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

NOV 18 2013

CENAD-RBT

MEMORANDUM FOR Commander, New York District, (CENAN-EN / Mr. Connolly), 26 Federal Plaza, New York, NY 10278-0090

SUBJECT: Review Plan Approval for Fire Island to Montauk Point (FIMP), Fire Island Stabilization, William Floyd Parkway to Moriches Inlet Reach

1. References:

a. E-Mail, CENAN-EN (A. Zuzulock), 22 October 2013, subject: FIMP Review Plan (William Floyd Parkway to Moriches Inlet Reach)

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

2. The enclosed Review Plan for FIMP William Floyd Parkway to Moriches Inlet Reach was prepared in accordance with Reference 1.b. The Review Plan only addresses the plans and specification for the beach berm and dune component of the William Floyd Parkway to Moriches Inlet Reach portion of the FIMP project.

3. NAD Business Technical Division is the Review Management Organization (RMO) for the Agency Technical Review (ATR). The Review Plan does not include Type II Independent External Peer Review (IEPR) (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 William Floyd Parkway to Moriches Inlet Reach portion of the FIMP 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. Other portions of the FIMP project will require separate Review Plans.

5. In accordance with Reference 1.c, 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 Business Technical Division for this action is Alan Huntley, 347-370-4664 or Alan.Huntley@usace.army.mil.

Encl

KENT D. SAVRE
Brigadier General, USA
Commanding

CF: (w/ encl)
CECW-NAD-RIT (M. Voich)
CENAN-EN (A. Zuzulock)

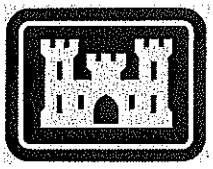
Review Plan

For
Fire Island Inlet to Montauk Point, NY

Fire Island Stabilization

William Floyd Parkway to Moriches Inlet Reach

Plans and Specifications



US ARMY CORPS
OF ENGINEERS
NEW YORK DISTRICT

Last Revision Date: 15 October 2013

MSC Approval Date: 18 November 2013

Table of Contents

1. Purpose and Requirements 1
Purpose 1
References 1
Requirements 1
2. Review Management Organization (RMO) 1
3. Project Information and Background 1
4. District Quality Control (DQC) 2
5. Agency Technical Review (ATR) 2
6. Independent External Peer Review (IEPR) 5
7. Policy and Legal Compliance Review 7
8. Cost Engineering Directorate of Expertise (DX) Review and Certification 7
9. Model Certification and Approval 7
10. Review Schedules and Costs 7
11. Public Participation 7
12. Review Plan Approval and Updates 7
13. Review Plan Points of Contact 8

Attachment 1: Team Rosters 9
Attachment 2: Sample Statement of Technical Review 11
Attachment 3: List of Acronyms 13
Attachment 4: MFR on Risk Informed Assessment of Significant Threat to Human Life (CENAN C, Engineering Division) 15

1. PURPOSE AND REQUIREMENTS

a. Purpose. This Review Plan defines the scope and level of peer review for implementation documents for the William Floyd Parkway to Moriches Inlet Reach of the Fire Island stabilization component of the Fire Island Inlet to Montauk Point (FIMP) project.

b. References

(1) EC 1165-2-214, Civil Works Review Policy, 15 December 2012

(2) ER 1110-2-1150, Engineering and Design for Civil Works Projects, 31 Aug 1999

(3) ER 1110-1-12, Engineering and Design Quality Management, 21 Jul 2006 as revised through 31 March 2011

c. Requirements. This review plan was developed in accordance with EC 1165-2-209 1, which establishes an accountable, comprehensive, life-cycle review strategy for projects 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 three general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review, and Policy and Legal Compliance Review.

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for implementation documents is the Major Subordinate Command (MSC), (per EC 1165-2-214). Therefore, the RMO for the peer review effort described in this Review Plan is the North Atlantic Division.

3. PROJECT INFORMATION AND BACKGROUND

a. Implementation Documents. This Review Plan has been prepared for the Plans and Specifications (P&S) for the beach berm and dune component of the Fire Island Inlet to Montauk Point (FIMP), Fire Island Stabilization, William Floyd Parkway to Moriches Inlet Reach (Smith Point County Park). The purpose of these documents is to provide a record of final design for the emergency stabilization component. Approval of the P&S is at the District Command level.

b. Project Description.

(1) A Fire Island Stabilization Project Report is currently under review by the North Atlantic Division. The recommended plan provides for reduction of storm damages from

coastal erosion and flooding caused by high surge events through storm protective dune, berm, beach fill, dune planting, and sand fencing. The State of New York, acting through the Department of Environmental Conservation, is the non-Federal sponsor for this project.

(2) The stabilization project consists of a sand dune and berm system. The implementation documents reflect post- Hurricane Sandy conditions.

c. Factors Affecting the Scope and Level of Review.

(1) The focus of this Review Plan is on the P&S for the beach berm and dune component in the William Floyd Parkway to Moriches Inlet Reach of the Fire Island Inlet to Montauk Point Project.

(2) An assessment of the need for a Type II Independent External Peer Review, Safety Assurance Review, is documented in Section 6 of this Review Plan. This assessment by the New York District Chief of Engineering Division considered life safety and other factors including whether the project includes redundancy, resiliency, and robustness; and whether the project has unique construction sequencing. This assessment was conducted for the dune and berm components only.

4. DISTRICT QUALITY CONTROL (DQC)

All implementations documents shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district will manage the DQC.

a. Documentation of DQC. DQC will be documented using DrChecks and a DQC report, which will be signed by all reviewers.

b. Products to Undergo DQC. Products that will undergo DQC include the Plans and Specifications.

c. Required DQC Expertise. DQC will be performed by New York District staff that are not involved in the P&S. The required disciplines for review are listed in page 6. The DQC supplements the reviews provided by the Project Delivery Team (PDT) during the course of completing the P&S.

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 or product. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts, as appropriate. The Corps of Engineers Reviewer Certification and Access Program (CERCAP) will be used to select reviewers. The ATR team lead will be from outside the home MSC.

a. Products to Undergo ATR. The products that will undergo ATR are the Plans and Specifications.

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.
Environmental Resources	Team member will have independently completed EA/EIS's and be well versed in the NEPA process, will have participated in partnerships with other environmental resource agencies, will have experience with identifying and resolving environmental issues in a coastal ecosystem, and will have experience with Section 106 actions and documentation.
Coastal Engineering	Team member will be an expert in the field of coastal processes and have a thorough understanding of sediment transport, application of wave forces and water levels over the likely range of storm return periods, beach fill design including renourishment, and determination of risk due to sea level rise.
Civil Engineering	Team member will be an expert in the field of civil engineering, especially in the review of coastal projects.

Cost Engineering	Team member will be an expert in cost estimating for similar projects. Review includes plans and specifications for cost implications. As the Cost Engineering Center of Expertise, Walla Walla District will assign this team member as part of a separate effort coordinated by the ATR team lead.

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 required to ensure adequacy of the product.

(1) The four key parts of a quality review comment will normally include:

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

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

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

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

(2) In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist.

(3) 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 with a notation that the concern has been elevated to the vertical team for resolution.

d. Review Report. At the conclusion of each 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 documents 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 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. The 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 the beach berm and dune component Plans and Specifications. A sample Statement of Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

a. 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 1165-2-214, is made as to whether an IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

(1) Type I IEPR. Type I IEPRs are managed outside 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 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 1165-2-214.

(2) Type II IEPR. Type II IEPRs, or Safety Assurance Reviews (SAR), are managed outside 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, and 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.

b. Decision on IEPR.

(1) Type I IEPR is not applicable as per EC 1165-2-214, Civil Works Review Policy, since the William Floyd Parkway to Moriches Inlet Reach of the Fire Island Inlet to Montauck Point, NY project is in the Preconstruction Engineering and Design (PED) Phase.

(2) Type II Independent External Peer Review, Safety Assurance Review, is required by EC 1165-2-214 for any hurricane and storm risk management projects where issues of life safety are present. As documented in Memorandum for Record dated 16 October 2013 (Attachment 4), New York District Chief, Engineering Division made a risk informed assessment of whether there is a significant threat to human life as a result of the Fire Island Inlet to Montauk Point, Fire Island Stabilization Project, berm and dune component. The key factors considered were:

(i) The Fire Island Inlet to Montauk Point, Fire Island Stabilization Project, berm and dune components provide reduction in storm damage by reducing wave-induced property damage and reducing shoreline storm erosion.

(ii) The Fire Island Inlet to Montauk Point, Fire Island Stabilization Project, berm and dune component does not protect critical public facilities. The project does not protect a primary or intermediate storm evacuation route. All storm evacuations can be accomplished by other thoroughfares within the project area. Failure of the beach berm and dune component of the project would most likely be from gradual erosion followed by a significant coastal storm event. The State of New York and Suffolk County have the resources to monitor the beach berm and dune component of the project if there is erosion that reduces the features of the project (berm width and height and dune width and height). The Corps and the State have capabilities to maintain the beach berm and dune project features over the life of the project.

(iii) Furthermore, traditional and proven design features and traditional and proven construction materials and methodologies will be used.

(3) Based on a risk informed assessment which considered life safety factors, New York District Chief, Engineering Division determined that there is not a significant threat to human life associated with the Fire Island Inlet to Montauk Point, Fire Island Stabilization Project, William Floyd Parkway to Moriches Inlet Reach, Berm and Dune Component. Accordingly, a Type II IEPR, Safety Assurance Review, is not required for the beach berm and dune component.

c. Products to Undergo IEPR. Not applicable to berm and dune component.

d. Required IEPR Panel Expertise. Not applicable to berm and dune component.

e. Documentation of IEPR. Not applicable to berm and dune component.

7. POLICY AND LEGAL COMPLIANCE REVIEW

All implementation documents will be reviewed for their compliance with law and policy. DQC facilitate the policy 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 a decision document requiring Congressional authorization is not being prepared.

9. MODEL CERTIFICATION AND APPROVAL

Not applicable since this project is in the Preconstruction Engineering and Design Phase and this relates to the use of certified or approved models for planning activities.

10. REVIEW SCHEDULES AND COSTS

a. **ATR Schedule and Cost.** The schedule and cost budgeted for ATR review is: 100% Plans and Specifications- November 2013 ($15,000)

b. **IEPR Schedule and Cost**. Not applicable

c. **Model Certification/ Approval Schedule and Cost.** Not applicable

11. PUBLIC PARTICIPATION

There will be public meetings prior to the start of each construction contract, along with public meetings as part of the overall project reformulation. Also, as significant changes or developments occur, the District will present this information to the NYSDEC, and the applicable municipal entities.

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 Significant changes to the Review Plan

(such as changes to the scope and/or level of review) require MSC Commander re-approval. The latest Review Plan will be provided to the RMO/MSC.

13. REVIEW PLAN POINTS OF CONTACT

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

- Andrew Zuzulock, NAN, EN Technical Manager, 917-790-8241
- Alan Huntley, NAD Technical Business Division, 347-370-4664

Attachment 1- Team Rosters

District Project Delivery Team

Responsibility	Name	Contact
Technical Manager	Andrew Zuzulock	917-790-8241
Project Manager	Frank Verga	917-790-8212
Project Planner	Stephen Couch	917-790-8707
Coastal Engineer	Lynn Bocamazo	917-790-8396
Civil Engineer	Suzana Saric	917-790-8374

ATR Team

Name	Role	Review District
Greg Baer	ATR Lead	SAD
	Civil Engineer	
Tom Martin	Coastal Engineer	SAJ
Douglas Piatkowski	Environmental Resources	SAW
	Cost Engineer	

Vertical Team

Name	Role	Phone Number	E-mail Address
Anthony Ciorra	NAN PPMD Civil Works Branch Chief	917-790-8208	Anthony.Ciorra@usace.army.mil
Leonard J. Houston	NAN-PL, Environmental Analysis Branch Chief	917-790-8702	Leonard.Houston@usace.army.mil
Frank Santangelo	NAN-EN, Civil Resources Branch Chief	917-790-8266	Frank.A.Santangelo@usace.army.mil
Thomas Dannemann	NAN-EN, Design Branch Chief	917-790-8363	Thomas.R.Dannemann@usace.army.mil
Mukesh Kumar	NAN-EN, Cost Engineering Branch Chief	917-790-8421	Mukesh.Kumar@usace.army.mil
Angelo Trotto	NAN-EN, Engineering Management, Civil Works Section Chief	917-790-8296	Angelo.R.Trotto@usace.army.mil
Alan Huntley	NAD BTD	347-370-4664	Alan.Huntley@usace.army.mil
Mike Voich	NAD RIT	202-761-4655	Michael.p.voich@usace.army.mil

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the *<type of product>* for *<project name and location>*. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-209. 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 DrChecks[sm].

SIGNATURE

_____ _____

Name Date

ATR Team Leader

Office Symbol/Company

SIGNATURE

_____ _____

Name Date

Project Manager

Office Symbol

SIGNATURE

_____ _____

Name Date

Architect Engineer Project Manager[1]

Company, location

SIGNATURE

Name Date

Review Management Office Representative

Office Symbol

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.

SIGNATURE

Name Date

Chief, Engineering Division

Office Symbol

SIGNATURE

Name Date

Architect Engineer Principal

Office Symbol

[1] Only needed if some portion of the ATR was contracted

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	Ecosystem Restoration	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
Home District/MSC	The District or MSC responsible for the preparation of the decision document	RMC	Risk Management Center
HQUSACE	Headquarters, U.S. Army Corps of Engineers	RMO	Review Management Organization

Term	Definition	Term	Definition
IEPR	Independent External Peer Review	RTS	Regional Technical Specialist
ITR	Independent Technical Review	SAR	Safety Assurance Review
LRR	Limited Reevaluation Report	USACE	U.S. Army Corps of Engineers
MSC	Major Subordinate Command	WRDA	Water Resources Development Act

CENAN-EN-MC-F 25 October 13

MEMORANDUM For Record

SUBJECT: Fire Island Inlet to Montauk Point (FIMP), Fire Island Stabilization, William Floyd Parkway to Moriches Inlet Reach (Contract 1) - Risk Informed Assessment of Significant Threat to Human Life

1. Project Information. The recommended plan resulting from the Fire Island Stabilization Report provides for reduction of storm damages from coastal erosion and flooding caused by high surge events through storm protective dune, berm, beach fill, and non-structural solutions. The State of New York, acting through the Department of Environmental Conservation, is the non-Federal sponsor for the project. A Review Plan is being prepared for the implementation documents for the beach berm and dune components of the project.

2. Project Description. The shore protection component of the William Floyd Parkway to Moriches Inlet project, which will be the first constructible element, consists of a sand dune and berm system.

3. Risk Informed Assessment. In accordance with EC 1165-2-214, Civil Works Review Policy, 15 December 2012, a risk informed assessment was made as to whether there is a significant threat to human life from the berm and dune project component (Table 1). The key factors considered are:

a. The Fire Island Inlet to Montauk Point, Fire Island Interim, William Floyd Parkway to Moriches Inlet reach, berm and dune project components provide reduction in storm damage by reducing wave-induced property damage and reducing shoreline storm erosion.

b. The Fire Island Inlet to Montauk Point (FIMP), Fire Island Stabilization, William Floyd Parkway to Moriches Inlet Reach berm and dune project component does not protect critical public facilities. The project does not protect a primary or intermediate storm evacuation route. There is no population within the contract area. Failure of the shore protection component of the project would most likely be from gradual erosion followed by a significant coastal storm event. The State of New York and Suffolk County have the resources to monitor the shore protection component of the project if there is erosion that reduces the features of the project (berm width and height and dune width and height). The Corps and the State have capabilities to maintain the shore protection project features over the life of the project.

c. Furthermore, traditional and proven design features and traditional and proven construction materials and methodologies will be used. All elements in construction

that may pose a risk are identified and methodologies are in place to reduce the human life safety risk to low.

4. Determination. Based on a risk informed assessment which considered life safety factors, I have determined that there is not a significant threat to human life associated with the Fire Island Inlet to Montauk Point, Fire Island Stabilization Project, William Floyd Parkway to Moriches Inlet, berm and dune component. Accordingly, it is recommended that a Type II IEPR, Safety Assurance Review, is not warranted for the berm and dune component.

Encl

ARTHUR J.CONNOLLY, P.E.
C, Engineering Division

Risk Informed Assessment. In accordance with EC 1165-2-209 (31 Jan 10), Civil Works Review Policy, Appendix E, Paragraph 2, a risk informed assessment was made as to whether there is a significant threat to human life from the shore protection project component, which would thereby require a Safety Assurance Review.

Table 1: Risk Assessment for Significant Threat to Life Safety, FIMP, William Floyd Parkway to Moriches Inlet Berm and Dune Component (Contract 1)

No.	Risk Factor (Significant Threat to Life Safety)	Risk Magnitude (H/M/L)	Basis of Concern	Risk Assessment
1	Land Use adjacent to the project	Low	Smith Point County Park is a non-residential open area in Suffolk County at the eastern portion of Fire Island.	There is no residential property on Fire Island landward of this contract area.
1a	Population Density	Low	Smith Point County Park is not populated.	The contract area in question does not have any population.
1b	Critical Facilities Affected (e.g. schools, hospitals, assisted living/nursing homes, evacuation routes)	Low	William Floyd Parkway provides north-south evacuation from the project area.	There are no critical facilities within this contract area.
1c	Number or types of structures in floodplain	Low	There is 1 non-residential structure within the contract area (Smith Point County Park Pavilion).	The non-residential structure is too high in elevation to be affected by flooding.
2	Inundation of protected side due to project failure	Low	Following completion of the line of protection, the project will be subject to risk due to catastrophic failure of any portion of the dune and berm.	Completion of the dune and berm component alone does not have a risk of inundation due to sudden catastrophic failure.
3	Shoreline Storm Erosion	Low	Coastal storms often result in significant shore erosion over short time periods which can undermine structures	Construction of the shore protection component will increase berm width, dune height, and dune volume which will lessen the risk of storm erosion because of increased berm width.
4	Wave Attack	Low	Overtopping of the dune/berm by waves during high water level events can result in damage to structures from direct wave impact.	Construction of the shore protection component will increase berm width, dune height, and dune volume which will lessen the risk of damage due to wave attack.
5	Use of unique or non-traditional	Low	Unique or non-traditional design methods may be poorly understood or inadequately designed and may	Engineering for the project elements employed accepted methods in accordance with COE guidance. No

	design methods		be more subject to failure than proven design methods.	innovative or precedent setting methods or models were used.
6	Use of unique or non-traditional design features	Low	Unique or non-traditional design features may be poorly understood or inadequately designed and may be more subject to failure than proven design features.	Design of the shore protection component features fall within prevailing practice and include only time-tested design features (e.g. berm, dune, planting).
7	Use of unique or non-traditional construction materials or methods	Low	Unique or non-traditional construction materials or methods may be poorly understood or executed inadequately resulting in a project feature that may be more subject to failure than those built with proven materials and methods.	All materials and construction techniques used for the shore protection component are in common practice.
8	Does the project have unique construction sequencing or a reduced or overlapping design/construction schedule?	Low	Unique or accelerated construction sequencing may lead to poor quality work, leading to greater possibility of future project failure.	The shore protection component does not have any accelerated design or construction scheduling. Sufficient time is available for completion of construction including all environmental shut-down windows.
9	Inherent risk with construction methods:	Low	The beach berm and dune will be constructed using established methods (hopper dredge, pumped on to beach via submerged pipeline).	These are established methods that are industry standards.
10	Does the project design require:			
10a	Redundancy	Low	Failure of one critical project element would result in sudden, catastrophic damage. Duplication of critical components of the protective system are required to increase the reliability of the system.	Construction of the shore protection components greatly reduces the risk to human life and property relative to the existing condition, which is seriously eroded. Nonperformance of the shore protection segment would result in flood levels, erosion, and/or wave forces less than or equal to those present under existing conditions.
10b	Resiliency	Low	Erodible structures are reduced in volume over time, providing less protective capacity.	The shore protection segment of the project includes resiliency in the form of regular beach renourishment, and post-storm emergency dune and berm rehabilitation.
10c	Robustness	Low	Natural events can occur that are greater than the optimized project design, and may lead to project failure.	The berm and dune design considered storm events up to a 100-year return interval, and long-term erosion derived from the sediment budget which reflects sea-level rise over the period of analysis. Dune and berm designs are adaptable to changes in water level due to climate change (sea level rise), with opportunities to incorporate

				additional volume and/or dune/berm elevation as part of regularly scheduled renourishment operations.