

Index

Index

A

Access Control, Existing Roadway	1-11
Access During Construction.....	4-177
Access, Need for Across Oregon Inlet	1-3
Accessibility Impacts	4-8
Acronyms and Abbreviations, List of	G-1
Agency Coordination	
1993 DEIS Preparation	8-1
1993 DEIS Scoping	8-1
1996 Preliminary Final Environmental Impact Statement.....	8-4
Between the SDEIS and the 2007 Supplement to the SDEIS	8-19
NC 12 Maintenance Alternatives Meetings.....	8-14
SDEIS NEPA/Section 404 Merger Team Meetings	8-6
SDEIS Other Agency Meetings.....	8-10
SDEIS Scoping	8-6
SSDEIS NEPA/Section 404 Merger Team Meetings	8-19
Agency Review of 1993 DEIS	8-3
Air Quality	
Affected Environment.....	3-110
Analysis, Microscale.....	4-142
Carbon Monoxide	3-110
Conformance.....	4-144
Construction.....	4-173
Emissions, Other than Carbon Monoxide	3-110
Environmental Consequences.....	4-141
Impacts.....	4-144
Mobile Source Air Toxics.....	4-145
Regional Air Quality.....	3-111, 4-142
Airports.....	1-22
Alignment Alternatives, Pamlico Sound Bridge Corridor (2003)	
Alignment Analysis	2-50
Alignments Considered.....	2-43
Alignments Selected for Detailed Evaluation.....	2-54
Alternatives Study.....	2-42
Evaluation Factors	2-47
Screening Criteria	2-43
Alternatives	
1993 Draft Environmental Impact Statement	2-5
2002 Pamlico Sound Bridge Corridor Alternatives Study.....	2-34
2003 Pamlico Sound Bridge Corridor Alignment Alternatives Study.....	2-42
2004 Additional Replacement Bridge Scenarios	2-54
2005 Parallel Bridge Corridor with NC 12 Maintenance Alternatives Studies	2-58
2006 Parallel Bridge Corridor with NC 12 Maintenance Alternatives Studies	2-77
2006 Long Bridge Operations and Safety Study	2-78

Analysis of 1993 DEIS Alternatives.....	2-7
Analysis of 2002 Pamlico Sound Bridge Corridor Alternatives.....	2-39
Analysis of 2003 Pamlico Sound Bridge Corridor Alignment Alternatives.....	2-50
Analysis of 2005 Potential Parallel Bridge Corridor with NC 12 Maintenance Alternatives	2-58
Analysis of 2006 Parallel Bridge Corridor with NC 12 Maintenance Alternatives.....	2-77
Considered During Study.....	2-1
No-Action	2-4
Pamlico Sound Bridge Corridor, Description.....	2-81
Pamlico Sound Bridge Corridor Alignment Options.....	2-43
Parallel Bridge Corridor with NC 12 Maintenance, Description.....	2-96
Archaeological Resources	
Affected Environment.....	3-32
Environmental Consequences.....	4-40
Architectural and Landscape Cultural Resources	
Affected Environment.....	3-28
Environmental Consequences.....	4-33
Assumptions, Basic Planning, Used in 1991 and 1993	2-6
Avoidance Alternatives, Section 4(f)	5-23
Bridge from Rodanthe to Roanoke Island.....	5-25
Existing NC 12 Right-of-Way, Build the Replacement Bridge Completely within	5-26
Rehabilitate Bonner Bridge.....	5-24

B

Background Information	
Population Growth.....	1-7
Project Area Setting and Land Use.....	1-6
Project History	1-7
Barrier Island Change, Positive Benefits of Allowing Natural	4-114
Bicycles	1-11
Biotic Communities	
Affected Environment.....	3-74
Environmental Consequences.....	4-84
Breach of Hatteras Island, Storm Caused	
Economic Impact	4-16
Potential for.....	2-64, 3-54, 4-56
Bridge, Description of Proposed NC 12 Maintenance Bridges.....	2-116, 2-117
Bridge, Description of Proposed Oregon Inlet Bridge	2-101
Construction Procedures	2-107
Costs and Funding	2-132
Design Characteristics	2-102
Location (alignment).....	2-101
Bridge, Description of Proposed Pamlico Sound Bridge	2-81
Approach Roadways.....	2-88
Bridge.....	2-85
Construction Procedures	2-91
Costs and Funding	2-132
Location	2-85
Rodanthe Terminus Options	2-90

C

Cape Hatteras National Seashore	
Parks and Recreation/Wildlife Refuges	3-35
Recreational Use Impacts	4-44
Section 4(f) Properties, Description of	5-2
Use of Section 4(f) Properties on Bodie Island.....	5-11
Use of Section 4(f) Properties on Hatteras Island.....	5-15
Chicamacomico Life Saving Station and Rodanthe Historic District	3-30
Section 4(f) Properties, Description of	5-10
Use of Section 4(f) Properties	5-20
Citizen Involvement, SDEIS	8-12
Newsletters.....	8-13, 8-18
Public Hearings, Summary	8-18
Public Hearings, Transcripts.....	B-1
Telephone Number, Toll-Free	8-13
Workshops, Informational	8-12
Citizen Involvement, SSDEIS	8-23
Newsletter	8-23
Public Hearing, Summary	8-23
Public Hearing, Transcripts	B-1
Coastal Barrier Resources System	
Affected Environment.....	3-12
Environmental Consequences.....	4-8
Coastal Conditions	
Affected Environment.....	3-49
Environmental Consequences	4-49
Erosion of the Hatteras Island Shoreline.....	1-5, 3-51
Existing	3-51
Future	3-56
Off-Shore Coastal Processes with the Phased Approach Alternatives	4-59
Comments and Responses	8-1
Government Agency	8-41
Non-Governmental Organization.....	8-131
Public	8-33
SDEIS and SSDEIS Review	8-33
Commitments	xxxiii
Community	
Accessibility Impacts	4-8
Affected Environment.....	3-1
Cohesion Impacts.....	4-8
Environmental Consequences	4-2
Regional Setting.....	3-1
Services Existing.....	3-16
Services Impacts	4-21
Construction	
Environmental Consequences.....	4-172
Environmental Protection During	2-144
Procedures, Pamlico Sound Bridge Corridor.....	2-91

Procedures, Parallel Bridge Corridor with NC 12 Maintenance	
NC 12 Maintenance.....	2-123
Oregon Inlet Bridge.....	2-107
Constructive Use	5-45
Conclusion	5-58
Methodology	5-46
Proximity Impacts, Analysis of.....	5-49
Coordination	
General.....	8-1
Section 4(f) Evaluation	5-59
Correspondence	
Agency	A-1
Public	B-1
Corridor Alternatives, Pamlico Sound Bridge Corridor (2002)	2-34
Corridor Alternatives Analysis	2-39
Corridor Alternatives	2-35
Corridor Selected for Detailed Evaluation.....	2-42
Evaluation Factors	2-37
Screening Criteria	2-35
Corridor Alignment Alternatives Analysis, Pamlico Sound Bridge Corridor (2003)	
Alignment Analysis within the Pamlico Sound Bridge Corridor.....	2-42
Alignment Alternatives within the Pamlico Sound Bridge Corridor	2-43
Alignments Selected for Detailed Evaluation in Pamlico Sound Bridge Corridor	2-54
Evaluation Factors	2-47
Screening Criteria	2-43
Costs and Funding	2-132
Bonner Bridge Demolition and Removal.....	2-138
Capital Funding.....	2-142
Other Public Costs	2-138
Maintenance Costs, Short-Term NC 12 Expected Prior to Implementation	
of the Phased Approach Alternatives	2-144
Proposed Project	2-132
Cultural Resources	
Affected Environment.....	3-27
Environmental Consequences.....	4-33
Cumulative Impacts, Indirect and.....	4-158
Activities, Other Potential Impact Causing.....	4-162
Cumulative Impacts, Potential.....	4-166
Directions and Goals of Study Area	4-160
Features, Notable in Study Area	4-161
Indirect Impacts, Potential	4-165
Study Area	4-159

D

Demolition and Removal of Bridges and Pavement	
Bonner Bridge, Demolition and Removal.....	2-130
Cost	2-138
Future Demolition of Replacement Bridges	2-132
NC 12 Pavement, Removal.....	2-132

E

East Bridge Corridor (1991 Feasibility Study Alternative).....	2-30
Economics	
Affected Environment.....	3-14
Environmental Consequences.....	4-10
Access To Pea Island National Wildlife Refuge, No Paved Road	4-11
Breach Of Hatteras Island	4-16
Tax Base Impact.....	4-11
Energy, Environmental Consequences	4-156
Environment, Affected	3-1
Environmental Consequences	4-1
Environmental Justice	
Affected Environment.....	3-22
Environmental Consequences.....	4-28
Environmental Protection During Construction and Demolition	2-144
Erosion Control During Construction	4-180
Evacuation, Hurricane	1-19
Executive Order 12898, Environmental Justice	3-22

F

Farmland	
Affected Environment.....	3-22
Environmental Consequences.....	4-28
Ferry Alternative (1991 Feasibility Study Alternative).....	2-21
Ferry (Water Travel), Existing	1-22
Fisheries	
Affected Environment.....	3-88
Environmental Consequences.....	4-102
Flooding During Major Storms	4-50
Floodplains	3-49
Funding of Proposed Project's Cost.....	2-142

G

Geodetic Survey Markers.....	4-180
Geology, Topography, and Soils	
Affected Environment.....	3-68
Environmental Consequences.....	4-74
Groin	
Effect of Proposed Project on Its Performance.....	4-52
Removal Potential.....	4-52
Government Agency Comments and Responses, SDEIS and SSDEIS Review	8-41

H

Hazardous Waste

Affected Environment.....	3-19
Environmental Consequences.....	4-27
Historic Resources	
Affected Environment.....	3-26
Environmental Consequences.....	4-33
History of the Project	1-7

I

Indirect and Cumulative Impacts.....	4-158
Activities, Other Potential Impact Causing.....	4-162
Cumulative Impacts, Potential.....	4-166
Directions and Goals of Study Area	4-160
Features, Notable in Study Area	4-161
Indirect Impacts, Potential	4-165
Study Area	4-159
Intersections, Existing	1-11

L

Land Use.....	3-2
Land Use and Project Area Setting	1-6
Land Use Planning	
Affected Environment.....	3-6
Environmental Consequences.....	4-4
Least Harm Analysis	5-27
Conclusion	5-44
Costs Among the Alternatives, Substantial Differences in.....	5-42
Magnitude of Any Adverse Impacts to Properties Not Protected by Section 4(f), After Reasonable Mitigation	5-41
Meets the Purpose and Need for the Project, Degree to Which Each Alternative	5-40
Mitigate Adverse Impacts and Relative Severity of Remaining Harm, Ability to	5-28
Officials with Jurisdiction over Each Section 4(f) Property, Views of.....	5-38
Relative Significance of Each Section 4(f) Property	5-38
Legislation, NC, Related to Bonner Bridge Replacement.....	8-18
Letter, US Secretary of the Interior	8-22
Levels of Service.....	1-15
Lighting During Construction	4-175
Location	
Pamlico Sound Bridge Corridor.....	2-83
Parallel Bridge Corridor with NC 12 Maintenance	2-101, 2-114
Long Bridge Operations and Safety Study (2006)	2-77
Application to the Detailed Study Alternatives.....	2-81
Crashes and Safety	2-81
Operational Concerns	2-79
Weather	2-79
Low-Income and Minority Populations, Concentrations of	3-22

M

Maintenance of NC 12 Alternatives Studies, Parallel Bridge Corridor with NC 12 Maintenance (2005).....	2-58
Alternatives Defined for Detailed Evaluation.....	2-76
Coastal Studies.....	2-63
Evaluation of Potential Detailed Study Alternatives	2-65
Meetings to Consider the Specific Components of NC 12 Maintenance Alternatives	8-14
Process Used for Study	2-61
Maintenance of NC 12 Alternatives Characteristics	2-114
Merger Team Meetings, NEPA/Section 404.....	8-6, 8-19, 8-23
Merger Team, NEPA/Section 404 Concurrence Forms	D-1
Mineral Resources	
Affected Environment.....	3-109
Environmental Consequences	4-141
Minority and Low-Income Populations, Concentrations of	3-22
Modal Interrelationships.....	1-22

N

Natural Resource Protection During Construction	4-179
Natural Systems	
Affected Environment.....	3-68
Environmental Consequences	4-74
Impacts Prior to Implementation of Phases II to IV of the Phased Approach/ Rodanthe Bridge Alternative from Potential Short-Term or Emergency Actions	4-115
NC 12 Maintenance Alternatives (See “Maintenance of NC 12”)	
Need for Project.....	1-1
Network, Existing Road	1-9
No-Action Alternative.....	2-3
Noise	
Affected Environment.....	3-105
Construction.....	4-173
Environmental Consequences	4-150
Noise Abatement	
Criteria	3-107
Proposed Project	4-154
Noise, Fundamental Concepts of Roadway.....	3-105
Noise Levels	
Ambient (Existing)	3-107
Analysis	4-151
Model, Traffic Noise.....	4-151
Predicted	4-151
Non-Governmental Organization Comments and Responses, SDEIS and SSDEIS Review ...	8-131

O

Officials, Local, Meeting for SDEIS	8-12
Oregon Inlet	

Channel Gorge, Migration History	1-5, 3-45
Migration, Profile, and Gorge Alignment, Future	4-49
Navigation Channel Dredging Operations	4-52
Users	3-19, 4-26
Overwash, Natural	4-53

P

Pamlico Sound Bridge Corridor, Description	2-81
Pamlico Sound Bridge Corridor Alternatives (2002)	
Alternatives Analysis	2-39
Corridor Alternatives	2-35
Corridor Selected for Detailed Evaluation	2-42
Evaluation Factors	2-37
Screening Criteria	2-35
Pamlico Sound Bridge Corridor Alignment Alternatives Analysis (2003)	2-42
Alignment Analysis within the Pamlico Sound Bridge Corridor	2-50
Alignments Considered within the Pamlico Sound Bridge Corridor	2-43
Alignments Selected for Detailed Evaluation in Pamlico Sound Bridge Corridor	2-54
Evaluation Factors	2-47
Screening Criteria	2-43
Pamlico Sound, Recreational Use Impacts	4-49
Parallel Bridge Corridor in 1993 (1993 DEIS Preferred Alternative)	2-16
Parallel Bridge Corridor with NC 12 Maintenance, Description	2-94
Parallel Bridge Corridor with NC 12 Maintenance Alternatives Studies (2005)	2-58
Alternatives Defined for Detailed Evaluation	2-76
Coastal Studies	2-63
Evaluation of Potential Detailed Study Alternatives	2-65
Meetings to Consider the Specific Components of NC 12 Maintenance Alternatives	8-14
Process Used for Study	2-61
Parallel Bridge Corridor with NC 12 Maintenance Alternatives Studies (2006)	2-77
Parks and Recreation	
Affected Environment	3-34
Environmental Consequences	4-41
Pea Island National Wildlife Refuge	
Access to Pea Island National Wildlife Refuge, No Paved Road, Economic Impact	4-11
Breach of Hatteras Island	4-56
Land Use Impacts	4-42
Parks and Recreation/Wildlife Refuges	3-40
Recreational Use Impacts	4-44
Section 4(f) Properties, Description of	5-6
Use of Section 4(f) Properties	5-15
Pedestrian Movements and Sidewalks	1-11
Permits and Approvals	2-146
Planning, Land Use	
Affected Environment	3-6
Environmental Consequences	4-4
Planning, Thoroughfare	1-8
Planning to Minimize Harm to Section 4(f) Properties, All Possible	5-58
Population	

Characteristics.....	3-13
Growth	1-7
Preferred Alternative	2-148
Merger Team Meetings Associated with Selection of.....	8-23
Individual Merger Member Meetings Associated with Selection of	8-27
Meeting of the Merger Review Board Associated with Selection of.....	8-32
Preparers, List of	6-1
Protected Species	
Affected Environment.....	3-102
Environmental Consequences.....	4-116
Public Comments and Responses, SDEIS and SSDEIS Review.....	8-33
Public Hearing and Agency Review (1993 DEIS)	8-3
Public Hearings	
SDEIS, Summary	8-18
Transcripts	B-1
2007 Supplement to SDEIS, Summary.....	8-23
Purpose of Project	1-1, 1-6

R

Railroads.....	1-22
Rare Habitats	
Affected Environment.....	3-81
Environmental Consequences	4-100
Recipients, List of Agencies, Organizations, and Persons to Whom Copies of the Statement Are Sent	7-1
Recreation, Parks and	
Affected Environment.....	3-33
Environmental Consequences.....	4-41
References, List of.....	F-1
Regional Air Quality Standard Compliance.....	3-111
Rehabilitation of Bonner Bridge	2-16, 5-24
Relationship between Long-Term and Short-Term Uses/Benefits.....	4-181
Relocation	
Impacts.....	4-2
Reports of NCDOT Relocation Assistance Program.....	C-1
Replacement Bridge Scenarios, Additional (2004).....	2-54
Comparison of Long-Span Bridges and 1993 Parallel Bridge Corridor.....	2-57
Conclusion.....	2-58
Construction Cost.....	2-56
Pamlico Sound Bridge Corridor with Hatteras Island Connector	2-58
Resources, Irreversible And Irretrievable Commitments of.....	4-181
Roadway Characteristics, Existing.....	1-10
Roanoke Island, Bridge from	5-25
Rodanthe Historic District and Chicamacomico Life Saving Station	
Section 4(f) Properties, Description of	5-10
Use of Section 4(f) Properties	5-20
Rodanthe Terminus Options	
Pamlico Sound Bridge Corridor.....	2-90
Parallel Bridge Corridor with NC 12 Maintenance	2-116, 2-118

S

Scoping	
1993 DEIS.....	8-1
SDEIS	8-6
Sea Level Rise, Accelerated.....	4-54
Section 4(f), Final Evaluation.....	5-1
Avoidance Alternatives.....	5-23
Conclusion	5-61
Constructive Use.....	5-45
Coordination	5-59
Description of Section 4(f) Properties	5-2
Harm, All Possible Planning to Minimize	5-58
Least Harm Analysis.....	5-27
Use of Section 4(f) Properties	5-11
Setting	
of the Project Area	1-6
Regional	3-1
Shoreline, Future on Hatteras Island	2-63, 3-51
Sidewalks and Pedestrian Movements	1-11
Soils, Geology, and Topography	
Affected Environment.....	3-68
Environmental Consequences.....	4-74
Speed, Posted.....	1-10
Summary of FEIS.....	iii
Summary of Purpose of, and Need for, Action	1-22
Supplemental Materials	E-1

T

Terminal Groin	
Effect of Proposed Project on Its Performance.....	4-52
Removal Potential.....	4-52
Thoroughfare Plan, Dare County	1-8
Thoroughfare Planning Process, Overview of.....	1-8
Topography, Geology, and Soils	
Affected Environment.....	3-68
Environmental Consequences.....	4-74
Traffic	
Levels of Service.....	1-15
Maintenance During Construction.....	4-172
Operating Characteristics.....	1-9
Volumes	1-12
Transit.....	1-22
Transportation Improvement Program, NCDOT.....	1-9
Transportation Network and Operating Characteristics	1-9
Transportation Systems Management (TSM) Alternative.....	2-16
Tunnel Alternative.....	2-26

U

Underground Storage Tanks	
Affected Environment.....	3-20
Environmental Consequences.....	4-27
Unique Habitats	
Affected Environment.....	3-87
Environmental Consequences.....	4-100
US Coast Guard Station, (Former) Oregon Inlet	
Affected Environment.....	3-30
Environmental Consequences.....	4-35, 4-38
Section 4(f) Properties, Description of	5-9
Use of Section 4(f) Properties.....	5-19

V

Visual	
Affected Environment.....	3-22
Environmental Consequences.....	4-28
Oregon Inlet Characteristics	3-26
Oregon Inlet Impacts.....	4-31
Pea Island National Wildlife Refuge Characteristics.....	3-25
Pea Island National Wildlife Refuge Impacts.....	4-30
Rodanthe Characteristics	3-23
Rodanthe Impacts	4-28

W

Waste Disposal During Construction	4-175
Waste Spill During Construction Contingency Planning.....	4-180
Water Habitats	
Affected Environment.....	3-83
Environmental Consequences.....	4-92
Water Quality	
Affected Environment.....	3-68
Environmental Consequences.....	4-74
Water Resources, Fisheries, and Wildlife	3-88
Water Travel (Ferry), Existing	1-22
Wildlife Refuges.....	3-33
Waters, Surface	
Affected Environment.....	3-68
Environmental Consequences.....	4-75
West Bridge Corridor (1991 Feasibility Study Alternative).....	2-33
Wetlands	
Affected Environment.....	3-83
Avoidance, Minimization, and Compensatory Mitigation.....	4-129
Environmental Consequences.....	4-92

Wildlife
 Affected Environment..... 3-82
 Environmental Consequences 4-101
Workshop, Phased Approach Constructability..... 8-22

Z

Zoning 3-12