DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NORTH ATLANTIC DIVISION
FORT HAMILTON MILITARY COMMUNITY
302 GENERAL LEE AVENUE
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CENAD-PD-P

JUL 31 2014

MEMORANDUM FOR Commander, U.S. Army Corps of Engineers, New York District, (CENAN-PL/Karen Ashton) 26 Federal Plaza New York, NY 10278

SUBJECT: Review Plan Approval for South Shore of Staten Island, New York

1. Reference, South Shore of Staten Island, New York Review Plan prepared by New York District dated May 2014.

2. Attached is the Review Plan for the South Shore of Staten Island study prepared by New York District in accordance with EC 1165-2-214, Civil Works Review.

3. The above referenced Review Plan has been approved for execution and is subject to change as study circumstances require, consistent with study development under the Project Management Business Process. Subsequent revisions to this Review Plan or its execution will require new written approval from the NAD Commander.

4. Point of contact is Mr. Larry Cocchieri, Deputy Director, USACE National Planning Center for Coastal Storm Risk Management, 347-370-4571.

Encl
Review Plan, South Shore
of Staten Island

KENT D. SAVRE
Brigadier General, USA
Commanding

REVIEW PLAN

South Shore of Staten Island, NY
Coastal Storm Damage Reduction
Feasibility Study

New York District

MSC Approval Date: January 2008
MSC Approval Date (revised Review Plan): December 2012
Last Revision Date: **May** 2014 (Incorporates Post-Sandy Review Requirements)

US Army Corps
of Engineers ®

REVIEW PLAN

South Shore of Staten Island, NY
Coastal Storm Damage Reduction
Feasibility Study

TABLE OF CONTENTS

1. PURPOSE AND REQUIREMENTS

a. Purpose. This Review Plan defines the scope and level of peer review for the South Shore of Staten Island, NY Coastal Storm Damage Reduction Feasibility Study

b. References.

(1) Engineering Circular (EC) 1165-2-214, Civil Works Review, 15 Dec 12

(2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 11

(3) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 06

(4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and
Approval of Decision Documents, Amendment #1, 20 Nov 07

(5) Project Management Plan (PMP), May 2014

(6) District/MSC Quality Management Plan(s)

(7) Public Law 113-2, the Disaster Relief Appropriation Act of 2013 in response to Hurricane Sandy

(8) MSC Approval Memorandum "*South Shore of Staten Island (SSSI), NY Coastal Storm Damage Reduction Project, Review and Concurrence with Proposed Approach for Study Completion*", dated August 7, 2013.

c. Requirements. This review plan was developed in accordance with EC 1165-2-214, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, decision documents are subject to cost engineering review and certification (per EC 1165-2-214) and planning model certification/approval (per EC 1105-2-412).

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

a. The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for decision documents is typically either a Planning Center of Expertise (PCX) or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this

Review Plan is *North Atlantic Division, Coastal Storm Risk Management PCX, CSDR-PCX.*

b. The RMO will coordinate with the Civil Works Cost Engineering and Agency Technical Review Mandatory Center of Expertise (MCX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies.

3. STUDY INFORMATION

a. Decision Document. This study is authorized by a resolution of the US House of Representatives Committee on Public Works and Transportation, adopted 13 May 1993. The purpose of this study is to identify possible solutions to hurricane and storm damages in the area, and to determine whether Federal participation is warranted in constructing shore protection measures.

The Disaster Relief Appropriations Act of 2013 was signed into law on January 29, 2013 as Public Law 113-2. The legislation provides supplemental appropriations to address damages caused by Hurricane Sandy and to reduce future flood risk in ways that will support the long-term sustainability of the coastal ecosystem and communities and reduce the economic costs and risks associated with large-scale flood and storm events. Ongoing feasibility studies for shore protection projects that were already underway and located in areas impacted by Hurricane Sandy within the North Atlantic Division of the Corps are eligible to be considered for initial construction funding under this provision. Periodic nourishment would not be authorized under PL 113-2 and a separate authorization would be required to carry out periodic nourishment activities for this project.

The Decision Document for the South Shore of Staten Island, NY Coastal Storm Damage Reduction Study is expected to result in a Chief of Engineers Report and a Director's Report for the on-going Feasibility Study. The Director's Report would be for the initial construction of the recommended plan, for approval by the Director of Civil Works, Assistant Secretary of the Army. The Chief's Report would address the periodic nourishment of the recommended plan and would need to be approved by the Chief of Engineers and then provided to the U.S. Congress for authorization.

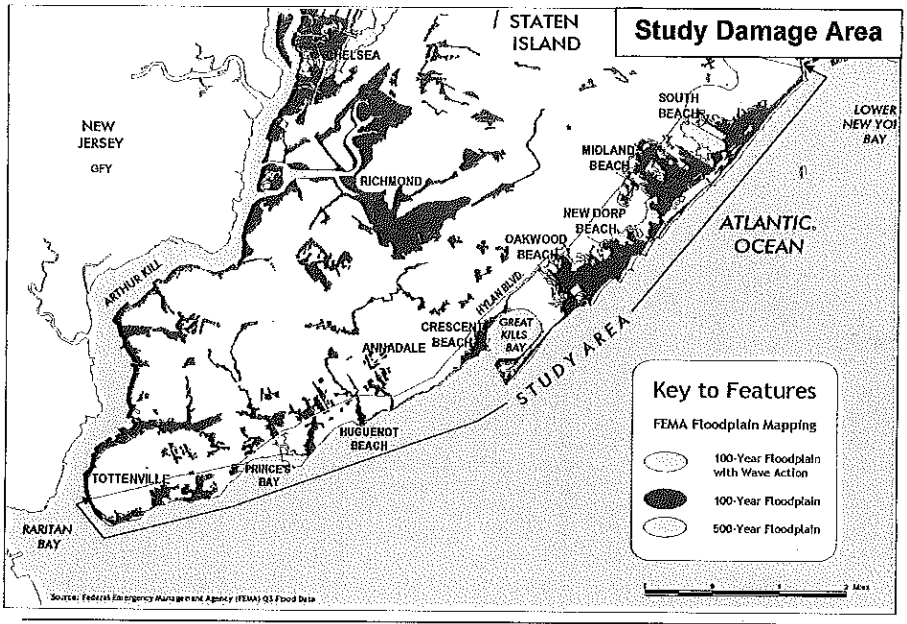
The study area is located along the south shore of Staten Island, New York City, New York.

The National Environmental Policy Act (NEPA) documentation will be an Environmental Impact Statement (EIS) which will be prepared along with the document.

b. Study/Project Description.

The study area covers about 13 miles of coast on Staten Island, extending along Lower New York Bay and Raritan Bay from Fort Wadsworth to Tottenville at the mouth of

Arthur Kill. The area has a long history of storm damage. The shoreline experienced major erosion and storm damage from the Northeaster of December 1992, the March 1993, and most recently, Hurricane Sandy in October 2012. These storms caused evacuations in several communities, damage to hundreds of structures from flooding, and loss of over hundreds of structures from erosion. The loss of beachfront now leaves the area increasingly vulnerable to severe damages even from moderate storms. Damages have not yet been estimated for the Hurricane Sandy coastal storm event. However, approximately 23 lives were lost during this event. Expected annual damages are approximately $23 million.



The development of conceptual plans within this feasibility study consists of looking at different measures at selected locations of the study area (Ft. Wadsworth to Oakwood Beach, Crescent Beach and Annandale to Tottenville). This approach offers both flexibility and opportunities for long-term decisions about what works best for each location, as well as the entire study area. Coastal storm damage reduction options include structural and/or non-structural options. The structural options consist of beach/dune fill, levee/floodwall, and seawall. The non-structural options consist of non-structural (building retrofit) and acquisition (buy-outs). For all structural plans, an interior flood control feature must be analyzed to alleviate the interior runoff on the protected side of the proposed structural protection. The total expected cost of the implementation of the project is approximately $300M.

The non-Federal partner is:

- **New York State Department of Environmental Conservation (NYDEC)**

- **NYDEC partnered with:**
  - **New York City Department of Environmental Protection (NYCDEP)**
  - **New York City Department of Parks and Recreation (NYCDPR)**
- **Study cost 100% Federal in accordance with Hurricane Sandy, PL 113-2, 2nd Interim Report to Congress.**
- **Construction to be cost-shared 65%/35% Federal/non-Federal in accordance with a Project Partnership Agreement**

c. Factors Affecting the Scope and Level of Review. The PDT has completed an initial risk assessment associated with this project based upon five factors and rated the project quantitatively among five levels of project risk of failure ranging from low to high (risk score class). The PDT scored each Project Risk Item in the Review Plan Score Guide and calculated an overall Average Project Risk Assessment Score. The exact values of the scores were not as important as compared to what risk score class (low, medium, or high) the Average Project Risk Assessment Score was classified as. Based upon the PDT analysis, the project is medium in risk because it did not receive an overall high risk score.

The PDT considered previous District project experience when making this analysis. No attempt was made to tie this to a national scale of rating.

The study area has a high level of beach erosion control and coastal storm damage reduction experience and a high degree of risk if the staff had a low level of experience.

- Anticipated risks include (but are not limited to): 1) the unpredictability of the number and severity of future storm events impacting and 2) funding uncertainty 3) Real Estate acquisition.

- If the project will be justified by life safety or if the project likely involves significant threat to human life/safety assurance, consider at minimum the safety assurance measures described in EC 1165-2-214 including, but not necessarily limited to, the consequences of non-performance of project economics, the environmental and social well-being (public safety and social justice); residual risk; uncertainty due to climate variability, etc.: Since buried seawall cross-sections are included as possible structural solutions and are subject to design exceedence, a Safety Assurance Review (SAR) as part of a Type I IEPR is warranted due to the potential for risk to life safety involved in any CSDR study.

- If there is a request by the Governor of an affected state for a peer review by independent experts: There has not been such a request.

- If the project is likely to involve significant public dispute as to the size, nature, or effects of the project: Public dispute may be likely

- If the project is likely to involve significant public dispute as to the economic or environmental cost or benefit of the project: It is anticipated that public issues may be significant and would require the preparation of an Environmental Impact Statement.

- If information in the decision document or anticipated project design is likely to be based on novel methods, involve the use of innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices: Standard methods of analysis will be employed including well-documented techniques for evaluating coastal processes.

- If the project design is anticipated to require redundancy, resiliency, and/or robustness, unique construction sequencing, or reduced or overlapping design construction schedule: The project is likely to utilize standard equipment. The anticipated plan is expected to require redundancy, unusual resiliency and/or robustness, unique construction sequencing or reduced or overlapping design construction schedule.

d. In-Kind Contributions. The in-kind products and analyses to be provided by the non-Federal sponsor, the New York State Department of Environmental Conservation, include acquiring the appropriate real estate, coordination in such matters as soliciting public involvement and local cost sharing support. Products and analyses provided as in-kind services are subject to DQC, ATR, and IEPR

4. DISTRICT QUALITY CONTROL (DQC)

All decision documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district shall manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home MSC.

a. Documentation of DQC. District Quality Control will be documented through the use of a Quality Control Report, which is managed in the New York District and signed by those members performing the DQC as well as the Division Chiefs of the major technical offices responsible for producing this report.

b. Products to Undergo DQC. Interim and final products and ultimately the Feasibility report and appendices and the EIS

c. Required DQC Expertise. The expertise of the DQC review team will consist of Section Chiefs and subject matter experts or regional technical specialists in the fields

of Plan Formulation, NEPA compliance, and Engineering Design and Analysis as well as Real Estate.

5. AGENCY TECHNICAL REVIEW (ATR)

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

a. Products to Undergo ATR. ATR will be conducted on the draft Feasibility Report (including NEPA and supporting documentation) and final report (including NEPA and supporting documentation). Additional ATR of key technical and interim products, MSC-specific milestone documentation, and In-Progress Review (IPR) documentation, if such documentation becomes necessary, should occur depending on the study needs and the requirements of MSC/District Quality Management Plans. Where practicable, technical products that support subsequent analyses will be reviewed prior to being used in the study and may include: surveys & mapping, hydrology & hydraulics, coastal engineering, geotechnical investigations, economic, environmental, cultural, and social inventories, annual damage and benefit estimates, cost estimates, real estate requirements etc.

b. Required ATR Team Expertise.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The lead should also have the necessary skills and experience to lead a virtual team through the ATR process. Typically, the ATR lead will also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).
Plan Formulation	The Planning reviewer should be a senior water resources planner with experience in the plan formulation process. The reviewer should be familiar with evaluation of alternative plans for coastal storms

	risk management projects.
Economics	The economics reviewer should be a senior water resource economist with experience in coastal storms risk management projects.
Environmental Resources	The environmental resources reviewer should be a senior NEPA compliance specialist with experience in coastal storms risk management projects, particularly projects in urbanized coastal areas.
Coastal Engineering	The coastal engineering reviewer should be a senior engineer with experience with coastal storms risk management projects, particularly projects in urbanized coastal areas.
Structural Engineering	Team member should have expertise in the field of structural engineering, especially in design and review of floodwalls and closure gates. A registered professional engineer is required.
Geotechnical Engineering	Team member should have expertise in geotechnical engineering and levee construction and experience with bendway weirs. A registered professional engineer is required.
Risk Reviewer	Team member should have knowledge and experience in accordance with ER 1105-2-101. The risk analysis reviewer will be experienced with performing and presenting risk analyses in accordance with ER 1105-2-101 and other related guidance, including familiarity with how information from the various disciplines involved in the analysis interact and affect the results.
Cost Engineering	Team member should have expertise in cost estimating for similar projects in MII. Review includes construction schedules and contingencies. The team member will be a Certified Cost Technician, a Certified Cost Consultant, or a Certified Cost Engineer. As the Cost Engineering Center of Expertise, Walla Walla District will assign this team member as part of a separate effort coordinated by the ATR team lead.
Hydrology	Team Member should have expertise in interior drainage modeling and minimum facilities calculations.

c. Documentation of ATR. DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should be limited to those that are required to ensure

adequacy of the product. The four key parts of a quality review comment will normally include:

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

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

(3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness

(function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and

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

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

e. The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-1-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

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

(1) Identify the document(s) reviewed and the purpose of the review;

(2) Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;

(3) Include the charge to the reviewers;

(4) Describe the nature of their review and their findings and conclusions;

(5) Identify and summarize each unresolved issue (if any); and

(6) Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

g. ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A Statement of Technical Review should be completed, based on work reviewed to date, for the AFB, draft report, and final report. A sample Statement of Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

a. IEPR may be required for decision documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-214, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

(1) Type I IEPR. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-214.

(2) Type II IEPR. Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

b. Decision on IEPR. The South Shore of Staten Island Feasibility study will require Type 1 &2 IEPR because the Federal action is justified by life safety or failure of the project would pose a significant threat to human life; estimated cost of the project, including mitigation costs, exceeds $45 million. The risk informed assessment of significant threat to human life will be performed once the tentatively selected plan is identified and optimized prior to performing the SAR.

Type II IEPR is anticipated to be required, a Safety Assurance Review will also be addressed during the Type I IEPR per Paragraph 2.c.(3) of Appendix D of EC 1165-2-214.

c. Products to Undergo Type I IEPR. The product to undergo IEPR will be the draft/final Feasibility report.

d. Required Type I IEPR Panel Expertise. All should be well versed in the conduct of coastal storms risk management studies. Reviewers will be a panel from an Outside Eligible Organization (OEO).

IEPR Panel Members/Disciplines	Expertise Required
Plan Formulation	The Planning reviewer should be a senior water resources planner with experience in the plan formulation process. The reviewer should be familiar with evaluation of alternative plans for coastal storms risk management projects.
Economics	The economics reviewer should be a senior water resource economist with experience in coastal storms risk management projects.
Environmental Resources	The environmental resources reviewer should be a senior NEPA compliance specialist with experience in coastal storms risk management projects, particularly projects in urbanized coastal areas.
Coastal Engineering	The coastal engineering reviewer should be a senior engineer with experience with coastal storms risk management projects, particularly projects in urbanized coastal areas.
Structural Engineering	Team member should have expertise in the field of structural engineering, especially in design and review of floodwalls and closure gates. A registered professional engineer is required.
Geotechnical Engineering	Team member should have expertise in geotechnical engineering and levee construction and experience with bendway weirs. A registered professional engineer is required.

Risk Reviewer	Team member should have knowledge and experience in accordance with ER 1105-2-101. The risk analysis reviewer will be experienced with performing and presenting risk analyses in accordance with ER 1105-2-101 and other related guidance, including familiarity with how information from the various disciplines involved in the analysis interact and affect the results.
Hydrology	Team Member should have expertise in interior drainage modeling and minimum facilities calculations.

e. Documentation of Type I IEPR. The IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-214, Appendix D. Panel comments will be compiled by the OEO and should address the adequacy and acceptability of the economic, engineering and environmental methods, models, and analyses used. IEPR comments should generally include the same four key parts as described for ATR comments in Section 4.d above. The OEO will prepare a final Review Report that will accompany the publication of the final decision document and shall:

(1) Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;

(2) Include the charge to the reviewers;

(3) Describe the nature of their review and their findings and conclusions; and

(4) Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

f. The final Review Report will be submitted by the OEO no later than 60 days following the close of the public comment period for the draft decision document. USACE shall consider all recommendations contained in the Review Report and prepare a written response for all recommendations adopted or not adopted. The final decision document will summarize the Review Report and USACE response. The Review Report and USACE response will be made available to the public, including through electronic means on the internet.

7. POLICY AND LEGAL COMPLIANCE REVIEW

All decision documents will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination

comply with law and policy, and warrant approval or further recommendation to higher authority by the home MSC Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.

8. COST ENGINEERING AND ATR MANDATORY CENTER OF EXPERTISE (MCX) REVIEW AND CERTIFICATION

All decision documents shall be coordinated with the Cost Engineering and ATR MCX, located in the Walla Walla District. The MCX will assist in determining the expertise needed on the ATR team and Type I IEPR team (if required) and in the development of the review charge(s). The MCX will also provide the Cost Engineering certification. The RMO is responsible for coordination with the Cost Engineering MCX.

9. MODEL CERTIFICATION AND APPROVAL

a. EC 1105-2-412 mandates the use of certified or approved models for all planning activities to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions. Planning models, for the purposes of the EC, are defined as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives and to support decision making. The use of a certified/approved planning model does not constitute technical review of the planning product. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

b. EC 1105-2-412 does not cover engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. As part of the USACE Scientific and Engineering Technology (SET) Initiative, many engineering models have been identified as preferred or acceptable for use on Corps studies and these models should be used whenever appropriate. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

(1) Planning Models. The following planning models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
HEC-FDA 1.2.4 (Flood Damage Analysis)	The Hydrologic Engineering Center's Flood Damage Reduction Analysis (HEC-FDA) program provides the capability for integrated hydrologic engineering and economic analysis for formulating and evaluating flood risk management plans using risk-based analysis methods. The program will be used to evaluate and compare the future without- and with-project plans along the Wild River near River City to aid in the selection of a recommended plan to manage flood risk.	Certified
Mitigation model	TBD	TBD

(2) Engineering Models. The following engineering models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
STWave: model of wave climate	This is a widely-used model. This is a software model that takes historic wind, fetch, and wave data to simulate the wave climate along a shoreline and probabilistically predict wave action and surge elevations into the future.	not certified; CoP-preferred
spreadsheet model for storm damages on bulkheads and structures behind them	This is widely used by New York District. This model uses wave equations and assumptions of wave scour from the USACE Shore Protection Model, and wave overtopping equations recommended in USACE EM-1110-2-1614 "Design of Coastal Revetments, Seawalls, and Bulkheads" to simulate failure conditions for bulkheads and wave undermining of roads.	not certified and not CoP-listed, referenced in Shore Protection Manual
HEC-HMS 2014	Interior Drainage modeling	Certified
EDUNE	This is widely used by New York District. This model calculates erosion and wave climate prediction, and is based on the equilibrium profile theory, as is the Corps model, SBEACH. The erosion prediction is utilized in simulating structure undermining.	not certified and not CoP-listed; developed after the Shore Protection Manual

10. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost. The estimated schedule for ATR has ATR taking place for the submission of the draft report, in July 2014. The ATR budget of $75,000 includes participation of the ATR Lead in milestone conferences and the Civil Works Review Board (CWRB) meeting to address the ATR process and any significant and/or unresolved ATR concerns.

b. Type I IEPR Schedule and Cost. The estimated schedule for IEPR has IEPR taking place concurrently with NAD/HQUSACE and Public review in accordance with Implementation Guidance for on-going Hurricane Sandy studies. The IEPR budget of $200,000 includes participation of the IEPR Lead in the Civil Works Review Board (CWRB) meeting to address the IEPR process and any significant and/or unresolved IEPR concerns.

IEPR of the Draft Report/DEIS is scheduled to begin September 2014 following ATR.

c. Model Certification/Approval Schedule and Cost. *Not Applicable or TBD*

11. PUBLIC PARTICIPATION

There have been and will be opportunities for public comment. Public comments and questions will be made available in the final EIS. The EIS will be scoped in accordance with regulation.

12. REVIEW PLAN APPROVAL AND UPDATES

The MSC Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, and HQUSACE members) as to the appropriate scope and level of review for the decision document. Like the PMP, the Review Plan is a living document and may change as the study progresses. The home district is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval is documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) should be re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, should be posted on the Home District's webpage. The latest Review Plan should also be provided to the RMO and home MSC.

13. REVIEW PLAN POINTS OF CONTACT

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

a. Frank Verga, NAN-PPMD, 917-790-8212
b. Hibba Wahbeh, NAD, 347-370-4779
c. Lawrence Cocchieri, RMO, 347-370-4571

ATTACHMENT 1: TEAM ROSTERS

Project Manager	Frank Verga	Frank.verga@usace.army.mil	917-790-8212
Chief, Coastal Section	Steve Couch	Stephen.couch@usace.army.mil	917-790-8707
Project Planner	Karen Ashton	Karen.ashton@usace.army.mil	917-790-8607
Coastal Engineer	David Yang	David.w.yang@usace.army.mil	917-790-8270
Technical Manager	Sheila Rice-McDonnell	Sheila.rice-mcdonnell@usace.army.mil	917-790-8297
Economist	Johnny Chan	Johnny.c.chan@usace.army.mil	917-790-8706
Biologist	Kate Alcoba	Catherine.j.alcoba@usace.army.mil	917-790-8216
Chief, Environmental Section	Peter Weppler	Peter.m.weppler@usace.army.mil	917-790-8634
Cultural Specialist	Lynn Rakos	Lynn.rakos@usace.army.mil	917-790-8629
Real Estate Specialist	Noreen Dresser	Noreen.D.Dresser@usace.army.mil	917-790-8430

ATR Team Members to be designated by the PCX – CSDR (SAD Wilmington District

ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECSION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the *<type of product>* for *<project name and location>*. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-209. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks[sm].

SIGNATURE _____ _____

Name Date
ATR Team Leader
Office Symbol/Company

SIGNATURE _____ _____

Name Date
Project Manager
Office Symbol

SIGNATURE _____ _____

Name Date
Architect Engineer Project Manager[1]
Company, location

SIGNATURE _____ _____

Name Date
Review Management Office Representative
Office Symbol

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: *Describe the major technical concerns and their resolution.*

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

SIGNATURE _____ _____

Name Date
Chief, Engineering Division
Office Symbol

SIGNATURE _____ _____

Name Date
Chief, Planning Division
Office Symbol

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

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number
15 November 2012	Update to 2012 format	all
7 April 2014	Update to Post Sandy Review requirements, review schedules and costs & PDT members	3, 6, 11-13

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

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