



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
NORTH ATLANTIC DIVISION, US ARMY CORPS OF ENGINEERS  
FORT HAMILTON MILITARY COMMUNITY  
BROOKLYN, NEW YORK 11252-6700

DEC 14 2012

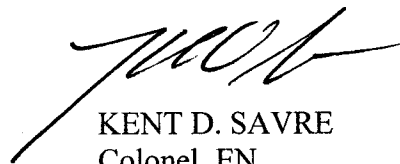
CENAD-PD-PP

MEMORANDUM FOR Commander, Philadelphia District, ATTN: CENAP-PL

SUBJECT: Review Plan Approval for Hereford Inlet to Cape May Inlet, New Jersey Feasibility Study

1. The attached Review Plan for the subject study has been prepared in accordance with EC 1165-2-209, Civil Works Review Policy.
2. The Review Plan has been coordinated with the Coastal Storm Damage Reduction Planning Center of Expertise of the North Atlantic Division, which is the lead office to execute this plan. For further information, contact Mr. Larry Cocchieri at 347-370-4571. The Review Plan includes independent external peer review.
3. I hereby approve this Review Plan, which 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 this office.

Encl

  
KENT D. SAVRE  
Colonel, EN  
Commanding

# **REVIEW PLAN**

**Hereford Inlet to Cape May Inlet  
Feasibility Study  
Philadelphia District**

**MSC Approval Date: Pending  
Last Revision Date: 12/3/12**



**US Army Corps  
of Engineers®**

## REVIEW PLAN

### Hereford Inlet to Cape May Inlet Feasibility study review plan

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## 1. PURPOSE AND REQUIREMENTS

a. **Purpose.** This Review Plan defines the scope and level of peer review for the Hereford Inlet to Cape May Inlet Feasibility Study.

### b. References

- (1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
- (2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
- (3) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
- (4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
- (5) Project Management Plan, Hereford Inlet to Cape May Inlet – April 2003

c. **Requirements.** This review plan was developed in accordance with EC 1165-2-209, 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 1165-2-209) and planning model certification/approval (per EC 1105-2-412).

## 2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for 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 Flood Risk Management Planning Center of Expertise.

The RMO will coordinate with the Cost Engineering Directory of Expertise (DX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies. The RMO will coordinate with the RMC for risk management review and with the Ecosystem Restoration PCX for review of any recommended ecosystem restoration associated with flood risk management measures.

## 3. STUDY INFORMATION

**Decision Document.** The decision document for this project will be a feasibility level analysis for the Hereford Inlet to Cape May Inlet study area. The analysis will contain the plan formulation, and Environmental Assessment and the project's economic justification. This document will be approved at the HQUSACE level and it will require Congressional Authorization.

**Study/Project Description.** The Hereford Inlet to Cape May General Investigation was undertaken by authority of The New Jersey Shore Protection Study, by resolutions adopted

within the Committee on Public Works and Transportation of the U.S. House of Representatives and the Committee on Environment and Public Works of the U.S. Senate in December 1987.

This 1987 authorization culminated in the September 1990 Report of Limited Reconnaissance and supported investigative studies along the New Jersey coast. Within that report problems between the Hereford Inlet and Cape May Inlet were viewed as not critical. As a result recommendations were made for studies in other areas along the New Jersey coastline that required immediate attention. The situation in The Hereford Inlet to Cape May Inlet worsened in the early 1990's and investigative studies were recommended by non-Federal interests.

By the mid 1990's a number of shoreline problems developed between Hereford Inlet and Cape May Inlet area including erosion and the excessive accumulation of sand along the study area's southern beaches. A January 2002 letter from the non-Federal sponsor, the New Jersey Department of Environmental Protection, recognized that the most urgent needs of the New Jersey coastline had been addressed but "*The situation in the Wildwoods has worsened and now requires being addressed immediately*". In response, the Hereford Inlet to Cape May Inlet Preliminary Financial Analysis (Reconnaissance Study.) was initiated by the Philadelphia District.

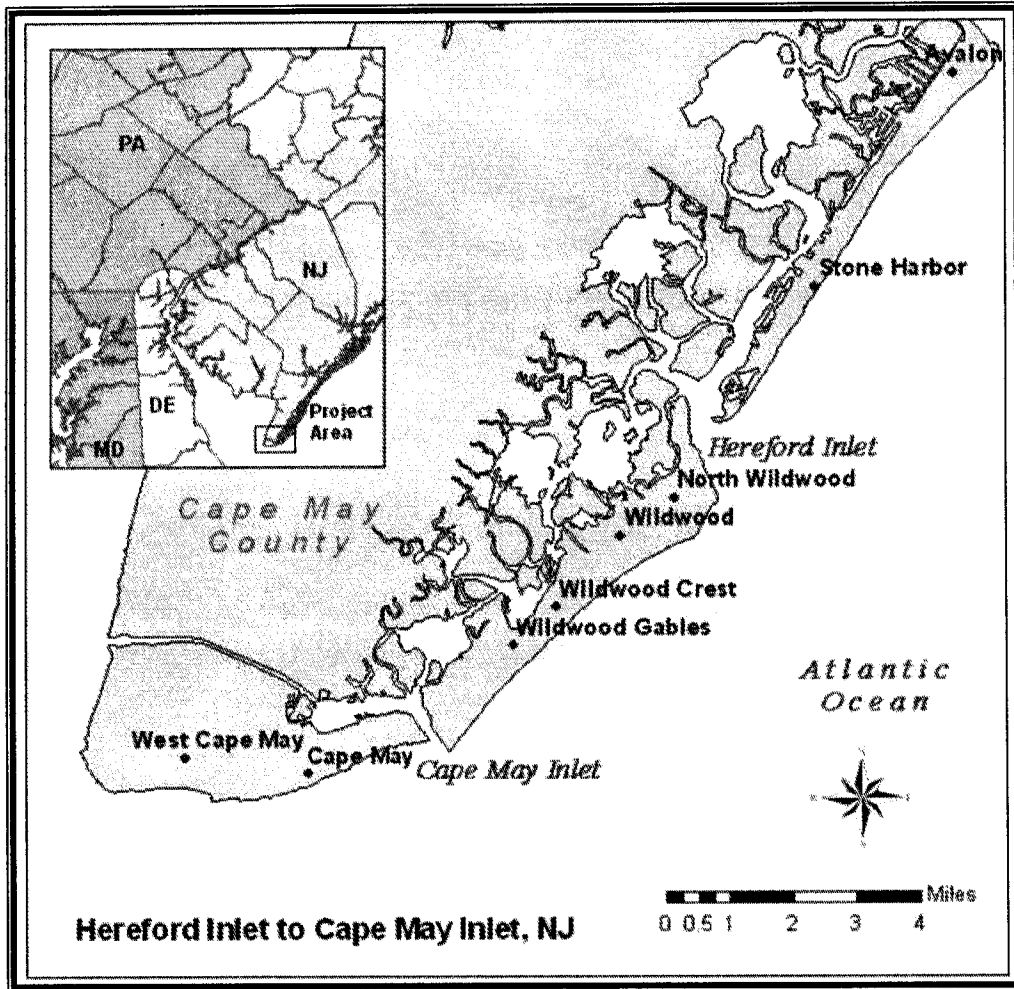
The Preliminary Financial Analysis determined that Federal interest existed and sections of the study area were eroding severely while other areas were accumulating so much sand that it was clogging the municipal storm water system.

In a letter dated 28 January 2002 North Atlantic Division approved the District's Preliminary Financial Analysis and directed the District to proceed into the Feasibility phase. A Feasibility Cost Sharing Agreement was signed between the District and the non-Federal Sponsor, the New Jersey Department of Environmental Protection (NJDEP), on 30 September 2002.

The study area is a barrier island located in Cape May County, New Jersey (Figure 1-1). The island is bordered to the north by Hereford Inlet and to the south by Cape May Inlet (*formerly Cold Spring Inlet*). Municipalities on the island include: North Wildwood, Wildwood, Wildwood Crest, West Wildwood, and Lower Township. A natural area managed by the US Fish and Wildlife Service and a U.S. Coast Guard Electronics Center are located at the northern boundary of Cape May Inlet, within Lower Township. In the early 20th century the study area was two separate island segments consisting of "Five Mile Beach" and "Two Mile Beach". These two island sections were bisected by Turtle Gut Inlet until the 1920's. At that time Turtle Gut Inlet was closed and a bulkhead was constructed by local interests at the entrance to what was then referred to as Sunset Bay in Wildwood Crest. A marker identifying the approximate

location of Turtle Gut Inlet currently stands at Toledo Avenue in Wildwood Crest. The study area from Hereford Inlet to Cape May Inlet is now a single, continuous barrier island locally known as "Five Mile Island", although the island is approximately 7 miles long.

**Figure 1-1** Project Study Area from Hereford Inlet to Cape May Inlet



**Factors Affecting the Scope and Level of Review.** The Herford to Cape May project has been determined to be of low to moderate risk for the factors listed below. The ATR team should focus on the technical analysis, hydrology/hydraulic analysis and development of alternatives to assure quality control in the projects forwarded for MSC consideration.

- Most aspects of the study will not be technically challenging; similar repair measures have been successfully engineered and implemented on similar projects in the area and the country.
- There is a moderate level of uncertainty associated with this study. The hydraulic/hydrologic and economic analyses performed during the feasibility study was put through a rigorous peer reviewed Risk and Uncertainty Analysis.
- Implementation of a flood risk management project could potentially reduce flood related risks to human life/safety. The overall study has limited risks and will most likely be a very traditional flood risk management project. The study evaluated both structural and non-structural flood risk management measures including, relocation, beach nourishment and hardened structures. Non-performance or design exceedance of these measures could result in risks to life safety. If a flood barrier were to be overtopped, the benefited area, including critical infrastructure and the population would be at risk; however, there would likely be adequate warning time to allow preparation or evacuation before flooding occurs. The District Chief of Engineering has not determined that there is a potential for significant life safety risk associated with some of the measures being considered in the event of non-performance or design exceedance.
- An independent peer review by independent experts has not been initiated
- The study is not likely to involve significant public dispute as to the size, nature, or effects of the project. The project delivery team (PDT) has conducted a series of three meetings with elected officials and three open houses with the general public. Information was provided about formulation and the results of the initial screening, along with conceptual alternatives. The PDT received no comments involving significant concerns or requested changes.
- The study is not likely to involve significant public dispute as to the economic or environmental cost or benefit of the project. The project delivery team (PDT) has conducted a series of three meetings with elected officials and three open houses with the general public. Information was provided about preliminary benefit/cost ratios, as well as environmental aspects of the project. The PDT received no comments involving significant concerns or requested changes.
- The information in the decision document is not 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.
- At this early stage, it is unknown to what degree the project design will require redundancy, resiliency, and/or robustness. However, these qualities will be built into the range of storm damage reduction alternatives considered as part of the study.

**In-Kind Contributions.** Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. The in-kind products and analyses to be provided by the non-Federal sponsor include: Nothing. The non-Federal sponsor's cost share is being provided through cash contributions and no in-kind services have been provided.

#### 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 documents that review contractor work and have previously been created in Microsoft Word will be provided through attachment in DrChecks. All future contractor work will be reviewed in DrChecks. For work conducted in-house, technical supervisors are assuring that experienced personnel, who have been involved with similar work, are checking team members' technical work for completeness, accuracy and clarity. The DQC of the in-house work is being documented in DrChecks. At a minimum all reviews will place a comment in DrChecks that states they have performed the review and all comments have been adequately addressed. Any major comment regarding the documents will also be placed in DrChecks. Comments minor in nature will be provided to the PDT and addressed outside of DrChecks. A District Quality Control Review (DQCR) will be conducted prior to ATR. The ATR team will be provided access to the DQC comments and responses.

#### 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.

- a. **Products to Undergo ATR.** The feasibility study will be conducted in phases. ATR will occur on documentation leading up to, and including, the tentatively selected plan, including NEPA documentation to date.
- b. **Required ATR Team Expertise.** The expertise represented on the ATR team reflects the significant expertise involved in the work effort and generally mirrors the expertise on the PDT. The ATR Team Leader follows the requirements as outlined in the "ATR Lead Checklist" developed by the National Planning Centers of Expertise. The following table provides a list of disciplines included on the ATR team and descriptions of the expertise required, though it is not certain that GeoEnvironmental expertise will be needed.



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. The ATR lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).
Planning	The Planning reviewer should be a senior water resources planner with experience in the formulation aspect of flood risk management studies.
Economics	The Economics reviewer should be a senior level economist with experience in evaluating the benefits and costs associated with a flood risk management study, including the use of HEC-FDA.
Environmental Resources	The Environmental reviewer should be a senior biologist with experience in ecosystem restoration opportunities associated with flood risk management studies, especially tidal wetland enhancement. They should also have expertise in NEPA compliance.
Cultural Resources	The Cultural Resources reviewer should be a senior archaeologist.
Hydrology	The Hydrology review should be a senior level hydrologic engineer with experience in flood risk management studies and the development of flow and stage frequency curves.
Hydraulic Engineering	The Hydraulic Engineering reviewer should be an expert in the field of hydraulics and have a thorough understanding and knowledge of open channel dynamics, enclosed channel systems, application of detention/retention basins, application of levees and flood walls, interior drainage, non-structural solutions involving flood warning systems and flood proofing, etc and/or computer modeling techniques that will be used such as HEC-RAS and HEC-HMS.
Risk Analysis	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.
Geotechnical Engineering	The Geotechnical reviewer should be a senior geotechnical engineer familiar with the geotechnical requirements of structural and nonstructural flood risk management measures.
Civil Engineering	The Civil Engineering reviewer should be a senior civil engineer familiar with structural and nonstructural flood risk management measures.
Cost Engineering	The Cost Engineering reviewer should be a senior cost engineer.
Real Estate	The Real Estate representative should be an expert in real estate acquisition and appraisals.
GeoEnvironmental	The GeoEnvironmental expert, if needed as a team member, should be familiar with RCRA and CERCLA.

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

- (1) The review concern – identify the product’s information deficiency or incorrect application of policy, guidance, or procedures;
- (2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not been properly followed;
- (3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and
- (4) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

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

The ATR documentation in DrChecks 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.

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:

- Identify the document(s) reviewed and the purpose of the review;
- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions;
- Identify and summarize each unresolved issue (if any); and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

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)

IEPR has been initiated. 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 1165-2-209, 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:

- **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 1165-2-209.
- **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.

**Decision on IEPR.** Application of an IEPR requires a risk informed decision considering the following factors (Appendix D of EC 1165-2-209):

- a) The consequences of nonperformance on project economics, the environment, and social well-being (public safety and social justice).
  - b) Whether the product is likely to contain influential scientific information or be highly influential scientific assessment.
  - c) If and how the study meets any of the possible IEPR exclusions described in Paragraph 11.d. (3) and Appendix D of EC 1165-2-209.
  - d) If and how the study contains a mandatory triggers for IEPR.
- a. This study does not meet the all of the IEPR exclusion criteria. Because of the potential risks associated with the study, Type I IEPR is recommended for this project. This study will be subject to Type I IEPR on the basis of potential life safety risks. The general purpose of the IEPR is to consider the adequacy, appropriateness, and acceptability of the design in assuring public health, safety, and welfare. Type II IEPR or Safety Assurance Review (SAR) is anticipated to be required on project

design and implementation document. As such, SAR will be done in type I IEPR for the Feasibility Study.

- b. **Products to Undergo Type I IEPR.** Type I IEPR should be performed for the entire decision document (including supporting documentation) at the draft report stage. Safety Assurance will be addressed during the Type I IEPR.
- c. **Required Type I IEPR Panel Expertise.** Type I IEPR will be conducted for this study. The expertise represented on the IEPR panel should be similar to those on the ATR team. The panel will include the necessary expertise to assess the engineering, environmental, and economic adequacy of the decision document as required by EC 1165-2-209, Appendix D.

IEPR Panel Members/Disciplines	Expertise Required
Economics	The Economics Panel Member reviewer will be responsible for reviewing the required economic analyses, project benefits, anticipated future costs, and residual damages for the project alternatives as well as ensuring that the proper economic information was included in the Environmental Assessment.
Environmental	The Environmental reviewer will be responsible for assessing environmental impacts, coordinating ecosystem restoration studies and ensuring the proper NEPA and cultural resource compliance activities were completed. This may include verifying any NER calculations and completion of the Fish and Wildlife Service Coordination Act requirements.
Engineering	<p>The Hydraulic engineering and Hydrology reviewers will ensure that the hydrologic and hydraulic analysis was properly completed and that the alternatives will actually achieve the desired results.</p> <p>The cost engineering reviewer will ensure that the estimated project costs are accurate and that the assumptions made to develop these costs were reasonable.</p> <p>The civil engineering reviewer will ensure that the designed project meets Corps standards that the quantities estimated and assumptions are reasonable.</p> <p>The geotechnical engineering reviewer should have an extensive experience in geotechnical evaluation of flood risk management structures such as static and dynamic slope stability evaluation, evaluation of the seepage through earthen embankments and underseepage through the foundation of the flood risk management structures, including canal and levee embankments, floodwalls, closure structures and other pertinent features, and in settlement evaluation of the structure.</p>

**d. Documentation of Type I IEPR.** The IEPR panel will be selected and managed by an Outside Eligible Organization (OEO) per EC 1165-2-209, 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:

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

The 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 DIRECTORY OF EXPERTISE (DX) REVIEW AND CERTIFICATION**

All decision documents shall be coordinated with the Cost Engineering DX, located in the Walla Walla District, or by a locally approved and certified cost reviewer. The DX 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 DX will also provide the Cost Engineering DX certification. The RMO is responsible for coordination with the Cost Engineering DX.

## **9. MODEL CERTIFICATION AND APPROVAL**

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).

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).

Two models were approved and certified for one time use by North Atlantic Division for this study. The two models were Cost-dam and S-Beach. A Coastal Storm Damage Assessment model, COSTDAM was originally developed within the USACE Wilmington District as a FORTRAN program and was updated and adopted for use by USACE Philadelphia District (NAP) for their shoreline studies. COSTDAM will be utilized in conjunction with the Storm Induced Beach Change (SBEACH) model. SBEACH is a two-dimensional model used to predict storm-induced beach erosion and post-storm recovery and was developed by USACE Engineering Research Development Center (ERDC). Use of SBEACH/COSTDAM will collectively be referred to in this plan as the model. It will be considered for approval for use solely on the Hereford Inlet to Cape May Inlet, NJ Feasibility Study. The model was reviewed and approved by the Jacksonville ATR team, the Planning Center of Expertise in Economics, Norfolk District and ultimately the Coastal Storm damage Center of Expertise on 13 April 2012.

**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 1.2.5 (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 Delaware River to aid in the selection of a recommended plan to manage flood risk.	Certified
Cost-Dam		Approved

- a. **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
S-Beach	Two dimensional cross shore profile change model developed by the Hydrologic Engineering Center to model the change in profile shape, volume loss, shoreline retreat of sand beaches as a result of coastal storms.	Certified

## 10. REVIEW SCHEDULES AND COSTS

- a. **ATR Scope and Cost.** ATR review has been performed by the Jacksonville District. Jacksonville is nearly complete their portion of the review and will review the upcoming draft document and final report package. They have contributed heavily to the study process and have reviewed the submittal packages and report information, the FSM material from 2009 as well as the Risk and Uncertainty plan approved in 2011. Jacksonville will also review the draft feasibility report, DP-3, DP-4 and DP-5 read ahead material as well as the final report. The total Costs for the ATR to date is approximately \$60,000.
- b. **Type I IEPR Scope and Cost.** IEPR will be performed for the entire decision document at the Draft Report stage. It is anticipated that the review will not exceed 12 weeks. Total estimated costs for the IEPR is \$160,000.
- c. **Model Certification/Approval Schedule and Cost.** The planning and engineering models were certified for one time use by the Coastal Storm damage reduction Center of Expertise on 13 April 2012.

## 11. PUBLIC PARTICIPATION

At the beginning of the feasibility study the PDT met with official representatives of each local government in the field to visit previously flooded areas. Each representative was asked to identify a municipal problem statement, actions planned or taken, municipal desires and any other relevant topics. A project website was subsequently created to disseminate information about the project and flooding in general. After the initial formulation and screening, regional meetings were held with elected officials and their designees to explain the project process to date and discuss the outcome of the first alternatives screening. Feedback was incorporated into the project. Subsequently, regional open houses were held for the general public. These open houses also served as NEPA scoping events and all relevant parties were invited. It is anticipated that further public outreach will occur around the selected plan and, as required, the Draft Report will be sent out for public review. To date, the PDT has not received comments of significance to reviewers. Should this occur the comments will be provided to the reviewers prior to the next review. It is not anticipated that the public will be asked to nominate potential peer reviewers. The final decision document, associated review reports, and USACE responses to IEPR comments (if applicable) will be made available to the public via pdf format on the project website.

## **12. REVIEW PLAN APPROVAL AND UPDATES**

The North Atlantic Division Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, and HQUSACE members) as to the appropriate scope and level of review for the 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 are 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:

- Philadelphia District, Project Manager, 215.656.6585
- Coastal Planning Center of Expertise, 347-320-4571



**ATTACHMENT 1: TEAM ROSTERS**

<b>PDT</b>			
<b>Discipline</b>	<b>Name</b>	<b>Phone</b>	<b>Email</b>
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Coastal Engineering	pending	pending	pending
Biologist	pending	pending	pending
Geotechnical/Civil	pending	pending	pending

**ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECISION 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<sup>sm</sup>.

SIGNATURE

\_\_\_\_\_  
Name  
ATR Team Leader  
Office Symbol/Company

\_\_\_\_\_  
Date

SIGNATURE

\_\_\_\_\_  
Name  
Project Manager  
Office Symbol

\_\_\_\_\_  
Date

SIGNATURE

\_\_\_\_\_  
Name  
Architect Engineer Project Manager<sup>1</sup>  
Company, location

\_\_\_\_\_  
Date

SIGNATURE

\_\_\_\_\_  
Name  
Review Management Office Representative  
Office Symbol

\_\_\_\_\_  
Date

**CERTIFICATION OF AGENCY TECHNICAL REVIEW**

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

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

SIGNATURE

\_\_\_\_\_  
Name  
Chief, Engineering Division  
Office Symbol

\_\_\_\_\_  
Date

SIGNATURE

\_\_\_\_\_  
Name  
Chief, Planning Division  
Office Symbol

\_\_\_\_\_  
Date

<sup>1</sup> Only needed if some portion of the ATR was contracted

**ATTACHMENT 3: REVIEW PLAN REVISIONS**

<b>Revision Date</b>	<b>Description of Change</b>	<b>Page / Paragraph Number</b>

**ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS**

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