

Final Independent External Peer Review Report Fire Island Inlet to Montauk Point, New York General Reformulation Report

Prepared by
Battelle Memorial Institute

Prepared for
Department of the Army
U.S. Army Corps of Engineers
Coastal Storm Risk Management Planning Center of Expertise
Baltimore District

Contract No. W912HQ-15-D-0001
Task Order: 0007

November 15, 2016

This page is intentionally left blank.

CONTRACT NO. W912HQ-15-D-0001
Task Order: 0007

Final Independent External Peer Review Report Fire Island Inlet to Montauk Point, New York General Reformulation Report

Prepared by

Battelle
505 King Avenue
Columbus, Ohio 43201

for

Department of the Army
U.S. Army Corps of Engineers
Coastal Storm Risk Management Planning Center of Expertise
Baltimore District

November 15, 2016

This page is intentionally left blank.

Final Independent External Peer Review Report Fire Island Inlet to Montauk Point, New York General Reformulation Report

Executive Summary

PROJECT BACKGROUND AND PURPOSE

The Congressionally authorized study area extends from Fire Island Inlet east to Montauk Point along the Atlantic Coast of Suffolk County, Long Island, New York. The study area includes the barrier island chain from Fire Island Inlet to Southampton inclusive of the Atlantic Ocean shorelines and adjacent back-bay areas along Great South, Moriches, and Shinnecock Bays. The study area continues to the east, including the Atlantic Ocean shoreline along the mainland of Long Island extending from Southampton to Montauk Point. This area includes the entire Atlantic Coast of Suffolk County, covering a shoreline length of approximately 83 miles. The study area also includes over 200 additional miles of shoreline within the estuary system. The study area includes areas on the mainland that are vulnerable to flooding, which generally extend as far landward as Montauk Highway, for an approximate area of 126 square miles.

The study area includes portions of the towns of Babylon, Islip, Brookhaven, Southampton, and Easthampton, as well as 12 incorporated villages, the entirety of Fire Island National Seashore, the Poospatuck Indian Reservation, and the Shinnecock Indian Reservation. The study area contains over 46,000 buildings, including 42,600 homes and more than 3,000 businesses. There are 60 schools, two hospitals, and 21 firehouses and police stations in the study area. Of the buildings within the study area, more than 9,000 fall within the modeled 100-year floodplain (storm with a 1 percent probability of occurring in any given year, based upon current modeling).

The study area functions as a complex, interconnected system. Shoreline areas to the east provide a source of littoral material to the west. The barrier island serves as a protective barrier to the mainland of the estuary, while the tidal inlets serve as conduits for exchange of water between ocean and bay. The inlets alter sediment transport pathways, resulting in erosion to the west, which can compromise the natural beach and dune conditions, and reduce the effectiveness of the barrier islands as a protective feature.

In order to address the problems associated with storm damages in the study area, one must consider the interconnected functioning of the area. Although it is necessary to consider the system as a whole, for presenting the analyses, it is possible to break the area into three distinct regions, or problem areas.

Three distinct regions can be described when assessing the physical conditions and associated problems of coastal storm damage. They are (1) the barrier island segment of the project in the western portion of the study area, (2) the back bay areas behind the barrier island in the western portion of the study area, and (3) the shoreline areas in the eastern portion of the study area. The recommended plan will include

features to sustain the barrier island, reduce vulnerability to breaches, and non-structural proposals for the back bay mainland area.

Independent External Peer Review Process

Independent, objective peer review is regarded as a critical element in ensuring the reliability of scientific analysis. The United States Army Corps of Engineers (USACE) is conducting an Independent External Peer Review (IEPR) of the Fire Island Inlet to Montauk Point, New York General Reformulation Report (hereinafter: FIMP GRR IEPR). As a 501(c)(3) non-profit science and technology organization, Battelle is independent, free from conflicts of interest (COIs), and meets the requirements for an Outside Eligible Organization (OEO) per guidance described in USACE (2012). Battelle has experience in establishing and administering peer review panels for USACE and was engaged to coordinate this IEPR. The IEPR was external to the agency and conducted following USACE and Office of Management and Budget (OMB) guidance described in USACE (2012) and OMB (2004). This final report presents the Final Panel Comments of the IEPR Panel (the Panel). Details regarding the IEPR (including the process for selecting panel members, the panel members' biographical information and expertise, and the charge submitted to the Panel to guide its review) are presented in appendices.

Based on the technical content of the FIMP GRR review documents and the overall scope of the project, Battelle identified potential candidates for the Panel in the following key technical areas: economics/plan formulation, biological resources and environmental law compliance, and coastal engineering. Battelle screened the candidates to identify those most closely meeting the selection criteria and evaluated them for COIs and availability. USACE was given the list of final candidates to confirm that they had no COIs, but Battelle made the final selection of the three-person Panel.

The Panel received electronic versions of the FIMP GRR IEPR review documents (3,839 pages in total), along with a charge that solicited comments on specific sections of the documents to be reviewed. Following guidance provided in USACE (2012) and OMB (2004), USACE prepared the charge questions, which were included in the draft and final Work Plans.

The USACE Project Delivery Team (PDT) briefed the Panel and Battelle during a kick-off meeting held via teleconference at the start of the review to provide the Panel an opportunity to ask questions of USACE and clarify uncertainties. Other than Battelle-facilitated teleconferences, there was no direct communication between the Panel and USACE during the peer review process. The Panel produced individual comments in response to the charge questions.

IEPR panel members reviewed the FIMP GRR documents individually. The panel members then met via teleconference with Battelle to review key technical comments and reach agreement on the Final Panel Comments to be provided to USACE. Each Final Panel Comment was documented using a four-part format consisting of (1) a comment statement; (2) the basis for the comment; (3) the significance of the comment (high, medium/high, medium, medium/low, or low); and (4) recommendations on how to resolve the comment. Overall, 13 Final Panel Comments were identified and documented. Of these, one was identified as having high significance, two were identified as having medium/high significance, eight had a medium significance, and two had medium/low significance.

Results of the Independent External Peer Review

The panel members agreed on their “assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used” (USACE, 2012; p. D-4) in the FIMP GRR review documents. Table ES-1 lists the Final Panel Comment statements by level of significance. The full text of the Final Panel Comments is presented in Section 4.2 of this report. The following summarizes the Panel’s findings.

The Panel recognizes that this project has a long history (having been authorized in 1960) and is therefore dependent on a large, complex volume of documentation and extensive analyses. The USACE project team conducted analyses to attempt to understand the diverse and complex hydrodynamic and sediment processes in play and developed a plan to provide a long-term solution that manages the risk of coastal storm damages. From the plan formulation perspective, the study is also complex, having to meet the needs of local, state, and federal agencies. However, the Panel identified some elements of the project where additional analysis are warranted and places where clarification of project findings and objectives need to be documented in the FIMP GRR.

Plan Formulation and Economics:

The Panel expressed concern that the tentatively selected plan (TSP) assumption of 100 percent homeowner participation in non-structural alternatives may be too optimistic, which will affect the benefit-to-cost ratios. With documentation demonstrating that the 100 percent assumption is achievable and a risk and uncertainty analysis conducted on participation rates, this issue is resolvable. The validity and potential implications of the National Economic Development (NED) TSP assumption that 100 percent of homeowners will participate in voluntary flood-proofing are not well-documented. In addition, the Panel noted that sufficient rationale was not provided for why non-structural alternative 4 was screened out when it had greater net benefits. The Panel recommends providing more explanation in the GRR as to how the non-structural alternatives were evaluated against each other. Finally, the Panel noted a number of places in the GRR and appendices where the text and the tables and figures were not consistent with one another, making it difficult to assess the analyses and alternative formulation process.

Engineering:

One of the Panel’s primary engineering concerns was that the Delft3D model results did not appear to have been validated using data from Hurricane Sandy, which has implications for the level of uncertainty in the model results and, therefore, raises questions about the alternatives selection process. The Panel suggests that the GRR be updated to either reflect that Hurricane Sandy comparisons were made, or explain why such comparisons were not made. Similarly, the Panel found that the Delft3D breaching frequency predictions did not appear to have been compared to historical data. The Panel also observed that the SBEACH model was used to forecast beach profile changes and overtopping potential on a coastline with many tidal inlets and coastal structures, when SBEACH model results are only considered valid for open coasts. To address this issue, the Panel suggests that the GRR could be supplemented with sensitivity analyses that show SBEACH is a valid model choice for the project area, or with an explanation of how the results were applied near inlets or coastal structures. The Panel also noted that the GRR would benefit from an explanation as to why the second-generation HISWA wave model was used rather than the third-generation SWAN wave model. Other issues included a lack of clarity on whether the offshore borrow areas contain enough suitable material, questions about how wave heights

and wave damages were estimated in the back bay areas, and a missing explanation of why shoreline change model results were considered conservative.

Environmental:

The Panel's most significant finding was that the EIS does not contain enough information to confirm that the beach and dune fill management and proposed breach response plans will protect listed species in the project area. The Panel observed that, without a plan to protect the three federally listed species, their habitats and life cycles could be negatively affected by some project activities, creating a takings issue. By proposing implementable mitigation measures and conducting adaptive management, the risk to these species can be greatly reduced. The Panel also noted that the EIS does not have a clearly defined statement on agency purpose and need, which should be revised to ensure the intent of the EIS is clear. In addition, the Panel thought that the Environmental Consequences chapter of the EIS included statements that could not be verified, were incomplete, or were incorrect, making it difficult for the Panel to determine if the alternatives analysis was properly conducted.

Table ES-1. Overview of 13 Final Panel Comments Identified by the FIMP GRR IEPR Panel

No.	Final Panel Comment
Significance – High	
1	The Environmental Impact Statement (EIS) does not provide enough information on the beach and dune fill management plan and proposed breach response plan to determine if the recommendations in the tentatively selected plan (TSP) will protect listed species in the project area and avoid a takings issue.
Significance – Medium/High	
2	The Environmental Consequences chapter of the EIS contains statements that cannot be verified, as well as incomplete or incorrect information.
3	It is not clear why simulations of Hurricane Sandy were not developed for comparison to the Delft3D or SBEACH model results for water levels, waves, overtopping, breaching, and beach profile change.
Significance – Medium	
4	The SBEACH model results are assumed to be valid for open coasts without tidal inlets and coastal structures; however, Appendix A does not explain how the model results were determined to be reasonable in locations where that model assumption may have been violated.
5	The validity and potential implications of the National Economic Development (NED) TSP assumption that 100 percent of homeowners will participate in voluntary flood-proofing are not well-documented.
6	The justification for using a second-generation instead of a third-generation wave model is not provided.
7	The GRR does not fully address whether the identified offshore borrow areas contain sufficient sediment resources needed under higher sea level rise scenarios, or whether additional testing and analysis may warrant elimination of one or more borrow areas.
8	The rationale for screening out non-structural alternative 4 has not been sufficiently presented, especially given that it appears to offer greater risk reduction at a nominally higher price.
9	There are several instances when the text of the main GRR and appendices are not consistent with tables or figures or other areas of the GRR, which could impact project cost estimates or overall conclusions.
10	Appendix A does not describe how wave heights and wave damage were estimated in the back bay areas, given that the HISWA grids do not cover the back bays.
11	It is not clear whether the Delft3D breaching frequency predictions were compared to historical data to determine if the model-based predictions match historical patterns.
Significance – Medium/Low	
12	The EIS does not have a clearly defined statement describing the purpose and need for agency action that meets CEQ regulations.
13	Appendix A does not define how the simple analytical approach used to model shoreline change is considered conservative.

This page is intentionally left blank.

Table of Contents

	Page
Executive Summary	iii
1. INTRODUCTION.....	1
2. PURPOSE OF THE IEPR.....	2
3. METHODS FOR CONDUCTING THE IEPR	2
4. RESULTS OF THE IEPR.....	4
4.1 Summary of Final Panel Comments.....	4
4.2 Final Panel Comments	5
5. REFERENCES.....	24
Appendix A. IEPR Process for the FIMP GRR Project	
Appendix B. Identification and Selection of IEPR Panel Members for the FIMP GRR Project	
Appendix C. Final Charge for the FIMP GRR IEPR	
Appendix D. Conflict of Interest Form	

List of Tables

	Page
Table ES-1. Overview of 13 Final Panel Comments Identified by the FIMP GRR IEPR Panel.....	vii
Table 1. Major Milestones and Deliverables of the FIMP GRR IEPR.....	3

LIST OF ACRONYMS

ADM	Agency Decision Milestone
ATR	Agency Technical Review
BA	Biological Assessment
BO	Biological Opinion
CEQ	Council on Environmental Quality
COI	Conflict of Interest
CWRB	Civil Works Review Board
DrChecks	Design Review and Checking System
EC	Engineer Circular
EIS	Environmental Impact Statement
ER	Engineer Regulation
ERDC	Engineer Research and Development Center
FIIS	Fire Island National Seashore
FIMP	Fire Island Inlet to Montauk Point
FWOP	Future without project
GRR	General Reevaluation Report
IEPR	Independent External Peer Review
IWR	Institute for Water Resources
LTRCMP	Long-term Regional Comprehensive Management Plan
NED	National Economic Development
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NPS	National Park Service
OEO	Outside Eligible Organization
OMB	Office of Management and Budget
PDT	Project Delivery Team
SPCP	Smith Point County Park
SLR	sea level rise
TSP	Tentatively Selected Plan
USACE	United States Army Corps of Engineers
USFWS	United States Fish and Wildlife Services
WRRDA	Water Resources Reform and Development Act

1. INTRODUCTION

The Congressionally authorized study area extends from Fire Island Inlet east to Montauk Point along the Atlantic Coast of Suffolk County, Long Island, New York. The study area includes the barrier island chain from Fire Island Inlet to Southampton inclusive of the Atlantic Ocean shorelines and adjacent back-bay areas along Great South, Moriches, and Shinnecock Bays. The study area continues to the east, including the Atlantic Ocean shoreline along the mainland of Long Island extending from Southampton to Montauk Point. This area includes the entire Atlantic Coast of Suffolk County, covering a shoreline length of approximately 83 miles. The study area also includes over 200 additional miles of shoreline within the estuary system. The study area includes areas on the mainland that are vulnerable to flooding, which generally extend as far landward as Montauk Highway, for an approximate area of 126 square miles.

The study area includes portions of the towns of Babylon, Islip, Brookhaven, Southampton, and Easthampton, as well as 12 incorporated villages, the entirety of Fire Island National Seashore, the Poospatuck Indian Reservation, and the Shinnecock Indian Reservation. The study area contains over 46,000 buildings, including 42,600 homes and more than 3,000 businesses. There are 60 schools, two hospitals, and 21 firehouses and police stations in the study area. Of the buildings within the study area, more than 9,000 fall within the modeled 100-year floodplain (storm with a 1 percent probability of occurring in any given year, based upon current modeling).

The study area functions as a complex, interconnected system. Shoreline areas to the east provide a source of littoral material to the west. The barrier island serves as a protective barrier to the mainland of the estuary, while the tidal inlets serve as conduits for exchange of water between ocean and bay. The inlets alter sediment transport pathways, resulting in erosion to the west, which can compromise the natural beach and dune conditions, and reduce the effectiveness of the barrier islands as a protective feature.

In order to address the problems associated with storm damages in the study area, one must consider the interconnected functioning of the area. Although it is necessary to consider the system as a whole, for presenting the analyses, it is possible to break the area into three distinct regions, or problem areas.

Three distinct regions can be described when assessing the physical conditions and associated problems of coastal storm damage. They are (1) the barrier island segment of the project in the western portion of the study area, (2) the back bay areas behind the barrier island in the western portion of the study area, and (3) the shoreline areas in the eastern portion of the study area. The recommended plan will include features to sustain the barrier island, reduce vulnerability to breaches, and non-structural proposals for the back bay mainland area.

Independent, objective peer review is regarded as a critical element in ensuring the reliability of scientific analysis. The objective of the work described here was to conduct an Independent External Peer Review (IEPR) of the Fire Island Inlet to Montauk Point, New York General Reformulation Report (hereinafter: FIMP GRR IEPR) in accordance with procedures described in the Department of the Army, U.S. Army Corps of Engineers (USACE), Engineer Circular (EC) *Civil Works Review* (EC 1165-2-214)(USACE, 2012) and the Office of Management and Budget (OMB), *Final Information Quality Bulletin for Peer Review* (OMB, 2004). Supplemental guidance on evaluation for conflicts of interest (COIs) was obtained

from the *Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports* (The National Academies, 2003).

This final report presents the Final Panel Comments of the IEPR Panel (the Panel) on the existing engineering, economic, environmental, and plan formulation analyses contained in the FIMP GRR IEPR documents (Section 4). Appendix A describes in detail how the IEPR was planned and conducted, including the complete schedule followed in executing the IEPR. Appendix B provides biographical information on the IEPR panel members and describes the method Battelle followed to select them. Appendix C presents the final charge to the IEPR panel members for their use during the review; the final charge was submitted to USACE in the final Work Plan according to the schedule listed in Table 1. Appendix D presents the organizational conflict of interest form that Battelle completed and submitted to the Institute for Water Resources (IWR) prior to the award of the FIMP GRR IEPR.

2. PURPOSE OF THE IEPR

To ensure that USACE documents are supported by the best scientific and technical information, USACE has implemented a peer review process that uses IEPR to complement the Agency Technical Review (ATR), as described in USACE (2012).

In general, the purpose of peer review is to strengthen the quality and credibility of the USACE decision documents in support of its Civil Works program. IEPR provides an independent assessment of the engineering, economic, environmental, and plan formulation analyses of the project study. In particular, the IEPR addresses the technical soundness of the project study's assumptions, methods, analyses, and calculations and identifies the need for additional data or analyses to make a good decision regarding implementation of alternatives and recommendations.

In this case, the IEPR of the FIMP GRR was conducted and managed using contract support from Battelle, which is an Outside Eligible Organization (OEO) (as defined by EC 1165-2-214). Battelle, a 501(c)(3) organization under the U.S. Internal Revenue Code, has experience conducting IEPRs for USACE.

3. METHODS FOR CONDUCTING THE IEPR

The methods used to conduct the IEPR are briefly described in this section; a detailed description can be found in Appendix A. Table 1 presents the major milestones and deliverables of the FIMP GRR IEPR. Due dates for milestones and deliverables are based on the award/effective date listed in Table 1. Note that the actions listed under Task 6, as well as the public comment review, occur after the submission of this report. Battelle anticipates submitting the pdf printout of the USACE's Design Review and Checking System (DrChecks) project file (the final deliverable) on January 23, 2017. The actual date for contract end will depend on the date that all activities for this IEPR, including Civil Works Review Board (CWRB) preparation and participation, are conducted and subsequently completed.

Table 1. Major Milestones and Deliverables of the FIMP GRR IEPR

Task	Action	Due Date
1	Award/Effective Date	1/11/2016
	Review documents available	7/27/2016
2	Battelle submits list of selected panel members	3/8/2016
	USACE confirms the panel members have no COI	3/11/2016
3	Battelle convenes kick-off meeting with USACE	1/19/2016
	Battelle convenes kick-off meeting with USACE and panel members	8/4/2016
4	Panel members complete their individual reviews	9/1/2016
	Panel members provide draft Final Panel Comments to Battelle	9/20/2016
5	Battelle submits Final IEPR Report to USACE	11/15/2016
4 ^a	Panel completes its review of public comments	11/29/2016
	Panel drafts Final Panel Comment for public comments, if necessary	12/1/2016
5 ^a	Battelle submits Addendum to the Final IEPR Report	12/12/2016
6 ^a	Battelle convenes Comment Response Teleconference with panel members and USACE	1/6/2017
	Battelle submits pdf printout of DrChecks project file to USACE	1/23/2017
	Agency Decision Milestone (ADM) meeting ^b	Est. Dec. 2016
	CWRB Meeting (estimated date) ^b	TBD
	Contract End/Delivery Date	1/30/2017

^a Tasks occur after the submission of this report.

^b The ADM and CWRB meetings were listed in the Performance Work Statement under Task 3 but were relocated in this schedule to reflect the chronological order of activities.

Battelle identified, screened, and selected three panel members to participate in the IEPR based on their expertise in the following disciplines: economics/plan formulation, biological resources and environmental law compliance, and coastal engineering. The Panel reviewed the FIMP GRR document and produced 13 Final Panel Comments in response to 16 charge questions provided by USACE for the review. This charge included two overview questions and one public comment question added by Battelle¹. Battelle instructed the Panel to develop the Final Panel Comments using a standardized four-part structure:

¹ The public comment charge question added by Battelle will be answered by the Panel and be part of the Addendum.

1. Comment Statement (succinct summary statement of concern)
2. Basis for Comment (details regarding the concern)
3. Significance (high, medium/high, medium, medium/low, or low; in accordance with specific criteria for determining level of significance)
4. Recommendation(s) for Resolution (at least one implementable action that could be taken to address the Final Panel Comment).

Battelle reviewed all Final Panel Comments for accuracy, adherence to USACE guidance (EC 1165-2-214, Appendix D), and completeness prior to determining that they were final and suitable for inclusion in the Final IEPR Report. There was no direct communication between the Panel and USACE during the preparation of the Final Panel Comments. The Panel's findings are summarized in Section 4.1; the Final Panel Comments are presented in full in Section 4.2.

4. RESULTS OF THE IEPR

This section presents the results of the IEPR. A summary of the Panel's findings and the full text of the Final Panel Comments are provided.

4.1 Summary of Final Panel Comments

The panel members agreed on their "assessment of the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used" (USACE, 2012; p. D-4) in the FIMP GRR IEPR review documents. The following summarizes the Panel's findings.

The Panel recognizes that this project has a long history (having been authorized in 1960) and is therefore dependent on a large, complex volume of documentation and extensive analyses. The USACE project team conducted analyses to attempt to understand the diverse and complex hydrodynamic and sediment processes in play and developed a plan to provide a long-term solution that manages the risk of coastal storm damages. From the plan formulation perspective, the study is also complex, having to meet the needs of local, state, and federal agencies. However, the Panel identified some elements of the project where additional analysis are warranted and places where clarification of project findings and objectives need to be documented in the FIMP GRR.

Plan Formulation and Economics:

The Panel expressed concern that the tentatively selected plan (TSP) assumption of 100 percent homeowner participation in non-structural alternatives may be too optimistic, which will affect the benefit-to-cost ratios. With documentation demonstrating that the 100 percent assumption is achievable and a risk and uncertainty analysis conducted on participation rates, this issue is resolvable. The validity and potential implications of the National Economic Development (NED) TSP assumption that 100 percent of homeowners will participate in voluntary flood-proofing are not well-documented. In addition, the Panel noted that sufficient rationale was not provided for why non-structural alternative 4 was screened out when it had greater net benefits. The Panel recommends providing more explanation in the GRR as to how the non-structural alternatives were evaluated against each other. Finally, the Panel noted a number of places in the GRR and appendices where the text and the tables and figures were not consistent with one another, making it difficult to assess the analyses and alternative formulation process.

Engineering:

One of the Panel's primary engineering concerns was that the Delft3D model results did not appear to have been validated using data from Hurricane Sandy, which has implications for the level of uncertainty in the model results and, therefore, raises questions about the alternatives selection process. The Panel suggests that the GRR be updated to either reflect that Hurricane Sandy comparisons were made, or explain why such comparisons were not made. Similarly, the Panel found that the Delft3D breaching frequency predictions did not appear to have been compared to historical data. The Panel also observed that the SBEACH model was used to forecast beach profile changes and overtopping potential on a coastline with many tidal inlets and coastal structures, when SBEACH model results are only considered valid for open coasts. To address this issue, the Panel suggests that the GRR could be supplemented with sensitivity analyses that show SBEACH is a valid model choice for the project area, or with an explanation of how the results were applied near inlets or coastal structures. The Panel also noted that the GRR would benefit from an explanation as to why the second-generation HISWA wave model was used rather than the third-generation SWAN wave model. Other issues included a lack of clarity on whether the offshore borrow areas contain enough suitable material, questions about how wave heights and wave damages were estimated in the back bay areas, and a missing explanation of why shoreline change model results were considered conservative.

Environmental:

The Panel's most significant finding was that the EIS does not contain enough information to confirm that the beach and dune fill management and proposed breach response plans will protect listed species in the project area. The Panel observed that, without a plan to protect the three federally listed species, their habitats and life cycles could be negatively affected by some project activities, creating a takings issue. By proposing implementable mitigation measures and conducting adaptive management, the risk to these species can be greatly reduced. The Panel also noted that the EIS does not have a clearly defined statement on agency purpose and need, which should be revised to ensure the intent of the EIS is clear. In addition, the Panel thought that the Environmental Consequences chapter of the EIS included statements that could not be verified, were incomplete, or were incorrect, making it difficult for the Panel to determine if the alternatives analysis was properly conducted.

4.2 Final Panel Comments

This section presents the full text of the Final Panel Comments prepared by the IEPR panel members.

Final Panel Comment 1

The Environmental Impact Statement (EIS) does not provide enough information on the beach and dune fill management plan and proposed breach response plan to determine if the recommendations in the tentatively selected plan (TSP) will protect listed species in the project area and avoid a takings issue.

Basis for Comment

The three federally listed species in the project area (piping plover [*Charadrius melodus*], seabeach amaranth [*Amaranthus pumilus*], and red knot [*Calidris canutus*]) are protected under the ESA, which mandates that any potential impacts on listed species be fully analyzed and a determination reached that the proposed action will not result in a take.

The EIS lacks information on how impacts on listed species using the beach and dune habitat have been and will be monitored during the life of the project and what mitigation measures will be implemented to offset impacts of implementing the TSP. For example, the EIS does not provide the necessary baseline data for these species (e.g., analyses of population trends) to establish their current size or status in the project area. In addition, little information is provided on how USACE will monitor the listed species and their habitats as the TSP is implemented (other than during construction). Without this information, the Panel cannot determine whether the TSP will have an adverse impact on one or more species.

Breach and overwash locations are important natural habitats for many fish and wildlife species, a fact that USACE recognizes in several locations in the EIS (pp. 2-5, 3-4, 4-26) and the appendices (Appendix B, p. B-25; Appendix H, p. H-3). Breaches and overwash areas bring new sediment into the bays that can become new marsh and submerged aquatic vegetation sites used by many species, including the listed piping plover and red knot. However, one feature of the TSP is that breaches would be closed fairly quickly and the project would be constructed so that the chances for overwash would be reduced; however, no rationale is provided for how this satisfies the Vision Statement of the Reformulation Study (EIS, p. ES-6). Among the descriptions of the TSP in the EIS are, “The TSP would reduce the frequency and volume of the barrier overwash and reduce the number of the barrier breaches” (p. ES-11) and “Specific to Fire Island, the Plan recommends that breaches be filled as they occur” (p. 3-78). The Panel believes that the plan to close most or all breaches and constructing dunes designed to reduce the chances for overwash will adversely impact fish and wildlife species.

The agencies charged with reviewing impacts on federally listed species have similar concerns and have requested information that, as far as the Panel can determine, has not been incorporated in the EIS and/or GRR.

- The EIS mentions the U.S. Fish and Wildlife Service’s (USFWS) document, *Significant Habitats and Complexes of the New York Bight Watershed* (USFWS, 1997). This document shows the concerns that the USFWS has with the impacts of dune stabilization and breach management activities on listed species, specifically the piping plover and seabeach amaranth.
- Appendix O of the Reformulation Study Draft EIS includes a January 26, 2016 letter from USFWS detailing ongoing concerns with this project and listed species management, specifically regarding the need for a plan to address the identification and protection of natural breaching and overwash locations as important habitat. The letter stated that, although a collaborative effort to develop a Long-term Regional Comprehensive Management Plan (LTRCMP) for Threatened and

Endangered Species had been begun by USFWS and USACE in the early 2000s, the work on that plan had been discontinued by USACE and not resumed.

- In addition, the letter also notes that the information necessary to “fully assess the project’s impacts to fish and wildlife resources” was not provided and describes a detailed list of information needed, but not yet received, for the USFWS to prepare the Biological Assessment (BA) and the Biological Opinion (BO) (p. 3-5).
- Appendix O of the Reformulation Study Draft also includes a May 3, 2016 letter from the National Marine Fisheries Service (NMFS) that cites a lack of specific information in the EIS, leading to the inability of NMFS to provide “a full evaluation of the direct, indirect, individual and cumulative effects of the actions proposed.” The NMFS letter goes on to state additional information discussed in the letter “will be needed as part of any programmatic consultation.”

Significance – High

As presented in the EIS, the beach and dune fill management plan and proposed breach response for barrier islands in the TSP may negatively impact the habitats and life cycles of the project area’s three listed species.

Recommendation for Resolution

1. Conduct a literature review and compile findings of the impacts on listed species and their habitats arising from the TSP’s beach and dune fill management plan and proposed breach response for barrier islands.
2. Update the EIS to provide additional information on whether it can be determined if the proposed action will or will not result in a take of any federally listed threatened or endangered species.
3. Present the status of the listed species present in the project area in a table in the final report.
4. Develop mitigation measures for listed species and their habitats that will offset impacts of implementing the TSP.
5. Using adaptive management, include annual evaluations of the status of each listed species, and specifies mitigation measures to be taken to avoid the take of a listed species and/or its habitat.

Literature Cited

USFWS (1997). Significant Habitats and Habitat Complexes of the New York Bight Watershed. U.S. Fish and Wildlife Service, Southern New England – New York Bight Coastal Ecosystems Program, Charlestown, Rhode Island. November. Available online at: https://nctc.fws.gov/resources/knowledge-resources/pubs5/web_link/text/toc.htm.

Final Panel Comment 2

The Environmental Consequences chapter of the EIS contains statements that cannot be verified, as well as incomplete or incorrect information.

Basis for Comment

Section 1502.16 of the Council on Environmental Quality (CEQ) regulations describes the information needed to be in compliance with the Environmental Consequences section of an EIS:

- direct effects and their significance
- indirect effects and their significance
- possible conflicts between the proposed action and the objectives of Federal, regional, State, and local (and in the case of a reservation, Indian tribe) land use plans, policies, and controls for the area concerned
- the environmental effects of alternatives, including the proposed action
- means to mitigate adverse environmental impacts.

The following statements in the Environmental Consequences chapter of the EIS are not supported with data or sufficient documentation:

- “Given the intent of this project to reduce the frequency and to reduce the number of the barrier breaches, beneficial topographic and geomorphological effects are anticipated with the Preferred Alternative. These features are still under refinement and will be finalized with the reports” (p. 4-4). Without seeing the final reports, the Panel cannot determine how the plan to close breaches will affect listed species and their habitat.
- “Continual and ongoing maintenance of the existing jetties and dredging activities has led to increased flushing of the bay and mainland wetland systems. This has likely maintained higher salinity levels in certain bay areas than what would occur under more natural conditions if some of the inlets were to close. Therefore, the FWOP condition, particularly in light of projected future sea level rise, would likely result in maintaining or continuing an increase in salinity to surface water resources in certain bays and the freshwater streams” (p. 4-7). This statement makes presumptions not supported by any data, making it impossible to determine the significance of the comment on the future without-project (FWOP) condition.
- “The TSP has been identified as the plan that reasonably balances the policies of the US Army Corps of Engineers and the Department of the Interior, as well as meets the needs from an engineering and economic point of view to restore and enhance the coastal zone of the Project” (p. 4-7). There is no indication or documentation provided that the National Park Service (NPS) supports the TSP.
- “The projected rise in sea level will likely cause other long-term changes to the plant communities within the Project. Increases in water levels within the bays will cause a shift in the plant community zones, especially salt marsh habitat that borders these bays. Zones of low marsh will be inundated and will relocate into zones that were previously occupied by high marsh plant communities. This shift will continue inland resulting in a net decrease in vegetated area” (p. 4-13). The conclusion presented is based on a presumption of “will likely cause” with no evidence presented to support this claim, thus making it an unsubstantiated comment.
- “One of the benefits to finfish that may occur from the increased salinity associated with breach and overwash events, is the potential for more suitable habitat conditions for shellfish predators,

such as sea stars (Class Asteroidea) and oyster drills (*Urosalpinx cinerea* and *Eupleura caudate*), although this benefit would be short-term as all breaches that occur would be expected to be closed within the bay” (p. 4-28). There are no published studies cited in the EIS to support this claim.

- “Gently sloping overwash fans that extend into the back bay marshes provide prime foraging habitat” (p. 4-48). If this is prime plover habitat, then a plan to close breaches and prevent overwashes is likely to adversely affect a federally listed species.
- “EFH in the Atlantic shores and inlets ecosystem including the marine nearshore, marine intertidal, and inlets may benefit from the TSP which would build-up dunes, provide beachfill and beach nourishment, and provide sand bypassing at inlets. These actions would be expected to reduce the potential impacts to the Atlantic shores and inlets ecosystem by reducing barrier island breaching and overwash. The TSP would also reduce the potential impacts associated with the projected rise in sea level” (p. 4-51). There are no published studies cited in the EIS to support this claim. In addition, the statement is qualified by use of the word “may,” thus the benefit to the TSP is not established.
- “The implementation of ebb shoal dredging as part of the sediment management plan may have negative impacts on vegetation such as on seagrass. Changes in bathymetry, current velocity, and increases in turbidity and sedimentation caused by ebb shoal dredging can potentially lead to seagrass loss although the critical threshold and duration of these factors that seagrasses can tolerate varies among species (Erftemeijer & Lewis 2006)” (p. 4-52). It is not clear how dredging of the ebb shoal, which occurs on the seaward side of an inlet, will adversely impact seagrasses in the back bay system.

In addition, the following statements in the Environmental Consequences chapter appear to use incorrect or incomplete information:

- “Short-term impacts, such as the scouring or smothering of intertidal marshes, is considered a negative impact, while there are usually detrimental” (p. 4-28). This is an incomplete sentence so its significance is unknown.
- “Although estuarine organisms may occur as a result of increased saline conditions that occur during barrier island breaching and overwash events, modeling conducted by USACE for the Project indicate that these events would not prevent the fluctuations in salinity and temperature” (p. 4-28). This sentence states both that (1) estuarine organisms may be present if salinity increases as a result of a breach or overwash, and (2) modeling indicates that breaches and overwash do not prevent fluctuations in temperature and salinity. These two observations need to be separate sentences or the connection between them needs to be explained. Their relevance to the back bay finfish and the TSP also needs to be explained.
- “Invertebrates that colonize soft sediment are similar to the nearshore environment, with the highest biomass consisting of polychaete worms (USFWS 2007d)” (p. 4-26). It is not clear how an invertebrate is similar to the nearshore environment.
- “With careful monitoring, negative impacts could be mitigated.” (p. 4-39). Monitoring in and of itself cannot provide mitigation.
- “The placement of sand on the barrier beach has the potential to benefit both the least and common terns which show a distinct preference for nesting on open shorelines, barrier beach dunes, and dredge spoils (USACE 1999)” (p. 4-48). This contradicts the following statement from the USFWS Watershed Study Report: “The U.S. Army Corps of Engineers is considering a range of options for the reformulation of the Fire Island segment of the south shore of Long Island,

including developing an unbroken 15-foot-high dune ridge along the entire length of the island. These actions will result in degradation or loss of beach habitat for rare plants and animals, especially species such as piping plover or terns, which are dependent on overwash and inlet areas.” These differing views on placing sand on the beaches need to be explained.

- In the discussion of species of concern on page 4-49, the red knot is not identified as a federally listed species.

Significance – Medium/High

The Environmental Consequences chapter of the EIS includes statements that cannot be verified, along with several inconsistencies and incomplete information; therefore, it is not possible to determine if the Draft EIS is in compliance with CEQ regulations or if the alternatives analysis was properly conducted.

Recommendation for Resolution

1. Revise the Environmental Consequences chapter to reflect the requirements of CEQ Section 1502.16.
2. Add sufficient scientific references to support the statements made in the chapter to substantiate the stated conclusions.
3. Revise the chapter and provide additional explanation or supporting text to eliminate misstated or incomplete comments.

Final Panel Comment 3

It is not clear why simulations of Hurricane Sandy were not developed for comparison to the Delft3D or SBEACH model results for water levels, waves, overtopping, breaching, and beach profile change.

Basis for Comment

The Delft3D numerical modeling (FLOW, WAVE, MOR modules) conducted for the study provides critical information related to the water levels, waves, and sediment transport (overwash and breaching) associated with potential storm events and the performance of with-project conditions. The Project Delivery Team (PDT) applied information from Delft3D and SBEACH modeling to understanding existing conditions, evaluating project alternatives, and developing the TSP. Ensuring that the Delft3D model can reproduce water levels, waves, and sediment transport from historical storms is critical to increasing the confidence that the model can accurately simulate with-project conditions. Hurricane Sandy is the recent storm of record for the project area and produced elevated water levels and waves that caused significant overwash and breaching in the project area. The storm provides an opportunity to validate the Delft3D and SBEACH models to demonstrate model performance and reduce uncertainty associated with model results, which are critical to the TSP development.

Appendix A, Section 6.1.1.5, mentions that significant data sources exist for the recent Hurricane Sandy, with measured water levels and waves during the storm and measured beach profile data and aerial photographs taken after the storm, which can indicate breach locations (p. A-88). These storm data (water levels, breaking, overtopping, breaching) would allow a robust validation of the Delft3D model performance related to the processes simulated in the model that are critical to the evaluation of alternatives. However, a Hurricane Sandy simulation was not conducted to allow for evaluation of the Delft3D model performance for a recent storm of record with measured data for important storm-induced factors, and the GRR does not explain why. Notably, GRR sub-Appendix A4 details post-Sandy Delft3D simulations designed to show the model can reproduce water levels with the breach present and understand how the breach created during Hurricane Sandy altered bay water levels. However, this sub-Appendix does not include a comparison of Hurricane Sandy measured water levels, waves, breach locations and results from a Delft3D simulation.

Appendix A, Section 6.1.1.5, also describes the Delft3D simulations to demonstrate the model's capability to simulate barrier island overwash and states, "The simulation results are particularly realistic in the case of the 1938 storm, for which more comprehensive topographic data near some of the damaged areas were available. The agreement between simulated peak water levels for both storms and the reported measurements can be considered excellent considering the uncertainty associated with this type of data" (p. A-88). However, no plots of the simulated and historical overwash patterns or water levels are provided in the GRR to evaluate the agreement between model results and historical data. Including plots of the model calibration and validation would strengthen the report and support the use of models for the evaluation of alternatives.

In addition, Appendix A Section 6.1.1.5 states, "Calibration of the SBEACH Model was performed for the FIMP region using available data describing storm-induced beach change. Details of the calibration can be found in Gravens et al (1999)" (p. A-88). However, there is no discussion of SBEACH model validation within the project area. Hurricane Sandy produced wide-spread beach profile changes and a recent strong

storm with available pre- and post-storm profile data and storm water level and wave conditions, which makes the storm a viable validation storm.

Significance – Medium/High

Model validation to the Hurricane Sandy data could influence Delft3D and SBEACH model settings and impact the analyses of the various project alternatives. Without the validation to the recent data set, model results and alternative evaluations would have higher uncertainty associated with them.

Recommendation for Resolution

1. Given that significant data sources for Hurricane Sandy are mentioned as being available, add information to the GRR indicating that the Delft3D and SBEACH Hurricane Sandy model results were compared to historical data and the model produces results comparable to the measured data.
2. If the PDT did not conduct Hurricane Sandy simulations, or results were not compared to measured water level, wave, overwash, breaching, or beach profile changes, discuss why these simulations and comparisons were not deemed necessary and what the potential impact could be on the alternative analyses.

Final Panel Comment 4

The SBEACH model results are assumed to be valid for open coasts without tidal inlets and coastal structures; however, Appendix A does not explain how the model results were determined to be reasonable in locations where that model assumption may have been violated.

Basis for Comment

The SBEACH model results provide critical information related to the understanding of storm-induced beach profile changes, overtopping potential, the design of beach fill templates, and beach fill renourishment needs. These sediment transport processes affect the beach fill design and quantities, which directly relate to project costs and benefits. Appendix A states (p. A-83), “A basic assumption of the SBEACH model is that profile change is produced solely by cross-shore processes, resulting in a redistribution of sediment across the profile with no net gain or loss of material. Longshore transport processes are assumed to be uniform and therefore can be neglected in the calculation of beach profile change. These assumptions are expected to be valid for short-term storm-induced profile responses on open coasts sufficiently removed from the influence of tidal inlets and coastal structures.”

The project area is known to include three inlets and several locations with coastal structures (groins). The inlets can trap sediments and influence local sediment transport, and groins have the potential to interrupt sediment transport. The documentation in the GRR does not indicate how the project team ensured reasonable SBEACH model results for project areas with features that violate the SBEACH model assumptions.

Significance – Medium

When the SBEACH model is used in project areas with features that violate the model’s stated assumptions, model results cannot be assessed if analyses and/or discussion that demonstrate reasonable model performance in these areas is not provided.

Recommendation for Resolution

1. Provide analyses, sensitivity tests, or additional information that demonstrates the SBEACH model produces results in project area locations with features known to violate SBEACH model assumptions and add this information to the GRR.
2. Alternatively, explain in the GRR why these features (inlets and groins) do not violate the SBEACH model assumptions.

Final Panel Comment 5

The validity and potential implications of the National Economic Development (NED) TSP assumption that 100 percent of homeowners will participate in voluntary flood-proofing are not well-documented.

Basis for Comment

The estimated project costs and the projected project benefits are a function of homeowner participation in non-structural alternatives. Non-structural alternatives make up a significant percentage of the project. Table 5.11 of GRR Appendix E states (p. 156) that non-structural benefits are based on 100 percent homeowner participation and heavily support the other components of the project. In order to assess how the 100 percent assumption may affect the benefit-to-cost ratio, the Panel would have expected to see a sensitivity analysis and a risk and uncertainty analysis of the likelihood of participation and the associated locations in terms of distance and elevation from the shore and the related costs involved.

Significance – Medium

Since the benefit-to-cost ratios for the various alternatives presented in the GRR barely exceed 1, the ratio could result in negative benefits, which would affect the project justification.

Recommendation for Resolution

1. Provide documentation that the assumption of 100 percent homeowner participation in non-structural alternatives is attainable and necessary.
2. Provide a risk and uncertainty analysis of the effects that participation rates have on project justification.

Final Panel Comment 6

The justification for using a second-generation instead of a third-generation wave model is not provided.

Basis for Comment

Accurate estimates of wave conditions are important for damage calculations, placement and benefits of non-structural alternatives, and evaluation of wave-induced water level changes. Using the most recently released models, which typically contain updated physics and algorithms, should best define the project costs and benefits and may affect the identification of the TSP. Therefore, a third-generation model would be more advanced than a second-generation one.

Appendix A states (p. A-86) that the second-generation wave model, HISWA was applied in this study. However, the Delft3D modeling system includes a third-generation wave model (SWAN). Appendix A, Figure 6-6, shows a layer of SWAN modeling within the FIMP storm water level modeling and stage-frequency methodology. Figure 9 in the main GRR; however, which is a flow chart of the storm water level modeling methodology, does not include this layer within the methodology.

Significance – Medium

If the most recently released models are not consistently used, the project costs, benefits, and TSP identification may be affected.

Recommendation for Resolution

1. Explain why a third-generation wave model was not applied as part of the Delft3D modeling system.
2. If a third-generation wave model (SWAN) was applied within the analyses, explain which analyses applied the second-generation model (HISWA) and which analyses applied the third-generation wave model (SWAN).

Final Panel Comment 7

The GRR does not fully address whether the identified offshore borrow areas contain sufficient sediment resources needed under higher sea level rise scenarios, or whether additional testing and analysis may warrant elimination of one or more borrow areas.

Basis for Comment

The TSP requires significant sediment quantities, mostly obtained from offshore borrow areas. The GRR (Main Report and Appendix B) does not adequately describe a scenario where the overall beach-compatible sediment quantity is available for the project, nor does it confirm that the identified borrow sources can provide the sediment quantity needed by the project under an increased sea level rise (SLR) scenario.

Appendix B, Table 5, and the associated text (p. B-15) indicate many of the potential borrow sites will require additional cultural resource surveys, sediment transport modeling, and vibracore samples. Table 6 (p. B-16) shows that, based on these additional tests, 25 percent of the material at all borrow sites may be deemed unusable. The GRR does not clearly address how the uncertainty associated with the additional testing could influence suitable sediment quantities or how the 25 percent unusable material factor was developed.

In addition, GRR Section 7.6.1 (p. 147) states that the Bruun Rule analysis for beach nourishment requirements under higher SLR estimates shows additional sediments are needed. However, it does not discuss whether the project area contains sufficient sediment resources to meet the increased need. Should sediments need to be brought from further distances or alternative locations (i.e., quarries), then the beach nourishment costs could change significantly and affect the project economics.

Significance – Medium

If additional offshore sediment resources are required, either because the borrow areas have less available sediment than anticipated or because the increased SLR scenario required more sediment, more expensive sediment sources (e.g., quarries or offshore sources further away from the project area) may need to be used, thereby increasing project costs.

Recommendation for Resolution

1. Provide additional information that describes the uncertainty associated with sediment availability at the borrow sources and how project costs might be affected if additional sediment sources need to be used.
2. If applicable, provide an analysis that shows, even with the known uncertainty, the identified borrow sources contain a sufficient volume of beach quality sediment to meet the project needs.
3. Provide more information on the additional sediment resources needed under the higher SLR scenarios and if the identified borrow sources contain enough beach quality sediment to meet this need.
4. Describe how the 25 percent unusable material factor was developed.

Final Panel Comment 8

The rationale for screening out non-structural alternative 4 has not been sufficiently presented, especially given that it appears to offer greater risk reduction at a nominally higher price.

Basis for Comment

Appendix E, Table 4.19 (p. 81) compares four non-structural alternatives. The annual net benefits are as follows:

- Alternative 1: \$12,736,503
- Alternative 2: \$11,674,536
- Alternative 3: \$9,608,423
- Alternative 4: \$13,540,748.

Table 4.15 (p. 78) indicates that non-structural alternative 4 “protects” approximately 50 percent more structures than non-structural alternative 3 for only a 7 percent increase in annual cost. However, the reasons for screening out non-structural alternative 4 have not been provided. The TSP uses non-structural alternative 3. During the screening process, non-structural alternatives 2 and 3 were carried forward despite their fewer net benefits than non-structural alternative 4. Non-structural alternative 4 is only slightly more costly than non-structural alternative 3 and provides greater risk reduction.

Significance – Medium

The project net benefits could increase by using non-structural alternative 4 because it appears to protect more structures than non-structural alternative 3.

Recommendation for Resolution

1. Provide the basis for screening out non-structural alternative 4.
2. Clarify in the report why non-structural alternatives 2 and 3 were carried forward despite having fewer net benefits than non-structural alternative 4.

Final Panel Comment 9

There are several instances when the text of the main GRR and appendices are not consistent with tables or figures or other areas of the GRR, which could impact project cost estimates or overall conclusions.

Basis for Comment

Inconsistencies both within the GRR and between the GRR and appendices could affect project costs, project benefits, and project optimization. The following are examples of such inconsistencies:

- Main Report, Executive Summary, Table 3: The \$138.4M without-project total damage value seems to be slightly overstated because it is greater than the sum of the itemized numbers. This would indicate higher benefits than there would be if Table 3 were to be corrected.
- Main Report, Executive Summary, Economics Section (results table on p. 18): Net benefits are stated as \$28M, whereas the itemization on that page yields net benefits of \$30M. Table 2 of the Executive Summary also shows net benefits of \$30M (the annualized costs [\$67.2M] and benefits [\$97.2M]).
- Appendix A, Tables 7-39, 7-40, 7-41: These tables all show the same required berm length, but the text discussing the tables indicates different required berm lengths. This could impact project cost estimates.
- Appendix A, Section 7.7.4, Beach Fill Volumes: This section states, “In other words, in reaches where no initial berm is required under a certain plan (e.g., Smith Point County Park (SPCP) or WHPTIN East), no future renourishment volume was assumed” (p. A-278). However, Tables 7-42, 7-43, and 7-44 show renourishment volumes for WHPTIN East. This inconsistency could impact the overall renourishment volumes and conclusions.
- Appendix A, Section 7.7.4, Annual Costs: This section states, “Table 7-48, which presents the net benefits and benefit-cost ratios of the three beach fill alternatives, indicates that when considered over the full length of the study area shoreline, all three alternatives would be cost-effective in reducing storm damage with the +15 ft Plan as the Alternative which maximizes net benefits” (p. A-284). However, Table 7-48 shows the +13 ft and +17 ft beach fill alternatives have negative net benefits for the total project area, which would make them less cost-effective.
- Appendix A, Section 7.8.3 (p. A-347): This section states that Alternatives 2F and 2H have the greatest net benefits (referring to results in Table 7-73). However, Table 7-73 shows Alternative 2E has higher net benefits than Alternative 2H.

Significance – Medium

Without the resolution of inconsistencies within the GRR and within the GRR and its appendices, the Panel cannot entirely assess the economic, environmental, and engineering analyses and formulation of the alternatives, but acknowledges the net benefits of the various alternatives are similar and the adaptive management conducted has been extensive.

Recommendation for Resolution

1. Resolve the inconsistencies within the report and its appendices cited above.

Final Panel Comment 10

Appendix A does not describe how wave heights and wave damage were estimated in the back bay areas, given that the HISWA grids do not cover the back bays.

Basis for Comment

Appendix A, Figure 6.10 (p. A-87), shows regional and local HISWA (wave model) grids. The local grids do not cover the back bay areas. If non-structural alternatives are intended to reduce wave damage, then robust estimates of wave heights should be applied in these back bay areas. Appendix A describes the purpose of applying non-structural alternatives (p. A-213): “Reduction in flooding, erosion, and wave damage would be achieved by modifying structures to a specified design level to lessen risks from these sources of damage.”

The GRR does not clearly explain how robust estimates of wave heights were developed for back bay areas. These robust wave estimates are necessary to understand the potential wave damage and the possible reduction in wave damage offered by the non-structural alternatives.

Significance – Medium

If reasonable wave heights in back bay areas were not applied, then potential wave damages and benefits of non-structural alternatives may be over- or underestimated, which could affect project costs and benefits.

Recommendation for Resolution

1. Describe how wave height estimates were developed in back bay areas given that the HISWA grids did not cover the back bays.
2. If detailed wave modeling was not conducted in the back bay areas, explain why detailed wave modeling was not deemed necessary in those areas.

Final Panel Comment 11

It is not clear whether the Delft3D breaching frequency predictions were compared to historical data to determine if the model-based predictions match historical patterns.

Basis for Comment

The GRR presents historical events that caused breaching along the project shoreline and predictions of breaching frequency based on Delft3D and SBEACH model results.

Appendix A, Table 6-3 (p. A-124), gives combined breaching/overwash frequency values based on the Delft3D modeling. For the baseline conditions, the full breaching return periods show most locations with return period values of >300 years. Appendix A, Section 2.1 (p. A-19), describes historical storms and breaching events during the historical storms. Since 1930, multiple storms have caused multiple breaches along the project shoreline; however, the documentation does not compare the historical breaching rate with the Delft3D model results to see whether the model results align with historical patterns.

Significance – Medium

The breach management options evaluated during the alternatives analysis rely on breach frequency data from Delft3D model simulations, which, if they do not align with the historical breach record, could affect the alternatives assessment and the overall project costs and benefits.

Recommendation for Resolution

1. Provide details on any comparisons made of historical breach events and frequency and the Delft3d model-based breach frequencies in Appendix A, Table 6-3.
2. If comparisons between the historical record and the model results cannot be made, provide details that support the use of the breach frequency results in Appendix A, Table 6-3.

Final Panel Comment 12

The EIS does not have a clearly defined statement describing the purpose and need for agency action that meets CEQ regulations.

Basis for Comment

The CEQ regulations that implement the National Environmental Policy Act (NEPA) require that an EIS include a statement of purpose and need. Section 1502.13 of the CEQ regulations states, “The statement [purpose and need] shall briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action.”

Each agency involved in the proposed action has a subsection in Section 1.2 of the EIS. The USACE New York District’s subsection states, “As such, the purpose and need for the New York District action is to evaluate and recommend a long-term, comprehensive plan to protect these areas from flooding, erosion, and other storm damage, while concurrently maintaining, preserving, or enhancing the natural resources (USACE 2009a)” (p. 1-7). This statement and the rest of the subsection do not describe a purpose and need as specified by CEQ regulations. The EIS states that the goal of the project is to “identify an economically viable, environmentally acceptable plan that addresses the storm damage reduction needs of the Study Area and is acceptable to the key federal, state, and local stakeholders” (p. 1-4). The purpose of the EIS should therefore be the reason for wanting to achieve this goal, and the development of alternatives, including a preferred alternative, that address the needs of the study area and the key stakeholders.

The need for the project should describe the reason why the EIS is being prepared. In the New York District’s purpose and need subsection, the “need” is a statement of what they intend to do, which is to develop a plan to protect areas and resources, instead of the reason why the EIS is being undertaken (the “need”), which is the creation of an alternative that meets the purpose of the EIS.

The other subsections in Section 1.2 present the objectives of the National Park Service (pp. 1-7 and 8), the U.S. Fish and Wildlife Service (USFWS) (p. 1-8), and New York State (p. 1-8) as they relate to the EIS. The purpose and need section of the EIS is intended to be brief and should only include the objectives of other agencies if they are relevant to the purpose and need of the EIS.

Significance – Medium/Low

Without a clearly stated purpose and need statement, the EIS does not fully meet the CEQ requirements and the intent of the EIS is not clear.

Recommendation for Resolution

1. Revise Section 1.2 of the Draft EIS to include a purpose and need statement in the opening paragraph that meets the CEQ definition. A suggested statement to help clarify the Panel’s concern could be as follows:
 - The purpose of this EIS is to identify alternatives that assess the damage from coastal storms and the potential impacts of sea level rise on the densely populated and economically valuable south shore of Long Island, New York. The need for the EIS is to create a plan (the preferred alternative) which balances the risks to human life and property, while maintaining, enhancing, and restoring the natural coastal processes and

ecosystem integrity and is consistent with CEQ Regulations and other applicable federal laws.

2. Clarify the relationship of the agency objectives as they relate to the revised purpose and need in Section 1.2 of the EIS.

Final Panel Comment 13

Appendix A does not define how the simple analytical approach used to model shoreline change is considered conservative.

Basis for Comment

The design and placement of the beach fill projects within the project area is an important part of the alternative analysis and the TSP development. Appendix A states (p. A-391) that the “simple analytical approach” used to model shoreline change is “conservative.” However, it does not define how the simple analytical approach is “conservative,” so it may be considered subjective. For example, it is unclear whether “conservative” means the approach produces high erosion rates, low erosion rates, erosion over a wide longshore area, or some other response. Understanding how the simple analytical approach is conservative provides important information related to the coastal engineering analysis and potentially the TSP features, including the quantity of sediment needed for the project.

Significance – Medium/Low

Without a description of how the approach is conservative, there is insufficient information to analyze and assess the model and its results.

Recommendation for Resolution

1. Provide documentation on the simple analytical approach and explain why it is considered to be conservative.

5. REFERENCES

OMB (2004). Final Information Quality Bulletin for Peer Review. Executive Office of the President, Office of Management and Budget, Washington, D.C. Memorandum M-05-03. December 16.

The National Academies (2003). Policy on Committee Composition and Balance and Conflicts of Interest for Committees Used in the Development of Reports. The National Academies (National Academy of Science, National Academy of Engineering, Institute of Medicine, National Research Council). May 12.

USACE (2012). Water Resources Policies and Authorities: Civil Works Review. Engineer Circular (EC) 1165-2-214. Department of the Army, U.S. Army Corps of Engineers, Washington, D.C. December 15.

USFWS (1997). Significant Habitats and Habitat Complexes of the New York Bight Watershed. U.S. Fish and Wildlife Service, Southern New England – New York Bight Coastal Ecosystems Program, Charlestown, Rhode Island. November. Available online at: https://nctc.fws.gov/resources/knowledge-resources/pubs5/web_link/text/toc.htm.

APPENDIX A

IEPR Process for the FIMP GRR Project

This page is intentionally left blank.

A.1 Planning and Conduct of the Independent External Peer Review (IEPR)

Table A-1 presents the schedule followed in executing the Fire Island Inlet to Montauk Point, New York General Reformulation Report Independent External Peer Review (hereinafter: FIMP GRR IEPR). Due dates for milestones and deliverables are based on the award/effective date listed in Table A-1. The review documents were provided by U.S. Army Corps of Engineers (USACE) on July 27, 2016. Note that the actions listed under Task 6 and activities regarding the public comment review occur after the submission of this report and are described in more detail at the end of this Appendix.

Table A-1. FIMP GRR Complete IEPR Schedule

Task	Action	Due Date
1	Award/Effective Date	1/11/2016
	Review documents available	7/27/2016
	Battelle submits draft Work Plan ^a	2/9/2016
	USACE provides comments on draft Work Plan	2/17/2016
	Battelle submits final Work Plan ^a	8/2/2016
2	Battelle requests input from USACE on the conflict of interest (COI) questionnaire	1/19/2016
	USACE provides comments on COI questionnaire	1/28/2016
	Battelle submits list of selected panel members ^a	3/8/2016
	USACE confirms the panel members have no COI	3/11/2016
	Battelle completes subcontracts for panel members	7/15/2016
3	Battelle convenes kick-off meeting with USACE	1/19/2016
	Battelle sends review documents to panel members	7/28/2016
	Battelle convenes kick-off meeting with panel members	8/2/2016
	Battelle convenes kick-off meeting with USACE and panel members	8/4/2016
	Battelle convenes Mid-Review Teleconference for panel members to ask clarifying questions of USACE	8/18/2016
4 GRR Review	Panel members complete their individual reviews	9/1/2016
	Battelle provides talking points for Panel Review Teleconference to panel members	9/12/2016
	Battelle convenes Panel Review Teleconference	9/12/2016
	Battelle provides Final Panel Comment templates and instructions to panel members	9/13/2016
	Panel members provide draft Final Panel Comments to Battelle	9/20/2016
	Battelle provides feedback to panel members on draft Final Panel Comments; panel members revise Final Panel Comments	9/21 – 9/28/2016
	Panel finalizes Final Panel Comments	9/29/2016
5 GRR Final Report	Battelle provides Final IEPR Report to panel members for review	11/14/2016
	Panel members provide comments on Final IEPR Report	11/15/2016

Task	Action	Due Date
	Battelle submits Final IEPR Report to USACE ^a	11/15/2016
	USACE Planning Center of Expertise (PCX) provides decision on Final IEPR Report acceptance	11/18/2016
4 Public Comments – Review and Final Panel Comments^b	Battelle receives public comments from USACE	11/7/2016
	Battelle sends public comments to Panel	11/16/2016
	Panel completes its review of public comments	11/29/2016
	Battelle and Panel review Panel's responses to public comments	11/30/2016
	Panel drafts Final Panel Comment for public comments, if necessary	12/1/2016
	Panel finalizes Final Panel Comment regarding public comments	12/5/2016
5 Public Comments – Addendum^b	Battelle submits Addendum to the Final IEPR Report ^a	12/12/2016
	USACE PCX provides decision on Addendum to the Final IEPR Report acceptance	12/14/2016
6^b	Battelle inputs Final Panel Comments to DrChecks and provides Final Panel Comment response template to USACE	11/18/2016
	Battelle convenes teleconference with USACE to review the Comment Response process	11/21/2016
	Battelle convenes teleconference with Panel to review the Comment Response process	11/21/2016
	USACE provides draft Project Delivery Team (PDT) Evaluator Responses to Battelle	12/27/2016
	Battelle provides draft PDT Evaluator Responses to panel members	12/28/2016
	Panel members provide draft BackCheck Responses to Battelle	1/3/2017
	Battelle convenes teleconference with panel members to discuss draft BackCheck Responses	1/4/2017
	Battelle convenes Comment Response Teleconference with panel members and USACE	1/6/2017
	USACE inputs final PDT Evaluator Responses to DrChecks	1/13/2017
	Battelle provides final PDT Evaluator Responses to panel members	1/16/2017
	Panel members provide final BackCheck Responses to Battelle	1/19/2017
	Battelle inputs the Panel's final BackCheck Responses in DrChecks	1/20/2017
	Battelle submits pdf printout of DrChecks project file ^a	1/23/2017
	Agency Decision Milestone (ADM) meeting ^c	Est. Dec 2016
	CWRB meeting (estimated date) ^c	TBD
	Contract End/Delivery Date	1/30/2017

^a Deliverable.

^b Tasks occur after the submission of this report

^c The ADM and CWRB meetings were listed in the Performance Work Statement under Task 3 but were relocated in this schedule to reflect the chronological order of activities.

At the beginning of the Period of Performance for the FIMP GRR IEPR, Battelle held a kick-off meeting with USACE to review the preliminary/suggested schedule, discuss the IEPR process, and address any questions regarding the scope (e.g., terminology to use, access to DrChecks, etc.). Any revisions to the schedule were submitted as part of the final Work Plan. The final charge consisted of 16 charge questions provided by USACE, two overview questions and one public comment question¹ added by Battelle (all questions were included in the draft and final Work Plans), and general guidance for the Panel on the conduct of the peer review (provided in Appendix C of this final report).

Prior to beginning their review and after their subcontracts were finalized, all the members of the Panel attended a kick-off meeting via teleconference planned and facilitated by Battelle in order to review the IEPR process, the schedule, communication procedures, and other pertinent information for the Panel. Battelle planned and facilitated a second kick-off meeting via teleconference during which USACE presented project details to the Panel. Before the meetings, the IEPR Panel received an electronic version of the final charge, as well as the review documents and reference/supplemental materials listed in Table A-2 below.

Table A-2. Documents to Be Reviewed and Provided as Reference/Supplemental Information

Review Documents	No. of Review Pages
General Reevaluation Report (GRR)	181
Appendix A: Engineering and Design	950
Appendix B: Borrow Source Invest.	29
Appendix C: Cost Engineering	31
Appendix D and D1: Economics (Benefits and Recreation)	109
Appendix E: Plan Formulation	185
Appendix F: Real Estate	215
Appendix G: Public Access	55
Appendix H: Land Devel. and Mgmt.	14
Appendix I: Physical Monitoring	67
Appendix J: OMRR&R	196
Appendix K: Adaptive Management	24
Appendix L: Correspondence	95
Environmental Impact Statement (EIS)	345
Appendices A-Q	868

¹ The public comment charge question added by Battelle will be answered by the Panel and be part of the Addendum.

Review Documents	No. of Review Pages
Public Comments ^a	475
Total number of pages to be reviewed	3,839
Supplemental Information	
Sub-Appendix A1: Baseline Conditions--Storm Surge Modeling and Stage Frequency Generation Report	494
FIMP GRR Decision Log	2
FIMP GRR Decision Management Plan	7
FIMP GRR Risk Register	2
FIMP District Quality Control (DQC) Certification	38
FIMP Report Synopsis for Tentatively Selected Plan (TSP) Milestone	41
FIMP TSP Meeting Memorandum for the Record	2
FIMP Project Study Issue Checklist	2
Total number of pages provided for reference	588

^a A separate Addendum to the Final Report will be submitted to document the public comment review.

In addition to the materials provided in Table A-2, the panel members were provided the following USACE guidance documents.

- USACE guidance *Civil Works Review* (EC 1165-2-214, December 15, 2012)
- Office of Management and Budget’s *Final Information Quality Bulletin for Peer Review* (December 16, 2004)
- USACE Climate Change Adaptation Plan (June 2014)

About halfway through the review, a teleconference was held with USACE, Battelle, and the Panel so that USACE could answer any questions the Panel had concerning either the review documents or the project. Prior to this teleconference, Battelle submitted 21 panel member questions to USACE. USACE was able to provide responses to some of the questions during the teleconference, and was able to provide written responses to the remaining questions prior to the end of the review.

A.2 Review of Individual Comments

The Panel was instructed to address the charge questions/discussion points within a charge question response form provided by Battelle. At the end of the review period, the Panel produced individual comments in response to the charge questions/discussion points. Battelle reviewed the comments to identify overall recurring themes, areas of potential conflict, and other overall impressions. At the end of the review, Battelle summarized the individual comments into a preliminary list of overall comments and discussion points. Each panel member’s individual comments were shared with the full Panel.

A.3 IEPR Panel Teleconference

Battelle facilitated a teleconference with the Panel so that the panel members could exchange technical information. The main goal of the teleconference was to identify which issues should be carried forward as Final Panel Comments in the Final IEPR Report and decide which panel member should serve as the lead author for the development of each Final Panel Comment. This information exchange ensured that the Final IEPR Report would accurately represent the Panel's assessment of the project, including any conflicting opinions. The Panel engaged in a thorough discussion of the overall positive and negative comments, added any missing issues of significant importance to the findings, and merged any related individual comments. At the conclusion of the teleconference, Battelle reviewed each Final Panel Comment with the Panel, including the associated level of significance, and confirmed the lead author for each comment.

A.4 Preparation of Final Panel Comments

Following the teleconference, Battelle distributed a summary memorandum for the Panel documenting each Final Panel Comment (organized by level of significance). The memorandum provided the following detailed guidance on the approach and format to be used to develop the Final Panel Comments for the FIMP GRR IEPR:

- **Lead Responsibility:** For each Final Panel Comment, one Panel member was identified as the lead author responsible for coordinating the development of the Final Panel Comment and submitting it to Battelle. Battelle modified lead assignments at the direction of the Panel. To assist each lead in the development of the Final Panel Comments, Battelle distributed a summary email detailing each draft final comment statement, an example Final Panel Comment following the four-part structure described below, and templates for the preparation of each Final Panel Comment.
- **Directive to the Lead:** Each lead was encouraged to communicate directly with the other panel member as needed and to contribute to a particular Final Panel Comment. If a significant comment was identified that was not covered by one of the original Final Panel Comments, the appropriate lead was instructed to draft a new Final Panel Comment.
- **Format for Final Panel Comments:** Each Final Panel Comment was presented as part of a four-part structure:
 1. Comment Statement (succinct summary statement of concern)
 2. Basis for Comment (details regarding the concern)
 3. Significance (high, medium/high, medium, medium/low, and low; see description below)
 4. Recommendation(s) for Resolution (see description below).
- **Criteria for Significance:** The following were used as criteria for assigning a significance level to each Final Panel Comment:
 1. **High:** Describes a fundamental issue with the project that affects the current recommendation or justification of the project, and which will affect its future success, if the project moves forward without the issue being addressed. Comments rated as high indicate

that the Panel determined that the current methods, models, and/or analyses contain a “showstopper” issue.

2. **Medium/High:** Describes a potential fundamental issue with the project, which has not been evaluated at a level appropriate to this stage in the SMART Planning process. Comments rated as medium/high indicate that the Panel analyzed or assessed the methods, models, and/or analyses available at this stage in the SMART Planning process and has determined that if the issue is not addressed, it could lead to a “showstopper” issue.
 3. **Medium:** Describes an issue with the project, which does not align with the currently assessed level of risk assigned at this stage in the SMART Planning process. Comments rated as medium indicate that, based on the information provided, the Panel identified an issue that would raise the risk level if the issue is not appropriately addressed.
 4. **Medium/Low:** Affects the completeness of the report at this time in describing the project, but will not affect the recommendation or justification of the project. Comments rated as medium/low indicate that the Panel does not currently have sufficient information to analyze or assess the methods, models, or analyses.
 5. **Low:** Affects the understanding or accuracy of the project as described in the report, but will not affect the recommendation or justification of the project. Comments rated as low indicate that the Panel identified information that was mislabeled or incorrect or that certain data or report section(s) were not clearly described or presented.
- Guidelines for Developing Recommendations: The recommendation section was to include specific actions that USACE should consider to resolve the Final Panel Comment (e.g., suggestions on how and where to incorporate data into the analysis, how and where to address insufficiencies, areas where additional documentation is needed).

Battelle reviewed and edited the Final Panel Comments for clarity, consistency with the comment statement, and adherence to guidance on the Panel’s overall charge, which included ensuring that there were no comments regarding either the appropriateness of the selected alternative or USACE policy. At the end of this process, 13 Final Panel Comments were prepared and assembled. There was no direct communication between the Panel and USACE during the preparation of the Final Panel Comments. The full text of the Final Panel Comments is presented in Section 4.2 of the main report.

A.5 Final IEPR Report

After concluding the review and preparation of the Final Panel Comments, Battelle prepared a final IEPR report (this document) on the overall IEPR process and the IEPR panel members’ findings (this document). Each panel member and Battelle technical and editorial reviewers reviewed the IEPR report prior to submission to USACE for acceptance.

A.6 Comment Response Process

As part of Task 6, Battelle will enter the 13 Final Panel Comments (and any Final Panel Comments associated with the public comment review) developed by the Panel into USACE’s Design Review and Checking System (DrChecks), a Web-based software system for documenting and sharing comments on

reports and design documents, so that USACE can review and respond to them. USACE will provide responses (Evaluator Responses) to the Final Panel Comments, and the Panel will respond (BackCheck Responses) to the Evaluator Responses. All USACE and Panel responses will be documented by Battelle. Battelle will provide USACE and the Panel a pdf printout of all DrChecks entries, through comment closeout, as a final deliverable and record of the IEPR results.

This page is intentionally left blank.

APPENDIX B

Identification and Selection of IEPR Panel Members for the
FIMP GRR Project

This page is intentionally left blank.

B.1 Panel Identification

The candidates for the Fire Island Inlet to Montauk Point, New York General Reformulation Report (hereinafter: FIMP GRR IEPR) Panel were evaluated based on their technical expertise in the following key areas: economics/plan formulation, biological resources and environmental law compliance, and coastal engineering. These areas correspond to the technical content of the review documents and overall scope of the FIMP GRR project.

To identify candidate panel members, Battelle reviewed the credentials of the experts in Battelle’s Peer Reviewer Database, sought recommendations from colleagues, contacted former panel members, and conducted targeted Internet searches. Battelle evaluated these candidate panel members in terms of their technical expertise and potential conflicts of interest (COIs). Of these candidates, Battelle chose the most qualified individuals, confirmed their interest and availability, and ultimately selected three experts for the final Panel. The remaining candidates were not proposed for a variety of reasons, including lack of availability, disclosed COIs, or lack of the precise technical expertise required.

Candidates were screened for the following potential exclusion criteria or conflicts of interest (COIs). These COI questions were intended to serve as a means of disclosure in order to better characterize a candidate’s employment history and background. Battelle evaluated whether scientists in universities and consulting firms that are receiving USACE-funding have sufficient independence from USACE to be appropriate peer reviewers. Guidance in OMB (2004, p. 18) states,

“...when a scientist is awarded a government research grant through an investigator-initiated, peer-reviewed competition, there generally should be no question as to that scientist's ability to offer independent scientific advice to the agency on other projects. This contrasts, for example, to a situation in which a scientist has a consulting or contractual arrangement with the agency or office sponsoring a peer review. Likewise, when the agency and a researcher work together (e.g., through a cooperative agreement) to design or implement a study, there is less independence from the agency. Furthermore, if a scientist has repeatedly served as a reviewer for the same agency, some may question whether that scientist is sufficiently independent from the agency to be employed as a peer reviewer on agency-sponsored projects.”

Panel Conflict of Interest (COI) Screening Statements for the IEPR of the Fire Island Inlet to Montauk Point, New York General Reformulation Report

1. Previous and/or current involvement by you or your firm¹ in the Fire Island Inlet to Montauk Point, New York General Reformulation Report
2. Previous and/or current involvement by you or your firm¹ in flood control, coastal storm damage reduction or ecosystem restoration studies in Suffolk County, Long Island, New York
3. Previous and/or current involvement by you or your firm¹ in Fire Island Inlet to Montauk Point, New York General Reformulation Report related projects.

¹Note: Includes any joint ventures in which the candidate’s firm is involved and if the candidate’s firm serves as a prime or as a subcontractor to a prime.

Panel Conflict of Interest (COI) Screening Statements for the IEPR of the Fire Island Inlet to Montauk Point, New York General Reformulation Report

4. Previous and/or current involvement by you or your firm¹ in the conceptual or actual design, construction, or operation and maintenance (O&M) of any projects associate with the Fire Island Inlet to Montauk Point, New York General Reformulation Report.
5. Current employment by the U.S. Army Corps of Engineers (USACE).
6. Previous and/or current involvement with paid or unpaid expert testimony related to the Fire Island Inlet to Montauk Point, New York General Reformulation Report.
7. Previous and/or current employment or affiliation with members of the cooperating agencies or local sponsors: New York State Department of Environmental Conservation; Towns of Babylon, Islip, Brookhaven, Southampton and Easthampton; Fire Island National Seashore (FIIS); the Poospatuck Indian Reservation; and the Shinnecock Indian Reservation (for pay or pro bono).
8. Past, current, or future interests or involvements (financial or otherwise) by you, your spouse, or your children related to Suffolk County, Long Island, New York
9. Current personal involvement with other USACE projects, including whether involvement was to author any manuals or guidance documents for USACE. If yes, provide titles of documents or description of project, dates, and location (USACE district, division, Headquarters, ERDC, etc.), and position/role. Please highlight and discuss in greater detail any projects that are specifically with the New York and/or the New England Districts.
10. Previous or current involvement with the development or testing of models that will be used for, or in support of the project.
11. Current firm¹ involvement with other USACE projects, specifically those projects/contracts that are with the New York District. If yes, provide title/description, dates, and location (USACE district, division, Headquarters, ERDC, etc.), and position/role. Please also clearly delineate the percentage of work you personally are currently conducting for the New York and/or the New England Districts. Please explain.
12. Any previous employment by USACE as a direct employee, notably if employment was with the New York and/or the New England Districts. If yes, provide title/description, dates employed, and place of employment (district, division, Headquarters, ERDC, etc.), and position/role.
13. Any previous employment by USACE as a contractor (either as an individual or through your firm¹) within the last 10 years, notably if those projects/contracts are with the New York and/or the New England Districts. If yes, provide title/description, dates employed, and place of employment (district, division, Headquarters, ERDC, etc.), and position/role.
14. Previous experience conducting technical peer reviews. If yes, please highlight and discuss any technical reviews concerning flood control, coastal storm damage reduction or ecosystem restoration studies, and include the client/agency and duration of review (approximate dates).
15. Pending, current, or future financial interests in Fire Island Inlet to Montauk Point, New York General Reformulation Report related contracts/awards from USACE.

Panel Conflict of Interest (COI) Screening Statements for the IEPR of the Fire Island Inlet to Montauk Point, New York General Reformulation Report

16. Significant portion of your personal or office's revenues within the last three years came from USACE contracts.
17. Significant portion of your personal or office's revenues within the last three years came from Suffolk County, Long Island, New York contracts.
18. Any publicly documented statement (including, for example, advocating for or discouraging against) related to the Fire Island Inlet to Montauk Point, New York General Reformulation Report
19. Participation in relevant prior and/or current Federal studies relevant to this project and/or Fire Island Inlet to Montauk Point, New York General Reformulation Report
20. Previous and/or current participation in prior non-Federal studies relevant to this project and/or Fire Island Inlet to Montauk Point, New York General Reformulation Report

Providing a positive response to a COI screening question did not automatically preclude a candidate from serving on the Panel. For example, participation in previous USACE technical peer review committees and other technical review panel experience was included as a COI screening question. A positive response to this question could be considered a benefit.

B.2 Panel Selection

In selecting the final members of the Panel, Battelle chose experts who best fit the expertise areas and had no COIs. Table B-1 provides information on each panel member's affiliation, location, education, and overall years of experience. Battelle established subcontracts with the panel members when they indicated their willingness to participate and confirmed the absence of COIs through a signed COI form. USACE was given the list of candidate panel members, but Battelle selected the final Panel.

Table B-1. FIMP GRR IEPR Panel: Summary of Panel Members

Name	Affiliation	Location	Education	P.E.	Exp (yrs)
Economics/Plan Formulation					
David Bastian	Independent consultant	Annapolis, MD	M.S., river engineering	Yes	35
Biological Resources and Environmental Law Compliance					
Kris Thoemke	Coastal Engineering Consultants (CEC)	Naples, FL	Ph.D., zoology	N/A	36
Coastal Engineering					
Chris Bender	Taylor Engineering, Inc.	Jacksonville, FL	Ph.D., coastal engineering	Yes	13

Table B-2 presents an overview of the credentials of the three members of the Panel and their qualifications in relation to the technical evaluation criteria. More detailed biographical information regarding each panel member and his area of technical expertise is given in Section B.3.

Table B-2. FIMP GRR IEPR Panel: Technical Criteria and Areas of Expertise

Technical Criterion	Bastian	Thoemke	Bender
Economics/Plan Formulation			
Minimum 10 years of demonstrated experience in public works planning	X		
Familiar with large, complex Civil Works projects with high public and interagency interests	X		
Experience related to evaluating traditional Civil Works plan benefits associated with hurricane and coastal storm risk management projects	X		
Familiar with evaluation of alternative plans for hurricane and coastal storm risk management projects and ecosystem restoration	X		
Familiar with USACE plan formulation standards and procedures	X		
Capable of evaluating traditional National Economic Development (NED) plan benefits associated with hurricane and coastal storm risk management	X		
Experience working with:			
Hydrologic Engineering Center’s Flood Damage Reduction Analysis (HEC-FDA) model	X		
USACE Beach-fx model	X		
Biological Resources and Environmental Law Compliance			

Technical Criterion	Bastian	Thoenke	Bender
Minimum 15 years of demonstrated experience directly related to water resource environmental evaluation or review and National Environmental Policy Act (NEPA) compliance		X	
Familiar with large, complex Civil Works projects with high public and interagency interests		X	
Experience in describing and evaluating complex relationships and dynamics of coastal ecosystems		X	
Experience assessing the consequences of altering environmental conditions, particularly projects in urbanized coastal areas		X	
Familiar with the habitat and the fish and wildlife species that may be affected by the project alternatives along the northeastern U.S.		X	
Experience with:			
U.S. Fish and Wildlife Service Habitat Evaluation Procedure (HEP)		X	
Endangered Species Act (ESA)		X	
Essential fish habitat (EFH)		X	
Marine Mammals Protection Act (MMPA)		X	
M.S. degree or higher in a related field		X	
Coastal Engineering			
Minimum 10 years of experience in coastal and hydraulic engineering			X
Familiar with large, complex Civil Works projects with high public and interagency interests			X
Extensive experience in estuarine systems			X
Familiar with USACE applications of standard USACE coastal, hydrologic and hydraulic computer models such as:			
Coastal Modeling System Wave (CMS)			X
Steady State Spectral WAVE (STWAVE)			X
Advanced Circulation (ADCIRC)			X
Spreadsheet models for storm damages on bulkheads and structures behind them			X
Familiar with the USACE application of risk and uncertainty analyses in coastal storm risk management projects, particularly projects in urbanized coastal areas.			X
Capable of addressing the USACE Safety Assurance Review aspects of all projects per Engineer Circular (EC) 1165-2-214, Appendix D, Para. 2.c(3)			X
M.S. degree or higher in engineering			X
Registered professional engineer (P.E.)			X

B.3 Panel Member Qualifications

Detailed biographical information on each panel members' credentials and qualifications and areas of technical expertise are summarized in the following paragraphs.

David Bastian, P.E.

Role: Economic and plan formulation expert

Affiliation: Independent Consultant/David Bastian Consulting

Mr. Bastian is an independent consultant and P.E. for David Bastian Consulting in Annapolis, Maryland, specializing in USACE compliance and policy review, plan formulation and incremental cost analysis, flood risk reduction, and hydraulic and river engineering. He earned his B.S. in civil engineering from the Georgia Institute of Technology and a M.S. in river engineering from Delft University, Holland.

Mr. Bastian has over 35 years of experience with USACE and as contractor/consultant on USACE projects involving feasibility studies and public works planning, all based on the USACE six-step planning process. As a reviewer at USACE, Headquarters, he became familiar with and has direct experience with Engineer Regulation (ER) 1105-2-100 as well as other USACE engineering regulations, manuals, and pamphlets. He co-authored the USACE Planner's Workshop Manual. His project history has resulted in his review of and collaboration on over 100 USACE reports evaluating and comparing alternative plans.

Mr. Bastian has 20 years of experience in coastal economics evaluation and flood risk evaluation. He has direct experience in identifying and evaluating flood risk, including nine years involved in the coastal economic evaluation for coastal Louisiana restoration, the greater New Orleans hurricane and storm damage risk reduction system, and four other study areas along the Louisiana and Texas coasts. He is familiar with large, complex Civil Works projects with high public and interagency interests through his extensive involvement with the Louisiana Coastal Study area pre- and post-Hurricane Katrina. Additionally, he has spent four years working for the greater New Orleans Hurricane and Storm Damage Risk Reduction System, planning and constructing the 133-mile levee, floodwall, and massive pumping system.

Mr. Bastian is familiar with USACE coastal storm damage reduction projects and has evaluated and conducted NED analysis procedures, particularly as they relate to hurricane and coastal storm damage risk reduction, through his participation on the following related projects. He managed the hydrologic and hydraulic studies and contributed to the draft Donaldsonville to the Gulf hurricane risk reduction feasibility study report and the draft Larose to Golden Meadow hurricane risk reduction feasibility study report. He reviewed the Morganza to the Gulf hurricane risk reduction feasibility study report. He prepared and collaborated on many of the project description documents (mini-feasibility decision documents) required for the segments that make up the New Orleans Hurricane and Storm Damage Risk Reduction system. Additionally, he participated in and was recognized for his work on the Louisiana Coastal Protection and Restoration study, where he assisted in writing the report and managing the application of surge model studies. Mr. Bastian is familiar with USACE flood risk and hurricane/coastal damage risk reduction analysis and economic benefit calculations, including the use of standard USACE computer programs such as HEC's Flood Impact Analysis (HEC-FIA) modeling program. He has reviewed HEC-FIA and other model applications and their outputs for several flood risk reduction projects for technical economic justification. Mr. Bastian is also familiar with the use and application of BEACH-fx models.

Mr. Bastian's previous employment at USACE included positions as Deputy Chief of Staff for Support, Office Chief of Engineers; Assistant Director of Civil Works, Office Chief of Engineers; technical and policy compliance review expert, Washington Level Review Center; and navigation research, USACE Institute for Water Resources. He has served as a USACE Washington-level technical and policy compliance review expert and managed interdisciplinary reviews of over 70 feasibility reports.

Mr. Bastian's participation in professional societies includes the American Society of Civil Engineers (ASCE), the American Association of Port Authorities, the Permanent International Association of Navigation Congresses, and the Western Dredging Association.

Kris Thoenke, CEP, Ph.D.

Role: Biology and ecology expert

Affiliation: Coastal Engineering Consultants, Inc.

Dr. Thoenke is a Senior Scientist for Coastal Engineering Consultants, Inc. He received his Ph.D. in biology from the University of South Florida in 1979 and is a Certified Environmental Professional (CEP). He has 36 years of experience as a professional ecologist in South Florida; has been a researcher and land manager for the State of Florida, a private ecological consultant, an environmental and outdoor communicator, and an Everglades project manager for a non-profit organization; and teaches undergraduate- and graduate-level environmental management, fisheries management, and fish and wildlife policy and management courses for the American Public University System.

For the past eight years as an environmental consultant, Dr. Thoenke has conducted marine and estuarine environmental assessments (EAs), environmental permitting, and listed species surveys along the Atlantic and Gulf coasts in Florida. His experience with wetlands and estuarine ecosystems includes his Ph.D. work on estuarine invertebrates; 11 years as manager of Rookery Bay National Estuarine Research Reserve in Naples, Florida; four years as a wetlands ecologist conducting Everglades restoration work; and seven years as a wetlands and estuarine consultant.

Dr. Thoenke is familiar with large, complex Civil Works projects with high public and interagency interests. His direct experience includes his work as a wetland scientist on the Florida Everglades restoration program, ongoing involvement as the environmental scientist for the Charlotte County Florida Erosion Control Project for Stump Pass, and participation on a team working on large Civil Works restoration projects for the State of Louisiana in the Mississippi Delta region.

Dr. Thoenke's experience with construction impacts on marine and terrestrial ecology of coastal regions and characterization of benthic communities includes identifying and assessing construction impacts to seagrass, mangrove, shorebird, and dune plant communities at Stump Pass and Blind Pass, Florida, and gopher tortoise habitat at Clam Pass and Vanderbilt Beach Parks, Florida. His Ph.D. research focused on estuarine benthic invertebrates, and he has more than 30 years of experience characterizing benthic communities. He also has extensive experience permitting and mitigating for construction impacts resulting from coastal and upland development, including assessing and monitoring impacts to beach and dune systems, nesting sea turtles, shorebirds, and upland listed species found in the coastal and beach/dune habitats. In addition, he has conducted post-storm analysis of beach and dune systems.

Dr. Thoenke is familiar with all National Environmental Policy Act (NEPA) and environmental impact statement (EIS) requirements. He gained experience with environmental policies and processes by preparing reports and by serving on IEPR panels, including the Walton County, Florida, Hurricane and Storm Reduction Feasibility Report and Draft Environmental Assessment, and the Central Everglades Planning Project Draft Project Implementation Report and EIS.

Dr. Thoenke was a member of an integrated team of scientists and engineers that prepared the EIS for the Terrebonne Basin Barrier Island Shoreline Restoration Project, Louisiana, including Endangered Species Act (ESA), essential fish habitat (EFH), and NEPA requirements. In addition, he has reviewed EISs and EAs for other coastal restoration projects in the Mississippi Delta. Dr. Thoenke was project manager on the Port Everglades Ocean Dredged Material Disposal Site Environmental Assessment, which included Marine Mammals Protection Act (MMPA) listed species. In addition, he has completed Section 7 assessments for listed species under National Marine Fisheries Service jurisdiction for projects in several south Florida locations, and he coordinated with U.S. Fish and Wildlife Service (USFWS) to prepare an updated Biological Opinion for swimming sea turtles and shorebirds on Marco Island, Florida. He has provided EFH consultation to several projects and continues to prepare EFH studies for marine and estuarine species as a part of his permitting work. Dr. Thoenke is a member of the National Association of Environmental Professionals and is a member and Chairman of the Certification Review Board of the Academy of Board Certified Environmental Professionals.

Chris Bender, P.E., D. CE, Ph.D.

Role: Coastal engineering expert

Affiliation: Taylor Engineering, Inc.

Dr. Bender is a senior engineer in the coastal engineering group at Taylor Engineering, Inc. He earned a Ph.D. in coastal engineering from the University of Florida in 2003 and is a registered professional engineer in Florida and Mississippi. He leads much of Taylor Engineering's simulations and evaluations of hurricane surges, wave mechanics and loading, littoral processes, shoreline stability and protection, beach renourishment, and sediment transport. He has also served as an adjunct professor at the University of North Florida since 2009, teaching coastal engineering and processes classes. His experience includes large urban coastal risk reduction engineering projects and shore protection projects and designs in Florida and coastal storm surge studies in the southeastern U.S., New York, New Jersey and the Gulf of Mexico. Studies include the Federal Emergency Management Agency (FEMA) Region IV Coastal Storm Surge Update Studies in South Carolina, Georgia, Northeast Florida, and East Coast Central Florida and the Nuclear Regulatory Commission (NRC) Evaluation of Coastal Storm Surge for Nuclear Power Plants. Dr. Bender has also served on USACE IEPR panels as the coastal engineering discipline expert for coastal storm damage reduction studies for the Hereford Inlet to Cape May Inlet, New Jersey Hurricane and Coastal Storm Damage Risk Reduction Project Draft Feasibility Report and Environmental Assessment Statement and the Surf City and North Topsail Beach Integrated Feasibility Report and Environmental Impact Statement.

Dr. Bender is familiar with USACE coastal, hydrologic and hydraulic computer models, and has extensive experience setting up, executing and post-processing results in USACE coastal models including Coastal Modeling System (CMS), Steady State Spectral WAVE (STWAVE), Advanced Circulation (ADCIRC), Storm-induced Beach Change Model (SBEACH), Beach-fx, Simulating Waves Nearshore model (SWAN),

Generalized Model for Simulating Shoreline Change (GENESIS), and Coastal Engineering Design and Analysis System (CEDAS) for several projects. He has worked with the CMS system and models and the Surface Water Modeling (SMS) software system. During recent studies, he has applied STWAVE for nearshore and offshore spectral wave modeling and ADCIRC to simulate storm surge levels, with efforts during the entire modeling process: grid development, model validation, storm simulation, and processing of model results. Dr. Bender has applied spreadsheet models for wave growth, wave runup, and wave overtopping along Louisiana coastal levees and during evaluation of storm surge hazard at NRC nuclear sites. He is also familiar with the Generalized Risk and Uncertainty Coastal Plan (GRANDUC model) and has successfully applied these models to many locations from Florida to Texas.

Dr. Bender is familiar with risk and uncertainty analyses for coastal storm risk management projects, participating in such studies as the development of general reevaluation report (GRR) and limited reevaluation report (LRR) documents for the Ft. Pierce, Florida Shore Protection Project; GRR document for the Panama City Beaches, Florida Shore Protection Project; and Feasibility Study for the Walton County Project. The projects applied USACE models to define damages and benefits and NED aspects of project alternatives. Efforts on the various projects included storm damage modeling, alternative development, alternative analysis, and NED plan selection. He also worked with a team of experts to develop risk-based methodology to calculate revised coastal storm surge and wave estimates for the Joint USACE/FEMA Coastal Storm Surge Studies along the Louisiana and Texas coasts. He also participated in projects to develop revised coastal storm surge and wave estimates for FEMA Coastal Storm Surge Studies along the South Carolina, Georgia, and east Florida coasts.

Dr. Bender is capable of addressing the USACE Safety Assurance Review (SAR) requirements and has conducted SAR review in support of such studies as the Shore Protection Projects (SPP) in Martin County and St. Lucie County, Florida. He has also authored or co-authored numerous publications on nearshore wave transformation, coastal processes, and simulation of nearshore waves. His involvement on the Fort Pierce, Florida LRR and GRR projects, the Nassau County, Florida GRR, and the Panama City Beaches, Florida GRR project included working with the USACE application of risk and uncertainty analyses in coastal storm damage reduction studies.

This page is intentionally left blank.

APPENDIX C

Final Charge for the FIMP GRR IEPR

This page is intentionally left blank.

Charge Questions and Guidance to the Panel Members for the Independent External Peer Review (IEPR) of the Fire Island Inlet to Montauk Point, New York General Reformulation Report

This is the final Charge to the Panel for the FIMP GRR. This final Charge was submitted to USACE as part of the final Work Plan, originally submitted on August 2, 2016.

BACKGROUND

The Congressionally authorized study area extends from Fire Island Inlet east to Montauk Point along the Atlantic Coast of Suffolk County, Long Island, New York. The study area includes the barrier island chain from Fire Island Inlet to Southampton inclusive of the Atlantic Ocean shorelines and adjacent back-bay areas along Great South, Moriches, and Shinnecock Bays. The study area continues to the east, including the Atlantic Ocean shoreline along the mainland of Long Island extending from Southampton to Montauk Point. This area includes the entire Atlantic Coast of Suffolk County, covering a shoreline length of approximately 83 miles. The study area also includes over 200 additional miles of shoreline within the estuary system. The study area includes areas on the mainland that are vulnerable to flooding, which generally extend as far landward as Montauk Highway, for an approximate area of 126 square miles.

The study area includes portions of the towns of Babylon, Islip, Brookhaven, Southampton, and Easthampton, as well as 12 incorporated villages, the entirety of Fire Island National Seashore, the Poospatuck Indian Reservation, and the Shinnecock Indian Reservation. The study area contains over 46,000 buildings, including 42,600 homes and more than 3,000 businesses. There are 60 schools, two hospitals, and 21 firehouses and police stations in the study area. Of the buildings within the study area, more than 9,000 fall within the modeled 100-year floodplain (storm with a 1 percent probability of occurring in any given year, based upon current modeling).

The study area functions as a complex, interconnected system. Shoreline areas to the east provide a source of littoral material to the west. The barrier island serves as a protective barrier to the mainland of the estuary, while the tidal inlets serve as conduits for exchange of water between ocean and bay. The inlets alter sediment transport pathways, resulting in erosion to the west, which can compromise the natural beach and dune conditions, and reduce the effectiveness of the barrier islands as a protective feature. In order to address the problems associated with storm damages in the study area, one must consider the interconnected functioning of the area. Although it is necessary to consider the system as a whole, for presenting the analyses, it is possible to break the area into three distinct regions, or problem areas.

Three distinct regions can be described when assessing the physical conditions and associated problems of coastal storm damage. They are (1) the barrier island segment of the project in the western portion of the study area, (2) the back bay areas behind the barrier island in the western portion of the study area, and (3) the shoreline areas in the eastern portion of the study area. The following paragraphs provide an overview of the physical conditions and coastal storm damage risks in each of these areas.

The recommended plan will include features to sustain the barrier island, reduce vulnerability to breaches, and non-structural proposals for the back bay mainland area.

OBJECTIVES

The objective of this work is to conduct an independent external peer review (IEPR) of the Fire Island Inlet to Montauk Point, New York General Reformulation Report. (hereinafter: FIMP GRR IEPR) in accordance with the Department of the Army, U.S. Army Corps of Engineers (USACE), Water Resources Policies and Authorities' *Civil Works Review* (Engineer Circular [EC] 1165-2-214, dated December 15, 2012), and the Office of Management and Budget's *Final Information Quality Bulletin for Peer Review* (December 16, 2004).

Peer review is one of the important procedures used to ensure that the quality of published information meets the standards of the scientific and technical community. Peer review typically evaluates the clarity of hypotheses, validity of the research design, quality of data collection procedures, robustness of the methods employed, appropriateness of the methods for the hypotheses being tested, extent to which the conclusions follow from the analysis, and strengths and limitations of the overall product.

The purpose of the IEPR is to assess the “adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used” (EC 1165-2-214; p. D-4) for the FIMP GRR documents. The IEPR will be limited to technical review and will not involve policy review. The IEPR will be conducted by subject matter experts (i.e., IEPR panel members) with extensive experience in economics/plan formulation, biological resources and environmental law compliance, and coastal engineering issues relevant to the project. They will also have experience applying their subject matter expertise to coastal storm risk management.

The Panel will be “charged” with responding to specific technical questions as well as providing a broad technical evaluation of the overall project. Per EC 1165-2-214, Appendix D, review panels should identify, explain, and comment upon assumptions that underlie all the analyses, as well as evaluate the soundness of models, surveys, investigations, and methods. Review panels should be able to evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable. Reviews should focus on assumptions, data, methods, and models. The panel members may offer their opinions as to whether there are sufficient analyses upon which to base a recommendation.

DOCUMENTS PROVIDED

The following is a list of documents, supporting information, and reference materials that will be provided for the review.

Documents for Review

Title	No. of Pages	Required Disciplines
Main General Reevaluation Report (GRR)	181	All Disciplines
Appendix A: Engineering and Design	950	Coastal Engineering
Appendix B: Borrow Source Investigation	29	Bio. Resources Coastal Engineering
Appendix C: Cost Engineering	31	Economics/Plan Formulator Coastal Engineering
Appendix D and D1: Economics (Benefits and Recreation)	109	Economics/Plan Formulator

Title	No. of Pages	Required Disciplines
Appendix E: Plan Formulation	185	Economics/Plan Formulator
Appendix F: Real Estate	215	Economics/Plan Formulator
Appendix G: Public Access	55	Bio. Resources
Appendix H: Land Development and Management	14	Bio. Resources Coastal Engineering
Appendix I: Physical Monitoring	67	Bio. Resources Coastal Engineering
Appendix J: OMRR&R	196	Coastal Engineering
Appendix K: Adaptive Management	24	Bio. Resources Coastal Engineering
Appendix L: Correspondence	95	All Disciplines
Main Environmental Impact Statement (EIS)	345	Bio. Resources
Appendices A-Q	868	Bio. Resources
Public Comments	100*	All Disciplines
Total Page Count	3,388	

* Page count for public comments is approximate. Public comments will be provided after the review of the main documents is complete.

Supporting Information

- FIMP GRR Decision Log (2 pages)
- FIMP GRR Decision Management Plan (7 pages)
- FIMP GRR Risk Register (2 pages)
- FIMP District Quality Control (DQC) Certification (38 pages)
- FIMP Report Synopsis for Tentatively Selected Plan (TSP) Milestone (41 pages)
- FIMP TSP Meeting Memorandum for the Record (2 pages)
- FIMP Project Study Issue Checklist (7 pages)
- Sub-Appendix A1: Baseline Conditions--Storm Surge Modeling and Stage Frequency Generation Report (494 pages)

Documents for Reference

- USACE guidance *Civil Works Review* (EC 1165-2-214, December 15, 2012)
- Office of Management and Budget's *Final Information Quality Bulletin for Peer Review* (December 16, 2004)
- Foundations of SMART Planning
- SMART Planning Bulletin (PB 2013-03)
- SMART – Planning Overview
- Planning Modernization Fact Sheet

- USACE Climate Change Adaptation Plan (June 2014)
- ETL 1100-2-1 – Procedures to Evaluate SLR Change Impacts Responses Adaptation
- ER 1100-2-8162 – Incorporating SLR Change in CW Programs.

SCHEDULE

This schedule is based on the July 27, 2016 receipt of the review documents. Note that dates presented in the schedule below could change due to panel member and USACE availability.

Task	Action	Due Date
Conduct Peer Review	Subcontractors must complete OPSEC training	8/14/2016
	Battelle sends review documents to panel members	7/28/2016
	Battelle convenes kick-off meeting with panel members	8/2/2016
	Battelle convenes kick-off meeting with USACE and panel members	8/4/2016
	Battelle convenes mid-review teleconference for panel members to ask clarifying questions of USACE	8/16/2016
	Panel members complete their individual reviews	9/1/2016
Prepare Final Panel Comments and Final IEPR Report	Battelle provides panel members with talking points for Panel Review Teleconference	9/8/2016
	Battelle convenes Panel Review Teleconference	9/9/2016
	Panel members provide draft Final Panel Comments to Battelle	9/19/2016
	Battelle provides feedback to panel members on draft Final Panel Comments; panel members revise Final Panel Comments	9/20/2016 - 9/27/2016
	Panel finalizes Final Panel Comments	9/28/2016
	Battelle receives the public comments from USACE	10/7/2016
	Battelle sends public comments to Panel	10/11/2016
	Panel completes their review of the public comments	10/14/2016
	Panel drafts Final Panel Comment, if necessary	10/18/2016
	Panel finalizes Final Panel Comment regarding public comments	10/20/2016
	Battelle provides Final IEPR Report to panel members for review	10/24/2016
	Panel members provide comments on Final IEPR Report	10/26/2016
	Battelle submits Final IEPR Report to USACE*	10/28/2016
USACE PCX Provides Decision on Final IEPR Report Acceptance	11/2/2016	
Comment/Response Process	Battelle inputs Final Panel Comments to the Design Review and Checking System (DrChecks) and provides Final Panel Comment response template to USACE	11/2/2016
	Battelle convenes teleconference with Panel to review the Post-Final Panel Comment Response Process	11/2/2016

Task	Action	Due Date
	USACE Project Delivery Team (PDT) provides draft Evaluator Responses to USACE Planning Center of Expertise (PCX) for review	11/30/2016
	USACE PCX reviews draft Evaluator Responses and works with USACE PDT regarding clarifications to responses, if needed	12/6/2016
	USACE PCX provides draft PDT Evaluator Responses to Battelle	12/7/2016
	Battelle provides the panel members the draft PDT Evaluator Responses	12/8/2016
	Panel members provide Battelle with draft BackCheck Responses	12/13/2016
	Battelle convenes teleconference with panel members to discuss draft BackCheck Responses	12/14/2016
	Battelle convenes Comment-Response Teleconference with panel members and USACE	12/16/2016
	USACE inputs final PDT Evaluator Responses to DrChecks	12/27/2016
	Battelle provides final PDT Evaluator Responses to panel members	12/28/2016
	Panel members provide Battelle with final BackCheck Responses	1/3/2017
	Battelle inputs the panel members' final BackCheck Responses to DrChecks	1/4/2017
	Battelle submits pdf printout of DrChecks project file*	1/5/2017
Civil Works Review Board (CWRB)	Panel prepares and/or reviews slides for CWRB	TBD
	Civil Works Review Board (CWRB) meeting	To be scheduled
Agency Decision Milestone ADM	Panel prepares and/or reviews slides for ADM	TBD
	Agency Decision Milestone (ADM) meeting	To be scheduled

* Indicates deliverables

CHARGE FOR PEER REVIEW

Members of this IEPR Panel are asked to determine whether the technical approach and scientific rationale presented in the FIMP GRR documents are credible and whether the conclusions are valid. The Panel is asked to determine whether the technical work is adequate, competently performed, and properly documented; satisfies established quality requirements; and yields scientifically credible conclusions. The Panel is being asked to provide feedback on the economic, engineering, environmental resources, and plan formulation. The panel members are not being asked whether they would have conducted the work in a similar manner.

Specific questions for the Panel (by report section or appendix) are included in the general charge guidance, which is provided below.

General Charge Guidance

Please answer the scientific and technical questions listed below and conduct a broad overview of the FIMP GRR documents. Please focus your review on the review materials assigned to your discipline/area of expertise and technical knowledge. Even though there are some sections with no questions associated with them, that does not mean that you cannot comment on them. Please feel free to make any relevant and appropriate comment on any of the sections and appendices you were asked to review. In addition, please note the following guidance. Note that the Panel will be asked to provide an overall statement related to 2 and 3 below per USACE guidance (EC 1165-2-214; Appendix D).

1. Your response to the charge questions should not be limited to a “yes” or “no.” Please provide complete answers to fully explain your response.
2. Assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, and any biological opinions of the project study.
3. Assess the adequacy and acceptability of the economic analyses, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, and models used in evaluating economic or environmental impacts of the proposed project.
4. If appropriate, offer opinions as to whether there are sufficient analyses upon which to base a recommendation.
5. Identify, explain, and comment upon assumptions that underlie all the analyses, as well as evaluate the soundness of models, surveys, investigations, and methods.
6. Evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable.
7. Please focus the review on assumptions, data, methods, and models.

Please **do not** make recommendations on whether a particular alternative should be implemented, or whether you would have conducted the work in a similar manner. Also please **do not** comment on or make recommendations on policy issues and decision making. Comments should be provided based on your professional judgment, **not** the legality of the document.

1. If desired, panel members can contact one another. However, panel members **should not** contact anyone who is or was involved in the project, prepared the subject documents, or was part of the USACE Agency Technical Review (ATR).
2. Please contact the Battelle Project Manager (Corey Wisneski, wisneskic@battelle.org) or Program Manager (Rachel Sell; sellr@battelle.org) for requests or additional information.
3. In case of media contact, notify the Battelle Program Manager, Rachel Sell (sellr@battelle.org) immediately.
4. Your name will appear as one of the panel members in the peer review. Your comments will be included in the Final IEPR Report, but will remain anonymous.

Please submit your comments in electronic form to Corey Wisneski, wisneskic@battelle.org, no later than August 30, 2016, 10 pm ET.

Charge Questions and Relevant Sections as Supplied by USACE

1. Is the need for and intent of the decision document clearly stated?
2. Does the decision document adequately address the stated need and intent relative to scientific and technical information?

Given the need for and intent of the decision document, assess the adequacy and acceptability of the following:

3. Project evaluation data used in the study analyses.
4. Economic, environmental, and engineering assumptions that underlie the study analyses.
5. Economic, environmental, and engineering methodologies, analyses, and projections.
6. Models used in the evaluation of existing and future without-project conditions and of economic or environmental impacts of alternatives.
7. Methods for integrating risk and uncertainty.
8. Formulation of alternative plans and the range of alternative plans considered.
9. Quality and quantity of the surveys, investigations, and engineering sufficient for conceptual design of alternative plans.
10. Overall assessment of significant environmental impacts and any biological analyses.
11. Evaluate whether the interpretations of analysis and the conclusions based on analysis are reasonable.
12. Assess the considered and tentatively selected alternatives from the perspective of systems, including systemic aspects being considered from a temporal perspective, including the potential effects of climate change.

For the tentatively selected plan, assess whether:

13. The models used to assess life safety hazards are appropriate.
14. The assumptions made for the life safety hazards are appropriate.
15. The quality and quantity of the surveys, investigations, and engineering are sufficient for a concept design considering the life safety hazards and to support the models and assumptions made for determining the hazards.

16. The analysis adequately address the uncertainty and residual risk given the consequences associated with the potential for loss of life for this type of project.

Battelle Summary Charge Questions to the Panel Members¹

Summary Questions

17. Please identify the most critical concerns (up to five) you have with the project and/or review documents. These concerns can be (but do not need to be) new ideas or issues that have not been raised previously.
18. Please provide positive feedback on the project and/or review documents.

Public Comment Questions

19. Do the public comments raise any additional discipline-specific technical concerns with regard to the overall report?

¹Questions 17 through 19 are Battelle supplied questions and should not be construed or considered part of the list of USACE-supplied questions. These questions were delineated in a separate appendix in the final Work Plan submitted to USACE.

APPENDIX D

Conflict of Interest Form

This page is intentionally left blank.

Conflicts of Interest Questionnaire

Independent External Peer Review

Fire Island Inlet to Montauk Point, New York, General Reformulation Report

The purpose of this document is to help the U.S. Army Corps of Engineers identify potential organizational conflicts of interest on a task order basis as early in the acquisition process as possible. Complete the questionnaire with background information and fully disclose relevant potential conflicts of interest. Substantial details are not necessary; USACE will examine additional information if appropriate. Affirmative answers will not disqualify your firm from this or future procurements.

NAME OF FIRM: **Battelle Memorial Institute Corporation Operations**

REPRESENTATIVE'S NAME: **Jason M. Jenkins**

TELEPHONE: **614-424-4873**

ADDRESS: **505 King Avenue, Columbus, OH 43201**

EMAIL ADDRESS: **jenkinsj@battelle.org**

I. INDEPENDENCE FROM WORK PRODUCT. Has your firm been involved in any aspect of the preparation of the subject study report and associated analyses (field studies, report writing, supporting research etc.) **No** Yes (if yes, briefly describe):

II. INTEREST IN STUDY AREA OR OUTCOME. Does your firm have any interests or holdings in the study area, or any stake in the outcome or recommendations of the study, or any affiliation with the local sponsor? **No** Yes (if yes, briefly describe):

III. REVIEWERS. Do you anticipate that all expert reviewers on this task order will be selected from outside your firm? No **Yes** (if no, briefly describe the difficulty in identifying outside reviewers):

IV. AFFILIATION WITH PARTIES THAT MAY BE INVOLVED WITH PROJECT IMPLEMENTATION. Do you anticipate that your firm will have any association with parties that may be involved with or benefit from future activities associated with this study, such as project construction? **No** Yes (if yes, briefly describe):

V. ADDITIONAL INFORMATION. Report relevant aspects of your firm's background or present circumstances not addressed above that might reasonably be construed by others as affecting your firm's judgment. Please include any information that may reasonably: impair your firm's objectivity; skew the competition in favor of your firm; or allow your firm unequal access to nonpublic information.

No additional information to report.



12/18/2015

YOUR SIGNATURE

DATE

This page is intentionally left blank.

