DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, SOUTH ATLANTIC DIVISION
60 FORSYTH STREET SW, ROOM 10M15
ATLANTA, GA 30303-8801

REPLY TO
ATTENTION OF

CESAD-RBT

20 October 2017

MEMORANDUM FOR COMMANDER, WILMINGTON DISTRICT

SUBJECT: Approval of the Implementation Documents Review Plan for the Carteret County North Carolina (Bogue Banks) Coastal Storm Risk Management Project

1. References:

a. Memorandum, CESAW-ECP-E, 2 October 2017, subject: Approval of Review Plan for Carteret County North Carolina (Bogue Banks), Coastal Storm Risk Management Project, Implementation Documents (Encl).

b. EC 1165-2-214, Civil Works Review, 15 December 2012.

2. The enclosed subject Review Plan (RP) submitted by the Wilmington District via reference 1.a has been reviewed by South Atlantic Division (SAD) and is hereby approved in accordance with reference 1.b above.

3. SAD concurs with the determination of the District Chief of Engineering that a Type II Independent External Peer Review (IEPR) is not required on the Design Documentation Report and Plans and Specifications associated with this design effort. The primary basis for our IEPR concurrence is that failure or loss of the features associated with this beach nourishment design effort will not pose a significant threat to human life.

4. The District should take steps to post the approved RP to its web site and provide a link to CESAD-RBT. Before posting to the web site, the names of Corps/Army employees should be removed. Subsequent significant changes to this RP, such as scope or level of review changes, should they become necessary, will require new written approval from this office.

5. The SAD point of contact is [redacted], CESAD-RBT, 404-562-5121.

HOLLAND.DIANA.MAUREEN.1168759696

Digitally signed by HOLLAND.DIANA.MAUREEN.1168759696
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Date: 2017.10.20 12:07:02 -04'00'

Encl

DIANA M. HOLLAND
Brigadier General, USA
Commanding

CF:

[redacted]

DEPARTMENT OF THE ARMY
WILMINGTON DISTRICT, CORPS OF ENGINEERS
69 DARLINGTON AVENUE
WILMINGTON, NORTH CAROLINA 28403-1343

CESAW-ECP-E

2 October 2017

MEMORANDUM FOR Commander, U. S. Army Corps of Engineers, South Atlantic Division (CESAD-RBT), ATTN: [redacted], CESAD-RBT, Rm 10M15, 60 Forsyth Street, SW, Atlanta, Georgia 30303-8801

SUBJECT: Approval of Review Plan for Carteret County North Carolina (Bogue Banks), Coastal Storm Risk Management Project, Implementation Documents

1. Reference - EC 1165-2-214, Civil Works Review Policy, 15 Dec 2012

2. I hereby request approval of the enclosed Review Plan for Carteret County North Carolina (Bogue Banks), Coastal Storm Risk Management Project, Implementation Documents. The Review Plan complies with applicable policy and includes DQC and ATR plans for this project. Also, Chief of Engineering Branch agrees with the Review Plan as submitted.

3. The District will post the Corps of Engineers South Atlantic Division approved Review Plan to its website and provide a link to CESAW for its use. Names of Corps/Army employees are withheld from the posted version, in accordance with guidance.

FOR THE COMMANDER:

Christine M Brayman

Encl

CHRISTINE M. BRAYMAN
Deputy District Engineer for
Programs and Project Mgmt

Review Plan

For

Carteret County, North Carolina (Bogue Banks) Coastal Storm Risk Management Project,
– Implementation Documents

Carteret County, North Carolina
P2 #: 113670

U.S. Army Corps of Engineers
Wilmington District
Wilmington, North Carolina

September 2017

THE INFORMATION CONTAINED IN THIS REVIEW PLAN IS DISTRIBUTED SOLELY FOR THE PURPOSE OF PREDISSEMINATION REVIEW UNDER APPLICABLE INFORMATION QUALITY GUIDELINES. IT HAS NOT BEEN FORMALLY DISSEMINATED BY THE U.S. ARMY CORPS OF ENGINEERS, WILMINGTON DISTRICT. IT DOES NOT REPRESENT AND SHOULD NOT BE CONSTRUED TO REPRESENT ANY AGENCY DETERMINATION OR POLICY.

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Attachment 2: Completion of Agency Technical Review Form
Attachment 3: Figure 1, Bogue Banks Recommended Plan from Feasibility Study

1. PURPOSE AND REQUIREMENTS

1.1 Purpose

This Review Plan defines the scope and level of review activities for the Preconstruction Engineering and Design (PED) Phase of the Carteret County North Carolina (Bogue Banks) Coastal Storm Risk Management Project (hereafter referred to as the Bogue Banks CSRM project), located in Carteret County, NC. The design will consist of beach fill placed to a prescribed geometry along Bogue Banks beaches to provide the required risk reduction as described in the approved Final Integrated Feasibility Report and Environmental Impact Statement. The review activities consist of District Quality Control (DQC) and Agency Technical Review (ATR). The project is in the design and implementation phase and the related documents are 35% and 95% Design Documentation Report (DDR) and 35% and 95% Plans and Specifications (P&S). Upon approval, this review plan will be included into the Project Management Plan.

1.2 References

- ER 1110-2-1150, Engineering and Design for Civil Works Projects, 31 Aug. 1999
- ER 1110-1-12, Engineering and Design Quality Management, 31 March 2011
- EC 1165-2-214, Civil Works Review, 15 Dec. 2012
- Engineering and Construction Bulletin, No. 2016-9, 04 Mar 2016
- ER 415-1-11, Biddability, Constructability, Operability, Environmental, and Sustainability (BCOES) Review, 1 January 2013
- Chief of Engineers Report for Bogue Banks, Carteret County, NC, Integrated Feasibility Report and Environmental Impact Statement for Coastal Storm Damage, 23 Dec 2014
- Quality Control Plan
- Project Management Plan

1.3 Requirements

This review plan was developed in accordance with EC 1165-2-214, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and Operation, Maintenance, Repair, Replacement and Rehabilitation (OMRR&R). The EC provides the procedures for ensuring the quality and credibility of U.S. Army Corps of Engineers (USACE) decision, implementation, and operations and maintenance documents and other work products. The EC outlines three levels of review for implementation documents: District Quality Control, Agency Technical Review, and Independent External Peer Review. Refer to the EC for the definitions and procedures for the three levels of review.

1.4 Review Management Organization (RMO).

The South Atlantic Division is designated as the RMO for this effort.

2. PROJECT INFORMATION AND BACKGROUND

2.1 Project Description

The island of Bogue Banks is located in Carteret County along North Carolina's central coast. Bogue Banks is the longest island south of Cape Lookout, and is a 25 mile long barrier island, stretching from Bogue Inlet on the west to Beaufort Inlet on the east. The barrier island, separated from the mainland by Bogue Sound, runs east to west, with the ocean beaches facing due south. Bogue Banks is developed and can be accessed by one of two bridges across Bogue Sound. The State Park/communities of Bogue Banks are (from east to west) Fort Macon State Park, Atlantic Beach, Pine Knoll Shores, Salter Path/Indian Beach, and Emerald Isle. Bogue Banks includes some hotels/motels but is dominated by private homes. Bogue Banks also contains areas of maritime forest. Stores and other commercial properties are found in all five main communities.

The plan recommended for construction in the Bogue Banks CSRM Feasibility Study consists of an 119,670 linear feet main beach fill (22.7 miles), with a consistent berm profile across the entire area, and dune expansion along 5.9 miles of the project shoreline (see graphic as Attachment 3). The main beach fill is bordered at the ends of the project by a 1,000 ft tapered transition zone berm. Material for the beach fill would be dredged from offshore borrow sources and transported to the beach for beach fill construction. The renourishment interval for the project is three years.

2.2 Proposed Work Description

This PED Phase of work prepares the implementation documents for the initial construction of the beach fill as recommended in the approved CSDR Feasibility Study. The design will include the detailed engineering and investigations required such as a Design Documentation Report (DDR) and Plans and Specifications (P&S). The 35% version of the DDR and P&S will undergo District Quality Control (DQC) while the 95% version of the DDR and P&S will undergo District Quality Control (DQC) and Agency Technical Review (ATR) levels.

3. DISTRICT QUALITY CONTROL

District Quality Control (DQC) and Quality Assurance activities for implementation documents (DDRs and P&S) are stipulated in ER 1110-1-12, Engineering & Design Quality Management. The subject project Design Documentation Report (DDR) and Plans and Specifications (P&S) will be prepared by the Wilmington District using the SAW procedures and will undergo DQC at 35% and at 95% completion. DQC Certification will be verified by the Agency Technical Review Team.

4. AGENCY TECHNICAL REVIEW

Agency Technical Review (ATR) is undertaken to "ensure the quality and credibility of the government's scientific information" in accordance with EC 1165-2-214 and ER 1110-1-12. An ATR will be performed on the 95% Plans and Specifications and 95% Design Documentation Report.

ATR will be conducted by individuals and organizations that are external to the Wilmington District (SAW). The ATR Team Leader will be a Corps of Engineers employee outside the South Atlantic Division. The required disciplines and experience are described below.

4.1 ATR Team Expertise

As stipulated in ER 1110-1-12, ATR members will be sought from the following sources: regional technical specialists (RTS); appointed subject matter experts (SME) from other districts; senior level experts from other districts; Center of Expertise staff; appointed SME or senior level experts from the responsible district; experts from other U.S. Army Corps of Engineers Districts; contractors; academic or other technical experts; or a combination of the above. The ATR will be conducted for the 95% DDR and 95% P&S. The ATR Team will be comprised of the following disciplines; knowledge, skills and abilities; and experience levels.

ATR Team Leader. The ATR Team Leader will have experience with
Coastal Storm Risk Management Projects and have performed ATR Team Leader duties or have been a senior ATR reviewer on a similar type project within the past 5 years. The ATR Team Leader can also serve as one of the review disciplines in addition to team leader duties. The ATR Lead should also have the necessary skills and experience to lead a virtual team through the ATR process.

Coastal Engineering. The team member will be a registered professional with experience in conducting and evaluating hydrodynamic and hydraulic analyses for coastal storm risk management projects.

Geotechnical Engineering and Engineering Geology. The team member will be a registered professional with experience that includes geologic and geotechnical analyses that are used to support the development of Plans and Specifications for coastal storm risk management projects.

Civil/Site Engineering. Team member will be a registered professional engineer and have experience with Civil/Site design and construction that includes dredging and placement operations, embankments, channels, revetments and coastal storm risk management project features.

NEPA Compliance. The team member will have experience in NEPA compliance activities and preparation of Environmental Assessments and Environmental Impact Statements for coastal storm risk management projects.

4.2 Documentation of ATR

DrChecks^{SM} review software will be used to document all ATR comments, responses, and associated resolutions accomplished throughout the review process. Comments are expected to be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will normally include:

(1) The review concern- identify the product's information deficiency or incorrect application of policy, guidance, or procedures;

(2) The basis for the concern- cite the appropriate law, policy, guidance, or procedure that has not be properly followed;

(3) The significance of the concern- indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and

(4) The probable specific action needed to resolve the concern- identify the action(s) that the reporting officers must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist. The ATR documentation in DrChecks^{SM} will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical coordination, and lastly the agreed upon resolution. The ATR team will prepare a Review Report which includes a summary of each unresolved issue; each unresolved issue will be raised to the vertical team for resolution. Review Reports will be considered an integral part of the ATR documentation and shall:

- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include an overview for the project information in which the ATR members were charged to review;
- Describe the nature of their review and their findings and conclusions; and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

The ATR may be certified when all ATR concerns are either resolved or referred to U.S. Army Corps of Engineers South Atlantic Division (CESAD) for resolution and the ATR documentation is complete. Certification of ATR should be completed, based on work reviewed for the 95% DDR and P&S. A sample certification is included in this Review Plan (see attachment 2).

5. BIDDABILITY, CONSTRUCTABILITY, OPERABILITY, ENVIRONMENTAL, AND SUSTAINABILITY REVIEW

The value of a BCOES review is based on minimizing problems during the construction phase through effective checks performed by knowledgeable, experienced personnel prior to advertising for a contract. Biddability, constructability, operability, environmental, and sustainability requirements must be emphasized throughout the planning and design processes for all programs and projects, including during planning and design. This will help to ensure that the government's contract requirements are clear, executable, and readily understandable by private sector bidders or proposers. It will also help ensure that the construction may be done efficiently and in an environmentally sound manner, and that the construction activities and projects are sufficiently sustainable. Effective BCOES reviews of design and contract documents will reduce risks of cost and time growth, unnecessary changes and claims, as well as support safe, efficient, sustainable operations and maintenance by the facility users and maintenance organization after construction is complete. A BCOES Review will be conducted for this project at the Final Design Phase when construction funding is available.

6. INDEPENDENT EXTERNAL PEER REVIEW (WRDA 2007 Section 2035 Safety Assurance Review)

EC 1165-2-214 provides implementation guidance for both Sections 2034 and 2035 of the Water Resources Development Act (WRDA) of 2007 (Public Law (P.L.) 110-114). The EC addresses review procedures for both the Planning and the Design and Construction Phases (also referred to in USACE guidance as the Feasibility and the Pre-construction, Engineering and Design Phases). The EC defines Section 2035 Safety Assurance Review (SAR), Type II Independent External Peer Review (IEPR). The EC also requires Type II IEPR be managed and conducted outside the Corps of Engineers.

6.1 Type I IEPR

A Type I IEPR is associated with decision documents. No decision documents are addressed/covered by this Review Plan. A Type I IEPR is not applicable to the implementation documents covered by this Review Plan.

6.2 Type II IEPR, Determination

A Type II IEPR SAR as stated by EC 1165-2-214 shall be conducted on design and construction activities for hurricane and storm risk management and flood risk management projects, as well as other projects where potential hazards pose a significant threat to human life. The purpose for the Bogue Banks Coastal Storm Risk Management Project is for storm risk reduction to residential and commercial structures and contiguous infrastructure. The project design provides for construction of a sand berm and dune along approximately 22 miles of shoreline along Bogue Banks island. The berm and dune is not designed to prevent loss of life.

To prevent loss of life within this project area from hurricane, severe storms, and flooding the public must be educated about the risks and warned of potential threats. The responsibility for educating the public about hurricane risks is an ongoing effort of multiple agencies and educational institutions and is not within the scope of this storm risk management project. Additionally, the system for determining and providing warnings for potential threats is not part of the Corps mission. Experts from the National Oceanic and Atmospheric Administration's (NOAA's) National Weather Service evaluate meteorological conditions and will inform the national and local media of any developing conditions that may affect the United States of America. Through the media and local authorities, the public is informed about the conditions and ordered to evacuate if necessary. Loss of life is prevented by existing procedures to completely evacuate the barrier island well before expected hurricane landfall.

The project purpose of storm risk management is to lower the risk of damage to structures (houses and businesses), infrastructure (roads, utilities, etc.), and land by absorbing and deflecting storm wave energy coming from the direction of the sea. As the design intends, the sand fill berm and dune constructed on the Bogue Banks Beach will erode as it performs.

This Coastal Storm Risk Management project does not trigger WRDA 2007 Section 2035 factors for Safety Assurance Review (termed Type II IEPR in EC 1165--2-214) and therefore, a Type II IEPR review under Section 2035 and/or EC 1165-2-214 is not required. The factors in determining whether a review of design and construction activities of a project is necessary, as stated under Section 2035 and EC 1165-2-214 along with this review plans' applicability statement which follows.

(1) The failure of the project would pose a significant threat to human life.

This project will perform a periodic nourishment that will establish a beach. The beach is designed to protect structures through its sacrificial nature and is continually monitored and renourished in accordance with program requirements and constraints. Failure or loss of the beach fill will not pose a significant threat to human life. In addition, the prevention of loss of life within the project area from hurricanes and severe storms is via public education about the risks, warning of potential threats and evacuations before hurricane landfall as previously indicated.

(2) The project involves the use of innovative materials or techniques.

This project will utilize methods and procedures used by the Corps of Engineers on other similar works.

(3) The project design requires redundancy, resiliency and robustness.

The beach fill design is in accordance with the USACE Coastal Engineering Manual. The manual does not employ the concept of redundancy for beach fill design.

(4) The project has unique construction sequencing or a reduced or overlapping design construction schedule.

The project design is not anticipated to require unique construction sequencing, or a reduced or overlapping design construction schedule. The construction sequence has been used successfully by the Corps of Engineers on other similar works.

As indicated above, this project does not pose a significant threat to human life, and does not trigger any of the EC 1165-2-214 factors for Type II IEPR. Therefore, the District Chief of Engineering, as the Engineer in Responsible Charge has determined that a Type II IEPR of these implementation documents (DDR and P&S) is not needed.

7. MODEL CERTIFICATION AND APPROVAL

The use of certified or approved engineering models is required for all activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required). No engineering models are anticipated to be used for this phase of the project

8. ESTIMATED COSTS AND SCHEDULE

8.1 Project Milestones

95% Plans and Specifications & DDR Review:

District Quality Control	6 Mar 2019
ATR	10 Apr 2019
Receive Construction Funding	TBD
District BCOE	TBD
BCOE Certification	TBD
Issue Date	TBD
Bid Opening	TBD
Construction Contract Award 1	TBD

8.2 ATR Schedule and Cost

The ATR will be conducted in FY19. It is envisioned that each reviewer will be afforded 28 hours review plus 4 hours for coordination. It is envisioned that the ATR Leader will be allowed 40 hours if also serving as a reviewer. The estimated cost range is $18k - $25k. The estimated ATR schedule follows.

ATRT Selected and Resourced	20 Feb 2019
ATR Kickoff and ATR Start	3 Apr 2019
ATRT Completes Comments	17 Apr 2019
PDT Completes Evaluations	1 May 2019

ATRT Completes Back Checks	8 May 2019
ATR Certification	15 May 2019

9. POINTS OF CONTACT

Per guidance, the names of the following individual will not be posted on the Internet with the Review Plan. Their titles and responsibilities are listed below.

Wilmington District POCs:

Review Plan, ATR and QM Process,	**910-251-4440**
Project Manager (PM),	**910-251-4671**
Chief of Water Resources	**910-251-4867**
Chief of Geotechnical, and Dam Safety:	**910 251-4742**
Chief of Engineering Branch, and Dam Safety Officer:	**910 251-4767**
South Atlantic Division POC:	**404-562-5121**

10. MSC APPROVAL

The MSC that oversees the home district is the South Atlantic Division and it is responsible for approving the review plan. Approval will be provided by the MSC Commander. The commander's approval should reflect vertical team input (involving district, MSC, and HQUSACE members) as to the appropriate scope and level of review for the pre-construction and engineering design phase of this effort. Like a PMP, the Review Plan (RP) is a living document and may change as work progresses. Significant changes to the RP should be approved by following the process used for initially approving the RP. In all cases the MSCs will review the decision on the level of review and any changes made in updates to the project scope.

Attachment 1

ACRONYMS AND ABBREVIATIONS

ATR – Agency Technical Review
ATRT – Agency Technical Review Team
BCOE – Biddability, Constructability, Operability and Environmental
CESAD – U.S. Army Corps of Engineers South Atlantic Division
CSRM – Coastal Storm Risk Management
DCP – District Control Plan
DDR – Design Documentation Report
DQC – District Quality Control
EC – Engineer Circular
EIS – Environmental Impact Statements
ER – Engineer Regulations
HQUSACE – Headquarters U.S. Army Corps of Engineers
IEPR – Independent External Peer Review
MSC – Major Subordinate Command
PDT – Project Delivery Team
PMP – Project Management Plan
P&S – Plans and Specifications
RMC – USACE Risk Management Center
RMO – Review Management Organization
RP – Review Plan
RTS – Regional Technical Specialists
SAD – South Atlantic Division
SAW – Wilmington District
SAR – Safety Assurance Review
SME – Subject Matter Expert
USACE – U.S. Army Corps of Engineers
WRDA – Water Resources Development Act

Attachment 2

COMPLETION OF AGENCY TECHNICAL REVIEW

The _____ District has completed the (*type of product*) of (*project name and location*). Notice is hereby given that an Agency Technical Review, appropriate to the level of risk and complexity inherent in the project, has been conducted as defined in the project's Review Plan. During the Agency Technical Review, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained; and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing Corps policy. The review also assessed the DQC documentation and made the determination that the DQC activities employed appear to be appropriate and effective. The Agency Technical Review was managed by (*RMO*). All comments resulting from ATR have been resolved and the comments have been closed in DrChecks™.

_____(Signature)_____ _____(Date)_____
RMO representative

_____(Signature)_____ _____(Date)_____
ATR Team Leader

_____(Signature)_____ _____(Date)_____
Project Manager

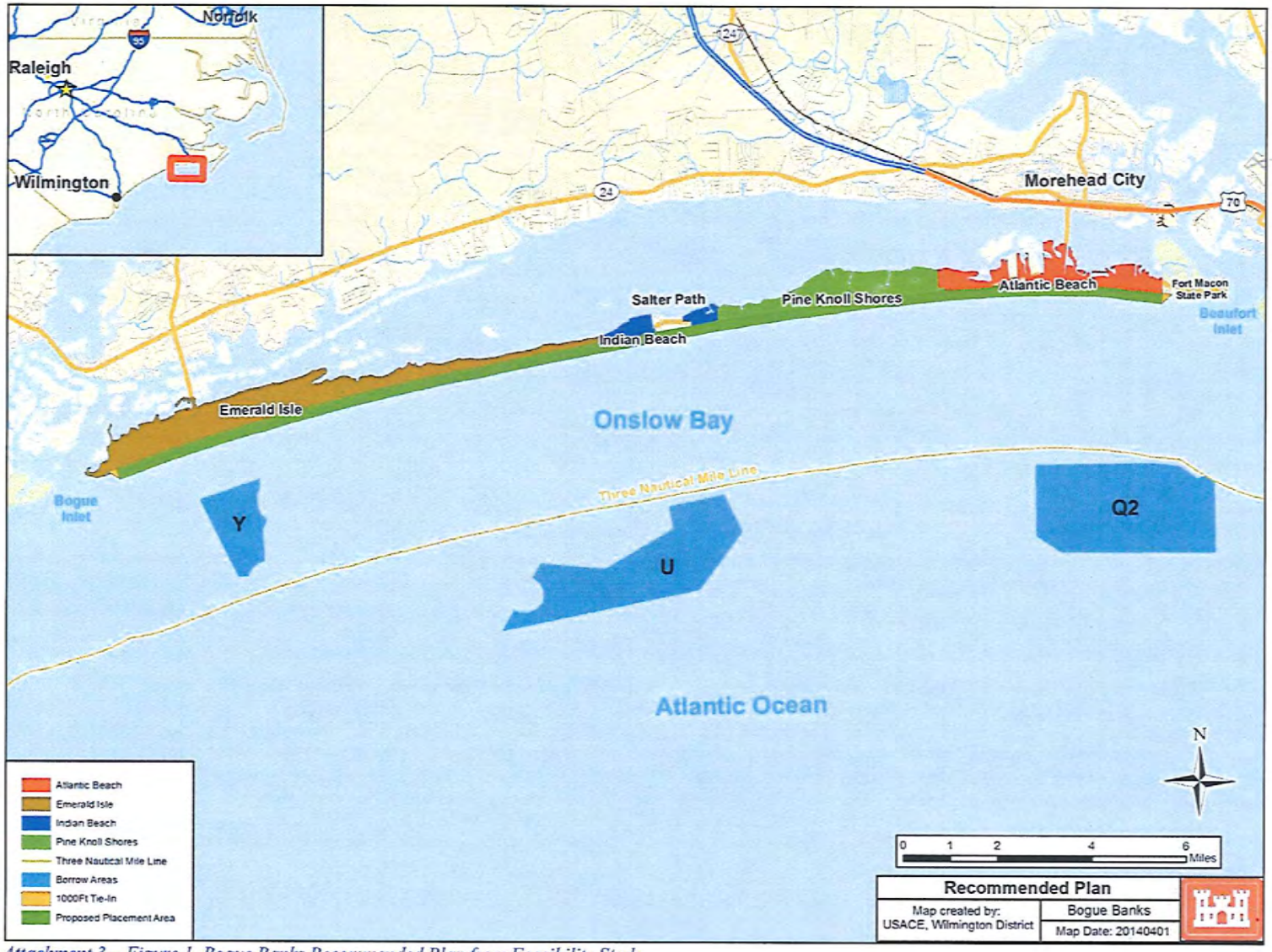
CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows:

(*Describe the major technical concerns, possible impact, and resolution*)

As noted above, all concerns resulting from Agency Technical Review of the project have been fully resolved.

_____(Signature)_____ _____(Date)_____
Chief, Engineering, Construction and Planning Division



Attachment 3 – Figure 1, Bogue Banks Recommended Plan from Feasibility Study