

Administrative Action
Environmental Assessment and Section 4(f) Evaluation
US Department of Transportation, Federal Highway Administration
North Carolina Department of Transportation

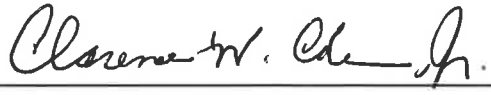
**NC 12 – Rodanthe Breach Long-Term Improvements
Bonner Bridge Replacement Project Phase IIb**

Federal-Aid No. BRNHF-0012(56)
NCDOT Project Definition: 32635
STIP Project No. B-2500B
Dare County, North Carolina

Submitted Pursuant to the National Environmental Policy Act 42 U.S.C. § 4332(2)(c)
and 49 U.S.C. § 303

Cooperating Agencies
US Coast Guard/US Army Corps of Engineers
US Fish and Wildlife Service/National Park Service

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The proposed project is the construction of a bridge to replace the Herbert C. Bonner Bridge in Dare County, the demolition and removal of Bonner Bridge, and improvements to NC 12 between the community of Rodanthe and Oregon Inlet. This EA focuses on the improvement of NC 12 in the vicinity of the Rodanthe breach (that formed during Hurricane Irene in August 2011) and the Rodanthe 'S' Curves Hot Spot. It identifies and assesses changes in the setting and the project in this area since the approval of the project's Record of Decision in December 2010 and analyzes two detailed study alternatives, including a preferred alternative for improving NC 12 in this area.

Comments on this EA are due by _____ and should be sent to Richard W. Hancock, P.E. at the above address.

NC 12 – Rodanthe Breach Long-Term Improvements Bonner Bridge Replacement Project Phase IIb

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Dare County, North Carolina

Administrative Action Environmental Assessment

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NC 12 Replacement of the Herbert C. Bonner Bridge

(Bridge No. 11) over Oregon Inlet

Federal-Aid Nos. BRS-2358(15), BRNHF-0012(55), BRNHF-0012(56)

NCDOT Project Definition: 32635

TIP Project Nos. B-2500, B-2500A, B-2500B

Dare County, North Carolina

PROJECT COMMITMENTS

All Project Commitments listed in Appendix A of the Phase IIa Record of Decision (ROD) are in effect. The following text lists the Project Commitments (using the same commitment numbers that were used in the Phase IIa ROD) with direct applicability to the Phase IIb. No new commitments have been added or revised.

Highway Design Branch and Technical Services Division

2. Bicycle Accommodations. The Cape Hatteras National Seashore (Seashore) management plan supports the use of bicycles along NC 12. All bridges associated with the detailed study alternatives (including the Selected Alternative[s]) would have 8-foot (2.4-meter) wide shoulders that would be safer for bicycle and pedestrian traffic than Bonner Bridge's 2-foot (0.6-meter) wide shoulders. In addition, a bicycle-safe bridge rail on the bridges also would provide increased safety for bicyclists. New roadway would have 4-foot (1.2-meter) paved shoulders, which would be safer for use by bicycle and pedestrian traffic than the existing NC 12's unpaved shoulders.

Highway Design Branch and Division 1

3. Use of Work Bridges. During construction of the project, steps taken to minimize turbidity (when possible and practicable) would include the use of work bridges (rather than barges, which would require dredging) for movement of construction equipment in shallow areas where submerged aquatic vegetation (SAV) is present. If SAV is in waters deep enough to float a barge without dredging, the use of a work bridge would not be necessary. Work bridges also would be used to carry construction equipment over intertidal marsh areas (black needlerush and smooth cordgrass). Dredging generally would only be used in depths less than 6 feet (1.8 meters) where SAV is not present. Work bridges will be used to cross SAVs. Neither dredging nor haul roads would be used in SAVs.
4. Sedimentation and Erosion Control. All waters in the project area are classified as SA waters (Class A salt waters) with a supplemental classification of High Quality

Waters (HQW). The most stringent application of the Best Management Practices (BMPs) is expected where highway projects affect receiving waters of special designation, such as HQW. Also, impacts to adjacent areas of SAV and/or wetlands should be minimized. Therefore, sedimentation and erosion control measures shall adhere to the Design Standards in Sensitive Watersheds [15A NCAC 04B.0124 (b)-(e)]. Prior to construction, the design-build contractor will submit the proposed sediment and erosion control plans for each stage of construction to the North Carolina Department of Transportation (NCDOT) and permitting agencies for review.

5. Pile Placement. Bridge piles in open water would be jetted to the tip elevation (depth of the tip of the pile). Bridge piles over land would be jetted or driven. Potential damage to wetlands, SAV, and Oregon Inlet from jetting spoils will be minimized to the extent practicable.

Highway Design Branch, Project Development and Environmental Analysis Unit, and Division 1

8. Design Coordination. NCDOT would invite NPS and USFWS, as well as the other agencies represented on the project's National Environmental Policy Act/Section 404 of the Clean Water Act (NEPA/Section 404) Merger Team (a full list of agencies on the Merger Team is shown on page 8-6 of the 2008 FEIS), to participate in the development of project design and mitigation strategies as a part of the permit application process for each phase of the project
11. Night-time Construction. Because construction activities could occur 24-hours-a-day, construction areas could be lit to daylight conditions at night. NCDOT would work with NCDENR-DMF, NMFS, NPS, and USFWS to determine other areas near project construction where night lighting would need to be avoided or limited. Night lighting also would not be used close to areas where people sleep, including the campground at the northern end of the project area and the Rodanthe area at the southern end. Night lighting also will meet the requirements specified to protect sea turtles contained within Commitment 26.a.
12. Manatee Protection. Construction contracts would require compliance with USFWS's Guidelines for Avoiding Impacts to the West Indian Manatee: Precautionary Measures for Construction Activities in North Carolina Waters (June 2003).
13. Sea Turtle and Smalltooth Sawfish Protection. NCDOT will comply with NMFS's March 23, 2006, *Sea Turtle and Smalltooth Sawfish Construction Conditions* (NMFS, 2006) that restrict in-water construction-related activities when these protected species are observed in the project area. However, NMFS and NCDOT agree that bridge construction or demolition activities do not need to stop when a protected

species is sighted in the proximity of construction if the construction activities are not in the water. The in-water moratorium prohibits pile installation and removal and activities associated with bridge construction and demolition when listed species are present in the water, but does not restrict terrestrial activity.

20. Atlantic and Shortnose Sturgeon. Conservation measures to protect shortnose sturgeon would include no hopper dredging and measures to minimize habitat degradation. Such measures would include Best Management Practices (BMPs) involving use, storage, and disposal of construction/demolition materials to minimize short-term turbidity or water quality degradation during over-water construction in Oregon Inlet and during periodic maintenance. Construction and demolition activities associated with Phase I of the project would be completed as quickly as possible in order to minimize deterring spawning sturgeon from entering Oregon Inlet. In addition, the project would incorporate BMPs to reduce habitat degradation from stormwater runoff pollution. The same conservation measures will be applied to the Atlantic sturgeon.

**Highway Design Branch, Project Development and Environmental Analysis Unit,
Division 1, Right-of-Way Branch, and Technical Services Division**

21. Utilities. Project development and construction activities would be coordinated with utility providers in the project area in order to prevent interruption of local utility services. The following utility providers currently serve the project area: Dare County (water service); Sprint Communications (telephone service); Charter Communications (cable television service); and Cape Hatteras Electric Membership Association (electric power service).

Project Development and Environmental Analysis Unit

23. Programmatic Agreement. As per the requirements of Section 106 of the National Historic Preservation Act of 1966, FHWA, the North Carolina State Historic Preservation Officer (SHPO), the Advisory Council on Historic Preservation (ACHP), and NCDOT, along with the consulting parties (Dare County, the North Carolina Aquarium Society, USFWS, NPS, and the Chicamacomico Historical Association), developed a Programmatic Agreement (PA) stipulating measures that FHWA will ensure are carried out during the design and construction of the Selected Alternative to mitigate adverse impacts to the historic cultural resources. The final PA (see Appendix D of the 2010 ROD) was signed by the signatory agencies on November 15, 2010 and amended in August 2013 (see Appendix E of the Phase IIa ROD). NCDOT would carry out the stipulations in this agreement.
24. Seabeach Amaranth. Since the favored habitat of the seabeach amaranth is highly ephemeral, a survey of the project area would be conducted for the habitat of this

species at least one year prior to initiating bridge construction activities. It would occur as needed for each construction phase

**Highway Design Branch, Project Development and Environmental Analysis Unit,
Division 1, and Bridge Management Unit**

25. Piping Plover. NCDOT will implement the following nondiscretionary measures that include the terms and conditions outlined in the *Biological and Conference Opinions* (USFWS, 2008):

- a. All construction equipment and personnel must avoid all bird closure areas within the Seashore and Refuge.

All future routine maintenance activities of bridge structures that would occur within or adjacent to current or future plover nesting areas must occur outside the nesting season (April 1 to July 15).

All future repair work on bridge structures that would occur within or adjacent to current or future plover nesting areas must occur outside the nesting season (April 1 to July 15) unless emergency or human safety considerations require otherwise. In this event, the area must be surveyed for nesting plovers and avoided to the extent possible.

- b. During the construction of Phases II, III and IV of the Phased Approach/Rodanthe Bridge Alternative (*if it is implemented under the NC 12 Transportation Management Plan [Selected Alternative]*), keep all construction equipment and activity within the existing right-of-way unless granted approval by the US Fish and Wildlife Service through a revised protected species Biological Opinion.

Do not moor any construction barges within 300 feet (91.4 meters) of the following islands: Green Island, Wells Island, Parnell Island, Island MN, Island C, the small unnamed island immediately east of Island C, Island D, and Island G (see Figure 1 in the *Biological and Conference Opinions* in Appendix E of the 2008 FEIS).

- c. All dredge spoil excavated for construction barge access must be used to augment either existing dredge-material islands or to create new dredge-material islands for use by foraging plovers. This must be accomplished as per the specifications of the North Carolina Wildlife Resources Commission. If the dredge material is used outside the current defined action area, the action area is assumed to be expanded to cover the beneficial placement of the material.

- d. To the maximum extent practical, while ensuring the safety of the traveling public, limit or avoid the use of road signs or other potential predator perches adjacent to plover nesting or foraging areas. Where signs or other structures are necessary, determine if alternative designs would be less conducive for perching on by avian predators (gulls, crows, grackles, hawks, etc.). For example, minimize or avoid the use of large cantilever signs in favor of smaller and shorter designs.

26. Sea Turtles (green sea turtle, leatherback sea turtle, and loggerhead sea turtle).

NCDOT will implement the following nondiscretionary measures that include the terms and conditions outlined in the *Biological and Conference Opinions* (USFWS, 2008):

- a. All construction equipment and personnel must avoid all marked sea turtle nests.

Construction material and equipment staging areas must not be located seaward of the artificial dune.

All future routine maintenance activities of bridge structures that would occur within or adjacent to current or future sea turtle nesting habitat, and which would require vehicles or equipment on the beach or the use of night lighting (excluding navigation lights required by the US Coast Guard), must occur outside the nesting season (May 1 to November 15).

All future repair work of bridge structures that would occur within or adjacent to current or future sea turtle nesting habitat, and which would require vehicles or equipment on the beach or the use of night lighting (excluding navigation lights required by the US Coast Guard) must occur outside the nesting season (May 1 to November 15) unless emergency or human safety considerations require otherwise. In this event, the area must be surveyed for sea turtle nests and avoided to the extent possible.

- b. Provide an opportunity for USFWS or a USFWS designee to educate construction contractor managers, supervisors, foremen and other key personnel and resident NCDOT personnel with oversight duties (division engineer, resident engineer, division environmental officer, etc.) as to adverse effects of artificial lighting on nesting sea turtles and hatchlings, and to the importance of minimizing those effects.
- c. During turtle nesting season (May 1 to November 15), use the minimum number and the lowest wattage lights that are necessary for construction.

During turtle nesting season, portable construction lighting must be amber-colored LED lights with a predominant wavelength of approximately 650 nanometers (preferred) or low pressure sodium-vapor type (with USFWS approval).

During turtle nesting season, utilize directional shields on all portable construction lights, and avoid directly illuminating the turtle nesting beach at night.

During turtle nesting season, all portable construction lights must be mounted as low to the ground as possible.

During turtle nesting season, turn off all lights when not needed.

- d. For Phases II, III, and IV if developed as defined by the Phased Approach/Rodanthe Bridge Alternative (*if it is implemented under the NC 12 Transportation Management Plan [Selected]*), on the ocean side, design the bridge structure in a manner which will shield the beach on the east side from direct light emanating from passenger vehicle headlights. For the small portion of Phase I over land on Hatteras Island, retrofit the bridge structure at the time that Phase II connects with Phase I. The specific design of the bridge will be developed in consultation with USFWS prior to re-evaluation of the environmental document for Phase II.
- e. Avoid retrofitting the bridges and approach roads with permanent light fixtures in the future (excluding navigation lights required by the US Coast Guard).

In addition, NCDOT does not anticipate the use of explosives during construction or demolition of the existing bridge. NCDOT's contractor will use pipeline or clamshell dredging, rather than a hopper dredge to minimize effects to sea turtles. No permanent light fixtures will be installed on the bridge or the approaches (with the exception of navigation lights as required by the US Coast Guard).

Photogrammetry Unit and Project Development and Environmental Analysis Unit

27. Submerged Aquatic Vegetation (SAV) Survey. The dynamic nature of the area around Oregon Inlet and the new Pea Island inlet (closed as of May 2013) results in ephemeral habitats, particularly in shallow water and shoreline areas. Consequently, NCDOT would obtain new SAV information for use by the contractor in construction access planning. All surveys for SAV in the vicinity of Oregon Inlet will follow protocols endorsed by the National Oceanic and Atmospheric Administration (NOAA) Fisheries.

Project Development and Environmental Analysis Unit

28. Section 4(f). If a later phase of the Parallel Bridge Corridor with NC 12 Transportation Management Plan Alternative (Selected) requires the use of a Section 4(f) property, then FHWA would complete an additional Section 4(f) analysis prior to FHWA's approval of the later phase. The 2009 Revised Final Section 4(f) Evaluation would be reviewed to verify the status of Section 4(f) resources, the effects(s) from the proposed response strategies on the Section 4(f) resource, "use" determinations, and, if necessary, a revised least overall harm analysis.
30. Replacement of Public Parking Lot Near Pea Island Inlet (new). Upon completion of construction of Phase IIa, the parking lot on the east side of NC 12 will be removed by NCDOT, along with all construction materials, including concrete, asphalt, contaminated soils, and any other material not naturally belonging on the site. NCDOT will construct a replacement parking lot at a new site near the northern terminus of the Phase IIb project per the direction of the USFWS. The site would be selected by the Refuge manager with input from NCDOT upon completion of the Phase IIb project. Upon project completion, the maintenance of the parking lot would be the responsibility of the Refuge.

Table of Contents

PROJECT COMMITMENTS	iii
1.0 INTRODUCTION.....	1-1
1.1 Purpose of the Environmental Assessment.....	1-2
1.2 Description of PBC/TMP Alternative.....	1-5
2.0 DESCRIPTION OF PHASE IIB ALTERNATIVES ANALYSIS.....	2-1
2.1 NC 12 Alternatives Included in the Parallel Bridge Corridor with the PBC/TMP Alternative.....	2-1
2.2 Scoping.....	2-2
2.3 Other Alternatives Considered Based on Public and Agency Comment During Scoping	2-5
2.4 Phase Iib Detailed Study Alternatives (Bridge on New Location and Bridge within Existing NC 12 Easement).....	2-6
2.4.1 Detailed Study Alternative Selection.....	2-6
2.4.2 Development of Phase Iib Preliminary Design for Bridge on New Location Alternative.....	2-8
2.4.3 Development of Phase Iib Preliminary Design for Bridge within Existing NC 12 Easement Alternative	2-9
2.5 Phase Iib Detailed Study Alternatives Cost and Financing	2-11
2.6 New Studies	2-13
2.6.1 Phase II New Studies Presented in the Phase IIa EA	2-13
2.6.2 Ongoing and Additional Phase II New Studies.....	2-14
3.0 DESCRIPTION OF PHASE IIB DETAILED STUDY ALTERNATIVES AND IDENTIFICATION OF PREFERRED ALTERNATIVE	3-1
3.1 Description of Bridge on New Location Alternative.....	3-1
3.2 Description of Bridge within Existing NC 12 Easement Alternative	3-2
3.3 Phase Iib Preferred Alternative	3-5
4.0 ENVIRONMENTAL UPDATE.....	4-1
4.1 Updated Affected Environment	4-1
4.1.1 Community Characteristics	4-1
4.1.2 Cultural Resources	4-3
4.1.3 Parks and Recreation/Wildlife Refuges.....	4-3
4.1.4 Coastal Conditions	4-3
4.1.5 Biotic Communities, Wetlands, and Open Water Habitat	4-7

Table of Contents (continued)

4.1.6	Protected Species	4-10
4.1.7	Essential Fish Habitat	4-11
4.2	Updated Impacts of the Phase IIb Detailed Study Alternatives	4-12
4.2.1	Community Impacts	4-15
4.2.2	Visual Impacts	4-17
4.2.3	Cultural Resource Impacts.....	4-20
4.2.4	Parks and Recreation Impacts	4-20
4.2.5	Natural Systems Impacts.....	4-24
4.2.6	Noise Impacts	4-34
4.2.7	Air Quality Impacts	4-39
4.3	Effect of the Phase IIb Detailed Study Alternatives on the PBC/TMP Alternative	4-43
4.3.1	Updated Impacts in the Phase IIb Area	4-43
4.3.2	Updated Costs	4-44
4.3.3	Impact of Implementation of All Phases of the PBC/TMP Alternative	4-44
4.4	Phase IIb Permits and Approvals.....	4-45
5.0	SECTION 4(F) EVALUATION FOR PHASE IIB.....	5-1
5.1	October 2009 Revised Final Section 4(f) Evaluation Findings as Updated in the Phase IIa EA	5-2
5.2	Proposed Detailed Study Alternatives for Phase IIb	5-3
5.3	Section 4(f) Properties in the Phase IIb Project Area.....	5-3
5.3.1	Description of Properties.....	5-3
5.3.2	Effect of Hurricane Irene and Hurricane Sandy on Section 4(f) Properties in the Phase IIb Project Area	5-5
5.4	Impact to Section 4(f) Properties	5-5
5.4.1	Pea Island National Wildlife Refuge	5-6
5.4.2	Rodanthe Historic District and Chicamacomico Life Saving Station	5-9
5.5	Analysis of Avoidance Alternatives	5-10
5.5.1	Alternatives Previously Considered that are Not Avoidance Alternatives	5-10
5.5.2	Avoidance Alternatives Previously Considered.....	5-11
5.5.3	Potential for Additional Phase IIb Avoidance Alternatives.....	5-11
5.5.4	No-Build Alternative	5-12
5.5.5	Avoidance Alternatives Conclusion.....	5-12

Table of Contents (continued)

5.6	Effect on the Least Harm Analysis	5-13
5.6.1	Factor #1: The ability of the alternatives to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property)	5-13
5.6.2	Factor #2: The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection	5-14
5.6.3	Factor #3: The relative significance of each Section 4(f) property ..	5-15
5.6.4	Factor #4: The views of the official(s) with jurisdiction over each Section 4(f) property	5-15
5.6.5	Factor #5: The degree to which each alternative meets the purpose and need for the project	5-15
5.6.6	Factor #6: After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f)	5-15
5.6.7	Factor #7: Substantial Differences in costs among the alternatives	5-18
5.6.8	Conclusion	5-18
5.7	Effect on All Possible Planning to Minimize Harm	5-19
6.0	COMMENTS AND COORDINATION	6-1
6.1	Public Meetings and Activities	6-1
6.1.1	Citizens Informational Workshops for Scoping	6-1
6.1.2	Phase IIa Public Hearings	6-1
6.1.3	Newsletters	6-2
6.1.4	Toll-Free Telephone Number	6-2
6.1.5	Web Sites	6-3
6.2	NEPA/Section 404 Merger Team Meetings and Outcomes	6-3
6.3	Endangered Species Act Consultation	6-6
6.4	Essential Fish Habitat Coordination	6-7
6.5	Section 106 of the National Historic Preservation Act Coordination	6-7
6.6	List of Agencies, Organizations, and Persons to Whom Copies of the Environmental Assessment are Sent	6-9
7.0	CONCLUSION	7-1
8.0	LIST OF REFERENCES	8-1
A.	NEPA/404 CONCURRENCE FORMS, AGENCY CORRESPONDENCE, AND MEETING SUMMARIES	A-1

Table of Contents (continued)

B.	PUBLIC INVOLVEMENT MATERIALS AND CORRESPONDENCE	B-1
C.	RESPONSE TO SCOPING COMMENTS ON POTENTIAL PHASE IIB ALTERNATIVES	C-1
D.	2060 HIGH-EROSION SHORELINE	D-1
E.	RELOCATION REPORTS	E-1

List of Tables

Table 1.	Phase IIb Detailed Study Alternatives Cost	2-12
Table 2.	Comparison of Existing (2012) and FEIS (2008) Biotic Communities.....	4-9
Table 3.	Relocations	4-15
Table 4.	Impacts to Biotic Communities in the Phase IIb Project Area	4-26
Table 6.	Noise Abatement Criteria Noise Abatement Criteria (Hourly Equivalent A-Weighted Sound Level Decibels – dB(A)).....	4-36
Table 7.	Average Daily VMTs in the Phase IIb Project Area	4-41
Table 8.	Comparison of Key Impacts of the Phase IIb Alternatives	5-16
Table 9.	Phase IIb Impacts, Mitigation Measures, and Current Status	5-22

List of Figures

Figure 1.	Parallel Bridge Corridor with NC 12 Transportation Management Plan Alternative.....	1-3
Figure 2.	Phase IIb Alternatives Considered	2-3
Figure 3.	Phase IIb Detailed Study Alternatives	2-7
Figure 4.	Comparison of Bridge on New Location Alternative and “Bridge South” from 2010 EA	2-10
Figure 5.	Bridge within Existing NC 12 Easement with Frontage Roads.....	3-4
Figure 6.	Land Use in Rodanthe Area	4-2
Figure 7.	Land Use in Pea Island National Wildlife Refuge.....	4-4
Figure 8.	Photosimulation of the Bridge on New Location Alternative	4-18
Figure 9.	Photosimulation of Bridge within Existing NC 12 Easement Alternative	4-19
Figure D-1.	Comparison of FEIS and Updated Forecast 2060 High-Erosion Shoreline Locations	D-1

1.0 Introduction

The Parallel Bridge Corridor with NC 12 Transportation Management Plan Alternative (PBC/TMP Alternative) is the Selected Alternative for the NC 12 Replacement of the Herbert C. Bonner Bridge over Oregon Inlet (Bonner Bridge Replacement Project), which is included in the State Transportation Improvement Program (STIP) as STIP Project No. B-2500. The components of the PBC/TMP Alternative are detailed in the December 2010 Record of Decision (ROD). It consists of Phase I, which is the replacement of the Bonner Bridge over Oregon Inlet, and future phases that provide for the long-term maintenance of NC 12 from Oregon Inlet to Rodanthe. The North Carolina Department of Transportation (NCDOT) has started work on Phase I of the PBC/TMP Alternative; a design-build contract for the construction of the new bridge was awarded in July 2011. A ROD was released in October 2013 for Phase IIa, an improvement in the existing NC 12 easement beginning at the southern end of the Pea Island National Wildlife Refuge's (Refuge) South Pond and extending 2.4 miles south, including a 2.1-mile-long bridge. It would bridge Pea Island inlet (formed in 2011 and now closed).

The project phase under consideration in this document is Phase IIb of the PBC/TMP Alternative. As discussed in Section 3.3.2 of the 2010 ROD, the PBC/TMP Alternative did not specify a particular action at that time on Hatteras Island beyond the limits of Phase I because of the inherent uncertainty in predicting future conditions within the dynamic coastal barrier island environment. Instead, the PBC/TMP Alternative addresses the study and selection of future actions on Hatteras Island beyond the limits of Phase I through a comprehensive NC 12 Transportation Management Plan (TMP). The TMP is guiding the implementation of future phases of the project through 2060. By actively monitoring the conditions in the Bonner Bridge Replacement Project (B-2500) project area and delaying final decision-making as set forth in the TMP, the environmental impacts beyond Phase I can be better quantified, minimized, and mitigated. This process is somewhat analogous to a tiered National Environmental Policy Act (NEPA) study, in that the entire end-to-end impacts have been studied, but the detailed selection of a portion of the action is being delayed. The measures incorporated into the TMP to assist in the study and selection of future actions on Hatteras Island beyond the limits of Phase I are described in detail in Section 1.2.

In addition to the measures incorporated into the TMP related to guiding the implementation of future phases of the PBC/TMP Alternative, Project Commitment 16 in Appendix A of the 2010 ROD (as updated in the Phase IIa ROD) indicated that final decisions on future phases of the PBC/TMP Alternative would be developed through interagency collaboration and under the requirements of NEPA as project area conditions warrant. Hurricane Irene hit the North Carolina coast on August 27, 2011, and breached NC 12 in two locations: in northern Rodanthe at the Rodanthe 'S' Curves Hot Spot (the "Rodanthe breach") and within the Refuge approximately 6 miles south of

Oregon Inlet (the “Pea Island inlet”). Hurricane Irene was a powerful and destructive tropical cyclone that affected a significant portion of the east coast of the United States, as well as the Caribbean.

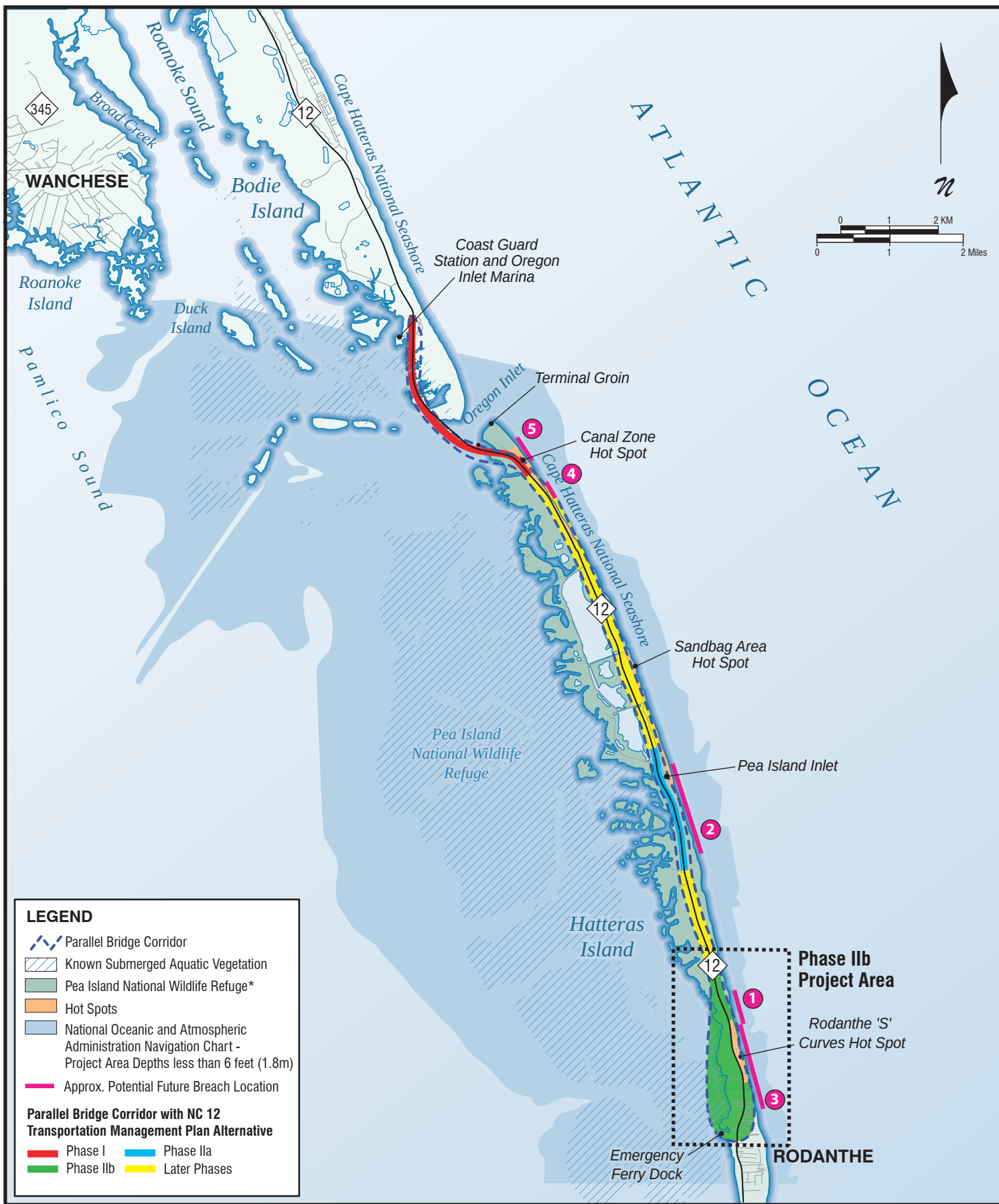
As a result of the damage caused by the storm within the Bonner Bridge Replacement Project (B-2500) project area and the “temporary” nature of the current repairs, NCDOT initiated Phase II (B-2500A and B-2500B) of the Bonner Bridge Replacement Project (B-2500) to implement long-term improvements to NC 12 in the two breach areas pursuant to the 2010 ROD. This Environmental Assessment (EA) is intended to fulfill the requirements of NEPA for the Rodanthe breach area (B-2500B or “Phase IIb”). A separate EA was released in February 2013 and a ROD was released in October 2013 for the Pea Island inlet area (B-2500A or “Phase IIa”). The proposed Phase IIb is consistent with the objectives for later phases of the PBC/TMP Alternative as described in Section 3.3.2 of the 2010 ROD.

The project area for the Bonner Bridge Replacement Project (B-2500) is shown in Figure 1, along with the locations of Phases I and II (both IIa and IIb) of the PBC/TMP Alternative. The Phase IIb (B-2500B) project area also is shown in Figure 1. The Bonner Bridge Replacement Project (B-2500) project area starts at the southern tip of Bodie Island and extends south to the community of Rodanthe. The boundaries of the project area were chosen to include the Bonner Bridge over Oregon Inlet, as well as NC 12 between Oregon Inlet and the community of Rodanthe, an area that is at risk because of shoreline erosion. The Phase IIb project area includes the area between about the southern end of the 2.1-mile section of NC 12 in the southern half of the Refuge that is not expected to be threatened by shoreline erosion prior to 2060 and NC 12’s intersection with Myrna Peters Road (SR 1492) in Rodanthe. This area includes the Rodanthe breach that was created by Hurricane Irene in August 2011, as well as the Rodanthe ‘S’ Curves Hot Spot and two areas identified in the 2008 Final Environmental Impact Statement (FEIS) as geologically susceptible to breaches (see Figure 1).

1.1 Purpose of the Environmental Assessment

The purpose of this EA for Phase IIb is to identify and assess changes in the setting, project, and impacts that may have occurred since the 2010 ROD for the PBC/TMP Alternative was issued on December 20, 2010. This EA for Phase IIb is established on the previous NEPA documentation for the Bonner Bridge Replacement Project (B-2500) as its basis. The previous NEPA documentation includes:

- Final Environmental Impact Statement (FEIS) and Section 4(f) Evaluation signed in September 2008 (2008 FEIS).
- Revised Final Section 4(f) Evaluation signed in October 2009.
- Environmental Assessment signed in May 2010 (2010 EA).



**PARALLEL BRIDGE CORRIDOR WITH NC 12
TRANSPORTATION MANAGEMENT PLAN ALTERNATIVE**

Figure
1

- Record of Decision that selected the PBC/TMP Alternative issued in December 2010 (2010 ROD).
- Environmental Assessment for Phase IIa signed in February 2013 (Phase IIa EA).
- Record of Decision for Phase IIa issued in October 2013 (Phase IIa ROD).

The findings of these documents are incorporated into this EA by this reference. The Phase IIa EA and the Phase IIa ROD are available on the compact disc (CD) that accompanies this EA, at the public review locations listed in Section 6.6, and on the NCDOT web site at <http://www.ncdot.gov/projects/bonnerbridgephase2>.

The purpose of this EA also is to provide documentation of compliance with NEPA in accordance with the PBC/TMP Alternative. The limits of the Phase IIb project area in the context of the PBC/TMP Alternative are shown in Figure 1. This EA includes the following:

- A description of the Phase IIb alternative screening process, including the steps followed (including scoping), alternatives considered, screening findings, and several additional studies conducted in the project area.
- A description of the two detailed study alternatives for Phase IIb (Bridge within Existing NC 12 Easement Alternative and Bridge on New Location Alternative) that were selected by the project's NEPA/Section 404 Merger Team for detailed study. (See Section 6.2 for a description of the Merger Team process and Section 6.2.6 of the Phase IIa EA for a description of the November 14, 2012 Merger Team meeting at which these two alternatives were selected.) The decisions at the November 14, 2012 meeting relevant to Phase IIb are described in Section 6.2 of this EA. The Concurrence Point No. 2 and 2A form for Phase IIb is included in Appendix A of this EA. The Bridge within Existing NC 12 Easement Alternative is identified as the Preferred Alternative in this EA.
- An update of the assessment of the Phase IIb detailed study alternatives, including a description of changes in the environmental setting since the release of the 2010 ROD; a description of the impacts of the two detailed study alternatives; a discussion of costs and financing; and a discussion of the effects that the changes in setting, Phase IIb impacts, and costs and financing findings have on the Bonner Bridge Replacement Project (B-2500) as a whole. Changes in the environmental setting since the release of the 2010 ROD are primarily associated with on-going beach erosion and storm activity, including the formation of the Rodanthe breach during Hurricane Irene in August 2011 (which was closed by NCDOT during repairs to NC 12) and on-going challenges of keeping NC 12 open at the Rodanthe 'S' Curves Hot Spot during storm events.

- An evaluation of the October 2009 Revised Final Section 4(f) Evaluation (Revised 4(f) Evaluation) that includes: a summary of the findings from the October 2009 Revised 4(f) Evaluation, a brief description of the two proposed detailed study alternatives for Phase IIb, a description of the three Section 4(f) properties in the Phase IIb project area, a discussion of the impacts to those Section 4(f) properties (a use or constructive use would occur at only one of the three properties), an analysis of avoidance alternatives, the least harm analysis, and all possible planning to minimize harm.
- A summary of public and agency scoping conducted during the consideration of Phase II, including responses to scoping comments directly associated with Phase IIb. The public and agency scoping program for Phase II was described in detail in Chapter 6.0 of the Phase IIa EA. Responses to scoping comments related to Phase IIa and Phase II in general also were presented in that document. Comments related to Phase IIb that were raised at the Phase IIa public hearings and during the Phase IIa comment period also are presented.
- An analysis of and preliminary conclusion on the need to prepare a supplemental Environmental Impact Statement (EIS).

The findings contained within this EA and subsequent review of this EA by the public and environmental resource and regulatory agencies will be used to determine whether or not these changes or circumstances would result in significant environmental impacts in the Phase IIb project area that were not evaluated in the 2008 FEIS, the 2010 EA, and the 2010 ROD, as well as to finalize a Selected Alternative for Phase IIb. If the agency conclusion is that these changes or circumstances would result in significant environmental impacts not evaluated in the previous NEPA documentation, then a supplemental EIS will be prepared.

FHWA and NCDOT will make this EA available to provide resource agencies and the public an opportunity to review and comment. Comments received will be reviewed and taken into account prior either to the determination to prepare a supplemental EIS or to the approval of a ROD for Phase IIb, which will identify the Selected Alternative for Phase IIb.

1.2 Description of PBC/TMP Alternative

The PBC/TMP Alternative was identified in the 2010 ROD as the Selected Alternative for the Bonner Bridge Replacement Project (B-2500). The PBC/TMP Alternative includes the replacement of the existing Bonner Bridge with a new Oregon Inlet bridge parallel to and west of the Bonner Bridge as Phase I of the project, as well as the Phase IIa project selected in the October Phase IIa ROD. A design-build contract for Phase I was awarded in July 2011.

The PBC/TMP Alternative calls for the study and selection of future actions on Hatteras Island beyond the limits of Phase I through a comprehensive NC 12 Transportation Management Plan. The PBC/TMP Alternative includes the following measures described in Section 3.3.2 of the 2010 ROD beginning on page 12:

- NCDOT will fund and implement an on-going coastal monitoring program on Hatteras Island within the project study area (i.e., Oregon Inlet to Rodanthe). The data to be gathered includes the extent and location of geomorphological features, the relationship of NC 12 to those features, overwash occurrences, NC 12 maintenance data, dredge disposal and beach nourishment projects undertaken, and storm event data. The results presented in the monitoring program's annual reports will be used to determine when planning of future phases of the project should begin. The program was initiated in early 2011.
- NCDOT will fund and implement a periodic Refuge habitat/NC 12 vulnerability forecasting study in consultation with the US Fish and Wildlife Service (USFWS) with at least a five-year recurrence. Through this program, NCDOT and USFWS will work together to develop and assess alternative future scenarios including possible site-specific events and remedies. This program is based on the on-going findings of the coastal monitoring program (as discussed in Section 2.6.3 of the Phase IIa EA). With the current focus on developing for implementation the Phase II projects, the vulnerability forecasting component of the PBC/TMP Alternative has not yet formally begun. The coastal monitoring program results to date have, however, identified potential areas within the Refuge where NC 12 is vulnerable. These areas likely will be the initial focus of the first vulnerability forecasting study.
- NCDOT and FHWA will use the results of the coastal monitoring program and the periodic Refuge habitat/NC 12 vulnerability forecasting study to determine when the environmental review for each phase (e.g., Phase III) should be initiated and what alternative actions should be studied in detail. This assessment will be performed after the completion of each report prepared as part of the coastal monitoring program and after each iteration of the vulnerability study. In other words, based on the measures included in the PBC/TMP Alternative, the conditions in the Bonner Bridge Replacement Project (B-2500) project area will be constantly re-assessed to determine whether the next project phase should be implemented until the full PBC/TMP Alternative is completed.
- The NEPA/Section 404 Merger Process will be used to study, select, and finalize future phases. The NEPA/Section 404 Merger Process is described in Section 6.2.

2.0 Description of Phase IIb Alternatives Analysis

2.1 NC 12 Alternatives Included in the Parallel Bridge Corridor with the PBC/TMP Alternative

The alternatives listed below were previously assessed within the Parallel Bridge Corridor in the 2008 FEIS and 2010 EA. They are included in the PBC/TMP Alternative as potential phases beyond Phase I and are representative of the range of potential impacts of the PBC/TMP Alternative. Section 2.10 of the 2008 FEIS describes these Parallel Bridge Corridor alternatives in detail. In addition, Section 2.1 of the 2010 EA describes updates to the designs of several of these alternatives so as to address agency concerns about impacts to the Rodanthe Historic District. These PBC/TMP Alternatives are:

- Nourishment Alternative – NC 12 would remain in its current location and beach nourishment (combined with dune enhancement) would be used to maintain an adequate protective beach and dune system. Nourishment would occur in four locations, likely repeated at four-year intervals.
- Road North/Bridge South Alternative – NC 12 would be relocated as a road west of the forecast 2060 high-erosion shoreline in the north end of the Refuge. At the south end of the Refuge and in Rodanthe, NC 12 would be placed on a bridge west of Hatteras Island.
- All Bridge Alternative – NC 12 would be relocated onto a bridge west of the forecast 2060 high-erosion shoreline in the north end of the Refuge. At the south end of the Refuge and in Rodanthe, NC 12 would be placed on a bridge west of Hatteras Island.
- Phased Approach Alternatives – NC 12 would be elevated in its current easement onto a series of bridges within the Refuge and in Rodanthe. There are two options for the Phased Approach in Rodanthe. The Phased Approach/Rodanthe Nourishment Alternative includes a bridge that ends just south of the Refuge boundary and the use of beach nourishment to stabilize NC 12 in Rodanthe. The Phased Approach/Rodanthe Bridge Alternative includes a bridge in Rodanthe that ends just north of the Rodanthe Historic District (no beach nourishment). The Selected Alternative in Phase IIa, the Bridge within Existing NC 12 Easement Alternative, elevates NC 12 in its current easement in the area in the Refuge near the Pea Island inlet.

All of these alternatives remain potential options for future phases, reflecting several basic approaches to addressing project need, including: addressing the threat to existing

NC 12 by protecting the road from the natural forces (e.g., ocean overwash and beach erosion) that create the need for improvements, moving the road west on a road away from the shoreline affected by current and future erosion, and moving NC 12 to a bridge either in the existing easement or west away from the shoreline affected by current and future erosion.

Based on the original alternatives listed above, four alternatives were considered as possible long-term improvements for the Phase IIb Rodanthe breach study area. As a Phase IIb alternative, all four alternatives would extend from within the Refuge south to the intersection of NC 12 and Myrna Peters Road (SR 1492) in Rodanthe. This distance includes the Rodanthe 'S' Curves Hot Spot and two areas identified in the 2008 FEIS for this study area as geologically susceptible to breaches (see Figure 1). The four alternatives considered for study in the Rodanthe breach study area are:

1. Beach Nourishment
2. Bridge on New Location (from Road North/Bridge South and All Bridge alternatives)
3. Bridge within Existing NC 12 Easement (part of Phase II of Phased Approach/Rodanthe Bridge Alternative)
4. Bridge within Existing NC 12 Easement and Beach Nourishment (part of Phase II of Phased Approach/Rodanthe Nourishment Alternative)

In the remainder of this EA for Phase IIb, these alternatives will be identified by their Phase IIb descriptive names above rather than the names used in previous environmental documentation. These four alternatives, which were assessed in the 2008 FEIS and 2010 EA, are illustrated in Figure 2.

This Phase IIb EA does not address alternatives to the PBC/TMP Alternative that were suggested during scoping for Phase II (i.e., the Pamlico Sound Bridge Corridor, the Ferry Alternative, a bridge from Rodanthe to either Stumpy Point or Roanoke Island, and the Seven-Mile Bridge Alternative). Section 2.3 of the Phase IIa EA describes these alternatives and the reasons each was not studied in detail in Phase II. Appendix C of the Phase IIa ROD responds to additional comments advocating these alternatives that were received during the public review process for the Phase IIa EA. Consideration of these comments did not result in a change in the decision not to study these alternatives in detail for Phase II.

2.2 Scoping

Scoping activities completed as part of Phase II included an October 18, 2011 Merger Team meeting, an October 2011 Peer Exchange meeting, and three Citizens

Informational Workshops:

- The October 18, 2011 Merger Team meeting was an informational/scoping meeting. The purposes of the meeting were for NCDOT to inform the Merger Team members about the initiation of Phase II following Hurricane Irene, as well as to allow agency representatives to provide scoping comments on impact issues and alternatives related to the two breach sites (i.e., Pea Island inlet and Rodanthe). The action items identified at the meeting were to: further address the merits of a Ferry Alternative (see Section 2.3.2 of the Phase IIa EA), consult with the National Marine Fisheries Service (NMFS) under Section 7 of the Endangered Species Act (ESA) of 1973 regarding the Atlantic sturgeon (see Sections 4.1.4 and 4.2.4.4 of the Phase IIa EA and Section 4.1.6 and 4.2.5.4 of this EA), revisit the cost and financing of a bridge in the Pamlico Sound Bridge Corridor (see Section 2.6.1 of the Phase IIa EA), and consider a “Seven-Mile Bridge Alternative” (see Section 2.3.4 of the Phase IIa EA). This meeting is described in Section 6.2.2 of the Phase IIa EA.
- The purposes of the October 24 and 25, 2011 Peer Exchange meeting were to get feedback from a panel of coastal scientists and engineers on the four Parallel Bridge Corridor alternatives under consideration for the Phase IIa and IIb project areas, as well as to get their suggestions on other potential alternatives for consideration (see Section 2.6.2 of the Phase IIa EA for a summary of the Peer Exchange meeting). In response to this request, the USFWS-Refuge representative suggested a “Seven-Mile Bridge Alternative” as a possible additional option. The USFWS-Refuge representative also mentioned this option at the October 18, 2011 Merger Team meeting. Section 2.3.4 of the Phase IIa EA presents a detailed discussion of the Seven-Mile Bridge Alternative, including the additional coordination that took place with USFWS-Refuge related to this alternative).
- Citizens Informational Workshops were held in Manteo (December 5, 2011) at the Dare County Administration Building, in Rodanthe (December 6, 2011) at the Rodanthe-Waves-Salvo Community Center, and in Ocracoke (January 5, 2012) at the Community Center. The purposes of the three workshops were to provide the public with an opportunity to review and revisit the alternatives considered in the 2008 FEIS and the 2010 EA, to consider their potential implementation at the two breach sites, and to suggest other alternatives that might be considered. Environmental issues also were discussed. These workshops are described in Section 6.1.1 of the Phase IIa EA. Scoping comments were made related to project need and timing, reconsideration of the Pamlico Sound Bridge Corridor, reconsideration of a Ferry Alternative, consideration of bridges to Rodanthe originating at either Stumpy Point or Roanoke Island, potential impacts and merits of relocating NC 12 on a bridge either in a new NC 12 easement (within the Refuge or Pamlico Sound) or in the existing easement, potential impacts and merits of relocating NC 12 as a surface road, potential impacts and merits of beach

nourishment, concerns about the length of the temporary bridge, utility relocation along NC 12, the potential impacts of a “Seven-Mile Bridge” Alternative, and the legality of phased decision-making. Workshop materials and public scoping comments are included in Appendix B. These items also appeared in Appendix B of the Phase IIa EA.

- Public Hearings were held to obtain public input on the Phase IIa EA in Manteo (March 11, 2013) at the Dare County Administration Building, in Rodanthe (March 12, 2013) at the Rodanthe-Waves-Salvo Community Center, and in Ocracoke (March 13, 2013) at the Community Center. Public comments also were made on Phase IIb during the Phase IIa Public Hearings (see Appendix C). These comments included: an inquiry about the possibility for an emergency bridge solution prior to implementation of Phase IIb, immediate need for beach nourishment to address challenges with keeping NC 12 open at the Rodanthe ‘S’ Curves Hot Spot, preference for an immediate long-term solution that would support the community, preference for an immediate short-term solution that would support tourism until a permanent solution is reached, concerns about impacts to businesses properties under each of the Phase IIb alternatives, reconsideration of beach renourishment to sustain recreation in the Rodanthe area, request to consider alternatives that would further reduce the visual impact of a bridge in Pamlico Sound, opposition to a bridge within the existing NC 12 easement, preference for an alternative that would bypass Rodanthe to the west in Pamlico Sound, and opposition to short-term cosmetic fixes.

2.3 Other Alternatives Considered Based on Public and Agency Comment During Scoping

Some public and agency scoping comments received at and following the December 2011 and January 2012 Citizens Informational Workshops for Phase II suggested that three alternatives previously rejected as detailed study alternatives be revisited: the Pamlico Sound Bridge Corridor Alternative, the Ferry Alternative, and a bridge from Rodanthe to either Stumpy Point or Roanoke Island. A fourth, the Seven-Mile Bridge Alternative, was suggested in the context of agency scoping. These alternatives were all re-considered or considered. Detailed discussions of the analyses for each alternative are provided in the Phase IIa EA in the following sections:

- Section 2.3.1 – Pamlico Sound Bridge Corridor
- Section 2.3.2 – Ferry Alternative
- Section 2.3.3 – Bridge from Rodanthe to Either Stumpy Point or Roanoke Island
- Section 2.3.4 – Seven-Mile Bridge Alternative

The conclusion was reached that all four alternatives are unreasonable because they do not meet the project purpose and need, are not affordable, and/or because of potential environmental impacts. Appendix C of the Phase IIa ROD responds to additional comments advocating the first three alternatives that were received during the public and agency review process for the Phase IIa EA. The responses to those comments re-affirmed the reasons each was not a reasonable alternative.

2.4 Phase IIb Detailed Study Alternatives (Bridge on New Location and Bridge within Existing NC 12 Easement)

2.4.1 Detailed Study Alternative Selection

At the November 14, 2012 Merger Team meeting, the Team reached consensus that, from among the alternatives described in the previous sections, the Bridge on New Location and the Bridge within Existing NC 12 Easement alternatives (see Figure 3) would be carried forward as the detailed study alternatives for Phase IIb. FHWA, NCDOT, US Army Corps of Engineers (USACE), the North Carolina Department of Environment and Natural Resources (NCDENR)-Division of Water Quality (DWQ) (now within NCDENR-Division of Water Resources [DWR]), the North Carolina Department of Cultural Resources (NCDCR), and NCDENR-Division of Coastal Management (DCM) signed the Merger Team concurrence forms. USEPA, USFWS, USFWS-Refuge, NMFS, the National Park Service (NPS), NCDENR-Division of Marine Fisheries (DMF), and the North Carolina Wildlife Resources Commission (NCWRC) abstained (see Section 6.2 for the Merger Process definition of abstention). The concurrence form is included in Appendix A of this Phase IIb EA.

The Phase IIb detailed study alternatives would involve building a bridge on new location (part of Road North/Bridge South Alternative) or building a bridge in the existing NC 12 easement (portion of Phase II of Phased Approach/Rodanthe Bridge Alternative).

The Bridge on New Location Alternative, including the bridge and its associated roadway approaches, is approximately 3.0 miles in length. The bridge portion of this alternative is approximately 2.6 miles in length. The reasons the Bridge on New Location Alternative was selected as a detailed study alternative are: it would avoid the entire area considered geologically susceptible to breaches in the Phase IIb project area (see Figure 3) and it would be less vulnerable to potential future changes in Hatteras Island resulting from shoreline erosion than the Bridge within Existing NC 12 Easement Alternative. Finally, it would remove the NC 12 transportation corridor from a portion of the Refuge, allowing natural coastal processes to resume in that portion of the Refuge, which is consistent with current Refuge management policy.



PHASE IIb DETAILED STUDY ALTERNATIVES

Figure
3

The Bridge within Existing NC 12 Easement Alternative is approximately 2.5 miles in length, including the roadway approaches to the bridge. The bridge portion of this alternative is approximately 2.3 miles in length. The reasons the Bridge within Existing NC 12 Easement Alternative was selected as a detailed study alternative are that it would bridge over the entire area considered geologically susceptible to breaches in the Phase IIb project area (see Figure 3) and it would not require a change in the existing NC 12 easement within the Refuge.

The Phase IIb detailed study alternatives are described further in Chapter 3.0, and potential impacts are discussed in Section 4.2. The remaining alternatives discussed in Section 2.1 and the reasons that each was eliminated from further consideration are:

- Beach Nourishment – This alternative was eliminated because of uncertainties related to the availability of a suitable sand source over the project’s estimated 50-year life (i.e., through 2060); it would not adequately protect NC 12 from potential future breaches/ inlets (either from the ocean or sound-side [such as Hurricane Irene] storm surges, although the dunes associated with this alternative would reduce the risk of a breach occurring in this area since NC 12 would remain at-grade; it would not allow natural island processes to occur; and, based on the opinions of USFWS representatives, it is not likely to be found compatible with the Refuge’s mission and purpose. It also was a recommendation of the October 2011 Peer Exchange coastal expert panel that a long-term beach nourishment program not be implemented in the Phase IIb project area because of the high rate of shoreline erosion in this area (See Section 2.6.1).
- Bridge within Existing NC 12 Easement and Beach Nourishment – This alternative was eliminated because its nourishment component presented concerns similar to the Beach Nourishment Alternative. The primary difference is that although the availability of a suitable sand source is a concern, this alternative would require less sand over the project’s estimated 50-year life (i.e., through 2060) than the Beach Nourishment (only) alternative, because a smaller area of beach would be nourished.

2.4.2 Development of Phase IIb Preliminary Design for Bridge on New Location Alternative

The preliminary design for the Bridge on New Location Alternative assessed in this EA incorporates two changes from the Bridge South component of the Road North/Bridge South Alternative that was assessed in the 2010 EA. First, the northern end was refined in consultation with Refuge representatives to identify an alignment that minimized the use of new Refuge lands while conforming to NCDOT design standards. The alignment assessed in this EA would require 2.79 acres of new easement in the Refuge. The alternative is designed to be entirely on structure when it leaves the existing NC 12 easement so that the direct impact to Refuge habitat would be limited to bridge piles and shading from the bridge deck. Second, because in order for the alternative to

continue to meet horizontal curve design speed requirements after the first change, the alignment was further shifted approximately 930 to 950 feet further to the west in Pamlico Sound. (See Figure 4.) The Bridge on New Location Alternative both begins and terminates more than 230 feet soundward of the 2060 high erosion shoreline forecast in 2012, NCDOT's preferred criterion for minimizing the potential for impacts from shoreline erosion prior to 2060.

2.4.3 Development of Phase IIb Preliminary Design for Bridge within Existing NC 12 Easement Alternative

The preliminary design for the Bridge within Existing NC 12 Easement Alternative assessed in this EA incorporates three refinements from the Phased Approach/Rodanthe Bridge Alternative assessed in the 2008 FEIS and 2010 EA. One design refinement is within the Refuge, while the other two are in Rodanthe.

Within the Refuge, the bridge is lower in height. The additional site analysis performed for necessary bridge heights by NCDOT for the Phase IIa project area applies to Phase IIb in the Refuge (see Section 4.2.1 of the Phase IIa EA on page 4-16). This analysis was done in coordination with members of the committee who originally developed Hurricane Katrina storm surge safety requirements. Based on the results of this analysis, it was determined that it would be sufficient for the Phase IIb bridge to have 15.8 feet of clearance between mean high water and the bottom of the superstructure, instead of 25 feet. In addition, the deck would be at 25 feet above mean sea level instead of 33.5 feet.

Within Rodanthe, the bridge also is lower in height but not as low as in the Refuge. In Rodanthe, motor vehicles operating on the one-way frontage roads parallel to the bridge need to make u-turns under the bridge (see Figure 5 in Section 3.2 below). The frontage roads would be provided to maintain access to private property on either side of NC 12. The bridge clearance in Rodanthe needs to be high enough to accommodate large trucks that might need to make a u-turn under the bridge. In Rodanthe, the Phase IIb bridge would have a minimum of 17 feet of clearance for motor vehicle traffic (between the ground and the bottom of the superstructure). The deck would be 30 feet above mean sea level instead of the 33.5 feet in the earlier design.

Also within Rodanthe, the design assessed in the 2010 EA ended the main (33.5-foot-high) bridge at a point approximately 680 feet north of Myra Peters Road (SR 1492). The design assessed in the 2010 EA avoided adverse impacts to the Chicamacomico Life Saving Station and Rodanthe Historic District, but did not achieve the project goal of placing the end of the main bridge 230 feet soundward of the forecast 2060 high-erosion shoreline used for the 2008 FEIS and 2010 EA. Under the 2010 design, the main bridge

ended approximately 250 feet seaward of the forecast 2060 high erosion shoreline (between the forecast 2040 and 2050 high erosion shorelines). A slip ramp (ramp on the sound side of and parallel to the main bridge) was used to bring traffic down to the ground level before NC 12 reaches the historic district. The intent was that if high erosion rates manifested themselves, or a breach occurred that put the slip ramp-to-grade at risk, then, following additional environmental analysis, a new ramp could be built off the end of the full height bridge and/or the full height bridge could be extended. In terms of impacts to the Chicamacomico Life Saving Station and Rodanthe Historic District, the then-forecast 2060 high erosion shoreline placed almost all of the Chicamacomico Life Saving Station and approximately half of the Rodanthe Historic District in the Atlantic Ocean. FHWA and NCDOT planned to reassess the condition of these historic resources prior to the implementation of any extension of this alternative southward in response to shoreline erosion.

As shown in Figure D-1 in Appendix D, the erosion in the Rodanthe area through 2060 is now forecast to be less than was forecast for the 2008 FEIS and 2010 EA. This provides an opportunity to alter the south end of the Bridge within Existing NC 12 Easement Alternative to eliminate the slip ramp and bring the bridge down to grade before the Rodanthe Historic District. This design reduces the community impacts that had resulted from the wider NC 12 right-of-way needed to accommodate both the main bridge and the slip ramp. In Rodanthe, the revised main bridge ends approximately 140 feet west of the 2060 high erosion shoreline forecast using data through 2012. The approach bridge and fill then extend from the end of the main bridge. The revised design also does not meet the original goal of placing the end of the main bridge 230 feet soundward of the forecast 2060 high-erosion shoreline, but it offers a reasonable balance for this alternative between that goal and the objective of minimizing impacts to the Chicamacomico Life Saving Station, and the Rodanthe Historic District. The northern end of this alternative is more than 230 feet soundward of the forecast 2060 high erosion shoreline.

2.5 Phase IIb Detailed Study Alternatives Cost and Financing

Based on the revised designs, NCDOT updated the construction cost estimates for the Phase IIb detailed study alternatives. Consistent with the cost estimates included in the 2008 FEIS, a “low” and “high” construction cost estimate was prepared to reflect a range of possible structure types and construction techniques. These estimates are shown in Table 1 and are subject to change as the final design is developed.

Table 1. Phase IIb Detailed Study Alternatives Cost

Type of Cost	Bridge on New Location Alternative		Bridge within Existing NC 12 Easement Alternative	
	Low	High	Low	High
Construction	\$198,000,000	\$231,000,000	\$153,000,000	\$181,000,000
Right-of-Way	\$5,100,000		\$33,350,000	
Utilities ¹	\$244,650		\$1,153,250	
TOTAL	\$203,344,650	\$236,344,650	\$187,503,250	\$215,503,250

¹NCDOT pays utility relocation costs when its projects directly affect utilities outside NCDOT's existing right-of-way or directly affect utilities within NCDOT's existing right-of-way where the utility's easement rights pre-date NCDOT's right-of-way ownership.

Phase IIb would be funded through existing federal and state funding sources available to transportation projects and allocated to NCDOT's Division 1¹ in the STIP. In addition, FHWA advised NCDOT that a portion of the cost of Phase II (including Phase IIa and Phase IIb) may be eligible for reimbursement under federal Emergency Relief² (ER) funding. The amount of ER funding available for Phase II will depend upon the scope of the long-term solution as compared to the original damage as a result of the storm. FHWA estimates that 30 percent of the long-term solution at the Rodanthe site (Phase IIb) will be eligible for ER funding; however, the ER funding is provided through a reimbursement process and is not necessarily a guaranteed funding source.

Phases I (Bonner Bridge Replacement), IIa (Pea Island inlet), and IIb (Rodanthe breach) have all been allocated funding in the current (2012 to 2018) STIP. Therefore, the construction of Phase I could proceed as soon as relevant legal and permitting matters are resolved. NCDOT's current construction objectives call for being ready to construct long-term improvements at Pea Island inlet (Phase IIa) in winter 2013 and being ready to award a design-build construction contract for the long-term improvements at the Rodanthe 'S' Curves Hot Spot (Phase IIb) in spring 2014. NCDOT plans to be ready to begin construction on both Phases IIa and IIb when relevant legal and permitting matters are resolved.

¹ NCDOT Division 1 includes the following counties: Bertie, Camden, Chowan, Currituck, Dare, Gates, Hertford, Hyde, Martin, Northampton, Pasquotank, Perquimans, Tyrrell, and Washington.

² The FHWA Emergency Relief Program is a special program from the Highway Trust Fund for the repair or construction of federal-aid highways and roads on federal lands that have suffered serious damage as a result of natural disasters or catastrophic failures from an external cause. The funding supplements the commitment of resources by states to help pay for unusually heavy expenses resulting from extraordinary conditions (i.e., damage to highways must be severe, occur over a wide area, and be unusually expensive to the highway agency).

2.6 New Studies

2.6.1 Phase II New Studies Presented in the Phase IIa EA

The Phase IIa EA documented the following four new studies associated with Phase II:

- New Cost Estimates for the Pamlico Sound Bridge Corridor are presented in Section 2.3.1 (beginning on page 2-5).
- Peer Exchange Meeting held in October 2011 to discuss the impacts of Hurricane Irene as well as engineering and scientific concerns over proposed long-term options for NC 12; a summary of the meeting discussions and main conclusions related to Phase IIa are presented in Section 2.6.2 (beginning on page 2-29). Findings pertaining to Phase IIb are:
 - The Panel agreed that the two breaches resulting from Hurricane Irene were not caused by a storm surge from the ocean side, but rather from the sound side. Also, they agreed that the storm surge flooded man-made ditches to the west of the Rodanthe breach location and continued to the ocean to create the Rodanthe breach.
 - The Panel noted that because of the high shoreline erosion rate in the Phase IIb project area, a bridge within the existing NC 12 easement would ultimately result in the structure being in the ocean a notable distance from shore, as compared to other locations where this alternative might be used. Thus, the Panel agreed that from this perspective, the Bridge within Existing NC 12 Easement Alternative would be not the best long-term solution at the Rodanthe breach site.
 - The Panel agreed that from a coastal engineering perspective, placing NC 12 on a bridge in Pamlico Sound (Bridge on New Location Alternative) would be a better option than the Bridge within Existing NC 12 Easement Alternative because it would be less vulnerable to potential future changes in Hatteras Island resulting from shoreline erosion and breach formation.
 - The Panel recommended that beach nourishment should not be used as a long-term solution at the Rodanthe breach site because it would not address the area's susceptibility to inlet formation and because of the area's high rate of shoreline erosion.
 - The Panel indicated that the Bridge on New Location Alternative should be considered, but the Panel acknowledged that impacts to the Refuge, wetlands, and homes within Rodanthe are concerns with that alternative.
- Updated 2060 Shoreline Forecast and Other Coastal Conditions Updates are presented in Section 2.6.3 (beginning on page 2-32). The 2060 high erosion forecast

completed in 2011 as compared to the shoreline forecast used with the 2008 FEIS is presented in Appendix D of the Phase IIa EA for the project area from Oregon Inlet to Rodanthe. A new shoreline forecast adding 2012 erosion data was completed in 2013 and is illustrated in Appendix D of this EA along with the two previous forecasts. Where forecast lines overlap, the most recent is shown. The biggest change from the 2011 forecast is in Rodanthe where the 2060 high erosion shoreline is approximately 40 to 80 feet further east.

- Bird survey results are presented in Section 2.6.4 (beginning on page 2-33).

2.6.2 Ongoing and Additional Phase II New Studies

2.6.2.1 On-Going Bird Surveys

Semimonthly (twice a month) bird surveys conducted by NCDOT began in October 2011 to record shorebird utilization of the new habitat created by the formation of the Pea Island inlet. Beginning in 2013, the monthly bird surveys included the entire length of the Refuge and the Bodie Island spit on the north side of Oregon Inlet until that area was closed for nesting birds. According to NPS data, four American oystercatcher nests were in the spit closure, but no piping plover or black skimmer nests were found. Piping plovers were observed at the spit area and in the area behind the (former) US Coast Guard station on the south side of Oregon Inlet beginning in March 2013. As many as seven piping plovers were observed at one time in the area behind the (former) US Coast Guard station. American oystercatchers, black skimmers and least terns were observed nesting in this area.

As of July 2013, there were five nesting closures on the Refuge's beach between Oregon Inlet and Rodanthe; most were for least terns, but at least one was for American oystercatcher. NCDOT staff observed two American oystercatcher chicks in this closure on June 20, 2013. Also on this date, at least 53 least terns were observed inside the closures. Three nesting closures were south of the Pea Island Inlet area in the Phase IIb project area, including one for an American oystercatcher nest and two (one east of NC 12 and one west of NC 12) for primarily least terns (personal communication Dennis Stewart, USFWS, refuge biologist, 17 September 2013).

In July, August, and September of 2013, NCDOT biologists observed four piping plovers foraging in the area around the temporary bridge at Pea Island inlet (Phase IIa area). As of the end of September 2013, no piping plovers have been observed in the Phase IIb project area by NCDOT biologists. Since the Pea Island inlet closed in May 2013, the area near the sound has become a location where many other birds rest and forage. These include greater yellowlegs, great egrets, snowy egrets, great blue and tricolored herons, white ibis, and black skimmers.

2.6.2.2 USACE Rodanthe 'S' Curve Interim Maintenance Environmental Assessment

USACE was contracted by NCDOT to develop and conduct a one-time beach nourishment project that would be designed to help reduce the impact of storms on NC 12 at the Rodanthe 'S' Curves Hot Spot for approximately three years. This project is a maintenance activity and is not a part of the Bonner Bridge Replacement Project (B-2500), but this project is within the Phase IIb project area. A public notice was posted on July 1, 2013 at <http://www.saw.usace.army.mil/Missions/RegulatoryPermitProgram/PublicNotices/tabid/10057/Article/15690/saw-2013-01129.aspx>. USACE approved the EA for the project on October 15, 2013. USACE concluded that the project would have no significant impacts.

Two alternatives to the nourishment program were considered:

- Maintain NC 12 on its existing alignment with protective sandbags and dunes within the existing NCDOT easement.
- Install a temporary bridge west of the existing easement within the Pea Island National Wildlife Refuge.

Nourishment was found to be the preferred alternative. To complete the project with the preferred nourishment alternative, USACE estimates that 1.7 million cubic yards of material would be needed. After investigating sand sources within Oregon Inlet and offshore at Wimble Shoals, USACE identified sand sources within Wimble Shoals as appropriate for the project.

Sand placement would be accomplished by means of hydraulic dredging, including hopper and/or cutterhead suction dredging. The discharge pipe would be floated from a seaward station to the nourishment project area beach face where heavy equipment (e.g., bulldozers, front end loaders) would move and grade the discharged sand into the desired beach profile. The project is estimated to be completed within 60 to 90 days from initiation and is projected to begin no earlier than November 2013. The work would be conducted 24 hours throughout a seven day work week.

The beach nourishment project design focuses the majority of the sand berm placement within an 8,000 linear foot area located around the Rodanthe 'S' Curves Hot Spot/Mirlo Beach area. The final beach width berm throughout the 8,000 foot critical zone would be 130 feet. North and south of this critical zone, the project would begin transitioning with a tapered berm back to the existing shoreline. The northern transition zone would include dune construction that is approximately 1,800 feet long. The total length of the project, including the critical zone and transition areas, would be approximately 11,300 feet.

The sand utilized for this the beach nourishment project would come from an approved borrow source that is currently being sampled for compatibility with the native beach

sand in the project area. The proposed beach nourishment project would only utilize borrow sand that meets federal and state compatibility requirements.

NCDOT has coordinated with NMFS and NCDENR-DMF for consultation on impact minimization. Essential fish habitat (EFH) consultation requirements under the Magnuson-Stevens Fishery Conservation and Management Act have been initiated. USACE has determined that the proposed project would not affect historic resources present in the proposed beach nourishment area. USACE has determined that the effects determination for the proposed project is May Affect, Not Likely to Adversely Affect federally listed endangered or threatened species or their formally designated critical habitat. USACE has initiated consultation under Section 7 of the Endangered Species Act.

3.0 Description of Phase IIb Detailed Study Alternatives and Identification of Preferred Alternative

3.1 Description of Bridge on New Location Alternative

NC 12 would leave the existing NC 12 easement within the Refuge at a point approximately 1.8 miles north of the Refuge boundary with Rodanthe and enter Pamlico Sound. The bridge would be in Pamlico Sound between 0.3 and 0.4 mile off-shore until a point north of the emergency ferry terminal, where the relocated NC 12 would turn east and enter Rodanthe. This alternative would re-join NC 12 just north of the Liberty gas station/Island Convenience Store. The alternative is approximately 3.0 miles long. It is designed such that it is on a bridge when it leaves the existing easement in the Refuge, and it continues on a bridge for most of its length until coming back to the ground in Rodanthe. The bridge is approximately 2.6 miles long. This alternative would bypass the two areas considered geologically susceptible to breaches at the south end of the Refuge and in Rodanthe, as well as the Rodanthe 'S' Curves Hot Spot (see Figure 3). The proposed design of the Bridge on New Location Alternative has the following characteristics:

- Two 12-foot lanes with 8-foot shoulders on the bridge, similar to Phase I and Phase IIa of the Bonner Bridge Replacement Project (B-2500). The same would be true on the road portion. Four feet of the 8-foot shoulder would be paved. The roadway and the bridge would be located within a 100-foot right-of-way or easement.
- 110- to 120-foot main spans with 60-foot approach spans.
- Approach fills at each end of the bridge. At the north end in the Refuge, a 590-foot-long fill section would include a retaining wall where needed to keep approach fills within the existing NC 12 easement. At the south end in Rodanthe, an 840-foot-long fill section with fill side slopes only.
- Existing NC 12 between the intersection of the Bridge on New Location Alternative and existing NC 12 in Rodanthe and the Refuge boundary would be retained and maintained by NCDOT as a local road serving adjacent development. This road would end at the Refuge boundary and a means for vehicles to turn around would be provided. Existing NC 12 would be removed from the Refuge boundary north to the point where Bridge on New Location Alternative connects to existing NC 12 in the Refuge. Approximately 1.8 miles of existing NC 12 pavement within the Refuge

would be removed and that portion of the transportation easement would be returned to the Refuge.

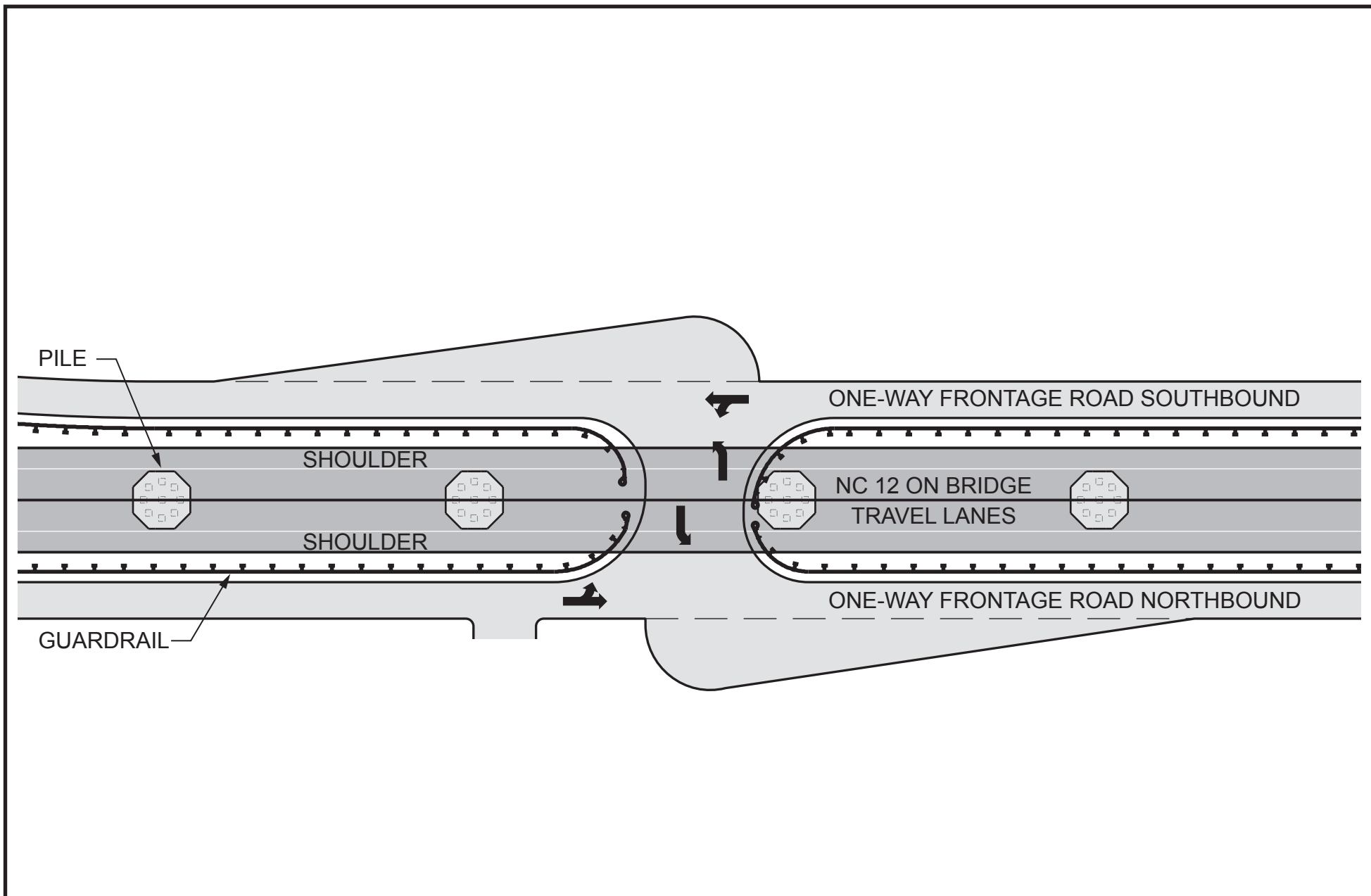
- Pile foundations with a pile cap supporting the spans between the foundations.
- There would be 15.8 feet of clearance under most of the bridge spans above mean high water (17 feet from zero elevation), as with Phase IIa. The bridge deck would be at an elevation of approximately 25 feet.
- Bicycle safe bridge rail.
- Runoff would be collected from the ends of the Phase IIb bridge and piped to a riprap apron, which would drain to roadside swales to promote infiltration. Bridge drainage for the main bridge spans would be from deck drains (openings) at the outer edges of the deck. The bridge would be high enough to allow wind to disperse the deck drain discharge before it reaches the ground or inlet surface. Roadway runoff would drain into roadside ditches.
- Construction activity would be primarily confined to the existing or new easement/right-of-way except at the northern end (in the Refuge), where a temporary construction easement would be needed for a temporary traffic maintenance road to take traffic around the bridge approach. This temporary easement would be approximately 0.63 acre in size.
- Construction is anticipated to last between 3 and 3.5 years.

3.2 Description of Bridge within Existing NC 12 Easement Alternative

The Bridge within Existing NC 12 Easement Alternative (see Figure 3), would involve building a bridge in the existing NC 12 easement to replace the existing surface road. The total length of this alternative is approximately 2.5 miles. The bridge component, approximately 2.3 miles in length, would bridge two areas considered geologically susceptible to breaches at the south end of the Refuge and in Rodanthe, as well as the Rodanthe 'S' Curves Hot Spot (see Figure 3). This alternative starts approximately 1.7 miles north of the Refuge boundary with Rodanthe. It continues to the south and ends at a point on NC 12 approximately 170 feet north of Myrna Peters Road (SR 1492). The Bridge within Existing NC 12 Easement Alternative has the following characteristics:

- Two 12-foot lanes with 8-foot shoulders on the bridge, similar to Phase I and Phase IIa of the Bonner Bridge Replacement Project (B-2500 and B-2500A).
- Located on the ocean side of the NC 12 easement.

- 110- to 120-foot main spans with 60-foot approach spans.
- Approach fills at each end of the bridge (including an approximately 360-foot-long fill section at the south end of the bridge and a 410-foot-long fill section at the north end) with the fill held by a retaining wall where needed to keep approach fills within the NC 12 easement/right-of-way.
- Access to properties adjacent to the bridge in Rodanthe would be provided by a one-lane, one-way frontage road on each side of the NC 12 bridge. The two frontage roads would flare out and connect with NC 12 at a four-legged intersection at the south of the end of the project. Crossovers to provide access between the two frontage roads underneath the NC 12 bridge were assumed to be provided in two locations: just south of the Refuge boundary and across from Cross of Honor Way (SR 1445). The frontage roads and a typical crossover are illustrated in Figure 5.
- Pile foundations with a pile cap or footer cast on top of the piles at the existing ground line topped by a pier used to support bridge spans. In the Refuge, there would be 15.8 feet of clearance under most of the bridge spans above mean high water (17 feet from zero elevation), as with Phase IIa. The bridge deck would be at an elevation of approximately 25 feet. In Rodanthe, the bridge would have a minimum of 17 feet of clearance for u-turning motor vehicle traffic (between the ground and the bottom of the superstructure). The bridge deck would be at an elevation of approximately 30 feet.
- New right-of-way would be required on each side of the existing NC 12 easement for at-grade frontage roads that provide access to side streets and properties adjacent to the existing NC 12 easement. Additional right-of-way also would be needed for bulb-outs to accommodate turning traffic at intersections connecting the two one-way frontage roads to NC 12. The total new right-of-way purchased would be 2.83 acres. The purchase of utility easements 15 feet wide on either side of NC 12 also is assumed. These easements would total 2.50 acres. An alternative would be to mount electrical and telephone lines on the bridge. The easements primarily would be used to relocate poles carrying electrical and telephone lines with no re-grading of land expected. However, 0.48 acres of the 2.5 acres also would serve as a construction easement for grading the final slopes.
- Bicycle safe bridge rail mounted on a 36-inch parapet to partially block headlights that otherwise could affect the success of turtle nesting on the beach.
- Runoff would be collected from the ends of the Phase IIa bridge and piped to a riprap apron, which would drain to roadside swales to promote infiltration. Bridge drainage for the main bridge spans would be from deck drains (openings) at the outer edges of the deck. The bridge would be high enough to allow wind to disperse the deck drain discharge before it reaches the ground or inlet surface.



BRIDGE WITHIN EXISTING NC 12 EASEMENT WITH FRONTAGE ROADS

Figure
5

- Construction activity would be primarily confined to the existing NC 12 easement, including a temporary traffic maintenance road. However, approximately 2.06 acres of temporary construction easement would be needed to construct Phase IIb in the Refuge. In Rodanthe, 0.48 acre of the 2.5-acre utility easement also would be used for grading final slopes.
 - In the Refuge, an approximately 5-foot-wide temporary construction easement would be needed for the entire length of the project on the sound side of the existing NC 12 easement. The purpose of this narrow easement would be primarily to provide room for construction workers to erect erosion control measures (fencing) along the edge of the existing NC 12 easement. A pile jetting pipe would be placed between NC 12 and the Pamlico Sound on a 10-foot wide temporary easement at what is currently expected to be three locations in the Refuge.
 - In Rodanthe, the 0.48 acre of regrading in the utility easement would occur just south of the Refuge border.
- Construction is anticipated to last between 2 and 3 years.

3.3 Phase IIb Preferred Alternative

The Preferred Alternative is the Bridge within Existing NC 12 Easement Alternative. It is preferred because it is entirely within the existing NC 12 easement and as such, would require no new permanent NC 12 easement in the Refuge and avoids impacts in Pamlico Sound.

Both detailed study alternatives would have differing types and levels of impact on important project area features, including impacts to the Refuge (both as a wildlife refuge and a historic resource), the community of Rodanthe, protected species, EFH, and submerged aquatic vegetation (SAV). These impacts were taken into consideration in identifying the Phase IIb Preferred Alternative. A final decision on the alternative to be implemented (Selected Alternative) will be made after public and agency review of this Phase IIb EA and will consider input from stakeholders. Consideration will be given to comments received during the review period, including the views and preferences of official(s) with jurisdiction over the management of the Refuge (USFWS-Refuge), the State Historic Preservation Officer (SHPO) under the Historic Preservation Act of 1966, USFWS and NMFS under Section 7 of the Endangered Species Act, the NMFS and Fisheries Management Council/Commissions (FMC) under Magnuson-Stevens Fishery Conservation and Management Act, and other state and federal environmental resource and regulatory agencies. Additionally, consideration will be given to input from the residents, business owners, and property owners of the portion of Rodanthe affected, along with other public comments.

The final decision and the reasons for the selection will be documented in a Phase IIb ROD. The project's NEPA/Section 404 Merger Team would be involved in the decision. The Merger Team process is described in the introduction to Section 6.2.

4.0 Environmental Update

4.1 Updated Affected Environment

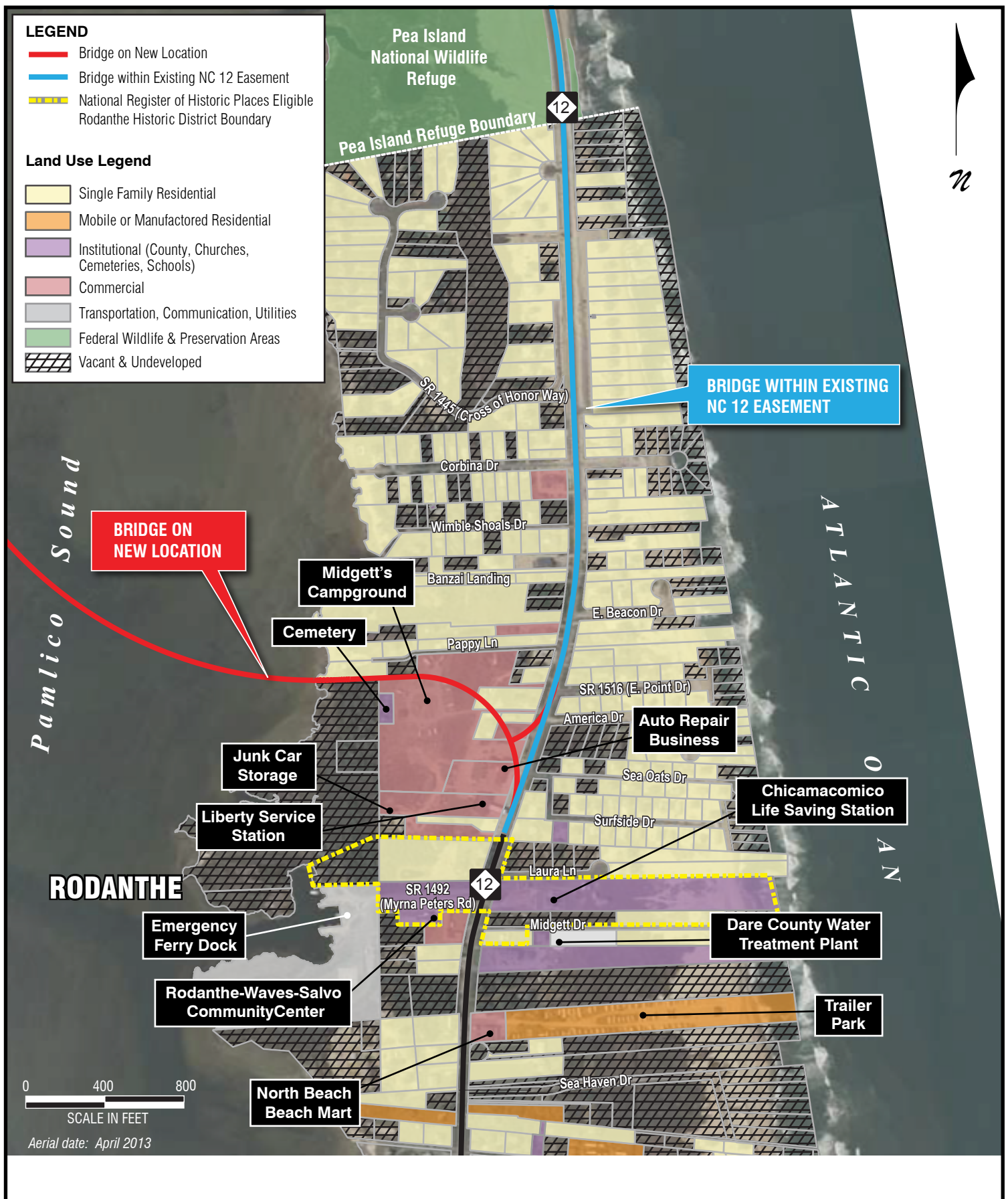
This section updates affected environment information presented in Chapter 3 of the 2008 FEIS for the Phase IIb project area illustrated in Figure 1. The need for updates is primarily the result of storms, particularly Hurricane Irene in August 2011, and other coastal processes that caused changes in the affected environment. The effects of Hurricane Sandy in October 2012 also are considered based on field observations and post-Hurricane Sandy aerial photography. This chapter includes updated information on:

- Community characteristics
- Cultural resources
- Parks and recreation/wildlife refuges
- Coastal conditions
- Wetlands and open water habitat
- Protected species
- Essential fish habitat (EFH)

4.1.1 Community Characteristics

According to Section 3.1.2 of the 2008 FEIS, commercial development in Rodanthe exists along NC 12 and consists mostly of small service stations (including the Island Convenience Store/Liberty service station in the Phase IIb project area), as well as general stores, realty agencies, restaurants, and businesses for recreational activities. Residential development focuses on the oceanfront on the east and Pamlico Sound on the west. The development primarily consists of large, multiple-story, multiple-bedroom rental vacation home neighborhoods; however, there also are scattered neighborhoods of smaller, often one-story, permanent homes. The Chicamacomico Life Saving Station, a museum listed on the National Register of Historic Places (NRHP), is located on the east side of NC 12 in the project area. The Rodanthe-Waves-Salvo Community Center is located on the west side of NC 12 in the project area.

Land use in the Rodanthe portion of the project area is shown on Figure 6. The primary changes in land use since the 2008 FEIS and 2010 ROD have been the construction of some new vacation homes, the loss of some vacation homes due to storm events and shoreline erosion, and the construction of a recreational campground.



LAND USE IN RODANTHE AREA

4.1.2 Cultural Resources

There are three resources within the Phase IIb project area listed on or eligible for inclusion in the National Register of Historic Places (NRHP):

- Pea Island National Wildlife Refuge (Refuge) (eligible)
- Chicamacomico Life Saving Station (listed)
- Rodanthe Historic District (eligible)

These resources were described in detail in Section 3.4.1 of the 2008 FEIS, beginning on page 3-28. The Refuge within the Phase IIb project area is shown on Figure 3. The boundaries of the Life Saving Station and the Rodanthe Historic District are shown in Figure 6. Hurricanes Irene and Sandy had no effect on the features of the three resources that make them eligible for inclusion in the NRHP.

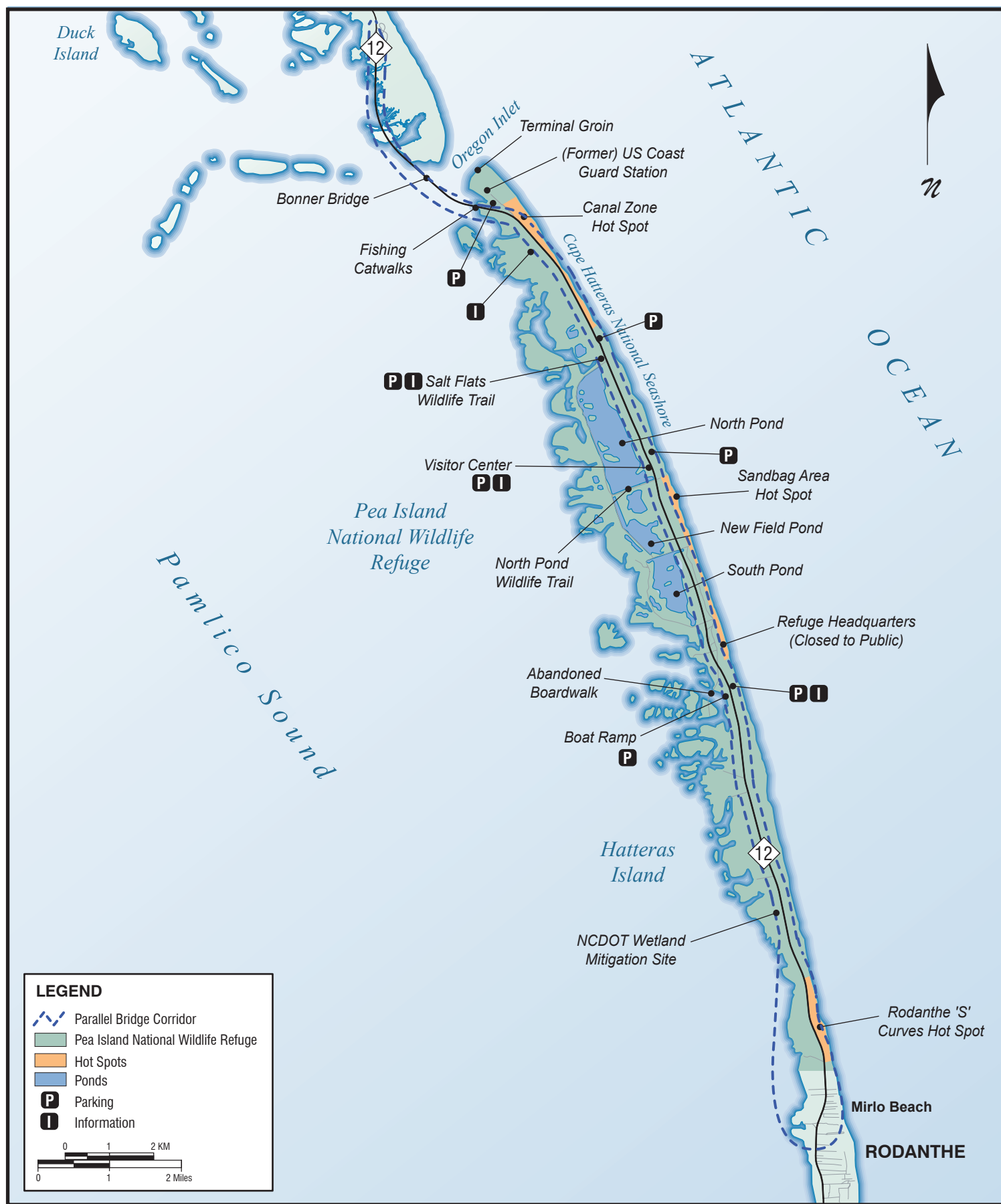
4.1.3 Parks and Recreation/Wildlife Refuges

The Phase IIb project area is partially within the Pea Island National Wildlife Refuge (Refuge), whose jurisdiction substantially overlaps with that of the Cape Hatteras National Seashore (Seashore) (See Figure 7). The Refuge is characterized by ocean beach, dunes, upland, fresh and brackish water ponds, salt flats, and salt marsh. It is inhabited by an extensive number of bird species, as well as a variety of mammals, reptiles, and amphibians. A variety of recreational opportunities also exist within the Refuge, including fishing, birding, surfing, walking, kayaking, and going to the beach (sunbathing). The detailed characteristics of the Refuge are described in Section 3.5.2 of the 2008 FEIS, beginning on page 3-40. Except for sand overwash and associated dune loss and damage (both considered by USFWS-Refuge staff to be a part of acceptable natural processes), Hurricanes Irene and Sandy had a minimal effect on the Refuge in the Phase IIb project area. Effects in the Phase IIb project area included NCDOT construction activities and detours (in 2012 and 2013) following Hurricane Irene to close the breach opened by the hurricane, restore the sandbag-filled dune just north of Rodanthe, and repair/clear and re-open NC 12. For repairs following Hurricane Irene, a CAMA major permit and a USFWS Special Use Permit were obtained. NCDOT also prepared a CE for this work to fulfill the requirements of NEPA. The sandbag filled dune and NC 12 were again repaired following Hurricane Sandy.

4.1.4 Coastal Conditions

Coastal processes drive the physical changes in the Phase IIb project area. This section discusses existing conditions and trends in the Phase IIb project area, including:

- Rodanthe breach resulting from Hurricane Irene and potential for breaching
- Rodanthe 'S' Curves Hot Spot



**LAND USE IN
PEA ISLAND NATIONAL WILDLIFE REFUGE**

Figure
7

- Forecast shoreline changes through 2060

Existing coastal conditions for the entire Phase II project area are described in Section 3.6 of the 2008 FEIS; this discussion includes the location of floodplains, Oregon Inlet migration, changes in the Oregon Inlet gorge (deepest part) alignment and location, historical shoreline changes, factors that drive inlet and shoreline changes, the Hatteras Island shoreline through 2060 (based on data through June 2004), potential breach locations, and forecast Oregon Inlet movement through 2085. Recent updates related to the formation of Pea Island inlet, potential for Pea Island inlet migration or closure (closed as of the date of this Phase IIb EA), Pea Island inlet depth, and natural factors affecting inlet and shoreline changes are presented in the Phase IIa EA in Section 4.1.2 beginning on page 4-3.

Many of the decisions related to phasing and the starting and ending points of various phases of the PBC/TMP Alternative were based on a forecast 2060 high-erosion shoreline from Oregon Inlet to Rodanthe and locations geologically susceptible to breaches. The 2060 high-erosion shoreline forecast was updated in 2012 using shoreline change data through the end of 2011 (Overton, 2013) and discussed in Section 4.1.2.6 of the Phase IIa EA, beginning on page 4-8. A new shoreline forecast adding 2012 erosion data was completed in 2013 and is illustrated in Appendix D of this EA along with the two previous forecasts. Where forecast lines overlap, the most recent is shown. The biggest change from the 2011 forecast is in Rodanthe where the 2060 high erosion shoreline is approximately 40 to 80 feet further east. Changes between the 2060 high-erosion shoreline assumed in the 2008 FEIS and the updated forecast for the Phase IIb project area are presented for the Phase IIb project area in this section.

4.1.4.1 Rodanthe Breach

In August 2011, Hurricane Irene created breaches on NC 12 at two locations: within the Refuge (Phase IIa project area) and within northern Rodanthe (Phase IIb project area, including the Rodanthe 'S' Curves Hot Spot). Hurricane Irene produced a soundside (western shore) storm surge. The Rodanthe breach occurred immediately north of Rodanthe at the southern limit of the Refuge. As a part of restoring NC 12, NCDOT closed the breach by filling it in with sand obtained from a site in Avon. NCDOT prepared a Categorical Exclusion (CE) for this work to fulfill the requirements of NEPA. The CE, approved in September 2011, demonstrated that this work would have no significant environmental impact. Other actions taken as a result of Hurricane Irene to restore NC 12 at the Rodanthe 'S' Curves Hot Spot are described in the next section.

During the Peer Exchange meeting in October 2011 (described in Section 2.6.2 of the Phase IIa EA³), panel members agreed that the two breaches resulting from Hurricane

³ On October 24 and 25, 2011, NCDOT assembled a panel of coastal science and engineering experts from FHWA, USACE, USFWS-Refuge, and several universities. The purposes of the

Irene were not caused by the storm surge on the ocean side. Also, they agreed that the storm surge flooded man-made ditches to the west of the Rodanthe breach location and continued to the ocean to create the Rodanthe breach. The Phase IIb project area contains two adjoining locations considered geologically susceptible to breaching that encompass most of the Phase IIb project area (see Figure 3). These potential breach sites were described in Section 3.6.3.4 of the 2008 FEIS beginning on page 3-59.

4.1.4.2 *Rodanthe ‘S’ Curves Hot Spot*

In August 1991, the NCDOT sponsored a research project conducted by North Carolina State University to identify critical sections of North Carolina’s coastal highways and options available for maintaining these highway corridors. The study concluded that NC 12 has six critical sections, or “hot spots,” between Oregon Inlet and the southwestern tip of Ocracoke Island. Three of the hot spots are at the north end of Hatteras Island (within the Bonner Bridge Replacement Project [B-2500] project area): Canal Zone, Sandbag Area, and Rodanthe ‘S’ Curves.

The Phase IIb project area, which includes the Rodanthe ‘S’ Curves Hot Spot, has the highest erosion rates in the Bonner Bridge Replacement Project (B-2500) project area. The 2011 Peer Exchange meeting panel affirmed that erosion rates in Rodanthe (in particular, at the Mirlo Beach subdivision) were amongst the highest rates along the North Carolina coast. The subsurface rock structure (Wimble Shoals) in the vicinity of the northern Rodanthe area concentrates wave energy in the area and leads to wave refraction that contributes to high beach erosion and vulnerability for breaches. This also contributes to the susceptibility of the area to ocean flooding and overwash.

Since 2006, NCDOT has conducted a series of repairs at the Rodanthe ‘S’ Curves Hot Spot to restore/maintain NC 12 following major storm events:

- November 2006 – Installed a 900-foot section of sandbag-filled dune adjacent to NC 12 to protect the roadway.
- November 2009 – Following Hurricane Ida, relocated approximately 1,860 feet of the roadway 23 feet west, remaining within the existing NC 12 easement in the Refuge. The 900 feet of sandbags built in 2006 were removed and replaced, and an additional 350-foot section of sandbag-filled dune was installed on the south end of the original 900 feet (total of 1,250 feet). In association with this effort, a beach habitat restoration (nourishment) project took place at the Rodanthe ‘S’ Curves Hot Spot in 2010. The

meeting were to: 1) evaluate the changes in the setting at both Pea Island and at Rodanthe as a result of Hurricane Irene, 2) provide engineering advice regarding the design constraints of long-term options at both locations. and 3) identify any concerns regarding the future maintenance of NC 12.

beach habitat restoration was done at the request of USFWS, through a condition of the 2006 Special Use Permit authorizing the original sandbag project.

- August 2011 – Severe damage to the sandbag-filled dune area occurred as a result of Hurricane Irene; the dune was rebuilt following the storm.
- March 2013 - Some sandbag-filled dune loss occurred during Hurricane Sandy (October 2012) and was repaired.

The Rodanthe 'S' Curves Hot Spot is currently the location on northern Hatteras Island where NC 12 appears to be most vulnerable to storm damage.

4.1.4.3 Forecast Shoreline Changes through 2060 in the Phase IIb Project Area

As part of the coastal monitoring program, updated coastal conditions data for the Bonner Bridge Replacement Project (B-2500) project area were collected starting in early 2011. Background information and improvements to methodology, which are applicable to both the Phase IIa and Phase IIb projects, are discussed in detail in Section 4.1.2.6 of the Phase IIa EA (beginning on page 4-8).

In comparison to the 2008 FEIS shoreline forecasts (using data through June 2004), the updated 2060 high-erosion shoreline (using data through 2012) in the Phase IIb project area shows similar forecast erosion in the Refuge portion of the Rodanthe 'S' Curves Hot Spot and less erosion (approximately 300 to 570 feet less) in Rodanthe. The current shoreline in the vicinity of the Refuge boundary is between the 2020 average-erosion shoreline and the 2010 high-erosion shoreline presented in the 2008 FEIS.

A comparison of the 2060 high-erosion shoreline forecast from the 2008 FEIS (using data through June 2004), the updated forecast using data through 2011, and the updated forecast using data through 2012 is shown for the Phase IIb project area in Figure D-1 in Appendix D.

4.1.5 Biotic Communities, Wetlands, and Open Water Habitat

Wetlands and open water habitat are discussed in Section 3.7.4 of the 2008 FEIS, as well as Section 4.1 of the *Natural Resources Technical Report* (CZR, Incorporated, 2008). A total of 20 biotic communities were mapped within the entire Bonner Bridge Replacement Project (B-2500) project area based on field surveys conducted between 2003 and 2005, including ten wetland biotic communities and one jurisdictional open water community.

In 2012, NCDOT updated the wetland delineations. Section 404 jurisdictional and Coastal Area Management Act (CAMA) coastal wetland boundaries were updated, and NPS wetland boundaries were determined. The revised wetland boundaries were approved by USACE, NCDENR-DCM, and NPS. The Phase IIb impact assessment presented herein uses these new wetland delineations. It should be noted that these updates were completed and approved prior to Hurricane Sandy in October 2012. A

review of aerial photography after Hurricane Sandy showed that in the Phase IIb project area affected, new areas of overwash sand appeared, likely affecting a small amount of wetland that was recently delineated. However, the total amount of overwash areas was not calculated, nor was the depth of the overwash sand evaluated. Depending on the depth of the sand, wetland communities could quickly recover or be turned into upland communities.

As part of this updated analysis of jurisdictional areas within the Phase IIb project area, some of the upland communities listed in the 2003 and 2005 survey results were consolidated, and some wetland communities were also merged (e.g., black needle rush, brackish marsh, and smooth cordgrass became marsh) because of the complex and mosaic nature of the occurrence of these communities. In addition to marsh, several of the previously described wetland biotic communities (salt shrub and grassland and a combination of the two, and maritime shrub and grassland and a combination of the two) were designated as additional CAMA variant communities. The CAMA designation identifies communities that receive tidally influenced flooding and contain species subject to regulation as “coastal wetlands,” a category of Areas of Environmental Concern (AEC). These CAMA variant communities, plus the marsh community, contain “AEC coastal wetlands” which are subject to NCDENR-DCM jurisdiction under CAMA, as well as Section 404.

Within the Phase IIb project area, Section 404 jurisdictional areas occur within 18 wetland biotic communities and four open water communities (see Table 2). Open water categories consist of open water, pool, ditch, and culvert. Pools include several small interdunal ponds between NC 12 and the primary dune field. Pools are not regularly connected to other waters and are mostly permanent or frequently flooded. Rainfall is the most common source of input for the pools. Ditches and culvert areas are mostly maintained areas found in association with NC 12. All other open water areas include the waters of Pamlico Sound, nearshore ocean, and some ditches that are directly connected to the sound. Open water includes intertidal areas (including mud flats) and some man-modified areas (i.e., dug-out or excavated areas within natural marsh).

A comparison of the previous biotic communities mapping and the updated mapping within the approximate 1028-acre Phase IIb project area (see Table 2) shows Section 404 jurisdictional wetland areas (all wetlands, including CAMA wetlands) decreased 23.61 acres from 235.77 acres to 212.16 acres with the 2012 delineation and jurisdictional waters (open water, culverts, ditches, pools) increased by 39.26 acres from 351.57 acres to 390.83 acres. Additionally, areas regulated as CAMA AEC areas (CAMA

**Table 2. Comparison of Existing (2012) and FEIS (2008) Biotic Communities
within the Phase IIb Project Area**

Biotic Community	Existing (2012) (acres)	FEIS (2008) (acres)
Open water	382.68	342.13
Open water-culvert	0.02	0.00 ¹
Open water-ditch	1.06	0.00 ¹
Open water-pool	7.07	9.44
Upland beach	45.49	45.98
Upland dune	80.84	91.22
Upland man-dominated	157.49	147.18
Upland maritime grassland	69.78	11.73
Upland maritime shrub thicket	37.47	96.57
Upland maritime shrub/grassland	34.29	0.00
Upland reed stand	0.29	0.00
Upland salt shrub/grassland	0.00	16.43
Upland overwash	0.00	31.43
Wetland black needlerush ²	0.00	51.69
Wetland man-dominated	0.30	4.15
Wetland maritime grassland	18.26	24.07
Wetland maritime shrub thicket	34.34	<u>59.11</u>
Wetland maritime shrub/grassland	30.95	<u>0.00</u>
Wetland marsh	12.69	<u>0.00</u>
Wetland reed stand	1.60	<u>3.96</u>
Wetland salt grassland	8.02	<u>0.00</u>
Wetland salt shrub thicket	2.23	<u>0.00</u>
Wetland salt shrub/grassland	13.62	<u>68.60</u>
Wetland smooth cordgrass ²	0.00	<u>14.51</u>
Wetland overwash	0.00	<u>9.68</u>
CAMA marsh	63.07	0.00
CAMA wetland maritime grassland	5.97	0.00
CAMA wetland maritime shrub thicket	0.17	0.00
CAMA wetland maritime shrub/grassland	4.62	0.00
CAMA wetland salt grassland	3.04	0.00
CAMA wetland salt shrub thicket	0.73	0.00
CAMA wetland salt shrub/grassland	11.74	0.00
CAMA wetland salt/shrub grassland	0.81	0.00
TOTAL	1028.64	1,027.88

¹Area included within open water-pool category.

²CAMA coastal wetlands in 2010 EA.

Note: The difference in the two totals reflects rounding.

communities in the 2012 delineation and wetland black needlerush and wetland smooth cordgrass in the previous delineation) increased by 23.95 acres from 66.20 acres to 90.15 acres. In general, most changes between the two evaluations are associated with shrub thickets (upland and wetland), which occupied 15.15 percent of the project area in the 2008 FEIS, but occupy about 7.20 percent of the Phase IIb project area in 2012. The reduction in the area of maritime shrub thickets may be as a result of less protection from salt spray and/or storm damage, allowing grasses to become co-dominant or more prevalent within these former shrub-dominated communities. Many areas formerly occupied by maritime shrub thickets are now occupied by maritime shrub/grassland, salt shrub/grassland, salt grassland, and maritime grassland communities.

4.1.6 Protected Species

The *Biological Assessment* (BA) (FHWA and NCDOT, 2008) for the Bonner Bridge Replacement Project (B-2500), as well as Section 3.7.7 of the 2008 FEIS, addressed 12 species granted protection under Section 7 of the ESA of 1973 and critical habitat for one species, the piping plover, which occurs near Oregon Inlet. These protections were designated by USFWS and/or NMFS, a division of the National Oceanic and Atmospheric Administration (NOAA). In February of 2012, one additional species beyond those assessed in the 2008 BA, the Atlantic sturgeon (*Acipenser oxyrinchus*), was designated as “endangered” and granted protection by NMFS. The Atlantic sturgeon was discussed in Section 4.2.4.4 of the Phase IIa EA and in a 2013 technical memorandum for the Atlantic Sturgeon (CZR Incorporated, 2013). As previously documented, the Phase IIb project area offers habitat for the following protected species:

- Piping plover foraging habitat (beach)
- Roseate tern (beach and interdune)
- Five species of sea turtles:
 - Hawksbill sea turtle (ocean)
 - Kemp’s ridley sea turtle (ocean and sound)
 - Leatherback sea turtle (ocean, sound, and beach)
 - Green sea turtle (ocean, sound, and beach)
 - Loggerhead sea turtle (ocean, sound, and beach)
- Two species of sturgeon
 - Shortnose sturgeon (ocean and sound)
 - Atlantic sturgeon (ocean and sound)

- Seabeach amaranth (beach and dunes)

New foraging and potential nesting habitat for piping plovers and other beach nesting birds was created as a result of Hurricane Irene and subsequent storms, including Hurricane Sandy. The open, bare sandy overwash areas east and west of NC 12 serve as ephemeral habitat areas that provide potential nesting habitat for the piping plover and other early successional beach nesters, such as the least tern (*Sternula antillarum*), the American oystercatcher (*Haematopus palliatus*), and several other waterbird species. There is little ideal habitat for piping plovers in the Phase IIb project area. Several least tern nesting colonies, which sometimes nest in association with piping plovers, were documented in the NCDOT bird surveys referenced in Section 2.6.4 of the Phase IIa EA (conducted from December 2011 through November 2012) along NC 12 between Oregon Inlet and the new Pea Island inlet. Updates to the bird surveys through August 2013 are presented in Section 2.6.2.1 of this EA. Many least terns and at least one pair of American oystercatchers also used as a nesting area in 2012 the area formerly occupied by the Refuge headquarters buildings, just south of the Pea Island inlet. More nests were found in 2013, but none were piping plover nests. The Phase IIb project area was not surveyed during 2012 but was in 2013.

4.1.7 Essential Fish Habitat

Since the preparation of the *Essential Fish Habitat Assessment* (CZR, Incorporated, 2008) for the Bonner Bridge Replacement Project (B-2500), as well as Section 3.7.6.3 of the 2008 FEIS (beginning on page 3-91), red drum (*Sciaenops ocellatus*) is no longer managed by the South Atlantic Fisheries Management Council (SAFMC). No new species have become managed by SAFMC or other state or federal fisheries management entities. Red drum are still managed by the Atlantic States Marine Fisheries Commission (ASMFC), which serves as a deliberative body, coordinating the conservation and management of the states' shared nearshore fishery resources and the NC Division of Marine Fisheries.

Essential fish habitat in the Phase IIb project area has not substantially changed since the 2008 FEIS. It includes soundside wetlands (estuarine emergent), submerged aquatic vegetation in the sound (seagrass), and open water in the sound (estuarine water column).

In general in the Phase IIb project area, waters less than 6 feet deep within Pamlico Sound are considered potential SAV habitat. The North Carolina Marine Fisheries Commission (NCMFC) defines SAV habitat as an area that is currently vegetated with one or more appropriate (native) SAV species, or an area that has been vegetated by one or more appropriate species within the past 10 annual growing seasons and meets the average growing conditions needed (water depth of 6 feet or less, average light availability [Secchi depth of 1 foot or more], and limited wave exposure). The total Pamlico Sound (open water) impacts reflect the impact to SAV habitat.

Evaluation of SAV in the 2008 FEIS and 2010 EA was based on general DENR-DMF maps generated with pre-2000 aerial data (the latest available at the time). NCDOT conducted on-site SAV surveys in the Rodanthe area in 2009, 2011, 2012, and 2013 and generated a SAV map using 2012 aerial photography. NCDOT SAV data from 2009 through 2013 have documented more SAV in the Rodanthe area compared to the pre-2000 DENR- DMF SAV maps used in 2008 and 2010. Some of the additional SAV coverage documented by NCDOT is likely the result of better aerial mapping tools and data and more extensive on-site surveys by NCDOT.

Based on the 2012 aerial SAV mapping, all open water of the Pamlico Sound crossed by the Phase IIb Bridge on New Location Alternative contain either “patchy” or “sparse” SAV. On-site surveys from this area in 2013 documented that 88 percent of the surveyed plots contained SAV, and of the plots with SAV, shoal grass (*Halodule wrightii*) was found in 55 percent of the plots, widgeon grass (*Ruppia maritime*) was found in 55 percent of the plots, and eel grass (*Zostera marina*) was found in 46 percent of the plots. The surveys found that 45 percent of the plots surveyed had 60 percent or greater coverage. The 2013 SAV survey data also found that the southern half of the Bridge on New Location Alternative alignment over the sound was comprised of generally deeper water depths dominated by eel grass and widgeon grass, while the northern half consisted of shallower water with firmer and sandier substrate and was dominated by shoal grass.

4.2 Updated Impacts of the Phase IIb Detailed Study Alternatives

This section updates the impact discussions presented in Chapter 4 of the 2008 FEIS and Section 2.3.3 of the 2010 EA. It focuses on updates relevant to Phase IIb of the Bonner Bridge Replacement Project (B-2500). The characteristics of the Phase IIb detailed study alternatives evaluated in this EA, the Bridge on New Location Alternative and the Bridge within Existing NC 12 Easement Alternative, would be similar to what was defined in the 2008 FEIS as the Bridge South component of the Road North/Bridge South and as the Phased Approach/ Rodanthe Bridge alternatives, respectively. Changes in impacts are associated with minor changes in the characteristics of the project area and refinements to the 2008 designs of the two detailed study alternatives. In general, these changes reduced or did not substantially change impacts.

As a result of changes in project area conditions and in the designs of the detailed study alternatives, some impacts have changed since they were last presented in the 2008 FEIS and 2010 EA. This section addresses changes in the following types of impacts:

- Community impacts
- Visual impacts

- Cultural resource impacts
- Parks and recreation impacts
- Natural systems impacts
- Noise impacts
- Air quality impacts

Indirect and cumulative impacts findings contained in Section 4.12 of the 2008 FEIS are unchanged. In terms of indirect impacts, as discussed in Section 4.12.5 of the 2008 FEIS, construction of a project in the Parallel Bridge Corridor would not induce changes in development trends, because the project does not have an economic development purpose and is consistent with local area land use plans. In addition, it would not serve a specific land development, would be unlikely to stimulate land development having complementary functions, and would be unlikely to influence substantial intraregional land development location decisions since it would replace an existing two-lane facility with a new two-lane facility. Finally, it is not being introduced to an area with notable natural features that could be lost to development.

In terms of cumulative impacts, based on discussions in Section 4.12.6 of the 2008 FEIS:

- Phase IIb detailed study alternatives would not interfere with the Outer Banks Task Force's goal to implement a long-term solution to the effect of shoreline erosion and ocean overwash on NC 12 at the three hot spot locations in the Bonner Bridge Replacement Project (B-2500) project area. The Phase IIb detailed study alternatives would in fact implement a long-term solution to the effects of shoreline erosion and ocean overwash on NC 12 at the Rodanthe 'S' Curves Hot Spot.
- Phase IIb would change access within the Refuge in that there would be no direct access to the Refuge between the ends of either detailed study alternative, as described in Section 4.2.4.
- Phase IIb detailed study alternatives would not interfere with the benefits to USACE dredging offered by Phase I of the PBC/TMP Alternative.
- Phase IIb detailed study alternatives would not change the potential impact of the PBC/TMP on the preservation of the (former) Oregon Inlet US Coast Guard Station. Phase IIb would help maintain access to the station from the southern part of Hatteras Island.
- Phase IIb detailed study alternatives would not change the need to retain the terminal groin at Oregon Inlet that is associated with the PBC/TMP Alternative.

- With Phase IIb detailed study alternatives, the options for future relocation of utilities along NC 12 (moving them back multiple times in response to shoreline erosion or moving them back once to beyond the 2060 high-erosion shoreline) would still be available.
- With the Phase IIb Bridge on New Location Alternative, the cumulative effects of habitat loss or changes on the ecological integrity of the Outer Banks would be nearly identical to the Bridge South component of the Road North/Bridge South Alternative assessed in the 2008 FEIS. Like the Road North/Bridge South Alternative, the Phase IIb Bridge on New Location Alternative would, at the south end of the Refuge and in Rodanthe, place NC 12 on a bridge west of Hatteras Island. This alternative would have direct impacts to natural habitat in the sound; however, the natural shoreline erosion process would be allowed to take place without affecting the integrity of NC 12.
- With the Phase IIb Bridge within Existing NC 12 Easement Alternative, the cumulative effect of habitat loss or change on the ecological integrity of the Outer Banks would be nearly identical to the Phased Approach/Rodanthe Bridge Alternative assessed in the 2008 FEIS. Like the Phased Approach/Rodanthe Bridge Alternative, the Phase IIb Bridge within Existing NC 12 Easement Alternative would place NC 12 on a bridge in the existing easement, resulting in the least initial direct impact to natural habitat as compared to the other PBC/TMP Alternative future phase options. Natural shoreline processes would be allowed to take place. The shoreline would erode underneath the bridge. Like the Phased Approach/Rodanthe Bridge Alternative, ultimately the Bridge within Existing NC 12 Easement Alternative would have portions located over the beach and in the ocean, with the associated direct impacts described later in Sections 4.2.4.2 and 4.2.5.

NCDOT also plans an NC 12 maintenance action associated with efforts to stabilize and maintain the reliability of NC 12 at the Rodanthe 'S' Curve Hot Spot until the proposed Phase IIb long-term project is implemented. As an interim measure, it would likely involve one round of beach nourishment. The USACE approved an EA for this interim measure on October 15, 2013. USACE concluded that this project would have no significant impacts. Other options considered were a temporary bridge or continuing to maintain the existing sandbag dune (for which a CE was done in the context of obtaining the Special Use Permit for the dune from the USFWS). Beach nourishment was chosen as the preferred alternative.

The 2008 FEIS examined likely maintenance activities on NC 12 until the PBC/TMP Alternative was completed (Section 4.6.8.6, beginning on page 4-68) and their potential impacts (Section 4.7.8, beginning on page 4-115). The listing of potential maintenance activities was developed by the study team's coastal engineer; based on coastal data available at the time, the need for interim nourishment was not forecast. The 2008 FEIS

did, however, assess a long-term Nourishment Alternative and its impacts are addressed in Chapter 4 of the 2008 FEIS. An interim nourishment program essentially would be one round of nourishment in one part of the Bonner Bridge Replacement Project (B-2500) project area. Therefore, the potential impacts of nourishment in the Rodanthe 'S' Curves Hot Spot area are addressed in the 2008 FEIS and were taken into consideration in the selection of the PBC/TMP Alternative in the 2010 ROD.

4.2.1 Community Impacts

This section discusses changes in relocation and other community impacts associated with the two detailed study alternatives since the 2008 FEIS, as updated in the 2010 EA. These changes result primarily from changes in the design of the Bridge within Existing NC 12 Easement Alternative made in response to the 2060 high erosion shoreline forecast completed in 2013. In addition, one business building now contains fewer businesses than previously counted, and a camping trailer park (business) has been built within the proposed right-of-way of the Bridge on New Location Alternative. The two detailed study alternatives would result in the relocations shown in Table 3.

Table 3. Relocations

Detailed Study Alternatives	Homes	Businesses
2010 EA (Table 2-1 on page 2-7)		
Bridge on New Location (Bridge South)	2	5
Bridge within Existing NC 12 Easement (Phased Approach/Rodanthe Bridge)	6	7
Current Conditions/Detailed Study Alternatives Design		
Bridge on New Location	2 ¹	2
Bridge within Existing NC 12 Easement	5	2

¹This number does not include the relocation of camping trailers parked in the camping trailer park (one business relocation). The owner of this business indicated that of the 23 sites, approximately 12 to 14 are rented on a long-term (yearly) basis, but that in accordance with Dare County regulations, the sites are not used for permanent residence. Seven are currently occupied within the acquisition area of this alternative. All but five of the 23 sites are affected by the Bridge on New Location Alternative.

Updated NCDOT relocation reports, particularly addressing 2013 preliminary designs for the detailed study alternatives, are included in Appendix E. Consistent with relocation information documented in the 2008 FEIS, updated reports indicate that impacts to minorities, large families, disabled persons, or others who would have special problems being relocated would not be substantial. No special relocation services would be necessary. Residential relocations would not cause a housing shortage. There

is adequate decent, safe, and sanitary housing that is expected to be available during the relocation period. There is a concern that if any of the residential buildings displaced contain permanent residents, the replacement housing could be up to 5 to 10 miles away because of the predominance of vacation homes in the Rodanthe area. Suitable sites for relocation of the displaced businesses are also available and business services would still be available after project implementation. Detailed information on the NCDOT policy to ensure comparable replacement housing and the North Carolina Board of Transportation's programs to minimize the inconvenience of relocation is provided in Section 4.1.1 of the 2008 FEIS.

The owner of the business building that houses an auto repair shop and the new camping trailer park (business) is also the owner of the Liberty gas station/Island Convenience Store in the same area on the west side of existing NC 12. The southern termini of both detailed study alternatives are located in this area. The business building was damaged in Hurricane Irene; it had previously housed several businesses, but currently houses only an auto repair shop. The Bridge within Existing NC 12 Easement would require taking the Liberty gas station/ Island Convenience Store and auto repair business, while the Bridge on New Location would require the taking of the auto repair business and the campground. The owner of these businesses has indicated a preference for the Bridge on New Location Alternative because of a desire to preserve the Liberty gas station/ Island Convenience Store, which is the family's main source of income. Further, the Liberty gas station/ Island Convenience Store is an important part of the Rodanthe community. Local residents depend on it for gas, groceries, and other necessities. It provides a gathering spot for locals during non-tourist season months.

The relocations do not represent a new significant impact because they are lower than identified in the 2010 EA.

A gravesite on Seagull Street would be avoided by both detailed study alternatives. Table 2-1 of the 2010 EA also noted that what is now the Bridge on New Location Alternative could cross a cemetery, but that no known gravesites would be affected. Both the 2010 Bridge South design and the 2013 Bridge on New Location design show the bridge approach passing close to the cemetery. The associated new right-of-way includes a "cut-out" that follows the cemetery boundary so that the right-of-way does not take a portion of the cemetery property. This is important. Without this "cut-out," any known graves in this portion of the cemetery would need to be relocated. If graves were to be relocated, there appears to be available space in the western part of the cemetery for the relocation of graves. If the Bridge on New Location Alternative becomes the Selected Alternative, NCDOT would conduct research and field surveys to determine precisely where graves are located to ensure no unmarked graves are unintentionally disturbed. If a decision were made to relocate gravesites, the relocation would take place under North Carolina Statute 65-106, *Removal of Graves*. As required

by law, descendants would be contacted, to the extent possible, prior to moving graves. Descendants would be involved in relocation location decision.

4.2.2 Visual Impacts

With either detailed study alternative, a new bridge would affect the viewshed within Rodanthe, although the affected views would differ between the alternatives. The visual impacts described below do not represent significant new impacts. These impacts were documented in the 2008 FEIS and 2010 EA, and are generally unchanged.

4.2.2.1 Bridge on New Location Alternative

Section 4.3.1.2 of the 2008 FEIS indicated the Bridge on New Location Alternative would result in substantial changes to panoramic and unobstructed views of the Pamlico Sound from homes along the sound's shoreline (and second-story homes farther away from the Sound) in Rodanthe. The Rodanthe area bridge would be approximately 1,200 to 2,500 feet from the soundside shoreline and the homes located along the shoreline. Exceptions would be two homes that would be adjacent (80 and 150 feet away) to the bridge where it crosses the shoreline in Rodanthe. The design assessed in the 2010 EA was approximately 1,200 to 1,600 feet from the shore with the exception of the same two homes. The greater distance from the shoreline was an additional outcome of the alignment adjustment made in the Refuge. Because of the greater distance, the bridge would appear thinner and the visual impact would be somewhat less than documented in the 2010 EA.

The intactness and unity of the view would be split by the line of the Rodanthe area bridge across the full 180 degrees of the view. At night, the lights of motor vehicles would be visible. Roadway lighting is not planned for the proposed bridge. An aerial representation of the Bridge on New Location Alternative is shown in Figure 8.

4.2.2.2 Bridge within Existing NC 12 Easement Alternative

Section 4.3.1.2 of the 2008 FEIS on page 4-29 indicated that the Bridge within Existing NC 12 Easement Alternative would substantially affect the Rodanthe area, introducing an elevated roadway into the community. This also was true for the revised design assessed in the 2010 EA and is the case for the Phase IIb Bridge within Existing NC 12 Easement Alternative. A representation of the Bridge within Existing NC 12 Easement Alternative is shown in Figure 9.

Over 50 residential and/or business structures are located along NC 12 between the Refuge boundary and the proposed southern end of the bridge and would have direct views of the bridge. The bridge also would be seen from most homes west of the properties adjacent to NC 12, with sightlines between, and sometimes above, the homes and businesses that line NC 12. The elevated structure would impede the viewshed of the primary viewers looking east towards the Atlantic Ocean and ocean-side viewers looking west toward the sound. Views could be blocked by the bridge as high as the



PHOTOSIMULATION OF THE BRIDGE ON NEW LOCATION ALTERNATIVE

Figure
8



**PHOTOSIMULATION OF BRIDGE
WITHIN EXISTING NC 12 EASEMENT ALTERNATIVE**

Figure
9

third or fourth story. At an elevation of approximately 30.0 feet above mean sea level (approximately 26.5 feet above ground), the bridge would be a dominating presence at ground level, particularly for those homes and businesses close to it. Despite the slightly lower height compared with the 2008 FEIS and 2010 EA design (see Section 2.4.3), the combination of the bridge's height, length, structural characteristics, and materials would still present a structure not in keeping with the existing character of the area.

As indicated in the 2008 FEIS in Section 4.3.1.2 on page 4-30, the potential for beach erosion is severe in the Rodanthe area. By 2060, as a result of the beach eroding under the bridge, the majority of the bridge would be located in the ocean and would be a presence within ocean views for properties currently located to the west of NC 12.

4.2.3 Cultural Resource Impacts

This section describes the effects of the Phase IIb detailed study alternatives on cultural resources, in accordance with Section 106 of the National Historic Preservation Act of 1966 (36 *Code of Federal Regulations* [CFR] Part 800). The cultural resource impacts described below do not represent significant new impacts. These impacts were documented in the 2008 FEIS and 2010 EA and are generally unchanged. Both detailed study alternatives would have an Adverse Effect on the Refuge. The nature of the Adverse Effect would be the visual impact on the historic landscape of the Refuge and loss of access to Refuge features. As discussed in Section 4.4.1.2 of the 2008 FEIS (beginning on page 4-36), bridges in the Refuge would be a sizable new, elevated, linear, man-made feature. Although adverse, the impact of Phase IIb would be less with the Bridge on New Location Alternative, in that the bridge would be within the Refuge for approximately 0.4 mile. With the Bridge within Existing NC 12 Easement Alternative, a bridge would be introduced to Refuge views for approximately 1.8 miles.

As indicated in Table 2-1 of the 2010 EA, the Bridge on New Location Alternative (labeled in the table as Road North/Bridge South) and Bridge within Existing NC 12 Easement Alternative (labeled as Phased Approach/Rodanthe Bridge) would have No Adverse Effect on the Rodanthe Historic District and Chicamacomico Life Saving Station since the alternatives would be outside the district. Although the alternatives would be within the view of the resources, this view also includes modern commercial and residential structures. The current designs of the detailed study alternatives also remain outside the district and remain in a view that includes modern commercial and residential structures.

4.2.4 Parks and Recreation Impacts

The parks and recreation resource impacts described below do not represent significant new impacts. These impacts were documented in the 2008 FEIS and 2010 EA and did not substantially change with the design refinements associated with the two detailed study alternatives for Phase IIb.

4.2.4.1 Land Use

The Phase IIb detailed study alternatives would affect land from the Refuge in a manner similar to the Bridge South component of the Road North/Bridge South Alternative and the portion of the Phased Approach/Rodanthe Bridge Alternative within the Phase IIb project area. Impacts would be:

- Bridge on New Location Alternative:
 - 2.79 acres of new permanent NC 12 easement
 - 19.27 acres of existing NC 12 easement returned to the Refuge and restored
 - 0.63 acres of temporary construction easement in the Refuge for a temporary traffic maintenance road to take traffic around the proposed bridge approach
- Bridge within Existing NC 12 Easement Alternative:
 - No new permanent NC 12 easement
 - 2.06 acres of temporary construction easement in the Refuge. In the Refuge, an approximately 5-foot-wide temporary construction easement would be needed for the entire length of the project on the sound side of the existing NC 12 easement. The purpose of this narrow easement would be primarily to provide room for construction workers to erect erosion control measures (fencing) along the edge of the existing NC 12 easement. A pile jetting pipe would be placed between NC 12 and the Pamlico Sound on a 10-foot wide temporary easement at what is currently expected to be three locations in the Refuge. The easement in Rodanthe would be needed to provide room for construction equipment to operate when completing grading in the NC 12 right-of-way.

4.2.4.2 Recreational Use

As with the Bridge South and Phased Approach alternatives discussed in the 2008 FEIS in Section 4.5.3 (beginning on page 4-44), direct motor vehicle access to the Refuge would be eliminated for the length of the bridge component of the Phase IIb detailed study alternatives (see Figure 3). Sacrificing direct motor vehicle access in favor of eliminating the need for artificial dunes to maintain a surface road is the preference of USFWS, which has indicated in the past that it will provide for some form of replacement access to the Refuge and its facilities where direct access from a surface road is lost in Phase II and in future phases of the Bonner Bridge Replacement Project (B-2500).

As the beach erodes as a part of natural coastal processes, the Bridge within Existing NC 12 Easement Alternative's bridge would be located first over the beach and then in the ocean. As a result, several recreational activities that occur in this area, including

fishing, hiking, surfing, wind surfing, kite boarding, swimming, ocean kayaking, and birding, would be affected both by the presence of the bridge and the loss of direct Refuge access, as discussed in Section 4.5.3.3 of the 2008 FEIS. As with the Phased Approach alternatives discussed in the 2008 FEIS and the Phase IIa Selected Alternative, bridge piles in the ocean could change the types of fish that congregate around the shore. To the extent that certain sections of the bridged roadway would be over the beach, beach and water activities would be affected, but not precluded where it is safe, by the presence of the bridge and bridge piles. Once the bridge piles are located in the ocean, the ability to surf in the area affected would be eliminated. Ultimately this would be the case for almost all of the entire 2.27-mile Bridge within Existing NC 12 Easement Alternative bridge. The piles would change how and where the waves break, which would interfere with the swells in such a way that the waves would no longer be conducive to good surfing. In addition, the presence of bridge piles in areas where the bridge would be less than 150 feet from shore would be a safety hazard to surfers and other recreational ocean users.

The economic impact of eliminating the paved road access to the Refuge was assessed (2008 FEIS, Section 4.1.5.3, beginning on page 4-12). It was determined that on average, the losses of tourism associated with loss of access to the Refuge “would not have a major economic impact on the Outer Banks/Dare County area.” Recreational user surveys conducted for the economic analysis, as documented in Section 3.5.2.4 of the 2008 FEIS (beginning on page 3-43), observed fishing (particularly from the catwalks on Bonner Bridge and the terminal groin/sea walls at Oregon Inlet), birding, surfing, beach use (sunbathing), walking, and kayaking as activities in the Refuge (see Table 3-10 of the 2008 FEIS, page 3-44). Visitors also visited the Refuge’s visitor center. As indicated in the 2008 FEIS study, the key question in terms of the economic impact to the Outer Banks economy is what resource/activity is lost, or to which access is reduced or lost, and whether there is no other location on the Outer Banks to participate in the activity. Visitor survey results in Section 4.1.5.3 of the FEIS (page 4-12) found that without any paved road access to the Refuge, 9 percent of Refuge visitors would not visit the Refuge and had no other location on the Outer Banks to conduct their activity. They would thus not visit the Outer Banks and this loss of visitors would have an economic impact.

There are other locations on the Outer Banks, including Hatteras Island, and specifically the Seashore, where one can use a beach (sunbathing), walk, kayak, and go birding along a beach and other natural habitats. Thus, the loss of use of beach area for these activities because of bridge piles on the beach or offshore is not expected to have a notable economic impact on Dare County beyond the impact associated with changed access.

Regarding surfing, during the Phase IIa scoping comments, the Outer Banks Chapter of the Surfrider Foundation submitted a petition (with 1,148 signatures) in favor of giving consideration to design options that, at a minimum, provide continued, if not improved,

access to the Rodanthe 'S' Curves Hot Spot area for surfing. The petition did not indicate support for a particular alternative, but it stated that the 'S' Curves Hot Spot area is a top surfing spot in the United States. It also emphasized the contribution of surfing to the local economy. There are other locations on the Outer Banks, including Hatteras Island, and specifically the Seashore, where one can surf. Therefore, the loss of use of beach area in the Refuge and at the 'S' Curves Hot Spot as a surfing opportunity because of bridge piles on the beach or offshore is not expected to have a notable economic impact on Dare County beyond the impact associated with changed access.

Of the Refuge activities listed above, three can occur only in the Refuge: 1) fishing from the catwalks on Bonner Bridge (under Seashore jurisdiction) and terminal groin/seawalls at Oregon Inlet, 2) birding at the managed impoundments and Oregon Inlet, and 3) visiting the visitor center. The first is a unique place to fish. The managed impoundments are unique in terms of the habitat provided and the diversity and number of bird species using these areas. In addition to the impoundments, both sides of Oregon Inlet and adjacent habitats often attract birds not commonly seen in other places and are targeted by visiting birders. The visitor center is inherent to USFWS-Refuge's mission. None of these locations is associated with the beach or specifically the Phase IIb detailed study alternatives.

Fishing from the catwalks was discussed in Section 4.5.3.2 of the 2008 FEIS (beginning on page 4-46) and revisited in Section 2.3.2.1 of the 2010 EA (page 2-17). Phase I of the PBC/TMP Alternative will leave a part of Bonner Bridge in place as a pier that could be used for recreation (specifically, fishing) and provide direct road access to an existing parking lot. This parking lot is used by those who fish at Oregon Inlet, whether from the existing catwalks or terminal groin/seawalls, and those who do birding at Oregon Inlet. Formal consultation with NMFS in 2013 yielded a new concern related to the effect of existing fishing at Oregon Inlet on protected sea turtles. NMFS indicated that there is evidence that at least four sea turtles have been hooked during recreational fishing in Oregon Inlet since 1989 and one hooking occurred from the existing bridge catwalks in 2012. As such, NCDOT will install "no fishing" signs to not allow fishing on the catwalks during Oregon Inlet replacement bridge construction to satisfy NMFS concerns and for safety reasons. To satisfy NMFS concerns, "no fishing" signs also will be installed on the portion of Bonner Bridge that will be left in place as a pier. If and when a decision is made to allow fishing on the pier, FHWA will initiate Section 7 consultation with NMFS prior to the "no fishing" signs being removed. (See *Protected Species* under Section 3.5.1 of the Phase IIa ROD, pages 25 and 26.) If fishing is not allowed on the pier, there could be an economic impact on Dare County because fishing at Oregon Inlet is a unique fishing opportunity that cannot be found elsewhere in Dare County. That impact, however, is accounted for within the 9 percent loss of Refuge visitors associated with changed access presented in the 2008 FEIS in Section 4.1.5.3.

From the perspective of birding at the impoundments, none of the alternatives assessed in the 2008 FEIS that are a part of the PBC/TMP Alternative would preclude birding at the impoundments, although to the extent direct road access is lost as future phases of the PBC/TMP Alternative are built, users will have to rely on alternate access provided by USFWS-Refuge, as USFWS-Refuge has indicated it would do. This is documented in the second paragraph of page 4-12 of the 2008 FEIS.

Finally, the visitor center could be moved. In any event, the visitor center will likely eventually be moved because its site is forecast to be in the ocean by 2060.

As noted above, if paved road access to the Refuge were lost completely, such as with the Pamlico Sound Bridge Alternative, 9 percent of Refuge visitors may choose not to come to the Outer Banks, which would have the associated economic impact documented in 2008 FEIS Section 4.1.5.3 (page 4-12). A full 9 percent loss of Refuge visitors would not be the case with the PBC/TMP Alternative in that it would retain direct road access to at least two locations based on 2060 shoreline forecasts: Oregon Inlet and between Phase IIa and Phase IIb where, based on shoreline forecasts, no improvements to NC 12 are needed. However, at this time there is a possibility that fishing would not be allowed from the part of Bonner Bridge left as a pier because of a past history of protected sea turtles being hooked by fishing at Oregon Inlet. Overall, from the perspective of access, the loss of visitors to the Refuge would be less than 9 percent with the PBC/TMP Alternative.

4.2.5 Natural Systems Impacts

The natural systems impacts described below do not represent significant new impacts. Similar impacts were documented in the 2008 FEIS and 2010 EA and did not substantially change with the design refinements associated with the two Phase IIb detailed study alternatives or with changes in the affected environment that have occurred since the release of those documents.

4.2.5.1 Surface Waters and Water Quality

As discussed in Section 4.7.2 of the 2008 FEIS on page 4-75 and Section 4.7.2.2 of the 2008 FEIS on page 4-82, waters associated with Pamlico Sound are classified as SA waters (Class A saltwaters) with a supplemental classification as High-Quality Waters (HQW). Construction-related water quality impacts to the open water of the sound could result in temporary increases in turbidity and a potential decrease in dissolved oxygen; however, given the dynamic nature of the waters in the sound, a temporary increase in turbidity likely would not be notable as the flux of water through the sound would reduce the potential for any permanent water quality problems. Construction of the entire Bridge within Existing NC 12 Easement Alternative would occur over land; therefore, direct water quality impacts during construction would not occur. Most of the Bridge on New Location Alternative would be built over water in Pamlico Sound; therefore, direct water quality impacts during construction would occur. Impacts would

be minimized by not using dredging during bridge construction and by containing pile jetting spoil.

As discussed in Section 4.7.2.2 of the 2008 FEIS beginning on page 4-82, runoff from the bridges would be a potential source of pollutants to the Atlantic Ocean (in the case of the Bridge within Existing NC 12 Easement Alternative, when beach erosion results in its presence in the ocean) and Pamlico Sound (Bridge on New Location Alternative). To minimize the potential impact of project pollutants, a Post-Construction Stormwater Program (PCSP) would be developed in association with NCDENR-DWR (formerly NCDENR-DWQ) and other state and federal environmental resource and regulatory agencies during final bridge design and in the process of obtaining related permits. NCDOT's PCSP for the Phase IIb bridges is expected to be the same as the stormwater management plan set forth for Phase I (the new Oregon Inlet bridge) and Phase IIa. Runoff would be collected from the ends of a Phase IIb bridge and piped to a riprap apron, which would drain to roadside swales to promote infiltration. Bridge drainage for the main bridge spans would be from deck drains (openings) at the outer edges of the deck. The bridge would be high enough to allow wind to disperse the deck drain discharge before it reaches the ground or water surface. Best Management Practices (BMPs) discussed in Section 4.7.2.2 of the 2008 FEIS (pages 4-83 to 4-84) would apply to both alternatives.

4.2.5.2 *Biotic Communities*

Biotic communities in the study area would be impacted permanently and temporarily as a result of project construction. The impacts to biotic communities in the Phase IIb project area are presented in Table 4.

Fill/pile and shading are two types of permanent impacts or effects associated with the project. Permanent fill impacts involve changing the ground surface by earth moving or placement of fill. Piles are a key component of bridge foundations or bents upon which bridge spans rest. Permanent pile impacts are the area of land used by the piles if the pile cap that connects the piles together is immediately under bridge spans and above the ground. When the pile cap is at ground level or at the surface of open water, then the area of the pile cap is considered the area of permanent impact. Shading is the area of bridge deck less the pile impacts.

Consistent with the bridge foundation design used for the in-easement (preferred) alternative for the Phase IIa project, pile caps at ground level are assumed for the Phase IIb Bridge within Existing NC 12 Easement Alternative. With the Bridge on New Location Alternative, either location for the pile cap could be used. In the 2010 EA, the pile cap was assumed to be just below the bridge spans in the impact assessment for the Road North/Bridge South Alternative. Thus, the permanent impact of both configurations of the bridge foundation described above is presented for the Bridge on New Location Alternative. This distinction in permanent impacts is shown in Table 4.

Table 4. Impacts to Biotic Communities in the Phase IIb Project Area

Biotic Community	Subject to Section 404 Jurisdic-tions?	Bridge within Existing NC 12 Easement Alternative			Bridge on New Location Alternative		
		Permanent Fill and Pile (acres)	Permanent Shading (acres)	Temporary Easement (acres) ¹	Permanent Fill and Pile (acres) ²	Permanent Shading (acres)	Temporary Easement (acres) ¹
Open water	Yes	0.00	0.00	0.04	0.11 (2.88)	11.23 (8.46)	0.00
Open water-culvert	Yes	0.00	0.00	0.00	0 (0)	0 (0)	0.00
Open water-ditch	Yes	0.00	0.00	0.00	0 (0)	0 (0)	0.00
Open water-pool	Yes	0.02	0.00	0.03	0 (0)	0 (0)	0.00
Upland beach	No	0.01	0.00	0.05	0 (0)	0 (0)	0.00
Upland dune	No	0.44	1.09	0.35	0 (0)	0 (0)	0.00
Upland Man-Dominated	No	2.86	7.57	0.37	3.02 (3.05)	0.35 (0.32)	0.00
Upland maritime grassland	No	0.15	1.07	1.13	0.01 (0.15)	0.51 (0.37)	0.45
Upland maritime shrub thicket	No	0.24	0.05	0.06	0 (0)	0 (0)	0.00
Upland maritime shrub/grassland	No	0.04	0.27	0.29	0.01 (0.12)	0.44 (0.33)	0.18
Upland reed stand	No	0.00	0.00	0.00	0 (0)	0 (0)	0.00
Wetland man-dominated	Yes	0.00	0.00	0.00	0 (0)	0 (0)	0.00
Wetland maritime grassland	Yes	0.00	0.00	0.01	0.43 (0.43)	0 (0)	0.00
Wetland maritime shrub thicket	Yes	0.00	0.00	0.04	0 (0.04)	0.33 (0.3)	0.00
Wetland maritime shrub/grassland	Yes	0.05	0.00	0.05	0.01 (0.01)	0.04 (0.04)	0.00

Table 4 (concluded). Impacts to Biotic Communities in the Phase IIb Project Area

Biotic Community	Subject to Section 404 Jurisdic-tions?	Bridge within Existing NC 12 Easement Alternative			Bridge on New Location Alternative		
		Permanent Fill and Pile (acres)	Permanent Shading (acres)	Temporary Easement (acres) ¹	Permanent Fill and Pile (acres)	Permanent Shading (acres)	Temporary Easement (acres) ¹
Wetland marsh	Yes	0.00	0.00	0.00	0 (0)	0 (0)	0.00
Wetland reed stand	Yes	0.00	0.00	0.00	0 (0)	0 (0)	0.00
Wetland salt grassland	Yes	0.00	0.00	0.00	0 (0.01)	0.08 (0.07)	0.00
Wetland salt shrub thicket	Yes	0.00	0.00	0.00	0 (0)	0 (0)	0.00
Wetland salt shrub/grassland	Yes	0.00	0.00	0.00	0 (0)	0.07 (0.07)	0.00
CAMA marsh	Yes	0.00	0.00	0.05	0 (0.03)	0.12 (0.09)	0.00
CAMA wetland maritime grassland	Yes	0.00	0.00	0.03	0 (0)	0 (0)	0.00
CAMA wetland maritime shrub thicket	Yes	0.00	0.00	0.00	0 (0)	0 (0)	0.00
CAMA wetland maritime shrub/grassland	Yes	0.00	0.00	0.04	0 (0)	0 (0)	0.00
CAMA wetland salt grassland	Yes	0.00	0.00	0.00	0 (0)	0 (0)	0.00
CAMA wetland salt shrub thicket	Yes	0.00	0.00	0.00	0 (0)	0 (0)	0.00
CAMA wetland salt shrub/grassland	Yes	0.00	0.00	0.00	0 (0)	0.04 (0.04)	0.00
CAMA wetland salt/shrub grassland	Yes	0.00	0.00	0.00	0 (0)	0 (0)	0.00
TOTAL BIOTIC COMMUNITY IMPACTS		3.81	10.05	2.54	3.59 (6.72)	13.22 (10.09)	0.63

¹Impacts within the 2.54 acres of easement for the Bridge within Existing NC 12 Easement Alternative (2.06 temporary construction easement in the Refuge and 0.48 acres of utility easement in Rodanthe used in final grading) and 0.63 acres of temporary construction easement for the Bridge on New Location Alternative only. As indicated in the text above, there also would be temporary impacts within the existing NC 12 easement. The majority of the temporary impacts in the existing NC 12 easement are in upland, previously disturbed/maintained areas in the man-dominated community.

²The numbers not in parentheses assume the pile cap is immediately under the bridge spans. The numbers in parentheses assume the pile cap is a ground level or at the surface of open water.

With the Bridge within Existing NC 12 Easement Alternative, permanent impacts to biotic communities would occur within the existing NC 12 easement. This alternative would permanently impact 3.81 acres of biotic communities with fill and piles and would shade another 10.05 acres. Of the 3.81 acres of permanent impacts, approximately 75.1 percent (2.86 acres) would occur in man-dominated areas. Of the 10.05 acres of shading impacts, 75.3 percent (7.57 acres) would occur in man-dominated areas.

Most of temporary impacts (total of 2.54 acres) are in upland (mainly grassland); 0.07 acre are in open water and 0.22 acre are in wetland.

With the Bridge on New Location Alternative, most of the permanent impacts to biotic communities would occur outside of the existing NC 12 easement. This alternative would permanently impact 3.59 acres of biotic communities with fill and piles and would shade an additional 13.22 acres. The fill and pile impact of 3.59 acres assumes the pile cap would be just under the bridge on new location spans (not in the water and would not result in permanent impact), which was assumed in the 2010 EA in calculating pile impacts for the Road North/Bridge South. The area of the bridge's pile caps is estimated to be 6.72 acres, which as indicated above would be a reasonable representation of the fill and pile impact on land and in the sound if during final design, the decision was made to place the pile cap at ground and water level. The larger fill and pile impact would reduce the shading impact to 10.09 acres.

Of the permanent fill and pile impact of 3.59 acres, approximately 84.1 percent (3.02 acres) would occur in man-dominated areas and 0.03 percent (0.11 acres) would occur in open water. The 0.63 acre of temporary easement impacts to biotic communities would occur within upland maritime grassland and upland maritime shrub/grassland.

4.2.5.3 Wetlands and Open Water Habitat

Given that the two detailed study alternatives are located similarly to their counterparts in the 2008 FEIS and 2010 EA, their impacts to wetland and open water habitat would be similar.

The Bridge within Existing NC 12 Easement Alternative would permanently impact 0.05 acre of wetlands and 0.02 acre of open waters (pool) with fill and pile; no wetlands or open waters would be impacted by shading. This alternative would temporarily impact 0.01 acre of wetlands (maritime grassland) and 0.03 acre of open waters (pool). Neither permanent nor temporary CAMA wetland impacts would occur.

The Bridge on New Location Alternative would permanently impact 0.44 acre of wetlands and 0.11 acre of open waters with fill and pile. If the pile caps were placed at ground or water level, this alternative would impact 0.52 acre of wetlands and 2.88 acres of open water. Shading (the area of the bridge deck less the pile area) would affect 0.68 acre of wetlands and 11.23 acres of open water. If pile caps were placed on the ground

or at water level, shading would affect 0.61 acre of wetlands and 8.46 acres of open water). This alternative would permanently impact less than 0.01 acre of CAMA wetlands with fill and pile (0.03 if using the larger pile cap area) and would shade 0.16 acre of CAMA wetlands (0.13 acre if using pile cap area). There would be no impact to wetlands, including CAMA wetlands, from temporary fill.

4.2.5.4 *Protected Species*

Protected species and habitat for protected species addressed in the 2008 BA occur in the Phase IIb project area. Descriptions and details on these species and associated habitat are found in the 2008 FEIS (Section 4.7.9), the 2008 BA, as well as the 2013 technical report on the Atlantic Sturgeon (CZR, Incorporated, 2013). Updated information is found in the 2013 technical memorandum on threatened and endangered species for Phase IIa (FHWA and NCDOT, 2013) and a similar document was prepared for Phase IIb (FHWA and NCDOT, 2013). The current status of consultation under Section 7 of the ESA of 1973 is described in Section 6.3.

Protected Species in an Aquatic Environment. The direct effects common to all sea turtles identified in Section 7.2.1 of the 2008 BA remain applicable. The effects of noise, lighting, and turbidity described in the 2008 BA for construction in Oregon Inlet also would be applicable to the Phase IIb Bridge on New Location Alternative because this alternative would include a bridge over Pamlico Sound, but because sea turtles occur less frequently in the Bridge on New Location Alternative area, the chance of an effect is less likely. There would be no dredging associated with in-water construction with this alternative. Shading and fill do not have a direct impact on sea turtles because they are mobile organisms and can find other aquatic habitat.

Pamlico Sound open water habitats would be affected by jetting of piles with either detailed study alternative. In the case of the Bridge on New Location Alternative, open water habitats would be subject to jetting during construction; these effects would be primarily short-term and are not likely to adversely affect sea turtles. Jetting spoil would be contained. For the Phase IIb Bridge within Existing NC 12 Easement Alternative, NCDOT is planning to pump water from Pamlico Sound to the NC 12 easement to use in jetting piles. The pumping of water would be continuous while the jetting equipment is running, and the volume of water needed to be pumped would be about 1,000 to 1,500 gallons per minute. The internal diameter of the jetting pipes likely would be about 2 to 2.5 inches and at least two pipes likely would be used. Turtles in the water likely would avoid the area where the water is disturbed by the pumping of water into the jetting pipes.

As documented in Appendix A of the 2008 BA for the Bridge within Existing NC 12 Easement Alternative (then the Phased Approach/Rodanthe Bridge Alternative), the potential impacts with Phase IIb to sea turtles in the aquatic environment also would occur when the Bridge within Existing NC 12 Easement Alternative bridge piles are in

the ocean as a result of shoreline erosion. These impacts are highway run-off and predation on hatchlings by fish attracted to piling habitat.

The direct effects of the project on the shortnose sturgeon remain largely unchanged from those listed in Section 8.2.1 of the 2008 BA and also would apply to the Atlantic sturgeon. The effects of construction activities in Pamlico Sound with the Phase IIb Bridge on New Location alternative would be similar to the effects of the construction of the Phase I bridge over Oregon Inlet. Both would generate a short-term localized increase in noise, turbidity, and siltation. Again, there would be no dredging associated with in-water construction for Phase IIb, and NCDOT is planning to either pump water from Pamlico Sound or jet piles in Pamlico Sound depending on the detailed study alternative selected. However, the rarity of shortnose and Atlantic sturgeon in Albemarle and Pamlico sounds, and their preference for deep spots during the day and tidal flats at night in the summer and early fall (Jackson et al., 1992), makes the possibility that project construction in Pamlico Sound would adversely affect this species discountable. In addition, any occurrence of this species within the construction area likely would be short-term and in conjunction with annual spring migrations, further discounting the prospect that project construction in Pamlico Sound would adversely affect these species. As was indicated above for sea turtles, the Phase IIb Bridge on New Location Alternative would permanently affect open water habitat in the Pamlico Sound by piles or shading (including SAV). Piles would permanently occupy a discountable portion of the potential soft-bottom habitat for the shortnose and Atlantic sturgeon in Pamlico Sound. Piles associated with the Bridge within Existing NC 12 Easement Alternative would ultimately be in the Atlantic Ocean as a result of shoreline erosion. Sturgeon could be affected by highway runoff with bridges over Pamlico Sound or the Atlantic Ocean. Piles and highway runoff in either Pamlico Sound or the Atlantic Ocean are unlikely to have any adverse effects on either of the two sturgeon species because they are mobile organisms and can find other adjacent available aquatic habitat.

NMFS issued a letter on September 30, 2013 (see Appendix D of the Phase IIa ROD) concluding formal consultation with FHWA on sea turtles and sturgeon. The focus of the letter was on Oregon Inlet, where sea turtles and sturgeon are known to occur, and the proposed Phase I replacement bridge over Oregon Inlet. The letter did not indicate that a potential for impact to sea turtles or sturgeon existed for Phase IIb with either detailed study alternative. Unlike the catwalks that provide fishing access at Oregon Inlet, no fishing access facilities are planned as part of Phase IIb bridges.

The biological conclusion of May Affect, Not Likely to Adversely Affect for the Bonner Bridge Replacement Project's (B-2500) PBC/TMP Alternative would not change because of the characteristics of the Phase IIb alternatives.

Protected Species on Land. The Phase IIa and Phase I areas include beach habitat suitable for nesting sea turtles. The Phase IIb project area also includes the same type of

beach habitat. The effects of those projects and the PBC/TMP Alternative as a whole on nesting sea turtles were described in the other the documents listed in the first paragraph of this section. Because Phase IIb project impacts to sea turtles and their habitat on land would be similar to those previously described in the other the documents listed in the first paragraph of this section, there is no change in the effects determinations for sea turtles for either Phase IIb detailed study alternative.

The Phase IIa and Phase I areas include habitat suitable for seabeach amaranth and the effects of the projects on the plant and its habitat were described in the documents listed in the first paragraph of this section. The Phase IIb project area also includes habitat suitable for seabeach amaranth, and because the project impacts are similar to or less than those previously evaluated in other documents, there is no change in the biological conclusion of May Affect, Not Likely to Adversely Affect. The Phase IIb Bridge on New Location Alternative would not have any impacts on the plant or its habitat because no construction would occur on the beach. The Phase IIb Bridge within Existing Easement would affect 0.01 acre beach habitat with fill and pile and 0.05 acre with temporary impacts, and 0.25 acre of dune with fill and pile and 0.35 acre with temporary impacts. An additional 1.09 acres of dune would be shaded by the bridge. Seabeach amaranth has not been documented in the Phase IIb project area.

The Phase IIa area and the Phase I area include open water and adjacent shorelines that include habitat suitable for piping plover nesting. The Phase IIb project area does not include preferred nesting habitat. Monthly bird surveys have been conducted by NCDOT biologists since January 2013. As of the date of this EA, no nests of piping plover have been recorded in the Phase IIb area. While potential nesting and foraging habitat has increased in the vicinity of the Pea Island inlet north of Phase IIb since the 2010 ROD, an incidental take of piping plover nests during construction would not increase because no nests or nesting behavior have been documented near the Pea Island inlet or the Phase IIb project area. Therefore, the biological conclusions for the piping plover addressed in the 2008 BA and the Phase IIa EA also are assumed to remain unchanged as a result of the Phase IIb alternatives.

4.2.5.5 *Essential Fish Habitat*

The potential impacts (short-term, long-term, permanent, and potential species-specific) to EFH addressed in the 2008 FEIS (Section 4.7.6.2) beginning on page 4-104 and the *Essential Fish Habitat Assessment* (CZR, Incorporated, 2008) as it relates to Phase I (replacement of the Bonner Bridge) would be similar for the two detailed study alternatives since both areas have the same EFH types. In addition, Phase I and the two Phase IIb detailed study alternatives would involve the same type of activities in those habitats. The Bridge on New Location Alternative, and to a lesser extent, the Bridge within Existing NC 12 Easement Alternative, would affect EFH in Pamlico Sound. The Bridge within Existing NC 12 Easement Alternative also would affect EFH once

shoreline erosion results in the bridge being in the ocean. Permanent EFH impacts would be the result of pile presence and bridge shading.

As indicated in Section 4.1.7, in general in the Phase IIb project area, waters less than 6 feet deep within Pamlico Sound are considered potential SAV habitat. Based on the 2012 aerial SAV mapping, all the open water of the Pamlico Sound crossed by the Phase IIb Bridge on New Location Alternative contain either “patchy” or “sparse” SAV.

The pile impact to EFH and SAV habitat in Pamlico Sound (open water) would be 0.11 acre assuming the pile cap would be just under the bridge spans, which was assumed in the 2010 EA in calculating pile impacts. The total area over the sound of the bridge’s pile caps is estimated to be 2.88 acres, which although not set on the bottom, would be a reasonable representation of the pile cap impact to EFH/SAV habitat if during final design, the decision was made to place the pile cap at water level. The shading impact (if the pile cap is placed directly under the bridge) to EFH/SAV habitat would be 11.23 acres. If 2.88 acres is the open water pile cap impact, the shading impact would be 8.46 acres. See the introduction to Section 4.2.5.2 for the reasons two different pile and shading impacts are presented for the Bridge on New Location Alternative.

The bridge deck and pile presence impacts listed above would result in some loss of EFH (under the piles) and in changes in light levels of the area underneath the bridge and for some distance surrounding the bridge. These changes are expected to have a minimal adverse effect on EFH, managed species, and SAV functions because of the extensive distribution of SAV throughout the area and because the bridge would be over 15 feet above mean high water. SAV beds in this area are naturally patchy and function as fragmented communities of varying density.

With the Bridge on New Location Alternative, temporary construction-related impacts on marine and estuarine waters could result from noise and turbidity, sediment removal, and burial of organisms. Although some minor adverse impacts to EFH would occur during the construction phases, the impacts would be temporary and are not expected to result in significant short-term or long-term adverse effects on managed species. A primary potential for construction impact within EFH for the Bridge on New Location Alternative would be the pile jetting process, including increased turbidity and burial of organisms by jetting spoil surrounding the pile being jetted into place. Jetting uses high pressure water from pipes adjoining a pile to move the soil away from the tip of the pile, allowing the pile to move into the hole created. When the high pressure water is turned off, the surrounding soil settles around the pile. The soil that is displaced by the pile is referred to as spoil. The water that is used in the jetting process would come from the sound; as the USFWS and other agencies have previously indicated, the placement of pipes and pumps associated with the jetting process cannot be placed on the ocean beach. Depending upon the size of the pile and the depth at which it needs to be placed, one bridge pile can be jetted into place in approximately 60

minutes. Jetting operations likely would occur over approximately half of the construction period; and they would occur year round. Phase I of the PBC/TMP Alternative also will involve jetting piles within EFH. A mitigation measure agreed to with environmental resource and regulatory agencies in Phase I permit documents that could be considered for the Bridge on New Location Alternative is minimizing turbidity and water quality degradation by containment of the jetting spoil as a requirement in the contractor's contract. Primary and secondary containment systems could capture as much of the jetting water as possible and re-use it within the jetting operation in SAV and wetland areas.

All spoil will be disposed of in an approved waste area. NCDOT will work with NCDENR-DCM, USFWS-Refuge, and other agencies as needed on minimizing jetting impacts to EFH, as well as jetting spoil disposal.

With the Bridge within Existing NC 12 Easement Alternative, jetting water would be taken from the sound, likely at three locations, and would be transported through pipes for use in jetting piles on land. This also will be done during the construction of the Selected Alternative for the Phase IIa project. For the Phase IIa project, to minimize impacts in the sound, a screen will be used on the intake of the jetting water pumping operations to prevent the intake of larval species. Jetting spoils will be disposed of within the NC 12 easement unless the Refuge accepts them for Refuge use. These disposal measures also could apply to Phase IIb's Bridge within Existing NC 12 Easement Alternative. There would be no other EFH impacts associated with the initial construction of the Bridge within Existing NC 12 Alternative. Again, NCDOT will work with NCDENR-DCM, USFWS-Refuge, and other agencies as needed on minimizing jetting impacts to EFH, as well as jetting spoil disposal.

Impacts to EFH from Phase IIb's Bridge within Existing NC 12 Easement Alternative (plus any future phases involving a bridge in the existing NC 12 easement) would eventually occur in the ocean as a result of shoreline erosion placing these alternatives in the ocean. The impacts to EFH from bridge presence in the ocean are described in Section 4.7.6.2 of the 2008 FEIS on page 4-107. These impacts would include changes related to water quality, water flow, sediment grain size and topography, bridge shading, and potential long-term impacts resulting from bridge maintenance activities for portions of the bridge that over time would be located in the surf zone. A Bridge within Existing NC 12 Easement Alternative would result in approximately 11.00 acres of shading area over the Atlantic Ocean in 2060 as a result of shoreline erosion. There is a potential to reduce habitat quality for larval and adult fish, as well as reduce invertebrate species abundance and diversity. In addition, the introduction of bridge piles would provide a type of hard substrate previously unavailable in the surf zone, thereby increasing habitat complexity. Currently, the only wetland impact associated with the Bridge within Existing NC 12 Easement Alternative would be 0.05 acre of

wetland maritime shrub/grassland, and the only open water impacts would be 0.02 pile and fill and 0.03 temporary impact to open water-pool.

4.2.6 Noise Impacts

In accordance with Title 23 *Code of Federal Regulations* Part 772, "Procedures for Abatement of Highway Traffic Noise and Construction Noise" (23 CFR 772) and the NCDOT Traffic Noise Abatement Policy (July 13, 2013), each Type I highway project must be analyzed for predicted traffic noise impacts. In general, Type I projects are proposed federal or federal-aid highway projects that involve any of the following: construction of a highway or interchange on new location; improvements of an existing highway that either substantially changes the horizontal or vertical alignment or increases the vehicle capacity; or projects that involve either new construction or substantial alteration of transportation facilities such as weigh stations, rest stops, ride-share lots or toll plazas. Traffic noise was addressed previously for the Bonner Bridge Replacement Project (B-2500) in Section 4.10 of the 2008 FEIS beginning on page 4-150 and in Table 1 of the 2010 ROD on page 17.

Traffic noise impacts were determined through implementing the current Traffic Noise Model® (TNM®) approved by FHWA (Version 2.5 released in 2004) and by following procedures detailed in 23 CFR 772 and the NCDOT *Traffic Noise Analysis and Abatement Manual*. When traffic noise impacts are predicted, examination and evaluation of alternative noise abatement measures must be considered for reducing or eliminating these impacts. Temporary and localized noise impacts also likely will occur as a result of project construction activities. Construction noise control measures are incorporated into the project plans and specifications.

4.2.6.1 Traffic Noise Impacts and Noise Contours

Predicted traffic noise impacts for the two Phase IIb detailed study alternatives, as well as the No-Build Alternative and existing conditions, are shown in Table 5 (NCDOT,

Table 5. Predicted Traffic Noise Impacts by Alternative

Alternative	Traffic Noise Impacts ¹			
	Residential (NAC B, 66 dBA or greater)	Churches/ Schools, etc. (NAC C, 66 dBA or greater & D, 51 dBA or greater)	Businesses (NAC E, 71 dBA or greater)	Total
Existing Conditions	1	0	0	1
No-Build Alternative (2025)	2	0	0	2
Bridge within Existing NC 12 Easement Alternatives (Build 2025)	6	0	0	6
Bridge on New Location Alternative (Build 2025)	2	0	0	2

¹Per TNM®2.5 and in accordance with 23 CFR 772

2013b). The Table 5 findings take into consideration the potential for receptors (persons standing outside) to experience traffic noise impacts by either approaching or exceeding the FHWA noise abatement criteria (NAC) or by a substantial increase in exterior noise levels as defined in the NCDOT Traffic Noise Abatement Policy, for any activity category listed in Table 6. All the impacts indicated in Table 5 result from traffic noise impacts that approach (1 dB(A) below the NAC criteria) or exceed the NAC. For the existing condition, one residential noise receptor was predicted to approach or exceed the FHWA NAC for Activity Category B.

As shown in Table 1 of the 2010 ROD (page 17), the Road North/Bridge South Alternative would have resulted in three residential noise receptors that approach or exceed the FHWA NAC for Activity Category B; substantial noise increases would have occurred at an additional three residential receptors (including one of the three that exceeds the FHWA NAC for Activity Category B) and 1 business noise receptor (Activity Category E). As indicated in Table 5 above, the equivalent Bridge on New Location Alternative would result in two residential noise receptors that approach or exceed the FHWA NAC for Activity Category B; a substantial increase in noise levels between the existing condition and the design year is not predicted for any noise receptor. Therefore, the Bridge on New Location alternative has a lower traffic noise impact than the Road North/Bridge South Alternative included in the 2010 ROD.

As shown in Table 1 of the 2010 ROD (page 17), the Phased Approach/Rodanthe Bridge Alternative would have resulted in three residential noise receptors that approach or exceed the FHWA NAC for Activity Category B. As indicated in Table 5 above, the equivalent Bridge within Existing NC 12 Easement Alternative would result in six residential noise receptors that approach or exceed the FHWA NAC for Activity Category B. This higher traffic noise impact is likely the result of changes in the specific homes displaced, including homes formally displaced that now have noise impacts. No substantial increases in noise levels would occur at any receptors with either the Bridge within Existing NC 12 Easement Alternative or its equivalent in the 2010 ROD.

The maximum extent of the 71 and 66 dB(A)⁴ noise level contours⁵ measured from the center of the proposed roadway is less than 20 and 56 feet, respectively, for the Bridge within Existing NC 12 Easement Alternative. The maximum extent of the 71 and 66

⁴ dB stands for decibel. The A-weighted sound level is a measure of sound intensity with frequency characteristics that correspond to human subjective response to noise. For more detail, see the 2008 FEIS, Section 3.10.1.4 on page 3-112.

⁵ The 71 and 66 dB(A) noise contours are lines that illustrate the distance from each detailed study alternative where the noise levels of 71 and 66 dB(A) are expected to occur, and corresponds to the NAC for Activity Category E and B/C receptors, respectively.

**Table 6. Noise Abatement Criteria Noise Abatement Criteria
(Hourly Equivalent A-Weighted Sound Level Decibels – dB(A))**

Activity Category	Activity Criteria ¹ L _{eq} (h) ²	Evaluation Location	Activity Description
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B ³	67	Exterior	Residential
C ³	67	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F.
F	--	--	Agriculture, airports, bus yards, emergency services, industrial, logging maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	--	--	Undeveloped lands that are not permitted.

Source: NCDOT *Traffic Noise Abatement Policy*, effective July 20, 2011.

¹The L_{eq}(h) activity criteria values are for impact determination only, and are not design standards for noise abatement measures.

²The equivalent steady-state sound level which in a stated period of time contains the same acoustic energy as the time-varying sound level during the same time period, with L_{eq}(h) being the hourly value of L_{eq}.

³Includes undeveloped lands permitted for this activity category.

dB(A) noise level contours measured from the center of the proposed roadway is 20 feet and 75 feet, respectively for the Bridge on New Location Alternative.

4.2.6.2 *No-Build Alternative Traffic Noise*

The traffic noise analysis also considered traffic noise impacts for the No-Build Alternative. If the proposed Phase IIb project is not built, two receptors are predicted to experience traffic noise impacts, and the future traffic noise levels will increase by approximately 3 dB(A). Based upon research, humans barely detect noise level changes of 2 to 3 dB(A). A 5 dB(A) change is more readily noticeable. Therefore, most people working and living near NC 12 would not notice this predicted increase.

4.2.6.3 *Traffic Noise Abatement Measures*

Measures for reducing or eliminating the traffic noise impacts were considered for all impacted receptors of each alternative. The primary noise abatement measures evaluated for highway projects include highway alignment changes, traffic system management measures, establishment of buffer zones, noise barriers, and noise insulation (Activity Category D only). For each of these measures, benefits versus allowable abatement measure quantity (reasonableness), engineering feasibility, effectiveness and practicability and other factors are included in the noise abatement considerations.

A highway alignment change is the only viable noise abatement measure of those listed in the previous paragraph. Highway alignment changes for traffic noise abatement involve modifying the alignment of a proposed road to minimize traffic noise at noise sensitive receptors. The selection of alternative alignments for noise abatement purposes must consider the balance between noise impacts and other engineering and environmental parameters. The Bridge on New Location Alternative reflects a viable option for locating the highway alignment to minimize noise impact, reducing impacts from six receptors (with the Bridge within Existing NC 12 Easement Alternative) to two receptors.

Traffic system management measures such as banning truck traffic, limiting times of operation, or lowering the speed limit are not considered viable options since NC 12 is the only through route on Hatteras Island. Costs to acquire buffer zones (essentially displacing the impacted receptors) would exceed the NCDOT base quantity value of \$37,500 per benefited receptor, causing this abatement measure to be unreasonable.

Noise barriers include two basic types: earthen berms and noise walls. These structures act to diffract, absorb, and reflect highway traffic noise. This project would remain an uncontrolled right-of-way access road, meaning that most noise-sensitive land uses would have direct access connections to the proposed project, and intersections would adjoin the project at grade. The traffic noise analysis confirmed that because regular breaks would be required for driveways and street intersections, any potential noise

barriers would not be reasonable or feasible as defined by the noise abatement measure feasibility criteria of the NCDOT Traffic Noise Abatement Policy.

4.2.6.4 *Traffic Noise Summary*

The Bridge within Existing NC 12 Easement Alternative would result in six residential noise receptor impacts compared to two for the Phased Approach/Rodanthe Bridge Alternative. This is likely the result of changes in the specific homes displaced, including homes formally displaced that now have noise impacts. The Bridge on New Location Alternative would result in one less residential noise receptor impact (two instead of three) compared to the Road North/Bridge South Alternative, and no substantial noise level increases (compared to three substantial noise level increases for the Road North/Bridge South Alternative).

Based on this preliminary study, traffic noise abatement is not recommended and no noise abatement measures are proposed. This evaluation completes the highway traffic noise requirements of 23 CFR 772. No additional noise analysis will be performed for this project unless warranted by a substantial change in the project scope, vehicle capacity, or alignment.

In accordance with NCDOT Traffic Noise Abatement Policy, the federal and North Carolina governments are not responsible for providing noise abatement measures for new development for which building permits are issued after the Date of Public Knowledge. The Date of Public Knowledge of the proposed highway project will be the approval date of the Record of Decision (ROD). For development occurring after this date, local governing bodies are responsible to insure that noise compatible designs are used along the proposed project.

4.2.6.5 *Construction Noise*

Construction noise was addressed in Section 4.13.3 of the 2008 FEIS beginning on page 4-173. Compared to the Bridge on New Location Alternative, the Bridge within Existing NC 12 Easement Alternative would have greater construction noise impacts on daily activities in Rodanthe because construction would occur within Rodanthe, adjacent to the numerous homes and businesses lining NC 12. Except where it reaches the shore and enters Rodanthe, construction activities for the Bridge on New Location Alternative would be approximately 1,200 to 2,500 feet from the soundside shoreline and the homes located along the shoreline. In addition, the Bridge within Existing NC 12 Easement Alternative would have a greater construction noise impact on the Refuge because it is within the Refuge and not primarily offshore in the sound like the Bridge on New Location Alternative.

The predominant construction activities associated with this project are expected to be pile driving, impact hammers (jack hammer, hoe-ram), earth removal, hauling, grading,

and paving. Temporary and localized construction noise impacts likely will occur as a result of these activities.

During daytime hours, the predicted effects of construction activities would be temporary speech interference for passers-by and those individuals living or working near the project. During evening and nighttime hours, steady-state construction noise emissions, such as from paving operations would be audible, and could cause impacts to activities such as sleep. Sporadic evening and nighttime construction equipment noise emissions such as from backup alarms, lift gate closures (“slamming” of dump truck gates), etc., would be perceived as distinctly louder than the steady-state acoustic environment, and would likely cause severe impacts to the general peace and usage of noise sensitive areas – particularly residences.

Extremely loud construction noise activities such as the use of pile-drivers and impact hammers would provide sporadic and temporary construction noise impacts in the near vicinity of those activities. Such an impact could be mitigated by scheduling construction activities that would produce extremely loud noises during times of the day when such noises would create as minimal disturbance as possible.

Generally, low-cost and easily implemented construction noise control measures could be incorporated into the project plans and specifications to the extent possible. These measures include, but are not limited to, work-hour limits, equipment exhaust muffler requirements, haul road locations, elimination of “tail gate banging”, ambient-sensitive backup alarms, construction noise complaint mechanisms, and consistent and transparent community communication.

4.2.7 Air Quality Impacts

Air quality impacts of the Bonner Bridge Replacement Project (B-2500) were assessed in Section 4.9 of the 2008 FEIS beginning on page 4-141. That assessment concluded that the proposed project would not cause or exacerbate a violation of National Ambient Air Quality Standards (NAAQS), as established by the Clean Air Act of 1970 as amended. It further concluded that the Bonner Bridge Replacement Project (B-2500) conforms to the State Implementation Plan (SIP) and the goals set forth in the Clean Air Act Amendments (CAAA) and the Final Conformity Rule. It further concluded notable changes in the emissions of Mobile Source Air Toxics (MSATs) are not expected. An updated project-level qualitative air quality analysis was prepared for Phase IIb (NCDOT, September 20, 2013). This assessment of air quality impacts follows air quality assessment procedures as they relate to determining compliance with NAAQS and considering MSAT. No notable new air quality impacts were found. Specific findings of the new qualitative air quality assessment for Phase IIb are presented in the following sections.

4.2.7.1 *Attainment Status*

The project is in Dare County, which complies with NAAQS. The Phase IIb project will not add substantial new capacity or create a facility that is likely to meaningfully increase emissions. Therefore, it is not anticipated to create any adverse effects on the air quality of this attainment area.

4.2.7.2 *Mobile Source Air Toxics (MSAT)*

Controlling air toxic emissions became a national priority with the passage of the Clean Air Act Amendments (CAAA) of 1990, whereby Congress mandated that the USEPA regulate 188 air toxics. The USEPA rule on the Control of Hazardous Air Pollutants from Mobile Sources (Federal Register, Vol. 72, No. 37, page 8430, February 26, 2007) requires controls that will dramatically decrease MSAT emissions of motor vehicles through cleaner fuels and cleaner engines. Based on a FHWA analysis using USEPA's MOVES2010b motor vehicle emissions model (October 30, 2012), even if vehicle-miles traveled (VMT) increase by 102 percent (as assumed nationally from 2010 to 2050), a combined reduction of 83 percent in the total annual emissions for the priority MSAT is projected for the same time period.

The FHWA developed a tiered approach with three categories for analyzing MSAT in NEPA documents, depending on specific project circumstances:

1. No analysis for projects with no potential for meaningful MSAT effects;
2. Qualitative analysis for projects with low potential MSAT effects; or
3. Quantitative analysis to differentiate alternatives for projects with higher potential MSAT effects.

The Phase IIb project falls under Category 2 because it is intended to improve the operations of a highway, transit, or freight without adding substantial new capacity or without creating a facility that is likely to meaningfully increase emissions, and because the design year traffic is not projected to meet or exceed the 140,000 to 150,000 AADT criterion.

Qualitative MSAT Analysis. For Category 2 projects, a qualitative assessment of emissions projections is conducted. A qualitative MSAT analysis provides a basis for identifying and comparing the potential differences among MSAT emissions, if any, from the various alternatives. For each alternative in this EA, the amount of MSAT emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for the alternative. Average daily VMT in the Phase IIb project area is shown in Table 7.

Table 7. Average Daily VMTs in the Phase IIb Project Area

Alternative	Average Annual Daily Traffic	Length(miles)	Average Daily VMT
2012 Existing	7,300	2.50	18,250
2032 No Build	10,900	2.50	27,250
2032 Bridge within Existing NC 12 Easement Alternative			
• NC 12 on Bridge	10,900	2.50	27,250
• Frontage Road for Local Access	2,300 ¹	0.74	1,702
Total VMT			28,952
Increase in VMT Over No-Build Alternative			6.2%
2032 Bridge on New Location Alternative			
• NC 12 on Bridge	10,900	3.00	32,700
• Existing NC 12 Used for Local Access	1,700 ¹	0.64	1,088
Total VMT			33,788
Increase in VMT Over No-Build Alternative			24.0%

¹Local traffic volumes would vary over the length of the roads for local access with the greatest volumes at their intersection with NC 12 and the least volumes at the Refuge/Rodanthe border. To reflect that variation it was assumed that one-half the volume at the NC 12 intersection was representative of the average volume over the length of the roads for local access.

Because of changing local traffic patterns, the estimated daily VMT would be 6.2 percent higher than the No-Build Alternative with the Bridge within Existing NC 12 Easement Alternative. The daily VMT would increase by 24.0 percent with the Bridge on New Location Alternative, primarily because of the alternative's longer length (3.0 miles versus 2.5 miles). It is important to note, however, that with the Bridge on New Location Alternative, NC 12 traffic would for the most part be placed in the sound and away from residences sensitive to MSAT's. Thus, while MSAT emissions would increase because of the longer NC 12 length and changing local traffic patterns with the Bridge on New Location Alternative, the potential local impact of MSAT's would be substantially reduced over both the No-Build and the Bridge within Existing NC 12 Easement Alternative because of NC 12's relocation away from sensitive receptors. Finally, in the context of the full 15.7-mile length of existing NC 12 in the Bonner Bridge Replacement Project (B-2500) project area, the increase in the length of NC 12 of 0.5 mile that is associated with the Bridge on New Location Alternative represents only a 3 percent increase in the length of existing NC 12, as well as the associated VMT and estimated MSAT emissions.

The new alignment of NC 12 in Rodanthe with the Bridge on New Location Alternative also would have the effect of moving NC 12 traffic closer to homes and businesses

between the sound and its intersection with NC 12, the southern terminus. The Bridge within Existing NC 12 Easement Alternative would bring traffic closer to the upper story living areas of homes along NC 12 and local traffic on at-grade frontage roads closer to the same homes. Therefore, under each alternative there may be localized areas where ambient concentrations of MSAT could be higher.

Regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of USEPA's national control programs that are projected to reduce annual MSAT emissions by over 80 percent from 2010 to 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the USEPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the Phase IIb project area are likely to be lower in the future in virtually all locations.

Incomplete or Unavailable Information for Project-Specific MSAT Health Impacts Analysis. In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts that would result from changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action. Further, because of the limitations in the methodologies for forecasting health impacts, any predicted difference in health impacts between the detailed study alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits.

4.2.7.3 Construction Air Quality

The 2008 FEIS addressed construction-related impacts on air quality in Section 4.13.2 (page 4-173). Air quality impacts resulting from roadway construction activities are typically not a concern when contractors utilize appropriate control measures. During construction of the proposed project, all materials resulting from clearing and grubbing (removing plant roots), demolition, or other operations would be removed, burned, or otherwise disposed of by the contractor. Any burning done would be done in accordance with applicable local laws and ordinances and regulations of the North Carolina SIP for air quality in compliance with 15 NCAC 2D.0520. Care would be taken to ensure burning would be done at the greatest distance practicable from dwellings, and would not be done when atmospheric conditions are such as to create a hazard to the public. Operational agreements that would reduce or redirect work or shift times to avoid community exposures can reduce this impact. Burning would be performed under constant surveillance. Also during construction, measures would be taken to

reduce the dust generated by construction when the control of dust is necessary for the protection and comfort of motorists or area residents.

4.3 Effect of the Phase IIb Detailed Study Alternatives on the PBC/TMP Alternative

Changes since the findings of the 2010 ROD based on the above analysis of the Phase IIb detailed study alternatives are primarily associated with minor changes in the characteristics of the project area and refinements to the 2010 designs of the two detailed study alternatives. Changes in the characteristics of the Phase IIb project area resulted in the following effects:

- Updates to the forecast 2060 high-erosion shoreline, with reduced potential erosion (see Appendix D).
- Altering the location of Hatteras Island habitat types.

Hurricane Irene in August 2011 or Hurricane Sandy in October 2012 introduced few changed environmental elements to the Phase IIb project area. Beach erosion was associated with both storms. Beach erosion is taken into consideration in the 2008 FEIS and subsequent environmental documentation. Hurricane Irene created a breach, which was closed by NCDOT. The 2008 FEIS and subsequent environmental documentation take into consideration the potential for a breach in the Rodanthe area.

The design characteristics of the Phase IIb detailed study alternatives would be similar to what was defined in the 2008 FEIS (as updated in the 2010 EA) as the Bridge South component of the Road North/Bridge South Alternative (a bridge in the sound), and a portion of Phase II of the Phased Approach/Rodanthe Bridge Alternative (a bridge within the existing NC 12 easement). The minimal differences between the designs of the two bridge alternatives are described in Sections 2.4.2 and 2.4.3 of this EA.

4.3.1 Updated Impacts in the Phase IIb Area

The above changes in the setting and design introduced the following notable changes in potential impacts:

- Reduced residential and business relocations.
- Lessened, but still sizable, visual impacts on the Refuge. Phase IIb bridge height was re-evaluated during design of the Phase IIb detailed study alternatives (see Section 4.2.1) and is now lower than in the 2008 FEIS. Visual impacts contribute to the conclusion that the Phase IIb detailed study alternatives would have an Adverse Effect on the Refuge as a historic resource.

- Need for easements, including with the Bridge within Existing NC 12 Easement Alternative 2.5 acres of utility easement (0.48 acres of which also will be used for final grading) in Rodanthe and 2.06 acres of temporary construction easement in the Refuge and with the Bridge on New Location Alternative 0.63 acre of temporary construction easement in the Refuge.
- Lower noise impacts than presented in the 2010 ROD for the Bridge on New Location Alternative (Road North/Bridge South in the 2010 ROD) and higher impacts with the Bridge within Existing NC 12 Easement Alternative (Phased Approach/Rodanthe Bridge in the 2010 ROD). The higher impact is likely the result of changes in the specific homes displaced, including homes formally displaced that now have noise impacts.

4.3.2 Updated Costs

Phase IIb detailed study alternatives are expected to cost \$187.5 to \$215.5 million for the Bridge within Existing NC 12 Easement Alternative and \$203.3 to \$236.3 million for the Bridge on New Location Alternative. Details on the costs are shown in Table 1. Both detailed study alternatives are similar to alternatives assessed in the 2008 FEIS (as updated in the 2010 EA). Neither the Phase IIb setting nor design for the detailed study alternatives changed substantially since 2010 and thus, did not notably affect the overall cost of the PBC/TMP Alternative. Thus, no notable changes to the overall cost of the PBC/TMP are expected.

4.3.3 Impact of Implementation of All Phases of the PBC/TMP Alternative

This section addresses how the implementation of either one of the Phase IIb detailed study alternatives would affect the potential total impact of all phases of the PBC/TMP Alternative. The construction of either one of the Phase IIb detailed study alternatives would have no potential effect on the environmental impacts of the implementation of all phases of the PBC/TMP Alternative (selected for implementation in the 2010 ROD) because both their southern and northern endpoints connect to a portion of existing NC 12 for which no changes are planned or expected to be needed prior to 2060. The northern terminus of both alternatives connects to a portion of NC 12 in the Refuge that is not threatened by shoreline erosion prior to 2060 and where the island is not susceptible to breaching. The southern terminus of both alternatives is at the southern end of the Bonner Bridge Replacement Project (B-2500) project area. Thus, because there is no direct connection between Phase IIb and the locations where future phases of the PBC/TMP alternative would occur, the selection of either Phase IIb detailed study alternative would place no limits on the choices available for other future phases of the PBC/TMP alternative, including the use of nourishment, road on new location, bridge on new location, and bridge within the existing easement.

In general, the PBC/TMP Alternative as described in the 2010 ROD calls for the study and selection of future actions on Hatteras Island beyond the limits of Phase I, and now beyond Phase II, through a comprehensive NC 12 Transportation Management Plan. This approach takes into account the inherent uncertainty in predicting future conditions within the dynamic coastal environment. The PBC/TMP Alternative and the components of its comprehensive NC 12 Transportation Management Plan are described in Section 1.2. The implementation of plan components began in early 2011 and will continue until the PBC/TMP Alternative is completed.

Based on the above considerations, as well as the findings of Section 4.3.1, the expected nature and extent of environmental impacts of the potential future phases of the PBC/TMP Alternative are not expected to change with the implementation of either of one the Phase IIb detailed study alternatives.

4.4 Phase IIb Permits and Approvals

Construction of either one of the Phase IIb detailed study alternatives would require the permits and approvals listed below (with some differences between the two detailed study alternatives). Federal funding for this project is expressly conditioned upon compliance with all permitting terms and conditions.

US Coast Guard Permit

Under the authority of Section 9 of the Rivers and Harbors Act of 1899 and the General Bridge Act of 1946 (as well as other legislation), the US Coast Guard (USCG) is responsible for approving the locations and plans for bridges and causeways over navigable waterways. NCDOT anticipates a USCG Permit under Title 33, Section 115.50 of the *Code of Federal Regulations* will be required for the bridge over Pamlico Sound with the Bridge on New Location Alternative. This permit would not be needed for the Bridge within Existing NC 12 Easement Alternative.

US Army Corps of Engineers Permits

Under Section 404 of the Clean Water Act, USACE is responsible for issuing permits for discharges of dredged or fill material in waters of the United States, including fill placed in connection with bridge and road construction and the disposal of construction debris. The anticipated impacts to wetlands as a result of construction of the detailed study alternatives are discussed in Section 4.1.5.

US Fish and Wildlife Service Permits and Approvals

A special use permit would be required for the temporary construction easements necessary to construct either detailed study alternative and the new permanent easement associated with the Bridge on New Location Alternative. The exact terms and conditions, as well as appropriate compensatory mitigation, will be determined during the permitting process.

US Park Service Permits and Approvals

A special use permit could be required for the temporary construction easement and the new permanent easement necessary to construct the Bridge within Existing NC 12 Easement Alternative because this alternative is near the ocean just north of Rodanthe and could be outside USFWS jurisdiction but within NPS jurisdiction. The exact terms and conditions, as well as appropriate compensatory mitigation, will be determined during the permitting process.

Coastal Area Management Act Permit

A CAMA permit is required from NCDENR-DCM since either alternative would involve construction in AEC.

NCDENR-Division of Water Quality Certification

A 401 Water Quality Certification (as mandated under Section 401 of the Clean Water Act) would be required from NCDENR-DWR. The 401 certification process is coordinated with the 404 and CAMA processes and would be required with either detailed study alternative.

NCDENR-Division of Water Quality Stormwater Permit

Effective August 1, 2013, NCDOT is no longer required to submit State Stormwater permit applications for projects discharging stormwater runoff in High Quality Waters (HQW) and Outstanding Resource Waters (ORW) watersheds, because NCDOT is regulated under its National Pollutant Discharge Elimination System (NPDES) permit.

Other Permitting/Approval Actions and Consultations

FHWA and NCDOT will continue to coordinate with the permitting agencies throughout the Phase IIb final design and permitting process and during construction. FHWA also will coordinate with USFWS and NMFS on any Section 7 of the ESA of 1973 concerns that arise during final design and construction; consultation under Section 7 will be re-initiated with either of these agencies if it becomes necessary. FHWA and NCDOT also will carry out the stipulations of the Section 106 National Historic Preservation Act Programmatic Agreement (Appendix E of the Phase IIa ROD) and will coordinate with the other Signatory and Concurring Parties, as necessary, during the final design, permitting, and construction processes.

5.0 Section 4(f) Evaluation for Phase IIb

The purpose of this chapter is to assess whether the detailed study alternatives being considered for Phase IIb of the Bonner Bridge Replacement Project (B-2500) in the Rodanthe area affects the findings of the October 2009 Revised Final Section 4(f) Evaluation (Revised 4(f) Evaluation) related to the entire PBC/TMP Alternative, by determining if the Phase IIb detailed study alternatives, including the Preferred Alternative, would use Section 4(f) property and providing the information and analysis necessary for FHWA to approve any such use. The Revised 4(f) Evaluation was included in the 2010 EA as Appendix B, and its findings are summarized below in Section 5.1. The Phase IIb detailed study alternatives are described in Section 5.2.

Section 4(f) of the USDOT Act of 1966, as amended (49 U.S.C. § 303), states that USDOT may not approve the use of land from a significant publicly owned park, recreation area, or wildlife and waterfowl refuge, or any significant historic site, unless a determination is made that the project will have a *de minimis* impact, or unless a determination is made that:

1. There is no feasible and prudent avoidance alternative, as defined in 23 CFR 774.17, to the use of land from the property; and
2. The action includes all possible planning, as defined in 23 CFR 774.17, to minimize harm to the property resulting from such use.

The following sections are included in this chapter:

- October 2009 Revised Final Section 4(f) Evaluation Findings
- Proposed Detailed Study Alternatives for Phase IIb
- Section 4(f) Properties in the Phase IIb Project Area
- Impact to Section 4(f) Properties
- Analysis of Avoidance Alternatives
- Effect on the Least Harm Analysis
- Effect on All Possible Planning to Minimize Harm

5.1 October 2009 Revised Final Section 4(f) Evaluation Findings as Updated in the Phase IIa EA

As discussed in Section 4.0 of the 2010 ROD, the Revised 4(f) Evaluation determined that all six of the Parallel Bridge Corridor alternatives, including the PBC/TMP Alternative, would require a use of the Refuge. The Refuge qualifies as a Section 4(f) property because it is a wildlife refuge and a historic site that is eligible for the NRHP. The Revised 4(f) Evaluation concluded that Section 4(f) applies to the Refuge as a historic property (see pages 8 to 15 of the Revised 4(f) Evaluation [pages B-8 to B-15 of 2010 EA, Appendix B]). The Revised 4(f) Evaluation determined that Phase I would use approximately 3.2 acres of Refuge land. In addition, it was determined that for future phases, all of the Parallel Bridge Corridor alternatives considered may have a use of Refuge lands (see Table 1 of the 2010 ROD).

The Revised 4(f) Evaluation also determined that all six of the Parallel Bridge Corridor alternatives, including the PBC/TMP Alternative, would use approximately 6.3 acres from the Seashore, but that Section 4(f) is not applicable to this impact because the road [now called NC 12] was concurrently and jointly planned and developed with the establishment of the Seashore (see page B-12 of the Revised Section 4(f) Evaluation in Appendix B of the 2010 EA).

In addition to reaching the conclusions noted above, the Revised 4(f) Evaluation identified the location and characteristics of the Section 4(f) properties in the project area, described the applicability of Section 4(f) to these properties, discussed avoidance alternatives, presented a least overall harm analysis, and addressed the measures taken to minimize harm.

Based upon the Revised 4(f) Evaluation, FHWA determined in the 2010 ROD that there was no feasible and prudent alternative to the use of land from the Pea Island National Wildlife Refuge for the construction of Phase I of the project, and that the PBC/TMP Alternative would cause the least overall harm and includes all possible planning to minimize harm to the Refuge. Based upon the Revised 4(f) Evaluation and Chapter 5 of the Phase IIa EA, FHWA re-affirmed this finding in the Phase IIa ROD that there was no feasible and prudent alternative to avoid the use of the Refuge and that the PBC/TMP Alternative (including the Phase IIa Selected Alternative) causes the least overall harm. In addition, it was concluded that the PBC/TMP Alternative (including the Phase IIa Selected Alternative) includes all possible measures to minimize harm.

This chapter addresses, for Phase IIb, the Section 4(f) considerations related to the Refuge, the Chicamacomico Life Saving Station, and the Rodanthe Historic District. No changes in the characteristics of these resources that alter their eligibility for inclusion in

the NRHP have occurred since the Revised 4(f) Evaluation, including the effects of Hurricane Irene (August 2011) and Hurricane Sandy (October 2012).

5.2 Proposed Detailed Study Alternatives for Phase IIb

FHWA and NCDOT propose to advance Phase IIb of the PBC/TMP Alternative as a long-term solution to a section of NC 12 damaged by Hurricane Irene and that regularly has been affected by wave overwash. The Phase IIb detailed study alternatives are consistent with the objectives for later phases of the PBC/TMP Alternative as described in Section 3.3.2 of the 2010 ROD.

The Bridge on New Location Alternative would be approximately 3.0 miles in length. The bridge component would be approximately 2.6 miles. The reasons the Bridge on New Location Alternative was selected as a detailed study alternative are: it would avoid the entire area considered geologically susceptible to breaches in the Phase IIb project area (see Figure 3), it would be less vulnerable to potential future changes in Hatteras Island resulting from shoreline erosion, it would minimize visual impacts and avoid impacts to businesses and property, and it would remove NC 12 and its effects for 1.8 miles in the Refuge.

The Bridge within Existing NC 12 Easement Alternative would be approximately 2.5 miles in length. The bridge component would be approximately 2.3 miles. The reasons the Bridge within Existing NC 12 Easement Alternative was selected as a detailed study alternative are: it would avoid the entire area considered geologically susceptible to breaches in the Phase IIb project area (see Figure 3) and it would not require a change in the existing NC 12 easement within the Refuge.

The characteristics of the two Phase IIb detailed study alternatives are described in detail in Chapter 3.0.

5.3 Section 4(f) Properties in the Phase IIb Project Area

5.3.1 Description of Properties

There are four Section 4(f) properties in the Phase IIb project area: the Cape Hatteras National Seashore (the Seashore), the Pea Island National Wildlife Refuge (the Refuge), the Rodanthe Historic District, and the Chicamacomico Life Saving Station.

5.3.1.1 *Cape Hatteras National Seashore*

The Seashore stretches north to south across three islands: Bodie, Hatteras, and Ocracoke. The Seashore contains 30,319 acres of land and 70 miles of open, virtually unspoiled beach. The State of North Carolina donated approximately 10,000 acres of the

Seashore's land in 1937. The characteristics of the Seashore are described in detail in Section 3.5.1 of the 2008 FEIS. The Revised 4(f) Evaluation determined that Section 4(f) is not applicable to impacts to the Seashore because the Seashore and the transportation facility now called NC 12 were concurrently and jointly planned and developed by the federal and state governments working together to preserve land for wildlife, while maintaining a means for safe and efficient vehicular transportation (see the Revised Section 4(f) Evaluation in Appendix B of the 2010 EA on page B-12).

5.3.1.2 *Pea Island National Wildlife Refuge*

The Refuge is located within the Seashore on Hatteras Island north of Rodanthe. The primary purpose of the Refuge is to serve as a refuge and breeding ground for migratory birds and other wildlife. The Refuge is comprised of ocean beach, dunes, upland, fresh and brackish water ponds, salt flats, and salt marsh. The objectives of the Refuge are to:

- Provide nesting, resting, and wintering habitat for migratory birds, including the greater snow geese and other migratory waterfowl, shorebirds, wading birds, raptors, and neotropical migrants.
- Provide habitat and protection for endangered and threatened species.
- Provide opportunities for public enjoyment of wildlife and wildlands resources. Public use programs focus on interpretation, environmental education, wildlife observation, wildlife photography, and fishing. (Pea Island National Wildlife Refuge web site, August 18, 2008.)

In addition to being a wildlife refuge, the Refuge also is a significant publicly owned recreation area and a significant historic site eligible for inclusion in the NRHP.

The characteristics of the Refuge are described in detail in Section 3.5.2 of the 2008 FEIS. The Phase IIb project area is partially within the Refuge. The Revised 4(f) Evaluation concluded that Section 4(f) applies to the Refuge as a historic property, but not as a wildlife refuge because of joint planning (see pages 8 to 15 of the Revised 4(f) Evaluation [pages B-8 to B-15 of 2010 EA Appendix B]).

5.3.1.3 *Rodanthe Historic District*

The Rodanthe Historic District boundaries are shown in Figure 6. The following six buildings and associated resources are included in the Rodanthe Historic District: the Levene W. (or Levine) Midgett House; the J. Frank Meekins Fish House; the (former) Rodanthe School; the Chicamacomico Life Saving Station; the Cornelius P. Midgett (or Payne) House, on its new site minus its boathouse and cemetery; and the John Allen Midgett House. The components of the district generally line the east and west sides of NC 12, in the Myrna Peters Road and Midgett Drive area. The principal access for most of these resources is NC 12. The Phase IIb project area would be north of the Rodanthe Historic District. Based on the finding of "No Adverse Effect" under Section 106, FHWA

determined that the PBC/TMP Alternative would not use this property under Section 4(f) (see the Revised Section 4(f) Evaluation in Appendix B of the 2010 EA on page B-16 and B-17).

5.3.1.4 Chicamacomico Life Saving Station

The Chicamacomico Life Saving Station is a National Register-listed resource contained within the Rodanthe Historic District, and is illustrative of a property type unique to the Outer Banks. The Station is the most complete of any of the life saving stations built along the North Carolina barrier islands. In addition to its original 1874 board-and-batten station and 1911 shingle-style facility, the Station contains a detached frame kitchen, cisterns, a flag tower, and several frame boathouses, all of which are well-preserved. The Phase IIb project area would be north of the Station. Based on the finding of “No Adverse Effect” under Section 106, FHWA determined that the PBC/TMP Alternative would not use this property under Section 4(f) (see the Revised Section 4(f) Evaluation in Appendix B of the 2010 EA on page B-16 and B-17).

5.3.2 Effect of Hurricane Irene and Hurricane Sandy on Section 4(f) Properties in the Phase IIb Project Area

A breach was created within the Phase IIb project area by Hurricane Irene immediately north of Rodanthe at the southern limit of the Refuge. Sand was used to close the Rodanthe breach in order to re-build the NC 12 roadbed. In addition, Hurricanes Irene and Sandy both destroyed a sandbag dune built in the Phase IIb project area to prevent high tides from overwashing NC 12 and damaging the road. This sandbag dune was first built in 2006. The sandbag dune is mostly within the NC 12 easement. Repair of storm damage to NC 12 in the portion of the Refuge within the Phase IIb project area and elsewhere in the Refuge did not change the Refuge’s NRHP eligibility or the features contributing to this eligibility.

Hurricanes Irene and Sandy, had little or no effect on the Rodanthe Historic District and Chicamacomico Life Saving Station, including the structures and other features associated with these resources’ NRHP eligibility and listing.

5.4 Impact to Section 4(f) Properties

The three potential uses of the Refuge as a historic resource are: permanent incorporation of land, temporary use, and constructive use as defined in regulations (23 CFR 774.17). Permanent incorporation of land would occur when land is permanently incorporated into a transportation facility. Temporary use is defined as a temporary occupancy of land that is adverse in terms of the statute’s preservation purpose as determined by the criteria within 23 CFR 774.13(d). Constructive use is determined by the criteria within 23 CFR 774.15. A constructive use of a Section 4(f) property is only possible in the absence of a permanent incorporation of land or a temporary occupancy of the type that constitutes a Section 4(f) use. Constructive use occurs when the

proximity impacts of a project on an adjacent or near-by Section 4(f) property, after incorporation of impact mitigation, are so severe that the activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired. Substantial impairment occurs when the protected activities, features, or attributes of the Section 4(f) property are substantially diminished. As a general matter, this means that the value of the resource, in terms of its Section 4(f) purpose and significance, will be meaningfully reduced or lost.

5.4.1 Pea Island National Wildlife Refuge

5.4.1.1 *Permanent Incorporation of Land*

The Bridge on New Location Alternative, once completed, would require permanent incorporation of land for the short section of the alternative (1,300 feet) that would be on a bridge outside the NC 12 existing easement until that bridge is over Pamlico Sound and outside the Refuge's property. The right-of-way for this relocation would use 2.79 acres of Refuge land. Permanent loss of wildlife habitat in the Refuge would be 0.01 acre of pile impact (0.30 acre if assuming the larger pile cap area). The bridge would shade approximately 1.13 acres in the Refuge (0.84 acre if assuming the larger pile cap area). The introduction of a bridge in the Refuge also would have visual impacts that were found to be an Adverse Effect on the Refuge under Section 106 of the Historic Preservation Act of 1966, as described below in Section 5.4.1.3.

The Bridge within Existing NC 12 Easement Alternative would be confined to the existing NC 12 easement. Thus, there would be no permanent incorporation of land for this alternative.

5.4.1.2 *Temporary Occupancy*

With the Bridge within Existing NC 12 Easement Alternative, it is currently expected that a Special Use Permit for 2.06 acres of temporary construction easement would be requested from the Refuge. This is expected to be comprised primarily of a narrow temporary easement for the entire length of the Phase IIb project on one side. The easement would be approximately 5 feet wide. The primary purpose of this narrow easement would be to provide room for construction workers to erect erosion control measures (fencing) along the edge of the existing NC 12 easement. In addition, pile jetting pipes would be placed between NC 12 and the Pamlico Sound on a 10-foot wide easement at what is currently expected to be three locations. No construction staging areas are currently expected to be requested in the Refuge.

With the Bridge on New Location Alternative, a temporary easement of 0.63 acre would be needed for a temporary traffic maintenance road to take traffic around the northern end of the new bridge.

A temporary occupancy does not constitute a Section 4(f) use when all of five conditions listed in 23 CFR 774.13(d) are satisfied. The five conditions and evidence that all five are met in the case of the Phase IIb detailed study alternatives are:

1. Duration must be temporary, i.e., less than the time needed for construction of the project, and there should be no change in ownership of the land.

Although the Special Use Permit would be for the duration of Phase IIb construction, no one part of the permitted temporary construction easement would be used for the entire duration of the project. For the Bridge within Existing NC 12 Easement Alternative, the narrow 5-foot-wide easement would be used primarily during the installation and removal of erosion control fencing at the beginning and end of the construction period. The jetting pipe easements would be used only during bridge pile placement. For the Bridge on New Location Alternative, the temporary easement would be needed primarily near the end of the construction period when the Bridge on New Location Alternative is being connected into existing NC 12.

2. Scope of the work must be minor, i.e., both the nature and the magnitude of the changes to the Section 4(f) property are minimal.

The scope of work for the 0.63 to 2.06 acres of temporary construction easement, depending on the alternative, is expected to be confined to use for the movement of construction personnel, placement of jetting pipes, or traffic maintenance. No features that contribute to the eligibility of the Refuge as a historic resource would be affected.

3. There are no anticipated permanent adverse physical impacts, nor will there be interference with the protected activities, features, or attributes of the property, on either a temporary or permanent basis.

No features that contribute to the eligibility of the Refuge as a historic resource would be adversely affected physically either on a temporary or permanent basis. Coordination with the Refuge and the SHPO on the temporary easement will ensure this occurs.

4. The land being used must be fully restored, i.e., the property must be returned to a condition which is at least as good as that which existed prior to the project.

The wildlife habitat used would be restored as per the conditions of the Refuge and its Special Use Permit.

5. There must be documented agreement of the officials with jurisdiction over the Section 4(f) resource regarding the above conditions (in this instance, Refuge and the North Carolina State Historic Preservation Officer [SHPO]).

This documentation is pending and will be resolved prior to the release of a ROD for the Phase IIb Project. With Phase IIa, the Refuge and SHPO agreed that a similar type of temporary impact was not a Section 4(f) use.

Therefore, once the fifth condition is met, the temporary construction easement associated with the construction of either of the two Phase IIb detailed study alternatives would not constitute a Section 4(f) use. If the fifth condition is not met, a Section 4(f) evaluation will be prepared for this temporary impact.

5.4.1.3 *Constructive Use*

Since the Bridge on New Location Alternative would permanently incorporate Refuge lands, a constructive use of Section 4(f) property would not occur.

In the Revised 4(f) Evaluation, FHWA concluded that the Parallel Bridge Corridor with Phased Approach/Rodanthe Bridge Alternative would constructively use the Refuge as a historic property eligible for inclusion in the NRHP. The Bridge within Existing NC 12 Easement Alternative has similar characteristics to part of Phase II of the Parallel Bridge Corridor with Phased Approach/Rodanthe Bridge Alternative, in that it is a bridge within the existing easement. The only difference between the two designs in the Refuge is the bridge height (the Phase IIb bridge would be lower).

As indicated in the Revised 4(f) Evaluation on page 17 (page B-17 in the 2010 EA), FHWA based its conclusions on review of available documentation pertaining to why the Refuge is eligible for the NRHP: its significance, what elements of the historic landscape were constructed by the Civilian Conservation Corps (and the extent to which those elements still exist and have not been altered), and the proximity of the alternative to the significant elements of the historic landscape that are still extant. FHWA also considered the extent to which the visual impact of the alternative could be lessened through mitigation measures, such as by requiring careful attention to the design details of the bridge structure, or through landscaping. FHWA found that: the historic landscape of the Refuge is a rare example of its type; it is nationally significant; a number of contributing elements are extant and in fair condition; although threatened by weather, the historic landscape is protected from development because of its location within the Seashore and Refuge; and the introduction of a bridge structure up to 33 feet in height across the entire length of the Refuge in a location nearly adjacent to most of the significant contributing elements that still exist (dikes and dunes) would be a substantial visual intrusion for which little mitigation is possible. Thus, the proximity impacts from this alternative would be so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) would be substantially impaired.

As noted above, the Revised 4(f) Evaluation assumed a bridge deck height of 33 feet. However, bridge heights were re-evaluated during design of the alternative; as a result,

the bridge deck would be approximately 23 feet high for much of the Bridge within Existing NC 12 Easement Alternative for the 1.8 miles it is within the Refuge.

Despite the lower elevation of the Bridge within Existing NC 12 Easement Alternative's bridge, the still-tall bridge structure would still stand in contrast with the natural character of the Refuge and its historic landscape. A relatively tall bridge has never previously been a part of Refuge views. The bridge would dominate views from the dunes lining the beach and, as the dunes naturally reduce in size, migrate with the shoreline, or disappear over time, it would also dominate views of the beach and ultimately, the ocean. It would be uncharacteristic of the existing undeveloped and protected setting of the Refuge that makes it rare along the eastern US seaboard in terms of views and a resource for recreational activities. Therefore, the Bridge within Existing NC 12 Easement Alternative would be a constructive use of the Refuge, just as was found for the Parallel Bridge Corridor with Phased Approach/Rodanthe Bridge Alternative in the Revised 4(f) Evaluation.

5.4.2 Rodanthe Historic District and Chicamacomico Life Saving Station

The southern termini of both the Bridge within Existing NC 12 Easement and Bridge on New Location alternatives are located outside the Rodanthe Historic District and the Chicamacomico Life Saving Station property. This is consistent with the alternatives assessed in the Revised Section 4(f) Evaluation, the Phased Approach/Rodanthe Bridge and the Bridge South component of the Road North/Bridge South alternatives, respectively. Thus, there is no use of these properties by either of the detailed study alternatives.

The location and design of the Bridge on New Location Alternative within the viewshed of the Rodanthe Historic District and Chicamacomico Life Saving Station would be virtually identical to the Bridge South component of the Road North/Bridge South Alternative. The Bridge within Existing NC 12 Easement Alternative within the viewshed of the Rodanthe Historic District and Chicamacomico Life Saving Station would be substantially lower than that of the Phased Approach/Rodanthe Bridge. The Phased Approach/Rodanthe Bridge design maintained a bridge 33.5 feet above the existing ground elevation (mean sea level) to a point approximately 400 feet from the Rodanthe Historic District and Chicamacomico Life Saving Station boundaries. A slip ramp parallel to the 33.5-foot high bridge was used to bring traffic down to grade just before the boundaries. The Bridge within Existing NC 12 Easement Alternative would begin to drop from a height of 30 feet above the existing ground elevation approximately 1,180 feet from the Rodanthe Historic District and Chicamacomico Life Saving Station boundaries. (See Section 2.4.3 regarding the reasons for the change in bridge height from 33.5 to 30 feet.) The roadway would reach the existing ground elevation approximately 110 feet from the Rodanthe Historic District and Chicamacomico Life Saving Station boundaries. The changes in the design of the bridge

at the southern terminus reduce the visual impact on the District and Life Saving Station.

The Revised Section 4(f) Evaluation indicated that the SHPO, the Advisory Council on Historic Preservation (ACHP), and consulting parties concluded “No Adverse Effect” for all of the Parallel Bridge Corridor bridging alternatives on the Rodanthe Historic District and the Chicamacomico Life Saving Station. Given that the visual impact on the views from these two resources would be unchanged or less with the two Phase IIb detailed study alternatives than their counterparts assessed in the Revised Section 4(f) Evaluation, the two Phase IIb detail study alternatives also would have “No Adverse Effect.” Neither of the two Phase IIb detailed study alternatives would constructively use the Rodanthe Historic District and the Chicamacomico Life Saving Station.

Phase IIb is at the southern end of the Bonner Bridge Replacement Project (B-2500) project area. South of the Phase IIb and overall project area, NC 12 is not threatened by shoreline erosion between now and 2060, as indicated by the current 2060 high erosion shoreline shown in Figure D-1a. Therefore, future phases of the Bonner Bridge Replacement Project (B-2500) are not expected to affect the Rodanthe Historic District or the Chicamacomico Life Saving Station.

5.5 Analysis of Avoidance Alternatives

Circumstances have not changed such that feasible and prudent avoidance alternatives exist. This section addresses the avoidance alternatives considered in the 2008 Final Section 4(f) Evaluation (see Chapter 5 of the 2008 FEIS), in the Revised 4(f) Evaluation for the Bonner Bridge Replacement Project (B-2500), and in the Phase IIa EA; an additional potential avoidance alternative applicable to Phase IIb only; and the No-Build Alternative. The focus of this analysis of avoidance alternatives is on the Seashore and Refuge, since the two detailed study alternatives avoid the Rodanthe Historic District and the Chicamacomico Life Saving Station.

5.5.1 Alternatives Previously Considered that are Not Avoidance Alternatives

A ferry from Bodie Island at Oregon Inlet to Rodanthe or a bridge or ferry from Stumpy Point to Rodanthe would not be a Section 4(f) resource avoidance alternative. A mainland bridge terminal at Stumpy Point would cause environmental impacts to Alligator River National Wildlife Refuge (ARNWR) because of the anticipated upgrades to US 264 and SR 1100, such as wider lanes and shallower curves that would be required to safely accommodate increased traffic volumes. Such upgrades also would be required to accommodate increased traffic volumes traveling to a ferry terminal at Stumpy Point. (See Section 5.3.2 of the 2008 FEIS.)

The development of a ferry terminal on Bodie Island at Oregon Inlet would require land from the Seashore, but as indicated in the 2009 Revised Section 4(f) Evaluation (see

Appendix B of the 2010 EA beginning on page B-9) Section 4(f) is not applicable to the Seashore because there is a history of concurrent and joint planning between the Seashore and provisions for transportation facilities. However, ferry service is not a feasible and prudent alternative (as indicated in Section 2.3.2.6 of the Phase IIa EA on page 2-12) because:

- A Ferry Alternative that accommodates the current annual traffic demand, 2 million vehicles per year, would still diminish convenience to motorists because of vessel travel speeds and loading logistics. Motorists wishing to access Hatteras Island and Bodie Island would be forced to alter timing of trips or even forgo travel between the islands at times. The provision of basic emergency, medical, and public services also would be adversely affected.
- Dredging that would be needed to construct and maintain an 18-mile-long route from the Oregon Inlet Marina Complex (Bodie Island) to Rodanthe would substantially and permanently impact SAV, shallow water habitat, primary and secondary nursery areas, and shell bottom habitat.
- A Ferry Alternative would be far more expensive than any other transportation alternatives under consideration.

5.5.2 Avoidance Alternatives Previously Considered

Section 5.5.1 of the Phase IIa EA re-considered avoidance alternatives addressed in the 2008 Final Section 4(f) Evaluation and the 2009 Revised Section 4(f) Evaluation, including the Rehabilitate Bonner Bridge Avoidance Alternative, Bridge from Rodanthe to Roanoke Island Avoidance Alternative, and Pamlico Sound Bridge Alternative. The FHWA concluded that its previous determinations on these alternatives remain valid; they would not be a feasible and prudent avoidance alternative as defined in 23 CFR 774.17. Comments on these conclusions were addressed in the Phase IIa ROD. No events have occurred since the release of the Phase IIa EA and ROD that would change FHWA's conclusions in the Phase IIa EA related to these alternatives.

5.5.3 Potential for Additional Phase IIb Avoidance Alternatives

The use of the Refuge described above in Section 5.4.1.1 with the Bridge on New Location Alternative would result from altering the alignment on NC 12 so that it would leave the existing NC 12 easement within the Refuge at a point approximately 1.8 miles north of the Refuge boundary with Rodanthe and enter Pamlico Sound. This would require 2.79 acres of new Refuge use and would result in the return of approximately 19.27 acres of existing NC 12 easement to the Refuge. The re-aligned NC 12 would be on a bridge, which would be a visual impact from the perspective of the Refuge as a historic resource.

The constructive use of the Refuge described above in Section 5.4.1.3 with Bridge within Existing NC 12 Easement Alternative results from a substantial visual intrusion. That

visual intrusion would be associated with the height of the bridge that makes up the Bridge within Existing NC 12 Easement Alternative.

In order for an avoidance alternative to be feasible and prudent, it must first meet the project's purpose and need. The third purpose presented in Section 1.2 on page 1-6 of the 2008 FEIS applies the Phase IIb project. It states: "Provide a replacement crossing that will not be endangered by shoreline movement through year 2050." There are four ways to meet the third project purpose:

1. Relocate all of NC 12 outside the Refuge.
2. Relocate NC 12 outside the existing easement and west of the forecast high erosion shoreline on a bridge that spans the areas geologically susceptible to breaching.
3. Relocate NC 12 on a bridge within the existing NC 12 easement that spans the areas geologically susceptible to breaching and the portions of the easement that are forecast to be in ocean as a result of shoreline erosion.
4. Beach nourishment.

All four of these strategies have been considered. The first is not feasible and prudent as re-affirmed above in Section 5.5.2. The other three are not avoidance alternatives, as they would all involve a use (either permanent or constructive) of Refuge land. Therefore, there are no new avoidance alternatives that can be considered specifically for Phase IIb.

5.5.4 No-Build Alternative

With the No-Build Alternative, NCDOT would continue to keep NC 12 open within the existing NC 12 easement in the Phase IIb project area by maintaining and rebuilding the sandbag dune as needed and close any breaches that could open. Such an alternative would not be feasible and prudent because it would not meet the third project purpose presented in Section 1.2 of the 2008 FEIS: "Provide a replacement crossing that will not be endangered by shoreline movement through year 2050." The status quo would leave NC 12 in the Phase IIb project area under regular threat from shoreline erosion and severance during storm events. Further, the sandbag dune is permitted under North Carolina's Coastal Area Management Act as a temporary activity until a long-term improvement can be built; therefore, it cannot be maintained indefinitely.

5.5.5 Avoidance Alternatives Conclusion

Therefore, based on the determinations from the 2008 FEIS/Final Section 4(f) Evaluation, the Revised 4(f) Evaluation, Chapter 5.0 of the Phase IIa EA, and the above findings, there is no feasible and prudent avoidance alternative to the use of the Section 4(f) property needed to construct Phase IIb of the PBC/TMP Alternative.

5.6 Effect on the Least Harm Analysis

The 2008 FEIS, the 2010 EA, and the Revised 4(f) Evaluation all assessed the entire Bonner Bridge Replacement Project (B-2500) from the south end of Bodie Island to Rodanthe. The least harm analysis presented on pages 22 to 27 of the Revised 4(f) Evaluation (pages B-22 to B-27 of the 2010 EA) concluded on page B-27 that the PBC/TMP Alternative was the alternative that causes the least overall harm. That least harm analysis used seven factors to reach a determination as to least overall harm. These factors are:

1. The ability of the alternatives to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property);
2. The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection;
3. The relative significance of each Section 4(f) property;
4. The views of the official(s) with jurisdiction over each Section 4(f) property;
5. The degree to which each alternative meets the purpose and need for the project;
6. After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f); and
7. Substantial differences in costs among the alternatives.

As stated in Section 5.6 of the Phase IIa EA, no changes have occurred in the Bonner Bridge Replacement Project (B-2500) project area or its potential PBC/TMP Alternative phases related to those seven factors since the Revised 4(f) Evaluation that would alter FHWA's findings. The least harm analysis here focuses on whether the least harm to the Refuge would result from the Bridge on New Location Alternative (use) or Bridge within Existing NC 12 Easement Alternative (constructive use) or whether the two alternatives would result in substantially equal harm.

Each of these factors is re-evaluated for the two Phase IIb detailed study alternatives in the sections that follow.

5.6.1 Factor #1: The ability of the alternatives to mitigate adverse impacts to each Section 4(f) property (including any measures that result in benefits to the property)

The primary impact of the Phase IIb detailed study alternatives on the activities, attributes, or features that qualify the Refuge for Section 4(f) protection as a historic resource would be the visual presence of the bridge. In addition, the two alternatives differ in terms of changes in the NC 12 easement.

5.6.1.1 Visual Impacts

In terms of visual impact, as indicated in Section 5.4.1.3, this bridge would stand in contrast with the natural character of the Refuge and its historic features of dikes and dunes. It would be uncharacteristic of the existing undeveloped and protected setting of the Refuge that makes it rare along the eastern US seaboard in terms of views and a resource for recreational activities. The visual impact of the Bridge within Existing NC 12 Easement Alternative on the historic landscape would extend through the Refuge for 1.8 miles. The same visual impact would be present with the Bridge on New Location Alternative for 0.4 mile.

There are limited opportunities to directly mitigate the visual impact because the only complete mitigation would be to place NC 12 at grade or completely outside the Refuge, which is not feasible and prudent, as discussed in Section 5.5. Further, lowering the bridge below the storm surge also would not be prudent, because it would put the bridge spans at risk of damage during storms. In terms of mitigation, NCDOT, FHWA, and SHPO have agreed in the 2013 first amendment to the 2010 Section 106 Programmatic Agreement (PA) (see Appendix E of the Phase IIa ROD), to using a bridge rail with a bridge rail parapet height of 30 inches high for Phase I and up to 36 inches high for Phase IIa. The original PA in Appendix D of the 2010 ROD includes other mitigation stipulations related to management of NC 12, providing USFWS and NPS with copies of cultural resource technical reports, installing signs directing people to the Refuge's visitor center and points of historic interest in the Refuge, and providing exhibits and kiosks about the historic significance of the Civilian Conservation Corps' work efforts in the Refuge.

5.6.1.2 Changes in NC 12 Easement

The Bridge on New Location Alternative would require permanent incorporation of land for the short section of the alternative (1,300 feet) that would be on a bridge outside the NC 12 existing easement until that bridge is over Pamlico Sound and outside the Refuge's property. An easement for this relocation would use 2.79 acres of Refuge land. However, 19.27 acres of existing NC 12 easement would be returned to the Refuge and restored, resulting in a net gain in Refuge land of 16.48 acres. With the Bridge within Existing NC 12 Easement Alternative, no permanent changes would be made to the location of the existing NC 12 easement. There would be no net gain in Refuge land.

5.6.2 Factor #2: The relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection.

The primary impact of the Phase IIb detailed study alternatives on the activities, attributes, or features that qualify the Refuge for Section 4(f) protection as a historic resource would be the visual presence of the bridge. This impact could not be directly mitigated for the reasons noted in Section 5.6.1. Also as indicated in Section 5.6.1, the severity of harm would be less with the Bridge on New Location Alternative on the

Refuge as a historic resource because a bridge would be in the Refuge for 0.4 mile rather than 1.8 miles. This 1.4-mile difference would remain even if additional bridge were built beyond that associated with Phase I, Phase IIa, and the Bridge on New Location Alternative.

5.6.3 Factor #3: The relative significance of each Section 4(f) property

The Refuge is the only Section 4(f) property used by the two Phase IIb detailed study alternatives. Thus, this factor does not apply to this least harm analysis.

5.6.4 Factor #4: The views of the official(s) with jurisdiction over each Section 4(f) property

The State Historic Preservation Officer (SHPO), whose jurisdiction over the Refuge relates to its eligibility for the National Register of Historic Places, did concur at the November 14, 2012 Merger Team meeting with the selection of the two Phase IIb detailed study alternatives. The SHPO has not expressed a preference for one alternative over another. The preference of the SHPO is expected to be an outcome of the SHPO's review of this EA during the public and agency comment period.

Responsible officials for the Refuge (represented by the Refuge manager) in a letter dated July 22, 2013, indicated that a 2.87-acre use of the Bridge on New Location Alternative could likely be determined a minor modification of the existing NC 12 easement if adequate mitigation can achieve no net loss of habitat quantity and quality. The current estimate of Refuge use is 2.79 acres. The Refuge manager also indicated that the return and restoration of 18.68 acres of existing easement and nourishment of estuarine shoreline (later dropped from consideration after discussions with the Merger Team on July 15, 2013 [see Section 6.2]) would be appropriate for mitigation. The current estimate of existing easement that could be returned is 19.27 acres. The Refuge manager has not expressed a preference for one alternative over another. The preference of the Refuge is expected to be an outcome of the Refuge's review of this EA during the public and agency comment period.

5.6.5 Factor #5: The degree to which each alternative meets the purpose and need for the project

Both Phase IIb two detailed study alternatives meet the purpose and need for the project to the same degree. Thus, this factor does not apply to this least harm analysis.

5.6.6 Factor #6: After reasonable mitigation, the magnitude of any adverse impacts to resources not protected by Section 4(f)

A comparison of key impacts to resources not protected by Section 4(f) is presented in Table 8.

For the two Phase IIb detailed study alternatives, the primary differences in the magnitude of adverse impact after mitigation for these resources are the impacts to

Table 8. Comparison of Key Impacts of the Phase IIb Alternatives

Impact Type	Bridge on New Location Alternative	Bridge within Existing NC 12 Easement Alternative
Wetlands		
• Jurisdictional Wetlands (Permanent Fill)	0.44 acres	0.05 acres
Rodanthe		
• Residential Relocation	2	5
• Business Relocation	2	2
• Local Access Changes	Between the project terminus and the Refuge boundary, existing NC 12 would serve homes and businesses	Local one-way frontage roads to serve homes and businesses currently served by NC 12; community bisected by bridge
• Visual Impacts	Bridge within views of Pamlico Sound (1,400 to 1,700 feet from the shore except when approaching shore)	Bridge substantial visual presence, including homes less than 100 feet from bridge with traffic seen from third floor windows. Also, frontage roads for local traffic at edge of existing right-of-way
• Recreation impacts	Water recreation use limited by bridge presence in Pamlico Sound, particularly wind surfers and kite boarders	With shoreline erosion, beach and offshore recreation on the Atlantic Ocean ultimately affected by bridge presence
• Noise Sensitive Receptors Affected	2 homes	6 homes
• Cemetery	Bridge adjacent to cemetery	No impact
Pea Island National Wildlife Refuge		
• New Permanent NC 12 Easement	2.79 acres	0.00 acres
• Existing NC 12 Easement Returned to Refuge	19.27 acres	0.00 acres
• Temporary Construction Easement	0.63 acres	2.06 acres
• Refuge recreation Impacts	Loss of direct road access for 1.8 miles	Loss of direct road access for 1.8 miles plus with shoreline erosion, beach and offshore recreation ultimately affected by bridge pier presence
Protected Species	Not Likely to Adversely Affect protected species	Lights from the bridge are Likely to Adversely Affect sea turtle hatchlings; like Phase IIa could be mitigated by an up to 36-inch bridge rail parapet and construction lighting type, which will be considered during Section 7 consultation for this project.
Essential Fish Habitat (EFH)/Submerged Aquatic Vegetation (SAV)	Pamlico Sound is EFH and contains SAV or SAV habitat, would construct bridge from work bridge and contain jetting spoils to minimize impact. There would be a permanent EFH impact of 11.34 acres, almost all associated with the bridge deck shading EFH, SAV, and/or SAV habitat.	Minor impact associated with pumping pile jetting water from Pamlico Sound, mitigated by screening if needed. In 2060, when the bridge could be over the ocean, there would be approximately 11.00 acres of EFH shading.

wetlands, the open waters of the Pamlico Sound, the community of Rodanthe, the Pea Island National Wildlife Refuge, protected species, and essential fish habitat:

- For both Phase IIb detailed study alternatives, less than 1 acre of jurisdictional wetland would be filled.
- In Rodanthe, the community impacts of the Bridge within Existing NC 12 Easement Alternative would involve: bisecting the community, changing local property access patterns, being a substantial visual presence in the midst of the community, displacing five homes and two businesses, and affecting six noise sensitive receptors. In the long-term, beach and off-shore recreation would be affected by bridge presence as a result of shoreline erosion. The community impacts of the Bridge on New Location Alternative would involve being within views of Pamlico Sound at a location 1,400 to 1,700 feet from the shore, displacing two homes and two businesses, and affecting two noise sensitive receptors. In addition, the bridge's presence in the sound would limit recreation use, particularly windsurfers and kite boarders. At the December 2011 public meeting in Rodanthe, those commenters indicating a preference for one of the two now detailed study alternatives were close to evenly divided, as documented in Section C.1.1 of Appendix C of this Phase IIb EA.
- The Bridge on New Location Alternative would require 2.79 acres of new permanent NC 12 easement in the Refuge. The loss of habitat within the new easement would be minimized because NC 12 would be entirely on a bridge within the new easement; there is no other permanent fill of wetlands or other habitat within the proposed new easement. As mitigation, NCDOT would return approximately 19.27 acres of existing NC 12 easement to the Refuge, removing the pavement and restoring the habitat of the former easement per the direction of the USFWS. In a letter dated July 22, 2013, the Refuge manager indicated that the 2.87-acre use (later revised to 2.79 with design refinements) of the Bridge on New Location Alternative could likely be determined a minor modification of the existing NC 12 easement if adequate mitigation can achieve no net loss of habitat quantity and quality.

The Bridge within Existing NC 12 Easement Alternative would be confined to the existing NC 12 easement. No new permanent easement would be required. Both alternatives would result in the loss of direct road access to the Refuge for 1.8 miles. No Refuge facilities are in this area. As a result of long-term shoreline erosion, the Bridge on New Location Alternative would ultimately affect beach and off-shore recreation in this 1.8-mile-long portion of the Refuge. This impact could not be mitigated. Refuge representatives have not expressed a preference for one alternative over another. This impact to Atlantic Ocean beach and off-shore recreation would not occur with the Bridge on New Location Alternative.

- The USFWS has previously indicated that the vehicle headlights from the bridge in proximity to the ocean beach necessitate a May Affect, Likely to Adversely Affect for

several species of sea turtles. In mitigation for this effect, NCDOT has agreed that Phase IIa will include an up to 36-inch high bridge rail parapet in order to minimize the impact of vehicle headlights on nesting sea turtles and sea turtle hatchlings. This approach could be used with Phase IIb, if needed. In addition, NCDOT will use a type of construction lighting that minimizes the impacts to nesting sea turtles, per commitment #26 in Appendix A of the Phase IIa ROD. SHPO also has agreed to the bridge rail height in association with the consideration of its contribution to the visual impacts described above under Factors #1, #2, and #4. These mitigation items likely would primarily apply to the Bridge in Existing NC 12 Easement Alternative, which is currently either close to the beach or will be as a result of shoreline erosion. The Bridge on New Location Alternative would turn away from the beach, enter Pamlico Sound, and end in Rodanthe; thus, this mitigation may only be needed at the northern end of this alternative.

- Construction impacts, including jetting, would affect EFH for the entire length of the Bridge on New Location Alternative when it is in Pamlico Sound. Impacts would be minimized by not using dredging during bridge construction, but instead using a work bridge in areas too shallow for a work barge, and by containing pile jetting spoil.

The Bridge on New Location Alternative also would permanently affect 11.23 acres of EFH, SAV, and/or SAV habitat, primarily by shading. Pile presence may result in changes to: water quality, water flow, sediment grain size and topography, underneath the bridge and for some distance surrounding the bridge.

As a result of shoreline erosion, much of the Bridge within Existing NC 12 Easement Alternative would eventually be over the ocean, affecting EFH habitat, including again impacts related to water quality, water flow, sediment grain size and topography, and bridge shading.

Best Management Practices (BMPs) would be used to mitigate water quality impacts for the two alternatives. The other permanent impacts could not be mitigated. The NCDENR-DMF, NMFS, and FMCs have expressed no preference of one alternative over the other as of the date of this Phase IIb EA.

5.6.7 Factor #7: Substantial Differences in costs among the alternatives

The Bridge on New Location Alternative would cost \$203.3 to \$236.3 million and the Bridge within Existing Easement Alternative would cost \$187.5 to \$215.5 million. (See Table 1.) Thus, the Bridge on New Location Alternative would cost 8 to 10 percent more than the Bridge within Existing Easement Alternative.

5.6.8 Conclusion

The least harm analysis presented in the Revised 4(f) Evaluation included in the 2010 EA concluded that the PBC/TMP Alternative was the alternative that causes the least overall

harm. The least harm analysis presented in this Section 5.6 focuses on whether the least harm to the Refuge would result from the Bridge on New Location Alternative (use) or Bridge within Existing NC 12 Easement Alternative (constructive use) or whether the two alternatives would result in substantially equal harm. Based on a reconsideration and balancing of the seven factors above, FHWA and NCDOT have concluded that both alternatives offer the lesser harm on some impact considerations and greater harm on other impact considerations. Further, FHWA and NCDOT have concluded that, as with the consideration of the least harm to the Refuge as a historic resource in Factor #4, the views of the official(s) with jurisdiction over the management of the Refuge, USFWS under Section 7 of the Endangered Species Act, and the NMFS and FMCs under Magnuson-Stevens Fishery Conservation and Management Act, as well as the residents, business owners, property owners of the section of Rodanthe affected, and other members of the public are important to finalizing a decision of least harm. The views of these stakeholders, as well as the SHPO, are being solicited by the distribution of this Phase IIb EA and will be taken into consideration in reaching a conclusion on least harm that will be documented in a Phase IIb ROD or supplemental EIS.

5.7 Effect on All Possible Planning to Minimize Harm

The Revised 4(f) Evaluation identified project-specific minimization of harm efforts for Phase I and future phases of the Bonner Bridge Replacement Project (B-2500). Section 5.7 of the Phase IIa EA updated or re-affirmed the impacts and mitigation for Phase I and documented impacts and mitigation for Phase IIa. These findings have not changed substantially since the release of the Phase IIa EA with the following exceptions: bridge rail design, Refuge parking lot replacement, and replacement or maintenance of access to the Refuge boat ramp. The current status of these mitigation items is as follows:

- Bridge Rail Design – The USFWS, SHPO, FHWA, and NCDOT agreed to a bridge rail with an up to 36-inch high parapet as a Section 7 of the ESA of 1973 conservation measure related to a Likely Adverse Affect on protected nesting sea turtles.
- Refuge Parking Lot Replacement – The existing parking lot on the east side of the NC 12 and closest to the Pea Island inlet site would be fully removed along with all construction materials, including concrete, asphalt, contaminated soils, and any other material not naturally belonging on the site. At the end of construction, a replacement parking lot would be built and the existing kiosk would be relocated or reconstructed at a new site near the northern terminus of the Phase IIb project.
- Refuge Boat Ramp Access or Replacement – The New Inlet boat ramp/parking lot on the west side of NC 12 would be fully restored by NCDOT following construction. An access road with a turnaround would be constructed from the southern terminus of the new Phase IIa bridge to the boat ramp parking lot, within the existing NC 12 easement to the greatest extent possible. The only part of the completed access road

that will be outside the existing NC 12 easement would be part of the intersection of the access road and NC 12.

Table 7 of the Phase IIa EA summarized the measures to minimize harm that are also listed on pages 27 to 34 of the Revised 4(f) Evaluation (pages B-27 to B-34 of the 2010 EA) for Phase I and their current implementation status. As indicated, NCDOT has begun work on the mitigation commitments made in the Programmatic Agreement (PA) as amended that was signed by NCDOT, FHWA, SHPO, and ACHP. As noted in Table 7 of the Phase IIa EA, these commitments are currently being fulfilled and further efforts to minimize harm are proceeding.

To the extent that the specific commitments to minimize harm apply to Phase IIb, they will be implemented by NCDOT and FHWA, including:

- Under Section 106 of the Historic Preservation Act of 1966, stipulations in the PA presented in Appendix D of the 2010 ROD and its 2013 first amendment presented in Appendix E of the Phase IIa ROD, in particular the bridge rail (stipulation #IIA).
- Under Section 7 of the ESA of 1973, commitments included in Appendix A of the Phase IIa ROD related to night-time lighting (#11), manatee protection (#12), sea turtle and sawfish protection (#13), and protected species conservation measures (#20, #24, #25, #26).
- Related to EFH, commitments included in Appendix A of the Phase IIa ROD for the protection of SAVs (#3 and #27) and sedimentation and erosion control (#24).
- Related to minimizing impact to the Refuge, the commitment included in Appendix A of the Phase IIa ROD related to design coordination (#8).

NCDOT plans to minimize harm in relation to Phase IIb by:

- Bridge on New Location Alternative
 - Confining construction to the existing NC 12 easement and the new easement, as well as limited temporary easements. Traffic would be maintained on the existing NC 12 roadway until construction is completed.
 - Return of 19.27 acres of existing NC 12 easement to the Refuge.
 - Adhering to the coastal and environmental monitoring commitment through the coastal monitoring program (Project Commitment #17 in Appendix A of the Phase IIa ROD).
 - Adhering to permit requirements with respect to dewatering and stormwater discharges (and not pumping to wetlands and beach).

- Minimizing discharge of contaminants and trash.
- Working with USFWS, NMFS, and NCDENR-DCM to minimize the impacts of the spoil that would be generated from jetting the bridge piles (impacts, water source, and spoil disposal).
- Bridge within Existing NC 12 Easement Alternative
 - Confining all construction and traffic maintenance to the existing NC 12 easement and limited temporary easements.
 - Adhering to the coastal and environmental monitoring commitment through the coastal monitoring program (Project Commitment #17 in Appendix A of the Phase IIa ROD).
 - Adhering to permit requirements with respect to dewatering and stormwater discharges (and not pumping to wetlands and beach).
 - Minimizing discharge of contaminants and trash.
 - Working with USFWS, NMFS, and NCDENR-DCM to minimize the impacts of the spoil that would be generated from jetting the bridge piles (impacts, water source, and spoil disposal).

Table 9 summarizes Phase IIb impacts and mitigation measures for the two detailed study alternatives, and their current implementation status.

In addition to the general commitments listed above and in Table 9 for Phase IIb, FHWA and NCDOT will work with the appropriate agencies to develop and implement specific commitments that may come from planned additional consultation as the Phase IIb design and permit processes progress. Therefore, all possible planning to minimize harm has or will be done for Phase IIb.

Table 9. Phase IIb Impacts, Mitigation Measures, and Current Status

Impacts/Mitigation Measures	Status
General	
Consultation with USFWS will be conducted throughout the final design process.	NCDOT has actively coordinated with USFWS since Hurricane Irene in relation both to temporary repairs to NC 12 and the development of Phase IIa and Phase IIb (see Sections 6.2, 6.3, and 6.4 of the Phase IIa EA, as well as Section 3.6 of the Phase IIa ROD, and Sections 6.2 and 6.3 of this EA). Coordination will continue through final design and the permit process.
Use of Refuge Lands	
<u>Bridge on New Location Alternative</u>	
Total Acres Used	This alternative would have a permanent used of 2.79 acres of Refuge land and a temporary use of 0.63 acre.
Total Acres Returned	19.27 acres of the NC 12 easement would be restored and returned to the Refuge.
Mitigate wetlands acres filled	The permanent wetland impact would be 0.44 acre.
<u>Bridge within Existing Easement Alternative</u>	
Total Acres Used	This alternative would have no new permanent use of Refuge lands and a temporary use of 2.06 acres.
Total Acres Returned	Not applicable since no permanent use of Refuge lands
Mitigate wetlands acres filled	The permanent wetland impact would be .05 acre. No mitigation is required.

6.0 Comments and Coordination

6.1 Public Meetings and Activities

6.1.1 Citizens Informational Workshops for Scoping

As a part of scoping for Phase II, three Citizens Informational Workshops were held in December 2011 and January 2012 to provide the public with an opportunity to review and revisit the alternatives considered in the 2008 FEIS and the 2010 EA for the locations that were later breached by Hurricane Irene (Pea Island and Rodanthe) and to obtain scoping feedback from the public regarding ideas, thoughts, and suggestions about those alternatives and other alternatives that might be considered. A summary of these workshops is presented in Section 6.1.1 of the Phase IIa EA, beginning on page 6-1.

6.1.2 Phase IIa Public Hearings

Three Combined (Corridor and Design) Public Hearings were held on:

- March 11, 2013 at the Dare County Administration Building in Manteo.
- March 12, 2013 at the Rodanthe-Waves-Salvo Community Center in Rodanthe.
- March 13, 2013 at the Ocracoke Community Center in Ocracoke.

The primary purpose of the public hearings was to receive public comment on the findings of the Phase IIa EA. Each public hearing used an informal open-house format with no formal presentation. Opportunities were provided for making both oral and written comments. The same project information was presented at all three meetings. A total of approximately 382 people attended the hearings.

The public hearings updated the public on the status of the project since the release of the Record of Decision (ROD) in December 2010 (2010 ROD) and presented the Preferred Alternative for long-term improvements in the Pea Island inlet area (Phase IIa). A slideshow and handouts were provided. The meeting room included multiple stations where project staff responded to questions and comments from the public. The primary station focused on the proposed Phase IIa Preferred Alternative design (Selected Alternative in the Phase IIa ROD). In anticipation of a high level of public interest, informational stations on other aspects of NC 12 were also provided, including: the status of Phase IIb (now the focus of this EA), the status of the Oregon Inlet Bridge replacement (Phase I), other future NC 12 improvement projects south of Rodanthe, and ferry service. Other stations included a social media table and an area to submit comments.

The public comment period for the Phase IIa EA ended March 28, 2013. A total of 4,209 comments were received during the comment period; in addition, a petition was

received containing 1,700 signatures. The comments covered a range of issues, including the need for the project, the proposed new bridge at Pea Island inlet (Phase IIa Preferred Alternative), the long-term plans at Rodanthe, other needs along NC 12, and recreational use of the area. There also were comments about whether a long bridge (either a Pamlico Sound Bridge [Bodie Island to Rodanthe] or a bridge from the mainland or Roanoke Island to Rodanthe) should be considered. NCDOT received 150 individual written comments, and one oral comment was recorded during the public hearings. Most comments received were form e-mails sent at the request of either the Defenders of Wildlife in opposition to the project (1,597) or The Citizens Action Committee to Replace the Herbert C. Bonner Bridge in favor of the project (2,461). The North Carolina Conservation Network submitted a petition in opposition to the project containing 1,700 signatures. Many of the form emails included additional comments explaining the commenter's position. Of the 4,209 comments received, most comments expressed support for a long-term solution for NC 12, although they offered differing opinions about what the solution should be.

A full discussion of and response to comments received from members of the public, in addition to comments received from non-governmental organizations and from federal and state environmental resource and regulatory agencies are presented in the Phase IIa ROD. Public comments and responses related directly to Phase IIb are repeated in Appendix C of this EA in Section C.3.

6.1.3 Newsletters

NCDOT issued a Bonner Bridge Update newsletter in February 2013. The newsletter was mailed to everyone on the Bonner Bridge Replacement Project's (B-2500) mailing list, which includes Hatteras Island property owners, individuals on the Refuge's mailing list, and individuals who attended past Citizens Informational Workshops.

The newsletter discussed the availability of the Phase IIa EA and described the Preferred Alternative (Bridge within Existing NC 12 Easement Alternative) in the Pea Island inlet area. The newsletter also informed the public of the public hearings that were scheduled to be held March 11, 12, and 13, 2013, and indicated how to contact the study team, including the toll-free telephone number (see below). A copy of the newsletter is included in Appendix B.

Another newsletter will be mailed prior to planned public hearings for Phase IIb.

6.1.4 Toll-Free Telephone Number

The project's toll-free telephone number was provided in the February 2013 newsletter. It is answered by a senior member of NCDOT's consultant team (led by Parsons Brinckerhoff), and provides a means for citizens to obtain answers to questions about the Bonner Bridge Replacement Project (B-2500) and to make individual comments at any time during the study. The phone number is 1-866-803-0529, and it has been

available throughout the 2005 SDEIS, 2007 SSDEIS, 2008 FEIS, 2010 EA, 2010 ROD, Phase IIa EA, and Phase IIa ROD preparation portions of the study. This toll-free telephone number will continue to be open at least until the NEPA process associated with Phase IIb is complete.

6.1.5 Web Sites

The newsletter provided a web site and social media resources by which those interested could view information about the damage to NC 12 caused by Hurricane Irene, Hurricane Sandy, and other storm events as well as NCDOT's efforts to temporarily restore NC 12 to service. The web sites and other social media resources are:

- Bonner Bridge Replacement Project (B-2500) Phase II Web Site – <http://www.ncdot.gov/projects/bonnerbridgephase2/>
- NC 12 Projects Web Site – <http://www.ncdot.gov/nc12/>. (Note that this web page includes links to all NC 12-related NCDOT projects, including the Phase II link above and a link to information on Phase I, the new Oregon Inlet bridge.)
- NC 12 Recovery Web Site – www.ncdot.org/travel/nc12recovery
- NC 12 Twitter Feed – http://twitter.com/NCDOT_NC12
- Repairing NC 12 Blog – <http://nc12repairs.blogspot.com/>
- NC 12 Facebook Page – <https://www.facebook.com/NCDOT>

6.2 NEPA/Section 404 Merger Team Meetings and Outcomes

The NEPA/Section 404 Merger Process is a streamlining effort that helps to avoid duplication of effort between the NEPA and the Clean Water Act Section 404 processes, since USACE must meet the requirements of NEPA in order to issue a dredge and fill permit under the Clean Water Act. Stakeholders can reach concurrence or agreement; or the Merger Process also may involve instances of non-concurrence or abstention.⁶ The goal of the Merger Process is to obtain stakeholder concurrence on key issues during the NEPA study so that those decisions do not need to be revisited during application for a USACE permit. The current Merger Team members are: NCDOT; FHWA; USACE;

⁶ The Merger Process guidelines define abstention as follows: "... abstain means that a team member does not actively object to a concurrence point but the agency representative does not sign the concurrence point form. The process may continue and the agency representative agrees not to revisit the concurrence point. Written justification for abstaining from a concurrence point should be provided to the project team within 5 days of the concurrence meeting."

USEPA; USFWS (Raleigh Office); USFWS—Pea Island National Wildlife Refuge; NMFS; NPS—Cape Hatteras National Seashore; NCDENR-DCM; NCDENR-DMF; NCDENR-DWR; NCWRC; NCDCR; and the Albemarle Rural Planning Organization (RPO). USCG is not a signing team member, but is sent information before and following all NEPA/Section 404 Merger Team meetings.

The Merger Process includes the following concurrence points:

1. Concurrence on purpose and need;
2. Concurrence on the alternatives to be evaluated in detail in the environmental document;
- 2A. Concurrence on the approximate length of any proposed bridges to minimize impacts to wetlands and streams, and preliminary alignment review for each detailed study alternative;
3. Concurrence on the Least Environmentally Damaging Practicable Alternative (LEDPA);
- 4A. Concurrence that all efforts were made to avoid and minimize harm to USACE jurisdictional resources (streams and wetlands) to the maximum extent practicable;
- 4B. Concurrence on the 30 percent complete hydraulic design; and
- 4C. Concurrence on permit drawings after the hydraulic design is complete and prior to Section 404 permit application.

For more details on the Merger Process, see Section 8.3.1 of the 2008 FEIS.

The following Merger Team Meetings have been held to date for Phase II of the Bonner Bridge Replacement Project (B-2500):

- August 31, 2011 Merger Team Meeting: This meeting was held to determine issues and discuss response strategies for the emergency repair of the damage caused by Hurricane Irene to NC 12 on Hatteras Island in order to re-open NC 12 to traffic as early as possible.
- October 18, 2011 Merger Team Meeting: This was an informational/scoping meeting for Phase II. The purpose of the meeting was for NCDOT to inform the Merger Team members about the start of the Phase II studies of long-term repairs at the two areas along NC 12 that were breached by Hurricane Irene in August 2011 (i.e., Pea Island inlet and Rodanthe). Agency representatives were asked to provide scoping comments related to impact issues and alternatives related to the two breach sites prior to NCDOT's initiation of these studies.

- December 15, 2011 Merger Team Meeting: This meeting was the initial Concurrence Point (CP) 2/2A meeting for Phase II of the Bonner Bridge Replacement Project (B-2500). The purposes of the meeting were to determine the alternatives to be studied in detail (CP 2) for Phase II at the two breach areas (i.e., Pea Island inlet and Rodanthe), as well as to discuss any additional bridging decisions associated with the detailed study alternatives (CP 2A).
- March 21, 2012 Merger Team Meeting: The purpose of this meeting was for the Merger Team to discuss consensus on CP 2/2A, 3, and 4A for the Phase IIa project and CP 2/2A for the Phase IIb project. Concurrence was not reached at this meeting. Further studies were undertaken to address concerns raised by USACE and other merger team members. The USACE indicated that NCDOT needed to complete a re-evaluation of the cost of the Pamlico Sound Bridge Corridor to determine if the conclusion reached in the 2010 EA – that this alternative was not practicable from the perspective of Section 404 of the Clean Water Act or feasible and prudent from the perspective of Section 4(f) of the Department of Transportation Act of 1966 – remained valid. Also discussed with the Merger Team was the agreement at the December 15 Merger Team meeting to look at the merits of a Seven-Mile Bridge, as suggested by USFWS, that would address both parts of the Phase II study area.
- May 16, 2012 Merger Team Meeting: The purpose of the meeting was informational. NCDOT discussed with the Merger Team agencies, and received feedback regarding, a design for NCDOT's proposed Preferred Alternative for Phase IIa. The design issues discussed would likely affect the permit applications for the proposed project and would apply to the Phase IIb detailed study alternatives. These issues include the use of temporary construction easements, utility placement, and use of retaining walls, jetting, and other design-related issues.
- November 14, 2012 Merger Team Meeting: This meeting occurred after the completion of additional studies requested at the May 21, 2012 meeting. The updated cost analysis requested was completed in October 2012. The analysis reaffirmed that NCDOT is unable to fully fund a Pamlico Sound bridge. The USACE indicated their agreement with this conclusion at a meeting between NCDOT, FHWA, and USACE on October 29, 2012. At the November Merger Team meeting, FHWA, NCDOT, USACE, NCDENR-DWQ (now NCDENR-DWR), NCDCR, and NCDENR-DCM signed the Phase IIa concurrence forms for CP2, CP2A, and CP3, as well as the Phase IIb concurrence form for CP2A. USEPA, USFWS, USFWS-Refuge, NMFS, NPS, NCDENR-DMF, and NCWRC abstained. Issues related to CP4A were also discussed. Concurrence was reached at this meeting that the Bridge within Existing NC 12 Easement Alternative would be the sole detailed study alternative for Phase IIa, and that two detailed study alternatives would be analyzed for Phase IIb: the Bridge on New Location Alternative and the Bridge within Existing NC 12 Easement Alternative. Prior to this merger meeting, NCDOT met with FHWA and

USACE on October 29, 2012 to discuss the re-evaluation of alternatives for Phase II, including the financial feasibility of the Pamlico Sound Bridge Corridor.

- January 30, 2013 Merger Team Meeting: This meeting was held in order to finalize concurrence on CP4A and to discuss CP4B and CP4C for Phase IIa. All members of the Merger Team signed the CP4A concurrence form except for USEPA, which abstained.
- July 25, 2013 Merger Team Meeting: This meeting focused on potential mitigation for impacts in the Refuge with the Bridge on New Location Alternative. The USFWS-Refuge had indicated that the Bridge on New Location Alternative likely could be considered a minor modification of the existing NC 12 easement. It was stated that NCDOT and USFWS have agreed that the section of existing NC 12 easement that is bypassed by the Bridge on New Location Alternative would be restored and returned to the Refuge as mitigation. NCDOT noted that in previous mitigation discussions with the Refuge, an idea also had been proposed by the Refuge to “nourish” the estuarine (soundside) shoreline in order to build up and support the natural migration of Hatteras Island. The following concerns were raised by Merger Team members regarding this idea: it would impact SAV habitat, it would be costly and risky in terms of unknown benefits and impacts, and it was not needed from a USACE jurisdictional impacts perspective. The Merger Team agreed that a soundside nourishment program could be considered as an option for disposal of jetting spoils, but only after further coordination with the appropriate agencies. The Refuge representative urged NCDOT to “think outside the box” on means that might be used in the context of the Phase IIb project to facilitate accretion on the sound side of Hatteras Island.

The summaries and concurrence forms for the meetings through November 14, 2012 were presented in the Phase IIa EA in Appendix A. The full meeting summary of the July 25, 2013 meeting is included in Appendix A of this Phase IIb EA. Summaries of additional meetings held with various agencies are included in Section 6.2 of the Phase IIa EA, beginning on page 6-3. The minutes and concurrence forms for the meeting on January 20, 2013 were presented in Appendix D of the Phase IIa ROD. Summaries of additional meetings held with various agencies are included in Section 3.6 of the Phase IIa ROD beginning on page 25.

6.3 Endangered Species Act Consultation

As a part of finalizing the Phase II alternatives for implementation, including the Phase IIb project that is the subject of this EA, FHWA has consulted with USFWS and NMFS in compliance with Section 7 of the ESA of 1973.

During the planning and permitting processes for Phase I and IIa, NCDOT coordinated with the USFWS and SHPO regarding specific design and construction issues, in

keeping with the existing Section 7 and Section 106 agreements. To minimize impacts to nesting sea turtles, NCDOT has committed to using approved lighting sources during construction of bridges within the Refuge, which include either amber-colored LED lights (preferred) or low-pressure sodium-vapor lights. Additionally, NCDOT, FHWA, USFWS, and SHPO agreed to a bridge rail design that is intended to shield sea turtle hatchlings from car headlights on bridges. The bridge rail design is illustrated in Figure 3 of the Phase IIa EA. The lighting commitment would apply to either of the two detailed study alternatives, while the bridge rail commitment most likely would apply only to the Bridge within Existing NC 12 Easement alternative. The railing design would have to be reviewed by USFWS and SHPO in compliance with the commitments. FHWA also has completed formal consultation with NMFS on potential impacts to sturgeon and sea turtles. Formal consultation concluded with the receipt of a letter from NMFS on September 30, 2013 (see Appendix D of the Phase IIa ROD).

6.4 Essential Fish Habitat Coordination

As a part of finalizing the Phase II alternatives for implementation, including Phase IIb, FHWA will coordinate with NMFS regarding EFH. The Magnuson-Stevens Fishery Conservation and Management Act (16 U.S.C. § 1801 et seq.) requires federal agencies to consult with the US Secretary of Commerce on all actions or proposed actions authorized, funded, or undertaken by the agency that might adversely affect EFH. This is done through NMFS. NMFS is represented on the NEPA/Section 404 Merger Team. As part of this coordination with NMFS for Phase IIb, NCDOT has developed an EFH Assessment Addendum. This report focuses on the potential for EFH impacts associated with the new Bridge on New Location Alternative, which was not evaluated in the 2008 EFH Assessment, but is similar to the Bridge South component of the Road North/Bridge South alternative evaluated in the 2008 FEIS. The Bridge within Existing NC 12 Easement Alternative, which was considered as a part of the Phased Approach Alternative in the 2008 EFH Assessment, also is addressed. In the Phase IIb project area (the southern end of the Refuge and the Rodanthe area), there has been no substantial change in EFH habitat since the 2008 FEIS. While Hurricane Irene created a breach in the Rodanthe area in August 2011, the breach was filled by NCDOT and no new EFH was established in this area.

6.5 Section 106 of the National Historic Preservation Act Coordination

Section 106 of the National Historic Preservation Act of 1966 as amended (16 U.S.C. § 470f) affords consideration of those properties that are listed or eligible for listing in the NRHP. The Phase IIb detailed study alternatives are similar in characteristics to alternatives previously described in the 2008 FEIS and in the 2010 EA; the Bridge within Existing NC 12 Easement Alternative is similar to the Phased Approach/Rodanthe Bridge Alternative, and the Bridge on New Location Alternative is similar to the Bridge

South component of the Road North/Bridge South Alternative. Both of the Phase IIb detailed study alternatives would have an Adverse Effect on the NRHP-eligible Pea Island National Wildlife Refuge. The nature of the Adverse Effect is the visual impact on the historic landscape of the Refuge. This impact is described in Section 4.2.3 of this EA.

As discussed in Project Commitment 23 in the Project Commitments in Appendix E of the Phase IIa ROD, FHWA, SHPO, ACHP, and NCDOT, along with the consulting parties (Dare County, the North Carolina Aquarium Society, USFWS, NPS, and the Chicamacomico Historical Association), developed a Programmatic Agreement (PA) stipulating measures that FHWA will ensure are carried out during the design and construction of the PBC/TMP Alternative to mitigate adverse impacts to the historic cultural resources. NCDOT, FHWA, and SHPO signed the Programmatic Agreement (PA) on historic resource impacts and mitigation in November 2010 (see Appendix D of the 2010 ROD). It was amended in 2013 to include a final agreement on the characteristics of bridge rails in the Refuge for Phases I and IIa (see the paragraph at the end of this section). NCDOT is in the process of fulfilling the commitments made in the PA, as amended, in parallel with preparations to start construction of Phase I of the Bonner Bridge Replacement Project (B-2500). The PA is applicable to the entire Project, and Stipulation #VI of the PA requires further consultation for future phases if there is:

- A change in the historic status of properties.
- Identification of a new alternative.
- Change in an existing alternative that would result in a different “effects determination” for a historic property.
- Selection of a new Preferred Alternative.

None of these conditions apply to Phase IIb or to its current setting. A representative of SHPO (from NCDOT) who serves on the NEPA/Section 404 Merger Team, concurred with the detailed study alternatives for Phase IIb and has had an opportunity to indicate if any of the above conditions were met or indicate that additional consultation was desired.

Stipulation #IIA of the PA discusses bridge design within the Refuge, in particular the design of the bridge rail. In accordance with this stipulation, further coordination about the bridge rail occurred in 2013 between NCDOT, USFWS, NPS, and SHPO. The agencies agreed on a parapet design of 30 inches high for Phase I and up to 36 inches high for the bridge railing through the Refuge with Phase IIa, which shields sea turtle hatchlings from headlight glare. This agreement resulted in the amendment to the PA presented in Appendix E of the Phase IIa ROD.

6.6 List of Agencies, Organizations, and Persons to Whom Copies of the Environmental Assessment are Sent

The agencies and interest groups listed below will be sent a copy of this EA with a request for comments. These agencies and interest groups also were sent a copy of the 2008 FEIS, 2010 EA, 2010 ROD, Phase IIa EA, and Phase IIa ROD. The availability of the EA will be announced via a newsletter sent to those on the project's mailing list and in advertisements within local media outlets. The EA also will be available on the project web site (<http://www.ncdot.gov/projects/bonnerbridgephase2/>). Public hearings will be held to gather additional comments on the EA. Comments on the EA will be addressed in subsequent documentation.

Federal Agencies

Advisory Council on Historic Preservation	US Department of Health and Human Services
Federal Emergency Management Agency	US Department of Housing and Urban Development
US Army Corps of Engineers	US Department of the Interior—Office of the Secretary; US Fish and Wildlife Service (Pea Island National Wildlife Refuge and Raleigh Field Office); Keeper of the National Register; and National Park Service (Cape Hatteras National Seashore)
US Coast Guard—5th District	
US Department of Agriculture—Natural Resources Conservation Service	
US Department of Commerce—National Oceanic and Atmospheric Administration—National Marine Fisheries Service	
	US Environmental Protection Agency, Region IV (Environmental Review Branch)

State Agencies

North Carolina Department of Administration—State Clearinghouse and State Publications Clearing House (State Library)	North Carolina Department of Environment and Natural Resources—Division of Air Quality; Division of Coastal Management; Division of Land Resources; Division of Marine Fisheries; Division of Parks and Recreation; Division of Water Resources
North Carolina Department of Cultural Resources—Division of Archives and History	

North Carolina Wildlife Resources
Commission

Local Governments and Agencies

Albemarle Regional Planning and Development Commission (Albemarle Rural Planning Organization)	Mayor of Kitty Hawk Mayor of Manteo
County of Dare—Chair, Dare County Commissioners; Dare County Manager; Emergency Management Agency	Mayor of Nags Head Mayor of Southern Shores
Mayor of Duck	Oregon Inlet and Waterways Commission
Mayor of Kill Devil Hills	

Local Interest Groups

Audubon North Carolina	North Carolina Coastal Federation
Carolina Electric Cooperatives	North Carolina Fisheries Association
Center for Biological Diversity	Outer Banks Chamber of Commerce
Coastal Wildlife Refuge Society	Pamlico – Tar River Foundation
Conservation Council of North Carolina	Sierra Club, North Carolina Chapter
Dare County Tourist Bureau	Southern Albemarle Association
Defenders of Wildlife	Southern Appalachian Biodiversity Project
Eastern Surfing Association, Outer Banks District	Southern Environmental Law Center
Environmental Defense Fund	Surfrider Foundation, Outer Banks Chapter
Hatteras Village Civic Association	
National Parks Conservation Association	

Public Review Locations

Dare County Libraries in Hatteras
Village, Kill Devil Hills, and Manteo,
North Carolina

Dare County Planning and Inspections
Satellite Office in Frisco, North Carolina

Fessenden Recreation Center in Buxton,
North Carolina

NCDOT Resident Engineer's Office in
Manteo, North Carolina

Ocracoke School and Community
Library in Ocracoke, North Carolina

7.0 Conclusion

This Environmental Assessment (EA) documents changes associated with the Bonner Bridge Replacement Project (B-2500), as well as changes to the project environment, as they relate to the planned Phase IIb.

- From the analysis contained in Chapter 4.0, FHWA believes that the Phase IIb detailed study alternatives, including the Preferred Alternative, do not result in new, significant impacts to the human and natural environments not previously identified in the 2008 FEIS and 2010 EA. This is the case because these alternatives represent portions of the Road North/Bridge South, All-Bridge, and Phased Approach alternatives assessed in their entirety in the 2008 FEIS and 2010 EA.
- From the analysis contained in Chapter 5.0, FHWA believes that the conclusions in the 2009 Revised Final Section 4(f) Evaluation (included as Appendix B in the 2010 EA) remain valid for the PBC/TMP Alternative and the analysis in Chapter 5.0 does not suggest any new, significant impacts not previously identified in the 2008 FEIS, 2010 EA, and Phase IIa EA. It also concludes that both Phase IIb detailed study alternatives would offer the lesser harm on some impact considerations and greater harm on other impact considerations. Further, FHWA and NCDOT have concluded that as with the consideration of the least harm to the Refuge as a historic resource in Factor #4, the views of the official(s) with jurisdiction over the management of the Refuge, USFWS under Section 7 of the Endangered Species Act, and the NMFS and FMCs under Magnuson-Stevens Fishery Conservation and Management Act, as well as the residents, business owners, property owners of the section of Rodanthe affected, and other members of the public are important to finalizing a decision of least harm. The views of these stakeholders, as well as the SHPO, are being solicited by the distribution of this Phase IIb EA and will be taken into consideration in reaching a conclusion on least harm that will be documented in a Phase IIb ROD or supplemental EIS.

Based on this analysis and in coordination with state and federal environmental resource and regulatory agencies, FHWA believes that the changes identified and assessed in this EA for the two Phase IIb detailed study alternatives, including the Preferred Alternative (Bridge within Existing NC 12 Easement Alternative), would not result in new, significant impacts not previously identified in the 2008 FEIS, 2010 EA, 2010 ROD, or Phase IIa EA.

FHWA now seeks input on the content and tentative conclusions identified in this EA. Once public and agency input have been received and considered, FHWA will determine whether a Supplemental EIS will be prepared.

8.0 List of References

- CZR, Incorporated. 2008. *Essential Fish Habitat Assessment for NC 12 Replacement of Herbert C. Bonner Bridge*. Prepared for the North Carolina Department of Transportation.
- CZR, Incorporated. 2008. *Natural Resources Technical Report for NC 12 Replacement of Herbert C. Bonner Bridge*. Prepared for the North Carolina Department of Transportation.
- CZR, Incorporated. 2013. *Essential Fish Habitat Assessment Addendum for Phase IIa of NC 12 Replacement of Herbert C. Bonner Bridge*. Prepared for the North Carolina Department of Transportation.
- CZR, Incorporated. 2013. *Essential Fish Habitat Assessment Addendum for Phase IIb of NC 12 Replacement of Herbert C. Bonner Bridge*. Prepared for the North Carolina Department of Transportation.
- Federal Highway Administration and North Carolina Department of Transportation. 2005. *Administrative Action Supplemental Draft Environmental Impact Statement and Draft Section 4(f) Evaluation for NC 12 Replacement of Herbert C. Bonner Bridge*.
- Federal Highway Administration and North Carolina Department of Transportation. 2007. *Administrative Action Supplement to the 2005 Supplemental Draft Environmental Impact Statement and Draft Section 4(f) Evaluation for NC 12 Replacement of Herbert C. Bonner Bridge*.
- Federal Highway Administration and North Carolina Department of Transportation. 2008. *Administrative Action Final Environmental Impact Statement and Section 4(f) Evaluation for NC 12 Replacement of Herbert C. Bonner Bridge*.
- Federal Highway Administration and North Carolina Department of Transportation. 2008. *Biological Assessment for NC 12 Replacement of Herbert C. Bonner Bridge*.
- Federal Highway Administration and North Carolina Department of Transportation. 2010. *Administrative Action Environmental Assessment for NC 12 Replacement of Herbert C. Bonner Bridge*.
- Federal Highway Administration and North Carolina Department of Transportation. 2010. *Administrative Action Record of Decision for NC 12 Replacement of Herbert C. Bonner Bridge*.

- Federal Highway Administration and North Carolina Department of Transportation. June 2012. *NC 12 Transportation Management Plan – Phase II, Peer Exchange Meeting for NC 12 Replacement of Herbert C. Bonner Bridge*.
- Federal Highway Administration and North Carolina Department of Transportation. 2012. *Technical Memorandum on the Effects of Parallel Bridge Corridor with NC 12 Transportation Management Plan Alternative for NC 12 Replacement of Herbert C. Bonner Bridge on Atlantic Sturgeon*.
- Federal Highway Administration and North Carolina Department of Transportation. May 2013. *Threatened and Endangered Species Technical Memorandum for Pea Island Long-Term Improvements Bonner Bridge Replacement Project Phase IIa*.
- Federal Highway Administration and North Carolina Department of Transportation. 2013. *Threatened and Endangered Species Technical Memorandum for Pea Island Long-Term Improvements Bonner Bridge Replacement Project Phase IIb*.
- Jackson, J., K. Coder, R. Gilbert, T. Patrick, C. Rabolli, and L. Tankersley. 1992. *Georgia's Endangered Animals and Plants*. Cooperative Extension Service/University of Georgia, College of Agricultural and Environmental Sciences, Athens, GA.
- North Carolina Department of Transportation. 2013. *Air Quality Analysis, NC 12 Long-Term Improvements in Rodanthe, Dare County*.
- North Carolina Department of Transportation. 2013. *Traffic Noise Analysis, NC 12 Long-Term Improvements in Rodanthe, Dare County*.
- Overton, M. F. January 2013. *Coastal Monitoring Program, NC 12 Transportation Management Plan, TIP Project B-2500, 2011 Update*. Prepared for the North Carolina Department of Transportation.
- Overton and Fisher. June 2005. *Parallel Bridge Corridor with NC 12 Maintenance – Shoreline Change and Stabilization Analysis*. Prepared for the North Carolina Department of Transportation.

Appendix A

**NEPA/404 Concurrence
Forms, Agency
Correspondence, and
Meeting Summaries**

A. NEPA/404 Concurrence Forms, Agency Correspondence, and Meeting Summaries

CONCURRENCE POINT A AND 2A SIGNED FORM FOR PHASE IIB.....	A-2
CORRESPONDENCE WITH PEA ISLAND NATIONAL WILDLIFE REFUGE	A-3
MEETING SUMMARY FOR JULY 25, 2013 MITIGATION MEETING.....	A-11

Section 404/NEPA Merger Project Team Agreement
Concurrence Point No. 2: Alternatives to be Studied in Detail and
Concurrence Point 2A: Bridging Decisions and Alignment

Project No./TIP No./Name/Description:

Federal Project Number: BRS-2358(15)

WBS No.: 32635

TIP Project Number: B-2500B

Description: Replacement of the Herbert C. Bonner Bridge (Bridge No. 11) over Oregon Inlet in Dare County (Phase II of the Parallel Bridge Corridor with NC 12 Transportation Management Plan)

The Project's Merger Team has concurred on this date of October 24, 2012 that the following alternatives will be evaluated further for the Rodanthe breach component of Phase II of the subject project:

- Bridge on New Location
- Bridge within Existing NC 12 Easement

USACE <u>William J. Billmore</u>	NCDOT <u>Elizabeth A. Smyre</u>
USEPA <u>Abstain</u> <u>OK</u>	USFWS <u>Abstain</u> <u>df</u>
NCDWQ <u>Paul Wang</u>	NCWRC <u>Abstain</u> <u>son</u>
SHPO <u>Renee Medkell-Early</u>	FHWA <u>Clarence W. Coleman, Jr.</u>
NMFS <u>Abstain</u> <u>FR</u>	NCDMF <u>Abstain</u> <u>KH</u>
NPS <u>Abstain</u> <u>TB</u>	NCDCM <u>Dan V. Haggitt</u>
USFWS-PINWR <u>Abstain</u> <u>AS</u>	



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

July 11, 2013

Mike Bryant
U.S. Fish & Wildlife Service
Pea Island National Wildlife Refuge
P.O. Box 1969
Manteo, North Carolina 27954

Subject: Minor Modification of NC 12 Easement for Phase IIb of Bonner Bridge
Replacement Project (TIP No. B-2500B), Dare County, North Carolina

Dear Mr. Bryant:

In November 2012, the Merger Team for the subject project selected two bridge alternatives to be carried forward for detailed study (see Figure 1). One of these alternatives, called the Rodanthe- Bridge on New Location alternative, involves the construction of a bridge extending west of the existing NC 12 roadway into Pamlico Sound. Construction of this alternative would require new easement within the Pea Island National Wildlife Refuge (Refuge) between the existing NC 12 easement and the Refuge's western boundary. This letter is to request your views on whether the new easement needed for the Rodanthe- Bridge on New Location alternative could likely be determined a minor modification of the existing NC 12 easement. We also request your views on the scale and nature of any mitigation that may be related to such a determination.

NCDOT is currently preparing an Environmental Assessment (EA) in order to identify changes to the project area since the 2010 Record of Decision and to assess the impacts of the two bridge alternatives. While FHWA and NCDOT will likely recommend a preferred alternative in the EA, the Merger Team will make the final decision on the project's Least Environmentally Damaging Practicable Alternative (LEDPA) after the EA is issued and associated public involvement is completed. If the Rodanthe- Bridge on New Location alternative is selected for construction, then NCDOT will complete the final design for this alternative and will submit a formal request to your agency for a minor modification of the easement.

A-3

MAILING ADDRESS:
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PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1548 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-707-6000
FAX: 919-250-4224

WEBSITE:
[HTTPS://CONNECT.NCDOT.GOV/RESOURCES/ENVIRON
MENTAL/PAGES/DEFAULT.ASPX](https://connect.ncdot.gov/resources/environmental/PAGES/DEFAULT.ASPX)

LOCATION:
CENTURY CENTER, BUILDING A
1000 BIRCH RIDGE DRIVE
RALEIGH NC 27610

Proposed New Easement

The Rodanthe- Bridge on New Location alternative will require approximately 2.87 acres of new easement west of existing NC 12 at the proposed bridge's northern terminus (see Figure 2). The location and design of the northern terminus was developed in consultation with your staff, and NCDOT is proposing an alignment that minimizes impacts to the Refuge to the greatest extent possible while conforming to the department's design standards. Based on NCDOT surveys of the project corridor, the proposed new easement contains the following biotic communities:

Upland	Wetland
Maritime grassland	Salt shrub/grassland
Maritime shrub/grassland	Salt grassland
	CAMA marsh
	Maritime shrub/grassland
	Maritime shrub thicket

NCDOT is in the process of calculating the acreage of impact for each biotic community for the project; this information will be included in the upcoming EA.

In addition, the proposed new easement would cross the southeastern corner of the former wetland mitigation site that was constructed by NCDOT in the mid-1990's. The alternative is designed so that NC 12 would be entirely on a structure once it leaves the existing NC 12 easement, such that any impacts to these areas would be limited to the placement of bridge piles and shading from the bridge deck. The northern roadway approach and associated fill would be within the existing NC 12 easement.

Mitigation

It is understood that mitigation for the use of new Refuge land would be required if the U.S. Fish & Wildlife Service (USFWS) approved the Rodanthe- Bridge on New Location alternative as a minor modification to the existing easement. Based on discussions during a meeting with you on June 25, 2013, NCDOT proposes the following conceptual mitigation measures:

Return of Existing NC 12 Easement: Based on the current preliminary design of the alternative, approximately 18.68 acres of the existing NC 12 easement between the northern bridge terminus and the Refuge's southern border with Rodanthe would no longer be needed for NC 12 and could be returned to the USFWS. Once the new bridge is open to traffic, NCDOT would restore the area by removing pavement and sandbags and conducting any additional grading work or planting of native species as directed by your office.

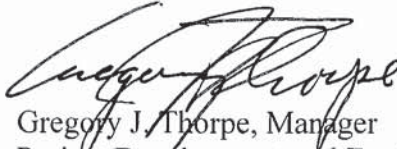
Nourishment of Estuarine Shoreline: NCDOT would work with the USFWS and the appropriate permitting agencies to develop a plan to place compatible material along the estuarine shoreline within the Refuge north of Rodanthe. The intent of this nourishment would be to create additional wetland areas on the west side of the Refuge and aiding the island's natural overwash process. Only material determined to be compatible by the USFWS would be placed along the estuarine shoreline, and all work would be done at the direction of USFWS staff. Jetting spoil material from bridge construction at both the Pea Island inlet and Rodanthe sites, or beach sand from the proposed temporary beach nourishment project, could be used for this purpose. NCDOT will need to work with the USFWS in order to determine how the jetting spoil material and the beach sand could be transported and placed along the estuarine shoreline in a manner that minimizes further impacts to the Refuge. NCDOT would also need approval from the appropriate federal and state permitting agencies. In order to determine the feasibility of this option, NCDOT has scheduled a meeting with the appropriate permitting agencies for Thursday, July 25, 2013 at 1:00 pm at the NCDOT Century Center Complex in Raleigh. Your office has been included in the invitation to this meeting.

Improvements to Former NCDOT Mitigation Site: In the event that nourishment of the estuarine shoreline is determined not to be a feasible mitigation option, NCDOT would work with the USFWS on appropriate updates to the former NCDOT wetland mitigation site on the west side of NC 12; these updates could include site grading and/or planting of additional native species. Though the site is within the Refuge, any work on this site would need to be coordinated with the U.S. Army Corps of Engineers, the N.C. Division of Coastal Management, and other appropriate agencies, as this site was developed as wetland mitigation for a previous NCDOT project.

If the Rodanthe- Bridge on New Location alternative is selected by the Merger Team as the alternative for this phase of the project, NCDOT will submit a detailed request for a minor modification of the existing easement once the NEPA process is completed. This request will include a metes and bounds description of both the proposed new easement and the easement to be returned, a summary of the impacts to each of the biotic communities within the proposed new easement, and a detailed mitigation proposal based on the ideas proposed in this letter. While NCDOT realizes that the USFWS cannot make an official determination prior to the full application, we request your input on the likelihood that this alternative could be deemed a minor modification of the existing NC 12 easement. We would also appreciate your input on the appropriate scale and nature of any associated mitigation, including the measures discussed in this letter. We ask that you respond to this request by Wednesday, July 31, 2013, so that we may consider your response in the development of the EA for this project.

Thank you for your attention to this request. If you have any questions about this request, please contact Ms. Beth Smyre, Project Planning Engineer, at (919)707-6043 or bsmyre@ncdot.gov.

Sincerely,



Gregory J. Thorpe, Manager
Project Development and Environmental Analysis Unit

GJT/eas

Attachments

cc: (electronic copy) w/ attachments:
Victor Barbour, NCDOT-Technical Services
Terry Gibson, NCDOT- Division of Highways
Deborah Barbour, NCDOT- Preconstruction
Jerry Jennings, NCDOT- Division 1
Rob Hanson, NCDOT- PDEA
Phil Harris, NCDOT- PDEA
Clarence Coleman, FHWA



Figure 1

PHASE IIb DETAILED STUDY ALTERNATIVES



**NEW PERMANENT EASEMENT WITH THE BRIDGE
ON NEW LOCATION ALTERNATIVE**

Figure
2



United States Department of the Interior

FISH AND WILDLIFE SERVICE

Coastal North Carolina National Wildlife Refuges Complex

Post Office Box 1969

Manteo, North Carolina 27954

(252) 473-1131 473-1668 (fax)

July 22, 2013

Gregory J. Thorpe, Manager
North Carolina Department of Transportation
Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548

Subject: Request for a response on suggested Minor Modification of NC 12 Easement for Phase IIb of Bonner Bridge Replacement Project (TIP No. B-2500B), Dare County, North Carolina

Dear Mr. Thorpe:

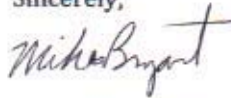
In your July 11, 2013 letter to me concerning the need for a new easement for the Rodanthe-Bridge on New Location alternative for Phase IIb of the Bonner Bridge Replacement Project (TIP No. B-2500B) in Dare County North Carolina on Pea Island National Wildlife Refuge you asked for my views on determining whether the alternative is a minor modification of the existing NC 12 easement and on the scale and nature of any mitigation that may be related to such a determination. You requested comments by July 31, 2013.

The proposed new easement requires 2.87 acres of easement west of existing NC 12 at the proposed bridge's northern terminus. The location and design was developed in consultation with my staff and it appears that the designed alignment minimizes impacts to the Refuge to the greatest extent possible while conforming to NCDOT's design standards. It could likely be determined a minor modification of the existing NC 12 easement if adequate mitigation can achieve no net loss of habitat quantity and quality. It appears to be necessary for safety reasons.

As you note, we met with Ms. Beth Smyre, NCDOT Project Planning Engineer, on June 25, 2013 at which time we discussed three conceptual mitigation measures. I appreciate that NCDOT would restore the approximately 18.68 acres of existing NC 12 easement that would no longer be needed for NC 12 once the new bridge is open for traffic. You describe the restoration as removing pavement and sandbags and conducting any additional grading work or planting of native species as directed by my office. This form of restoration on these acres would be appropriate mitigation. I also appreciate that NCDOT is exploring the nourishment of estuarine shoreline on the Refuge and my staff will call in to the July 25, 2013 at 1:00 pm scheduled meeting on this subject with the appropriate permitting agencies. This form of nourishment would be appropriate mitigation especially for wetland impacts. I'm less inclined to think that improvements to the former NCDOT wetland mitigation site on the west side of NC 12 would be appropriate. The Refuge is narrowing in width from loss on both shores. Blowing sand, and, possibly, over-wash sand are trapped in the wetland mitigation site changing it over time to an upland site, thus losing the wetland mitigation values. Unimpeded, the natural coastal process would bypass sand to the sound side shore and grow sound side shore line as the ocean shore line erodes - adding wetland acres to the Refuge. I would need more information to convince me that reworking an NC 12 relocation, former wetland mitigation site would lead to a sustainable, no net loss of quantity and quality of habitat.

In my judgment we need the sound side shore line to grow west to mitigate for loss on the ocean shore line. Thank you for your attention to my response. If you have questions about this response, please contact either Dennis Stewart, Refuge Wildlife Biologist (ext 231), Scott Lanier, Deputy Refuge Manager (ext 223), or me at (252) 473-1131.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael R. Bryant". The signature is fluid and cursive, with a large initial "M" and a stylized "B".

Michael R. Bryant, Project Leader

Cc: (electronic copy):
Victor Barbour, NCDOT Technical Services
Jerry Jennings, NCDOT – Division 1
Beth Smyre, Project Planning Engineer
Pete Jerome, FWS, Refuge Supervisor
David Viker, FWS, Regional Chief of Refuges – Southeast Region



Note: Attachments referenced in these minutes already included in this EA are not included with this summary.

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

MEMO TO: July 25, 2013 B-2500B Meeting Attendees

FROM: Beth Smyre, PE

DATE: July 31, 2013

SUBJECT: Meeting Summary- July 25, 2013 Meeting for Phase IIb of the Bonner Bridge-NC 12 Transportation Management Plan (TIP No. B-2500B)

**July 25, 2013 Mitigation Meeting:
Discussion and Conclusions**

A meeting was held at 1:00 pm on July 25 in the Roadway Design Conference Room at NCDOT Century Center for the subject project. The purpose of the meeting was to discuss potential mitigation options for the use of Pea Island National Wildlife Refuge land associated with the Bridge on New Location Alternative associated with Phase IIb of the Bonner Bridge Replacement Project (B-2500B). The following people attended:

Bill Biddlecome	USACE – Washington Field Office
Tracey Wheeler	USACE – Washington Field Office
David Wainwright	NC Division of Water Quality
Doug Huggett	NC Division of Coastal Management
Cathy Brittingham	NC Division of Coastal Management
Ron Lucas	FHWA
Kevin Hart (<i>via teleconference</i>)	NC Division of Marine Fisheries
Fritz Rohde (<i>via teleconference</i>)	National Marine Fisheries Service
Dennis Stewart (<i>via teleconference</i>)	USFWS – PINWR
Scott Lanier (<i>via teleconference</i>)	USFWS – PINWR
Thayer Broili (<i>via teleconference</i>)	NPS
Steve Thompson (<i>via teleconference</i>)	NPS
Beth Smyre	NCDOT – PDEA
Brian Yamamoto	NCDOT – PDEA
Bob Capehart	NCDOT – Division 1
Pablo Hernandez	NCDOT – Division 1
Leilani Paugh	NCDOT – NES
Kathy Herring	NCDOT – NES
Morgan Weatherford	NCDOT – NES
Chris Rivenbark	NCDOT – NES

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1000 BIRCH RIDGE DRIVE
RALEIGH NC 27610

Michael Valiquette
John Page
Elise Bielen

NCDOT- Geotechnical Engineering Unit
Parsons Brinckerhoff
Parsons Brinckerhoff

Beth Smyre opened the meeting by updating the group on the current progress of Phase IIb; she explained that the Phase IIb Environmental Assessment (EA) is currently underway and that two detailed study alternatives are under consideration: the Bridge within Existing NC 12 Easement Alternative and the Bridge on New Location Alternative (Figure 1). Beth stated that NCDOT is working towards a decision on which of these alternatives will be presented in the EA as the Preferred Alternative, and that each alternative has issues to be considered. Beth mentioned that the Bridge within Existing NC 12 Easement Alternative carries construction concerns, while the Bridge on New Location Alternative goes outside of the existing NC 12 easement in the Pea Island National Wildlife Refuge (Refuge). The USFWS-Refuge must determine whether the new easement can be considered a minor modification of the existing NC 12 easement. If the new easement is considered a minor modification, then NCDOT must provide the appropriate mitigation for the use of Refuge land. The USFWS-Refuge has indicated in a letter (attached) that the Bridge on New Location Alternative likely could be considered a minor modification of the existing easement. The remainder of the meeting focused primarily on the appropriate mitigation options for the use of Refuge lands.

Beth indicated that NCDOT and USFWS have agreed that the section of existing NC 12 easement that is bypassed by the Bridge on New Location Alternative would be restored and returned to the Refuge. The new easement is estimated to require approximately 2.87 acres of new Refuge lands; approximately 18.68 acres of the existing NC 12 easement would be returned to the Refuge. Restoration of the existing easement will serve as a major portion of the mitigation required for the new easement.

Beth informed the group that in previous mitigation discussions with the Refuge, an idea also had been proposed to “nourish” the estuarine (soundside) shoreline in order to build up and support the natural migration of Hatteras Island. Beth presented the current estimated fill, pile, and SAV impacts of the Bridge on New Location Alternative (see attached table) and noted that the wetland fill impacts shown in the table occur entirely at the southern terminus of the new bridge, outside of the Refuge. NC 12 would be entirely on a bridge within the new easement; therefore, any wetland impacts in the new easement would be due to the placement of bridge piles. Beth requested that the group discuss and give opinions on the possibility of soundside nourishment as mitigation for impacts to the refuge.

The group discussed the following agency concerns with the nourishment proposal:

- The National Marine Fisheries Service is concerned about impacts to SAV habitat and is against filling good SAV habitat with a nourishment program. Based on previous NCDOT surveys, the SAV habitat in near the Refuge terminus is patchy, and most of the SAV in the area is at the southern end of the Bridge on New Location Alternative. The water bottom in the area near the Refuge terminus is hard-packed sand, which is

not good SAV habitat. Staff at the National Marine Fisheries Service Beaufort lab may have expertise that could assist with this proposal.

- The USFWS-Refuge explained to the group that the islands are eroding from both the ocean and the soundside, and that the Refuge is running out of options for mitigating the impacts of NC 12. The nourishment idea was proposed as an innovative, experimental way to see if building up the land mass on the western shore could be encouraged. Offsite mitigation efforts do not help with the Refuge's issue of eroding land mass.
- If the CAMA impacts remain as shown in the draft impact table (.03 acres of CAMA marsh impacted by piles), then DCM would not require compensatory mitigation for that type of impact.
- Several NCDOT staff expressed concerns that a nourishment program of this nature would be costly and risky, considering the unknown benefits and potential impacts. Because the wetland impacts are relatively small in this area, it was suggested that the wetland acreage lost as a result of Phase IIb could be rolled into the planned mitigation for Phase I of the project.
- The USACE agreed that SAV habitat should not be filled for the sake of a soundside nourishment program, but that it could be done if the area is hard-packed and not good SAV habitat. The USACE questioned what, from a jurisdictional wetlands standpoint, is driving this discussion, considering the small number of wetlands impacts and the low level of mitigation required. There are two issues at hand: mitigation for use of the Refuge and mitigation for wetlands. The USACE noted that a permit would not be required for the pile impacts in Refuge wetlands, but only the fill impacts in Rodanthe.

There was some discussion of using fill from dredging at the emergency ferry terminal in Rodanthe for a potential soundside nourishment program. The use of jetting spoils associated with B-2500B bridge construction or ocean sand gathered during the planned short-term nourishment program at the Rodanthe 'S' Curves Hot Spot was also discussed.

In summary, the group felt that the soundside nourishment program could be considered as an option for disposal of jetting spoils, but only after further coordination with the appropriate agencies. However, there may not be enough of a benefit to consider it as a mitigation measure. The nourishment program idea does not necessarily need to be tied into the Phase IIb project, and the group agreed to put the proposal aside for now and focus instead on wetlands mitigation. Dennis Stewart urged NCDOT to think outside the box on means that might be used in the context of the Phase IIb project to facilitate the accretion on the sound side of Hatteras Island.

Note: NCDOT staff conducted an SAV survey of the Bridge on New Location Alternative alignment on July 30, 2013. The updated design of the alternative involved shifting the bridge west of its previously proposed location, farther into potential SAV habitat. Preliminary results of the survey indicate more SAV present within the corridor, with patchy to thick

July 25, 2013 B-2500B Meeting Summary

July 31, 2013

Page 4 of 4

coverage (greater than 60% coverage, on average) noted throughout the alignment. NCDOT will conduct additional surveys of the corridor, and the results of the surveys will be discussed in the upcoming B-2500B EA.

If anyone has any additions or corrections to this summary, please contact John Page at PB at (919) 836-4076 or by e-mail at pagej@pbworld.com.

Attachments

Rodanthe- Bridge on New Location Alternative

New Easement Needed	Easement to be Returned
2.87 acres	18.68 acres

Fill Impacts	Acres
Wetland maritime grassland	1.29
Wetland maritime shrub/grassland	0.11
CAMA Wetlands	0
Total	1.40
Pile Impacts	
Wetland maritime shrub thicket	0.04
Wetland maritime shrub/grassland	0.00
Wetland salt grassland	0.01
Wetland salt shrub/grassland	0.00
CAMA marsh	0.03
Total	.08
Open Water Shading SAV Impact*	8.56
Open Water Pile SAV Impact*	1.76

*Total open water impact multiplied by 0.63

Appendix B

Public Involvement Materials and Correspondence

B. Public Involvement Materials and Correspondence

NOVEMBER 2011 NEWSLETTER	B-2
DECEMBER 2011 AND JANUARY 2012 PUBLIC WORKSHOP HANDOUT.....	B-3
DECEMBER 2011 AND JANUARY 2012 PUBLIC WORKSHOP DISPLAY BOARDS	B-12
DECEMBER 2011 AND JANUARY 2012 PUBLIC WORKSHOP PRESENTATION SLIDE SHOW	B-15
DECEMBER 2011 AND JANUARY 2012 PUBLIC SCOPING COMMENTS (ALPHABETICALLY BY LAST NAME)	B-24
SOUTHERN ENVIRONMENTAL LAW CENTER COMMENT LETTER	B-79
FEBRUARY 2013 NEWSLETTER.....	B-92

Bonner Bridge Update

Date County, North Carolina

TIP Project No. B-2500

NCDOT STARTS PHASE II OF BONNER BRIDGE REPLACEMENT PROJECT

Hurricane Irene hit the North Carolina coast on Aug. 27 and breached NC 12 in two locations – northern Rodanthe and within the Pea Island National Wildlife Refuge. The North Carolina Department of Transportation (NCDOT) has completed temporary repairs at the two breach sites and reopened NC 12 to traffic on Oct. 10. With traffic restored to the area, NCDOT has started work on long-term solutions for these two sites, which are considered Phase II of the Bonner Bridge Replacement Project. Before any decisions are made on long-term fixes, NCDOT wants to hear what the citizens think about the design options under consideration.

PUBLIC WORKSHOPS SCHEDULED

Public workshops are scheduled for Dec. 5 in Manteo and Dec. 6 in Rodanthe. These workshops will provide the public with an opportunity to learn more about the design options under consideration for each breach site. **The same information will be available at both workshops.**

The workshops will be informal, with the public welcome to drop in any time between 4 p.m. and 7 p.m. to view displays of the design options. Study team members will be available to explain them and answer any questions. The public is urged to share their ideas, thoughts, and suggestions with study team members.

If you cannot attend a workshop, you may write the study team or call the toll-free project information line with your comments or questions. See the second page of this newsletter for the names and numbers of the study team contacts.

NCDOT will provide auxiliary aids and services under the Americans with Disabilities Act for disabled persons who wish to participate in these workshops. Anyone requiring special services should contact the study team.

LONG-TERM OPTIONS UNDER CONSIDERATION FOR BOTH BREACH SITES

The design options studied as part of the Bonner Bridge Replacement Project represent the range of what could be built in future phases along NC 12 between Oregon Inlet and Rodanthe. Using this information, NCDOT has established several possible options for fixing the two breaches for the long term.

For the Pea Island breach, these options include:

- Beach renourishment;
- Building a bridge within the existing NC 12 easement; and
- Building a bridge or road on a new location to the west of the existing road.

For the Rodanthe breach, these options include:

- Beach renourishment;
- Building a bridge within the existing NC 12; and
- Building a bridge or road on a new location to the west of the existing road, possibly extending into Pamlico Sound.

Continued on next page

Bonner Bridge Update

November 2011

Long-Term Options Under Consideration for Both Breach Sites (continued from page 1)

After analyzing the changes to existing conditions in the project area as a result of Hurricane Irene, NCDOT will re-evaluate the impacts of these design options to determine the best long-term solutions for both breach sites. Comments received from state and federal environmental resource and regulatory agencies, as well as from the public, will also help guide the development of the Phase II designs.

BONNER BRIDGE REPLACEMENT STATUS

In the December 2010 Record of Decision (ROD) for the Bonner Bridge Replacement Project, NCDOT agreed to construct a new bridge over Oregon Inlet that is parallel to, and just west of, the current Bonner Bridge as Phase I of the project. The new bridge over Oregon Inlet is currently in the design phase, with construction scheduled to begin in January 2013. The new bridge is set to open to traffic in spring 2015.

For more information about the damage to NC 12 from Hurricane Irene and NCDOT's efforts to temporarily fix it, visit www.ncdot.org/travel/nc12recovery, follow our NC 12 Twitter feed at <http://twitter.com/NC12DOT>, or go to our Repairing NC 12 blog at <http://nc12repairs.blogspot.com/>. You may also visit the Bonner Bridge Replacement Project web page at www.ncdot.org/projects/bonnerbridgerepairs.



North Carolina Department of Transportation
Project Development and Environmental Analysis Unit
Attention: Beth Smyre
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Feel Free to Contact the Study Team

If you have any questions or wish to be added to our newsletter mailing list, please call **Bobby Norburn** or **John Page** on our **Toll-Free Project Information Line, 1-866-803-0529**. You may also write the study team at:

Ms. Beth Smyre
NC Department of Transportation
Project Development and
Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
bsmyre@ncdot.gov

– or –

Mr. Bobby Norburn
Parsons Brinckerhoff
434 Fayetteville Street
Suite 1500
Raleigh, NC 27601
norburn@pbworld.com



WELCOME to the Bonner Bridge – Phase II Public Workshops

Monday, December 5, 2011

4:00 p.m. to 7:00 p.m.

Dare County Administration Building
954 Marshall Collins Drive, Manteo

Tuesday, December 6, 2011

4:00 p.m. to 7:00 p.m.

Rodanthe-Waves-Salvo Community Center
23186 Myrna Peters Road, Rodanthe

Thursday, January 5, 2012

5:00 p.m. to 7:00 p.m.

Ocracoke Community Center
1009 Irvin Garrish Highway, Ocracoke

500 copies of this handout were reproduced at a cost of \$2.53 per copy

PURPOSE OF PUBLIC WORKSHOP

Today's workshop is an important step in the North Carolina Department of Transportation's (NCDOT) procedure for making you, the public, a part of the project development process. The purpose of the workshop is to obtain public input on Phase II of the Bonner Bridge Replacement project. NCDOT is holding three workshops, but the same information will be available at all of the workshops.

Hurricane Irene hit the North Carolina coast on August 27, 2011 and breached NC 12 in two locations – northern Rodanthe and within the Pea Island National Wildlife Refuge. NCDOT completed temporary repairs at the two breach sites and reopened NC 12 to traffic on October 10, 2011. With traffic restored to the area, NCDOT has started work on long-term solutions for these two sites, which combined are considered Phase II of the Bonner Bridge Replacement Project. However, before any decisions are made on long-term fixes, NCDOT wants to hear what you think about the design options under consideration.

Today's workshop is intended to provide you with an opportunity to learn more about the design options under consideration for each breach site. The workshop will be informal, with the public welcome to drop in at any time during the scheduled hours to view displays of the design options. Study team members will be available to explain the design options and answer any questions. You are urged to share your ideas, thoughts, and suggestions with study team members at today's workshop. You may also make comments or ask questions by filling out the comment sheet attached to this handout and leaving it in the comment box, mailing it by January 20, 2012 to the study team at one of the addresses shown below, or calling the toll-free project information line (1-866-803-0529).

Ms. Beth Smyre
NCDOT – Project Development
and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
E-mail: bsmyre@ncdot.gov

Mr. Bobby Norburn
Parsons Brinckerhoff
434 Fayetteville Street
Suite 1500
Raleigh, NC 27601
E-mail: norburn@pbworld.com

After the comment period ends on January 20, 2012, all comments will be reviewed by the NCDOT Bonner Bridge project team. The information you provide will help NCDOT develop the project by including input from all stakeholders prior to project decisions being made. NCDOT considers a number of factors, including the public's comments, in making decisions.

PROJECT DESCRIPTION

NCDOT proposes to construct a bridge to replace the Herbert C. Bonner Bridge (Bonner Bridge) in Dare County, demolish and remove existing Bonner Bridge, and improve NC 12 between the community of Rodanthe and Oregon Inlet.

The Federal Highway Administration (FHWA) and NCDOT issued the decision document for the Bonner Bridge Replacement Project, which is called a Record of Decision (ROD), on December 20, 2010. It selected the Parallel Bridge Corridor with NC 12 Transportation Management Plan as the alternative for the project. This alternative includes:

- Construction of a new parallel bridge ("short bridge") across Oregon Inlet as soon as possible (Phase I of the project); and
- The implementation of a coastal monitoring program on Hatteras Island between Oregon Inlet and Rodanthe to determine when and what to build for future phases of the project.

As a result of the damage caused by Hurricane Irene, Phase II of the project will develop long-term solutions for the two sections of NC 12 breached during the storm. The coastal monitoring program will continue during the planning and implementation of Phase II to determine the areas that later phases of the project should address.

The Bonner Bridge Replacement Project study area, along with the location of Phases I and II of the project, is shown on Figure 1 on the next page.

SUMMARY OF HURRICANE IRENE REPAIRS

NCDOT completed temporary repairs to the damage caused by Hurricane Irene and reopened NC 12 to traffic on October 10 – just seven weeks after the storm hit. Six miles south of Oregon Inlet within the Pea Island National Wildlife Refuge, crews installed a temporary metal bridge to span the largest breach on the Refuge, while filling in the three smaller breaches with sand. The bridge is a two-lane Mabey Universal Bridge manufactured with a modular design that allowed it to be assembled quickly. Although the bridge is a temporary solution and will require frequent maintenance, its strength and durability will allow it to remain in place for many years to keep traffic flowing.

In Rodanthe, crews filled in the breach with sand and used sandbags to stabilize sections of the roadway. The dunes on the east side of the roadway that were damaged were repaired.

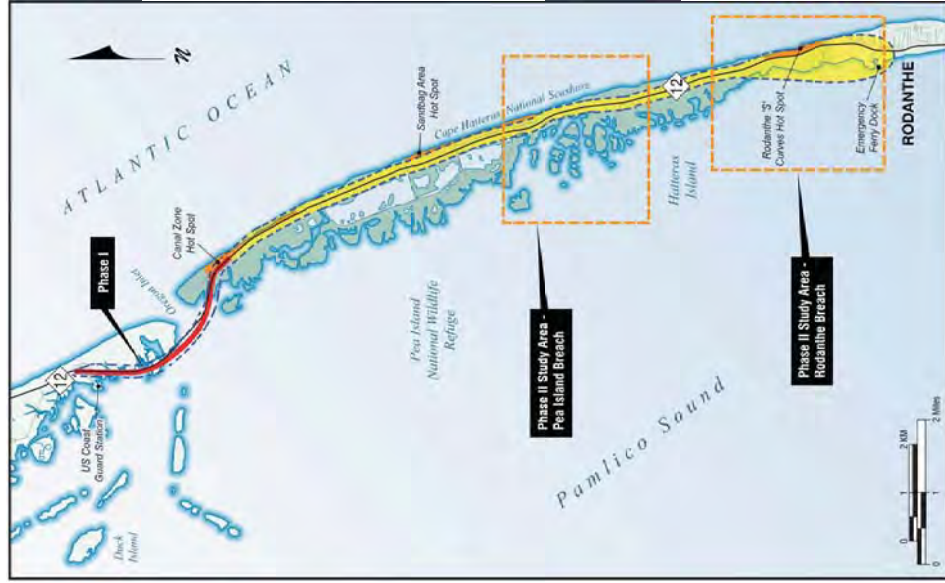


Figure 1

WHAT ARE THE ALTERNATIVES UNDER CONSIDERATION?

Under the Parallel Bridge Corridor with NC 12 Transportation Management Plan, the options that were studied for the section of NC 12 between Oregon Inlet and Rodanthe may be used in future sections of the project. These options were presented to the public as part of the Parallel Bridge Corridor at public hearings in November 2005, March 2007, and July 2010. Those options were called:

- Nourishment Alternative – NC 12 would remain in its current location, and beach nourishment (combined with dune enhancement) would be used to maintain an adequate protective beach and dune system. Nourishment would occur in four locations, likely repeated at four-year intervals.
- Road North/Bridge South Alternative – NC 12 would be relocated as a road west of the forecasted 2060 high erosion shoreline in the north end of the Refuge. At the south end of the Refuge and in Rodanthe, NC 12 would be placed on a bridge west of Hatteras Island.
- All Bridge Alternative – NC 12 would be relocated onto a bridge west of the forecasted 2060 high erosion shoreline in the north end of the Refuge. At the south end of the Refuge and in Rodanthe, NC 12 would be placed on a bridge west of Hatteras Island.
- Phased Approach Alternatives – NC 12 would be elevated in its current easement onto a series of bridges within the Refuge and in Rodanthe. There are two options for the Phased Approach in Rodanthe. The Phased Approach/Rodanthe Nourishment Alternative includes a bridge that ends just south of the Refuge border and the use of beach nourishment to stabilize NC 12 in Rodanthe. The Phased Approach/Rodanthe Bridge Alternative includes a bridge in Rodanthe that ends just north of the Rodanthe Historic District (no beach nourishment).

Based on the alternatives above, NCDOT has proposed several possible options for fixing the two breaches for the long-term.

For the Pea Island breach, these options include:

- Beach nourishment;
- Building a bridge within the existing NC 12 easement;
- Building a bridge on a new location to the west of the existing road; and
- Building a road on a new location to the west of the existing road.

For the Rodanthe breach, these options include:

- Beach nourishment;
- Building a bridge within the existing NC 12 easement;
- Building a bridge within the existing NC 12 easement and beach nourishment; and
- Building a bridge on a new location in Pamlico Sound.

These options are shown on Figures 2 and 3 on the following pages and in detail on the maps available at tonight's meeting.



Figure 2



Figure 3

After analyzing the changes to existing conditions in the project area as a result of Hurricane Irene, NCDOT will re-evaluate the impacts of these design options to determine the best long-term solutions for both breach sites. Comments received from state and federal environmental resource and regulatory agencies, as well as from the public, will be used to determine which options should be studied further and ultimately which options are selected for each site.

IMPACT ANALYSIS

Tables 1 and 2 on the following pages illustrate the potential impacts of each option for the two breach sites. The information presented here is based on studies conducted for the project prior to Hurricane Irene; NCDOT will update this impact information to account for the current environmental conditions for those options that are chosen for further study. Only the most current information available will be used to select the final option for each site.

Included in the analysis of each site in Tables 1 and 2 is a list of potential concerns with each option that could prohibit the option from being studied further. These concerns are based on comments to NCDOT made by either the federal and state agencies associated with the project, or by coastal engineers and scientists that NCDOT has consulted with during the life of the project.

PROJECT COSTS

The contract for the final design and construction of the new Oregon Inlet bridge (Phase I of the project) was awarded in July 2011 at a cost of \$215.8 million.

The project's Record of Decision (ROD) presented a range of costs for different options for maintaining NC 12 between Oregon Inlet and Rodanthe. At that time, the costs of the Parallel Bridge Corridor alternatives (not including the cost of the new Oregon Inlet bridge) were as shown in Table 3 on page 11.

Long-term bridging options for the Pea Island Breach site are estimated to cost between \$97 million and \$147 million (2006 dollars); these costs represent only the initial construction cost of a new bridge.

Long-term bridging options that span the Rodanthe Breach site only are estimated to cost between \$114 million and \$240 million (2006 dollars); these costs represent only the initial construction cost of a new bridge.

Because the beach nourishment and road relocation options extend beyond the immediate breach areas, cost estimates for those options are not immediately available.

Updated construction cost estimates for the two breach sites will be prepared for the long-term options that are chosen for further detailed study.

Table 1. Phase II Impacts – Pea Island Breach Area

	Beach Nourishment	Bridge on New Location	Road on New Location	Bridge within Existing NC 12 Easement
Community and Visual Impacts				
Visual Impact	None	Sizeable visual intrusion into the landscape of the Refuge.	None	Sizeable visual intrusion into the landscape of the Refuge.
Anticipated Need for Refuge Compatibility Determination	Compatibility Determination expected (for all alternatives that use Refuge lands outside the existing NC 12 easement).	Compatibility Determination expected (for all alternatives that use Refuge lands outside the existing NC 12 easement).	Compatibility Determination expected (for all alternatives that use Refuge lands outside the existing NC 12 easement).	No Compatibility Determination required.
Cultural Resource Impacts				
Pea Island National Wildlife Refuge (historic site)	No Adverse Effect.	Adverse Effect because the relocation of NC 12 would intrude into the existing dikes and ponds, and because of the elevation of the bridge as it passes through the Refuge.	Adverse Effect because the relocation of NC 12 would intrude into the existing dikes and ponds.	Adverse Effect because of the elevation of the bridge as it passes through the Refuge.
Parks and Recreation Impacts				
General Refuge Access	Little change in access. Refuge facilities protected from future beach erosion.	Direct access to some Refuge facilities lost.	Paved road access maintained but with some changes.	Direct access to some Refuge facilities lost.
Coastal Conditions Impacts				
Potential for Breach and Need for Closing Breach to Maintain NC 12	If additional breach occurs, breach would need to be closed.	Potential (and current) breach areas bridged. No expected need to close future breaches.	If additional breach occurs, breach would need to be closed.	Potential (and current) breach areas bridged. No expected need to close future breaches.
Natural Resources Impacts				
Biotic Communities Fill and Pile Impacts, acres (hectares)				
Wetlands – • Uplands – Natural and Man Dominated	0.8 (0.3)	0.1 (0.1)	3.0 (1.2)	0.1 (0.1)
• Aquatic Bottom	2.7 (1.1)	1.6 (0.6)	10.5 (4.2)	1.2 (0.5)
Total	0.0 (0.0)	0.0 (0.0)	0.2 (0.1)	0.0 (0.0)
Wetlands shaded, acres (hectares)	3.5 (1.4)	1.7 (0.7)	13.7 (5.5)	1.3 (0.5)
Protected Species Impacts	0.0 (0.0)	1.1 (0.4)	0.0 (0.0)	0.2 (0.1)
Potential Constraints	Likely disturbance to piping plover and sea turtles nesting on beach; not likely to adversely affect in ocean. Beach nourishment could affect seabird ananarth habitat.	None likely.	None likely.	None likely.
	Not likely to be found compatible with Refuge's mission and purpose; sand quality and sand availability for a long-term solution is a concern; at least partial filling of breach would be required.	Not likely to be found compatible with Refuge's mission and purpose.	Not likely to be found compatible with Refuge's mission and purpose; at least partial filling of breach would be required.	None

Table 2. Phase II Impacts – Rodanthe Area

	Beach Nourishment	Bridge on New Location	Bridge within Existing NC 12 Easement	Bridge within Existing NC 12 Beach Nourishment
Community and Visual Impacts				
Residential Relocations	0	2	6	0
Business Relocations	0	5	7	0
Cemetery Impacts	None	Proposed right-of-way would cross cemetery, but no known gravesites would be affected.	None	None
Anticipated Need for Refuge Compatibility Determination	Compatibility Determination expected (for all alternatives that use Refuge lands outside the existing NC 12 easement).	Compatibility Determination expected (for all alternatives that use Refuge lands outside the existing NC 12 easement).	No Compatibility Determination required.	Compatibility Determination expected (for all alternatives that use Refuge lands outside the existing NC 12 easement).
Rodanthe Community Cohesion and Accessibility	No impact.	No impact.	0.8 mile (1.3 kilometers) of bridge would bisect community and make vehicle access more circuitous.	0.3 mile (0.5 kilometer) of bridge would bisect community; access more circuitous
Noise Impact (estimated number of sensitive receptors affected)	2 residential receptors exceeding FHWA NAC	3 residential receptors exceeding FHWA NAC, and 3 residential receptors (including 1 of the 3 exceeding FHWA NAC) and 1 business receptor with substantial noise increases	3 residential receptors exceeding FHWA NAC	2 residential receptors exceeding FHWA NAC
Visual Impact	None	Panoramic views of Pamlico Sound from homes along shoreline in Rodanthe would be affected.	Sizeable visual intrusion into the landscape of the Refuge; views in Rodanthe near the Refuge affected.	Sizeable visual intrusion into the landscape of the Refuge; views in Rodanthe near the Refuge affected.
Cultural Resource Impacts				
Rodanthe Historic District and Chincocomco Life Saving Station	No Effect.	No Adverse Effect; the alternative ends outside the district, so cultural resources would not be directly affected; alternatives would be within view of resources, but view also currently includes modern commercial and residential structures.	No Adverse Effect; the alternative ends outside the district, so cultural resources would not be directly affected; alternatives would be within view of resources, but view also currently includes modern commercial and residential structures.	No Effect
Pea Island National Wildlife Refuge	No Adverse Effect.	Adverse Effect because the alternatives would leave the existing NC 12 easement, and because of the elevation of the bridge as it passes through the Refuge.	Adverse Effect because of the elevation of the bridge as it passes through the Refuge.	Adverse Effect because of the elevation of the bridge as it passes through the Refuge.

Table 2 (concluded). Phase II Impacts – Rodanthe Area

	Beach Nourishment	Bridge on New Location	Bridge within Existing NC 12 Easement	Bridge within Existing NC 12 Easement and Beach Nourishment
Parks and Recreation Impacts				
General Refuge Access	Little change in access. Refuge facilities protected from future beach erosion.	Bridge through Pamlico Sound in southern portion of Refuge would reduce access in that area.	Bridge in existing NC 12 easement in southern portion of Refuge would reduce access in that area.	Bridge in existing NC 12 easement in southern portion of Refuge would reduce access in that area.
Length of NC 12 Outside the Existing Easement within the Refuge	None.	0.7 mile (1.1 kilometers)	None.	None.
Coastal Conditions Impacts				
Potential for Breach and Need for Closing Breach to Maintain NC 12	Nourishment would reduce the risk of a breach. Any breaches through the Refuge would need to be closed.	Potential breach area north of Rodanthe bridge. No expected need to close future breaches.	Potential breach area north of Rodanthe bridge. No expected need to close future breaches.	Potential breach areas bridged. Phases II and III may need to be accelerated, if a breach occurred before all four phases are completed.
Natural Resources Impacts				
Biotic Communities Fill and Pile Impacts, acres (hectares)				
• Submerged Aquatic Vegetation (SAV)	0.0 (0.0)	0.1 (0.1)	0.0 (0.0)	0.0 (0.0)
• Wetlands	0.0 (0.0)	2.0 (0.8)	0.0 (0.0)	0.0 (0.0)
• Uplands – Natural and Man Dominated	11.2 (4.5)	5.6 (2.2)	7.2 (2.9)	2.8 (1.1)
Total	11.2 (4.5)	7.7 (3.1)	7.2 (2.9)	2.8 (1.1)
Wetlands and SAV Shaded, acres (hectares)				
• Wetlands	0.0 (0.0)	1.5 (0.6)	0.0 (0.0)	0.0 (0.0)
• SAV	0.0 (0.0)	5.3 (2.1)	0.0 (0.0)	0.0 (0.0)
Protected Species Adversely Affected	Likely disturbance to piping plover and sea turtles nesting on beach; not likely to adversely affect in ocean. Beach nourishment could affect seabeach ananarth habitat.	None likely.	None likely.	Likely disturbance to piping plover and sea turtles nesting on beach; not likely to adversely affect in ocean. Beach nourishment could affect seabeach ananarth habitat.
Potential Constraints	Not likely to be found compatible with Refuge's mission and purpose; sand quality and sand availability for a long-term solution in an area with a rapid erosion rate is a concern; would require extensive dredging to acquire the sand needed; would have to be repeated frequently.	Not likely to be found compatible with Refuge's mission and purpose.	Rapid erosion rate in this area may cause portions of the structure to be in the surf zone or offshore in the future.	Some concerns as with beach nourishment option; in addition, rapid erosion rate in this area may cause portions of the structure to be in the surf zone or offshore in the future.

Table 3. Total Highway Costs through 2060*
(Costs for Alternatives to Maintain NC 12 between Oregon Inlet and Rodanthe, including the Two Breach Sites)

	Low	High
Beach Nourishment	\$407,745,000	\$657,260,000
Road North/Bridge South	\$330,958,000	\$412,958,000
All Bridge	\$791,108,000	\$1,063,108,000
Phased Approach/Rodanthe Nourishment	\$816,068,000	\$1,136,320,000
Phased Approach/Rodanthe Bridge	\$797,459,000	\$1,076,113,000

* All costs are in 2006 dollars. These estimates include the costs of project construction, maintenance, and mitigation.

RIGHT-OF-WAY PROCEDURES

Construction of Phase I (the new Oregon Inlet bridge) of the project will not require the purchase of land from private property owners. However, Phase II of the project within Rodanthe could require the purchase of private property and relocation of homes and businesses. Specific acquisitions will depend on the alternative selected.

After the final design of any future phase(s) is complete, the proposed right-of-way limits will be staked on the ground. If you are an affected property owner, a Right-of-Way Agent will contact you and arrange a meeting. The agent will explain the plans and advise you as to how the project will affect you. The agent will inform you of your rights as a property owner. If permanent right-of-way is required, professionals who are familiar with real estate values will evaluate or appraise your property. The evaluations or appraisals will be reviewed for completeness and accuracy; then, the Right-of-Way Agent will make a written offer to you. The current market value of the property at its highest and best use when appraised will be offered as compensation. The Department of Transportation must:

1. Treat all owners and tenants equally.
2. Fully explain the owner's rights.
3. Pay just compensation in exchange for property rights.
4. Furnish relocation advisory assistance.

Right-of-Way Agents are available at tonight's meeting to answer your questions.

RELOCATION ASSISTANCE

If you are a relocatee, that is, if your residence or business is to be acquired as part of the project, additional assistance in the form of advice and compensation is available. You will be provided with assistance on locations of comparable housing and/or commercial establishments, moving procedures, and moving aid. Moving expenses may be paid for you. Additional monetary compensation is available to help homeowners cope with mortgage increases, increased value of comparable homes, closing costs, etc. A similar program is available to assist business owners. The Right-of-Way Agent can explain this assistance in greater detail.

WHAT'S NEXT FOR PHASE II?

After reviewing comments from citizens as well as input from a panel of coastal engineers and scientists, NCDOT and FHWA will meet with the project's "merger team," which includes members of federal and state agencies with interests in the project. That group is scheduled to meet in December and determine what options will be studied further for each site.

The merger team will meet again in early 2012 to determine the final option for each site. NCDOT and FHWA will then complete any required environmental documentation and apply for the appropriate environmental permits.

NCDOT expects to issue a construction contract for the Pea Island Breach site in August 2012, and a construction contract for the Rodanthe Breach site in December 2012.

In the meantime, NCDOT will continue the current coastal monitoring program of the entire project area to determine when future phases of the project should be implemented.

STATUS OF PHASE I (OREGON INLET BRIDGE)

A design-build contract for Phase I (the new Oregon Inlet bridge) was awarded in July. The contractor is currently working on the final design of the new bridge. Once all of the necessary environmental permits have been received, the contractor will start construction of the new bridge; construction is scheduled to start in January 2013. The new bridge is expected to be opened in the Spring of 2015, with all remaining work (including the demolition of the current bridge) to be completed in 2016. More information about Phase I of the project is available at tonight's meeting, and additional workshops will be scheduled in 2012 so that the contractor can answer your questions about the construction of the new bridge.

ADDITIONAL INFORMATION

As mentioned above, please leave comments in the comment box at the hearing or send them to Ms. Beth Smyre at the address on page 2.

For more information on NC 12 and the Bonner Bridge Replacement Project:

- Visit www.ncdot.org/travel/nc12recovery
- Follow our NC 12 Twitter feed at http://twitter.com/NCDOT_NC12
- Go to our Repairing NC 12 blog at <http://nc12repairs.blogspot.com/>
- Visit www.ncdot.org/projects/bonnerbridgerepairs
- Or call John Page or Bobby Norburn at the Project Hotline (toll-free): 1-866-803-0529.

Title VI Public Involvement Form

Completing this form is completely voluntary. You are not required to provide the information requested in order to participate in this meeting.

Meeting Type: Public Workshops Location: Mantee/Rodanthe/Ocracoke	Date: 12/05/11, 12/06/11, 01/05/12
TIP No.: B-2500 Project Description: Bonner Bridge Replacement Project	

In accordance with Title VI of the Civil Rights Act of 1964 and other civil rights provisions of Federal statutory law, the North Carolina Department of Transportation (NCDOT) assures that no person(s) affected by its programs, policies, or activities, shall be excluded from participation in, denied the benefits of, or subjected to discrimination on the grounds of race, color, national origin, disability, age, income, or gender.

This form helps the State DOT meet its statutory obligations for data collection and public involvement under Title VI and NEPA. Please place completed forms in the designated box on the registration table or mail it to the NCDOT Office of Civil Rights, Title VI Section at 1511 Mail Service Center, Raleigh, NC 27699-1511.

Completed forms will be held on file at the NCDOT as part of the public record.

Zip Code: _____ Street Name: _____ (i.e. Main Street)	Gender: ☐ Male ☐ Female Age: ☐ Less than 18 ☐ 45-64 ☐ 18-29 ☐ 65 and older ☐ 30-44 Disabled: ☐ Yes ☐ No
Total Household Income: ☐ Less than \$12,000 ☐ \$47,000 – \$69,999 ☐ \$12,000 – \$19,999 ☐ \$70,000 – \$93,999 ☐ \$20,000 – \$30,999 ☐ \$94,000 – \$117,999 ☐ \$31,000 – \$46,999 ☐ \$118,000 or greater	
Race/Ethnicity: ☐ White ☐ Black/African American ☐ Asian ☐ American Indian/Alaskan Native ☐ Native Hawaiian/Pacific Islander ☐ Hispanic/Latino ☐ Other (please specify): _____	National Origin: (if born outside the U.S.) ☐ Mexican ☐ Central American: _____ ☐ South American: _____ ☐ Puerto Rican ☐ Chinese ☐ Vietnamese ☐ Korean ☐ Other (please specify): _____

For further information regarding Title VI or this process, please contact the NCDOT Title VI Section at (919) 508-1808 or toll free at 1-800-522-0453, or by email at sllpscomb@ncdot.gov.

Thank you for your cooperation!



**NCDOT Office of Civil Rights
 Title VI Section
 1511 Mail Service Center
 Raleigh, NC 27699-1511**

COMMENT SHEET

**Bonner Bridge Replacement Project
Public Workshops – Phase II
TIP No. B-2500
Dare County**

NAME:

ADDRESS:

E-MAIL:

COMMENTS AND/OR QUESTIONS:

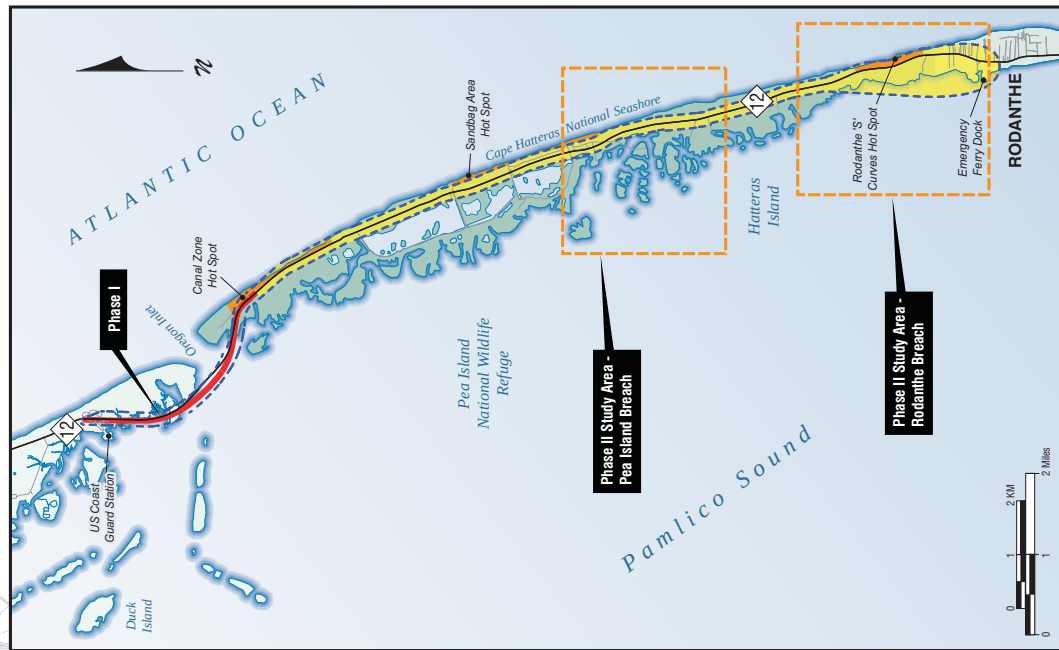
Comments may be mailed by January 20, 2012 to:

Ms. Beth Smyre, PE
NCDOT – Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Email: bsmyre@ncdot.gov

**Ms. Beth Smyre, PE
NCDOT - PDEA
1548 Mail Service Center
Raleigh, NC 27699-1548**



Phase II Study Areas Bonner Bridge Replacement Project



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
REPLACEMENT OF THE HERBERT C. BONNER BRIDGE (BRIDGE NO. 11) ON NC 12 OVER OREGON INLET

Welcome

Bonner Bridge Phase II Public Workshops

December 5 and 6, 2011



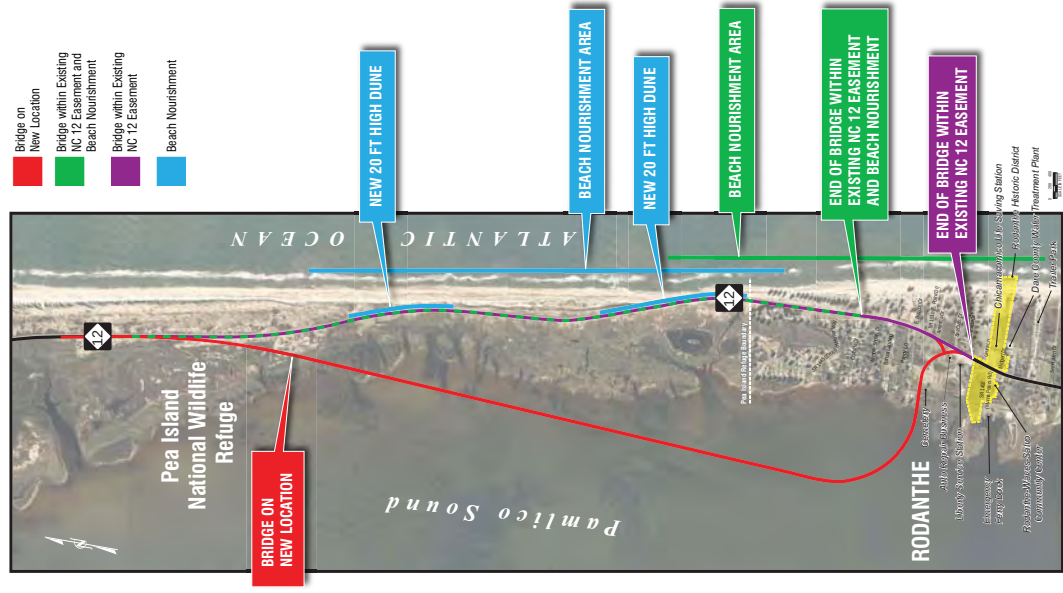
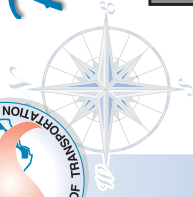
Phase II Study Areas

Pea Island Breach



Phase II Study Areas

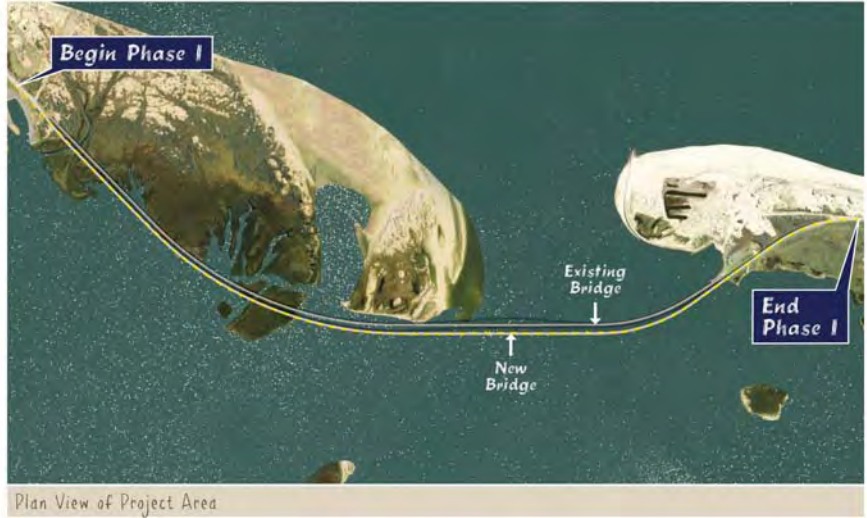
Rodanthe Breach





Phase I (New Oregon Inlet Bridge)

Photo Simulations



TIP Project No. B-2500



NCDOT Projects on North Carolina's Outer Banks



NCDOT Projects

- Bonner Bridge Replacement Project (STIP No. B-2500)
- Buxton to Avon Planning and Environmental Studies for Maintaining Roadway (STIP No. R-4070B)
- Ocracoke Island Hot Spot Interim Improvements (STIP No. R-3116A)
- Hatteras Village Hot Spot Interim Improvements (STIP No. R-3116B)

TIP Project No. B-2500



BONNER BRIDGE

TIP B-2500

Public Workshop Schedule

Dec 5th in Manteo

Dare Co. Administration Building

Public Workshop – 4 p.m. to 7 p.m.

Dec 6th in Rodanthe

Rodanthe-Waves-Salvo Community Center

Public Workshop – 4 p.m. to 7 p.m.

Jan 5th in Ocracoke

Ocracoke Community Center

Public Workshop – 5 p.m. to 7 p.m.



BONNER BRIDGE

TIP B-2500

WELCOME!



Public Workshops:

December 5 and 6, 2011 and January 5, 2012





BONNER BRIDGE

TIP B-2500

Public Workshops



- Informal – Speak one-on-one with project team members
- Consists of several “Stations”
- Opportunity to provide written comments



BONNER BRIDGE

TIP B-2500

Public Workshop Goals

1

Introduce Phase II of the Bonner Bridge Replacement Project

2

Discuss the Pea Island and Rodanthe design options

3

Hear your comments and concerns





BONNER BRIDGE

TIP B-2500

Pea Island Repairs

- Installed temporary bridge at breach site
- Installed sheet piles and sand bags to protect ends of bridge and roadway
- Sand used to fill smaller breaches



BONNER BRIDGE

TIP B-2500

- Parallel Bridge Corridor with NC 12 Transportation Management Plan
 - Phase I: Construction of new Bonner Bridge over Oregon Inlet
 - Coastal monitoring program
 - Phase II: Long-term solutions for both the Pea Island and Rodanthe breach sites





BONNER BRIDGE

TIP B-2500

Alternatives: Pea Island

- Beach nourishment
- Bridge on new location
- Bridge within easement
- Road on new location



BONNER BRIDGE

TIP B-2500

Rodanthe Repairs

- Used sand to fill in breaches
- Stockpiled sand for dune reconstruction
- Installed sand bags along the S-curves





BONNER BRIDGE

TIP B-2500

Impact Analysis

- Natural environment
 - Wetlands, endangered species, habitat
- Human environment
 - Property relocations, community services
- Coastal conditions
 - Shoreline position, potential for another breach
- Compatibility with federal lands
- Funding



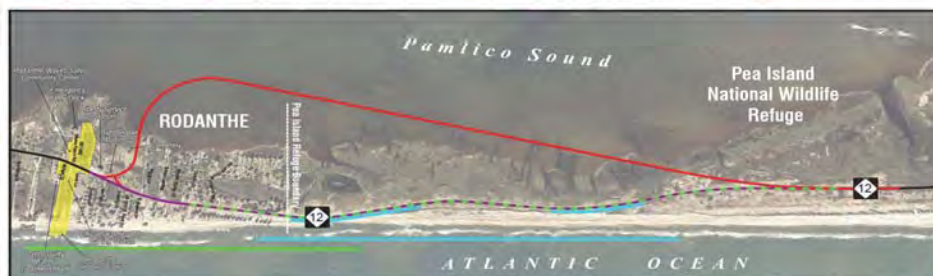
BONNER BRIDGE

TIP B-2500

Alternatives: Rodanthe

- Beach nourishment
- Bridge within easement
- Bridge on new location

Bridge on New Location Bridge within Existing NC 12 Easement and Beach Nourishment Bridge within Existing NC 12 Easement Beach Nourishment





BONNER BRIDGE

TIP B-2500

Next Steps

1. Comments reviewed and addressed
2. State and federal agencies meet to discuss design options
3. NCDOT will complete any further studies and acquire permits
4. Contract awarded for Pea Island – August 2012
5. Contract awarded for Rodanthe – December 2012



BONNER BRIDGE

TIP B-2500

Right-of-Way Acquisition

- No private property acquired for Phase I
- Phase II could require property acquisition and the relocation of homes and businesses in Rodanthe
- See the right-of-way agent here tonight if you have questions





For More Information on NC 12:

Twitter: http://twitter.com/NCDOT_NC12

Bonner Bridge Replacement Project web page:
www.ncdot.org/projects/bonnerbridgerepairs



Status of Phase I

- Replacement of Bonner Bridge
- Currently in the design stage
- Start of Construction: January 2013
- Open to traffic: Spring 2015





BONNER BRIDGE

TIP B-2500

THANK YOU!



BONNER BRIDGE

TIP B-2500



**Drop your
comments in
the box**



**E-mail your
comments**



**Mail your
comments**

Comments are being accepted until **January 20, 2012**; however, NCDOT encourages citizens to submit their comments as soon as possible





BONNER BRIDGE

TIP B-2500

THIS
PRESENTATION
WILL REPEAT IN
2 MINUTES



BONNER BRIDGE

TIP B-2500

Please Proceed
to the Main Area



Smyre, Elizabeth A

From: Tom Bartley <tom@bartleycorp.com>
Sent: Friday, December 09, 2011 5:17 PM
To: Smyre, Elizabeth A
Subject: Southgate Dr Rodanthe

Dear Ms. Smyre,

My wife and I own an oceanfront home at 23210 Southgate Dr. Rodanthe. Southgate Dr is a non county maintained "street" between East Corbina Dr and East Beacon Drive.

After studying the two bridge alternatives within the right of way, it is not clear to me how our property (plus our neighbors) would be accessed. If the bridge were in fact to be 25 ft in elevation, I can't imagine how a transition could be accomplished. If you could please write back addressing this issue, I would be very grateful.

Thank you.

Tom Bartley
301-252-0568



BONNER BRIDGE

TIP B-2500

THIS
PRESENTATION
WILL REPEAT IN
1 MINUTE

Smyre, Elizabeth A

From: Tom Bartley <tom@bartleycorp.com>
Sent: Monday, December 12, 2011 6:04 PM
To: Smyre, Elizabeth A
Subject: Re: Southgate Dr Rodanthe

Beth,

Thanks for your quick and informative response. So many time when one contacts government officials the response takes a long time. I remember seeing the side roads on an earlier version of the maps, but must of missed it on the version I looked at on Friday. I fully understand the three options now. I am a concrete contractor is the DC-Maryland area who is generally pro development. So faced with the three choices an elevated bridge passing by Southgate would be my least favorite alternative as it would impact our area more than the other two. Thanks again.

Tom Bartley

On Mon, 12 Dec 2011 18:56:20 -0000

"Smyre, Elizabeth A" <bsmyre@ncdot.gov> wrote:

- > Tom-
- > Thank you for your comment and question. For the option called "Bridge
- > Within Existing NC 12 Easement and Beach Nourishment," any bridging
- > would end far enough north of Southgate Drive such that there would be
- > no change to the NC 12 roadway in that location. The proposed beach
- > nourishment area for that option extends south until just past the
- > Chicamacomico Lifesaving Station, so it would be on the ocean side of
- > the properties on Southgate Drive.
- >
- > For the "Bridge Within Existing NC 12 Easement," the section of NC 12
- > would be on a bridge that would continue farther south (it ends just
- > north of the Liberty Service
- > Station) than the option above. Access to Southgate Drive would be
- > maintained through a set of one-lane, one-way service roads on either
- > side of the new bridge. There is no beach nourishment included with
- > this option (that's why the bridge goes farther south).
- >

> The maps that we presented last week are available on the NC 12

> Recovery web page at:

>

> <http://www.ncdot.org/travel/nc12recovery/>

>

> Look under the "Rodanthe Breach Design Options." If you have any

> further questions or comments, please let me know!

> Thanks,

> Beth

>

> ***Please note my phone number has changed, effective March 30, 2011 -

> see below. ***

>

> Beth Smyre, P.E.

> Project Planning Engineer

> NC Department of Transportation

- > Project Development & Environmental Analysis Branch
- > 1548 Mail Service Center
- > Raleigh, NC 27699-1548
- > (919) 707-6043
- >
- > ----- Original Message -----
- > From: Tom Bartley (mailto:tom@bartleycorp.com)
- > Sent: Friday, December 09, 2011 5:17 PM
- > To: Smyre, Elizabeth A
- > Subject: Southgate Dr Rodanthe
- >
- > Dear Ms. Smyre,
- > My wife and I own an oceanfront home at 23210 Southgate Dr. Rodanthe.
- > Southgate Dr is a non county maintained "street" between East Corbina
- > Dr and East Beacon Drive.
- > After studying the two bridge alternatives within the right of way,
- > it is not clear to me how our property (plus our neighbors) would be
- > accessed. If the bridge were in fact to be 25 ft in elevation, I can't
- > imagine how a transition could be accomplished. If you could please
- > write back addressing this issue, I would be very grateful.
- > Thank you.
- > Tom Bartley
- > 301-252-0568
- >
- > _____
- >
- > Email correspondence to and from this sender is subject to the N.C.
- > Public Records Law and may be disclosed to third parties.

Smyre, Elizabeth A

From: rpbauer@aol.com
Sent: Friday, December 09, 2011 12:06 PM
To: Smyre, Elizabeth A
Subject: NC 12 Comment

Greetings,
I live on Hatteras Island.
I have reviewed the plans for the long term plans for NC12.

To me the science, and the conditions actually in place on Pea Island suggest the only responsible action is to abandon NC 12 north of Mirlo.
Regardless of politics or engineering, Mother Nature is taking over up there.
NCDOT will clearly build highways & bridges to nowhere on Pea Island.

Once we abandon NC 12 north of Mirlo we have 2 choices:
1. Build a 17 mile causeway bypassing Pea Island entirely
2. Expand a permanent ferry service from mainland to Rodanthe.

I do recognize that the causeway approach might not provide a positive cost/benefit result.
The debt service may just be too great for Hatteras Island to absorb.
Then we should have a ferry.

Anything else seems irresponsible use of taxpayer monies.
In today's day, we must find a way to spend where it makes sense and recognize where it doesn't.
Sometimes we just need to say no.
Can we find such leadership?

Thanks,
Bob Bauer

Smyre, Elizabeth A

From: Abbott, Steve
Sent: Tuesday, January 17, 2012 10:46 AM
To: Smyre, Elizabeth A
Subject: Contact us comment for you

Rob Beedie Phone: (757)633-7445 Email: Rob@GlobalSurfNetwork.com

Comment History	
Tracking Number: KX6140G-IC2	
Sent By: Rob Beedie	Date/Time: 1/14/2012 8:56 AM
Comment: To Whom It May Concern:	
I could write a book on why this area (Pea Island to S-turns) should be preserved for future generations to enjoy and the importance in keeping free and open access to the beaches but instead I'm leaving a link to a short video, https://www.facebook.com/video/video.php?v=2359968642934 ,that I would like to share with you in hopes that it motivates each of you that are decision makers to do the right thing in regards to protecting the basic rights of the people, that being, each of our rights to Life, Liberty, and Pursuit of Happiness.	
Education is the key in helping make this suggestion work and our children, your children, and all of America will thank you for many years to come if through your leadership you act positively for the people by understanding their request and supporting freedom at its very core.	
https://www.facebook.com/video/video.php?v=2359968642934	
Sincerely,	
Rob Beedie, CSN Global Surf Network	
www.GlobalSurfNetwork.com	

Comments on NC12 Repair Alternatives - Rodanthe

Submitted by: Mark & Linda Bowers
Dare County Address: 27222 N Sunrise Ct, Salvo NC
Mailing Address: 137 Mount View Dr. Afton VA 22920
Email: mbalntell@cfw.com
Date: Jan 18, 2012

Let us first express our thanks to NCDOT and all involved parties for their continuing effort in maintaining and repairing NC12 over so many years. This effort is not only the construction work and maintenance that continues, but all of the meetings and work that goes into an issue that has many demands and pressures for different solutions. So please keep up the good work and accept our thanks! We feel that NC12 is a vital link to allow many people to enjoy this unique area of the USA, and should be maintained.

The factors which we list below seem to us to be very important, but yet do not appear to be on the list of factors being considered in the published information. We are not advocating the removal of other factors, but we do feel that the factors below need to be added and given high weight.

1. Maintaining a RoW for NC12 through the complete length of Pea Island - Our strongest recommendation is for a solution that maintains North Carolina's legal right to a road right-of-way within the whole length of Pea Island. We are urging you to select a solution that meets this criteria above all others, because, in our view, the political situation that changes from generation to generation will make it impossible to re-establish a new ROW once it is relinquished. Keeping the road within Pea Island is key legal point to maintaining this RoW in our view.
2. Bridge repair costs, length of time, and difficulty - A strong additional constraint is the cost of any sound bridge solution. There is continued advocacy to remove NC12 from Pea Island. In coming to understand the history of the ROW for NC12 on Pea Island and the solutions for the Bonner Bridge, it is becoming clear that the advocates of eliminating NC12 from Pea Island and moving it to a bridge out in the sound give little or no consideration of long term maintenance cost and difficulty. The cost of bridge repairs in any form is extremely high in comparison to land based road repair work, and such bridge repairs are very slow, especially out in a large body of water where all work must be done from large barges with shallow draft. In our view, such maintenance costs and difficulties have not been given due weight in such discussion.
3. Bridge accidents and blockage - Accidents on long bridges present a greater safety hazard, with a higher probability of lane blockage, and are harder to clear than accidents on road, particularly for vehicle fires. This factor becomes even more important in the case of emergency evacuations, which are a regular occurrence on Hatteras Island, and especially when there are 10's of thousands of visitors on the island. Land based road solutions offer many possibilities to move traffic quickly around accidents, simply because any crew with a tow rope can move a damaged vehicle quickly out of the way, and there is much more flexibility and room to move around. Having a land based road solution as much as possible and limiting the total bridge mileage seems a common sense way to be able to maintain critical evacuation routes.

These factors are not a direct endorsement of any particular proposed solution, **although it does lead us to advocate for rejection of the bridge out over the sound around Rodanthe, either the shorter one proposed or the longer one recently suggested by USFWS.**

Amongst the solutions proposed, we urge the working group to select either the short bridge in north Rodanthe within the existing ROW with or without beach nourishment, or the road rebuild with beach nourishment.

We also believe that the solutions involving beach nourishment have been prematurely removed from consideration, and should be re-considered. Only the lack of proper sand should eliminate this option in our view. We do recognize that there may be some effect on habitat, but the total area effected is small compared to the whole beach length in PINWR and in CHNSRA. Thus it should not have any substantial or lasting impact on habitat or species populations, the effect would be not be permanent, the area would recover and provide natural habitat for intervals between nourishment, and it is quite minor in comparison to the impacts of pond construction and continued maintenance in PINWR, for example.

Thank you.

Linda Bowers

Mark Bowers

Smyre, Elizabeth A

From: mbalntel@cfw.com
Sent: Thursday, January 19, 2012 10:32 AM
To: Smyre, Elizabeth A
Attachments: Comments on NC12 Repair Alternatives.doc

HI Ms. Smyre,

Please find a Word document attached to this email containing our thoughts, and recommendations on the proposed solutions for NC12 repairs around Rodanthe. We will be following up with a mailed hardcopy, with our signatures.

Thanks, and keepup the good work,

Mark & Linda Bowers

Smyre, Elizabeth A

From: Brock, Thomas <Thomas.Brock@cpschools.com>
Sent: Tuesday, January 10, 2012 10:53 AM
To: Smyre, Elizabeth A
Subject: RE: Road to Rodanthe

The road to s-turns and Rodanthe are iconic. Surfers from all over VA and NC have appreciated the ability to stop and surf. I understand the need for a bridge. I just hope they pick the shorter of the two. Thanks for your help in this matter.

Thomas G. Brock
P.E. Teacher at Rena B. Wright
thomas.brock@cpschools.com

From: Smyre, Elizabeth A [mailto:bsmyre@ncdot.gov]
Sent: Monday, January 09, 2012 3:01 PM
To: Brock, Thomas
Subject: RE: Road to Rodanthe

Thomas-
I have read the article that you are referring to, and I think the petition that you are looking for is located here:

<http://www.thepetitionsite.com/1/preserve-future-access-to-s-turns/#13261388869231&action=udata&udata=false>

You are also welcome to send me directly any comments you might have on the NC 12 projects.
Thanks,
Beth

Beth Smyre, P.E.
Project Planning Engineer
NC Department of Transportation
Project Development & Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
(919) 707-6043

From: Brock, Thomas [mailto:Thomas.Brock@cpschools.com]
Sent: Friday, January 06, 2012 2:39 PM
To: Smyre, Elizabeth A
Subject: Road to Rodanthe

Greetings,

Read the article on espn regarding the bridge options to (or around) Rodanthe. The link posted redirects to the current page. Could you please respond with a link so that I may sign and forward to my friends. Thank you for all of your work!

Thomas G. Brock
P.E. Teacher at Rena B. Wright
thomas.brock@cpschools.com

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COMMENT SHEET

Bonner Bridge Replacement Project Public Workshops – Phase II

TIP No. B-2500

Dare County

NAME:

FRANK & JOE BROWN

ADDRESS:

POB 475 Ocracoke, NC 27960

E-MAIL:

Frankandjoe@embarq.mail.com

COMMENTS AND/OR QUESTIONS:

We favor Brown Bridge at a New location
You both beach areas,
Get away from the ocean beach
building roads & bridges that can
withstand the sand surges and
be back from surge impact

Comments may be mailed by January 20, 2012 to:

Ms. Beth Smyre, PE
NCDOT – Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Email: bsmyre@ncdot.gov

Smyre, Elizabeth A

From: Ross Byrd <rossebyrd@gmail.com>
Sent: Thursday, January 12, 2012 10:24 AM
To: Smyre, Elizabeth A
Subject: bridge next to pappy lane

Hi Beth,

I hope I am seeing this email to the right person. Mark Haines passed your email along to me. We also own a home on Pappy Lane in Rodanthe and I just wanted to say we are very concerned about the option that would involve a bridge coming right next to our homes. In an already struggling economy and real estate market our property values would take an even more substantial hit and our ability to rent would be irreversibly damaged. That rental ability is all that most of us have to hold on to. All of us on Pappy Lane, as far as I can tell, would be in serious financial turmoil with regard to our properties. And that is not to mention the effect on all other sound-side homes to the north of us. The traffic pattern, it seems, would also be a major issue.

I do realize, of course, that my complaint is at bottom quite self-seeking. I'm sure the concerns of a the property value of a few people pales in comparison to the drastic need to solve this crisis. That makes sense. I do realize how completed and difficult this decision must be. What can we do to help encourage another option? It seems to me that the bridge within the easement would be far better. What is the downside there? Thank you for reading this. - Ross

--
Ross Byrd
Campus Minister
Christ Episcopal Church
(757) 274-8998

COMMENT SHEET

**Bonner Bridge Replacement Project
Public Workshops – Phase II
TIP No. B-2500**

~~HYDE COUNTY~~

NAME:

BRIAN CARTER

ADDRESS:

PO BOX 693 OCEANOKE NC 27960

E-MAIL:

BCARTER@HYDECOUNTY.NC.GOV

COMMENTS AND/OR QUESTIONS:

MY REQUEST IS THAT NO MATTER WHAT
IS DONE, THAT EMERGENCY SERVICES (ME - THE
EMERGENCY SERVICES DIRECTOR) BE ADVISED IN ADVANCE
OF ANY AND ALL CHANGES THAT WOULD
AFFECT THE TRANSPORT OF SICK OR THE ISLAND OR
IN THE EVENT I NEED TO REQUEST RESOURCES TO
OCEANOKE



Comments may be mailed by January 20, 2012 to:

Ms. Beth Smyre, PE
NCDOT – Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Email: bsmyre@ncdot.gov

Smyre, Elizabeth A

From: James Charlet <hatterasjames@gmail.com>
Sent: Monday, December 19, 2011 1:09 PM
To: Smyre, Elizabeth A
Subject: Comment sheet, NC 12 workshop, Rodanthe
Attachments: COMMENT SHEET NC 12, 2011.doc

COMMENT SHEET

Bonner Bridge Replacement Project

Public Workshops – Phase II

TIP No. B2500

Dare County

NAME:

James Charlet

ADDRESS:

PO Box 362, SALVO 27972

EMAIL:

hatterasjames@gmail.com

COMMENTS AND/OR QUESTIONS:

Over 15 years ago, I read in our local paper a "Letter to the Editor" written by David Stick offering solutions to Hatteras Island's NC 12 problems. In all the time since I have heard many more "solutions" but none more sensible. He made his points more eloquently than I shall render here, but in essence those points were :

1. We all know where the "hot spots" are: the Canal Zone, New Inlet area, just north of Rodanthe, just north of Buxton and just north of Hatteras Village. So stop giving money away to outsiders to form studies to tell us exactly that.

2. Build bridges and/or causeways NOW over those spots and let the tide roll!

3. For budgeting purposes, phase the construction projects from north to south. This is also the order of most frequent breeches and overwashes.

4. Once new inlets are inevitably formed, they really are outlets, thereby giving the Sound more places to exit and thus reducing or lessening the amount of soundside flooding.

5. This system of roads-bridges-islands has a long history of success in the Florida Keys, which is in a far harsher climate and covers a much greater distance.

For at least 15 years, this sage advice has been ignored. It is time to be sensible.

Smyre, Elizabeth A

From: jcochol <jcochol@aol.com>
Sent: Saturday, December 17, 2011 9:17 AM
To: Smyre, Elizabeth A
Subject: Pea Island/Mirlo Beach

We would like to express our opinion regarding the long term options being presented for access to Hatteras Island. We have been coming to Hatteras for twenty five years and own two properties in Avon. We are recently retired and plan to spend more time in one of our homes there.

In the previous ongoing discussions regarding the Oregon Inlet Bridge replacement we were in favor of the bridge and causeway option that was on the table. In reviewing the current options for Phase II of this project we would support the "beach nourishment" option for the Pea Island and Mirlo Beach areas as the best proposed solution.

Thank you for your time.

John & Corry Cochol
(585) 394-8974

COMMENT SHEET

**Bonner Bridge Replacement Project
Public Workshops – Phase II**

**TIP No. B-2500
Dare County**

NAME: Mary Ann Cohen
ADDRESS: PO Box 237, Rodanthe, NC 27968
E-MAIL: none

COMMENTS AND/OR QUESTIONS:

After attending the workshop in December, elevated roadways and the bridge going over the Pamlico Sound seems like the most logical way of preserving Rt 12 passage way off Hatteras Island. The bridge would be the least disruption for those home and business owners that live on Route 12.
Thank you and good luck
Mary Ann Cohen

Comments may be mailed by January 20, 2012 to:

Ms. Beth Smyre, PE
NCDOT – Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Email: bsmyre@ncdot.gov

COMMENT SHEET

Bonner Bridge Replacement Project
Public Workshops – Phase II
TIP No. B-2500
Dare County

NAME: April Contestable
ADDRESS: POB 88 SALVO NC 27972
E-MAIL: aprilisin@gmail.com

COMMENTS AND/OR QUESTIONS:

- ① Ultimately, a long bridge would be most efficient and it should be lined with windmills (like Jeanette's Pier) and have platforms for recreational fishing. ② The entrance to Rodanthe could "possibly" benefit from beach renourishment ~~and~~ and if this is the best COST Alternative, it would be worth a try. However, direct ingress to "historical Rodanthe" is a GREAT option.
- ③ Pea Island breach would most benefit from the plan with the most bridge ala' Fla. Keys.

Comments may be mailed by January 20, 2012 to:

Ms. Beth Smyre, PE
NCDOT – Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548

Email: bsmyre@ncdot.gov

Thank you for hearing & considering these comments. I have lived here and observed shifting sand patterns since 1989.

Smyre, Elizabeth A

From: Abbott, Steve
Sent: Thursday, December 15, 2011 2:23 PM
To: Smyre, Elizabeth A
Subject: NC 12

Comment Details

From: Mariner and Donna Cox Phone: (540)659-8590 Email: marinercox@comcast.net

Comment History
Tracking Number: 573CRW4UEE

Sent By: Mariner and Donna Cox Date/Time: 12/15/2011 1:12 PM

Comment:

WE own a home on Bluefish Ct in Hatteras Colony, Avon, NC. As Outer Banks property owners we strongly support Beach nourishment as the option of choice for long-term Route 12 recovery. We believe that this option offers the logical, cost-effective method of returning Route 12 to its pre-Irene condition and along with the already selected Bonner Bridge replacement option, is in the best interests of the Owners and residents of the Outer Banks, and all residents of the State of North Carolina. Further, we believe that this option adequately addresses the concerns of the various environmental groups.

Email correspondence to and from this sender is subject to the N.C. Public Records Law and may be disclosed to third parties.

Smyre, Elizabeth A

From: Dave Dawson <dawbiz@yahoo.com>
Sent: Sunday, January 22, 2012 9:14 PM
To: Smyre, Elizabeth A
Subject: Long term fix for Route 12 Hatteras Island

Beth Smyre,

I will be brief. The answer to saving our highway is to stabilize the beach. Bridges and constantly moving the road are all temporary fixes at best. Pumping sand to stabilize the beach is also temporary. North Carolina needs to change the law against using hardened structures to stabilize the beach. This was an antiquated tactic the environmental community used in order to control building density through the back door instead of local zoning. We have been asking the State to "sink a ship" for 40 years. This means use a ship, barge or rocks to build a breakwater, jetty, groin or whatever it takes to slow down the current and let our beach build up. Every time a ship washes close to the shore the beach builds out to it in a matter of days. We've seen it over and over again. This is a simple and less expensive solution and anyone who says it won't work is lying. Look what the Arabs have built in Dubai. I'm not advocating building cities in the ocean; only that the technology is there to fix our problems and to not do so is neglectful on the part of the State. Not only will the State not help us, they won't give us a permit to help ourselves (except for the millionaires who got a variance to build groins at Bald Head to protect their golf course-the groins worked by the way). It's time for North Carolina to protect all of it's citizens and visitors by taking care of the coastline. Can you imagine any other coastal state ignoring their coast the way this State has? Business here actually survived the recession fairly well except for the times when people can't get here because our road is out (again!).

Dave Dawson - Buxton NC

Smyre, Elizabeth A

From: Greg & Janet Duncan <gregjanetcamden@yahoo.com>
Sent: Monday, December 12, 2011 9:07 PM
To: Smyre, Elizabeth A
Subject: NC-12 and Bonner Bridge

Ms. Beth Smyre,

I live in Camden Co. on the water. I've been here for 35 yrs, I'm concerned with both the cost of maintaining NC12 and that the ferry system wasn't publicly offered/considered as an alt. way of providing access to the areas South of Oregon Inlet. During Irene the water level in the Pasquotank dropped 12 inches. This is not normal for a storm with winds from the NE. Water usually recedes 3-4 feet. That was a large impoundment of water in the Albermarle Sound. We saw the damage on the backside of the OBX. My concern is with larger dunes to protect NC12 the water surge will not be able to retreat to sea fast enough to stop flooding up the Albermarle's northern rivers as the storms past. I understand tourism, Fishing, hometown feelings and other issues But with the rising sea level for the next 50 years, even as small as NC-20 calls for, the economy, the narrowness of Pea Is. I think people are not looking at the whole issue. I would like to see the ferry system fully explored. Most of the towns would change, adapt, and survive to become great places to visit just as Ocracoke has. I have lots of memories of Jockeys ridge, Oregon Inlet, Hatteras, the beaches south to South Carolina over my life, 23 years in the Coast Guard flying and boating along the coast. All the "Sights" have changed looks and locations greatly in that time fixed bridges and roads don't stand a chance.

Thank you for your time, Merry Christmas.

Greg Duncan

Smyre, Elizabeth A

From: Bob <808bob.finch@gmail.com>
Sent: Friday, January 06, 2012 4:28 PM
To: Smyre, Elizabeth A
Subject: Pea Island access

Future highway plans must include access for surfing one of America's treasures--the Hatteras surf sites. I am a long time NC resident now living in Hawaii. But I always return to these breaks when back east. Unquestionably, surfers have a huge impact on the economy of the Outer Banks. Thanks for the opportunity to comment.

Bob Finch,
P. O. Box 1873
Kailua, HI. 96734

I'm a twentieth century man and I don't want to be one with an iPhone

COMMENT SHEET

**Bonner Bridge Replacement Project
Public Workshops - Phase II**

**TIP No. B-2500
Dare County**

NAME: DAVID L. FRUM

ADDRESS: P.O. Box 280/42 SWEATH ELLEN LANE, OCAHOCKE, NC 27960

E-MAIL: dunfrum@hotmail.com

COMMENTS AND/OR QUESTIONS:

I BELIEVE THE BEST SOLUTION TO THE ENTIRE BONNER BRIDGE/HIGHWAY
IS TO TAKE THE POSITION THAT IT WILL BE TOO COSTLY
AND NOT POSSIBLE TO MAINTAIN THE NEW BRIDGE AND THE ROAD IN THEIR
PRESSENT LOCATIONS. ALL THE COASTAL GEOLOGISTS AND ANYONE WHO HAS BEEN
HOLD MORE THAN A WEEKEND KNOW THAT STRIP OF BARBEER ISLAND FROM DUEBON
WILLET TO RODASTHE IS VERY DYNAMIC AND SUBJECT TO THE WORST CONDITIONS
DUE TO IT PERPENDICULAR ORIENTATION TO NORTHEAST WINDS. IT WOULD BE
SURPRISED IF THE PROJECT PROPOSED COULD EVER BE COMPLETED THROUGHOUT THE
ISLAND. THE WAKEMEST OF THE ISLAND AND THE EROSION THAT HAVE TAKEN
THE BEACHES MEAN THE BIGGEST PROBLEMS WILL OCCUR FROM THIS POINT ON.

Comments may be mailed by January 20, 2012 to:

(CONTINUED ON NEXT PAGE)

Ms. Beth Smyre, PE
NCDOT - Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Email: bsmyre@ncdot.gov

I WOULD LIKE TO PROPOSE THAT THE DOT AND ENGINEERING FIRMS TAKE THE POSITION THE NATIONAL PARK SERVICE TOOK WITH THE CAPE HATTERAS LIGHTHOUSE. AFTER YEARS OF TRYING TO STOP NATURE AND TRYING TO MANIPULATE THE SHORELINE RELATED TO A PERMANENT STRUCTURE, THEY GAVE UP AND MINED IT. I THINK THIS IS THE POSITION THAT SHOULD BE TAKEN WITH HIGHWAY 12.

I PROPOSE THAT ENGINEERING BE APPLIED TO CONSTRUCTING A BRIDGE TO THE WEST OF THE BARRETT ISLANDS ~~FROM~~ JUST NORTH OF RODANTHE. THE BEST SOLUTION, IN MY OPINION, WOULD BE TO BUILD THE ROAD EITHER TO THE SOUTH END OF RODANTHE ISLAND, EAST OF WAALCHASE AND CONNECTED TO US 64 AT SKYCO OR WEST ACROSS THE SOUND TO NEAR STUMPY POINT OR SANDY BAY. I FEEL THIS BRIDGE, THOUGH VERY COSTLY IS ORIGINAL CONSTRUCTION, COULD BE MORE EASILY MAINTAINED AND WOULD BE LESS VULNERABLE TO WAVE ACTION. IT WOULD BE IN THE SOUND RATHER THAN ON THE BEACH FACE.

IT SHOULD THIS PLAN BE PUT INTO EFFECT, OREGON INLET BRIDGE WOULD NOT HAVE TO BE BUILT, THE ROAD COULD BE ABANDONED ACROSS THE PRESENT BRIDGE AND IT COULD BE REMOVED AFTER CONSTRUCTION. OREGON INLET COULD BE ALLOWED TO DEVELOP WHEREVER IT DOES BECAUSE IT WOULD NOT HAVE TO BE MAINTAINED IN PLACE BECAUSE THE HIGH RISE OF THE BRIDGE. THE CHANNEL COULD BE WHEREVER IT FALLS ELIMINATING THE ENTIRE PROBLEM OF KEEPING OREGON INLET WHERE NATURE DOES NOT WANT IT TO BE, ELIMINATING THE NEED FOR JETTIES OR DREDGING.

HIGHWAY 12 THROUGH THE PEA ISLAND REFUGE COULD BE ABANDONED. PLEASE THE U.S. FISH AND WILDLIFE SERVICE WHO DOESN'T WANT IT THESE ANGLERS, THE ISLAND IN THAT SECTION WOULD RATHERLY REVERT TO A NATURAL SYSTEM, DUNES COULD DEVELOP WHEREVER THEY WANT. THE BEACHES WOULD WIDEN AND OVERWASH WOULD OCCUR BUT IT WOULD NOT MATTER SINCE THERE WOULD BE NO ROAD TO MAINTAIN. THE TEMPORARY BRIDGE AT THE NEW INLET WOULD BE UNNECESSARY AGAIN BECAUSE THERE WOULD BE NO ROAD.

PLEASE CONSIDER THESE RECOMMENDATIONS CAREFULLY. THINK OF THE HUNDREDS OF MILLIONS OF DOLLARS IT WILL TAKE TO MAINTAIN THE ROAD THROUGH A PLACE IT PROBABLY CANNOT RELIABLY BE DEPENDENT ON TO STAY. A ROAD ACROSS THE SOUND WEST OF THE BARRETT WILL REQUIRE MUCH SIMPLER CONSTRUCTION AND WOULD HAVE REASONABLE ASSURANCE REMAINING FOR YEARS TO COME.

David L. Stum

Smyre, Elizabeth A

From: Herbert Gaskill <hsgaskill@mun.ca>
Sent: Thursday, December 15, 2011 9:32 AM
To: Smyre, Elizabeth A
Subject: Bonner Bridge

Dear Ms Smyre -

My wife and I are local home owners, 26248 Wimble Shores Dr. We live in our NC home during the winter, at other times it is a rental.

Almost every year since 2003, we have had a major washout at S-curves requiring major repairs to the roadbed. Every year there have been periods during which Hwy 12 was closed due to overwash. Every year we watch as hundreds of tons of sand are trucked in to S-curves (beach nourishment), only to be washed away in an instant by the forces of nature. We have seen Hwy 12 closed for as long as a week due to wash out at S-curves from a Nor'easter.

We have examined the proposals for HWY 12. We believe that only proposals which guarantee continuous access are viable. Clearly, proposals that require "beach nourishment" are not in this category. We believe that a solution should be implemented ASAP. This rules out proposals that could become subject to law suits, i.e., proposals that place the roadbed outside existing easements.

On this basis we support the proposal described as "Bridge within Existing NC 12 Easement" shown in purple in Figure 3 of "Bonner Bridge Public Workshops" document handed out on Tues, Dec. 6 at the meeting in Rodanthe.

Thank you,

Herb and Cathy Gaskill

Herbert S Gaskill,
Professor, retired

15 Forest Ave
Mt Pearl, NL A1N 1P2
709-368-5218

PO Box 477
Rodanthe, NC
252-987-2298

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Smyre, Elizabeth A

From: Rob Gerritsen <rob@xore.com>
Sent: Wednesday, December 14, 2011 2:40 PM
To: Smyre, Elizabeth A
Cc: Scott Leggat
Subject: NC 12 Recovery Efforts

Dear Ms. Smyre,
Thank you very much for the Meeting Packet related to the Bonner Bridge – Phase II Workshops. It is a comprehensive and informative document.

I have a question and a comment.

My question regards the costs in Table 3. The language used implies that these are simple total expenditures through 2060. Does that mean that you did not use a discount rate to reflect the so-called time value of money? Since some alternatives require spending most of the money up front, and others do not, I suspect that using an appropriate discount rate might make a significant difference in the comparative costs.

My own preference is the beach nourishment option. It has a very low visual impact and a very low impact on existing residences and businesses.

Because beach nourishment expends money gradually over time, it also has a lower opportunity cost than any of the other alternatives. If any of the other alternatives end up having unforeseen negative effects or don't work as well as expected, we will only discover that after having spent a very large amount. If it turns out that beach nourishment has some unexpected negative effects, it can be terminated and other options considered before extremely large sums have already been expended. Because it has these lower opportunity costs it is a less riskier alternative.

I have been an owner of an ocean front property in Avon since 1990.

Regards,
-Rob

Rob Gerritsen, PhD
President
Exclusive Ore Inc.
www.xore.com
PO Box 1024
Blue Bell, PA 19422
(215) 643-3110

Smyre, Elizabeth A

From: Gery, Michael <michael.gery@carolinacountry.com>
Sent: Thursday, January 19, 2012 1:54 PM
To: Smyre, Elizabeth A
Subject: NC Hwy 12

These are my comments on the proposals to rebuild NC Hwy 12 on Pea Island.

All of these proposals are far riskier and more expensive than the sensible alternative which was – without explanation – excluded from the winter presentations in Dare County and Ocracoke: the so-called “long bridge” that would connect to Rodanthe. The long bridge was the preferred alternative in 2003 when nearly all agencies involved saw its wisdom. To build a series of bridges and causeways on a moving strip of sand, and through a national wildlife, not only will subject the refuge and its beaches to being a construction zone for years, but also is asking for a long future of frustration and expense, and exposes taxpayers to unneeded expense in court. I ask the DOT to abandon these alternatives as presented this winter in workshops I attended, and to instead reconsider the long bridge. People will be able to reach Pea Island without a dangerous bridge and doomed highway, just as we reach Core Banks, Portsmouth Island, Ocracoke, Shackleford Banks, Bald Head Island, Hammocks Beach and other barrier islands.

Michael E. C. Gery
104 Seaton Lane
Manteo, NC 27954

COMMENT SHEET

Bonner Bridge Replacement Project
Public Workshops – Phase II

TIP No. B-2500
Dare County

NAME: Harry Gilbert
ADDRESS: P.O. Box 850, Ocracoke, NC 27960
E-MAIL: info@theanchorageinn.com

COMMENTS AND/OR QUESTIONS:

I would prefer the "Bridge on New location" at both locations. If not "Road on New location" if above is not possible.

Comments may be mailed by January 20, 2012 to:

Ms. Beth Smyre, PE
NCDOT – Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Email: bsmyre@ncdot.gov

COMMENT SHEET

Bonner Bridge Replacement Project
Public Workshops – Phase II

TIP No. B-2500
Hyde County

NAME: H.W. Gilbert III
ADDRESS: P.O. Box 850, Ocracoke, NC 27960
E-MAIL: info@theanchorageinn.com

COMMENTS AND/OR QUESTIONS:

I previously made a comment at the Rodanthe Workshop and, after further review and a better understanding of the permitting process I would like to change my comment. At Pea Island I would like to see a "Bridge within Existing NC-12 Easement" mainly due to permitting issues. At the Rodanthe area I would like to see a "Bridge on New Location" due to the fact that the area has always been a problem area ~~because~~ because of the rapid beach erosion.

Comments may be mailed by January 20, 2012 to:

Ms. Beth Smyre, PE
NCDOT – Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Email: bsmyre@ncdot.gov

COMMENT SHEET

**Bonner Bridge Replacement Project
Public Workshops – Phase II**

TIP No. B-2500
Dare County

NAME: Leslie Gilbert

ADDRESS: P.O. Box 850 Ocracoke NC 27960

E-MAIL: info@thearchorageinn.com

COMMENTS AND/OR QUESTIONS:

Prefer Bridges on new

locations → which would be

more permanent.

Comments may be mailed by January 20, 2012 to:

Ms. Beth Smyre, PE
NCDOT – Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Email: bsmyre@ncdot.gov

Smyre, Elizabeth A

From: Abbott, Steve
Sent: Thursday, December 15, 2011 11:00 AM
To: Smyre, Elizabeth A
Subject: Another NC 12 from Contact us

Suzan (Mrs. James E.) Griffin **Phone:** (757)229-5235 **Email:** sgriffin@widomaker.com

**Comment History
Tracking Number: 87WEN3LN24**

Sent By: Suzan (Mrs. James E.) Griffin **Date/Time:** 12/14/2011 6:47 PM

Comment:

I am writing to ask you to support beach nourishment for the Outer Banks (especially to aid Highway 12). We are owners of property there and we implore you to find a solution to transportation and erosion issues on our beautiful Outer Banks. This is as close as you can get to heaven and we ask that you find a solution to the many issues facing the area in regard to transportation. Thank you for your consideration and hard work. I will anxiously await news of your meetings and look for outstanding conclusions from your group. Nobody does it better than NC...please live up to that belief.

Email correspondence to and from this sender is subject to the N.C. Public Records Law and may be disclosed to third parties.

Smyre, Elizabeth A

From: Abbott, Steve
Sent: Thursday, December 15, 2011 2:25 PM
To: Smyre, Elizabeth A
Subject: NC 12

By the way, I'm already responding to these in Contact Us, just saying, "Thank you for the comments. They are being forwarded to the DOT staff working on the project."

Steve

From: Raymond C. Grimm **Phone:** (540)635-2404 **Email:** rgimm@shentel.net

Comment History Tracking Number: PAG55C9RWI

Sent By: Raymond C.Grimm **Date/Time:** 12/15/2011 11:50 AM
Comment:
I am a Dare county OBX property owner since 1980. My wife and I own and rent several homes in Mirlo, and an ocean front on East Point Drive. We have watched homes disappear in front of the oceanfront. As a matter of fact, we were third lot back when we first built our cottage. Beach nourishment would have saved many of these homes, and I urge your consideration of this option for the Rodanthe area and the homes in Mirlo Beach.
Regards,
Ray and Lani Grimm, Front Royal, VA

Email correspondence to and from this sender is subject to the N.C. Public Records Law and may be disclosed to third parties.

Norburn, Robert E.

From: Norburn, Robert E.
Sent: Friday, December 09, 2011 11:20 AM
To: Smyre, Elizabeth A
Subject: Bomer Citizen Contact

I received an information line call from Mark Haines, who is a Rodanthe property owner. He was concerned about the long-term options at Rodanthe. He said he favors either beach nourishment, or the bridge in existing easement with beach nourishment, because these are the only options that will protect the homes in northern Rodanthe from long-term beach erosion. He said that he also attended the workshops and plans on submitting written comments, which I encouraged him to do so. He also asked about the project schedule, which I explained to him. He is already on the project mailing list.

Bobby Norburn
Transportation Engineer/Planner
Parsons Brinckerhoff
434 Fayetteville Street, Suite 1500
Raleigh, NC 27601
919-836-4081 (office)
919-836-4099 (fax)
norburn@pbworld.com
www.pbworld.com

Smyre, Elizabeth A

From: Haines, Mark <mark.haines@transcendata.com>
Sent: Sunday, December 11, 2011 10:33 PM
To: Smyre, Elizabeth A
Haines, Mark
Subject: Bonner Bridge Replacement Project Phase II Public Workshop Comment Sheet
Attachments: NC 12 Feedback.pdf

Hi Beth!

Attached you will find my feedback regarding the Bonner Bridge Replacement Project Phase II. I would appreciate it if you can confirm receipt of my email and attached comment sheet.

If you have any issues opening the attachment, please let me know.

Thanks,

Mark Haines
513-604-6641

COMMENT SHEET

**Bonner Bridge Replacement Project
Public Workshops – Phase II**

TIP No. B-2500
Dare County

Name: Mark Haines
Address: 3087 Palomino Trail, Mason OH 45040
E-mail: meh@iti-global.com

Comments and/or Questions:

My name is Mark Haines. I am a part time resident and rental property owner on Hatteras Island. I attended both the Manteo and Rodanthe workshops. Like everyone else involved, I have concerns about the solution that will be chosen. I submitted initial comments, but since the merger team has decided to eliminate both options which include beach nourishment, I am submitting additional feedback.

Trying to keep this to the point and short, here is my feedback associated with the Rodanthe S-Curves area.

1. Reconsider beach nourishment. It needs to be done regardless.
2. Solve the issue within the current easement.
3. Consider ending the bridge / elevated roadway in Mirlo Beach. This minimizes impact to current property owners which should be a very high consideration. Extending South on 12 can be done in the future when and if necessary. It also eliminates the congestion around the Liberty Gas station with the current option.
4. If you feel the need for the "Rodanthe Bridge on New Location", connect back onto 12 prior to any houses to avoid all of the issues associated with current property owners, along with what I would expect to be a long and lengthy legal battle.
5. Allow public comments on the final recommendation and decision on what to do. This will allow the public to provide specific feedback such as:
 - a. Include a bikeway or walking path along the new road or bridge
 - b. Input on access points crossing 12 to the ocean
 - c. Cosmetic features which might minimize the eye soar any new bridge or elevated roadway might cause.
 - d. Create an elevated section on a possible bridge to allow recreational access to the open sound.
6. Communicate with those in the immediate area (Northern Rodanthe) that you are serious about implementing a solution which minimizes the impact to their property values. Eliminating beach nourishment sent the wrong message.

Smyre, Elizabeth A

From: Haines, Mark <mark.haines@transcendata.com>
Sent: Thursday, January 19, 2012 12:07 PM
To: Smyre, Elizabeth A
Cc: Haines, Mark
Subject: Bonner Bridge Replacement Project Phase II Public Workshop Comment Sheet
Attachments: NC 12 Feedback 1-19-2012.pdf

Hi Beth!

Attached you will find additional feedback regarding the Bonner Bridge Replacement Project Phase II. I would appreciate it if you can confirm receipt of my email and attached comment sheet.

If you have any issues opening the attachment, please let me know.

Thanks,

Mark Haines
513-604-6641

Mark Haines
ITI TranscenData
513.604.6641
meh@iti-global.com

Visit our New Website: <http://www.transcendata.com>

B-42

Smyre, Elizabeth A

From: Ted Hamilton <tedsalvo@earthlink.net>
Sent: Thursday, January 12, 2012 7:11 AM
To: Smyre, Elizabeth A; norburn@ncdot.gov
Subject: Comments on Proposed NC 12 Improvements

The following are my comments on NC 12 proposed solutions in the Pea Island area.

1. Many of us have never seen a really definitive reason why NCDOT now has trouble getting permits from USFWS to move the road from its current right of way. In 1988 the road was relocated well to the West of the then right of way in the S-Curve area. Again in 1996 the same type of relocation occurred in the Sand Bag area.

What has changed to make this type of movement more difficult if not impossible????

It is one thing if it has resulted from new law but a whole different matter if it is just new DOI and/or USFWS policy. If the latter, that should be seriously challenged by the state in order to provide the best long term solution for a given area of the route. I have even seen articles indicating deeds exist that give the state basically right of way where ever it is needed, although some environmental groups disagree.

The public should be informed definitively as to the reason for this right of way difficulty, because common sense says that in general the farther West (away from the surf zone) the road is located, the better the long term survival.

2. Any solution should carefully consider the impact on electric rates to relocate power lines in order to provide reliable maintenance access. In 2007 CHEC estimated that an approximate 42% rate increase would be required to fund the relocation of the line on or near the then proposed 17 mile bridge that bypassed Pea Island. No doubt a similar increase would be needed if the now USFWS proposed 7 mile long bridge was to be built. I say similar increase because the increase would not be directly proportional to bridge length because design, environmental impact studies, etc would be similar in cost regardless of bridge length.

3. Any solution should carefully consider the impact on public access to areas of Pea Island. When the 17 mile bridge was first proposed NCDOT indicated they would obviously not maintain any sort of road on Pea Island. USFWS indicated they certainly would not maintain any sort of paved access and further indicated they would likely require the pavement be removed. In addition USFWS indicated that individual access by private vehicles would likely not be allowed, but would most likely go with a 4WD bus system similar to that used at Back Bay in VA.

Such access limitations as above would be unacceptable. At a minimum private vehicle access by at least 4WD vehicles on sand roads similar to the Interdunal Road near Cape Point and Pole Road at Hatteras Inlet should be provided for.

Now that said let me be clear in my expectations. If, for example, the 7 mile bridge proposed by USFWS is built, I would expect to see a sand road from the North end of Rodanthe to the South side of the new Pea Island Inlet and a sand road from the North terminus area of the bridge to the North side of the new Pea Island Inlet. But if, for example, an inlet was eventually formed at the S-Curve area, or any other area, I would not expect any bridging or fill of such an inlet to accommodate a sand road. We should at least start with reasonable sand road access and let new inlets dictate what access remains over time. Such access should be agreed to by USFWS as part of this process and factored into the road improvement decisions. It should not be left undecided and for USFWS to decide in the future as they indicated during discussions on the 17 mile bridge.

4. Any bridge / raised roadway solutions should carefully look at what wind restrictions may be needed and their impact on travel / access. I refer you to wind restrictions on the Chesapeake Bay Bridge Tunnel as examples of a similarly exposed roadway that is purposely not used as an evacuation route because of the wind restrictions.

Now having said all the above, I think the following are the best compromise solutions that would address my 4 concerns.

For Pea Island Breach:

Bridge on new location. This requires only a short section of new right of way, moves the road further from the surf zone (beyond the 2060 erosion zone) in the area of the breach (particularly to the South as inlets tend to migrate South; eg. Oregon Inlet), places it on a bridge so the current inlet can be left for sound water outflow relief from potential sound flooding and provides better interconnect to the North if the conceptual road / bridge (or portions thereof) ever need to be built to the North.

And any improvement should consider access to the boat ramp at New Inlet. We should not loose access to this boat ramp.

For Rodanthe Breach:

Bridge in Pamlico Sound. It seem foolish to build anything within the current easement, knowing it will soon be in the surf zone; (ie the easement is within the 2060 erosion zone) . The history of this area includes Loggerhead Inlet in this general location and sooner, rather than later, this area will be breached badly. When it is badly breached, it would obviously be better that any bridging in the area was not eventually in the surf zone.

Ted A. Hamilton
6 Jib Ct
Hampton VA 23664

Property owner in Salvo NC for 40 years

Cheers Ya'll

Ted A. Hamilton
(aka Salvo Jimmy)

Smyre, Elizabeth A

From: Ted Hamilton <tedsalvo@earthlink.net>
Sent: Tuesday, January 17, 2012 6:20 AM
To: Smyre, Elizabeth A
Subject: RE: Comments on Proposed NC 12 Improvements

Two other comments came to mind similar to comments on electric power supply.

I recall Charter has for years wanted a fiber optic system on Hatteras Island but has been prohibited from putting a cable on the present Bonner Bridge because of weight considerations. I believe they will be allowed to use the replacement bridge. Any solution should consider how such a fiber optic system would be accommodated, including access for maintenance.

Likewise, CenturyLink phones are underground, at least within the villages. I don't know if underground cables are used on Pea Island, but if so, that needs to be acomodated. In addition consideration of providing for upgrade to the phone system to fiber optic should be included in any solution.

-----Original Message-----
>From: Ted Hamilton <tedsalvo@earthlink.net>
>Sent: Jan 14, 2012 12:39 PM
>To: "Smyre,Elizabeth A" <bsmyre@ncdot.gov>
>Subject: RE: Comments on Proposed NC 12 Improvements
>
>Thanks for the reply.

>
>Re the 1997 law and USFWS: I recall that law is fairly general and not real specific thus making it open to wide interpretation which is what I think DOI / USFWS is doing in this case. It's hard for me to imagine that where releiable access is needed for the health, welfare and safety of residents and visitors, particularly during medical emergencies and storm events requiring evacuation, that such need would not trump even the letter of this 1997 law. It makes no sense to expenf funds staying strictly within the present right of way knowing that in a relatively short time the road would be in peril.

>
>BTW you did not address the issue of these "old" deeds supposedly giving the state access as needed without regard to "present" right of way. That, if true, would also seem to trump even this 1997 law.

>
>
>-----Original Message-----
>>From: "Smyre, Elizabeth A" <bsmyre@ncdot.gov>
>>Sent: Jan 13, 2012 11:02 AM
>>To: Ted Hamilton <tedsalvo@earthlink.net>
>>Subject: RE: Comments on Proposed NC 12 Improvements
>>

>>Ted-
>>Thank you for your comments! To answer some of the questions included in your email:

>>
>>- In 1997, Congress passed the National Wildlife Refuge System Improvement Act of 1997, which is an update of a similar law from the 1960's. This law stipulates how the US Fish & Wildlife Service makes decisions on activities within the Refuge system. The 1997 Act restricted what activities the USFWS could consider allowing within a Refuge;

essentially, any activity must now be consistent with the mission and purpose of that Refuge. New large-scale road and bridge construction outside of the existing NC 12 easement, as you can imagine, aren't necessarily consistent with the mission of a wildlife refuge, so we've been told that they would not be allowed. Therefore, road relocations that were allowed prior to 1997 wouldn't be allowed today. We've discussed this act and its implications to our project alternatives in our previous environmental documents for the project.

>> >> We work closely with the Cape Hatteras Electric Co. on determining the potential impacts of our alternatives on their utility easements. We provide them with copies of all our environmental documents, and any information they provide us on potential rate increases is considered as part of the overall decision.

>> >> We do consider the impacts of our alternatives on the ability to access the Refuge and the Seashore. Certainly, any bridging option at either of the breach sites will restrict access to the Refuge in those locations.

>> >>Again, thank you for your comments, and please let me know if you have any other comments or questions!

>>Thanks,
>>Beth

>>-----
>>

>>Beth Smyre, P.E.
>>Project Planning Engineer
>>NC Department of Transportation
>>Project Development & Environmental Analysis Unit
>>1548 Mail Service Center
>>Raleigh, NC 27699-1548
>>(919) 707-6043

>>

>>-----Original Message-----
>>

>>From: Ted Hamilton [mailto:tedsalvo@earthlink.net]
>>Sent: Thursday, January 12, 2012 7:11 AM
>>To: Smyre, Elizabeth A; norburn@ncdot.gov
>>Subject: Comments on Proposed NC 12 Improvements

>>

>>The following are my comments on NC 12 proposed solutions in the Pea Island area.

>>

>>1. Many of us have never seen a really definitive reason why NCDOT now has trouble getting permits from USFWS to move the road from its current right of way. In 1988 the road was relocated well to the West of the then right of way in the S-Curve area. Again in 1996 the same type of relocation occurred in the Sand Bag area.

>>

>>What has changed to make this type of movement more difficult if not impossible????

>>

>>It is one thing if it has resulted from new law but a whole different matter if it is just new DOI and/or USFWS policy. If the latter, that should be seriously challenged by the state in order to provide the best long term solution for a given area of the route. I have even seen articles indicating deeds exist that give the state basically right of way where ever it is needed, although some environmental groups disagree.

>>

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>>

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Smyre, Elizabeth A

From: Abbott, Steve
Sent: Wednesday, December 14, 2011 4:46 PM
To: Smyre, Elizabeth A
Subject: NC 12 comment

Hi,

Here is one from Contact Us

Steve

Tim sorrells

Phone: (443)789-9176

Email: drsorrells@yahoo.com

Comment History

Tracking Number: 50VJSMBQUY

Sent By: Tim sorrells **Date/Time:** 12/14/2011 4:37 PM

Comment:

I am in support of beach nourishment as a potential solution to the problem in Mido Beach and Rte 12. I favor this over the construction of bridges . I feel we should try nourishment first and if it becomes obvious that is is not working, then talk about bridge alternatives. I own a house in Waves,NC so I obviously have a personal investment here. Thank you, Tim Sorrells

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increase would be needed if the now USFWS proposed 7 mile long bridge was to be built. I say similar increase because the increase would not be directly proportional to bridge length because design, environmental impact studies, etc would be similar in cost regardless of bridge length.

>>

>>3. Any solution should carefully consider the impact on public access to areas of Pea Island. When the 17 mile bridge was first proposed NCDOT indicated they would obviously not maintain any sort of road on Pea Island. USFWS indicated they certainly would not maintain any sort of paved access and further indicated they would likely require the pavement be removed. In addition USFWS indicated that individual access by private vehicles would likely not be allowed, but would most likely go with a 4WD bus system similar to that used at Back Bay in VA.

>>

>>Such access limitations as above would be unacceptable. At a minimum private vehicle access by at least 4WD vehicles on sand roads similar to the Interdunal Road near Cape Point and Pole Road at Hatteras Inlet should be provided for.

>>

>>Now that said let me be clear in my expectations. If, for example, the 7 mile bridge proposed by USFWS is built, I would expect to see a sand road from the North end of Rodanthe to the South side of the new Pea Island Inlet and a sand road from the North terminus area of the bridge to the North side of the new Pea Island Inlet. But if, for example, an inlet was eventually formed at the S-Curve area, or any other area, I would not expect any bridging or fill of such an inlet to accommodate a sand road. We should at least start with reasonable sand road access and let new inlets dictate what access remains over time. Such access should be agreed to by USFWS as part of this process and factored into the road improvement decisions. It should not be left undecided and for USFWS to decide in the future as they indicated during discussions on the 17 mile bridge.

>>

>>4. Any bridge / raised roadway solutions should carefully look at what wind restrictions may be needed and their impact on travel / access. I refer you to wind restrictions on the Chesapeake Bay Bridge Tunnel as examples of a similarly exposed roadway that is purposely not used as an evacuation route because of the wind restrictions.

>>

>>

>>Now having said all the above, I think the following are the best compromise solutions that would address my 4 concerns.

>>

>>For Pea Island Breach:

>>

>>Bridge on new location. This requires only a short section of new right of way, moves the road further from the surf zone (beyond the 2060 erosion zone) in the area of the breach (particularly to the South as inlets tend to migrate South; eg. Oregon Inlet), places it on a bridge so the current inlet can be left for sound water outflow relief from potential sound flooding and provides better interconnect to the North if the conceptual road / bridge (or portions thereof) ever need to be built to the North.

>>

>>And any improvement should consider access to the boat ramp at New Inlet. We should not loose access to this boat ramp.

>>

>>For Rodanthe Breach:

>>

>>Bridge in Pamlico Sound. It seem foolish to build anything within the current easement, knowing it will soon be in the surf zone; (ie the easement is within the 2060 erosion zone) . The history of this area includes Loggerhead Inlet in this general location and sooner, rather than later, this area will be breached badly. When it is badly breached, it would obviously be better that any bridging in the area was not eventually in the surf zone.

>>

>>Ted A. Hamilton

>>6 Jib Ct

>>Hampton VA 23664

>>
>>Property owner in Salvo NC for 40 years

>>

>>

>>

>>

>>

>>Cheers Ya'll

>>

>>Ted A. Hamilton

>>(aka Salvo Jimmy)

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Smyre, Elizabeth A

From: Haug <haug@astound.net>
Sent: Wednesday, December 14, 2011 12:32 PM
To: Smyre, Elizabeth A
Subject: Hwy 12 - Outer Banks

I strongly support the beach nurishment options to create a stable corridor for the road.
Karl and Billi Haug
Owners
Sandbox at Salvo

Smyre, Elizabeth A

From: Bluesadvice@aol.com
Sent: Friday, December 09, 2011 11:49 AM
To: Smyre, Elizabeth A
Subject: Rodanthe road options

Dear Ms. Smyre,

This letter is for the purpose of asking NCDOT to proceed with the beach nourishment option for Highway 12 into Rodanthe. The bridge options, particularly the bridge in the sound, would harm the idyllic atmosphere of Miffo Beach and the surrounding area. My second choice would be the shorter bridge into Rodanthe along with the beach nourishment option.

The other bridge options are too disruptive to the area, too expensive, and would leave Rodanthe open to further erosion and loss of property value.

Nancy Hawkins

Norburn, Robert E.

From: Smyre, Elizabeth A [bsmyre@ncdot.gov]
Sent: Monday, January 23, 2012 8:57 AM
To: randy hirscher; Norburn, Robert E.
Cc: Office of the Governor; governor.office@governor.ncmail.net; L.T. Governor
Subject: RE: Mirlo Beach/Hwy 12 Beach Fix Options

Randy, Julie-

Thank you for your comments on the NC 12 projects. Every comment that NCDOT receives will be carefully considered as the planning process for the projects moves forward. If you have any further comments or questions, please feel free to contact me.

Thanks,
Beth

Beth Smyre, P.E.
Project Planning Engineer
NC Department of Transportation
Project Development & Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
(919) 707-6043

From: randy hirscher [mailto:rhirscher@yahoo.com]
Sent: Friday, January 20, 2012 6:26 PM
To: Smyre, Elizabeth A; norburn@pbworld.com
Cc: Office of the Governor; governor.office@governor.ncmail.net; L.T. Governor
Subject: Mirlo Beach/Hwy 12 Beach Fix Options

Ms. Smyre and Mr. Norburn:

I wanted to take the opportunity to contact you to provide my input to the Mirlo Beach Breach Fix Options that are under consideration and which NC DOT and the Office of the Governor will be making a decision about shortly. As one of the ocean front home owners in Mirlo Beach who is directly experiencing the effects of the overwash and erosion that is regularly occurring, and whose property will be directly impacted by any decision that is made on the breach fix option, I am dismayed to hear that beach nourishment option has been eliminated--right from the start--from serious consideration as a viable option to restore the highway while preserving the natural beauty that Hatteras Island is known for around the world. Any of the bridge options that might be chosen, besides being a more costly long-term option and contradicting the natural essence of the Island, will essentially commit our community (Mirlo Beach), including our house, to the sea. The Army Corps of Engineers built an engineering marvel that would stand any test of time when it built the dunes that line the island...that is, until the groin was set up at Oregon Inlet which shut off the natural flow of sand up and down the island. I would ask that NC DOT seriously reconsider the beach nourishment option -- one that is established and maintained like the Army Corp set up. NC DOT has a constant long-term source of sand that is being dredged at Oregon Inlet to maintain any beach nourishment option.

Thank you for your consideration of our comments!

Many best regards,

Randy and Julie Hirscher
22009 Sea Gull Street
Rodanthe, NC 27968

COMMENT SHEET

**Bonner Bridge Replacement Project
Public Workshops - Phase II
TIP No. B-2500
Dare County**

NAME: Mr & Mrs Robert Horning
ADDRESS: Po Box 132 Ocracoke NC 27960
E-MAIL: _____

COMMENTS AND/OR QUESTIONS:

We strongly recommend building the long
bridge- make absolutely no case to rebuild
the bridge as close to the inlet- building across
the sound where it would be more protected
and the land would be more secure seems to
be the most logical and same way to go

Respectfully
Mr & Mrs R Horning

Comments may be mailed by January 20, 2012 to:

Ms. Beth Smyre, PE
NCDOT - Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Email: bsmyre@ncdot.gov

Smyre, Elizabeth A

From: Ben Hutchinson <ben.hutchinson@gmail.com>
Sent: Wednesday, December 14, 2011 11:18 PM
To: Smyre, Elizabeth A
Subject: Beach Nourishment Plan

Dear Ms. Smyre,

I am writing you this email to express my support for consideration of the beach nourishment plan in Hatteras Island. I understand that you are meeting about this issue tomorrow, and I would like to add my voice to any others there might be in support of assessing the feasibility of the plan. My family has been coming to the Outer Banks for several decades now, and not only have we regularly supported the rentals-based economy and local businesses there, but we also own property in Rodanthe and are invested heavily in its future. From my understanding of the various proposals, the nourishment plan seems to be well worth considering given its relatively low cost and non-intrusive nature. I hope that you ultimately choose what is best for Rodanthe, and I believe that course of action to include at least looking into the nourishment plan. Many thanks for your time.

Best,
Ben Hutchinson

Smyre, Elizabeth A

From: Beth Hutchinson <beth.b.hutchinson@gmail.com>
Sent: Wednesday, December 14, 2011 11:57 AM
To: Smyre, Elizabeth A
Subject: Mirlo beach nourishment

Dear Ms. Beth Smyre,

Although I do not currently live in North Carolina, I've been vacationing in the Outer Banks for most of my life. I visit at least twice a year, I was married at Bodie Island lighthouse and I consider our family vacation home in Mirlo Beach my second home.

I realize that you will be meeting with other representatives tomorrow as part of a merger team to discuss action regarding solutions for the erosion and transportation issues affecting highway 12 near Mirlo Beach. **I hope you will strongly consider beach nourishment as a solution.** This approach has the potential to preserve the natural beauty of this special place in a *cost-effective, forward-thinking and sensible* way.

Thank you for your time.

Sincerely,
Beth Hutchinson

Smyre, Elizabeth A

From: Hutchinson, Wes <jwhutch@wharton.upenn.edu>
Sent: Tuesday, December 13, 2011 2:09 PM
To: Smyre, Elizabeth A
Baker, Sterling D; Capehart, Bob; Nance, Jon G; Bouchelle, Tammy; Roseam
Verrecchio, mike.bryant@fws.gov; Scott_lanier@fws.gov; dennis_stewart@fws.gov;
Cc: Office of the Governor
NC12 in Mirlo Beach - Comments for the Dec 15 meeting of the Bonner Bridge
Merger Team
Subject: NC12 in Mirlo Beach
Attachments: MirloBeachErosionOpinion-CSE-1Nov2011.pdf

Beth,

<https://sites.google.com/site/mirlobeachnc/home>

The above URL links to a website we have developed to inform the general public and specific stakeholders about the opinions of the Mirlo Beach Home Owners Association (MBHOA) regarding the beach nourishment design option for the Rodanthe part of Phase 2. **WE STRONGLY FEEL THE NOURISHMENT OPTION MERITS FURTHER STUDY.** Unless you know exactly where the sand is (and isn't), we cannot see how you can make an informed final decision that is in the best interests of the citizens of the State of North Carolina and all of the others who find value in the outer banks.

When you and I met at the NCDOT workshop (Monday 12/5/11), you suggested that I put all of our comments in one place. I am sure that individual home owners will contact you separately, but on behalf of MBHOA, I have pasted below "The 10 Top Reasons to Support Beach Nourishment" from our website. I have also pasted below the letter we emailed to you on November 4, 2011, and I have attached the report by Coastal Science and Engineering, which we also sent earlier.

Since you and John Page (PB Americas) indicated at the workshop that the cost of nourishment is difficult to quantify and that you do not attempt to quantify the costs of the bridge options in terms of damage to the local economy (which are qualitatively outlined in the FEIS), please note Reasons #6 and #8, respectively. These are necessarily very approximate estimates; however, we will continue to refine them and update our website as we do more research and consult more with a variety of experts.

After we learn which options have been retained by the Merger Team for further study and receive a copy of the expert report (which you said you would send), we will almost certainly have more comments to submit.

Thanks again for all of your hard work and that of the Merger Team.

--Wes

The 10 Top Reasons to Support Beach Nourishment

1. **Beauty.** The ribbon of sand that is the Outer Banks of North Carolina provides some of the most beautiful beaches in the world, some of the most beautiful wildlife, some of the most beautiful sunrises and sunsets. Nourishment preserves this beauty. Let's be honest, bridges are ugly.
2. **Working with nature.** Nourishment maintains a beach with sand matched to that beach. Pumping sand back onto a beach is simply using a human force to repair damage done by a natural force -- erosion. No concrete, no steel, no permanent manmade changes to nature.
3. **Permanence.** It is sometimes said that beach nourishment is not a permanent solution, but that just means that the nourishment must be repeated. This is how New York, New Jersey, and Delaware maintain their beaches (along with many

5

states and countries). The Final Environmental Impact Statement (FEIS) estimated that the nourishment cycle for Rodanthe would be once every 4 years. However, we will never know until we try it. It could be shorter; it could be longer. Thus, we should nourish as soon as possible to learn the facts.

4. **Speed.** Nourishment is the fastest way to protect NC12. The main thing that delays nourishment, is getting the needed permits. In South Nags Head, that took several years, which is about how long it takes to design and build a bridge. We assume that a project this big and important will be fast-tracked by the appropriate government agencies. NC12 needs protection ASAP!
5. **Flexibility.** Because nourishment is an ongoing solution, it can be repeated sooner or later depending on conditions. It leaves open the possibility of better solutions 20 years down the road based on new technologies. A bridge can always be built later if experience proves that nourishment is too costly or ineffective. A bridge cannot be "unbuilt" later, if nourishment is shown to be better or if better alternatives emerge. A bridge cannot even be stopped halfway if cost overruns show it to be much more expensive than expected.
6. **Saves money.** The cost of a bridge in Rodanthe is \$114 million to \$240 million (NCDOT estimate in 2006 dollars, \$128MM to \$270MM in 2011 dollars) and \$169 million to \$212 million (our estimate in 2011 dollars based on figures provided by Coastal Science and Engineering). However, build a bridge today, pay for it today. Begin beach nourishment and you pay only 1/12 of the total cost today, and the "present value" cost of nourishment is only \$106 million to \$133 million.
7. **Due diligence.** The BIG question with nourishment is whether or not sand can be found. This is why nourishment needs to be one of the alternatives selected by NCDOT and the Merger Team on December 15 for additional study. What the experts have said is that there is very little sand in Wimble Shoals (several miles from Rodanthe), but there is a lot of sand in Platt Shoals, which is 6 - 9 miles north and there may be sources of sand in between. Experts also say that even 10 - 20 miles can be economically feasible. We need to know where the sand is!
8. **Preserves the Hatteras Island economy.** All of the bridge alternatives will have a devastating effect on the cultural and economic life of north Rodanthe (not just Mirlo Beach). Popular uses such as fishing, birding, surfing, wind surfing, and kite boarding will all be negatively affected or eliminated. Vacation rentals and property values will plummet. The Mirlo Beach subdivision alone has a tax value of over \$50 million, and the rest of northern Rodanthe is worth at least that much. Thus, the annual tax contribution to Dare Co. is over \$400,000. Over the 50-year life of a bridge, that is \$20 million. Add to that the rental revenue and retail sales to vacationing renters and it is clear that bridges will result in a substantial financial loss to our community. ... and our community is one of the few that send more tax revenue to Raleigh than is spent here on government services.
9. **Rodanthe is the test case for all of OBX.** All of Hatteras Island is experiencing erosion problems: private homes in the villages, Pea Island Wildlife Refuge, and the Cape Hatteras National Seashore. What happens in Rodanthe will be a model for everywhere else. Do we really want a policy of simply building bridges and abandoning the current NC12 and the lands it supports? Is it right to just let the island dissolve into the Atlantic, when nourishment might keep the place just like it is now?
10. **Send a message.** It took 20 years to make a decision about the Bonner Bridge. The North Carolina Department of Transportation and the Federal Highway Administration worked with a Merger Team with representatives from many local, state, and national governmental organizations. But the people who live, work, and play here always come last. We get a month or two of public comment, then a decision is made. It is time for common sense to prevail. Please send a message to everyone who will be in the room when this decision is made and everyone who can directly influence this decision. It is now or never.

The message below was sent 11/4/11:

Jerry, Beth, and others at NCDOT and USFWS,

Thanks again for your responsiveness in providing information in the past and for arranging for Jim Hoadley to attend the meeting on Monday (10/31/11) at Mirlo Beach where NCDOT, USFWS, CHEC, and MBHOA (board members and affected property owners) were represented.

6

I would like to share two opinions that have emerged among MBHOA members. Opinion 1 involves the more immediate issue of the erosion of private property on the west side of NC 12, and Opinion 2 involves the more long term beach erosion and ongoing damage to NC 12 and private property. Both of these opinions are based on our frequent observations of the area and a preliminary expert report prepared for MBHOA by Coastal Science and Engineering (CSE). Major CSE projects in North Carolina include the beach nourishment project at Nags Head and the Bogue Bank project in Carteret County. Their report is attached to this email for your review.

We would be very interested to know whether or not you share our opinions, and, if not, we hope you will share the evidence that leads you to different conclusions. Overall, our opinion is that NCDOT and USFWS decisions and actions, however well intended and cost effective at the time, have contributed significantly to the extreme erosion damage that occurred during Hurricane Irene. From our common sense perspective, we believe some type of significant assistance from both agencies is appropriate and deserved. Moreover, we hope that the information we are providing assists both agencies in their current decisions about the future of Hatteras Island and that they will fully take into account the likely damage to Mirlo Beach that will almost certainly result from some alternatives under active consideration.

OPINION 1: THE CAUSES OF THE EXTREME EROSION AT MIRLO BEACH DURING HURRICANE IRENE. The erosion in question occurred on the west side of NC12 from Blue Sea Rd. to Green Lantern Ct. and removed most of the sand in that area transforming property that was approximately 4 foot above sea level into a pond whose bottom is now several feet below sea level. Nine Mirlo Beach properties as well as MBHOA roads and common areas were directly affected. All Mirlo Beach properties were indirectly insofar as ocean access is now limited for properties west of NC12. We also believe the power poles in standing water and remaining debris represent a significant safety hazard.

We believe there were **four important causal factors** that created this extreme and focused erosion rather than the diffuse and limited erosion that normally occurs in sound side flooding. **First**, the narrow breach at the boundary of Rodanthe and Pea Island Wildlife Refuge created a singular point of drainage for the 4 - 5 foot of water that flooded the area when the winds from Irene shifted to the southwest. **Second**, this focal breach was most immediately caused by the canal running between the ponds in the Refuge (Paul's Ditch), which significantly increased the water pressure at the point of the breach. (Evidently this canal has been in place for many years and is jointly maintained by NCDOT and USFWS. Several residents noted that it was cleared and re-established just prior to the storm.) **Third**, the sandbags placed on the east side of NC12 just north of the breach formed a dam which prevented overwash or secondary breaches, forcing all of the water through the narrow breach (plus NC12 and elevated beachfront properties south of the breach also acted as a dam). **Finally**, from a broader perspective, this breach (indirectly) and previous ocean side breaches (more directly) were caused by the high beach erosion rate at this "hot spot." Given this, the breach would have been prevented had there been a program of beach nourishment of sufficient scale in prior years. In particular, based on our previous discussions with you, we know that such a project had been planned (at least for study, R-3116D), but was set aside several years ago in deference to the Bonner Bridge plan. Of course, there may have been good budgetary and political reasons for not engaging in beach nourishment in previous years, but it is a fact, nonetheless, that such nourishment would have prevented this damage.

OPINION 2: BEACH NOURISHMENT IS A VIABLE LONG-TERM SOLUTION TO THE RODANTHE HOT SPOT PROBLEM. At our meeting on Monday, Dennis Stewart (USFWS) told us that there had been a high-level, inter-agency meeting about long-term solutions the previous Monday (10/24/11), which he attended. He said that during that meeting evidence was presented that while there was appropriate sand close to Mirlo Beach (e.g., within 3 miles) that this source was not sufficiently large to supply a long-term solution. He also mentioned that a distance of 6 miles was considered, but was thought to be too costly. You will note in the attached CSE report that distances of 10 to 20 miles are sometimes economically viable. Thus, based on the currently limited information that we have about NCDOT plans, we are very concerned that NCDOT is prematurely abandoning beach nourishment in favor of a bridge. We believe that, if only as a matter of due diligence and fairness, NCDOT should also get an analysis from CSE (i.e., more detailed and thorough than the one attached). While there are many experts that can provide valuable input to the NCDOT decision, it is hard to think of anyone with more practical and scientific knowledge of actual nourishment projects on the NC coast.

As we all know, the Governor has mandated that a long-term solution to the NC 12 problem be developed and implemented as soon as possible. Thus, we believe it is important for you to understand our Opinion 2 and for us to understand your opinions and the process you now plan to follow. However, the issues in Opinion 1 are a more immediate concern for us. MBHOA has contacted the necessary agencies to secure permits to fill in the erosion on the west side of NC 12. We have also

secured bids to complete the work. Unfortunately, the MBHOA does not have the funds to complete this project. We have filed for FEMA/SBA loans; however, this process is long, and approval for such loans is not guaranteed. Our current understanding, based on your previous responses, is that NCDOT has no further forms of assistance for us, and our only recourse is to make a legal claim of damage. Is that true? Is that true for USFWS as well? This is not something we are eager to do, except as a last resort. We would much rather find a more cooperative solution. Thus, we need to know that it is our only remaining option before we go down that path. Do you think assistance might be available from some other NC or federal agency?

As always, we deeply appreciate your efforts; the information you have provided, and your willingness to engage in frank and productive discussions.

Sincerely,

Wes Hutchinson

Vice President, Mirlo Beach Homeowners Association



Smyre, Elizabeth A

From: Hutchinson, Wes <jwhutch@wharton.upenn.edu>
Sent: Tuesday, December 13, 2011 9:08 PM
To: Smyre, Elizabeth A
Subject: FW: Mirlo Beach and Phase 2 of the Bonner Bridge Project

FYI.

--

Wes Hutchinson
Stephen J. Heyman Professor
Marketing Dept., 746 Jon M. Huntsman Hall
The Wharton School, University of Pennsylvania
Philadelphia, PA 19104-6340

office: (215) 898-6450
fax: (215) 898-2534

From: Robert Dean <rd dean@coastal.lufi.edu>

Date: Tue, 13 Dec 2011 20:41:38 -0500

To: John Wesley Hutchinson <jwhutch@wharton.upenn.edu>

Subject: RE: Mirlo Beach and Phase 2 of the Bonner Bridge Project

Hello:

Without knowing all the background information, I believe that "further study for nourishment" should be worthwhile. I suspect that the "UF expert" that Beth Smyre referenced was Dr. Max Sheppard. However, to the best of my knowledge, he does not work with beach nourishment.

Let me know if I can assist further.

Best regards,

Bob Dean

From: Hutchinson, Wes [<mailto:jwhutch@wharton.upenn.edu>]

Sent: Tuesday, December 13, 2011 1:29 PM

To: rd dean@coastal.lufi.edu

Subject: MirloBeach and Phase 2 of the Bonner Bridge Project

<https://sites.google.com/site/mirlobeachnc/home>

I am the VP of the Mirlo Beach Home Owners Association and several paths have led me to you. As you probably know know the Bonner Bridge merger team will be meeting on Thursday to decide which design options to retain for further study for Phase 2 of the Bonner Bridge Project. While researching beach nourishment, I came across a 2004 report you did with Robert Dolan, at the NCDOT workshop last week Beth Smyre mentioned that one of their experts was from UF (so I googled you, BTW I was on the UF faculty for 13 years before coming to U Penn), and this morning when I asked Tim Kana (Coastal Science & Engineering)

about you, he said, "Bob Dean is revered in our profession and would be a great resource for you." Thus, I would love to know your opinions about beach nourishment as a Phase 2 solution for the Rodanthe hot spot.

As you might expect, the MBHOA is a strong advocate offurther study for nourishment. We think it's worth the time and money to find out exactly where the sand is (or isn't) before a final decision is made. We will be "going public" this afternoon with a website (link is above -- gotta love Google). I am running it by the experts we have contacted for comments and especially to confirm that the facts behind our opinions are right (even though others might arrive at different opinions based on the same facts). We would value any thoughts you might have.

--Wes

--

Wes Hutchinson
Stephen J. Heyman Professor
Marketing Dept., 746 Jon M. Huntsman Hall
The Wharton School, University of Pennsylvania
Philadelphia, PA 19104-6340

office: (215) 898-6450
fax: (215) 898-2534

Smyre, Elizabeth A

From: Lynn & Windsor Jacques <frisconc@embarqmail.com>
Sent: Sunday, December 11, 2011 10:12 PM
To: Smyre, Elizabeth A
Subject: comment on the rt12 pea island fix

Lynn & Windsor Jacques
51170 Lassiter Lane
P.O. Box 1025
Buxton, NC 27920-1025
Tel 252-995-3760
e-mail: frisconc@embarqmail.com
Cell Phone 252-995-2125 or 252-305-1040
December 11, 2011

Ms. Beth Smyre, PE
NCDOT - Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548

Re. Comment concerning the Bonner Bridge replacement project - phase II TIP No. B-2500 Dare county

Ms. Smyre.

My wife & I attended the NCDOT Bonner Bridge Public Workshops meeting in Rodanthe on 12/6/11. I want to compliment you & your staff on presenting a well organized and informative meeting. The NCDOT personnel were knowledgeable & personable.

As you know, the Pea Island road situation is critical to the survival of Hatteras Island, & Dare county as a whole, both economically & socially. We firmly believe that the solutions presented at the meeting to fix the Pea Island situation were stop-gap & temporary at best. If NCDOT, the state, Dare county, the federal government &, most of all, the residents, are serious about providing sustainable access on & off Hatteras Island, we need to reconsider the Pea Island causeway by-pass, which was part of the original Bonner Bridge replacement proposal. During the December 6 meeting, the only reason we were given for not considering the Pea Island by-pass was that it would be too expensive. This being said, there are creative & innovative ways to finance such a project which could include tolls, a special tax on the people who benefit, municipal bonds or private investment. Yes, it will be expensive; & not politically attractive but it should be evaluated. One option that should be considered would be to tie a by-pass into the existing Bonner bridge. The existing bridge may not meet modern design criteria but is being maintained to be safe & usable.

During the meeting, when we mentioned a ferry system around Pea Island, We were told that NCDOT had evaluated a ferry solution & felt that a ferry system could not be engineered which would be able to handle the traffic & therefore did not present it as a viable solution. This answer is a cop-out. Given the gravity of the situation, we need to include a ferry solution as part of the evaluation process. I feel a ferry solution could be engineered & may be the least expensive & the most effective.

Pea Island is a dynamic westward moving, environmentally sensitive sand bar in the Atlantic ocean, the ocean is rising, storms are unavoidable, beach erosion is inevitable, engineering & building a sand dike on this sand

bar is foolish, building a fixed structure behind the dike is fool-hardy.

We would appreciate a response to our comments.

Thanks

Windsor J

Smyre, Elizabeth A

From: Frank A. Jakob <capehatreal@yahoo.com>
Sent: Tuesday, December 06, 2011 7:56 PM
To: Smyre, Elizabeth A
Cc: Jerri Getty; ccjake44@gmail.com; 'Warren Judge'; 'Warren Judge'
Subject: Public Comment Rodanthe Dec 6, 2011 re NC Hwy 12 and new Bonner Bridge
Attachments: 120620111 faj proposed stumpy point bridge scan0003.pdf; 12062011a aerial ocean front and sound front Dare co parcels rodanthe scan0004.pdf

Dear Beth Smyre,

I attended the public comment in Rodanthe this evening, December 6, 2011 regarding the construction of the new parallel Bonner Bridge and alternatives on how to maintain NC Highway 12 to Rodanthe. This was the fourth such meeting in the past 6 years and many more of the same meetings I've attended over the past 20 years. Hopefully we are getting closer to a solution.

After reviewing your site plans and many proposals, I'd like to offer my comments below:

First off, I would like to tell you a little about myself. I have an engineering back ground and worked as a project engineer for 10 years with United Engineers and later, Stone and Webster in the construction of Electrical Power Plants and Steel Mills. I relocated to Rodanthe in 1976 and have been in the development and construction of real estate here for over 30 years. I currently own and operate Cape Hatteras Realty and Construction Corp in Salvo, NC. I'm the broker who was responsible for the sale of Jenner's Fishing Pier and later indirectly Mann's Harbor Marina to the State of North Carolina, as well as many similar projects in my 30+ year experience. I have seen the effects of beach erosion on NC Highway 12 thru-out Pea Island and Rodanthe with over 1,800 feet lost due to erosion in one storm (south side of Oregon Inlet circa 1970's). There are many plotted lots in Rodanthe that are now in the ocean, including a 28 unit condo project on S Holiday Ave. The highway has been relocated 3 times since I've lived here, and now there is no land left to relocate it again. After reviewing historical maps from the 17th and 18th century Rodanthe was an inlet for centuries. Trying to combat the natural southerly flow of ocean currents in this hemisphere with beach erosion is a losing battle.

Sometimes you have to step back and take another look to see the forest thru the trees. Attached is a site plan marked "Alternate III" and aerial of Dare County property in Rodanthe. The only reason we have a problem with NC Highway 12 thru Pea Island is because we are **building a new bridge** in the **wrong location**. "Forget a new bridge across Oregon Inlet". Take the funds and build a new 13 mile bridge across the sound from the NC State Ferry terminal in Stumpy Point to the NC State/Dare County Ferry Landing in Rodanthe (behind the community center). Leave Pea Island alone for the wildlife. There would be no need for beach nourishment or maintenance of NC Hwy 12 or property acquisitions.

Let mother nature take care of the Rodanthe and Pea Island Breech. Make it accessible for walk on traffic only. Dare County already owns 9.82 ac sound-front (Rodanthe-Waves-Salvo community center) and 7.33 ac vacant ocean front land across the road from the community center. The county already applied for a grant on the ocean front parcel to build a recreation center with public parking. This would allow public walk-on access along the beach front to Pea Island.

This could be a simple solution to a unsolvable complex problem (and getting bigger).....provided you can get thru the political hoop net. The life line of over 5,000 Hatteras Island residents and 1,500 hundred Ocracoke residents, including hundreds of small mom and pop businesses and emergency services depend on safe dependable access from Rodanthe.

After all, the State and Feds are almost finished building a new high speed interstate US/NC 64 from I-95 (Rocky Mount, NC) to Manns Harbor/Nags Head, NC which could easily intersect Stumpy Point, NC.

"Bingo"

Please feel free to contact me if you have any questions.

Thanks and Have a Great Day!



"Without hard work, nothing grows but weeds"

Frank

Frank A. Jakob, President Realtor-Broker-Auctioneer

Buyer-Seller Agent & Investment Broker (1031 Tax Deferred Exchanges)

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Cape Hatteras Realty and Construction Corp
27013 Third Street
PO Box 249
Salvo, NC 27972

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Smyre, Elizabeth A

From: Thomas Kligge <tdkligge@gmail.com>
Sent: Wednesday, December 14, 2011 11:35 AM
To: Smyre, Elizabeth A; timspear@ncleg.net; Warren Judge; allenb@darenc.com;
Cc: joshua.bowlen@mail.house.gov; kara_weishaar@burr.senate.gov;
aaron_suntag@hagan.senate.gov
Subject: Beach Nourishment

Dear Government Officials, in addition to all information that you probably have received supporting beach nourishment for the Rodanthe area, a quick personal story: In May 2011, my wife and I invested our life savings in our dream house in Mirlo Beach. After exploring the entire eastern coast from Delaware to South Carolina, we both decided this is where we wanted to be. We felt we were safe investing on the west side of Route 12, thinking it would be there to protect us. Now, several options proposed, are threatening the entire northern area of Rodanthe. Please decide to pursue beach nourishment to protect this beautiful and historic area for us and our descendants. Thank you, Tom and Janet Kligge.

Smyre, Elizabeth A

From: Cathy Lane <LANECA@pwc.edu>
Sent: Thursday, December 15, 2011 3:05 PM
To: Smyre, Elizabeth A
Subject: Beach Nourishment

I am writing to you today with concerns about the proposal to ensure access to Hatteras Island through a beach nourishment project. Because I spend my summers in Hatteras Village and plan to retire there, I am greatly interested in keeping full time access to Hatteras Island available. However, I do have some questions that I would like to see addressed before a decision is made to go ahead with beach nourishment. Those questions are as follows:

- 1) Where is the sediment coming from? Will it be dredged and pumped onto the beach, or brought by dump trucks? If the sediment is being brought in, how will the eventual erosion of the new material affect the offshore environment? If it is being pumped in, how will the loss of sediment offshore and the dredging affect the offshore environment?
- 2) What will the size of the sediment be? Will it match the current grain size on the beach or be larger or smaller? Will the sediment be well sorted or poorly sorted? This will make a difference in how quickly the new beach erodes.
- 3) Will there be mud and silt mixed in? These tend to erode quickly and cause poor water quality directly offshore. In addition, contaminants tend to build in mud and silt.
- 4) Will the new sediment be compacted more than the existing sediment? Organisms that currently use the beach might not be able to survive if the sediment becomes too compacted.
- 5) Will a sediment toxicology study be done before the project is started?
- 6) Will the beach profile be affected? Will the "new" beach be steeper than the existing beach? This will affect how quickly it erodes and what organisms can utilize the beach.
- 7) Has a biological impact study been done? Will sea turtle nests be affected (sea turtles would be unable to nest on a compacted beach and cannot crawl onto a steep beach profile)? If there is mud and/or silt in the sediment greater than a few %, are there offshore filter feeders (clams, mussels, etc) that could be affected by the resulting poor water quality as the mud and silt erode?
- 8) Where is the funding coming from?

I thank you for taking the time to read this e-mail. I also thank you in advance for taking the answers to these questions seriously before any decision is made regarding beach nourishment. While, again, I want access to Hatteras Island, I do not want it at an exorbitant cost. Nor do I want the environment harmed to too great an extent. After all, it is for the great beauty of the Outer Banks that I spend my summers there.

Thank you,

Cathy Lane
Oceanography Instructor
Science Department Chair
C.D. Hylton High School

Smyre, Elizabeth A

From: Chris Lazinski <clazinski@gmail.com>
Sent: Thursday, January 19, 2012 3:24 PM
To: Smyre, Elizabeth A
Subject: Comments on the Future of S-Turns

Hello Ms. Smyre,

I'm writing in response to a recent article in ESPN Surfing (<http://espn.w2bcbh>) that details the potential outcomes of NCDOT's planning for the future of the Pea Island and North Rodanthe beach sites. As a resident of Hatteras Island whose employment depends on access to the waters of the ocean and the sound, I urge you to consider the needs of the surfing community in designing the future road structure of the S-Turns area. I teach kiteboarding and surfing lessons full-time for Real Watersports in the town of Waves, and I can attest that a very significant portion of our year-round business comes from tourists who travel to Hatteras Island specifically for surfing or kiting. By designing a road structure that does not easily preserve access to this area, we risk losing at least some of these surfers and kites to other, more easily accessible riding locations. This risk is unacceptable to an island that was so physically and economically damaged by Hurricane Irene this past August. In years past, the lack of public parking or designated public beach accesses in the S-Turns area has led to conflicts with property owners and a weakening of the dune structure due to constant human traffic. Barring any more large natural events, the surf breaks at the north end of Rodanthe won't be going anywhere, and as a consequence, neither will the surfers. By designing a long-term plan that takes the needs of surfers into account, such as the needs for parking, bathrooms/changing rooms, and designated beach accesses, we can preserve access to these breaks while also pleasing local property owners and helping preserve the dunes in that area. I feel that this win-win-win outcome should be the goal of your design process, and I hope the DOT listens to our concerns.

Best,
Chris Lazinski
Kiteboarding Coach, Real Watersports
www.realwatersports.com

B-56

COMMENT SHEET

**Bonner Bridge Replacement Project
Public Workshops – Phase II**

**TIP No. B-2500
Dare County**

NAME: Rush Little

ADDRESS: 23310 Hwy 1A

RODANTHE, NC. 27968

E-MAIL: PO BOX 876

Mailing Address HADY, VA 24101

COMMENTS AND/OR QUESTIONS:

I oppose the bridge down a sound
front home in Rodanthe. The bridge
would take away the view and taking at
traffic not the sound front. Windbreaks
will be trying to go over and under
bridge which would be dangerous.
It would be a lose of revenue

Comments may be mailed by January 20, 2012 to:

Ms. Beth Smyre, PE
NCDOT – Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Email: bsmyre@ncdot.gov

Smyre, Elizabeth A

From: SC SEA <scseasurfer@gmail.com>
Sent: Friday, January 06, 2012 12:22 PM
To: Smyre, Elizabeth A
Subject: Surfers' Environmental Alliance (SEA) support for public parking at "S-Curves" surf break on the Outer Banks

SURFERS' ENVIRONMENTAL ALLIANCE (SEA)
The Leading Edge of Coastal Activism

Respectful greetings from Surfers' Environmental Alliance (SEA),

SEA asks that any bridge-building or public transportation project on the Outer Banks include provision for public parking for recreational beach users and surfers. We believe beach access is a public right and public funds should not be used to eliminate or reduce said existing access. This request applies to the S-Curves surf break, in particular. This is a well-known break and used by surfers year-round. Such recreational activities help power the local economy, as well.

As a preliminary matter, Surfers' Environmental Alliance (SEA) is committed to the preservation and protection of the environmental and cultural elements that are inherent to the sport of surfing. Our goals are achieved through grassroots activism, community involvement, education and humanitarian efforts. We engage in projects that strive to conserve the quality of our marine environment, preserve or enhance surf breaks, protect beach access rights, and safeguard the coastal surf zone from unnecessary development. www.seasurfer.org

SEA operates nationally and overseas also when appropriate, so we are extremely interested in the Outer Banks situation. Any public action which reduces water quality, beach access, or surfing access is strongly opposed by all SEA members.

We all urge you to preserves beach access parking for surfers and all other beach users.

Jim Littlefield
West Coast Environmental Projects Director
Surfers' Environmental Alliance (SEA)
www.seasurfer.org

Smyre, Elizabeth A

From: Matthew_McCambridge@bd.com
Sent: Friday, December 09, 2011 4:54 PM
To: Smyre, Elizabeth A
Subject: Rodanthe NC 12 road options,

Dear Ms. Smyre:

This letter is to ask the NCDOT to implement the beach nourishment option for stabilizing Highway 12 into Rodanthe. It makes the most sense economically and would have the least disruptive effect of the four options. In particular, the bridge in the sound would ruin the Mirlo Beach area. As a frequent visitor to the area, I know that it would harm the active sound life that is so popular. Kiteboarders, stand-up paddlers, windsurfers, kayakers, and families enjoying the shallow warm waters would all be harmed by a bridge in the sound.

I fear that any program without beach nourishment would lead to further severe erosion and the gradual elimination of the northern Rodanthe area. Thank you for your considerations.

Very Respectfully,
Matt McCambridge



Matt McCambridge
Distribution / Supply Chain

BD
1 Becton Dr., Franklin Lakes, NJ 07417 USA MC: 017
tel: 201-847-5853
E-mail: Matthew_McCambridge@bd.com Website: www.bd.com

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COMMENT SHEET

Bonner Bridge Replacement Project
Public Workshops – Phase II

TIP No. B-2500
Dare County

NAME: GEORGE MEAD
ADDRESS: 27251 DORY RD - SIOUX
E-MAIL: GEOMEAD@CHARTER.NET

COMMENTS AND/OR QUESTIONS:

IT SEEMS TO ME THAT BENCH
NOVISHMENT IS A LAST CHANCE
IT SEEMS TO BE COSTING A GREAT DEAL
WITH ONLY TEMPORARY RESULTS
A RAISED STRUCTURE APPEARS TO BE
A GOOD APPROACH THAT PROMISES LONGEVITY
IN THE LONG RUN, LESS OVERALL COST
AND BETTER RELIABILITY. THANK YOU

Comments may be mailed by January 20, 2012 to:

Ms. Beth Smyre, PE
NCDOT – Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Email: bsmyre@ncdot.gov

See Do What You Have to Do.

COMMENT SHEET

Bonner Bridge Replacement Project
Public Workshops – Phase II

TIP No. B-2500
Dare County

NAME: Shirley Mead
ADDRESS: PO Box 364 Rodanthe NC 27968
E-MAIL: GRMEAD@CHARTER.NET

COMMENTS AND/OR QUESTIONS:

I don't think movement is a terrible
waste of money. We need a bridge and
not a temporary one. This bridge (whatever
kind you choose) needs to be started
immediately. Please don't waste
any more money repairing the road.
every time we have a storm. Get off the pot!!
Build a bridge.

Comments may be mailed by January 20, 2012 to:

Ms. Beth Smyre, PE
NCDOT – Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Email: bsmyre@ncdot.gov

Smyre, Elizabeth A

From: Diane Medley <Diane.Medley@mcmcpa.com>
Sent: Wednesday, December 14, 2011 1:27 PM
To: Smyre, Elizabeth A; Tim.Spear@ndeg.net; warrenj@darenc.com; allenb@darenc.com; Office of the Governor; Joshua.Bowlen@mail.house.gov; kara_weishaar@burr.senate.gov; aaron_suntag@hagan.senate.gov
Subject: Permanent Solution to Highway 12 Erosion Issues

Importance: High

Dear Government Officials and Other Leaders:

I am writing this email to plead with you to seriously consider the Beach Nourishment proposal currently being discussed for Highway 12. I am a homeowner of three houses on the Outer Banks and I have vacationed there for over 30 years. This area of your state is extremely important to many people who do not live in North Carolina but who go there on a regular basis and spend lots of time and money there every year. This portion of your state has had some misfortune of late with the storms that have damaged the infrastructure. It is very important that you consider this situation and take action now to stabilize and support this portion of your state for the future and future generations.

I appreciate your consideration of this matter and hopefully the solution that can and must occur.

Sincerely,

Diane Medley

Diane B. Medley, CPA-ABV, CVA

Co-Managing Partner

Phone / Fax (502) 882-4303

MAIN PHONE: (502) 749-1900

FAX: (502) 749-1930

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Smyre, Elizabeth A

From: Jer Mehta <jmehta@speechsoft.com>
Sent: Wednesday, January 11, 2012 5:09 PM
To: Smyre, Elizabeth A
Subject: RE: Bonner Bridge Replacement Project Phase II - Public Workshop Comments

Hi Beth,

Now that beach nourishment has been dismissed as an option for the Rodanthe S-curve project, I want to go on record as favoring the option to elevate NC 12. I am still very opposed to building a new bridge in the Pamlico Sound as it would have a very negative impact to my sound front home in Rodanthe.

As stated in my email below, a bridge in the Pamlico sound will destroy the charm and character of this unique natural resource and diminish the beauty of the entire area. It will ruin the property values of all the homes in Rodanthe, specifically the sound front homes. Our sound front home on Pappy Lane is right next to the planned termination point of the Pamlico bridge. The chaos, noise and disruption caused during construction will virtually put our rental home out of business. Additionally, this bridge will destroy the areas sport of kite boarding, windsurfing, and sailing, and would ruin the vacation rental business, a source of county revenue. We currently get a lot of rentals in the April, May, June, September and October months from kite boarders, wind surfers. This revenue will be lost for all homes north of the bridges termination point. Furthermore it will ruin the natural beauty of the wildlife refuge as well as the natural environment of the Pamlico sound waters.

Overall the option to build a bridge in the Pamlico Sounds would have a tremendous negative impact on the area that so many people are trying to preserve in its natural state and ruin the businesses and home values in Rodanthe.

Please take this into consideration as you assess the 2 remaining options for Rodanthe. Is there a target date when a decision will be made public?

Regards,
Jer Mehta

From: Smyre, Elizabeth A [mailto:bsmyre@ncdot.gov]
Sent: Monday, December 12, 2011 1:42 PM
To: Jer Mehta
Subject: RE: Bonner Bridge Replacement Project Phase II - Public Workshop Comments

Jer-
Thank you for your comments! Please let me know if you have any further comments or questions.
Thanks,
Beth

Please note my phone number has changed, effective March 30, 2011- see below.

Beth Smyre, P.E.
Project Planning Engineer
NC Department of Transportation
Project Development & Environmental Analysis Branch
1548 Mail Service Center

Raleigh, NC 27699-1548
(919) 707-6043

From: Jer Mehta [<mailto:jmehta@speechsoft.com>]

Sent: Sunday, December 11, 2011 9:57 AM

To: Smyre, Elizabeth A

Subject: Bonner Bridge Replacement Project Phase II - Public Workshop Comments

Hi Ms. Smyre,

Thank you for taking the time to discuss the Bonner Bridge Replacement Project Phase II at the public workshop held 12/5 in Manteco.

My name is Jer Mehta. My husband Morris Neuman and I own a sound front home at 23177 Pappy Lane, Rodanthe and another home at 22197 Green Lantern Court, Mirlo Beach, Rodanthe. Both houses are used as a rental business and the option of a new bridge in Pamlico Sound would destroy our business and investments.

For the Rodanthe beach area, I strongly favor the Beach Nourishment Option and am very opposed to the option of building a new bridge in the Pamlico Sound connecting Pea Island to Rodanthe.

The alternative for a new bridge in the Pamlico Sounds will be abandoning Rodanthe, our beach and destroying our sound. This alternative will have a huge negative impact to our homes, investments and businesses.

The beach is a national resource, unrecoverable once lost. Millions of people come to the beaches to vacation, enjoy fishing and for water sports, providing tourist dollars to the county and the state. All thru the eastern coast, county/state governments help local towns preserve the tourist business e.g. Ocean City MD, Bethany Beach MD. In NY, the beach shoreline is protected via jetties. The beach nourishment effort in Nags Head preserved a lot of investments during this past storm and has helped rejuvenate the image of Nags Head as a tourist destination. Places like Aspen CO spend millions of dollars each year grooming their ski slopes to preserve the tourist business, even though each year the snow melts and has to be replenished. Once the bridge is built, the existing NC 12 will be abandoned and the shoreline erosion will destroy not only the ocean front homes but the homes west of NC 12 (like our home) will be unmaintainable by the owners. The roadway and beach front as you enter Hatteras must not be abandoned. It should be nourished and preserved to showcase the natural beauty of this island and as the gateway to Hatteras.

The Pamlico Sounds is the largest body of water in the US with clear waters and unobstructed views. This bridge in Pamlico sound will destroy the charm and character of this unique natural resource and diminish the beauty of the entire area. It will ruin the property values of all the homes in Rodanthe, specifically the sound front homes. Our sound front home on Pappy Lane is right next to the planned termination point of the Pamlico bridge. The chaos, noise and disruption caused during construction will virtually put our rental home out of business. Additionally, this bridge will destroy the areas sport of kite boarding, windsurfing, and sailing, and would ruin the vacation rental business, a source of county revenue. We currently get a lot of rentals in the April, May, June, September and October months from kite boarders, wind surfers. This revenue will be lost for all homes north of the bridges termination point. Furthermore it will ruin the natural beauty of the wildlife refuge as well as the natural environment of the Pamlico sound waters.

Overall the option to build a bridge in the Pamlico Sounds would have a tremendous negative impact on the area that so many people are trying to preserve in its natural state and ruin the businesses and home values in Rodanthe.

There is continuous dredging to keep the Oregon Inlet open to fishing boats. The Sound is also quite shallow and requires dredging to keep the channel open. This sand should be made available and used to nourish/maintain our shoreline. Jetties should also be considered to preserve our beach.

Beach nourishment will preserve our national treasures - our beaches and a natural Pamlico Sound for thriving vacation business and enjoyment for millions.

15

After Hurricane Irene, any option but beach nourishment will be akin to abandoning Rodanthe.

Elevating Hwy 12 with beach nourishment seems like the least invasive option after beach replenishment.

Thank you for your consideration.

Regards,

Jer Mehta
914-384-3047 (cell)

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16

Smyre, Elizabeth A

From: Miale, Rick
Sent: Friday, January 06, 2012 6:10 PM
To: Smyre, Elizabeth A
Subject: S-Turns and parking

I saw the article in ESPN about parking at S-Turns. Since you've asked for comments I'd like to share.

I've surfed since the early 80s. I spent a lot of time on the Outer Banks, usually between Rodanthe and Frisco. Some visits were to go surf, some visits were to go fish. Hatteras is a very important place for me. Anyway, I'd love to see a parking lot at S-Turns. Even if it was inland a bit and required a walk it would beat having parking eliminated. I've always feared parking on 12 as it's dangerous and there are very few parking places in Rodanthe. Most of the streets are private or are too narrow to offer parking. I can understand why people wouldn't want their streets clogged with vehicles - when I lived in Virginia Beach (home) we lived a few blocks away from the water and it was always a zoo. Both sides of the street would be full and at times it was hard for us to pull into our driveway. When the city added some additional parking lots that really helped. The traffic went from the streets into the lots. It was then safe to walk on the streets again. One idea that I'm ok with is paid parking. A few bucks to park all day is a bargain and would help to offset the price of the lot, maybe evening making the town of Rodanthe some extra money in the process.

Thanks for reading this!

Rick Miale
NC Division of Public Health/Early Intervention
www.ncel.org

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Smyre, Elizabeth A

From: bsmyre@ncdot.gov
Sent: Monday, November 28, 2011 5:06 PM
To: Smyre, Elizabeth A
Subject: I have Carbon Copied you on this ContactUs message

Comment History

Tracking Number: WEVO1Y5RTT

Unit Name: Bonner

Sent By: Contact Us Administrator

Date/Time: 11/27/2011 5:56:52 PM

Comment:

Ronald- Thank you for your comment on the Bonner Bridge project; all comments are important and will be fully considered as we move forward with the next phase of the project. Please let us know if you have any further comments or questions! Thanks, Beth Smyre

Sent By: Ronald Moorse

Date/Time: 11/27/2011 5:56:52 PM

Comment:

In light of the Hurricane Irene effects, it is my considered opinion that building a new bridge is unwise. Spending \$215 million on the bridge will give the people of North Carolina a connector between nowhere and nowhere when the next hurricane hits. It would be better to build ferry terminals; quick and easy to repair at much lower cost.

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Norburn, Robert E.

From: Smyre, Elizabeth A [bsmyre@ncdot.gov]
Sent: Friday, January 20, 2012 4:46 PM
To: Brenda J Morris; Norburn, Robert E.
Cc: Office of the Governor
Subject: RE: DOT options for fix for NC 12, Rodanthe

Brenda, Robert-

Thank you for your comments on the NC 12 projects. Every comment that NCDOT receives will be carefully considered as the planning process for the projects moves forward. If you have any further comments or questions, please feel free to contact me.

Thanks,
Beth Smyre

From: Brenda J Morris [brexmor@optonline.net]
Sent: Friday, January 20, 2012 2:07 PM
To: Smyre, Elizabeth A; norburn@pbworld.com
Cc: Office of the Governor
Subject: DOT options for fix for NC 12, Rodanthe

To: Beth Smyre and Bobby Norburn,

Re: NC 12 fixes

My husband and I own an oceanfront house in Rodanthe, on Seagull Street, in the Mirlo Beach Development. It was built in 1990. We also own a lot across the street on Cross Of Honor Way in the Mirlo Beach development.

My husband, Robert, and I purchased the lot, on Seagull Street, in 1989 and built the house months later in 1990. We intended to rent the house to pay the mortgage and then retire to this area later on. After we built the house, we noticed the beginning of the groin project at the Bonner Bridge area. I remember the project was to build the groin on each side of the inlet, east of Bonner Bridge and put into place a pumping system on each side so as to direct the sand, that was dredged, southward or northward so that the beaches, south and north, do not lose sand from this project. The beaches were not to be starved of sand as a result of this groin and dredging activity. The project was never finished, with only one groin in place and no pumping systems to direct the dredged sand to the ocean. Instead, there are new islands being created every year in the sound, with the sand that is supposed to travel up and down the coastline. NC prohibits "permanent structures" on the beaches, however, this "permanent structure" was allowed to save a broken down building, which does not generate revenue, and to make a convenient route for fishing boats, which caused properties south and north of it to lose their beach sand, as well as property owners to lose their homes on the ocean. This project was only a band-aid for the Bonner Bridge, as it should have been replaced years ago, while the "always delayed" process took place for bridge replacement.

My husband and I have witnessed, since this groin was put in, the deterioration of the beaches in our area as well as the beaches north of us in Nags Head, Kill Devil Hills and Kitty Hawk. We strongly believe that the problems from Hurricane Irene, the inlets that were cut at Pea Island and Mirlo, were largely a result of the stripping of our sand, over the years, caused by the dredging at the Bonner Bridge area which still takes place. We loved the beaches in our area in 1989. We purchased the ocean lot because of this. We know that sand comes and goes every year, however, the escalation has

been speeded up at a ridiculous pace due to the dredging. If you notice, the lifesaving station, that was ready to fall in the water, has a huge island around it now. This is, basically, our lost beach!

Beach nourishment is used all over the US coastline and it works! Look at Atlantic City, NJ and Ocean City, MD. Robert and I believe that replacing the sand on our beaches would not only save NC 12 in this area, but the Mirlo Beach oceanfront homes as well. It took years for us to lose this sand and our beaches are almost non-existent now. The bridge option in the sound, which comes in on Sixteenth of August Street in Mirlo, will definitely destroy all of our properties, as well as the bridge option coming in at the Island Convenience campground. All the properties north of the campground will be left and forgotten. This revenue for the state will be gone, as the roads will be slowly abandoned by the NCDOT! A very large piece of Rodanthe will disappear, from ocean to sound! Both bridge options will affect all properties north of Island Convenience and will also need to be maintained with possible sand replenishment in the future so as to protect NC 12 and the rest of Rodanthe and Waves from disappearing.

Property and sales taxes could be raised to generate the money needed for sand replenishment for the beaches. Since Hatteras Island gives much more to the state, in taxes, than it has ever received, we think it's time to help this island because its beaches are disappearing at an alarming rate. Hatteras Island was once a beautiful island with beautiful beaches and now it looks like a disaster zone after every hurricane or nor'easter that passes by. Hatteras Island has long been neglected by NC state and the Federal Government, that took it over years ago, then promising to maintain it but instead, having FEMA haul away our sand after every disaster instead of putting it back on our beaches.

Robert and I believe that the small bridge at Pea Island, where the ocean cut through north of Mirlo, along with beach nourishment in that area and extending into or thru Mirlo would solve the problem and help the beaches to rebuild themselves from what was stolen from them years ago and continues to be stolen now, the sand!

Respectfully,

Brenda and Robert Morris
29 White Birch Rd.S.
Pound Ridge, NY 10576
914 764-4056

Cc: Governor Beverly Perdue

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Smyre, Elizabeth A

From: Angela Nagele <anagele@gmail.com>
Sent: Wednesday, December 14, 2011 3:45 PM
To: Smyre, Elizabeth A
Subject: Beach Nourishment

Please support Beach Nourishment. It is vital to our community.

Angela Nagele
North Carolina

Smyre, Elizabeth A

From: Abbott, Steve
Sent: Tuesday, January 03, 2012 4:58 PM
To: Smyre, Elizabeth A
Subject: from Contact Us on NC 12

From: Evan Nesch **Phone:** (252)202-1963 **Email:** enetsch@gmail.com

Comment History	
Tracking Number: OPHXVIO9SY	
Sent By: Evan Nesch	Date/Time: 12/29/2011 3:32 PM
Comment: Hi NCDOT Staff,	
My concerns and suggestions are relative to the HWY 12 recovery plan, on Hatteras Island, NC.	
I have lived in Kitty Hawk, NC for the majority of my life, worked in Rodanthe for the past 6 years in the summers and am now a senior at University of North Carolina at Wilmington, studying environmental science and economics. I have a particular interest in management of coastal areas.	
I found out about the workshop on Ocracoke, but unfortunately will be out of the country on Jan. 5th and will not be able to attend. However I would still like to voice my opinion and recommendations if possible. Living on the OBX for the majority of my life and spending a lot of time back and forth between Kitty Hawk and Rodanthe, I have become very familiar with the issues associated with HWY 12. Just a month ago I finished writing a major research paper on management and recovery options for HWY 12, in particular the section for the Oregon Inlet to Miro Beach in Rodanthe.	
In short, after much research and personal experience over the years, I concluded that small land bridges over problematic areas would be the best solution. I considered the ideas of moving the road west and extending the Bonner Bridge 17 miles in the Pamlico Sound to Rodanthe. Each solution has pros and cons, but by far a series of small land bridges is the best economical and environmentally practical solution. These land bridges would be about 10-12ft above the ground, and allow for general over wash during hurricanes and Nor Easters to wash under the road. The sections of elevated highway would not only be build over areas such as the newly formed inlet at the Ranger Station but also areas the require constant maintenance and are possible was out spots. For example the 2 miles immediately south of Oregon Inlet, where sand is being constantly cleared from the road, and the S-turns area just north of town. Footings for the elevated highway would be deep enough if the area for a small inlet during a storm and a lot of sand was lost from beneath the bridge the bridge would still stand. It would also eliminate annual maintenance and repair costs to these sections of unstable roads.	
I would like to share my findings with NCDOT in hopes to help find the best fix for HWY 12 in respect to the economy and doing the best to preserve the Pea Island National Wildlife Refuge. Some areas of HWY 12 are more protected then others, and not every mile of the road needs to be moved. Obviously like any east coast barrier island, Pea Island is moving westward. And eventually after decades the road will be in the ocean. But with the average life span of a bridge being between 50 and 100 years, the phrase "permanent fix" is relative to this time period.	
Access to Pea Island would still be available for bird watching, beachgoers, surfing etc, with the	

sections of elevated highway, opposed to the long bridge option. Marsh, ponds and migratory bird areas would not be destroyed by moving the road west either, which protection the valuable marsh and estuarine habitat is a major part of the National Wildlife Refuge's mission. Nor would the upfront cost associated with this option be as high as construction an entirely new bridge, as building small bridges over land is much cheaper than building a long one over water. Reasons for this solution are extensive, and range from safety, to short and long term economic benefits, user convenience, and reasons regarding environmental integrity.

I look forward to hearing back as soon as possible, and would like to help in any way that is needed in this project, and share a more in detailed description of my solution to HWY 12. Environmental Studies is my major, and issues such as coastal development and management is what my degree is intended for, and being a proud resident of the Outer Banks, I hope to see the best solution for HWY 12.

Please email me at enetsch@gmail.com

Or feel free to call me at 252-202-1963. I will not have phone access until January 15th, but will frequently be checking my email.

Thank You,
Evan Netsch

Email correspondence to and from this sender is subject to the N.C. Public Records Law and may be disclosed to third parties.

Smyre, Elizabeth A

From: Morris Neuman <neuman@speechsoft.com>
Sent: Wednesday, December 14, 2011 11:09 AM
To: Office of the Governor, Joshua.bowlen@mail.house.gov;
aaron.suntag@hagan.senate.gov; kara.weishaar@burr.senate.gov; Smyre, Elizabeth A;
Tim.Spear@ndeg.net; warrenj@dacenc.com; allenb@dacenc.com
Cc: jnehta@speechsoft.com
Subject: Save our National Treasure and Valuable Resources - Hatteras Island, Rodanthe

Dear Elected Representative

I am writing to all who have been elected by the people of North Carolina to serve the people's interest about a matter that is of immediate importance to the people of North Carolina and all the people of the United States, the conservation of Hatteras Island. The Governor and almost all of you have personally witnessed the devastation of hurricane Irene unleashed on Hatteras Island this past August. Now a decision will be made shortly by anonymous parties as to the future of Rodanthe - the Gateway town of Hatteras Island. I implore you all to proactively direct that decision to be in favor of beach nourishment.

If beach nourishment is abandoned as a viable option to consider at this next decision point it effectively abandons the people and businesses of Rodanthe to a future of ongoing erosion of the shoreline and all the tax generating property in that town that we have worked hard and spent millions to develop into one of the unique vacation destination for millions of Americans from all 50 states. It will be a squandering of our nations truly unique natural resources on the scale and level of the Grand Canyon or Yellowstone National Park.

My name is Morris Neuman and I am a home owner in Rodanthe. I came here in 2005 seeking an escape from the urban life of the big city New York. Although discouraged by locals from purchasing in Rodanthe due to erosion issues back then I was taken with the stark beauty and serenity of the area. I can now say that after traveling the whole east coast from Maine to the Florida Keys this slice of nature is truly unique in every way and once lost can never be recreated. Once Rodanthe is allowed to fall to the oceans relentless erosion in due time the neighboring Hatteras Island towns of Waves and Salvo will surely follow. No one can afford to lose such precious real estate.

I will never forget the first time I drove down highway 12 towards Rodanthe. After passing magnificent dunes and undisturbed landscapes of Pea Island I saw the town of Rodanthe on the horizon and it immediately brought to mind the vision Dorothy had when she first saw the Land of Oz on her quest to find the Wizard to get her home. I knew I was home. It is unimaginable that anyone could just make a decision on preserving this magical place based on strict cost analysis ignoring all other considerations that motivate millions of people to vacation here.

In support of our effort to make everyone ware of what Hatteris Island is all about we have created a website "Top 10 Reasons to Support Beach Nourishment", please visit our website <http://tinyurl.com/mirlobeach> created by the Mirlo Beach Home Owners Association outlining

Do not abandon our beach or our community of Rodanthe and do not destroy the natural beauty of the Pamlico Sound.

Morris Neuman
Speechsoft, Inc.
www.speechsoft.com
914-273-5560 x170
mail@neuman@speechsoft.com

COMMENT SHEET

Bonner Bridge Replacement Project
Public Workshops – Phase II
TIP No. B-2500
Dare County

NAME: JOSEPH F. NOCE
ADDRESS: 714 HARDING HWY, CARVER'S POINT NJ 08069
E-MAIL: joenocce@hotmail.com

COMMENTS AND/OR QUESTIONS:

After viewing the presentations, maps & materials, it seems as though all of the options have positive and negative aspects. After weighing all of the information, I find that the Nourishment alternative makes the most sense, but needs to be more extensive. Without beach nourishment, the village of Rodanthe would eventually die. Nourishment to the beach down to the Rodanthe Pier from the S-Curves area would invigorate the community, provide more beach habitat for wildlife at a fraction of the cost of other alternatives. Rodanthe is the Gateway village to Hatteras Island – it would be tragic to kill it with massive concrete bridges that effectively bypass this iconic village.

Comments may be mailed by January 20, 2012 to:

Ms. Beth Smyre, PE
NCDOT – Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Email: bsmyre@ncdot.gov

Smyre, Elizabeth A

From: Abbott, Steve
Sent: Wednesday, January 04, 2012 9:40 AM
To: Smyre, Elizabeth A
Subject: Contact Us comment on NC 12

Peter O'Donnell Phone: (772)801-5084 Email: surfset@att.net

[Print](#)

Comment History

Tracking Number: MTJ9TG8CUU

Sent By: Peter O'Donnell

Date/Time: 12/27/2011 6:27 AM

Comment:

Please consider a park and walk option for the area around Rodanthe due to the numerous good surf spots that access will be lost if bridge option is chosen. This will negatively impact tourism if consideration is not given to access to these beaches. We visit once or twice a year and would consider not coming if you cut off public access to these beaches. We would start a campaign here in Florida to "boycott Hatteras" if a reasonable solution is not found to keep public access to these beaches.

Email correspondence to and from this sender is subject to the N.C. Public Records Law and may be disclosed to third parties.

Smyre, Elizabeth A

From: Obermeyer Ed <edobermeyer@cox.net>
Sent: Friday, January 06, 2012 2:52 PM
To: Smyre, Elizabeth A
Subject: Roanthe Access
Attachments: BPwave copy 2.jpeg

I have been surfing since 1964 and totally support full access to EVERYONE on this area of the outer banks. After surfer's surf and even before, they usually go to the local store and spend money on food and other essentials. If the wife is in tow, you can bet she will want more than food from the local economy and will spend serious dollars on clothing's and collectables. Let me know what I can do to help.

Ed Obermeyer
<http://www.edobermeyer@cox.net>

COMMENT SHEET

**Bonner Bridge Replacement Project
Public Workshops – Phase II
TIP No. B-2500
Hyde County**

NAME: BETTY JANE OELSCHLEGEL

ADDRESS: P.O. BOX 366 398 JACKSON CIRCLE OCEACOCKE, NC 27960

E-MAIL: bjocraoke@earthlink.net

COMMENTS AND/OR QUESTIONS:

My first visit to Ocracoke was in 1974. I moved to the island in 1977, when I was 25. I have worked for 35 years to build a life on Ocracoke. I have mortgages, businesses, employees, children and dreams, all dependent on a steady stream of guests to our island. If our life line, called Route 12, is interrupted or severed, interrupted, the island ceases to function and the whole system falls apart. I don't expect this life line to be maintained on the backs of the environment or wildlife. I do expect "the powers that be" to find a middle ground solution. No one had any trouble taking my tax payments, mortgage payments or sales tax responsibilities. It would be unfair and immoral for you to let us drown in the wind.

Comments may be mailed by January 20, 2012 to:

Ms. Beth Smyre, PE
NCDOT – Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Email: bsmyre@ncdot.gov



Ms. Beth Smyre, PE
NCDOT - PDEA
1548 Mail Service Center
Raleigh, NC 27699-1548

*I'm begging you to do everything possible to make sure our
life line is viable now and in the future.*

Thank you,

B. DeBenedictis

Smyre, Elizabeth A

From: KEROR@aol.com
Sent: Friday, December 09, 2011 11:13 AM
To: Smyre, Elizabeth A
Subject: Bonner Bridge Replacement Bridge Phase 2

Dear Ms. Smyre:

I am a sound front property owner in the Mirlo Beach area of Rodanthe, NC. I am writing to express my strong support for the Beach Nourishment option. The bridge options, particularly the bridge on the new location in the sound would have a devastating impact on the life in Rodanthe.

This sound front area of Mirlo offers a unique waterfront experience that would be ruined by a bridge in the sound. Kiteboarding and windsurfing are very popular in Mirlo Beach. Even by Hatteras Island standards, Mirlo offers unusually good sailing conditions. In the summer, it gets strong thermal winds and it is also very good for the fall and winter northeast wind directions. This sailing nirvana would be lost if a bridge is put in the sound.

Outside of sailing, the sound bridge would still have a strong detrimental effect on Mirlo Beach. It would ruin the sound side views that attract vacationers and severely harm the property values of all the homes on the sound side of Rt 12.

I strongly disagree with Table 2 of the Phase 2 impacts on the Rodanthe Area. It says the bridge on new location would have no impact on the Rodanthe Cohesion and Accessibility. It will ruin Mirlo Beach and without beach nourishment, it would leave the north end of Rodanthe susceptible to further erosion and loss of property value.

Considering the negative effect on the quality of life in northern Rodanthe and the higher costs of the bridge in the sound, I think the logical choice is to institute the beach nourishment option.

Thank you.

Keith Orr
393 Hannastown Road
Greensburg, PA 15601
724-689-9062

Smyre, Elizabeth A

From: Nelson Paul <nelson@nelsonpaul.com>
Sent: Thursday, November 17, 2011 9:38 AM
To: Smyre, Elizabeth A
Subject: Re: Highway 12 Options Meetings

Dear Ms. Smyre,

My name is Nelson Paul. I am commenting as someone who is knowledgeable of the situation on the Outer Banks having worked with the NC Division of Coastal Management as a Field Representative for their coastal permitting program on the Outer Banks in the 1980's.

Hurricane Irene severely impacted the Outer Banks and severed Highway 12 with a new inlet that NCDOT has chosen to bridge, rather than fill.

Because inlets move, the decision to bridge this inlet, rather than fill the inlet, has created a scenario that will most likely doom the economies of these Outer Banks communities over the next decade. Without an enormous commitment of scarce revenues, the shifting sands of this new inlet will likely make travel on Highway 12 intermittent and undependable.

However, worse than that, the decision to bridge the inlet has created a potential trap for residents and visitors that could likely result in the loss of life.

Imagine a scenario where a Cat 1 storm approaches the Outer Banks in mid-July. While evacuating the island, a vehicle strikes a structural member of the existing temporary bridge, making traversing the inlet by vehicle impossible. The bridge is closed. The NCDOT Ferry Service springs into action, but it is too many people and too little time. The storm increases to a Cat 3 and bears down on the island, roughly following the path of Hurricane Irene.

This is a reasonable scenario that we would have considered when I worked for the NC Division of Coastal Management. In this scenario there could be more than 10,000 people trapped in a life-threatening situation. And from our recent experience with Irene, we can easily see that people could die if it had been a stronger storm. You may want to review what happened on Ocracoke Island with Hurricane Alex in 2004.

Highway 12 being designated as the "Outer Banks National Scenic Byway" exacerbates this life and death situation. The Scenic Byway designation is intended to lure MORE tourists to the area in order to improve the local economy. Through this designation NCDOT is making substantial investments in promoting the Outer Banks as a tourist destination.

If the intent is to lure more people to the Outer Banks through the Outer Banks National Scenic Byway designation, then the responsibility for the safety of these people (as it pertains to the availability of highway transportation) rests squarely on NCDOT. The combination of an NCDOT policy that allows this inlet to remain while simultaneously implementing a NCDOT policy that promotes and encourages tourism on the Outer Banks is very dangerous. This is irresponsible and is unnecessarily endangering the public.

So, in conclusion, the NCDOT designation of the Scenic Byway is at cross purposes with the decision to allow the inlet to remain. If the inlet is allowed to remain, then the Outer Banks National Scenic Byway designation

needs to be suspended until a long-term, permanent solution is established and IMPLEMENTED regarding the inlet.

It is my opinion that this inlet should be filled as soon as possible. And future inlets, should they occur, should be filled also. This is the only long-term, cost-effective solution that MUST be established as official NCDOT policy.

Thank you,
Nelson Paul
(919) 231-4409

----- Original Message -----

From: [Smyre, Elizabeth A](#)
To: Nelson Paul
Sent: Wednesday, November 16, 2011 5:22 PM
Subject: RE: Highway 12 Options Meetings

Nelson-
Absolutely! You are welcome to send me any comments you might have.
Thanks,
Beth

Please note my phone number has changed, effective March 30, 2011- see below.

Beth Smyre, P.E.
Project Planning Engineer
NC Department of Transportation
Project Development & Environmental Analysis Branch
1548 Mail Service Center
Raleigh, NC 27699-1548
(919) 707-6043

From: Nelson Paul [mailto:nelson@nelsonpaul.com]
Sent: Wednesday, November 16, 2011 5:11 PM
To: Smyre, Elizabeth A
Subject: Highway 12 Options Meetings

Hi Beth, hope you are doing well today.

Can we submit comments regarding the breaches in Highway 12 through you?

Thank you,
Nelson Paul
(919) 231-4409

Email correspondence to and from this sender is subject to the N.C. Public Records Law and may be disclosed to third parties.

Smyre, Elizabeth A

From: Dale Petty <dale@surfsound.com>
Sent: Monday, December 12, 2011 3:23 PM
To: Smyre, Elizabeth A
Cc: warrenj@darenc.com; Office of the Governor
Subject: Hatteras Island Hwy. 12 Beach Nourishment

<https://sites.google.com/site/mirlobeachnc/>

Ms. Smyre,

It is my understanding that the Merger Team will meet this Thursday to decide which Pea Island Hwy. 12 alternative(s) to advance for further study. I own Surf or Sound Realty on Hatteras Island. We manage approximately 450 single family vacation homes on Hatteras Island and accommodate approximately 100,000 visitors to CHNS each year. I am writing to request that beach nourishment be included as one of the alternatives for further study. A safe and reliable corridor is essential for visitor access to Cape Hatteras National Seashore and for Hatteras and Ocracoke Island residents and property owners. Beach nourishment is an appealing option to protect the Hwy. 12 corridor through Pea Island for several reasons. I have attached the link to a web site that highlights the many positive benefits of beach nourishment.

Thank you,

Dale Petty
CEO, Surf or Sound Realty

Smyre, Elizabeth A

From: Lou Ann Phelps <lphelps@selcnc.org>
Sent: Friday, January 20, 2012 5:00 PM
To: Smyre, Elizabeth A
Subject: Bonner Bridge Replacement Project (TIP No. B-2500)
Attachments: 01-20-12 Comments to NCDOT re Phase II Options.pdf

Please see the attached comments submitted on behalf of Defenders of Wildlife, National Wildlife Refuge Association, and the Southern Environmental Law Center, regarding the above-referenced project.

Thank you for your consideration.

Lou Ann Phelps
Administrative Legal Assistant
North Carolina State Bar Certified Paralegal
SOUTHERN ENVIRONMENTAL LAW CENTER
Tel.: (919) 967-1450
Fax: (919) 929-9421
laphelps@selcnc.org

PLEASE NOTE OUR NEW ADDRESS:

601 West Rosemary Street, Suite 220
Chapel Hill, North Carolina 27516-2356

Our telephone, fax, and e-mail addresses have not changed.

COMMENT SHEET

**Bonner Bridge Replacement Project
Public Workshops – Phase II**

TIP No. B-2500
Dare County

NAME: JAMES F. & VICKI W. PIERSON

ADDRESS: P.O. BOX 1195 OAKACRE N.C. 27960

E-MAIL:

COMMENTS AND/OR QUESTIONS:

*Nice presentation, excellent visuals, charts/photos.
Looks like a good plan finally.
This must happen – the Outer Banks would be
devasted without the new bridge. Concern is our
children we have alot of issues, but this
definitely would be an asset.
I hope the completion date of 2015 can be
achieved.*

Comments may be mailed by January 20, 2012 to:

Ms. Beth Smyre, PE
NCDOT – Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Email: bsmyre@ncdot.gov

Smyre, Elizabeth A

From: hpisek@aol.com
Sent: Friday, December 02, 2011 4:54 PM
To: Smyre, Elizabeth A; norburn@pbworld.com
Subject: Fwd: Dare County Bonner Bridge replacement

I meant to say: "Boys and their TOYS scenario."

-----Original Message-----
From: hpisek@aol.com
To: bsmyre@ncdot.gov; norburn@pbworld.com
Sent: Fri, Dec 2, 2011 12:00 pm
Subject: Dare County Bonner Bridge replacement

P-L-E-A-S-E consider the 17-mile-long bridge. In the long run, it will save the state millions of dollars trying to keep Highway 12 passable on Hatteras Island. It's almost a "boys and their boys" scenario. They have waaay tooo much fun playing with all that construction equipment.

Thank you.

Helen and Irv Pisek
5208 Birch Lane
Kitty Hawk, NC 27949

Smyre, Elizabeth A

From: Warren Powell <wpowell@prestigecapital.com>
Sent: Monday, January 09, 2012 8:15 AM
To: Smyre, Elizabeth A
Subject: Outer Banks

Dear Beth,

I have been traveling to the Outer Banks for the past 30 years primarily to surf and fish. It would be a travesty, if the new road/bridge options did not include some way for people to reach some of the best areas for surfing on the entire East Coast. Some of my greatest memories are crossing the Bonner Bridge and running across the dunes to see amazing surf, and I hope to be able to share these experiences with my 2 sons.

Please consider all access options and understand we spend a good bit of money when traveling to and surfing on the OBX.

Cordially,

Warren Powell

Warren Powell
Sales Director Southeast Region
Prestige Capital Corporation
919-349-2866
201-944-9477 fax
wpowell@prestigecapital.com

B-71

Flexible Accounts Receivable Funding Solutions

Smyre, Elizabeth A

From: jquinn739@comcast.net
Sent: Wednesday, December 14, 2011 5:35 PM
To: Smyre, Elizabeth A
Subject: Rodanthe

Dear Ms. Smyre,
Please take into consideration beach nourishment as opposed to the bridge alternative which will devastate Rodanthe.
Sincerely John Quinn owner of 23176 Pappys Lane Rodanthe.

COMMENT SHEET

Bonner Bridge Replacement Project
Public Workshops – Phase II

TIP No. B-2500
Dare County

NAME: Leslie J Roberson
ADDRESS: PO Box 62 Rodanthe NC 27968
E-MAIL: lesliejoanroberson@hotmail.com

COMMENTS AND/OR QUESTIONS:

I am for using a smaller bridge at "Stones"
plus beach reinforcement. It is
hard enough to live on this island -
please disturb our villages as little
as possible - Everything is disappearing
as it is - we don't need one
fewer convenience store/gas station

Comments may be mailed by January 20, 2012 to:

Ms. Beth Smyre, PE
NCDOT – Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Email: bsmyre@ncdot.gov

COMMENT SHEET

Bonner Bridge Replacement Project
Public Workshops – Phase II

TIP No. B-2500
Dare County

NAME: Harry Schiffman
ADDRESS: P.O. Box 489, Manteo, NC 27954
E-MAIL: schiffman@earthlink.net

COMMENTS AND/OR QUESTIONS:

Suggest a trial project on
Hatteras Island with the use of
a Floating Wave Attenuator such as
one developed by Elemental Innovations
out of N.J. in area of high
impact erosion - If successful,
it would greatly enhance the longevity
of beach nourishment.

Comments may be mailed by January 20, 2012 to:

Ms. Beth Smyre, PE
NCDOT – Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Email: bsmyre@ncdot.gov

COMMENT SHEET

**Bonner Bridge Replacement Project
Public Workshops – Phase II
TIP No. B-2500
Dare County**

NAME: Robert Steinburg

ADDRESS: 103 South Granville Street

E-MAIL: RSSteinburg@aol.com

COMMENTS AND/OR QUESTIONS:
Please see the map showing the
proposed bridge location.

Comments may be mailed by January 20, 2012 to:

Ms. Beth Smyre, PE
NCDOT – Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Email: bsmyre@ncdot.gov

Resolution for Immediate and Permanent Repair of Highway 12 on Hatteras Island

Whereas, Commerce on Hatteras and Ocracoke Islands is deemed vital to the economies of Dare, Hyde and surrounding counties; and

Whereas, Highway 12 is essential to the residents, visitors and commerce of Hatteras and Ocracoke Islands; and

Whereas, the bridge being constructed on Highway 12 between Oregon Inlet and Rodanthe is temporary and inadequate to sustain the needs of the residents, visitors, and economies of Hatteras and Ocracoke Islands

BE IT RESOLVED, by the membership of the Albemarle-Pamlico Republican Club representing 14 Northeastern North Carolina counties:

The need exists and it is requested that Highway 12 be immediately and permanently repaired.

ADOPTED unanimously this 6th day of October, 2011.


Bob Steinburg, President

103 South Granville Street
Edenton, N. C. 27932-1831
252-482-2404

RSSteinburg@aol.com

www.al-pam.com

Smyre, Elizabeth A

From: CINDY THORNE <cindy.thorne2000@yahoo.com>
Sent: Tuesday, January 17, 2012 9:18 AM
To: Smyre, Elizabeth A
Subject: NC 12

Please keep NC 12 through Pea Island open as close as possible to what is there now. Do not put the 7 mile bridge out in the sound. We are losing enough beach on the National Seashore we can not afford to lose more. I own a house in Salvo and in a few years will be retiring. Pea Island is my favorite place for just walking and shelling. The way it is going now there won't be any place left to access the beach so I guess I wasted all my money on buying a house and who would want to buy it if there is no beach. Please don't give into the environmental people or the Fish and Wildlife people.

Thank you.

Cindy Thorne
161 Nemec Lane
West Newton, Pa. 15089
724-331-1581

Smyre, Elizabeth A

From: outerbanks@surfrider.org
Sent: Wednesday, December 14, 2011 6:00 PM
To: Smyre, Elizabeth A
Subject: NC 12 options

Dear, Ms. Smyre:

On behalf of the Outer Banks Chapter of the Surfrider Foundation, we would like to offer some comments regarding the breaches along NC 12. While we're currently gathering a more official statement to submit for the comment period that ends January 20, we also understand there is a meeting tomorrow, so we thought we should voice a broad sense of what our overall stance will be. That stance, simply put, is that the DOT work as much as possible toward preserving access to surf breaks surrounding both those breaches, no matter what plan perseveres.

You may not be aware, but those particular stretches of beach are prime surfing areas. Many Outer Banks locals move to the area just to surf the Pea Island coast. And of them all, the area just north of Mirlo -- commonly called S-Turns -- is among the most famous and respected on the entire Eastern Seaboard. (Surfer Magazine named it one of its top 100 surf spots this past year.) This means plenty of surf tourism dollars for the immediate area. Sometimes the only business in the winter months when frequent storms make it a valuable resource for surfers from surrounding states as well.

Most of the time, these surfers park on the side of NC 12, which -- although easy for the surfers -- we also understand can cause conflicts with normal traffic. Our concern is that one of the bridge options will win out without any consideration of the existing surfing population who use the resource. We're hoping NC 12 and Dare County can seize this opportunity to provide some parking and access to prevent future conflict. We're not sure what that solution looks like, but it seems reasonable there is some way to look at all the options and figure out parking and access solutions for each, so that no matter what plan comes to fruition, the existing surfing population --- both local and visitor --- can continue to enjoy the surfing resource and the residents of Rodanthe can benefit from the increased business traffic without any negative impacts.

On behalf of the Surfrider Foundation's 125+ local members -- and 50,000 nationwide members -- we request you consider these options as you move through the decision-making process.

Thank you for the time and consideration. And we will file a more official request before January 20.

Sincerely,

Matt Walker
Vice Chair
Surfrider Foundation, Outer Banks Chapter

Smyre, Elizabeth A

From: Heinz Scheidemandel <hynessch@cox.net>
Sent: Monday, November 28, 2011 7:50 PM
To: Smyre, Elizabeth A

Dear Ms.Smyre:
I have been in Hatteras village for over 50 years and I can assure you the only sensible and financially feasible long term solution is to return to a Ferry System. This is flexible and relatively inexpensive. Everything else is a waste of tax payer's money!
H.Scheidemandel, Falls Church, Va.

Smyre, Elizabeth A

From: Fred Walters <fewalt@ntelos.net>
Sent: Thursday, December 08, 2011 12:19 PM
To: Smyre, Elizabeth A
Subject: Bridge to nowhere

If the NPS keeps closing beach access, or a total closure is eminent, NO bridge will be needed!!!!!!

Fred Walters
Troutville, Va

Smyre, Elizabeth A

From: John Wasniewski <John@shoshintech.com>
Sent: Friday, January 20, 2012 1:28 PM
To: Smyre, Elizabeth A
Cc: r.matt.walker@gmail.com; ivyray@earthlink.net
Subject: Rodanthe S-Turns Design Comments - Surfrider Foundation
Attachments: RodantheSTurnsAccesspdf; PreserveSTurnsAccess.xls

Dear Beth Smyre:

On behalf of the Surfrider Foundation (www.surfrider.org), I wish to submit the attached letter and petition listing to the N.C. D.O.T. for consideration of design impacts for the area known as S-Turns in Rodanthe, Dare County. The Excel document list all signers of the petition mentioned in the letter. Especially telling are the individual comments that users of the resource have made from all over the world regarding this site.

S-Turns is a valuable economic and natural resource for North Carolina. Please consider preserving access to this location in all D.O.T. planning.

Sincerely,

John Wasniewski
Chairman
Outer Banks Chapter of the Surfrider Foundation

Smyre, Elizabeth A

From: shelley <sweisberg@cox.net>
Sent: Tuesday, December 20, 2011 11:31 AM
To: Smyre, Elizabeth A
Subject: RE: Beach Nourishment Top Ten Reasons

Dear Beth,

The news from the Merger Team meeting in Raleigh is most disappointing.

As I understand, US Fish & Wildlife is adamantly opposed to Beach Nourishment and would not move forward til it was removed from consideration.

I believe, NCDOT is favoring keeping the bridge in the existing right of way on Pea Island and maintaining a strong position supporting Beach Nourishment to protect both the Bridge and the road.

Meanwhile Rodanthe being in National Park Jurisdiction must have a permit issued from NPS.

Perhaps consideration should be given to the source of the disappearing Pea Island - Rodanthe sand... Oregon Inlet's jetty?

Dixon and Pilkey's research (The Corps and the Shore, Island Press, 1996) speaks to the inevitable loss of sand from Rodanthe if only one jetty was constructed. Time has shown this prediction true. Let's stop dredging Pea Island - Rodanthe's sand out of Oregon Inlet. Let's abate the issue of disappearing sand by re-examining the jetty situation.

Please consider investigating the potential. We need your help.

Sincerely,

Shelley & Jeff Weisberg
22012 Sixteenth August St.
Rodanthe, NA 27968

From: Smyre, Elizabeth A [mailto:bsmyre@ncdot.gov]
Sent: Wednesday, December 14, 2011 4:07 PM
To: shelley
Subject: RE: Beach Nourishment Top Ten Reasons

Shelley-
Thank you for your comments! Please let me know if you have any further comments or questions.
Thanks,
Beth

Please note my phone number has changed, effective March 30, 2011- see below.

Beth Smyre, P.E.
Project Planning Engineer

NC Department of Transportation
Project Development & Environmental Analysis Branch
1548 Mail Service Center
Raleigh, NC 27699-1548
(919) 707-6043

From: shelley [mailto:sweisberg@cox.net]
Sent: Tuesday, December 13, 2011 7:54 PM
To: Smyre, Elizabeth A
Subject: Beach Nourishment Top Ten Reasons

Dear Beth,

I am a home owner in Mirllo Beach, a family-oriented community on the outer banks of North Carolina located at the north end of the village of Rodanthe -- the gateway to Hatteras Island. It is a beautiful place to live and vacation.

Right now, however, we are simply trying to survive! We were devastated by Hurricane Irene and are at the center of the debate on beach nourishment versus a bridge at the Rodanthe hot spot on Hatteras Island. Please give beach nourishment the consideration it deserves. Your actions affect our future.

The Top 10 Reasons to Support Beach Nourishment

1.Beauty. The ribbon of sand that is the Outer Banks of North Carolina provides some of the most beautiful beaches in the world, some of the most beautiful wildlife, some of the most beautiful sunrises and sunsets. Nourishment preserves this beauty. Let's be honest, bridges are ugly.

2.Working with nature. Nourishment maintains a beach with sand matched to that beach. Pumping sand back onto a beach is simply using a human force to repair damage done by a natural force -- erosion. No concrete, no steel, no permanent manmade changes to nature.

3.Permanence. It is sometimes said that beach nourishment is not a permanent solution, but that just means that the nourishment must be repeated. This is how New York, New Jersey, and Delaware maintain their beaches (along with many states and countries). The Final Environmental Impact Statement (FEIS) estimated that the nourishment cycle for Rodanthe would be once every 4 years. However, we will never know until we try it. It could be shorter; it could be longer. Thus, we should nourish as soon as possible to learn the facts.

4.Speed. Nourishment is the fastest way to protect NC 12. The main thing that delays nourishment, is getting the needed permits. In South Nags Head, that took several years, which is about how long it takes to design and build a bridge. We assume that a project this big and important will be fast-tracked by the appropriate government agencies. NC 12 needs protection ASAP!

5.Flexibility. Because nourishment is an ongoing solution, it can be repeated sooner or later depending on conditions. It leaves open the possibility of better solutions 20 years down the road based on new technologies. A bridge can always be built later if experience proves that nourishment is too costly or ineffective. A bridge cannot be "unbuilt" later, if nourishment is shown to be better or if better alternatives emerge. A bridge cannot even be stopped halfway if cost overruns show it to be much more expensive than expected.

6.Saves money. The cost of a bridge in Rodanthe is \$114 million to \$240 million (NCDOT estimate in 2006 dollars, \$128MM to \$270MM in 2011 dollars) and \$169 million to \$212 million (our estimate in 2011 dollars based on figures provided by Coastal Science and Engineering). However, build a bridge today, pay for it today. Begin beach nourishment and you pay only 1/12 of the total cost today, and the "present value" cost of nourishment is only \$106 million to \$133 million.

7.Due diligence. The BIG question with nourishment is whether or not sand can be found. This is why nourishment needs to be one of the alternatives selected by NCDOT and the Merger Team on December 15 for additional study. What the experts have said is that there is very little sand in Wimble Shoals (several miles from Rodanthe), but there is a lot of sand in Platt Shoals, which is 6--9 miles north and there may be sources of sand in between. Experts also say that even 10 - 20 miles can be economically feasible. We need to know where the sand is!

8.Preserves the Hatteras Island economy. All of the bridge alternatives will have a devastating effect on the cultural and economic life of north Rodanthe (not just Mirllo Beach). Popular uses such as fishing, birding, surfing, wind surfing, and kite boarding will all be negatively affected or eliminated. Vacation rentals and property values will plummet. The Mirllo Beach subdivision alone has a tax value of over \$50 million, and the rest of northern Rodanthe is worth at least that much. Thus, the annual tax contribution to Dare Co. is over \$400,000. Over the 50-year life of a bridge, that is \$20 million. Add to that the rental revenue and retail sales to vacationing renters and it is clear that bridges will result in a substantial financial loss to our community. ... and our community is one of the few that send more tax revenue to Raleigh than is spent here on government services.

9.Rodanthe is the test case for all of OBX. All of Hatteras Island is experiencing erosion problems; private homes in the villages, Pea Island Wildlife Refuge, and the Cape Hatteras National Seashore. What happens in Rodanthe will be a model for everywhere else. Do we really want a policy of simply building bridges and abandoning the current NC12 and the lands it supports? Is it right to just let the island dissolve into the Atlantic, when nourishment might keep the place just like it is now?

10.Please listen to those who your decision effects. Our future rest in your hands. Please act responsibly.

Sincerely,

Shelley & Jeff Weisberg
22012 Sixteenth August Street
Rodanthe, NC 27968

Email correspondence to and from this sender is subject to the N.C. Public Records Law and may be disclosed to third parties.

COMMENT SHEET

**Bonner Bridge Replacement Project
Public Workshops – Phase II
TIP No. B-2500
Dare County**

NAME:

Westervelt, Frederic B

ADDRESS:

25 Howard St, PO Box 505, Ocracoke, NC 27960

E-MAIL:

fwestervelt@aol.net

COMMENTS AND/OR QUESTIONS:

It would be well if we could, hypothetically, set aside all environmental issues and express the best engineering option- not just alternatives- that would meet the goal. This would sharpen the argument and lead to better decisions. At present we usually find that the environmental objections are introduced preemptively at an early stage, thus cutting off constructive thinking.

Keep your eyes on the prize- the primary goal of maintaining road access. This must trump wildlife- flora and fauna- and the niceties of land management.

USFWS and NPS possessiveness have for too long heavily compromised us. Surely there are ways, legislatively or other, to revise the current climate that have crowned as king the Organic Act of 1916 and subsequent E.O.s.

Current concerns about inadequate dredging of Rollison Channel and Hatteras Inlet are relevant to this project. If this is not attended to properly NC 12 is of no use to Ocracoke. If The Corps of Engineers have no federal funding the State of NC must step in, after all, this is a State road and we are State citizens.

Thank you for your hard work. Good luck.

FWestervelt
Comments may be mailed by January 20, 2012 to:

Ms. Beth Smyre, PE
NCDOT – Project Development and Environmental Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
Email: bsmyre@ncdot.gov

Norburn, Robert E.

From:

Page, John

Sent:

Wednesday, November 30, 2011 4:27 PM

To:

Norburn, Robert E.; Smyre, Elizabeth A

Subject:

Bonner Citizen Contact

I received an information line call from an Avon property owner. He was upset that no decision had been made on replacing Bonner Bridge and that the Pea Island breach bridge was too short. I explained that a design-build contractor had been selected to build the replacement Oregon Inlet Bridge. I also indicated that the bridge over the breach was a short-term fix and that NCDOT had started planning the long-term fix. I said one alternative in that area was a 1.5-mile long bridge. I offered to put him on the mailing list and he agreed.

Mr. William E. Wilson

5805 Kipling Court

Baltimore, Maryland 21212-3735

John

John Page, AICP, CEP

Parsons Brinckerhoff

434 Fayetteville Street, Suite 1500

Charlotte, North Carolina 27601

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SOUTHERN ENVIRONMENTAL LAW CENTER

Telephone 919-967-1450

601 WEST ROSEMARY STREET, SUITE 220
CHAPEL HILL, NC 27516-2356

Facsimile 919-929-9421

January 20, 2012

VIA EMAIL AND U.S. MAIL

Ms. Beth Smyre, P.E.
NCDOT - Project Dev. & Env. Analysis Unit
1548 Mail Service Center
Raleigh, NC 27699-1548
bsmyre@ncdot.gov

RE: Bonner Bridge Replacement Project
December 2011 Proposed Options for NC 12 (TIP No. B-2500)

Dear Ms. Smyre:

Thank you for the opportunity to comment on the options proposed by the North Carolina Department of Transportation ("NCDOT") for the "Phase II" portion of the Bonner Bridge replacement project, TIP Project Number B-2500 (the "Project"). These comments are submitted on behalf of Defenders of Wildlife, the National Wildlife Refuge Association, and the Southern Environmental Law Center.

None of the proposed alternatives will provide a viable long-term solution for the ongoing transportation crisis on Hatteras Island. The options will not satisfy Governor Perdue's request for a permanent solution to transport people to the southern Outer Banks. Moreover, they will run afoul of federal law. After two decades of study, it should be clear that the only viable long-term solution is to re-route the transportation corridor off the island onto a bridge that bypasses the most unstable portion of the island and/or onto ferries.

As discussed in more detail below, the Phase II plan is flawed in the following respects:

1. The selected alternative for the Project constitutes illegal segmentation in violation of the National Environmental Policy Act ("NEPA").
2. Outdated, skewed cost estimates can no longer justify construction of a replacement bridge over Oregon Inlet in Phase I and elimination of the Pamlico Sound Bridge alternative as the solution for the entire Project.

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Ms. Beth Smyre, P.E.
January 20, 2012
Page 2

3. The problems with each of the individual alternatives being considered for Phase II that have been previously identified still remain and prevent their implementation.

I. General Comments

A. Background

In the Environmental Assessment ("EA") issued May 7, 2010, and the Record of Decision ("ROD") issued on December 10, 2010, NCDOT and FHWA approved and selected an alternative called the "Parallel Bridge Corridor with NC 12 Transportation Management Plan" (the "Selected Alternative"). The Selected Alternative segments the Project into several parts: "Phase I" (an initial replacement bridge over Oregon Inlet) and "Later Phases" (monitoring Highway NC 12 through Pea Island National Wildlife Refuge (the "Refuge") and maintaining it in place while the island on which it is located, Hatteras Island, erodes and moves westward). The EA and ROD also refer to the Later Phases as "Future Phases" and "Phases II-IV," and state they will "mix and match" methods of maintaining the highway from methods previously identified in the NEPA process as well as other, yet-to-be-identified methods.

NCDOT and FHWA selected this alternative and rejected the less environmentally damaging Pamlico Sound Bridge alternative on the theory that the latter was not practical because all of its costs would be borne up front, while the Selected Alternative could proceed in phases, with fewer up-front costs and much of the cost being spread out over decades. Hurricane Irene in August 2011 (along with Tropical Storm Ida in November 2010, and numerous other storms over the years) proved the fallacy of that theory. Hurricane Irene created two new inlets and disrupted NC 12 for seven weeks. One new inlet is located near the mid-point of the Refuge (the "Refuge Inlet") and has been temporarily bridged. A second new inlet is located at the southern end of the Refuge near the village of Rodanthe (the "Rodanthe Breach"), and it has been temporarily filled and shored up with sandbags.¹

Governor Perdue has asked NCDOT to develop a long-term solution to the problem of maintaining NC 12 through the Refuge. In a series of public meetings beginning December 5, 2011, NCDOT presented alternatives for long-term solutions to the recurring problems caused by breaches of NC 12 in the southern two-thirds of the Refuge, leaving the recurring problems in the northernmost portion of the Refuge to be addressed later. The materials handed out by NCDOT at the public workshops are

¹ We understand that the banks of the Refuge Inlet are already eroding to the point that emergency measures are already being taken to prevent another breach of NC 12. Lauren King, "Lane Closures on N.C. 12 Bridge at Pea Island to Begin Wed.," *The Virginian-Pilot* (Jan. 17, 2012). We also understand that the fill material and sandbags supporting NC 12 at the Rodanthe Breach are also endangered by ongoing erosion.

hereinafter referred to as the "NCDOT Handout." These comments address those alternatives.

B. Segmentation

According to the EA and ROD, NCDOT and FHWA plan to select the methods for accomplishing the Later Phases from the list of options that were explored in previous NEPA documents but were rejected by federal agencies in the merger process. They may also turn to additional, undisclosed methods that were not revealed or explored in any NEPA document. NCDOT and FHWA plan to delay the decision on which of these methods – each impermissible for various reasons – until the Phase I bridge is already built and renders the maintenance of NC 12 in the Refuge necessary.

However, the damage caused by Hurricane Irene has forced NCDOT and FHWA to confront the unsustainable NC 12 situation sooner than they expected. The Refuge Inlet and the Rodanthe Breach destroyed sections of NC 12 in two of the four locations where government scientists have long predicted new inlets would form. NCDOT and FHWA are now tasked with developing a long-term plan to restore or bridge those two sections of NC 12 as "Phase II," before even beginning construction of Phase I.

According to news reports, NCDOT plans to award contracts for the northern-most portion of Phase II by August 2012 and for the Rodanthe area by December 2012. Construction on the Bonner Bridge replacement is not slated to begin until 2013 and is expected to last three years. The fact that Phase I and Phase II will now effectively proceed simultaneously demonstrates that the two phases are one project, the effects of which must be considered together.

Despite the fact that the Merger Team could not fully support any of the alternatives now proposed for Phase II at the time they were originally considered, NCDOT has proffered them again to the public, having failed to develop any different, workable options to keep the highway stable. Yet the problems that prevented the Merger Team from supporting each of these options still remain: they cannot receive necessary permits from various federal and state agencies, they depend upon easements that the State does not own, and/or they cannot be found compatible with the Refuge as required by the National Wildlife Refuge System Improvement Act of 1997 (the "Refuge Act").

NCDOT and FHWA cannot legally ignore the impediments and impacts of the Phase II alternatives by segmenting the difficult, environmentally damaging portions of the Project until there is no other choice but to construct them. Under CEQ's NEPA guidelines, when an agency is considering "connected actions" that "are related to each other closely enough to be, in effect, a single course of action," their impacts must be considered together. 40 C.F.R. §§ 1502.4(a), 1508.25(a). Here, the bridge over Oregon Inlet and the alternatives for addressing the damage inflicted by Hurricane Irene

constitute such "connected actions," and they must be considered a single transportation project, for which the impacts must be considered altogether.

The new breaches/inlets and NCDOT's newly accelerated timetable clarify that NCDOT cannot divide the Project into separate phases and consider only the environmental effects of Phase I at this time without violating NEPA. As we explained in previous comments,² NCDOT and FHWA's phased plan constitutes illegal segmentation by evaluating the environmental impacts of the Project piecemeal, and allowing the selection for Phase I to force choices for Phase II. The Project in this case encompasses the entire transportation corridor from Bodie Island to Rodanthe, so evaluating each "phase" of the Project separately violates NEPA. With multiple phases of this Project now underway simultaneously, it is even more apparent that NEPA documentation must evaluate the entire Project as a whole in order to analyze its environmental impacts adequately. A complete evaluation of the Project as a whole must include re-evaluating the choices made concerning Phase I.

To do otherwise – to treat Phase I's replacement bridge as a *fait accompli* when planning Phase II – impermissibly forces the decision on the Later Phases. It irretrievably commits resources to the Phase I replacement bridge in such a way that it forces the Later Phases to go forward without regard to their environmental consequences. If the environmental consequences and costs of the alternatives for the Later Phases had been considered thoroughly and realistically, the agencies would likely have selected a different alternative altogether in the ROD.

Segmentation is also inappropriate because it leaves users of NC 12 and Hatteras Island residents and visitors vulnerable to a foreseeable breach outside the two current Phase II sites. The proposed options do nothing to address the ongoing problems at the Canal Zone hot spot, for example, and another breach may open in or near the S-curves area in the very near future. NCDOT's approach suggests that, as with the Hurricane Irene breaches, it will wait until the next crisis arises before attempting to patch it and then retrospectively attempt to develop a stable solution for that particular site. This piecemeal approach falls far short of the comprehensive, long-term solution for the NC 12 corridor required by NEPA and, furthermore, requested by Governor Perdue.

C. Inaccurate Cost Estimates

The alternatives for Phase II cannot be considered without updated and accurate cost estimates, for all alternatives, including a Pamlico Sound Bridge and modern ferries, as requested by the Corps of Engineers in its letter to NCDOT of January 5, 2012. The Pamlico Sound Bridge alternative cost estimates should include estimates for a version of

² Comments dated June 21, 2010, on the EA (pp. 6-9); Comments dated October 27, 2008, on the 2008 Final Environmental Impact Statement ("FEIS") (pp. 25-27).

that bridge that does not travel as far away from Hatteras Island into the sound, but rather incorporates new bridge-building technologies that allow construction closer to the Refuge without harming submerged aquatic vegetation. Such a bridge would be shorter and presumably less expensive than the 17.5-mile version previously priced.

Although the Merger Team selected the Pamlico Sound Bridge alternative for detailed study in 2003 and generally acknowledged it to be the least environmentally damaging alternative, NCDOT and FHWA rejected it in favor of the current approach, arguing that the up-front costs of the long bridge would be too expensive while the phased approach or transportation management plan (TMP) alternatives would supposedly have fewer up-front costs with the majority of costs being spread over decades. This argument no longer justifies rejection of the Pamlico Sound alternative.

As explained above, after Hurricane Irene, Phases I and II will now overlap significantly and progress virtually simultaneously. We have attached a map showing the location of the three portions of the Project that are currently planned, created using data obtained from NCDOT. As is evident from the map, the currently planned Project portions account for at least seven to 10 miles of bridge and two-thirds of the length of the entire Project, leaving little to be accomplished in the Later Phases. In addition, in light of the current rate of erosion of the banks of the Refuge Inlet, we understand that the bridge over that portion of the Refuge might need to be much longer to last more than a few years. Accordingly, the combined up-front costs of the currently planned portions will surely begin to approach the up-front costs of the Pamlico Sound alternative. The fact that NCDOT is proposing to fund three large-scale construction projects simultaneously, even though the total cost of these projects is likely to be comparable to the less environmentally damaging Pamlico Sound Bridge, should compel reconsideration of the prior rejection of the Pamlico Sound Bridge solely on the basis of funding.

The cost estimates provided in the NCDOT Handout (p. 11) date from 2006. Even at that time, federal agencies – including the National Marine Fisheries Service (“NMFS”), Department of the Interior (“DOI”), and the Army Corps of Engineers – questioned the accuracy of those estimates. In 2006, when cost estimates of various alternatives were updated from the 2005 Supplemental Draft Environmental Impact Statement, the cost of the Pamlico Sound Bridge alternative rose inexplicably disproportionately as compared to the other alternatives. Then, in 2011, the Phase I Oregon Inlet replacement bridge contract was awarded for a mere 59% of its previously estimated price. The Pamlico Sound Bridge would likely see similar savings, and might even realize greater savings to the extent that its 2006 estimated price appears to have been inflated relative to the estimates for other alternatives.³ In addition to the passage of

³ See, e.g., U.S. Army Corps Comments on Supplement to SDEIS (Apr. 18, 2007), at p. 1 (questioning the 123% increase for the Pamlico Sound Bridge as compared with the 36% increase for the Oregon Inlet bridge).

time, much has changed since the 2006 estimates were generated, including construction costs, recession and inflation, the creation of new inlets in the Refuge, and other changes to the island’s geography.

The chart below shows the progression of cost estimates and contracts.

	Short / Parallel Bridge Alternative	Long / Pamlico Sound Bridge Alternatives
NCDOT’s 2005 Estimates (from NCDOT’s Supplemental Draft Environmental Impact Statement, Sept. 12, 2005, p. 2-110)	“All Bridge Alternative” \$493 million (incl. \$191 million for Phase I Oregon Inlet bridge, plus remainder for route to Rodanthe)	\$420 million to \$425 million
NCDOT’s 2006 Estimates (from NCDOT’s Revised Final Section 4(f) Evaluation, Oct. 9, 2009, pp. 26, 27, App. G-3)	Parallel Bridge Alternatives: \$602 million to \$1.524 billion (incl. up to \$368 million for Phase I Oregon Inlet bridge, plus remainder for route to Rodanthe)	\$943 million to \$1.441 billion
NCDOT’s 2006 Estimates for Phase II only (from NCDOT Handout, p. 11)	\$331 million to \$1.136 billion (for Phase II only)	N/A
NCDOT’s 2011 Estimates (from NCDOT Handout, p. 7, and article by Bruce Siceleoff, News & Observer, 12/15/11, quoting NCDOT)	\$216 million – contract for Phase I Oregon Inlet bridge \$211 million to \$387 million – NCDOT estimates for Phase II alternatives over new Hurricane Irene breaches Total: \$427 million to \$603 million	\$553 million to \$846 million ?? (if actual contract came in at the same 59% discount from 2006 estimate as the Phase I Oregon Inlet bridge)

NCDOT states that it will develop more accurate cost information once the proposed options have been narrowed down through the public comment process and Merger Team meetings. However, this sequence of events deprives the public of vital information it needs before it can accurately evaluate these options. Updated cost information should have been provided to the public at the outset to inform the comments. Moreover, NCDOT and the Merger Team need accurate cost information in order to select or eliminate options reasonably. Waiting until an alternative has been selected to develop

accurate cost information prevents sound agency decision-making and risks impermissible reverse-engineering of cost estimates to support predetermined outcomes.

Moreover, the cost estimates for Phase II provided by NCDOT fail to include key components of the Project. First, all cost estimates should include the cost of replacing the Bonner Bridge (Phase I) since they are part of the same Project. They also should include the costs of foreseeable direct and indirect impacts of these options, including mitigation costs, emergency repairs of storm damage throughout the construction of the phased approach, the permanent ongoing maintenance of an elevated roadway located in the Atlantic Ocean that will result from the phased approach, etc. For instance, NCDOT has incurred costs to restore NC 12 over the two Hurricane Irene breaches and is currently incurring additional costs to shore up the bridge over the Refuge Inlet; these costs should be considered part of Phase II. Finally, despite frequent mentions of a monitoring program in previous NEPA documents, there are no cost estimates provided to reflect the costs of such a program for each of the proposed alternatives. Providing all of this information to reflect the true cost of each alternative would help the agencies and the public fairly compare these alternatives with other alternatives such as a Pamlico Sound Bridge or modern ferry system.

In sum, many factors – including the fact that Phases I and II will proceed nearly simultaneously, the likelihood that the Pamlico Sound Bridge alternative would cost far less than previously estimated, the likelihood that the true cost of Phases I and II will approach that of a Pamlico Sound Bridge, and the possibility that any sources that could fund Phase II might also be available to fund a Pamlico Sound Bridge – all mandate a re-examination and revision of the cost estimates previously provided to the public and the Merger Team.

II. Specific Problems with Each of DOT's Proposals for Pea Island and Rodanthe

Each of the alternatives currently proposed by NCDOT for Phase II is taken from options first proposed in 2005 and analyzed extensively since then. None of these options was eventually selected as the preferred alternative due to the serious legal and/or engineering problems inherent in each of them, and the fact that the same problems remain militates in favor of re-evaluating the plan for the entire Project.

According to the NCDOT Handout, p. 4, the current Phase II “Beach Nourishment” alternative equates to the 2008 FEIS’s Nourishment alternative. The current Phase II “Bridge Within Existing NC 12 Easement” alternative equates to the 2008 FEIS’s “Phased Approach.” The current Phase II “Bridge/Road on New Location” alternatives described in the NCDOT Handout equate to the 2008 FEIS’s “Road North/Bridge South” and “All Bridge” alternatives.

Because all of these options are virtually identical to past alternatives rejected by the Merger Team, our specific comments on the current proposed options are similar to (and incorporate by reference) our comments on the 2005 Supplemental Draft Environmental Impact Statement (SDEIS), the 2007 Supplement to the SDEIS, the 2008 FEIS and Section 4(f) Evaluation, the 2009 Revised Final Section 4(f) Evaluation (“Revised 4(f) Evaluation”), and the 2010 E/A.

Finally, it is striking that NCDOT essentially concedes it has no viable plan for a long-term solution to transportation problems for the Rodanthe area. NCDOT Chief Operating Officer Jim Trogon has stated that even after six years of studying the current proposed options for Rodanthe, “there’s no alternative that stands out yet.”⁴ Moreover, even the NCDOT Handout, Table 2 (p. 10), lists “Potential Constraints” that will be fatal to each of the Rodanthe options:

- The Beach Nourishment option is “[n]ot likely to be found compatible with Refuge’s mission and purpose; sand quality and sand availability . . . is [sic] a concern,” as is the “extensive dredging” that will be required to obtain the sand and the frequency with which nourishment would have to be repeated.
- The Bridge on New Location option is “[n]ot likely to be found compatible with Refuge’s mission and purpose.”
- The Bridge within Existing NC 12 Easement is subject to a “[r]apid erosion rate” that will result in parts of the elevated structure being “in the surf zone or offshore in the future,” a result that was rejected in 1991 as creating serious maintenance problems and an unreliable storm evacuation route that would bear the brunt of an incoming nor’easter or hurricane.
- The Bridge within Existing NC 12 Easement and Beach Nourishment option raises the “[s]ame concerns as with beach nourishment option [i.e., compatibility and sustainability]; in addition, rapid erosion rate in this area may cause portions of the structure to be in the surf zone or offshore in the future.”

The significant problems that NCDOT concedes with regard to each of these options demonstrate that none of them presents the viable long-term solution to the NC 12 maintenance problem requested by Governor Perdue. Any long-term solution must include moving the transportation corridor off this vulnerable stretch of Hatteras Island.

⁴ Catherine Kozak, *NCDOT Presents Options for Long-Term Highway 12 Repair to the Public*, Island Free Press (Dec. 7, 2011).

A. Problems with Beach Nourishment Alternative

NCDOT proposes to use beach nourishment combined with dune enhancement “to maintain an adequate protective beach and dune system.” NCDOT plans to nourish four locations at four-year intervals, though more frequent intervals will likely be required.

1. Practical Difficulties

There are numerous practical impediments to relying on beach nourishment to try to counteract the natural movement of Hatteras Island and the formation of new breaches and inlets. Chief among these is the fact that nourishment tends to accelerate erosion by steepening the beach. This and other problems are described in more detail below.

However, in addition to these general problems, nourishment simply is not a viable option in the area of the temporary bridge over the Refuge Inlet because the inlet there is moving southward and will cause the bridge to collapse. Nourishment will not stop this movement. One of the Fish and Wildlife Service (“FWS”) buildings on the south side of the new inlet has already fallen into the inlet, and several more are currently close to collapse and may have already been condemned. Just a few months after the temporary bridge was installed there, the inlet has already migrated so much that it has already become necessary to shore up the bridge. (See footnote 1.) Inlet movement is a natural part of barrier island dynamics, and the new Refuge Inlet may migrate as far south as the location of the former New Inlet. Much more intrusive structural maintenance would be required to try to stabilize the current bridge, which would be found to be incompatible with the Refuge.

Finally, the nourishment options for the Rodanthe Breach are described inconsistently in NCDOT’s workshop handout. The Nourishment option’s map shows nourishment stopping just south of the Refuge boundary. However, the “Bridge Within Existing NC 12 Easement and Beach Nourishment” option shows nourishment extending south of the Rodanthe Historic District. If nourishment further south will be required for the bridge option, it will be required for the nourishment-alone option as well. Thus, NCDOT appears to understate significantly the geographical extent of the nourishment required for this latter option.

2. Geological and Biological Impacts

The Nourishment and dune enhancement option would harm – both directly and indirectly – protected species with habitat in the Study Area. It would also alter the geological profile of the island in a manner harmful to the natural processes of the barrier islands. The geologic effects of nourishment will narrow the island and will cause further harm to federally protected plants and animals.

Nourishment and dune construction alter the geological profile of the target beach. “[A] steeper beach profile is created when sand is stacked on the beach during the nourishment process. This condition can lead to greater wave energy on the beach and greater beachside erosion.” Atlantic States Marine Fisheries Commission, “Beach Nourishment: A Review of the Biological and Physical Impacts” 5 (November 2002). Because of this higher erosion rate with nourishment, the demand for sand increases over time. *Id.* at 6. The combined erosion on the ocean and sound sides of the island will lead to a narrowing of the island, potentially to the point that it can no longer support a highway, much less the wildlife habitat that is the purpose of the Refuge.

In addition, nourishment and dune construction prevent ocean overwash, leading to further erosion on the sound side, including erosion of sound-side wetlands. Overwash moves sand to the sound side of barrier islands and is an essential part of barrier island dynamics. See S.R. Riggs, *et al.*, “North Carolina’s Coasts in Crisis: A Vision for the Future” (“Coasts in Crisis”), which explains how nourishment and dune construction contribute to ocean-side erosion and prevent overwash, exacerbating sound-side erosion. This article is available at: <http://www.coastal-geology.ecu.edu/NCCOHAZ/downloads/Coasts%20in%20Crisis%20Booklet.pdf>.

The impacts of nourishment also extend beyond the visible beach to the near-shore waters and to the offshore areas from which sand is mined. Mining sand offshore can disrupt long-shore sediment transport and the long-term sediment budget for the barrier islands and their adjacent inlets.

Beyond these negative effects on the physical structure of the island, the nourishment option will also negatively impact plant and animal species. Organisms can be harmed by nourishment either directly by sand placement or indirectly through alterations to the beach environment. For example, “birds may be displaced by dredges, pipelines, and other equipment along the beach, or may avoid foraging on the beach if they are aurally affected.” Atlantic States Marine Fisheries Commission, “Beach Nourishment: A Review of the Biological and Physical Impacts” (November 2002). Other direct impacts include eggs, hatchlings, and adult birds being crushed by sand. *Id.* Indirect impacts to feeding birds are related to the sediment grain. “If the sediment is too coarse or high in shell content it can inhibit the bird’s ability to extract food particles in the sand. Fine sediment that reduces water clarity can also decrease feeding efficiency of birds.” *Id.* Other indirect impacts from beach nourishment can include diminished reproductive success, reduction in biomass of prey items, and long-term changes to substrate composition at dredging sites.

Long-term nourishment within the Project area would have additional adverse impacts on federally protected species, including the piping plover and North Carolina’s endangered sea turtle species. By suppressing overwash, nourishment leads to loss of

designated critical sound-side feeding habitat and nesting habitat for the federally threatened piping plover. In addition, the nourishment and artificial dune system prevents natural maintenance of existing habitat by increasing vegetative succession. Furthermore, nourishment may result in a narrower, steeper beach profile, reducing the available intertidal area. See National Park Service, Natural Resource Year in Review—2004: Ecosystem Restoration in an Altered Coastal Environment, *available at* http://www.nature.nps.gov/yearinreview/viir2004/01_H.html (“A berm constructed to reduce the potential for island breaching has prevented natural overwash processes and has reduced habitat availability of piping plover.”).

Beach nourishment can directly impact endangered sea turtles by burying nests and disturbing nesting turtles. Nourishment also impacts turtles indirectly. Beach nourishment may result in increased sand compaction and hardness and changes in moisture content and beach slope. Furthermore, as discussed above, nourished barrier islands may erode more quickly than natural beaches. This rapid erosion creates escarpments, which hamper access to nesting sites. In a vicious cycle, the rapid erosion may necessitate re-nourishment at more frequent intervals, thereby increasing the likelihood of interference with sea turtle nesting. See Fish and Wildlife Service, Recovery Plan for the U.S. Population of Atlantic Green Turtle, 3, 1991, *available at* http://www.nmfs.noaa.gov/pr/pdfs/recovery/turtle_green_atlantic.pdf.

The nourishment option is also unsustainable. Narrowing the island renders it more fragile and makes maintenance of NC 12 even more difficult in the long-term. Not only does erosion accelerate as a result of nourishment, but the costs of nourishment increase greatly over time and the amount of usable sand is limited. NMFS commented that the need for nourishment appeared to be significantly understated and the availability of suitable sand appears to be significantly overstated, which “could affect conclusions about the suitability of the alternatives that have beach nourishment as a component.” (FEIS at 8-49 to 8-50). DOI noted in its comments on the nourishment option that “over 500,000 cubic yards of Oregon Inlet sand have been placed along and adjacent to the ‘Canal Zone Hot Spot’ [alone] annually for the past four years, and it has not been sufficient to protect the highway from overwash and sand deposition impacts.” FEIS 8-58 (emphasis added). And NCDOT admitted in its response to NMFS and DOI’s concerns that it has not adequately studied the sand supply issue to determine whether available and suitable sand sources exist for a project of this magnitude. (Response to Comment, FEIS at 8-59).

3. Inaccurate Cost Estimates

The cost estimates provided for the nourishment option are misleading for several reasons. First, like all the cost estimates provided in the handout, they are now five years out of date. Second, as discussed above, nourishment tends to accelerate beach and sound-side erosion. That means that not only will the need for more sand increase over

time, but the island will become more vulnerable to breaches as it narrows, necessitating expensive emergency repairs. NCDOT has also admitted that nourishment has increased flooding problems in the Canal Zone hot spot area. FEIS at 4-70. Cost estimates should reflect these problems. Due to the massive volume of sand (500,000 cubic yards annually) that has been required even to partially stabilize the Canal Zone hot spot area in recent years, the Department of the Interior noted that “it appears that the estimated beach stabilization and associated costs are understated.” FEIS at 8-58.

Finally, the long Pamlico Sound Bridge agreed upon by the Merger Team in 2003 was designed to last 100 years. Providing only a 50-year cost estimate for nourishment disguises the true cost of this option in comparison with a 100-year option like the Pamlico Sound bridge. The equivalent 100-year cost of nourishment would be at least double the current 50-year estimate, or \$815,490,000 to \$1,314,520,000, and it will likely be much higher when updated cost information is developed and erosion acceleration and other geologic impacts of nourishment are taken into account. When these costs are added to the cost of the Oregon Inlet bridge currently under contract, the nourishment option is significantly more expensive than the Pamlico Sound Bridge alternative.

4. Permitting and Compatibility Problems

It is unlikely that NCDOT will be able to secure necessary permits from the Army Corps of Engineers for the Nourishment alternative. Section 404(a) of the Clean Water Act, 33 U.S.C. § 1344(a), authorizes the Secretary of the Army, acting through the Corps of Engineers, to issue permits for the discharge of dredged or fill materials into navigable waters. Section 404(b)(1) directs the Environmental Protection Agency to issue guidelines (“404(b)(1) Guidelines”) defining the circumstances in which dredged or fill material may be discharged into wetlands or other waters. The Corps must deny applications for section 404 permits if the discharge that would be authorized by the permit would not comply with EPA’s 404(b)(1) Guidelines. 33 C.F.R. § 320.4(a).

The 404(b)(1) Guidelines prohibit issuance of a permit where:

- (i) There is a practicable alternative to the proposed discharge that would have less adverse effect on the aquatic ecosystem, so long as such alternative does not have other significant adverse environmental consequences; or
- (ii) The proposed discharge will result in significant degradation of the aquatic ecosystem . . . ; or
- (iii) The proposed discharge does not include all appropriate and practicable measures to minimize potential harm to the aquatic ecosystem; or

- (iv) There does not exist sufficient information to make a reasonable judgment as to whether the proposed discharge will comply with these Guidelines.

40 C.F.R. § 230.12(a)(3). An alternative to discharge to navigable waters "is practicable if it is available and capable of being done after taking into consideration cost, existing technology, and logistics in light of overall project purpose." 40 C.F.R. § 230.10(a)(2) (emphasis added). Where a discharge "is proposed for a special aquatic site" and is not "water dependent," all practicable alternatives to the proposed discharge which do not involve a discharge to a special aquatic site "are presumed to have less adverse impact on the aquatic ecosystem, unless clearly demonstrated otherwise." 40 C.F.R. § 230.10(a)(3). As a federal wildlife refuge, the area at issue in this case is a special aquatic site, and the use is not "water dependent" since the transportation route could be placed elsewhere, including over Pamlico Sound. 40 C.F.R. §§ 230.2(q-1); 230.40. "If such an alternative exists . . . the [Clean Water Act] compels that the alternative be considered and selected unless proven impracticable." *Utahns for Better Transp. v. U.S. Dep't of Transp.*, 305 F.3d 1152, 1188-89 (10th Cir. 2002) (emphasis added).

The fact that NCDOT has a contract for construction of an Oregon Inlet bridge replacement does not preclude this required alternatives analysis, because practicable alternatives must be evaluated relative to the overall project purpose. The Pamlico Sound Bridge and the development of a ferry network are two examples of practicable alternatives that fulfill the project purpose with far less impact on the island's ecosystems. The decision to proceed simultaneously with three costly projects in the transportation corridor demonstrates that the funding concerns raised by FHWA in no way proved the Pamlico Sound Bridge impracticable as required by the Clean Water Act. As the Corps of Engineers explained in its letter to NCDOT dated January 5, 2012, "the primary reason [it] believed that the Pamlico Sound Bridge was not a practicable alternative was based on cost estimates and the assertion that the project could not reasonably be funded." If this underlying rationale is proven false and the Pamlico Sound Bridge re-emerges as the least environmentally damaging practicable alternative, the Corps will not be able to issue a § 404 permit for the Selected Alternative or any of its component parts, including the Nourishment option for Phase II.

In addition to these § 404 permitting concerns, the Nourishment option within the Refuge requires depositing sand outside the State's NC 12 easement, and therefore constitutes a use of the refuge under § 4(f) of the Department of Transportation Act of 1966. Use of publicly owned land is prohibited unless "(1) there is no prudent and feasible alternative to using that land; and (2) the program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use." 49 U.S.C. § 303(c). Depositing sand on the Refuge beaches is without question a use of the Refuge property. Thus, it is prohibited where

there are prudent and feasible alternatives. For the reasons discussed above, NCDOT's plan to construct three components of the transportation corridor project simultaneously reveals that the up-front funding concerns used to justify the rejection of the Pamlico Sound Bridge as not prudent were in fact arbitrary and capricious, and should be rejected in light of the current situation. Because feasible and prudent alternatives to this use of the Refuge land exist, this option cannot be approved under § 4(f). Even if no feasible and prudent alternatives exist, § 4(f)'s implementing regulations require that "the Administration may approve only the alternative that . . . [c]auses the least overall harm." 23 C.F.R. § 774.3(c)(1) (emphasis added). The Nourishment option does not cause the least overall harm, even among NCDOT's current Phase II options.

Moreover, the Nourishment option's use of the Refuge property also triggers a required compatibility determination: "[T]he Secretary shall not initiate or permit a new use of a refuge or expand, renew, or extend an existing use of a refuge, unless the Secretary has determined that the use is a compatible use and that the use is not inconsistent with public safety." 16 U.S.C. § 668dd(d)(3)(A)(i). "Compatible use" "means a wildlife-dependent recreational use or any other use of a refuge that, in the sound professional judgment of the Director, will not materially interfere with or detract from the fulfillment of the mission of the System or the purposes of the refuge." 16 U.S.C. § 668ee.

Inherent in fulfilling the System mission is not degrading the ecological integrity of the refuge The Refuge Manager must consider not only the direct impacts of a use but also the indirect impacts associated with the use and the cumulative impacts of the use when conducted in conjunction with other existing or planned uses of the refuge, and uses of adjacent lands or waters that may exacerbate the effects of a refuge use.

65 Fed. Reg. 62484, 62490 (Oct. 18, 2000).

Here, the direct and indirect impacts of nourishment and dune construction are incompatible with the purpose of the Refuge because would they harm plants and animals in the Refuge as well as the species' ecosystems and designated critical habitat, and they would negatively alter the geological condition of the Refuge land by contributing to increased erosion and island narrowing. NCDOT acknowledges that the Nourishment option is "[n]ot likely to be found compatible with Refuge's mission and purpose." (Handout p. 10).

Finally, the Cape Hatteras National Seashore extends 150 feet offshore of the Refuge, so NCDOT would also need a Special Use Permit from the National Parks Service ("NPS") in order to pursue the Nourishment option. The harmful impacts of nourishment, which result in narrowing the island, are not compatible with the NPS's goal of supporting the natural processes of barrier island dynamics.

B. Problems with Bridge Within Existing Easement Alternative

This “Bridge Within Existing Easement” alternative involves elevating NC 12 onto bridges within the State’s current easement and is part of the “Phased Approach” that was effectively rejected by not being designated the preferred alternative in the EA or the selected alternative in the ROD. This option has two components in the current Phase II proposal: a longer, permanent bridge over the Refuge Inlet, along with two bridge options for the Rodanthe Beach site. Though NCDOT’s workshop materials do not disclose this, the Phased Approach option may also involve nourishment and the construction of artificial dunes.

NCDOT claims that elevating NC 12 in the Refuge will not use the Refuge so long as the Project stays within its existing easement. As a result, NCDOT claims there are no potential constraints on this option (Handout p. 8). However, this option is highly unlikely to stay within its easement, and even if it does, it will constitute a use of the Refuge that is subject to a compatibility determination.

In a 2007 letter to then-Governor Easley, DOI stated that the Phased Approach would require actual use of Refuge land and therefore was likely incompatible with the Refuge’s purpose:

While the intent is to construct these new bridges within the existing road’s right-of-way, we believe this alternative would require *continued maintenance outside of the existing road’s right-of-way* through the Refuge until each subsequent phase of bridge construction along NC 12 is completed. Current information also indicates that all 4 phases would require at least 13 years of actual construction during a 28-year timeframe. Based on the information that the Service currently has, *it is unlikely that we could find this alternative to be compatible with the purposes for which the refuge was established*, as required under the Refuge Improvement Act.

Letter from David Verhey, Acting Assistant Secretary for Fish and Wildlife and Parks, to Governor Easley, dated September 11, 2007 (emphasis added).

The Phase II NCDOT Handout and other materials also fail to mention the projected dune-building and maintenance activities through 2030 that were integral to the Phased Approach as it was described in the FEIS (pages 4-70 to 4-72), much less explain how maintenance and any future dune-building will stay within the easement and cause no further encroachment onto the Refuge. Absent credible information to the contrary, it is simply not realistic for NCDOT to claim it will be able to accomplish all of the activities it proposes – new dune construction and maintenance, a temporary road, and constructing a long bridge more than 40 feet wide while keeping the existing highway

open— while staying entirely within its existing easement. It is virtually inevitable that these activities will “use” the Refuge within the meaning of Section 4(f). Moreover, the FEIS acknowledged that the Phased Approach “may require some beach nourishment,” which would constitute a further use of Refuge land. (FEIS at 4-107). For all these reasons, it is foreseeable that the Phased Approach will result in actual use of Refuge land.

In addition to these actual uses of Refuge land, this option will constructively use Refuge property as well. The elevated roadway will soon be located on the beach, in the surf, and eventually in the Atlantic Ocean as the island migrates westward. NCDOT acknowledges that the end result of this option will be a long bridge located in the ocean. See FEIS at 4-172. This is an absurd result. The U.S. Army Corps reminded NCDOT in its 2007 comments on the Supplement to the SDEIS that an ocean bridge was rejected in 1991 (in the form of the “East Bridge” alternative) because wave and storm impacts would create unjustifiably high maintenance costs. Those same problems will plague an elevated NC 12 that winds up in the ocean under the Phased Approach as well. Large sections of the proposed bridge will sit in highly dynamic breaker zones, where they will be subject to waves, scour, and severe storms, including nor’easters and hurricanes. Beyond the severe maintenance problems this would create, the route would also fail utterly to provide a safe, reliable storm evacuation route. For this reason alone, this option must be rejected.

Moreover, beyond these problems, the bridge’s eventual location in the surf also constitutes a constructive use of the Refuge: “A constructive use occurs when the transportation project does not incorporate land from a Section 4(f) property, but the project’s proximity impacts are so severe that the protected activities, features, or attributes that qualify a resource for protection under Section 4(f) are substantially impaired.” 23 C.F.R. § 774.15(a). An ocean-side bridge will negatively affect Refuge geology, including erosion rates, inlet formation, ocean overwash, etc. Indeed, NCDOT has admitted that the presence of bridge piles on the beach or in the ocean and the accompanying scour effects would create erosion problems and “could accelerate the development of a breach” during storms. The scour area on the ocean floor anticipated by NCDOT to result from the elevated roadway is approximately 15.6 acres. (FEIS at 4-61.) As we discussed in our comments on the FEIS, scour effects from a long ocean-side bridge running parallel to the shore have not been adequately studied and may be much more significant than revealed in the FEIS. Moreover, dune construction and/or nourishment will increase ocean-side erosion, prevent overwash, and increase sound-side erosion, reducing valuable wetland habitat.

The Refuge Act specifically mandates that a compatibility determination consider the direct, indirect, and cumulative impacts on Refuge land and any adjacent land or waters that affect the Refuge use. It is clear that the elevated roadway option will have adverse impacts on the Refuge, and it is therefore subject to a compatibility

determination. For the reasons already discussed, FWS is likely to find the proposed activity is incompatible with the mission and purpose of the Refuge.

This option also would be subject to a compatibility determination even if it did not constitute a physical use of Refuge land under § 4(f). First, this option would use the Refuge as a historic property due to the significant visual impact of an elevated bridge through the length of the Refuge. NCDOT acknowledges that a long bridge through the Refuge or on the beach will create a “sizeable visual intrusion in to the landscape of the Refuge,” all the more so in light of new bridge height requirements developed after Hurricane Katrina.

Second, irrespective of § 4(f) use, maintenance of an existing right-of-way is subject to review and approval by the FWS and is restricted to minor actions such as minor expansions or minor realignments to meet safety standards. See Final Compatibility Policy Pursuant to the National Wildlife Refuge System Improvement Act of 1997, 65 Fed. Reg. 62484, 62490 (Oct. 18, 2000). The impacts of a major project to elevate the length of NC 12 through the Refuge will include significant direct and indirect effects and therefore cannot be exempted from a compatibility determination.

Assuming that NCDOT plans to continue this option under a phased approach and thus will not elevate the entire roadway at once, this option will have significant indirect impacts on the Refuge and impermissibly interfere with the FWS’s ability to manage the Refuge for the benefit of federally protected species. Because of the unpredictable nature of barrier island dynamics – including inlet/breach formation, shoreline erosion rates and locations, and sound-side erosion – NCDOT’s plan to elevate sections of the highway as problems arise will likely occur suddenly and require “temporary” or “emergency” actions that will permanently and adversely affect the Refuge. As has been the case for maintaining NC 12 in the past, these temporary measures include sand bags, beach nourishment, dune rebuilding, dune springing, fencing, and road relocation. As NCDOT admitted in the FEIS, it has never conducted these emergency or maintenance measures within the existing right-of-way. Such an approach would also recreate the significant transportation problems and economic losses that Hatteras residents suffered as a result of recent NC 12 breaches, including the six to seven weeks they were cut off in the wake of Hurricane Irene.

In addition to the harmful impacts on Refuge land, an ocean bridge would harm essential fish habitat (“EFH”). NCDOT has stated that the ocean bridge that would result from this option

could permanently affect diversity and density of some aquatic wildlife within these [ocean] communities Because of habitat alteration and diminished vegetative growth, shading could impact managed species by locally diminishing the primary producers on which the managed species

rely for food and cover, thereby resulting in an overall reduction in local carrying capacity. Fish abundance and growth have been found to be lower beneath fishing piers compared to adjacent waters The high energy around the piles may reduce habitat quality for larval and adult fish, as well as reduce invertebrate species abundance and diversity.

(FEIS at 4-107.) The Magnuson-Stevens Act, 16 U.S.C. § 1801 *et seq.*, requires agencies to consult with the U.S. Secretary of Commerce before undertaking any action that might adversely affect EFH.

In addition, maintenance activities on this bridge in the surf zone “would . . . represent a long-term impact” to EFH and federally protected species. See FEIS at 4-108. Permanent, ongoing maintenance would be a necessity for bridge piles located in the high-energy surf zone, as the vast majority of the elevated roadway would be over the next 50 years, and this intrusive activity would be a major detriment to EFH. Permanent, on-going maintenance of an ocean bridge would also constitute another use of the Refuge, would require a Special Use Permit from the NPS, and likely a section 404 permit from the Army Corps as well.

The dune-building activities associated with this option will disrupt overwash and other barrier island dynamics, as described above in the discussion of the Nourishment option. Once these natural processes are interrupted, the bridge will adversely affect migratory bird and other wildlife habitat. For example, the eventual presence of bridge pilings in the surf or on the beach would impact the quality of nesting habitat for the federally protected piping plover and green and loggerhead sea turtles. Because this result is readily foreseeable, this option is incompatible with the purpose of the Refuge due to the significant negative impacts of a long bridge located on the beach or in the ocean.

Beyond these problems within the Refuge, there are serious legal and logistical problems with elevating the existing roadway in the Rodanthe area as well. By NCDOT’s own calculations, a bridge in this area will be located in the breakers by 2020 – *in eight short years* – creating tremendous maintenance and erosion problems. By 2060, NCDOT calculates the bridge could be 930 feet offshore. FEIS at 4-30, 4-62. Cost estimates should reflect the certainty of this section of bridge being located in the Atlantic Ocean. Moreover, as discussed above, the bridge’s eventual location in the breakers and offshore would render the bridge unusable as an emergency evacuation route.

A Rodanthe bridge will also create access problems and significant effects on the human environment for property owners and tourists. As one example, NCDOT noted in its 2010 EA that the bridge will have to terminate in a full-height stub so that it can be continued farther into Rodanthe when continuing erosion cuts off planned temporary access ramps. Furthermore, NCDOT concedes that the bridge being in the surf will

impede views and beach access for residents and visitors and likely will accelerate the erosion problems that already threaten structures in Mirlro and Rodanthe, to the detriment of local property owners.

The Bridge with Nourishment option for Rodanthe is not feasible either. It would have the same erosion problems as the longer Rodanthe bridge, and would also require a compatibility determination in order to deposit sand and construct dunes in the Refuge. As NCDOT acknowledges—as well as for the reasons given above—this activity is likely to be found incompatible with the Refuge. (Handout p. 10).

Finally, the cost of this option was estimated by NCDOT to be higher than that of the Pamlico Sound Bridge when the most recent cost estimates were calculated in 2006. The Phased Approach was estimated to cost between \$1.171 and \$1.497 billion, or between \$1.149 billion and \$1.524 billion if nourishment was also used in the Rodanthe area. (Rev'd Final 4(f) Evaluation, FEIS at B-26). The Pamlico Sound Bridge, by contrast, was estimated to cost between \$942.9 and \$1.441 billion. Cost cannot therefore justify rejecting the Pamlico Sound Bridge in favor of this current proposal.

C. Problems with Road or Bridge on New Location West of Existing Easement in the Refuge

NCDOT has conceded that the two options to relocate NC 12 west of its existing easement are not viable because they could not obtain the necessary easements and compatibility determinations. Jim Trogdon has admitted that “[o]n Pea Island, any option that stays in the right of way is preferred, and in some cases, required.”⁵ Several agencies on the Merger Team rejected these options in 2009 due to their substantial wetlands impacts. Moreover, the NCDOT Handout (p. 8) acknowledges that neither relocation option would be likely to be found compatible with the Refuge. These admissions should have prevented NCDOT from presenting such unrealistic options to the public.

The information provided to the public about these options is also unrealistic because it artificially understates the impacts to wetlands and other lands within the Refuge. The NCDOT Handout states that the wetlands impact for the “Bridge on New Location” option is 0.1 acre and that it is 3.0 acres for the “Road on New Location” option. However, the FEIS reveals that relocating the easement west as proposed by the current options will result in permanent wetlands impacts of 8.5 acres filled for an “All Bridge” option, and between 67.5 and 79.4 acres for a relocated roadway. SDEIS at 4-58, FEIS at 2-73. The workshop handout does not explain this discrepancy. It may stem from the fact that “Phase II” of this option entails temporarily linking the relocated corridor back to existing NC 12 just north of the new Refuge Inlet. However, given that this alignment is admitted to be temporary and will inevitably be replaced by a new

⁵ Kozak, “NCDOT Presents Options for Long-Term Highway 12 Repair to the Public,” Island Free Press (Dec. 7, 2011).

corridor that extends through the entire length of the Refuge, the true impacts of this option and their implications for the viability of this option must be disclosed to the public. To withhold those impacts until the remainder of the corridor is relocated is another instance of illegal segmentation.

In fact, neither of these options stands any chance of being constructed. Because of their massive impacts on jurisdictional wetlands and other Refuge wildlife habitat described above, these relocation options cannot be approved by FWS or the Army Corps. First, in order to be constructed, NCDOT would have to obtain a new easement for each of these options. FWS could not grant such an easement, however, because these options are manifestly incompatible with the mission and purpose of the Refuge. The huge footprint of a new road or bridge through the length of the Refuge, including cutting through vital waterfowl impoundments, would clearly degrade the ecological integrity of the Refuge as a wildlife habitat and therefore must be found to be an incompatible use.

In addition, there is no viable compensatory wetlands mitigation within the Refuge to offset these impacts. Even if FWS were willing to accept NCDOT’s abandonment of its existing easement as partial mitigation – which is unlikely, especially since on information and belief NCDOT plans to undertake no pavement removal or restoration work in the Refuge – the new route would use more acres of the Refuge than the existing easement and thus would require additional mitigation that simply does not exist. See EA at 2-24. Mitigation would also be required for the degraded state of the abandoned easement. DOI has reminded NCDOT that “mitigation cannot be used to make an otherwise incompatible proposed use compatible with the mission and purpose directives.” FEIS 8-70.

For similar reasons, the Army Corps could not issue a § 404 permit for the massive amount of wetlands fill that these options would necessitate. The existence of other proposed options that would be less harmful to jurisdictional wetlands, in addition to the even less intrusive long Pamlico Sound Bridge or ferry options, preclude the issuance of a § 404 permit for these options.

D. Problems with Bridge in Pamlico Sound Near Rodanthe

The proposed bridge from Rodanthe through the Pamlico Sound was originally proposed as part of the “Road North/Bridge South” and “All Bridge” alternatives. Because it now could also be combined with one of the other proposed options, we discuss it separately from the relocation options covered in the previous section.

No matter which other option the proposed bridge would be linked to, a Rodanthe area bridge would require a new easement through two acres of estuarine emergent wetland areas in the Refuge in order to rejoin the existing NC 12 corridor; such a new easement would likely be denied as incompatible for the reasons given above. Here too,

on-site compensatory mitigation would be impossible because there are no equivalent wetlands NCDOT could restore. For all these reasons, the NCDOT Handout concedes that this option is "[n]ot likely to be found compatible with the Refuge's mission and purpose" and thus it could not be constructed. (Handout at 10).

In addition, the proposed bridge would travel through areas of known submerged aquatic vegetation (SAV), which are also classed as EFH because they provide refuge from predators and foraging areas for juvenile and adult fish. As discussed above, the Magnuson-Stevens Act requires consultation with the Secretary of Commerce before any action is taken that might adversely affect EFH. In this case, the proposed bridge would fill approximately 1.4 acres of SAV (see FEIS at 4-88) and shade 5.3 acres of SAV (Handout at 10).

The bridge would also require a § 404 permit from the Army Corps of Engineers for discharge and fill in jurisdictional waters. Such discharges are not permitted if a practicable alternative exists that would have a lesser adverse impact on the aquatic ecosystem. 40 C.F.R. § 230.10(a)(2). As discussed earlier, the in-corridor Rodanthe bridge, as well as a long Pamlico Sound Bridge or a ferry system, would offer practicable alternatives with lesser adverse impact.

The Rodanthe terminus of this bridge would apparently be in the same location as the Rodanthe Bridge Within Existing NC 12 Easement. As discussed above, NCDOT has acknowledged potential problems with the terminus of the latter option being located seaward of the projected 2060 shoreline. The same problem is likely to affect the Bridge on New Location option, raising its costs and increasing its environmental impact as a result.

Lastly, the proposed bridge would be quite expensive to construct due to the shallow water in the proposed bridge corridor. The water depth is less than six feet for virtually all of the bridge length. NCDOT is prohibited from dredging in SAV areas in order to use barges to construct the bridge, so instead a temporary work bridge would have to be constructed and the proposed bridge built off of that. (FEIS 4-90, 4-177). This is a much more expensive construction method than conventional barge-based bridge construction and likely means the estimates provided in the handout are artificially low.

E. Seven-Mile Bridge in Pamlico Sound Bypassing Rodanthe Breach and Refuge Inlet

Although it was not included in NCDOT Handout or other materials distributed at the public meetings, we understand that NCDOT is also considering a seven-or-more-mile long bridge to bypass the southern half or even two thirds of the Refuge in the Pamlico Sound as yet another alternative for Phase II. We have marked our understanding of the general path of such a bridge in magenta on the attached map.

Because this alternative has not been explained by NCDOT nor evaluated during the NEPA process, it is difficult to comment thoroughly on it. Generally, it represents a step in the right direction insofar as it would remove the transportation corridor from the most unstable portion of Hatteras Island and would eliminate the need for the much of the nourishment, construction, maintenance, and other activities that would constitute use of the Refuge under the Refuge Act. Once the details of this alternative are revealed, however, there may well be problems to be addressed, such as the use of the Refuge land where the northern end of the bridge makes landfill on the Refuge, the maintenance of the remaining miles of NC 12 (especially in the future inlet locations identified by government scientists), impacts on submerged aquatic vegetation on the sound side of the Refuge, harm to EFH, and impacts to wetlands, among other things.

The consideration of this medium-length bridge alternative again raises the issue of cost: if NCDOT has the funding necessary to build both the 2.5- to 3.2-mile Phase I bridge over Oregon Inlet as well as a seven-or-more mile bridge to bypass both the Rodanthe Breach and the Refuge Inlet, why should that money not be spent to build the less environmentally damaging Pamlico Sound Bridge alternative? Such a bridge would bypass the entire Refuge, eliminate impacts to the Refuge, eliminate the need for the Later Phases of the current Selected Alternative, and result in a safe and reliable route predicted to last 100 years.

III. NCDOT Must Reconsider Off-Island Options

As discussed above, the ostensible justification for rejecting a long Pamlico Sound Bridge – its cost – has been disproven. At Governor Perdue's request, NCDOT has accelerated its timetable to try to provide a long-term solution to the breaches caused by Hurricane Irene. As a result, NCDOT now proposes to construct Phase I and Phase II of the Bonner Bridge replacement at once, with three major components, incurring costs that will surely be comparable to the likely contract price of the Pamlico Sound Bridge. Accordingly, that option must now be reconsidered by the Merger Team as the least environmentally damaging alternative, or "LEDPA," and as a feasible and prudent avoidance alternative under § 4(f), because it would cause significantly less environmental harm and would provide a much more stable long-term solution to the current transportation crisis on Hatteras Island.

In addition, however, it is time for NCDOT and the rest of the Merger Team to give serious consideration to a system of modern, high-speed ferries that would link the Hatteras communities to Bodie Island and the mainland. Ferry technology has come a long way since the ferry option was studied in 1991 and dismissed in the 1993 DEIS. For example, quadrimaran ferries already in use elsewhere appear to offer the combination of high speed, extremely shallow draft, and low wake that could meet the needs of transportation across Pamlico Sound. See, e.g., William A. Hockberger, "Quadrimaran

Ferries: High Speed with Shallow Draft," 2033 Transportation Research Record: Journal of the Transportation Research Board at 1-7 (2007).

Privatizing a ferry system for Hatteras Island would introduce competition and multiple route options while allowing the private sector to bear the costs of expensive new ferry technologies. Spreading the transportation burden among multiple routes (and possibly among multiple carriers) would help address the objection that a ferry system could not match the carrying capacity of the Bonner Bridge, since each route would only need to carry a fraction of the total demand by taking passengers directly to their final destination in Rodanthe, Cape Hatteras, Bodie Island, etc.

Finally, ferry terminals located in currently isolated mainland towns like Stumpy Point could have a tremendous positive economic impact on these communities. Ferries would create permanent jobs on the Outer Banks and the mainland while also supporting the creation of other local businesses to serve ferry passengers.

NCDOT's previous response to comments regarding ferries has indicated a resistance to meaningfully considering this option. For example, in its response to comments on the 2010 EA, NCDOT stated that other island communities served exclusively by ferries are "not in any way equivalent" in part because they have been "accessed by boat, ferry or plane for their entire modern histories." (ROD at C-53.) This is not a meaningful reason to refuse to study modern ferry options for Hatteras Island. NCDOT also argued that these other communities have lower permanent and seasonal populations than Hatteras Island, but again, dividing the transportation load currently carried by the Bonner Bridge among multiple ferry routes to key locations on Hatteras Island would alleviate any capacity issues.

One point made in our comments on the EA bears repeating in light of Hurricane Irene: ferry systems provide a much more reliable and resilient transportation option after a major storm. While the Hatteras communities were cut off for over six weeks after Hurricane Irene breached NC 12, ferry service to Ocracoke Island was up and running within days. Hatteras residents and businesses suffered a major economic loss as a result of NCDOT's dependence on the vulnerable stretch of NC 12 through the Refuge. In contrast, an updated ferry system would provide a much quicker recovery from hurricanes during tourist season.

In short, rather than finding reasons to reject ferries out of hand, NCDOT should study this option seriously, investigating other public and private ferry systems in the United States and internationally to determine whether such an option is practicable. NCDOT claimed in its response to comments on the EA that the FEIS provided an adequate discussion of the ferry option, but that discussion, like discussions in previous NEPA documents, appears merely to summarize and repeat assumptions made in a 1991 feasibility study. Given the lack of viable options among those it is currently proposing

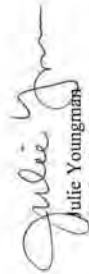
for Phase II, NCDOT can no longer afford to dismiss this alternative using out-of-date assumptions, data, and reasoning.

Conclusion

The Merger Team must revisit the entire Bonner Bridge replacement project. The Selected Alternative has proven inadequate because NCDOT has not developed any viable options for NC 12 and has instead been forced to rely upon old options already rejected by the Merger Team. Storm damage and erosion will only continue to reveal the shortcomings of this piecemeal approach. These realities have forced NCDOT to find funding to pursue three simultaneous components of its proposed transportation corridor, but the cumulative costs of these components are without question comparable to other alternatives, including the likely contract price of a long Pamlico Sound Bridge.

A safe and secure Pamlico Sound Bridge, predicted to last 100 years, and/or an updated ferry system, are surely a better use of the money than a series of precarious bridges and roads predicted to last only 50 years and to be beset by erosion and storm damage throughout their useful life. Thus, the Merger Team must reconsider off-island alternatives—including a Pamlico Sound Bridge and ferries—in light of the immense challenges and true costs of maintaining a long-term NC 12 corridor through the Refuge. These options are practicable, feasible, and prudent alternatives that will be far more stable and less environmentally damaging than the options presented to the public in the current Phase II process.

Sincerely,


Julie Youngman
Senior Attorney
Southern Environmental Law Center

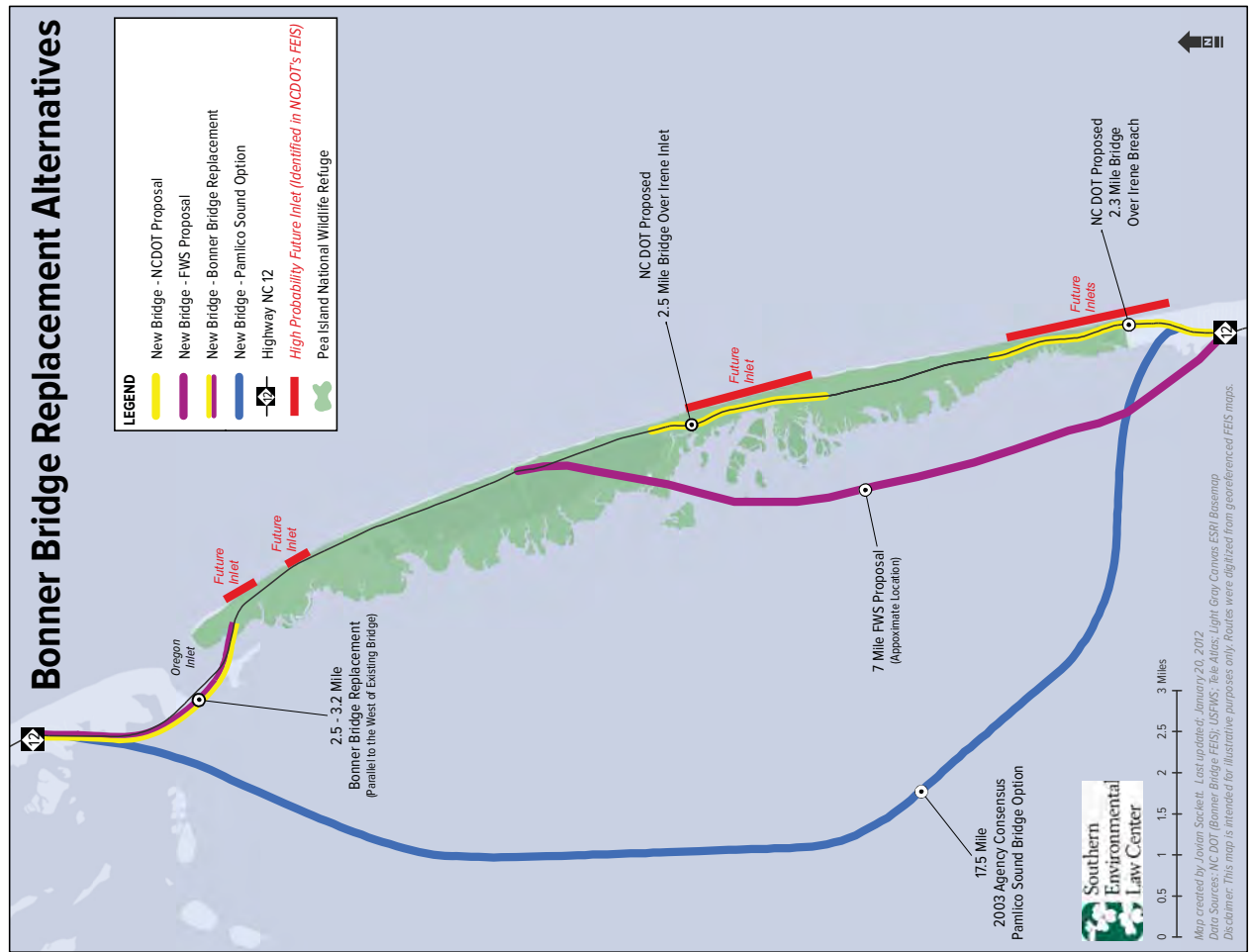
Jason Rylander
Senior Staff Attorney
Defenders of Wildlife

Robert Morgan
General Counsel
National Wildlife Refuge Association

Attachment

Ms. Beth Smyre, P.E.
January 20, 2012
Page 25

cc (by e-mail only, with attachment):
Dr. Gregory Thorpe, Ph.D., NCDOT
John Sullivan, FHWA
Clarence Coleman, FHWA
Stacey Bosshardt, Esq., USDOJ, attorney for FHWA
Thomas H. Henry, Esq., NCDOT, attorney for NCDOT





ENVIRONMENTAL ASSESSMENT FOR PERMANENT BRIDGE OVER NEW PEA ISLAND INLET AVAILABLE FOR REVIEW

The North Carolina Department of Transportation (NCDOT) has released an Environmental Assessment (EA) for public comment for Phase IIa (Pea Island inlet) of the Bonner Bridge Replacement Project. The Bonner Bridge Replacement Project includes both a new bridge over Oregon Inlet (Phase I) and future phases that provide for the long-term maintenance of NC 12 from Oregon Inlet to Rodanthe. Phase IIa of the project is the long-term solution for the section of NC 12 at the Pea Island inlet, which formed as a result of Hurricane Irene in 2011.

The EA identifies the Bridge within Existing NC 12 Easement Alternative as the Preferred Alternative for Phase IIa. The Preferred Alternative is shown on the figure on the next page. The EA also describes the changes in the environment since the release of the 2010 Record of Decision (ROD), in particular the formation of the new Pea Island inlet. As described in the EA, the Preferred Alternative for Phase IIa would include the following characteristics:

- An approximately 2.1-mile-long bridge within the existing NC 12 easement to replace the existing surface road and the temporary bridge over the Pea Island inlet.
- Designed to account for the potential expansion and migration of the current inlet in the future, as well as potential future breaches in the area (see figure on next page).
- Constructed on the ocean side of the NC 12 easement except in the area of the temporary bridge, where it would be on the sound side, due to the location of the existing temporary bridge.
- Traffic would be maintained on NC 12 throughout construction of the permanent bridge.

PUBLIC HEARINGS SCHEDULED

Locations and times of the public hearings scheduled for March 11, 12, and 13, 2013 are listed to the left on the Bulletin Board. The purpose of the hearings is to give citizens the opportunity to express their opinions about the Phase IIa alternative and design under consideration. The hearings will be informal, with the public welcome to drop in any time between 4:00 PM and 7:00 PM. Study team members will be available to explain the alternative and design under consideration and answer questions. The same information will be available at all three meetings.

NCDOT will provide auxiliary aids and services under the Americans with Disabilities Act for disabled persons who wish to participate in these hearings. Anyone requiring special services should contact the study team.

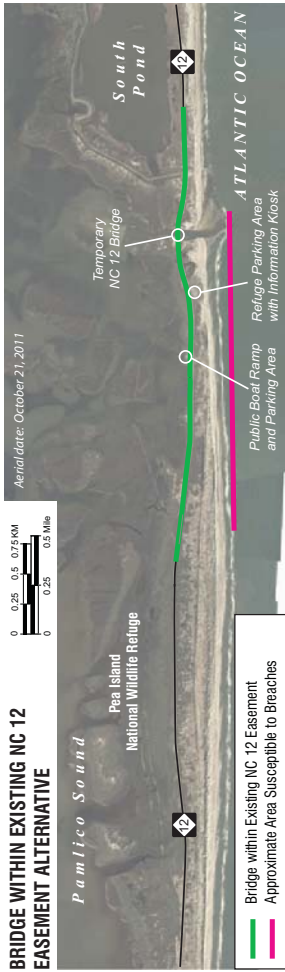
Bulletin Board PHASE IIa PUBLIC HEARINGS

March 11, 2013
MANTEO
Dare County
Administration Building
954 Marshall Collins Drive
Manteo, NC
4:00 pm - 7:00 pm

March 12, 2013
RODANTHE
Rodanthe-Waves-Galvo
Community Center
23166 Myra Peters Road
Rodanthe, NC
4:00 pm - 7:00 pm

March 13, 2013
OCRA COKE
Ocracoke Community Center
1009 Irvin Garratt Highway
Ocracoke, NC
4:00 pm - 7:00 pm

BRIDGE WITHIN EXISTING NC 12 EASEMENT ALTERNATIVE



WHAT HAPPENS NEXT

After reviewing comments from citizens, local government, and state and federal regulatory and resource agencies, NCDOT and the Federal Highway Administration (FHWA) will determine if the proposed Phase IIa project results in any significant new impacts beyond those taken into consideration in the 2010 ROD and if a Supplemental Final Environmental Impact Statement (SFEIS) is necessary. If a

North Carolina Department of Transportation
Project Development and Environmental Analysis Unit
Attention: Beth Smyre
1548 Mail Service Center
Raleigh, North Carolina 27699-1548



(continued from above)

SFEIS is not needed, a ROD will be issued in the spring of 2013 and permit applications will be submitted to regulatory agencies. NCDOT plans to award a construction contract as early as the summer of 2013. An EA assessing alternatives for a long-term solution to NC 12 overwash in the Rodanthe area (Phase IIb) is expected to be released in the summer of 2013.

Feel Free to Contact the Study Team

If you have any questions or wish to be added to our newsletter mailing list, please call John Page on our Toll-Free Project Information Line, 1-866-803-0529. You may also write the study team at:

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Raleigh, NC 27601
pagej@pbworld.com

EA Review Locations

The EA and maps of the Preferred Alternative design are available for public review at the following locations:

- Dare County, North Carolina library locations in Hatteras Village, Kill Devil Hills, and Manteo
- NCDOT Resident Engineer's Office 349 Water Plant Road, Unit B Manteo, NC
- Fessenden Recreation Center in Buxton, NC
- Ocracoke School & Community Library 225 Back Road, Ocracoke, NC
- Dare County Planning and Inspections Satellite Office 49815 NC Highway 12, Buxton, NC

The EA and maps also are posted for online review on NCDOT's website at <http://www.ncdot.gov/projects/bonnerbridgephase2/>

Appendix C

Response to Scoping Comments on Potential Phase IIb Alternatives

C. Response to Scoping Comments on Potential Phase IIb Alternatives

This appendix completes the response to the comments received following a series of Citizens Informational Workshops held in December 2011 and January 2012. The workshops were held as part of the scoping process for Phase II of the Bonner Bridge Replacement Project (B-2500).¹ As a result of damage to NC 12 caused by Hurricane Irene in August 2011 in two locations, the North Carolina Department of Transportation (NCDOT) initiated Phase IIa (B-2500A) and Phase IIb (B-2500B) of the Bonner Bridge Replacement Project (B-2500) to implement long-term NC 12 improvements pursuant to the PBC/TMP Alternative identified in the ROD. The two locations in which NC 12 was breached by the storm were in northern Rodanthe (the “Rodanthe breach”) and within the Pea Island National Wildlife Refuge (Refuge) approximately 6 miles south of Oregon Inlet (at the “Pea Island inlet”). This Environmental Assessment (EA) is for the Rodanthe breach area (“Phase IIb”). An EA for the Pea Island inlet area (“Phase IIa”) was released in February 2013 and a ROD was issued in October 2013. Appendix C of the Phase IIa EA for the Pea Island inlet included responses to comments that were applicable to Phase II as a whole, as well as those that specifically addressed Phase IIa. This appendix provides responses to the comments or portions of longer comments that are applicable only to Phase IIb and for which the promise of a response in this document was made in the Phase IIa EA (Appendix C).

Also included in this Appendix are public comments related to Phase IIb that were made during the Phase IIa EA comment period that ended March 28, 2013. They originally appeared in the Phase IIa ROD under the heading “Phase IIb Rodanthe Breach.” These comments were considered during the preparation of this EA and are repeated in this appendix for the reader’s convenience.

The Phase IIa EA and the Phase IIa ROD are included on the compact disc (CD) that accompanies this EA, at the public review locations listed in Section 6.7, and on the NCDOT website at <http://www.ncdot.gov/projects/bonnerbridgephase2/>.

¹ The Selected Alternative for the NC 12 Replacement of the Herbert C. Bonner Bridge over Oregon Inlet (Bonner Bridge Replacement Project), State Transportation Improvement Program (STIP) No. B-2500, is the Parallel Bridge Corridor with NC 12 Transportation Management Plan Alternative (PBC/TMP Alternative), as documented in the December 2010 ROD.

C.1 Public Comments

As part of the Phase II scoping process, Citizens Informational Workshops were held on December 5, 2011 at the Dare County Administration Building in Manteo; December 6, 2011 at the Rodanthe-Waves-Salvo Community Center in Rodanthe; and January 5, 2012 at the Community Center in Ocracoke. Based on the workshop sign-in sheets, attendance at the workshops was as follows: Manteo – 45 people; Rodanthe – 135 people; and Ocracoke – 58 people. A total of 77 citizens and one non-governmental organization (NGO) made comments (written, e-mail, or telephone) at and following the Citizens Informational Workshops. Of the 78 total comments, 25 comments did not express an alternative preference (i.e., general project-related comments and information requests). A summary of these comments sorted by the Phase IIb alternative favored is presented in the next section. Comments not related to a preference for one or more alternatives are presented in the section that follows.

C.1.1 Alternatives Favored in the Phase IIb Project Area

A total of 41 commenters expressed a preference for one of the alternatives displayed at the workshops in the Phase IIb project area, as follows:

• Beach Nourishment	29
• Bridge on New Location	9
• Bridge within Existing NC 12 Easement	7
• Bridge within Existing NC 12 Easement with Beach Nourishment	6

The Outer Banks Chapter of the Surfrider Foundation submitted a petition (with 1,148 signatures) in favor of giving consideration to design options that, at a minimum, provide continued, if not improved, access to Rodanthe 'S' Curves Hot Spot area for surfing. The petition did not indicate support for a particular alternative, but it stated that the 'S' Curves Hot Spot area is a top surfing spot in the United States. It also emphasized the contribution of surfing to the local economy.

C.1.2 Public Comment Summary Related to the Phase IIb Project Area

In addition to comments indicating a preference for one or more alternatives, there were comments addressing the following substantive topics: project need and timing, cost and financing, decision-making considerations, permanent bridges, the temporary bridge over the Pea Island inlet, a permanent bridge over the Rodanthe breach, relocating NC 12 as a road, beach nourishment, other actions to minimize shoreline change, and utilities and emergency services. Almost all of these comments were addressed in Appendix C of the Phase IIa EA (Section C.1.2, comment themes 1 to 5, 7, 8 [part], and 9 to 11). The comments grouped as comment themes 6 and 8 (part) are specific to the Rodanthe area. These are listed and responses are provided below.

- Permanent Bridge Over the Rodanthe Breach:
 - A new bridge would be too disruptive. It would ruin the waterfront experience, including recreation and scenic views. It would impact community cohesion and quality of life. Do not disturb the community; “everything” is disappearing; more commercial development is undesirable.
 - A new bridge will create negative impacts to recreational opportunities such as surfing and the economy unless beach access and parking are maintained/ provided, especially at the “S” curves.
 - The bridge alternative will devastate Rodanthe.

Response: *The positions of the commenters are noted. Such impacts were considered when evaluating these alternatives in the Bonner Bridge Replacement Project (B-2500) 2008 FEIS and the 2010 EA. They also were taken into consideration in the current Phase IIb study process and this EA. Access will be maintained to homes and businesses along NC 12 with either Phase IIb detailed study alternative. However, direct access from the NC 12 roadside within the Pea Island National Wildlife Refuge (Refuge) would be removed for the section of NC 12 within the Refuge that is bridged. In the past, the Refuge has preferred sacrificing direct roadside motor vehicle access in order to eliminate the need for artificial dunes to maintain a surface road. Refuge representatives have indicated in the past that they will allow for some form of access to the Refuge and its facilities. In the development of Phase IIa mitigation measures, NCDOT agreed to provide an access road, to be maintained by the Refuge, to the New Inlet boat ramp/parking lot. NCDOT also agreed to replace the parking lot currently on the east side of NC 12 that also will be bypassed by the Phase IIa Selected Alternative.*

- Beach Nourishment:
 - The entrance to Rodanthe could benefit from beach re-nourishment; if nourishment is tried, then direct ingress to historical Rodanthe is desirable.

Response: *The positions expressed in this comment are noted. Beach nourishment is not being pursued as a detailed study alternative for Phase IIb for the following reasons: uncertainties related to the availability of suitable sand to regularly re-nourish the shoreline over the project’s 50-year life; nourishment would not adequately protect NC 12 from potential future inlets in this area because of the underlying geology; the higher shoreline erosion rate in this area compared to the rest of the Bonner Bridge Replacement Project (B-2500) project area, which would increase the amount of sand required compared to other parts of the full project area; it would not allow natural island processes to occur within the southern portion of the Refuge; and nourishment as a long-term solution is not likely to be found compatible with the Refuge’s mission and purpose (based on previous US Department of Interior [USDOI] comments). Neither of the detailed study alternatives evaluated for Phase IIb would affect ingress to historical Rodanthe. In addition, neither of the detailed study alternatives would prohibit the*

consideration of either short-term or long-term beach nourishment proposals by other government or private entities.

C.2 Southern Environmental Law Center Comments

Portions of the Southern Environmental Law Center's (SELC) scoping comment 7 and comment 9, as presented in the Phase IIa EA, directly related to Phase IIb. Responses to these comments are presented in this section.

7. **Comment:** The portions of this comment not addressed in Appendix C of the Phase IIa EA are:

Beyond these problems within the Refuge, there are serious legal and logistical problems with elevating the existing roadway in the Rodanthe area as well. By NCDOT's own calculations, a bridge in this area will be located in the breakers by 2020 – *in eight short years* – creating tremendous maintenance and erosion problems. By 2060, NCDOT calculates the bridge could be 930 feet offshore. FEIS at 4-30, 4-62. Cost estimates should reflect the certainty of this section of bridge being located in the Atlantic Ocean. Moreover, as discussed above, the bridge's eventual location in the breakers and offshore would render the bridge unusable as an emergency evacuation route.

A Rodanthe bridge will also create access problems and significant effects on the human environment for property owners and tourists. As one example, NCDOT noted in its 2010 EA that the bridge will have to terminate in a full-height stub so that it can be continued farther into Rodanthe when continuing erosion cuts off planned temporary access ramps. Furthermore, NCDOT concedes that the bridge being in the surf will impede views and beach access for residents and visitors and likely will accelerate the erosion problems that already threaten structures in Mirlo Beach and Rodanthe, to the detriment of local property owners.

The Bridge with Nourishment option for Rodanthe is not feasible either. It would have the same erosion problems as the longer Rodanthe bridge, and would also require a compatibility determination in order to deposit sand and construct dunes in the Refuge. As NCDOT acknowledges—as well as for the reasons given above—this activity is likely to be found incompatible with the Refuge. (Handout p. 10).

Response:

Bridge in the Ocean as an Emergency Evacuation Route. NCDOT disagrees with the commenter's assertion that the Phase IIb bridge in the existing NC 12 easement would be rendered unusable as an evacuation route once located in the ocean. This concern was also addressed on page C-32 of the Phase IIa EA. The Phase IIb Bridge within Existing NC 12 Easement Alternative would be designed to span the entire area that is

geologically susceptible to breaching in the Rodanthe breach area, which addresses the potential for future storms to create a new breach or inlet. The superstructure (the bridge beams and deck), would be placed above the projected storm surge associated with major storms so that it cannot be struck or damaged by the surge, and the depths of the supporting bridge piles would be designed to account for the possibility that the Phase IIb bridge in the existing NC 12 easement would ultimately be off-shore as beach erosion progresses in the area. Additionally, estimated costs for the Bridge within Existing NC 12 Easement Alternative take into consideration that the bridge will be in the ocean by 2060.

Access Problems and Impacts to Property Owners and Tourists. Changes in access and community impacts noted in the comment were documented in the 2008 FEIS (Section 4.1 beginning on page 4-2) and updated in the 2010 EA (Table 2-3 on page 2-24) for the Phased Approach/Rodanthe Bridge Alternative. They are updated again in this EA for the Bridge within Existing NC 12 Easement Alternative, for which the 2010 EA design of the Phased Approach/Rodanthe Bridge Alternative was modified to take into consideration the 2060 high erosion shoreline updated in 2012 and keeping in mind a desire to minimize community impacts. Access changes and community impacts, however, remain similar to those presented in the 2008 FEIS and 2010 EA. The effect of bridge piles in the ocean on beach erosion was documented in Section 4.6.8.4 of the 2008 FEIS (on page 4-67). Clarifications were made in Appendix C of the Phase IIa ROD in response to this commenter's comments 14 to 16.

Bridge within Existing NC 12 Easement and Beach Nourishment Alternative. This alternative was not selected as a detailed study alternative for Phase IIb for reasons documented in Section 2.4.1 of this EA.

9. **Comment:** "The proposed bridge from Rodanthe through the Pamlico Sound was originally proposed as part of the "Road North/Bridge South" and "All Bridge" alternatives. Because it now could also be combined with one of the other proposed options, we discuss it separately from the relocation options covered in the previous section.

No matter which other option the proposed bridge would be linked to, a Rodanthe area bridge would require a new easement through two acres of estuarine emergent wetland areas in the Refuge in order to rejoin the existing NC 12 corridor; such a new easement would likely be denied as incompatible for the reasons given above. Here too, on-site compensatory mitigation would be impossible because there are no equivalent wetlands NCDOT could restore. For all these reasons, the NCDOT Handout concedes that this option is "[n]ot likely to be found compatible with the Refuge's mission and purpose" and thus it could not be constructed. (Handout at 10).

In addition, the proposed bridge would travel through areas of known submerged aquatic vegetation (SAV), which are also classed as EFH because they provide refuge from predators and foraging areas for juvenile and adult fish. As discussed above, the Magnuson-Stevens Act requires consultation with the Secretary of Commerce before any action is taken that might adversely affect EFH. In this case, the proposed bridge would fill approximately 1.4 acres of SAV (see FEIS at 4-88) and shade 5.3 acres of SAV (Handout at 10).

The bridge would also require a § 404 permit from the Army Corps of Engineers for discharge and fill in jurisdictional waters. Such discharges are not permitted if a practicable alternative exists that would have a lesser adverse impact on the aquatic ecosystem. 40 C.F.R. § 230.10(a)(2). As discussed earlier, the in-corridor Rodanthe bridge, as well as a long Pamlico Sound Bridge or a ferry system, would offer practicable alternatives with lesser adverse impact.

The Rodanthe terminus of this bridge would apparently be in the same location as the Rodanthe Bridge within Existing NC 12 Easement. As discussed above, NCDOT has acknowledged potential problems with the terminus of the latter option being located seaward of the projected 2060 shoreline. The same problem is likely to affect the Bridge on New Location option, raising its costs and increasing its environmental impact as a result.

Lastly, the proposed bridge would be quite expensive to construct due to the shallow water in the proposed bridge corridor. The water depth is less than six feet for virtually all of the bridge length. NCDOT is prohibited from dredging in SAV areas in order to use barges to construct the bridge, so instead a temporary work bridge would have to be constructed and the proposed bridge built off of that. (FEIS 4-90, 4-177). This is a much more expensive construction method than conventional barge-based bridge construction and likely means the estimates provided in the handout are artificially low.”

Response:

Refuge Compatibility. NCDOT worked with Refuge representatives to identify an alignment for the Bridge on New Location Alternative that can be considered a minor modification and be permitted under the terms of a Special Use Permit. In a letter dated July 22, 2013, USFWS-Refuge indicated that with the provision of adequate mitigation to ensure no net loss of habitat quality or quantity, the Bridge on New Location Alternative as assessed in this EA could likely be considered a minor modification to the existing NC 12 easement. The proposed alignment minimizes the amount of new easement required within the Refuge, and it allows for the return of approximately 19.27 acres of the existing easement to be returned to the Refuge. The impacts of this alignment are assessed in Chapter 4 of this EA.

Magnuson-Stevens Act Consultation. The National Marine Fisheries Service (NMFS), which is part of the US Department of Commerce, is on the project's Merger Team and EFH consultation is a part of the Phase II environmental studies. Such consultation is needed for any alternative affecting the Atlantic Ocean, Pamlico Sound, and Oregon Inlet. NCDOT and FHWA are consulting with the NMFS as required. An updated assessment of SAV and EFH impacts is included in Chapter 4 of this EA.

US Army Corps of Engineers (USACE) Permit Requirements. USACE is on the project's Merger Team. The commenter's opinion on there being practicable alternatives to the Bridge on New Location Alternative at Rodanthe is noted. The reasonableness and practicability of the Pamlico Sound Bridge Corridor and Ferry Alternatives were revisited in the Phase IIa EA (Sections 2.3.1 and 2.3.2, beginning on page 2-5), and it was re-affirmed that neither alternative was reasonable or practicable. Comments on the Phase IIa EA related to these alternatives were addressed in Appendix C of the Phase IIa ROD.

Location of Alternative Seaward of Forecast 2060 High Erosion Shoreline. NCDOT's goal with the Parallel Bridge Corridor alternatives is, where possible, to place bridge termini and surface road relocations more than 230 feet beyond the forecast 2060 high erosion shoreline (i.e., in the area that is not expected to be threatened by high shoreline erosion and sand overwash through 2060). Taking into consideration the 2060 high erosion shoreline prepared in 2012, the NC 12 intersection of the Bridge on New Location Alternative in Rodanthe is now more than 230 feet beyond the 2060 high erosion shoreline.

As a part of the PBC/TMP Alternative, NCDOT is regularly monitoring the shoreline and reconsidering the high erosion shoreline as a part of deciding when to implement future phases of the PBC/TMP Alternative. If shoreline erosion were to ultimately manifest itself in a manner similar to the 2060 high erosion shoreline used in the 2008 FEIS, NCDOT would relocate the NC 12 intersection of the Bridge on New Location Alternative to a location where it would not be threatened. If intersection relocation were to ultimately involve a portion of the Rodanthe Historic District, that also would mean the primary contributor to the District (i.e., the Chicamacomico Life Saving Station), which is seaward of NC 12, would have been lost or partially lost to beach erosion, and the historic resource issues considered in developing the Bridge on New Location Alternative would be different.

Cost. The current and past cost estimates for the Bridge on New Location Alternative assumed that a work bridge would be needed to erect a bridge when over SAV, as discussed in the response to this organization's comment 4 in Appendix C of the Phase IIa EA.

C.3 Public Comments Related to Phase IIb Made During the Phase IIa EA Comment Period

The comments and responses in this section originally appeared in the October 2013 Phase IIa ROD under the heading “Phase IIb Rodanthe Breach.” They were considered during the preparation of this EA and are presented here for the reader’s convenience with updates as needed.

- Natalie McIntosh

Ms. McIntosh states that an “emergency status” is needed for the Rodanthe ‘S’ Curves and Mirlo Beach area. She understands from conversations with Mr. Drew Joyner that there is a possibility for an emergency bridge solution prior to the implementation of Phase IIb. She states that the perception that the island is “cut off” must be avoided.

***Response:** The Governor declared the situation on NC 12 in the area between the temporary bridge at Pea Island inlet and the village of Rodanthe a State of Emergency on March 19, 2013. This declaration is expected to facilitate the implementation of interim measures to stabilize NC 12 at the Rodanthe ‘S’ Curves Hot Spot, prior to the construction of a long-term improvement at this location (Phase IIb). A temporary bridge was considered at the Rodanthe ‘S’ Curves Hot Spot as one option to stabilize NC 12 in the interim prior to the construction of Phase IIb. Beach nourishment also was assessed and is preferred as an interim measure. A permit application for an interim nourishment program at the Rodanthe ‘S’ Curves Hot Spot was submitted by NCDOT to USACE on June 13, 2013. USACE approved the EA for an interim beach nourishment project at the Rodanthe ‘S’ Curves Hot Spot on October 15, 2013. USACE concluded that this interim project would have no significant impacts. NCDOT continues to work with USACE to implement this interim program.*

- Scott and Martha Caldwell

Mr. and Mrs. Caldwell are the owners of the Island Convenience Store and Midgett’s Campground. They list the impacts to their businesses under each of the Phase IIb alternatives, including the loss of their convenience store with the existing easement alternative and the loss of their campground with the bypass through the sound alternative. They conclude that the sound bypass is their preference between the two, because the convenience store is their main source of income.

Response: *This position is acknowledged. The commenters' observations on the impact of the proposed alternatives to their properties are included in this EA in Section 4.2.1.*

- Keith McCulloch and Brian Van Druten

Mr. McCulloch is in favor of the bypass in the sound alternative and is against the existing easement alternative.

Mr. Van Druten states that he supports the Phase IIb option that would bypass the 'S' curves by going out into the Pamlico Sound.

Response: *These positions are acknowledged. A "sound alternative" is one of the detailed study alternatives assessed in this EA as the Bridge on New Location Alternative.*

- Stephanie Joy Sweeney

Ms. Sweeney asks NCDOT to reconsider beach nourishment using dredged sand to sustain sports and recreation in the Rodanthe area. With regard to the bridge alternatives under consideration, she asks that NCDOT consider pushing the sound side bridge farther from shore to make it less of an eyesore and to provide visuals of the side view of the bridges from a 2nd or 3rd story perspective.

Response: *The Merger Team (NCDOT, FHWA, and federal and state environmental resource and regulatory agencies) has advanced only bridging alternatives for detailed study in this EA. The reasons that beach nourishment was found not to be a reasonable long-term improvement are addressed in this EA in Section 2.4.1. This EA includes an analysis of impacts, including visual impacts to sound-side homes and homes along NC 12 (see Section 4.2.2). Visualizations are included in this EA as Figure 8 and Figure 9. The sound side bridge (Bridge on New Location Alternative) is 930 to 950 feet farther west in Pamlico Sound than the bridge location discussed in the 2010 EA that was presented to the public for discussion at the Phase II scoping meetings. (See Figure 4 of this EA.) This change in bridge location was made in the context of minimizing the Refuge impacts of this alternative.*

- Patrick Munson, Dhanyo Merillat-Bowers, and Janet Doll

Dr. Munson, a physician who lives in Waves and works on the mainland, stressed that the current pace of the Bonner Bridge project is not sufficient to prevent the collapse of the communities on the Outer Banks and that a permanent solution must happen sooner. He also states that the situation at the 'S' curves has advanced beyond the ability of the phased Bonner Bridge project

to address it, and supports beach nourishment as a solution between now and a permanent fix.

Ms. Merillat-Bowers is concerned that the livelihood of the island is being held hostage by the lawsuits brought by wildlife advocates and believes that beach nourishment is needed now in addition to a permanent fix.

Ms. Doll thanks NCDOT for their hard work on maintaining the 'S' Curve Hot Spot at Rodanthe and states that while a permanent fix is needed, it will take too long to construct the bridges and roads. She states that a short-term solution needs to be planned and implemented immediately, saying that tourists need a safe way to get on and off the island in order to avert disaster for the area.

***Response:** These positions and concerns are acknowledged. The Governor declared the situation on NC 12 in the area between the temporary bridge at Pea Island inlet and the village of Rodanthe a State of Emergency on March 19, 2013. This declaration is expected to facilitate interim measures to stabilize NC 12 (which could involve beach nourishment) at the Rodanthe 'S' Curves Hot Spot, prior to the implementation of a long-term improvement at this location (Phase IIb).*

- Carol Dawson

Ms. Dawson emphasizes that no beach nourishment has happened on the island in 39 years, and that dredging and beach nourishment is needed to stabilize the hot spots and secure NC 12 as safe passage to the mainland. Ms. Dawson is opposed to the Bridge within Existing NC 12 Easement Alternative. She believes that the NCDOT's methods have been reactionary rather than proactive, and that NCDOT should look to neighboring states for preventative measures.

***Response:** These positions are acknowledged. Section 2.4 of the Environmental Assessment (EA) on Phase IIa explains why Beach Nourishment was eliminated from further consideration as a long-term improvement for Phase IIa. The Merger Team (NCDOT, FHWA, and federal and state environmental resource and regulatory agencies) has advanced only bridging alternatives for detailed study in this Phase IIb EA. The reasons that Beach Nourishment has been found not to be a reasonable long-term improvement for Phase IIb are addressed in this EA in Section 2.4.1.*

- Michael R. Martin

In reference to recent NCDOT actions of moving sand from the NC 12 right of way and using it to cover sand bags in the 'S' Curve Hot Spot area, Mr. Martin states that it is a waste of time and money to continue these short-term cosmetic

fixes. Mr. Martin wonders whether the dredging permits have been obtained, and if not, who is holding up the process.

Response: *Covering the sandbag piles in the Rodanthe 'S' Curves Hot Spot area is required by state law and the permit that allowed for the placement of the sand bags. The sand used was the most readily available and its transport did not require a permit. The Governor declared the situation on NC 12 in the area between the temporary bridge at Pea Island inlet and the village of Rodanthe a State of Emergency on March 19, 2013. This declaration is expected to facilitate the implementation of interim NC 12 stabilization at the Rodanthe 'S' Curves Hot Spot.*

- Thomas Dolina

Mr. Dolina supports a longer span avoiding the 'S' Curves.

Response: *This position is acknowledged.*

Appendix D

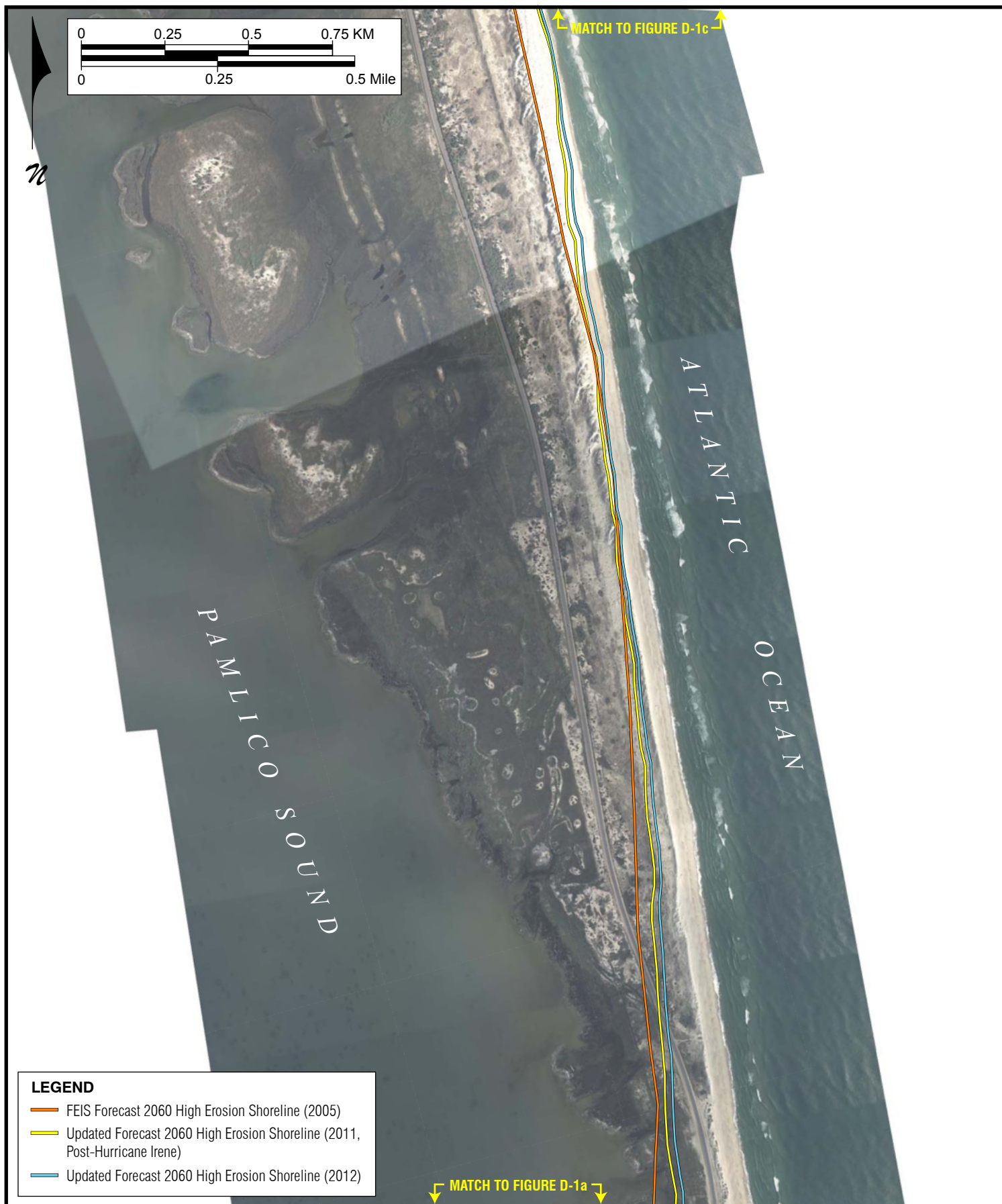
2060 High-Erosion Shoreline



Aerial date: April 13, 2012

COMPARISON OF FEIS AND UPDATED FORECAST 2060 HIGH-EROSION SHORELINE LOCATIONS

Figure
D-1a



Aerial date: April 13, 2012

COMPARISON OF FEIS AND UPDATED FORECAST 2060 HIGH-EROSION SHORELINE LOCATIONS

Figure
D-1b



Aerial date: April 13, 2012

COMPARISON OF FEIS AND UPDATED FORECAST 2060 HIGH-EROSION SHORELINE LOCATIONS

Figure
D-1c



Aerial date: April 13, 2012

COMPARISON OF FEIS AND UPDATED FORECAST 2060 HIGH-EROSION SHORELINE LOCATIONS

Figure
D-1d



**COMPARISON OF FEIS AND UPDATED
FORECAST 2060 HIGH-EROSION SHORELINE LOCATIONS**

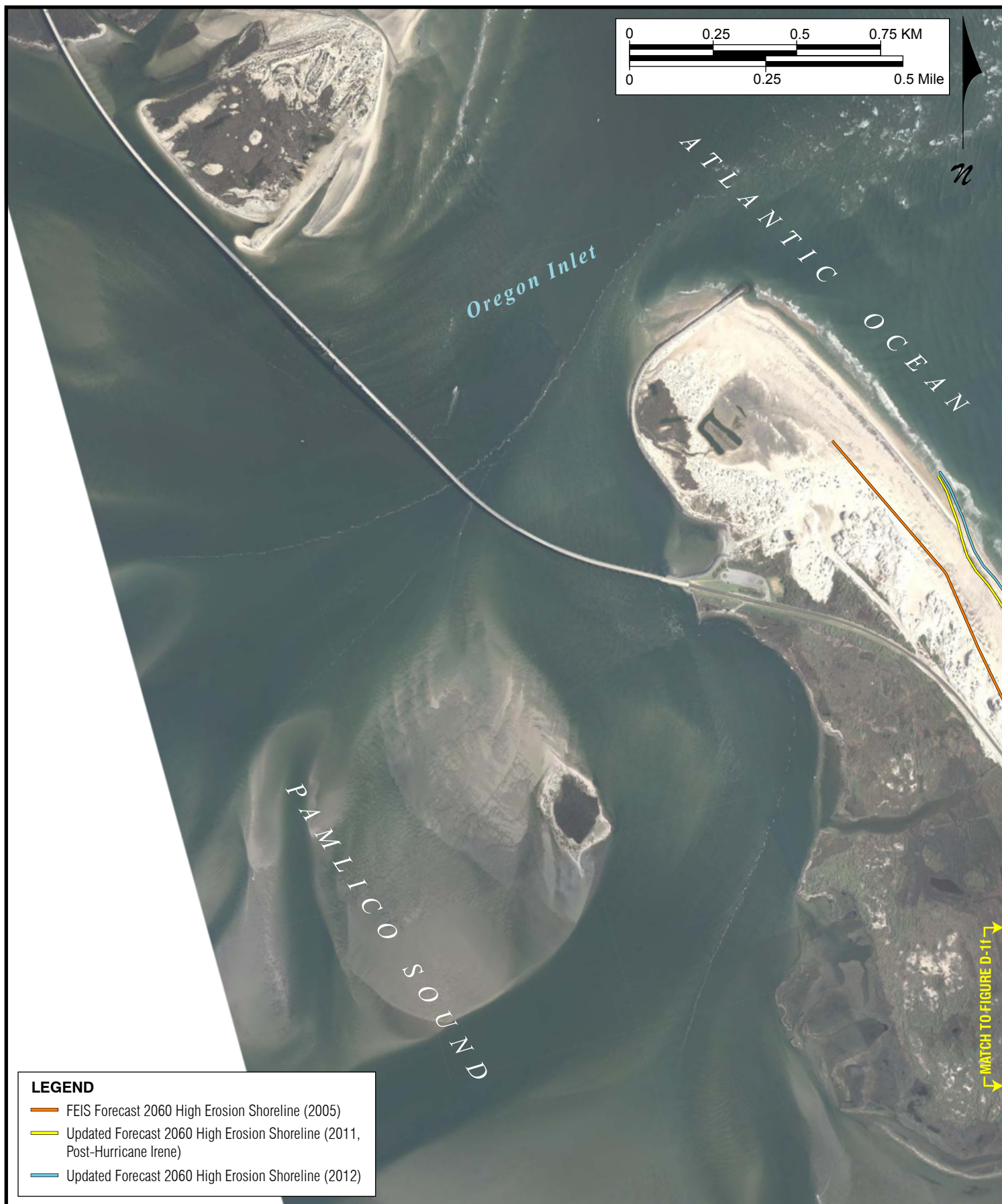
Figure
D-1e



Aerial date: April 13, 2012

COMPARISON OF FEIS AND UPDATED FORECAST 2060 HIGH-EROSION SHORELINE LOCATIONS

Figure
D-1f



Aerial date: April 13, 2012

COMPARISON OF FEIS AND UPDATED FORECAST 2060 HIGH-EROSION SHORELINE LOCATIONS

Figure
D-1g

Appendix E

Relocation Reports

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	13201.10 28025	COUNTY	Dare	Alternate	Red	of	2	Alternate
T.I.P. No.:	B-2500B							
DESCRIPTION OF PROJECT:		NC-12 Rodanthe Long-Term Improvements, Bridge on New Location Alternative						

ESTIMATED DISPLACED					INCOME LEVEL					
Type of Displacees	Owners	Tenants	Total	Minorities	0-15M	15-25M	25-35M	35-50M	50 UP	
Residential	2	0	2	0	0	0	0	2	0	
Businesses	0	2	2	0	VALUE OF DWELLING DSS DWELLING AVAILABLE					
Farms	0	0	0	0	Owners		Tenants		For Sale For Rent	
Non-Profit	0	0	0	0	0-20M	0	\$ 0-150	0	0-20M	0
					20-40M	0	150-250	0	20-40M	0
					40-70M	0	250-400	0	40-70M	0
					70-100M	0	400-600	0	70-100M	0
					100 UP	2	600 UP	0	100 UP	38
					TOTAL	2	0	0	38	0

ANSWER ALL QUESTIONS		REMARKS (respond by number)	
Yes	No	Explain all "YES" answers.	
	X	1. Will special relocation services be necessary?	3. There are other businesses in the area outside the acquisition areas.
	X	2. Will schools or churches be affected by displacement?	
X		3. Will business services still be available after project?	
X		4. Will any business be displaced? If so, indicate size, type, estimated number of employees, minorities, etc.	
	X	5. Will relocation cause a housing shortage?	4. 1) Strip Mall with the following shop: Island Convenience Auto Repair Garage – 4 employees The other 5 shops in this strip mall are vacant in anticipation of the project.
	X	6. Source for available housing (list).	
	X	7. Will additional housing programs be needed?	2) Money's Worth Rentals – 3 employees Please note that a Campground is in the acquisition area, which has 23 RV hook-ups, 7 of which are currently occupied within the acquisition area of this alternate, with only 5 hook-ups out of the 23 being unaffected by the project.
X		8. Should Last Resort Housing be considered?	
	X	9. Are there large, disabled, elderly, etc. families?	6. MLS, Realtor.com, newspaper, local realty offices
	X	10. Will public housing be needed for project?	8. As required by law
X		11. Is public housing available?	11. Economic Improvement Council, Inc. handles Section 8 housing for Dare County
X		12. Is it felt there will be adequate DSS housing available during relocation period?	12. There are plenty of houses for sale in the area.
X		13. Will there be a problem of housing within financial means?	13. This might be an issue due to the high prices of some of the local homes for sale.
X		14. Are suitable business sites available (list source).	14. MLS, Realtor.com, newspaper, local realty offices
		15. Number months estimated to complete RELOCATION? 18	

 Robert Woodard Right of Way Agent	9/19/13		 Relocation Coordinator	9/19/13
Date			Date	

EIS RELOCATION REPORT

North Carolina Department of Transportation
RELOCATION ASSISTANCE PROGRAM

☒ E.I.S. ☐ CORRIDOR ☐ DESIGN

WBS ELEMENT:	13201.10 28025	COUNTY	Dare	Alternate	Blue	of	2	Alternate
T.I.P. No.:	B-2500B							
DESCRIPTION OF PROJECT:	NC12 -- Rodanthe Long-Term Improvements, Bridge within Existing NC 12 Easement							

ESTIMATED DISPLACED					INCOME LEVEL				
Type of Displacees	Owners	Tenants	Total	Minorities	0-15M	15-25M	25-35M	35-50M	50 UP
Residential	5	0	5	0	0	0	0	2	3
Businesses	1	1	2	0					
Farms	0	0	0	0					
Non-Profit	0	0	0	0					

ANSWER ALL QUESTIONS									
Yes	No	Explain all "YES" answers.							
	☒	1. Will special relocation services be necessary?							
	☒	2. Will schools or churches be affected by displacement?							
☒		3. Will business services still be available after project?							
☒		4. Will any business be displaced? If so,							
	☒	5. Will relocation cause a housing shortage?							
	☒	6. Source for available housing (list).							
☒		7. Will additional housing programs be needed?							
	☒	8. Should Last Resort Housing be considered?							
	☒	9. Are there large, disabled, elderly, etc. families?							
	☒	10. Will public housing be needed for project?							
☒		11. Is public housing available?							
☒		12. Is it felt there will be adequate DSS housing available during relocation period?							
☒		13. Will there be a problem of housing within financial means?							
☒		14. Are suitable business sites available (list source).							
		15. Number months estimated to complete RELOCATION? 18							

VALUE OF DWELLING										DSS DWELLING AVAILABLE			
Owners		Tenants		For Sale		For Rent							
0-20M	0	\$ 0-150	0	0-20M	0	\$ 0-150	0						
20-40M	0	150-250	0	20-40M	0	150-250	0						
40-70M	0	250-400	0	40-70M	0	250-400	0						
70-100M	0	400-600	0	70-100M	0	400-600	0						
100 UP	5	600 UP	0	100 UP	38	600 UP	0						
TOTAL	5		0			38							

REMARKS (Respond by Number)

3. There are other businesses in the area outside the acquisition areas.

4. 1) Strip Mall with the following shop:

Island Convenient Auto Repair Garage – 4 employees

The remaining shops in the strip mall are vacant in anticipation of the project.

2) Island Convenient Store and Liberty Gas – 5 employees

6. MLS, Realtor.com, newspaper, local realty offices

8. As required by law.

11. Economic Improvement Council, Inc. handles Section 8 housing for Dare County

12. There are plenty of houses for sale to cover the displacees.

13. Some houses in this market may be priced too high for our displacees.

14. MLS, Realtor.com, newspaper, local realty offices

NOTE: The proposed 15' Aerial Easements (AUE) may not interfere with any existing private septic systems and/or drain lines. However, if they do, then a determination of the actual location will be necessary as well as any possible "repair areas". There could also be additional relocatees due to these issues, which are not being shown on this report.

Additionally. Please avoid the cemetery on Sea Gull Street

11/6/13



Robert Woodard
Right of Way Agent

Date

11/6/13



Relocation Coordinator

Date