drive. This design has been changed; the 10-foot-wide shoulder on the proposed bridge would now taper to a 4-foot-wide shoulder on this segment of US 21 southbound. Portions of the existing upland causeway may remain.

The proposed right-of-way on the western side of the bridge would match the present right-of-way of 100 feet. On the eastern side of the bridge, the proposed right-of-way would taper from 100 feet, to encompass the new causeway, to the existing 50-foot-wide right-of-way near Harbor Drive.

The proposed bridge would not include dedicated bicycle or pedestrian facilities, but would have a 10-foot-wide shoulder for use as an emergency lane. Cyclists and pedestrians would be able to use the 10-foot-wide shoulder on the new bridge. The proposed bridge would have a 42-inch-high barrier on the outside of each shoulder.

Avoidance and minimization of impacts to the human and natural environments has been considered throughout the project development process. Upon selection of the Preferred Alternative, the preliminary design plans were evaluated further for potential avoidance and minimization measures. Additional environmental analyses were conducted on the preferred alignment, including a detailed noise impact assessment.

6 Navigation

The proposed bridge would provide a 65-foot vertical clearance through the main span at mean high water (MHW). The proposed bridge would provide a 120-foot horizontal

clearance between the piers through the main span, with a proposed 90-foot horizontal clearance between the fenders.

SCDOT and FHWA developed the proposed bridge clearances through coordination with the USCG. A Navigation Study was prepared to evaluate the current and prospective navigation on the Harbor River at US 21. SCDOT conducted multiple public and agency meetings, interviewed local marine companies, distributed questionnaires, reviewed bridge opening logs, and documented vessel traffic using a real-time camera system. Based on the Navigation Study, SCDOT determined that the project design would meet the reasonable needs of navigation for this section of the Harbor River. USCG had no objections to SCDOT developing alternatives using the proposed navigation clearances determined by the Navigation Study. USCG will provide additional review and permitting decision during the application for an USCG Bridge Permit.

During construction of the new bridge, SCDOT would ensure that there would be no unreasonable interference with navigation. The vertical and horizontal clearance of the new bridge over the river's channel would remain sufficient to maintain river navigation by vessels during construction.

Upon completion of the new bridge and the shifting of traffic onto the new bridge, the existing bridge would be removed in its entirety. The piers and substructures of the existing bridge would be removed to the natural river bottom in accordance with SCDOT standard specifications (Section 202.4.2.4).

7 Summary of Probable Impacts of the Project on the Environment

This section includes a discussion on the probable beneficial and adverse social, economic, and environmental effects of the Preferred Alternative on the surrounding human and natural environment and describes the measures proposed to mitigate potential adverse impacts. An expanded discussion regarding the probable impacts on the environment is included in Chapter 5 of the EA. Environmental studies conducted on these alternatives indicate the absence of any significant impacts by the project on the surrounding environment.

7.1 Land Use

The study area consists of 338 acres bordering US 21, which connects St. Helena Island to Harbor Island in Beaufort County. The area surrounding the existing highway is predominantly marsh, creeks, shallows, and mudflats. Developments in the study area include a commercial fishing and shrimping dock on St. Helena Island, a boat ramp with parking on Butcher's Road, and the entrance to the Harbor Island and Harbor Key communities on Harbor Drive. Power lines owned by SCE&G run parallel to US 21 on the northern side of the causeway, crossing US 21 to the south adjacent to the existing bridge. The entrance to Hunting Island State Park is located approximately 0.8 mile east of the study area. The Open Land Trust maintains conservation easements in the eastern portion of the study area on property owned by Harbor Island Owners Association.

The proposed project would require acquisition of surrounding property for right-of-way; however, these right-of-way acquisitions would not impact the County's future land use considerations. The current bridge would remain in place and operational until completion of the project. The proposed project would benefit surrounding land uses by providing a connection between St. Helena Island and Harbor Island that meets SCDOT design standards.

The proposed bridge would not include additional travel lanes and would not promote development that conflicts with the rural, neighborhood existing mixed-use, or Cultural Protection Overlay (CPO) Districts. The project is also compatible with the Beaufort County Commercial Fishing Village (CFV) Overlay District because the proposed 65-foot bridge height would accommodate a variety of marine uses on the designated properties. If Gay Fish Company were sold, the bridge height would accommodate most uses allowed under the CFV Overlay District's development guidelines.

The proposed bridge replacement would impact approximately 4.1 acres that is under an Open Land Trust conservation easement. SCDOT coordinated with Open Land Trust during the Letter of Intent (LOI) to obtain a copy of the conservation easement. Impacts to the easement would be processed during right-of-way acquisitions in compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 USC § 4601 et seq.).

7.2 Farmlands

The proposed bridge replacement would not involve any farmland being converted to nonagricultural use. No impacts to lands protected under the Farmland Protection Policy Act are anticipated as a result of this project.

7.1 Wetlands and Waters of the U.S.

The study area is located in the Salkehatchie River Basin and the Salkehatchie Coastal Frontage watershed, designated by the U.S. Geological Survey as Hydrologic Unit Code (HUC) 03050210-01. The watershed consists of the Harbor River, Ward Creek, and a series of inlets that drain directly into the Atlantic Ocean.

Jurisdictional areas within the study area were delineated in June 2015. No freshwater wetlands were identified within the study area; all the wetlands and waters of the U.S. within the study area are considered Critical Area by SCDHEC-OCRM and Section 10 Waters by USACE. The study area contains tidal marsh and tidal open waters, which includes Harbor River, Ward Creek, unnamed tidal creeks, and tidal ponds. In the eastern portion of the study area, tidal open water or marsh areas appear to have been created as a result of excavation during the development of the Harbor Key community. These areas are now saltwater or brackish ponds that are connected to the adjacent tidal marsh through culverts or berm breaches.

Avoidance, Minimization, Mitigation

Replacement of the bridge and approaches would cross tidal wetlands, therefore permanent and temporary impacts to wetlands are unavoidable. All of the proposed build alternatives would impact salt marsh. The Preferred Alternative would result in direct

impacts to approximately 5.9 acres of salt marsh wetlands. This estimate includes permanent and temporary impacts to the proposed right-of-way boundary. Wetland impacts would be refined during final design.

Proposed causeway may be partially replaced by flat slab to reduce fill in the wetlands. Implementing erosion control measures, which include seeding of slopes, silt fences, and sediment basins as appropriate, would also minimize impact to adjacent wetlands. Additional best management practices (BMPs) would be required of the contractor, as needed, to ensure compliance with policies reflected in 23 CFR § 650 B and SCDOT's *Supplemental Specifications on Seeding and Erosion Control Measures*. Reclamation of wetland areas temporarily lost through construction activities would involve returning disturbed areas to their original elevations to the extent practicable and allowing adjacent vegetation to naturally reclaim the area.

Salt marsh is the only wetland type that would be adversely affected by the proposed project. Based on 5.9 acres of wetland impact associated with the proposed project, approximately 80 salt marsh credits would be required as compensatory mitigation for the proposed project.

7.2 Water Quality

Harbor River between St. Helena Sound and Fripp Inlet is classified by SCDHEC as an Outstanding Resource Water (ORW). St. Helena Sound and Ward Creek are classified by SCDHEC as Shellfish Harvesting Waters (SFH), which are tidal saltwaters protected for shellfish harvesting. The SCDHEC water quality monitoring stations within Harbor River and Ward Creek are not listed for impairments. None of the waterbodies in the study area are federally listed as Wild and Scenic rivers or part of the SCDNR State Scenic River Program.

The proposed bridge would be wider and longer than the existing bridge to meet current design standards, which would result in an increase in impervious surface in the study area. An increase in stormwater runoff volume may occur because of the proposed wider roadway. However, traffic capacity is not expected to increase over the "No-build" alternative because the purpose of the project is to replace the existing two-lane bridge with another two-lane bridge. Vehicle-related contaminants in the runoff should not increase as a result of the build alternatives.

Stormwater on the existing bridge flows through deck drains into the Harbor River and surrounding waters. To minimize the potential for water quality impacts, SCDOT is proposing to treat stormwater runoff from the proposed bridge and roadway prior to discharge into waters surrounding Harbor River. Stormwater would not be discharged within 1,000 feet of a shellfish bed. During final design of the proposed bridge, SCDOT would submit a drainage plan to SCDHEC and SCDHEC-OCRM prior to finalizing construction plans.

Siltation and turbidity may occur in the river and creek beds as sediments are disturbed during construction of the bridge pilings. However, this increase would be temporary and would likely dissipate within a few hours of completion of each piling. There is also the potential for erosion of soils from the construction of the new bridge approaches. Direct impacts to water quality as a result of project construction would be limited to the area within the construction limits. The contractor would be required to minimize impacts to

water quality through implementation of construction BMPs reflecting policies contained in 23 CFR § 650 B and SCDOT's *Supplemental Specifications on Seeding and Erosion Control Measures* (November 11, 2008).

Through the use of required BMPs, erosion control methods, the use of SCDOT designated seeding requirements, and by treating stormwater runoff, the proposed bridge replacement is not anticipated to adversely affect water quality in the study area.

7.3 Environmental Permits

It is anticipated a Section 404 Individual Permit will be required. However, the USACE holds the final discretion of what permit will be required. A corresponding Section 401 Water Quality Certification will be required from SCDHEC. A Coastal Zone Consistency Determination will be required by SCDHEC-OCRM and will be addressed through a joint application process with USACE as the lead agency. The proposed project is located in a coastal county and is expected to involve impacts to critical areas. Therefore, SCDHEC-OCRM must provide a Critical Area Permit and Coastal Zone Consistency Determination to ensure the project would be consistent with the local management program. The construction of the proposed Harbor River Bridge would require a USCG Bridge Permit in compliance with Section 9 of the Rivers and Harbors Act of 1899 and the General Bridge Act of 1946.

A National Pollutant Discharge Elimination System (NPDES) construction permit, pursuant to Section 402 of the Clean Water Act (CWA), including a stormwater drainage plan will be required from SCDHEC before construction plans are final.

7.4 Floodplains

Based on the Flood Insurance Rate Maps (FIRM), published by the Federal Emergency Management Agency (FEMA), the proposed project would involve construction within the regulated 100-year floodplain of the Harbor River. The entire study area is located within a FEMA 100-year floodplain where base flood elevations and flood hazard factors have been determined.

The project was designed so the proposed bridge low chord would be at least 2 feet above the 10-year wave height elevation. The proposed bridge would be longer than the existing bridge, which would further minimize potential impacts to the floodplain. The project is not expected to be a significant longitudinal encroachment as defined under the Code of Federal Regulations for the Location and Hydraulic Design of Encroachments on Floodplains (23 CFR § 650A).

The proposed project has also been developed in accordance with Executive Order 11988 for Floodplain Management, which states that agencies will minimize the potential impacts of flooding and restore and preserve the natural and beneficial values served by floodplains when implementing federally assisted construction and improvements.

The proposed bridge is not anticipated to cause a rise in water surface elevations or adversely affect the base floodplain elevation. Final hydraulic design will be completed in accordance with SCDOT guidance and FEMA regulations during final design of the project. Final hydraulic reports will be coordinated with the Beaufort County floodplain administrator.

7.5 Wildlife and Plant Communities

The study area crosses the Harbor River, as well as extensive tidal creeks, flats, and salt marsh wetlands. Man-made tidal and brackish ponds are located in the eastern portion of the study area on Harbor Island. The tidal creeks and deepwater habitats of the Harbor River include many species of fish, turtles, and other water dependent animals, including bottlenose dolphins.

Terrestrial or upland habitats adjacent to the salt marsh primarily consist of the US 21 causeways, Butcher's Island, and property surrounding Gay Fish Company. In the eastern portion of the study area, the Harbor Key residential community comprises most of the upland area. Butcher's Island and small islands near Harbor Key have characteristics of hammock islands.

The proposed project is not expected to result in significant adverse impacts to terrestrial or aquatic wildlife. The project would not add travel lanes to the roadway or widen the existing roadway. Temporary, short-term displacement of local wildlife, including diamondback terrapins, would likely occur during initial construction. Most local species are habituated to human disturbances from the existing roadway and are expected to move back into the vicinity of the construction area upon project completion. The proposed project avoids upland hammocks found on Butcher's Island and near Harbor Key. The proposed project would impact an upland area on the northeastern side of US 21 that contains live oaks and saw palmettos. Direct impacts to marsh communities are expected to be limited to areas of fill to construct the new bridge approaches. Existing, disturbed causeway would be used to the greatest extent practicable to minimize impacts to the salt marsh.

7.6 Migratory Birds

Migratory bird habitat is located near the proposed project on an egg bank near the confluence of Harbor River and St. Helena Sound, just north of the study area, and a waterbird rookery on Harbor Key. The proposed project would not impact the waterbird colony and egg bank in Saint Helena Sound, or the rookery on Harbor Key. Birds may be deterred from the study area by an increase in construction noise. However, these indirect impacts would be temporary and localized to the construction area.

During construction, SCDOT would comply with the Migratory Bird Treaty Act (MBTA) of 1918 in regard to the avoidance of taking of individual migratory birds and the destruction of their active nests. Prior to construction/demolition of the bridges, the Resident Construction Engineer (RCE) would coordinate with SCDOT Environmental Services Compliance Office to determine if any active nests are on the bridge. After this coordination, it would be determined whether construction/demolition could begin. After construction/demolition has begun, measures can be taken to prevent birds from nesting, such as screens, noise producers, and deterrents. If during construction or demolition a nest is observed on the bridge that was not discovered during the biological surveys, the contractor would cease work at the nest location and immediately notify the RCE, who would contact SCDOT Environmental Services Compliance Office. SCDOT biologists would determine whether the nest is active and the species using the nest. After this

coordination, it would be determined whether construction/demolition could resume or whether a temporary moratorium would be put into effect.

7.7 Bald Eagle

A raptor nest was identified in the eastern portion of the study area, on the southern side of US 21 near Harbor Drive. The large nest, located in a pine tree, was a suitable size for a bald eagle. The nest was monitored monthly for activity from September 2014 to May 2015, and from September 2015 to December 2015, which corresponds to the bald eagle nesting season in South Carolina. No activity was observed. During a site visit on April 19, 2016, the nest had deteriorated and was no longer present. During a site visit on May 20, 2016, the nest was partially rebuilt. Since signature of the EA, Hurricane Matthew affected the project area. Qualified personnel visited the nest on November 15, 2016; no evidence of the nest was present.

The proposed project would not impact any bald eagle nests; however, the proposed construction would affect tidal waters and marshes that provide foraging habitat for bald eagles in the area. Qualified personnel hired by the contractor would survey the project area for bald eagle nests prior to initiating construction. Construction personnel would be qualified to identify eagles and nests, and instructed to report any sightings of potential nests to SCDOT. If a bald eagle nest is identified within 660 feet of the project prior to or during construction, SCDOT would reinitiate consultation with the US Fish and Wildlife Service (USFWS) in accordance with the Bald and Golden Eagle Protection Act (BGEPA) and MBTA and would adhere to the USFWS *National Bald Eagle Management Guidelines*. The contractor will work with the SCDOT and USFWS to develop a Bald Eagle Zone Management Plan that would restrict construction work within 660 feet of the active nest during the nesting season, where practicable, and require the contractor to minimize noise, lighting, and night time work within the management zone.

7.8 Threatened and Endangered Species

Field investigations were conducted by qualified biologists in September 2014 to identify potential suitable habitat for federally protected species within the study area.

Federally Listed Species

No candidate species, USFWS, or National Oceanic and Atmospheric Administration - National Marine Fisheries Service (NOAA-NMFS) designated critical habitat for federally listed species exist in the study area. Critical habitat for loggerhead sea turtle and piping plover occurs close to the study area. The coastal environment within the study area does not provide suitable habitat for American chaffseed, Canby's dropwort, Frosted flatwood salamander, Kirtland's warbler, pondberry, leatherback sea turtle, and red-cockaded woodpecker. The proposed project would have no effect on these species.

Suitable habitat was identified for Atlantic sturgeon; shortnose sturgeon; West Indian (Florida) manatee; green, Kemp's ridley, and loggerhead sea turtles; piping plover; wood storks; red knots; and bald eagles. The proposed project may affect but is not likely to adversely affect these species. USFWS and NOAA-NMFS have concurred with these findings on species within their respective jurisdictions.

Atlantic and Shortnose Sturgeon

If sturgeon were present within the study area, potential impacts to sturgeon could result from direct strikes by construction equipment (piles, work barges) and from increases in noise levels and turbidity during construction. Construction could disturb fish by generating a temporary increase in underwater noise. Construction methods are not expected to exceed acoustic injury thresholds for sturgeon; however, a behavioral disturbance may occur. While there are no suitable freshwater spawning areas upstream (or south) of the study area, there is a minimal possibility that sturgeon may be present in the study area during certain times of the year. Therefore, the proposed project may affect, but is not likely to adversely affect the Atlantic and shortnose sturgeon.

Green, Kemp's Ridley, and Loggerhead Sea Turtles

No critical habitat for the green sea turtle is located in or near the study area. Critical habitat has not been designated by USFWS or NOAA-NMFS for the Kemp's ridley sea turtle. Critical habitat for the loggerhead sea turtle is not located within the study area; however, critical habitat for loggerhead sea turtles is located approximately ½ mile from the study area on the beaches of Harbor Island. Loggerhead sea turtles have been documented nesting on the sandy beaches of Harbor Island.

No loss of nesting habitat is anticipated. Construction of the drilled shafts and temporary trestle would likely use vibratory hammers that are not expected to exceed acoustic injury thresholds for sea turtles; however, a behavioral disturbance may occur. Turbidity from pile driving may temporarily decrease water quality and the foraging efficacy of sea turtles, which are visual predators. The increased turbidity is expected to dissipate over a matter of hours and would not permanently degrade water quality or sea turtles' ability to forage. Therefore, the proposed project may affect, but is not likely to adversely affect these species.

Piping Plover

Intertidal flats may be affected by the placement of fill material and construction of the bridge columns. Temporary impacts to foraging habitat may occur from the placement of timber mats. If foraging piping plovers were in the area, the birds would likely avoid the construction area due to the increased activity and noise. An abundance of similar habitat types in the immediate vicinity outside of the study area provide suitable alternative foraging areas. Therefore, the proposed project may affect, but is not likely to adversely affect piping plovers.

Red Knot

Unvegetated intertidal flats would be affected by the placement of fill material and construction of the bridge columns. Temporary impacts to foraging habitat may occur from the placement of timber mats. If foraging red knots were in the area, the birds would likely avoid the construction area given the increased activity and noise. An abundance of similar habitat types in the immediate vicinity outside of the study area provide suitable alternative foraging areas. Therefore, the proposed project may affect, but is not likely to adversely affect red knots.

West Indian (Florida) Manatee

The proposed construction may directly affect manatees by causing behavioral disturbances from pile driving noise or physical injuries caused by direct strikes during construction. Loud levels of intermittent or continuous construction noise could harm manatees if they were close to the noise source for prolonged periods. Possible indirect effects may include decreased water quality. Adverse effects on manatees are not expected to occur within the project area because construction operations would follow the USFWS *Manatee Protection Guidelines* (Appendix G of the EA). Furthermore, manatees would likely avoid the construction area given the increased vessel traffic and noise. Therefore, the proposed project may affect, but is not likely to adversely affect West Indian (Florida) manatees.

Wood Stork

Impacts to foraging habitat would be minimized, but areas of tidal wetlands may be filled as the new bridge connects to the existing causeway. Timber mats and/or barges may cause temporary impacts to salt marsh grasses during construction. Foraging wood storks would likely avoid the construction area due to the increased activity and noise. However, the study area is located in a large expanse of salt marsh and network of tidal creeks, which provide alternate feeding habitats nearby. Therefore the proposed project may affect, but is not likely to adversely affect wood storks.

State-Listed Species

In addition to the federally listed species, the least tern (*Sterna antillarum*), the smallest member of the gull and tern family is considered threatened by SCDNR. Least terns have been identified on an egg bank near the confluence of Harbor River and St. Helena Sound, outside of the study area. The project may affect least tern foraging habitat directly through potential habitat loss. Construction noise also may temporarily deter the birds from the area. The effects from construction noise would be temporary as least terns would return to the area to forage once construction activities were complete.

Table 2. Conservation measure summary

Common Name	Scientific name	Effect	Environmental commitment
Atlantic sturgeon	<i>Acipenser oxyrinchus</i>	May Affect, Not Likely to Adversely Affect	Follow SCDOT BMPs during construction; Obtain NPDES permit and prepare and follow a SWPPP ^a ; Treat stormwater prior to discharge into waters; Maintain 50 percent of Harbor River channel width during construction; Use vibratory hammers, where practicable; Use "slow starts"; Reinitiate consultation with USFWS and NOAA-NMFS and prepare marine wildlife watch plan if explosives are used for demolition; No in-water work would be conducted at night for a minimum of 8 hours
Piping plover	<i>Charadrius melodus</i>	May Affect, Not Likely to Adversely Affect	
Rufa red knot	<i>Calidris canutus rufa</i>	May Affect, Not Likely to Adversely Affect	
Shortnose sturgeon	<i>Acipenser brevirostrum</i>	May Affect, Not Likely to Adversely Affect	
Wood stork	<i>Mycteria americana</i>	May Affect, Not Likely to Adversely Affect	
Specific environmental commitments (in addition to those listed above)			
Green sea turtle	<i>Chelonia mydas</i>	May Affect, Not Likely to Adversely Affect	Follow NOAA-NMFS <i>Sea Turtle and Smalltooth Sawfish Construction Conditions</i> ;
Kemp's ridley sea turtle	<i>Lepidochelys kempii</i>	May Affect, Not Likely to Adversely Affect	No permanent roadway lighting; Reduced or shielded construction lighting during nesting season (May 1 through October 31);
Loggerhead sea turtle	<i>Caretta caretta</i>	May Affect, Not Likely to Adversely Affect	Restricting in-water work during nighttime between May and October to the maximum extent practicable.
West Indian (Florida) Manatee	<i>Trichechus manatus</i>	May Affect, Not Likely to Adversely Affect	Follow USFWS <i>Manatee Protection Guidelines</i> ; Operate construction vessels at safe, slow speeds (no-wake or idle) in the study area and in waters with less than a 4-foot clearance from the bottom sediments; Use a trained spotter between May 15 and October 15; Halt in-water moving equipment if a manatee is spotted within 50 feet of the in-water construction area; Report any collision, injury, or mortality to manatees to the USFWS South Carolina Field Office.

a. Stormwater Pollution Prevention Plan

7.9 Essential Fish Habitat

On July 13, 2015, representatives from NOAA-NMFS and SCDOT visited the study area to identify EFH. Based on the site visit and a NOAA-NMFS letter dated August 7, 2015, the study area includes the following EFH:

- High quality tidal salt marsh habitat, specifically estuarine emergent wetlands
- Intertidal non-vegetated flats
- Tidal creeks
- Oyster reef and shell bank
- Unconsolidated bottom

The proposed project would result in a direct, permanent impact to approximately 3.3 acres of EFH. The Preferred Alternative would avoid the tidal creek and shell bank located to the southeast of the existing bridge. The Preferred Alternative would also avoid SCDNR shellfish restoration areas.

The proposed project would have, at most, minimal effects on EFH or aquatic species managed by the South Atlantic Fishery Management Council (SAFMC). The contractor would amend the EFH Assessment during final design of the proposed bridge and would coordinate the findings between the FHWA, SCDOT, and NOAA-NMFS.

Since there will be impacts to the EFH, and possibly aquatic species managed by the SAFMC, an EFH Mitigation Plan would be established. The contractor would develop the EFH Mitigation Plan during the Section 404 permitting phase of the project. As part of the EFH Mitigation Plan, SCDOT commits to the following mitigation measures:

- SCDOT will require the contractor to reduce the amount of permanent fill in salt marsh habitat from the currently proposed 3.032 acres.
- SCDOT will require the contractor to remove some portion of the existing causeway and grade the removal areas to match elevations in adjacent marsh where marsh vegetation occurs.
- SCDOT commits to mitigating for the unavoidable impacts to EFH (shellfish habitat) by implementing a mitigation plan that would restore at least 0.1 acre of oyster habitat.

SCDOT plans to work with the SCDNR South Carolina Oyster Restoration and Enhancement Program (SCORE) program on the oyster habitat mitigation. The contractor would develop the plan in coordination with the SCDOT and NOAA-NMFS.

7.10 Marine Mammals

Two marine mammals—the common bottlenose dolphin (*Tursiops truncatus*) and West Indian manatee, Florida subspecies (*Trichechus manatus latirostris*)—may occur within the study area. Construction activities may have a direct effect on marine mammals if a vessel (such as a barge or tug boat) strikes a dolphin or manatee. Because of the manatee's slow movements, vessel strikes are the most significant threat faced by

manatees (USFWS¹ and Florida Fish and Wildlife Conservation Commission [FWC]²). The likelihood of direct strikes from vessels on bottlenose dolphins is low due to their high maneuverability coupled with the slow speeds at which the construction vessels would operate. Individual bottlenose dolphins would be able to avoid collisions. To minimize the potential for vessel strikes, equipment and materials used during the construction of the bridge would not obstruct or impede passage through more than 50 percent of the channel. SCDOT also commits to following the USFWS *Manatee Protection Guidelines*, which will minimize potential project effects on manatees and bottlenose dolphins.

Construction may indirectly affect marine mammals through a temporary increase in turbidity during placement of bridge pilings. However, this increase would be temporary and localized and would likely dissipate and settle within a few hours. Marine mammals and/or their prey may temporarily avoid the construction area. The temporary increase in turbidity would not permanently change habitat conditions. In general, the contractor would follow SCDOT BMPs, such as seeding slopes, installing silt fences, and creating sediment basins, during construction to avoid potential turbidity impacts within the Harbor River. If siltation or turbidity barriers are used, they would be made of material in which manatees or other marine mammals cannot become entangled, would be properly secured, and would be regularly monitored to avoid marine mammal entanglement or entrapment. Stormwater runoff from bridges would be treated prior to discharging into the waters surrounding Harbor River. An NPDES permit pursuant to Section 402 of the CWA would be required for construction activities. The NPDES permit application would include a SWPPP, which would be implemented by the contractor.

Pile driving is not expected to exceed injury thresholds for bottlenose dolphins or West Indian (Florida) manatees. During construction, the potential effect of noise impacts on marine mammals would be minimized through the use of “slow starts”, where pile driving ramps up slowly in an effort to deter marine species from the work area. The contractor would also stop in-water work at night for a minimum of 8 hours, which creates a daily lapse of in-water noise and provides time for marine species to navigate through the construction area during ambient noise levels.

If explosives are used for demolition, the contractor would be required to hire qualified personnel for evaluating the potential effect on protected species to submit to SCDOT. SCDOT would be responsible for reinitiating consultation with the USFWS and NOAA-NMFS. Future separate consultation on blasting would be required if the contractor would plan to use explosives. The contractor may be required to develop a blasting plan to include a marine wildlife watch plan to submit to SCDOT. SCDOT would then reinitiate consultation with USFWS and NOAA-NMFS to evaluate impacts as a result of the plan.

The proposed project is not expected to harm or injure bottlenose dolphins or West Indian (Florida) manatees. The proposed project would not result in a “take” of marine mammals under the Marine Mammal Protection Act (MMPA). If SCDOT or the contractor discovers an injured, sick, or dead marine mammal, NOAA-NMFS will be notified immediately by contacting the NOAA-NMFS Stranding Coordinator for the Southeast

¹ USFWS. 2001. Florida Manatee Recovery Plan, (*Trichechus manatus latirostris*), Third Revision. US Fish and Wildlife Service. Atlanta, Georgia. 144 pp. + appendices.

² Florida Fish and Wildlife Conservation Commission (FWC). 2007. Florida Manatee Management Plan: *Trichechus manatus latirostris*. http://myfwc.com/media/214332/Manatee_Mgmt_Plan.pdf

Region. NOAA-NMFS would be provided with the species or description of the animal(s), the condition of the animal (carcass condition if deceased stranding), location, the date and time of first discovery, observed behaviors (if alive), and photo or video (if available). Any collision, injury, or mortality to manatees will also be reported immediately to the USFWS South Carolina Field Office.

7.11 Air Quality

SCDHEC's Bureau of Air Quality was granted authority by the US Environmental Protection Agency (EPA) to administer the Clean Air Act (CAA) and its amendments in South Carolina. Geographic areas of the state are monitored and compared to the standards set forth by the National Ambient Air Quality Standards (NAAQS) established in the CAA. Based on the monitored results as compared to the established standards, each area is given a designation. Attainment areas are defined as those areas where the NAAQS for each pollutant are not exceeded.

South Carolina has developed a State Implementation Plan (SIP) to demonstrate its compliance with NAAQS. Beaufort County is in attainment for NAAQS, and conformity requirements do not apply to the proposed project. This project would be consistent with the South Carolina SIP regarding the attainment of the NAAQS. Presently, Beaufort County meets all air quality standards for automobile-related pollutants. SCDHEC has determined that transportation control measures (TCMs) are not required to maintain the area's air quality.

The 2007 EPA rule requires controls that will lower mobile source air toxic (MSAT) emissions of benzene and other priority air toxics through cleaner fuels and cleaner engines. This project was analyzed as a Tier 1 project under the FHWA interim guidance issued in December 2012. The project does not require detailed analysis because bridge projects are exempt from conformity and the project would have no or negligible traffic impacts (no additional capacity). It is anticipated that the project would have no appreciable impact on regional MSAT levels. The project may result in increased exposure to MSAT emissions in certain locations. Construction-related effects of the project would be limited to short-term localized increased fugitive dust and mobile-source emissions during construction. State and local regulations regarding dust control and other air quality emission controls shall be followed.

7.11.1 Greenhouse Gases and Climate Change

Greenhouse gases (GHGs) are those that trap heat in the atmosphere of the Earth, and include carbon dioxide, methane, nitrous oxide, and fluorinated gases.³ According to the USEPA, the most common of the GHGs is carbon dioxide (CO₂), which accounted for almost 81 percent of all U.S. GHG emissions due to human activities in 2014. The combustion of fossil fuels, land use changes, as well as some industrial processes are the main emission generators of greenhouse gases.⁴ In 2014, the transportation sector

³ USEPA, "GHG Overview," <https://www.epa.gov/ghgemissions/overview-greenhouse-gases>. (Last accessed 11/28/16).

⁴ Ibid.

was responsible for almost 27 percent of the CO₂ emissions in the U.S.⁵ Because GHGs trap heat in the atmosphere, the outcome has been a warming of the Earth's temperature, which has led to a change in the climate of the Earth, resulting in more extreme weather events, melting of glaciers, and sea level rise.⁶

On August 2, 2016, the Council on Environmental Quality (CEQ) issued Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews. While this guidance does not legally require agencies to mitigate for impacts to the climate due to GHG emissions, it does direct agencies to disclose the potential amounts of GHG being released due to the agency's action, as well as the agency's influence on climate change.

GHG Analysis

For this project, the operations, fuel cycle, and construction/maintenance emissions were estimated. A GHG Analysis was completed for the No-build Alternative and the Reasonable Alternatives, and included the emissions from constructions, operations, and fuel cycle. Operations and fuel cycle emissions were determined for the No-build Alternative and Preferred Alternative using lookup tables from the Motor Vehicle Emission Simulator (MOVES2014a) provided by the FHWA. Since the reasonable alternatives are all located in proximity to each other, the GHG analysis for the Preferred Alternative was completed only and is representative for all build alternatives. The proposed project would not add capacity to the roadway; thus, the No-build alternative would also have the same annual average daily traffic (AADT) and resulting GHG emissions (Table 3). The amount of CO₂e emitted would be expected to decrease with the advent of better technologies between now and 2040, as noted in the table. CO₂e is a carbon dioxide equivalent and is the internationally recognized measure of greenhouse emissions.

Table 3. Project CO₂e emissions and fuel cycle emissions

	Existing condition (2014)	No-build alternative/Preferred Alternative* in 2040
VMT ^a (millions of miles, per year)	2,035,240	2,884,084
CO ₂ e operations emissions and fuel cycle emissions (metric tons)	1,142	1,128

* Note: for this project, the reasonable alternatives are very similar and the No-build alternative would have the same AADT as the reasonable alternatives; thus, the GHG analysis was completed for the Preferred Alternative only.

a. Vehicle miles traveled

⁵ USEPA, "Greenhouse Gas Inventory Data Explorer," <https://www3.epa.gov/climatechange/ghgemissions/inventoryexplorer/#allsectors/allgas/econsect/current>. (Last accessed 11/28/16).

⁶ USEPA, "Climate Change Basic Information," <https://www.epa.gov/climatechange/climate-change-basic-information>. (Last accessed 11/28/16).

To determine the construction and maintenance emissions over the lifespan of the project, the FHWA's Infrastructure Carbon Estimator (ICE) Tool was used. The ICE Tool can be used to create estimates of energy usage and GHG emissions for a life-cycle of a project, including construction/rehabilitation and routine maintenance. However, it should be noted that this tool is not appropriate to inform engineering analysis and pavement selection.⁷ The assumptions used for the ICE Tool are included in Appendix B. The results below in the tables include both annualized energy use and annual GHG emissions, per year over the 60-year analysis cycle, and include both unmitigated and mitigated scenarios.

Table 4. Annualized energy use (mmBTUs) (per year over 60 years)

	Unmitigated						Mitigated					
	Roadway - new construction	Roadway- rehabilitation	Roadway - total	Bridges	Rail, bus, bicycle, ped.	Total	Roadway - new construction	Roadway- rehabilitation	Roadway - total	Bridges	Rail, bus, bicycle, ped.	Total
Upstream energy												
Materials	264	373	637	73	-	710	264	312	576	73	-	649
Direct energy												
Construction equipment	78	67	145	281	-	426	78	56	134	-	-	134
Routine maintenance						45						45
Total	342	440	782	354	-	1,181	342	368	710	73	-	828

Table 5. Annual GHG emissions (MT CO₂e)^a (per year over 60 years)

	Unmitigated						Mitigated					
	Roadway - new construction	Roadway- rehabilitation	Roadway - total	Bridges	Rail, bus, bicycle, ped.	Total	Roadway - new construction	Roadway- rehabilitation	Roadway - total	Bridges	Rail, bus, bicycle, ped.	Total
Upstream emissions												
Materials	17	20	37	7	-	44	17	17	34	7	-	41

⁷ FHWA, "Infrastructure Carbon Estimator Final Report and User's Guide," September 2014, https://www.fhwa.dot.gov/environment/climate_change/mitigation/tools/carbon_estimator/users_guide/page00.cfm. (Last accessed 11/28/16.)

	Unmitigated						Mitigated					
	Roadway - new construction	Roadway-rehabilitation	Roadway - total	Bridges	Rail, bus, bicycle, ped.	Total	Roadway - new construction	Roadway-rehabilitation	Roadway - total	Bridges	Rail, bus, bicycle, ped.	Total
Direct emissions												
Construction equipment	5	5	10	2	-	12	5	4	9	2	-	11
Routine maintenance						4						4
Total	22	25	47	9	-	60	22	21	43	9	-	56

a. Million metric tons carbon dioxide equivalent

Climate Change’s Impact on the Proposed Project

When closed, the existing swing-span bridge provides a 15-foot vertical clearance over MHW of the Harbor River. Through extensive coordination with the USCG, the vertical clearance of the Harbor River Bridge design will provide a 65-foot vertical clearance over the MHW. Since this vertical clearance has been previously agreed upon by the USCG, the effect of climate change on the project (i.e. resiliency) will not be evaluated.⁸ However, a detailed hydraulic analysis will be completed during final design and could incorporate resiliency measures at that time.

7.12 Noise

A detailed noise analysis utilizing a three-dimensional model was completed for the Preferred Alternative and its adjacent noise receivers. The FHWA Traffic Noise Model (TNM version 2.5) was used to calculate existing noise levels and predict future design year noise levels using existing traffic data and field measurements taken on September 3, 2015. Details of the methodology and analysis are detailed in the Noise Impact Assessment in Appendix K of the EA.

Traffic noise was modeled for the 2037 design year Build and No-build scenarios of the Preferred Alternative based on the existing and proposed roadway alignments, existing and design year traffic volumes and truck percentages, receiver and road elevations, water features, and existing and proposed speed limits.

A noise impact occurs when either (1) a predicted noise level approaches or exceeds the applicable Noise Abatement Criteria (NAC) as defined in 23 CFR § 772, or (2) there is a substantial increase from existing noise levels. According to the SCDOT Noise Abatement Policy, a “substantial increase” occurs when the future predicted noise levels increase at least 15 dBA (A-weighted decibels) or more over existing levels. There are 23 receivers within the study area. Based on the detailed noise analysis, no noise

⁸ CEQ, *Final Guidance for Federal Departments and Agencies on Consideration of Greenhouse Gas Emissions and the Effects of Climate Change in National Environmental Policy Act Reviews*. Section V.

sensitive receivers are impacted in the existing condition, nor are impacts predicted for the No-build and build alternatives. Therefore, in accordance with SCDOT and FHWA Noise Policy, noise abatement measures were not considered.

General construction noise impacts, such as temporary speech interference for passers-by and those individuals living or working near the project, can be expected particularly from pile driving, paving operations, and earth-moving equipment during construction. However, considering the relatively short-term nature of construction noise and the likely limitation of construction to daytime hours, these impacts are not expected to be substantial. The contractor would be required to comply with applicable local noise ordinances and Occupational Safety and Health Administration (OSHA) regulations concerning noise attenuation devices on construction equipment

7.13 Hazardous Waste and Underground Storage Tanks

A Limited Environmental Records Research (Appendix L of the EA) was prepared for the study area to identify possible sites involving the presence and/or past use of underground storage tanks (USTs), above ground storage tanks (ASTs), and/or other hazardous materials within the study area. The Harbor Island Sewer Treatment Plant is located in the eastern termini of the study area. Materials from the plant do not outfall into the surrounding marsh or other properties. ASTs were identified at Gay Fish Company within the study area. The proposed project would not impact the Harbor Island Sewer Treatment Plant or Gay Fish Company or require the acquisition of right-of-way from these properties. Therefore, the proposed project would have no effect on hazardous material sites.

A survey for asbestos containing materials (ACM) and lead-based paint (LBP) will be conducted on the US 21 bridge over the Harbor River. Survey findings and the potential removal of ACM or LBP would be coordinated with the SCDHEC Bureau of Air Quality, Asbestos Section prior to demolition of the existing bridge.

7.14 Cultural Resources

Section 106 of the National Historic Preservation Act (NHPA), of 1966, as amended (36 CFR § 800) requires the identification of historic properties within the study area, assessment of adverse effects, and resolution of adverse effects, if any. Research was conducted at the South Carolina Institute of Archaeology and Anthropology and the South Carolina Department of Archives and History (SCDAH). In June and September 2015, the study area was researched and investigated to identify cultural resources that may be affected by the project. The project findings were coordinated with the SCDAH, State Historic Preservation Office (SHPO), South Carolina Department of Parks, Recreations, and Tourism (SCPRT), and the Catawba Indian Nation, Eastern Band of Cherokee Indians, and United Keetoowah Band of Cherokee Tribal Historic Preservation Officers (THPOs).

The study area is entirely within the Gullah Geechee Cultural Heritage Corridor (GGCHC), the linguistic and cultural area of the descendants of people historically transported from west and central Africa to labor on coastal plantations from North

Carolina to Florida (Gullah Geechee Cultural Heritage Corridor 2012)⁹. Therefore, National Park Service Gullah Geechee Cultural Heritage Corridor Coordinator was also consulted.

Three cultural resources were found within the study area. These include an archaeological site, the existing Harbor River Bridge, and the Gay Fish Company.

Archaeological Site 38BU113

Cultural materials were recovered during shovel test pits (STPs) at site 38BU113, a precontact (Middle to Late Woodland) shell midden and ceramic scatter composing uplands north of US 21 and west of the Harbor River. Due to retaining integrity, the probability of containing cultural features, and its artifact density, site 38BU113 is recommended eligible for listing in the NRHP and is considered a historic property. The project would not adversely affect site 38BU113 due to the proposed project being located outside of the boundaries of site 38BU113.

Resource 5070 (Harbor River Bridge)

The Harbor River Bridge (Resource 5070), a modified Warren through-truss swing-span bridge, was built in the late 1930s by the Virginia Bridge Company (SCDOT 2013)¹⁰. The bridge provides access to Hunting Island State Park, developed by the Civilian Conservation Corps/Works Progress Administration (CCC/WPA) between 1938 and 1940. The Harbor River Bridge was previously determined eligible for listing in the NRHP by SCDOT due to its association with Depression-era work relief programs and the development of South Carolina's network of state parks; it is considered a historic property. The project would result in an adverse effect to the Harbor River Bridge, as this historic property would be removed or demolished during the project.

Resource 5071 (Gay Fish Company)

The Gay Fish Company (Resource 5071) is a circa 1952 concrete-block commercial building with an associated wooden dock used for seafood unloading, processing, and distribution. The resource is on the north bank of Ward Creek, within the protection of a CFV District. Due to its association with the state's important mid-twentieth century commercial fishing industry and because it retains historic integrity, the Gay Fish Company is recommended eligible for the NRHP and is considered a historic property. The project would not adversely affect the character or use of the Gay Fish Company.

To determine whether the project may affect any Gullah Geechee issues, resources, or traditions, the executive director of the GGCHC, J. Herman Blake, Ph.D., was consulted, and he, in turn, consulted several other Gullah Geechee people (Appendix A of the EA). Blake indicated that, because the project would be located on an existing roadway and would not result in access restrictions, he and the others he consulted had no concerns with the project.

⁹ Gullah Geechee Cultural Heritage Corridor. 2012. Our History and Culture. Accessed February 27, 2016. <http://gullahgeecheecorridor.org/?Itemid=103>

¹⁰ SCDOT 2013. Historic Bridge Inventory Report. Report by the South Carolina Department of Transportation, Columbia.

Copies of SHPO and THPO concurrences with the findings and GGCHC coordination are included in Appendix A of the EA.

Mitigation of the adverse effect to the historic bridge has been developed in consultation with FHWA, SCDOT, SHPO, and the Advisory Council on Historic Preservation (ACHP) and is documented in a signed Memorandum of Agreement (MOA, see Appendix M of the EA). Stipulations of the MOA include: (1) SCDOT would work with the SHPO, SCPRT, and the Hunting Island State Park Manager to develop and fund a public interpretation plan related to the impact of Depression-era work programs on Hunting Island State Park and its associated landscape. The plan would include elements that relate to the construction of the US 21 roadway and bridge over Harbor River, as well as the history of the Civilian Conservation Corps/Works Progress Administration (CCC/WPA) at Hunting Island State Park; (2) the draft plan would be developed within 6 months of execution of the MOA and a final plan shall be developed within 60 days after receipt of comments from the cooperating agencies; (3) components of the interpretation plan will be constructed at Hunting Island State Park within 1 year of finalizing the plan; (4) SCDOT would remove the placard from the existing US 21 bridge and provide it to SCPRT for use in the interpretive plan; and (5) SCDOT would consider options for reuse of the bridge through advertisement, relocation, or salvaging a section of the bridge for display within Hunting Island State Park.

If any cultural resources (artifacts/human remains) are encountered during the construction phase of the project, the South Carolina State Historic Preservation Office will be immediately notified and all work in the vicinity of the discovered materials and site work shall cease until SCDOT is otherwise directed.

7.15 Section 4(f) and Section 6(f) Resources

Section 4(f) of the U.S. Department of Transportation Act of 1966 specifies that publicly owned land from a public park, recreation area, wildlife and waterfowl refuge, and all historic sites of national, state, and local significance may be used for federal projects only if there is no feasible and prudent alternative to the use of such land (23 CFR § 774.3(a)(1)) and the project includes all possible planning to minimize impacts to 4(f) lands resulting from such use (23 CFR § 774.3(a)(2)). Four 4(f) resources related to public/recreational resources and historic sites are within, or in proximity to, the study area: Hunting Island State Park, Beaufort County Boat Ramp, Gay Fish Company, and Harbor River Bridge.

The proposed bridge would have beneficial effects on the state park by providing a connection between St. Helena Island and Hunting Island that meets SCDOT design standards. The proposed project would not permanently close the boat ramp. If construction, including materials staging or stockpiling, would result in partial or full temporary closure of the boat ramp, the contractor would be responsible for coordinating the 4(f) use with SCDOT, FHWA, and Beaufort County.

The project would result in an adverse effect to the Harbor River Bridge, as this historic property would be removed or demolished during the project. The bridge has been determined to no longer meet the State's safety and design requirements for its transportation system, and would be replaced 65 feet north of its existing alignment. Replacement of the existing bridge is deemed the only feasible and prudent alternative to

continue providing a safe and efficient transportation network. Proposed impacts to the existing bridge meets the applicability requirements for Programmatic Section 4(f) Evaluation and Approval, established by FHWA. A Programmatic Section 4(f) Evaluation (see Section 7.0 of EA) was prepared in accordance with 23 CFR § 774 to address the potential impacts and mitigation measures for the Harbor River bridge.

No wildlife refuges and no Beaufort County Rural and Critical Lands are located within the study area.

No Section 6(f) properties, which include places such as parks, trails, courts and other recreational areas that were purchased in part through federal grants, are located within the study area and thus there are no anticipated impacts to these resources.

7.16 Displacements

The project would not displace any residences or commercial businesses. The proposed project would require 4.2 acres of right-of-way acquisition to construct the new approaches and along the new bridge. SCDOT would process any new right-of-way acquisitions and relocations in compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 USC § 4601 et seq.).

7.17 Social and Economic Conditions

The proposed project was evaluated in accordance with the Civil Rights Act of 1964 and Executive Order (E.O.) 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations). Title VI of the Civil Rights Act of 1964 protects individuals from discrimination on the grounds of race, age, color, religion, disability, sex, and national origin. E.O. 12898 requires that the project corridor be examined for the possibility of having disproportionate impacts on minority or low-income populations.

Total population data for each of the Census Tracts comprising the project study area were developed based on 2010 U.S. Decennial Census counts. The proposed project would not result in relocations or adverse effects to local populations, employment, schools, or communities in the study area. Economic benefits should result from the proposed project because of continued access and efficient movement of tourists, and local motorists and goods in the area. The project would not change neighborhood or community cohesion, school districts, or minority or social groups and would not permanently affect existing travel patterns and accessibility.

The proposed project would not specifically benefit or harm any social group or result in disproportionately high or adverse impacts on low-income or high-minority populations. The proposed project would result in an improved and structurally safer and more modern transportation facility for the county and community residents.

7.18 Visual Resources

SCDOT used FHWA's 2015 *Guidelines for the Visual Impact Assessment of Highway Projects* to evaluate the visual effects of the proposed project. US 21 from Beaufort to Hunting Island is designated as the Sea Island Scenic Highway because of its expansive

vistas and natural beauty. The existing bridge is visible from some houses on Harbor Island and St. Helena Island. The view of the proposed bridge would be substantially different for a fixed-span bridge. With a clearance of 65 feet above MHW the fixed-span bridge would be silhouetted against the sky at day, night, dawn, and dusk to a much greater extent than the existing movable bridge. The fixed-span bridge would become a permanent part of the skyline of the area which is mostly dominated by the existing swing-span bridge, marshes, and trees.

The proposed bridge would affect the views from some houses located on Harbor Key, which is the closest community to the existing bridge. A rendering of the Preferred Alternative was prepared from a viewpoint on a rear deck of a house on Harbor Key. The rendering was presented in the EA and at the public hearing. Visual effects were minimized by shifting Alternative 1 closer to the existing bridge and away from Harbor Key to develop Alternative 1B, the Preferred Alternative. No permanent roadway lighting will be used on the proposed bridge, which would also minimize potential visual effects.

Motorists would initially be sensitive to the expansion of their views, but would likely become accustomed to the change over time. The proposed project would also have a beneficial effect on views for mariners on the Harbor River. The higher fixed-span bridge would facilitate a greater view through the bridge and from one side to the other.

7.19 Indirect and Cumulative Impacts

The FHWA's and other federal agencies' responsibility to consider direct, indirect, and cumulative impacts in the NEPA process was established in the CEQ Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR § 1500 – 1508). The CEQ regulations define the impacts and effects that must be addressed and considered by federal agencies in satisfying the requirements of the NEPA process. The CEQ regulations note three impact categories: direct, indirect, and cumulative.

The indirect impact analysis documented in the project's EA follows the eight-step process as described in National Cooperative Highway Research Program's Report 466: *Desk Reference for Estimating the Indirect Effects of Proposed Transportation Projects*. CEQ's 1997 guidance, *Considering Cumulative Effects under the National Environmental Policy Act*, and the CalTrans' 2012 *Guidance for Preparers of Cumulative Impact Analysis* were used to analyze cumulative effects during the NEPA process.

Indirect Impacts

The proposed bridge would have the same number of travel lanes as the existing bridge. As a bridge replacement project, the project's purpose and design features do not have an explicit economic development purpose or conflict with local plans. There is a low potential for growth and development within the study area because of the extensive tidal wetlands, floodplains, and zoning designations. The potential of the proposed project to indirectly affect tidal creeks and rivers, salt marsh, biological resources, or community resources will be mitigated through measures described in this FONSI and throughout the EA. None of the potential indirect effects are considered to be unacceptable or significant.

Cumulative Impacts

Cumulative impacts from this project are not likely. This is largely due to the lack of past actions and low potential for development in this area. The notable resources of the area include salt marsh and tidal creeks, federally threatened or endangered species, and the historic metal truss and swing-span bridge.

The proposed project would impact a very small percentage of salt marsh in the watershed. Projects that impact salt marsh or tidal creeks would be required to obtain a USACE Section 404 and SCDHEC-OCRM Critical Area permit, as well as provide compensatory salt marsh mitigation. In accordance with the U.S. Global Change Research Program, the southeast is likely to see sea level rise due to climate change and coastal areas will be more prone to these effects.¹¹ This could impact tidal marshes and swamps in this area, and lead to an inundation of coastal wetlands. Adaptive strategies could be evaluated in the future to protect salt marsh and tidal creeks, such as the construction of levees, natural protective measures, or raising of structures. These strategies could be developed and implemented at a local or state level by numerous entities.

Cumulative impacts to federally threatened or endangered species are not expected. SCDOT's consultation with USFWS and NOAA-NMFS has resulted in conservation measures that would minimize the potential for cumulative impacts. Because of the recovering populations, project commitments, nearby expanse of habitat, and low potential for future impacts, the proposed project is not expected to contribute to cumulative impacts to federally protected species.

In accordance with the U.S. Global Change Research Program, the southeast is likely to see sea level rise and an increase in temperature due to climate change and coastal areas will be more prone to these effects.¹² This could impact federally protected species by altering migratory patterns or spawning seasons; cause a change in species growth rates; change the local species composition (food chain) available; or, result in the introduction of invasive or new locally viable species.¹³ In addition, the rise in temperatures could increase harmful algal blooms in inland and coastal waters that were not previously problems in the southeast.¹⁴ This could also impact federally protected species in the long-term. Response strategies could be numerous to this, and implemented at many different levels. The U.S. Global Change Research Program has Adaption and Mitigation strategies presented in its 2014 report that could be implemented by various entities to address some of these potential effects.¹⁵

Three historic moveable span bridges would remain in coastal South Carolina. Efforts are being made to mitigate the loss of historic bridges. Direct impacts to the historic Harbor River bridge will be addressed through avoidance and minimization measures

¹¹ U.S. Global Change Research Program, "Climate Change Impacts in the United States: Chapter 17, Southeast and the Caribbean," 2014, <http://nca2014.globalchange.gov/report/regions/southeast>. (Last accessed 11/28/16.)

¹² U.S. Global Change Research Program, "Climate Change Impacts in the United States: Chapter 17, Southeast and the Caribbean," 2014, <http://nca2014.globalchange.gov/report/regions/southeast>. (Last accessed 11/28/16.)

¹³ *Ibid* at p. 402.

¹⁴ *Ibid* at p. 404.

¹⁵ *Ibid*.

previously identified in this FONSI and throughout the EA. Therefore, the replacement of the US 21 bridge over Harbor River would not have a cumulative impact on historic bridges.

8 Comments and Coordination

This project was coordinated with appropriate federal, state, and local agencies and the public. The public involvement and agency coordination that has taken place for the proposed project is summarized below.

8.1 Public Involvement

8.1.1 Public Information Meeting

SCDOT, in coordination with FHWA, conducted a Public Information Meeting (PIM) on September 15, 2015, from 5:00 p.m. to 7:00 p.m. at St. Helena Elementary School in St. Helena Island. The purpose of the meeting was to present information and solicit feedback from area residents concerning the proposed project. SCDOT gave a presentation summarizing the existing bridge conditions, proposed alternatives, typical section, NEPA process and considerations, and schedule and cost. The bridge alternatives and typical section were also presented on display boards. At the time of the PIM, SCDOT presented three bridge alternatives (Alternative 1, 2, and 3).

Approximately 121 individuals attended the PIM. During the meeting and comment period, SCDOT received 44 comment forms and emails. The majority of comments received during the PIM and response period expressed concern about the proposed alternative bridge locations. Many individuals expressed concern with Alternative 1, particularly with the potential visual and noise effects for property owners in the Harbor Key community. A number of commenters also suggested a left-turn lane from US 21 onto Harbor Drive because of congestion that occurs at the Harbor Island gate house during summer months. Comments also recommended including a bicycle and pedestrian lane as part of the proposed project, and expressed concern about speed limits and safety.

After the PIM, the three alternatives (1, 2, and 3) were refined into five (1A, 1B, 2A, 2B, and 3) based on the public's concerns.

8.1.2 Harbor Island Drop-In Community Meeting

FHWA and SCDOT hosted a community meeting on Friday, May 20, 2016 to introduce and discuss Alternative 1B with the Harbor Island and Harbor Key communities. Project team members explained how SCDOT had developed the three alternatives presented at the PIM into five alternatives to address community and agency concerns. Forty-one people attended the meeting and fourteen comments were received. Attendees generally supported Alternative 1B as the Preferred Alternative, particularly after discussing the results of the noise study and viewing the rendering. Of the 14 comments received, 5 expressed support for Alternative 1B. No comments expressed support for other alternatives or opposition to Alternative 1B. Continued concerns expressed by the Harbor

Island and Harbor Key community include the proposed 55 mph speed limit and adding a turn lane into Harbor Drive. The results of the traffic study do not warrant a turn lane at Harbor Drive. The traffic survey results and study may be found in Appendix A of this FONSI.

8.1.3 Public Hearing

On November 15, 2016, SCDOT and FHWA conducted a public hearing at Lady's Island Elementary School from 5:00 p.m. to 7:00 p.m. The purpose of this meeting was to present the Preferred Alternative (Alternative 1B) and potential environmental impacts with the public, and receive their comments. The public hearing had a tour-guide style format with displays and mapping available for viewing throughout the duration of the hearing. Project team members provided tours to small groups through the displays. Copies of the EA were also available. A formal presentation began at 6:00 p.m., followed by an opportunity for attendees to make formal verbal comments.

A copy of the Public Hearing Certification package is included in Appendix C of this FONSI. The Public Hearing Certification package includes the public hearing informational handout, a transcript of the formal presentation and verbal comments made by the public, sign-in sheets, written public comments and responses, and a summary of the comments received.

Attendance

Fifty seven (57) people were in attendance at the public hearing. Of this number, 15 were female, and there was 1 minority.

Comments

Three individuals had comments recorded during the formal comment portion of the public hearing. Written comments were received at the public hearing or during the 30-day comment period from a total of 9 people and 2 nongovernmental organizations (Coastal Conservation League and Friends of the Spanish Moss Trail). A summary of the concerns raised in these comments is provided below.

- Concern about potential effects of the proposed bridge on their views and noise
- Concern about 55 mph speed limit on the proposed bridge
- Support for proposed alternative and 10-foot-wide shoulders on bridge; recommendation for including designated bicycle lanes on proposed bridge and approaches
- Recommended the old bridge be used as a fishing pier
- Concern about proposed height of bridge and recommended SCDOT consider a lower, moveable span
- Recommended stormwater best management practices to protect water quality
- Concern about proposed bridge height and cost to construction new bridge, recommending rehabilitation of the existing bridge be considered.

No changes were made to the project as a result of the public comments. The public comments were addressed and copies of the comments and responses can be found in the public hearing certification package (Appendix C).

8.2 Agency Coordination

8.2.1 Letter of Intent

A LOI was distributed on June 23, 2015 via email to federal and state resource agencies, tribes, and local stakeholders requesting comments on the proposed project. A copy of the LOI, contact list and responses received are included in Appendix A of the EA.

8.2.2 Meetings and Coordination

On September 10, 2015, an agency coordination effort (ACE) meeting was held to introduce and discuss the proposed project. SCDOT presented a project update during an agency coordination effort web meeting on January 14, 2016. A summary of the meeting discussion is included in Appendix A of the EA.

An agency site visit was held on April 19, 2016 with representatives from SCDOT, USACE, USFWS, NOAA-NMFS, USCG, SCDNR, DHEC-OCRM, and Beaufort County. During the site visit, the agencies reviewed the study area and discussed the range of alternatives, reasonable alternatives, and the recommended Preferred Alternative.

The jurisdictional delineation was reviewed in the field by the SCDHEC-OCRM. SCDHEC-OCRM signed a survey plat of the wetland and waters boundaries on February 22, 2016. The USACE Charleston District verified the delineation (SAC-2015-00964) on March 15, 2016 (Appendix A of the EA).

Coordination with USFWS and NOAA-NMFS regarding federally threatened and endangered species and EFH is located in Appendix A of the EA.

Mitigation of the adverse effect to the historic bridge has been developed in consultation with FHWA, SCDOT, SC SHPO, and the ACHP, and is documented in a signed MOA (Appendix M of the EA). SCDOT also coordinated with representatives from the National Park Service Gullah Geechee Cultural Heritage Corridor. SCDOT, through FHWA, also coordinated with THPOs for the Catawba Indian Nation, Eastern Band of Cherokee Indians, and United Keetoowah Band of Cherokee. Copies of the Gullah Geechee Cultural Heritage Corridor and THPO coordination are found in Appendix A of the EA.

9 Basis for Finding of No Significant Impact

The FHWA has determined that this project will have no significant impact on the human and natural environment. This FONSI is based on the EA and other supporting information, which have been independently evaluated by the FHWA and determined to adequately and accurately discuss the need, environmental issues, and impacts of the proposed project and appropriate mitigation measures. The EA provided sufficient evidence and analysis for determining that an Environmental Impact Statement is not

required. The FHWA takes full responsibility for the accuracy, scope, and content of the EA and other environmental documentation for this project.

The following persons may be contacted for additional information concerning this proposal and statement:

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