DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NORTH ATLANTIC DIVISION
FORT HAMILTON MILITARY COMMUNITY
302 GENERAL LEE AVENUE
BROOKLYN, NY 11252-6700

CENAD-RBT

2 November 2018

MEMORANDUM FOR Commander, Baltimore District, (CENAB-ENC/Mr. Myrah)
2 Hopkins Plaza, Baltimore, MD 21201

SUBJECT: Review Plan Approval for the Design Phase of the Mid-Chesapeake Bay Island Environmental Restoration Project, Dorchester County, Maryland

1. References:

a. Memorandum, CENAB-DE, 21 September 2018, subject: Review Plan for the design phase of the Mid-Chesapeake Bay Island Environmental Restoration Project, Dorchester County, Maryland.

b. EC 1165-2-214, Water Resources Policies and Authorities – Civil Works Review, 15 December 2012.

2. The enclosed Review Plan for the Mid-Chesapeake Bay Island Environmental Restoration Project was prepared in accordance with Reference 1b.

3. North Atlantic Division Business Technical Division is the Review Management Organization for the Agency Technical Review. The Review Plan does not include Type II Independent External Peer Review (Safety Assurance Review) because the project does not include design or construction activities that involve potential hazards which pose a significant threat to human life.

4. The Review Plan for the Mid-Chesapeake Bay Island Environmental Restoration Project is approved. The Review Plan is subject to change as circumstances require, consistent with study development under the Project Management Business Process. Subsequent revisions to this Review Plan or its execution require new written approval from this office.

5. In accordance with Reference 1b, Appendix B, Paragraph 6, post this approved Review Plan on your district website for public review and comment. NAD will post on the Division website.

6. The point of contact in the Business Technical Division is Mr. Ralph LaMoglia, PE, 347-370-4599 or ralph.a.lamoglia@usace.army.mil.

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JEFFREY L. MILHORN
Major General, USA
Commanding

Encl
Review Plan

CF: (w/ encl)
CENAB-EN-WC (T. Myrah)

Design Phase Review Plan
U.S. Army Corps of Engineers

Baltimore District

Mid-Chesapeake Bay Island Ecosystem Restoration Project Design Phase Review Plan

Submission Date: 22 October 2018

MSC Approval Date: 02 November 2018

US Army Corps of Engineers®

TABLE OF CONTENTS

1. PURPOSE AND REQUIREMENTS

a. Purpose. This review plan defines the scope and level of review for implementation documents. Implementation documents include design documentation reports (DDRs) and Construction Plans & Specifications. This review plan defines the scope and level of review for the DDR and Plans and Specifications associated with the design phase of the Mid-Chesapeake Bay Island (Mid-Bay Island) Environmental Restoration Project.

b. References.

(1) EC 1165-2-217 Civil Works Review, February 2018.
(2) ER 1110-2-1150, Engineering and Design for Civil Works Projects, 31 August 1999.
(3) ER 1110-1-12, Engineering and Design Quality Management, 31 July 2006, as revised through 31 March 2011.
(4) ER 415-1-11 – Biddability, Constructability, Operability, Environmental and Sustainability (BCOES) Reviews, 1 January 2013.
(5) ER 1100-2-8162, Incorporating Sea Level Change in Civil Works Programs, 31 December 2013.
(6) Resolution by the Senate Committee on Environment and Public Works, 5 June 1997.
(7) Water Resources Reform and Development Act of 2014 (WRRDA 2014), Public Law 113-121, 10 June 2014.
(8) Climate Change – ER 1110-2-1941, 02 February 2018, ECB 2016-25 (reference a), Guidance for Incorporating Climate Change Impacts to Inland Hydrology in Civil Works Studies, Designs, and Projects.

c. Requirements. This review plan was developed in accordance with EC 1165-2-217 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 outlines four general levels of review: District Quality Control/Quality Assurance (DQC) and BCOES (Biddability, Constructability, Operability, Environmental and Sustainability) review, Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, the cost estimate may be subject to cost engineering review and certification (per EC 1165-2-217).

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall review effort described in this Review Plan. The RMO for implementation documents is the Major Subordinate Command (MSC), (per EC 1165-2-217). Therefore, the RMO for the review effort described in this review plan is the North Atlantic Division (NAD) Business Technical Division.

3. PROJECT INFORMATION

a. Implementation Documents.

This review plan has been prepared for the Design Document Reports and the Construction Documents (Plans and Specifications) for the Mid-Bay Island Environmental Restoration Project. The DDR will serve as the record of the design of the project. The Plans and Specifications will serve as the bid documents for the construction of the Mid-Bay Island features such as dikes, breakwaters, inlet structures and spillways. Approval of these implementation documents is at the district level.

This review plan focuses on the DDR developed in association with the initial construction contracts (armored containment dikes, stone sills, breakwaters, access channels, etc.) for the James Island and Barren Island components of the project. Because the designs for habitat development and dredged material inflow are not part of the initial construction, they are not included in this plan.

b. Project Description.

(1) USACE received the authority to conduct the Mid-Chesapeake Bay Island Ecosystem Restoration study under the resolution of the Senate Committee on Environment and Public Works on 5 June 1997. The Eastern Shore, Maryland (MD) and Delaware (DE) Section 905(b) analysis concluded that a Federal interest existed to assess the needs and opportunities within the study area and recommended a variety of potential projects for further study. The Mid-Chesapeake Bay Island Ecosystem Restoration study was initiated specifically to evaluate the protection and/or restoration of remote island habitat through the beneficial use of dredged material.

(2) The study culminated in the *Final Mid-Chesapeake Bay Island Ecosystem Restoration Integrated Feasibility Report & Environmental Impact Statement (EIS)*, dated September 2008 (and updated in April 2009). A Chief of Engineers report recommending the plan in the feasibility report was signed on 24 August 2009.

(3) Section 7002 of WRRDA 2014 authorized the construction of the Mid-Bay Island project.

(4) A supplemental Chief of Engineers report confirming the plan recommended in the 24 August 2009 Chief's Report was signed on 5 February 2018.

(5) The authorized project consists of restoring James Island (2,072 acres), with a habitat proportion of 45 percent upland to 55 percent wetland and an upland dike height of 20 feet above mean lower low water, in combination with restoration at Barren Island (72 acres), which is 100 percent wetland. The project will restore a combined 2,144 acres of remote island habitat, while also protecting approximately 1,325 acres of potential submerged aquatic vegetation (SAV) adjacent to Barren Island, which is an element of the U.S. Fish and Wildlife Service (USFWS) Chesapeake Marshlands National Wildlife Refuge Complex in Maryland and Virginia. Restoration of the islands will occur by the beneficial use of approximately 90 to 95 million cubic yards (MCY) of dredged material for more than 30 years. The sources of the dredged material are the federal navigation channels in

the Maryland portion of the Chesapeake Bay serving Baltimore Harbor and the southern Chesapeake and Delaware Canal approach channels. Detailed information on the specific components of the project can be found in the recommended plan section and engineering appendix of the September 2008 feasibility report.

c. Factors Affecting the Scope and Level of Review.

(1) The focus of this review plan is on the implementation documents for the initial construction of the Mid-Bay Island Environmental Restoration Project. Since both the James Island and Barren Island components of the project are situated in the Chesapeake Bay, designs will take into account the latest regulations and guidance on sea-level and climate change.

(2) An assessment of the need for a Type II Independent External Peer Review (IEPR), Safety Assurance Review, is documented in Section 6 of this review plan. This assessment by the Baltimore District Chief of Engineering Division considered life safety and other factors. This assessment was conducted for the initial construction contracts only.

4. DISTRICT QUALITY CONTROL (DQC) AND BCOES REVIEW

All implementation documents will undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project requirements defined in the design phase project management plan (PMP). The Baltimore District will manage the DQC. The DQC process will be performed in two phases. The initial phase will be the day-to-day production reviews performed by the designers' supervisor, team leader, or senior engineer as the product is being developed. For the second phase, qualified engineers/scientists not affiliated with the development of the product will be selected commensurate with the complexity of the product to be reviewed. Branch and Section Chiefs will sign-off to complete the review for the plans and specifications. The Engineering Chief will sign-off when the plans and specifications are ready to advertise thus completing the DQC review process. These reviews will be documented in Dr. Checks (PROJNET).

For Civil Works projects, the BCOES review will include evaluation of Plans and Specifications, Engineering Considerations and Instruction for Field Personnel (ECIFP) reports, the operations, maintenance, repair, replacement, and rehabilitation (OMRR&R) plan for the project and other required documents as mentioned in ER 415-1-11. The Baltimore District will manage the BCOES review.

a. Documentation of DQC and BCOES. DQC and BCOES will be documented through the use of DrChecks and DQC/BCOES certifications.

b. Products to Undergo DQC and BCOES. The P&S packages will undergo DQC and BCOES reviews.

c. Required DQC and BCOES Expertise. DQC and BCOES will be performed by staff in the home district that are not involved in preparing the implementation documents. The required

disciplines for review are similar to the PDT disciplines listed in Attachment 1. The DQC supplements the reviews provided by the Project Delivery Team during the course of completing the design.

5. AGENCY TECHNICAL REVIEW (ATR)

ATR is mandatory for all implementation documents. The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with published USACE guidance, and that the document explains the analyses and results in a reasonably clear manner. ATR is managed within USACE by the designated RMO and is conducted by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. The ATR team lead will be from outside the home MSC.

a. Products to Undergo ATR. The DDR documents will undergo an ATR.

b. Required ATR Team Expertise.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works implementation documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. The ATR lead may also serve as a reviewer for a specific discipline (such as civil engineering).
Environmental Resources	Team member will have independently completed EA/EIS's and be well versed in the NEPA process, completed all environmental compliance and permits, will have participated in partnerships with other environmental resource agencies, will have experience with identifying and resolving environmental issues in flood risk management and will have experience with wetland mitigation and Section 106 actions and documentation.
Civil Engineering	Team member shall have expertise in civil engineering design and review of site/civil layout, grading, drainage and utilities for coastal projects, and shall be a registered professional engineer.
Coastal/Hydraulic Engineering	Team member shall have expertise in coastal, hydraulics and hydrologic engineering and shall have a thorough understanding of application of wave forces, water levels, groin design and construction experience, implications of sea level rise over the likely range of storm return periods, and shall be a registered professional engineer.

Structural Engineering	Team member will be an expert in the field of structural engineering, especially in review of coastal structures. The team member must be a licensed professional engineer with the ability to exercise engineering judgment based on experience in design of coastal features.
Geotechnical Engineer	Team member shall have expertise in geotechnical engineering design and shall be an actively licensed professional engineer. Team member shall have experience in review of armored containment dikes, stone sills, and breakwaters.
Construction Manager	Team member shall have experience in the management of coastal construction projects. Team member shall have experience as an Administrative Contracting Officer of projects involving construction of coastal structures. Team member shall be a registered professional engineer.
Mechanical Engineer	Team member shall have expertise in mechanical engineering design and review of mechanical components of sluice gates, and shall be a registered professional engineer.

c. Documentation of ATR. DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should 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 been properly followed;
(3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the 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 will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO/ MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in ER 1110-1-12. Unresolved concerns can be closed in DrChecks[sm] with a notation that the concern has been elevated to the vertical team for resolution.

d. Review Report. At the conclusion of the ATR effort, the ATR team will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

(1) Identify the document(s) reviewed and the purpose of the review;
(2) Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
(3) Include the charge to the reviewers;
(4) Describe the nature of their review and their findings and conclusions;
(5) Identify and summarize each unresolved issue (if any); and
(6) Include a copy of each ATR comment, the PDT response, a brief summary of the pertinent points in the follow on discussion, including any vertical coordination, and the agreed upon resolution.

e. ATR Certification. ATR will be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A Statement of Technical Review should be completed for all the implementation documents. A sample Statement of Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

An IEPR may be required for implementation documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-217, is made as to whether an IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

a. Type I IEPR. Type I IEPRs are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-217.

b. Type II IEPR. Type II IEPRs, or Safety Assurance Reviews (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a

significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

c. Decision on IEPR.

(1) Type I IEPR's are conducted on project studies and reports. Since this review plan deals with implementation documents, a Type I IEPR is not applicable.

(2) Type II Independent External Peer Review, Safety Assurance Review, is required by EC 1165-2-217 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.

(3) Based on a risk informed assessment (attached memorandum dated September 2018 – Attachment 4), Baltimore District Chief, Engineering Division determined that there is not a significant threat to human life associated with the Mid-Bay Island Environmental Restoration Project construction contracts. Therefore, a Type II IEPR is not required for this contract.

d. Products to Undergo IEPR. Not applicable.

e. Required IEPR Panel Expertise. Not applicable.

f. Documentation of IEPR. Not applicable.

7. POLICY AND LEGAL COMPLIANCE REVIEW

All implementation documents will be reviewed for their compliance with law and policy. The DQC will facilitate the policy and legal compliance review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of results in implementation documents.

8. COST ENGINEERING DIRECTORATE OF EXPERTISE (DX) REVIEW AND CERTIFICATION

This is not applicable since this review plan is for implementation documents associated with the design phase of the Mid-Bay Island Environmental Restoration Project.

9. MODEL CERTIFICATION AND APPROVAL

This is not applicable since this project is in the Preconstruction Engineering and Design (PED) phase and this relates to the use of certified or approved models for planning activities.

10. REVIEW SCHEDULES AND COSTS

ATR Schedule and Cost. The schedule and cost budgeted for ATR is $75,000 and is scheduled for April 2020 for Barren Island and December 2021 for James Island. The District will advise BTD of any changes to the ATR schedule and advise BTD when an ATR team should be assembled.

11. PUBLIC PARTICIPATION

Public participation is not required for this review plan.

12. REVIEW PLAN APPROVAL AND UPDATES

The North Atlantic Division Commander is responsible for approving this review plan. The Commander's approval reflects vertical team input (involving district, MSC (RMO), and HQUSACE members) as to the appropriate scope and level of review for the implementation documents. Like the PMP, the review plan is a living document and may change as the engineering and design progresses. The home district is responsible for keeping the review plan up to date. Significant changes to the review plan (such as changes to the scope and/or level of review) should be re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the review plan, along with the Commander's approval memorandum, will be posted on the MSC's webpage.

13. REVIEW PLAN POINTS OF CONTACT

Public questions and/or comments on this review plan can be directed to the following points of contact:

- Thomas Myrah, CENAB, EN Senior Design Manager, 410-962-6757.
- Ralph LaMoglia, P.E., Senior Water Resources Engineer, 347-370-4559

ATTACHMENT 1 TEAM ROSTERS

Project Delivery Team

Name	Role	Phone Number	E-mail Address
Gannon Price	MPA Project Manager	410-385-4422	gprice1@marylandports.com
Fred Kimble	Project Manager	410-962-3528	Frederick.A.Kimble@usace.army.mil
Thomas Myrah	Design Manager	410-962-6757	Thomas.P.Myrah@usace.army.mil
Ray Tracy, P.E.	Civil Engineer	410-962-6114	Raymond.M.Tracy@usace.army.mil
Tanveer Chowdhurry, P.E.	Coastal Engineer	410-962-8126	Tanveer.G.Chowdhury@usace.army.mil
Andrew Felter	Structural Engineer	410-962-4575	Andrew.C.Felter@usace.army.mil
Charles Frey, P.E.	Geotechnical Engineer	410-962-5663	Charles.E.Frey@usace.army.mil
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TBD	Mechanical Engineer		
TBD	Electrical Engineer		
Sean Dawson	Value Engineer	410-962-4408	Sean.Dawson@usace.army.mil
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Catherine Perkins	Project Engineer	410-336-0648	Catherine.J.Perkins@usace.army.mil
Angie Sowers	Biologist	410-962-7440	Angela.Sowers@usace.army.mil
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Chris Gardner	Public Affairs Specialist	410-962-2626	Christopher.P.Gardner@usace.army.mil

District Quality Control (DQC) Team

Name	Role	Phone Number	E-mail Address
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TBD	Structural Engineering		
TBD	Geotechnical Engineering		
Parris McGee-Bey	Cost Engineering	410-962-9596	Parris.J.McGhee-Bey@usace.army.mil
Shawn Crossfield, P.E.	Mechanical Engineering	410-962-6105	Shawn.Crossfield@usace.army.mil
TBD	Electrical Engineering		
Michele Gomez	Environmental	410-962-5175	Michele.Gomez@usace.army.mil
Jeff Lorenz	Office of Counsel	410-962-2641	Carl.J.Lorenz@usace.army.mil

BCOES Team

Name	Role	Phone Number	E-mail Address
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Graham Mcallister	Navigation	410-962-6068	Graham.K.Mcallister@usace.army.mil
Kevin Brennan	Navigation	410-962-6113	Kevin.M.Brennan@usace.army.mil

Agency Technical Review (ATR) Team

Name	Role	Review District
TBD	ATR Lead	
TBD	Civil Engineer	
TBD	Environmental	
TBD	Coastal Engineer	
TBD	Geotechnical Engineer	
TBD	Structural Engineer	
TBD	Mechanical Engineer	
TBD	Electrical Engineer	

Vertical Team

Name	Role	Phone Number	E-mail Address
Chris Nolta	Chief, Civil Projects Branch	410-962-3358	Christopher.M.Nolta@usace.army.mil
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Charles Frey, P.E.	Chief, Geotechnical Branch	410-962-5663	Charles.E.Frey@usace.army.mil
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Kevin Brennan	Chief, Navigation Branch	410-962-6113	Kevin.M.Brennan@usace.army.mil

ATTACHMENT 2

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the *Design Documentation Report (DDR)* for *the Mid-Bay Island in Dorchester County, Maryland*. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-217. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and 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 US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in Dr. Checks.

Alan Huntley Chief, Business Technical Branch CENAD-RB-T	Date
Thomas Myrah Senior Design Manager CENAB-EN-WC	Date
Frederick Kimble Project Manager CENAB-PP-C	Date

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: *Describe the major technical concerns and their resolution.* As noted above, all concerns resulting from the ATR of the project have been fully resolved.

Ronald J. Maj, PE Chief, Engineering Division *CENAB-EN*	Date

ATTACHMENT 3: ACRONYMS AND ABBREVIATIONS

Term	Definition	Term	Definition
AFB	Alternative Formulation Briefing	NED	National Economic Development
ASA(CW)	Assistant Secretary of the Army for Civil Works	NER	National Ecosystem Restoration
ATR	Agency Technical Review	NEPA	National Environmental Policy Act
CSDR	Coastal Storm Damage Reduction	O&M	Operation and maintenance
DPR	Detailed Project Report	OMB	Office and Management and Budget
DQC	District Quality Control/Quality Assurance	OMRR&R	Operation, Maintenance, Repair, Replacement and Rehabilitation
DX	Directory of Expertise	OEO	Outside Eligible Organization
EA	Environmental Assessment	OSE	Other Social Effects
EC	Engineer Circular	PCX	Planning Center of Expertise
EIS	Environmental Impact Statement	PDT	Project Delivery Team
EO	Executive Order	PAC	Post Authorization Change
ER	Engineering Regulation	PMP	Project Management Plan
FDR	Flood Damage Reduction	PL	Public Law
FEMA	Federal Emergency Management Agency	QMP	Quality Management Plan
FRM	Flood Risk Management	QA	Quality Assurance
FSM	Feasibility Scoping Meeting	QC	Quality Control
GRR	General Reevaluation Report	RED	Regional Economic Development
HSLRR	Hurricane Sandy Limited Reevaluation Report	RMC	Risk Management Center
Home District/MSC	The District or MSC responsible for the preparation of the decision document	RMO	Review Management Organization
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RTS	Regional Technical Specialist
IEPR	Independent External Peer Review	SAR	Safety Assurance Review
ITR	Independent Technical Review	USACE	U.S. Army Corps of Engineers
LRR	Limited Reevaluation Report	WRDA	Water Resources Development Act
MSC	Major Subordinate Command		

CENAN-EN-EN 14 September 2018

MEMORANDUM FOR RECORD

SUBJECT: Mid-Chesapeake Bay Island (Mid-Bay Island) Environmental Restoration Project, Dorchester County, Maryland – Risk Informed Assessment of Significant Threat to Human Life

1. Project Authorization:

USACE received the authority to conduct the Mid-Chesapeake Bay Island Ecosystem Restoration study under the resolution of the Senate Committee on Environment and Public Works on 5 June 1997. The Eastern Shore, Maryland (MD) and Delaware (DE) Section 905(b) analysis concluded that a Federal interest existed to assess the needs and opportunities within the study area and recommended a variety of potential projects for further study. The Mid-Chesapeake Bay Island Ecosystem Restoration study was initiated specifically to evaluate the protection and/or restoration of remote island habitat through the beneficial use of dredged material. The study culminated in the Final Mid-Chesapeake Bay Island Ecosystem Restoration Integrated Feasibility Report & Environmental Impact Statement (EIS), dated April 2009 and a Chief's Report dated 24 August 2009. Section 7002 of the Water Resources Reform and Development Act (WRRDA) of 2014, Public Law 113-121, authorized the construction of the project. A supplemental Chief's Report was signed on 5 February 2018 that reconfirmed the plan recommended in the 24 August 2009 Chief's Report.

2. Project Description:

The authorized project consists of restoring James Island (2,072 acres), with a habitat proportion of 45 percent upland to 55 percent wetland and an upland dike height of 20 feet above mean lower low water, in combination with restoration at Barren Island (72 acres), which is 100 percent wetland. The project will restore a combined 2,144 acres of remote island habitat, while also protecting approximately 1,325 acres of potential submerged aquatic vegetation (SAV) adjacent to Barren Island, which is an element of the U.S. Fish and Wildlife Service (USFWS) Chesapeake Marshlands National Wildlife Refuge Complex in Maryland and Virginia. Restoration of the islands will occur by the beneficial use of approximately 90 to 95 million cubic yards (MCY) of dredged material for more than 30 years. The sources of the dredged material are the federal navigation channels in the Maryland portion of the Chesapeake Bay serving Baltimore Harbor and the southern Chesapeake and Delaware Canal approach channels. Detailed information on the specific components of the project can be found in the recommended plan section and engineering appendix of the Final Mid-Chesapeake Bay Island Ecosystem Restoration Integrated Feasibility Report & Environmental Impact Statement (EIS), dated April 2009.

3. *Levels of Review*

Reviews shall include:

- District Quality Control (DQC) – All work products shall undergo DQC.
- Agency Technical Review (ATR) – DDRs for both James Island and Barren Island shall undergo ATR reviews.

Independent External Peer Review (IEPR) – A Type I IEPR is not appropriate since the Mid-Bay Island DDR is an implementation document. A Type II IEPR is not required due to the following justification:

Within Appendix E of EC 1165-2-214, there are four factors listed to determine whether a Type II review is appropriate. Table 1 summarizes these factors and a discussion of each is below.

Table 1. Risk Informed Decision Factors Requiring a Type II IEPR SAR

Factor for Consideration	Yes	No
Significant Threat to Human Life (Public Safety)		X
Use of Innovative Material or Techniques		X
Project Design Requires Redundancy, Resiliency, and Robustness		X
Unique Construction Sequencing or Reduced or Overlapping Design Construction Schedule		X

(1) Significant threat to human life (public safety):

Hazards resulting from a failure at Mid-Bay Island would not affect any populated areas and therefore does not pose a threat to human life or public safety. Personnel operating on the Island will have sufficient advance warning of any storm of sufficient magnitude to cause a failure, and would be evacuated and therefore not at risk.

(2) Use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent-setting methods or models, or presents conclusions that are likely to change prevailing practices:

Mid-bay Island is very similar to Paul S. Sarbanes Ecosystem Restoration Project at Poplar Island, Talbot County, Maryland and therefore not considered to use innovative materials or techniques.

(3) Project design requires redundancy, resiliency, and robustness:

(a) Redundancy: The containment dikes for Mid-Bay Island are the critical components of the system and a backup or fail-safe system is not practicable and will not be constructed.

(b) Resiliency: The containment dikes for Mid-Bay Island will be designed to withstand certain levels of storm events. It is possible to have a storm event more severe than was designed for, at which point the project would likely fail or have significant damages. Therefore, the project will not be designed to avoid, minimize, withstand, and recover from the effects of adversity under all circumstances.

(c) Robustness: The design of Mid-Bay Island will consider a wide range of operational conditions (i.e. various magnitudes of storm events). Selection of the final design configuration was based on a combination of reducing likelihood of damages from certain storm events and reducing the cost of repairs from overtopping of the containment dikes.

(4) Unique construction sequencing or a reduced or overlapping design construction schedule:
Mid-Bay Island will follow the proven construction methods from Poplar Island and will utilize a similar construction sequence. The construction will not be executed using the Design-Build or Early Contractor Involvement delivery systems.

Consequences resulting in failure from conditions exceeding the design are less significant than traditional Civil Works projects (e.g. dams and levees). Due to the isolated nature of the island project and lack of downstream populations or development, there are very low life-safety or economic risks should any type of failure occur. A Type II IEPR SAR is not appropriate due to the low risk involved with the construction of Mid-Bay Island.

4. **Determination**. Neither a Type I nor Type II IEPR is warranted for Construction Contracts of the Mid-Chesapeake Bay Island Ecosystem Restoration Project.

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Encl.
Risk Assessment Matrix

Ronald J. Maj, P.E.
Chief, Engineering Division