



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

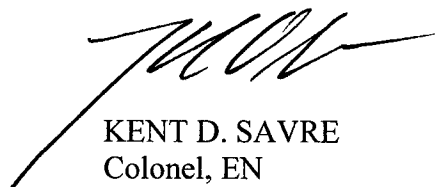
CENAD-PD-PP

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

SUBJECT: Review Plan Approval for Delaware River Basin Comprehensive New York, New Jersey, Pennsylvania, Maryland and Delaware – Interim Feasibility Study for New Jersey

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 Flood Risk Management Planning Center of Expertise of the South Pacific Division, which is the lead office to execute this plan. For further information, contact Mr. Eric Thaut at 415-503-6852. 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

**Delaware River Basin Comprehensive New York, New Jersey, Pennsylvania,
Maryland and Delaware
– Interim Feasibility Study for New Jersey**

Philadelphia District

**MSC Approval Date: Pending
Last Revision Date: None**



**US Army Corps
of Engineers®**

REVIEW PLAN

**Delaware River Basin Comprehensive New York, New Jersey, Pennsylvania, Maryland and Delaware
– Interim Feasibility Study for New Jersey**

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1. PURPOSE AND REQUIREMENTS

a. **Purpose.** This Review Plan defines the scope and level of peer review for the Delaware River Basin Comprehensive New York, New Jersey, Pennsylvania, Maryland and Delaware – Interim Feasibility Study for New Jersey.

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, Delaware River Basin Comprehensive New York, New Jersey, Pennsylvania, Maryland and Delaware – Interim Feasibility Study for New Jersey, 31 May 2006
- (6) Philadelphia District Quality Management Plan, February 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

a. **Decision Document.** The Delaware River Basin Comprehensive New York, New Jersey, Pennsylvania, Maryland and Delaware – Interim Feasibility Study for New Jersey will be focused on flood risk management for the project area and identify if there is a federally implementable flood risk management project. This project will require congressional authorization. In accordance with the

National Environmental Policy Act, an Environmental Assessment will be developed with this feasibility study.

- b. Study/Project Description.** The US Army Corps of Engineers (Corps) has been given the authority under Section 729 of the Water Resources Development Act (WRDA) of 1986, as amended by Section 202 of WRDA 2002, to conduct a Reconnaissance study and ensuing Feasibility level investigations in the Delaware River Basin. The Delaware River Basin was listed as a priority river basin and the authority provides that:

"The Secretary may assess the water resources needs of river basins and watershed of the United States, including needs relating to: (1) ecosystem protection and restoration; (2) flood damage reduction; (3) navigation and ports; (4) watershed protection; (5) water supply; and (6) drought preparedness."

In addition, on July 20, 2005 the United States Senate Committee on Environment and Public Works requested that the:

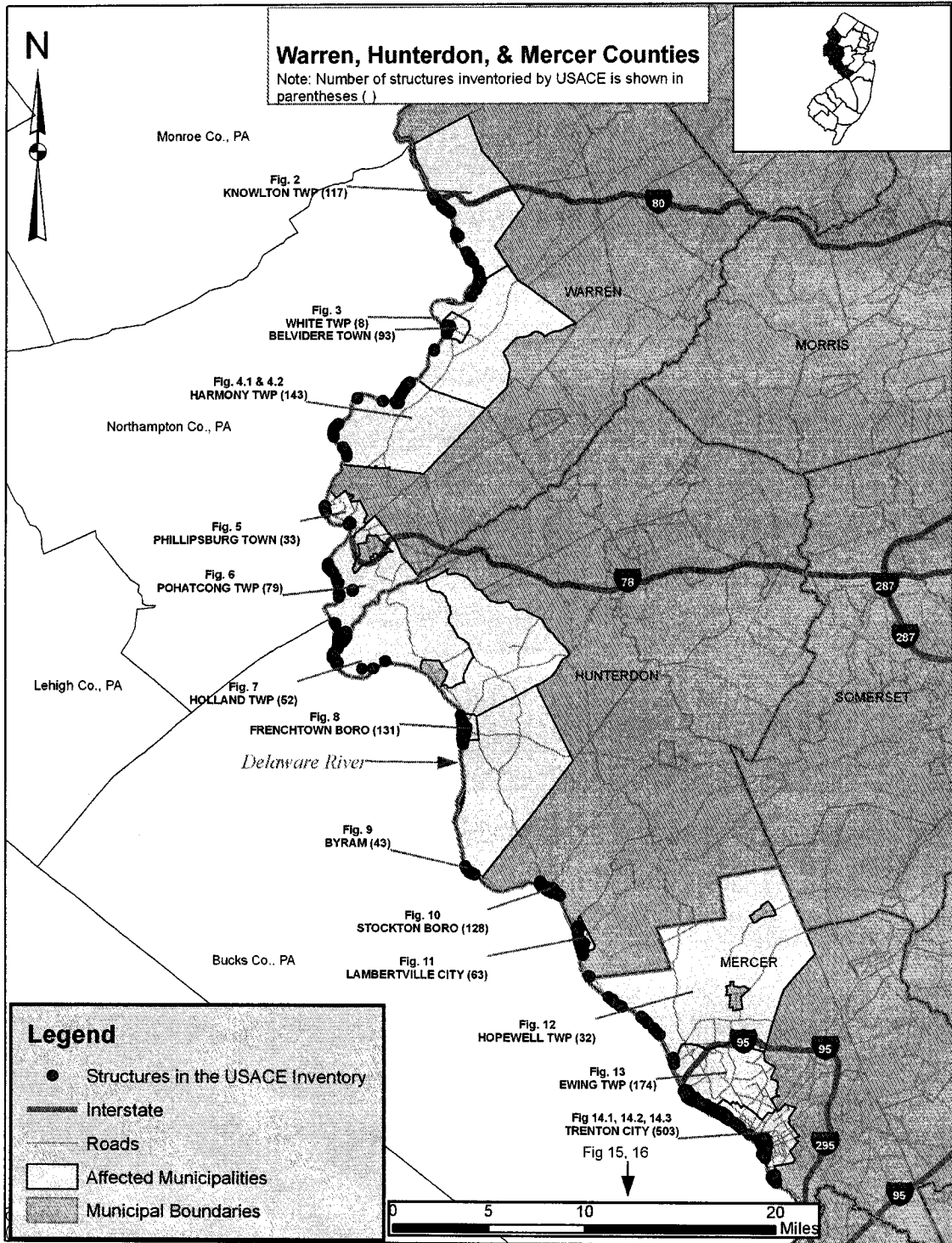
"Secretary of the Army review the report of the Chief of Engineers on the Delaware River and its tributaries, Pennsylvania, New Jersey, and New York, published as House Document 179, Seventy Third Congress, Second Session, with a view to determining whether any modifications of the recommendations contained therein are advisable in the interest of ecosystem restoration, flood plain management, flood control, water quality control, groundwater and subsidence management, comprehensive watershed management, recreation, and other allied purposes."

The Federal interest was established in the Reconnaissance phase. The Interim Feasibility Study for New Jersey will evaluate potential solutions to flooding problems and related environmental degradation within the Delaware River Basin.

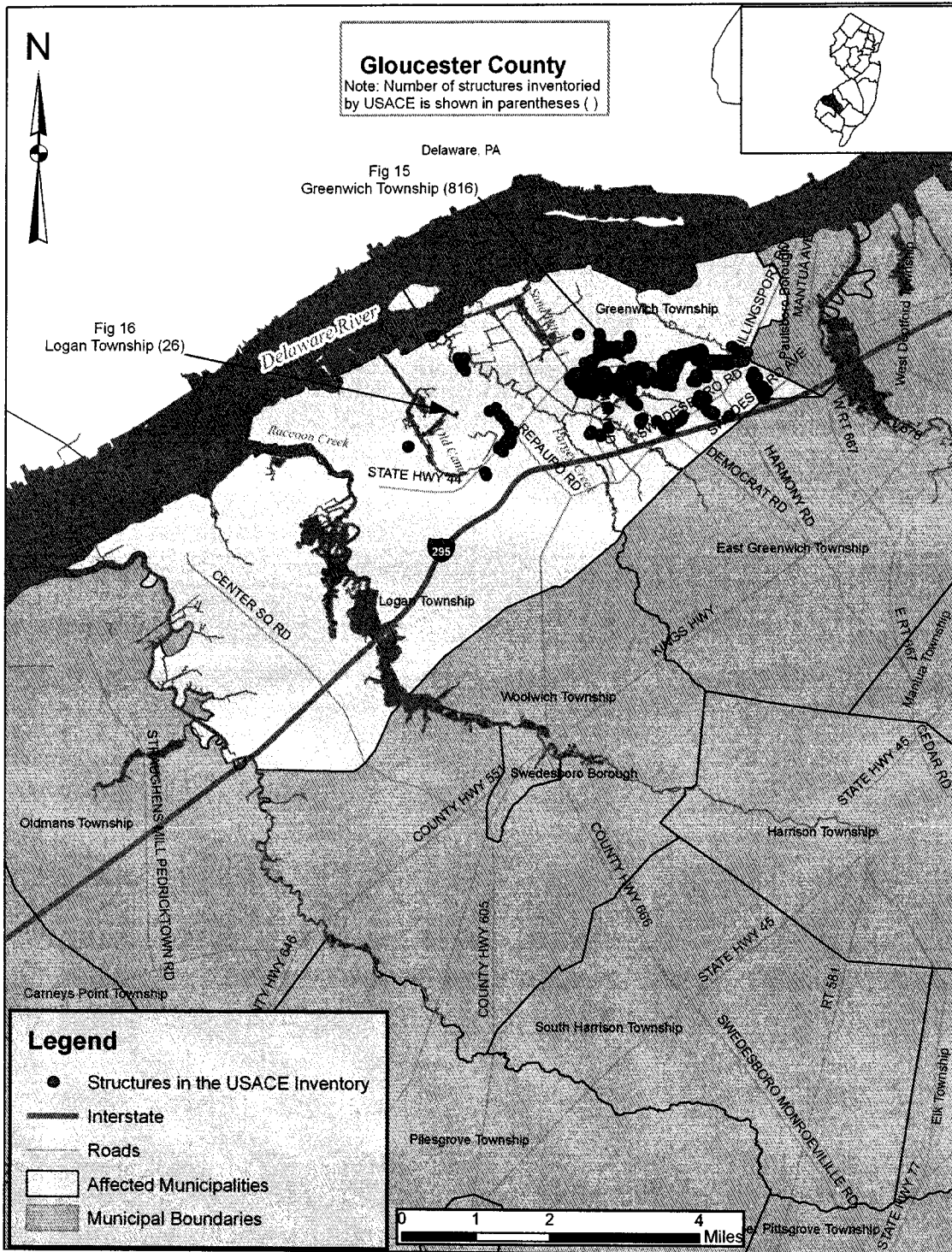
The New Jersey Department of Environmental Protection (NJDEP) has signed a feasibility cost-sharing agreement and is acting as the local sponsor for the study, with a responsibility for 50 percent of the costs of the Interim Feasibility Study for New Jersey.

As mutually agreed to with NJDEP, based on knowledge of the areas of greatest flood damage, the study area is along the Delaware River in the municipalities of Knowlton Township, Belvidere, White Township, Harmony Township, Philipsburg and Pohatcong Township in Warren County, Holland Township, Frenchtown, Kingwood Township, Stockton and Lambertville in Hunterdon County, and Hopewell Township, Ewing Township and Trenton in Mercer County. The study also investigates flooding and associated ecosystem restoration issues related to the levee along the Delaware River in Logan and Greenwich Townships in Gloucester County.

Structural flood risk management measures such as levees, floodwalls and associated interior drainage will be considered. In addition, nonstructural measures such as structure elevation, wet and dry floodproofing, ringwalls, rebuilding and acquisition will be considered. Also, if ecosystem restoration opportunities can be pursued in conjunction with flood risk management measures, these will be identified. Such opportunities appear to be limited due to the relatively small scale and limited regional or national significance of the potential restoration outputs. The most likely significant restoration opportunity is associated with a line of protection in Greenwich and Logan Townships. Costs for projects within the municipalities are estimated to range between \$300,000 and \$90,000,000.



Source: NJDEP, Municipalities of New Jersey (Clipped to Coast by NJDEP), 2008; NJDOT, Roads 2008



Source: NJDEP, Municipalities of New Jersey (Clipped to Coast by NJDEP), 2008; NJDOT, Roads 2008

The study area is located in the mid-Atlantic region of the United States and generally lies between Philadelphia, Pennsylvania and New York, New York. The study area as a whole has an estimated 2010 population of 204,231. The major population center within the study area is the City of Trenton, with a 2000 population of 85,403. Most of the study area has a rural/suburban character, with some areas experiencing a small amount of population increase. The Delaware River has played a major role in the area as far back as when the land was occupied by indigenous tribes. The majority of the floodplain areas are now extensively developed, particularly in older communities such as Phillipsburg, Lambertville, Stockton and Trenton. In the majority of the study area communities, the floodplain is primarily occupied by residential development. In some communities commercial uses are intermixed with the residential development.

c. Factors Affecting the Scope and Level of Review. The Delaware River Basin Comprehensive New York, New Jersey, Pennsylvania, Maryland and Delaware – Interim Feasibility Study for New Jersey 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; flood risk management measures have been successfully engineered and implemented on similar projects in the area.
- There is a moderate level of uncertainty associated with this study. The hydraulic and hydrologic analyses performed during the feasibility study will require a rigorous analysis with a strong 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 is considering both structural and non-structural flood risk management measures including flood proofing, relocation, and flood barriers. 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.
- A peer review by independent experts has not been requested by the Governor of an affected state.
- 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 flood risk management alternatives considered as part of the study.

- d. **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.

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 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.

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 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 1165-2-209, 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 the Delaware River Basin Comprehensive New York, New Jersey, Pennsylvania, Maryland and Delaware – Interim Feasibility Study for New Jersey. 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</p>

	<p>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>
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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. 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).

- a. **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
Habitat Suitability Indices (HSI) and Habitat Evaluation Procedure (HEP) Analysis	The purpose of HEP/HSI is to document the quality and quantity of available habitat for selected wildlife species. It is anticipated that HEP/HSI may be used to analyze habitat in potential ecosystem restoration areas associated with flood risk management measures.	Certified
IWR-PLAN Decision Support Software	IWR-PLAN assists with plan formulation by combining solutions to planning problems and calculating the additive effects of each combination. It is anticipated that IWR-PLAN may be used to analyze the increase in habitat value for potential ecosystem restoration opportunities associated with flood risk management measures.	Certified

b. 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
HEC-RAS 4.0 (River Analysis System)	The Hydrologic Engineering Center's River Analysis System (HEC-RAS) program provides the capability to perform one-dimensional steady and unsteady flow river hydraulics calculations. The program was be used for steady flow analysis to evaluate the future without- and with-project conditions.	HH&C CoP Preferred Model
HEC-HMS 3.5 (Hydrologic Modeling System)	The Hydrologic Modeling System (HEC-HMS) is designed to simulate the precipitation-runoff processes of dendritic watershed systems. It is designed to be applicable in a wide range of geographic areas for solving the widest possible range of problems. This includes large river basin water supply and flood hydrology, and small urban or natural watershed runoff. Hydrographs produced by the program are used directly or in conjunction with other software for studies of water availability, urban drainage, flow forecasting, future urbanization impact, reservoir spillway design, flood damage reduction, floodplain regulation, and systems operation.	HH&C CoP Preferred
HEC-SSP 2.0 (Statistical Software Package)	The Hydrologic Engineering Center's Statistical Software Package (HEC-SSP) allows users to perform statistical analyses of hydrologic data. The current version of HEC-SSP can perform flood flow frequency analysis based on Bulletin 17B, "Guidelines for Determining Flood Flow Frequency" (1982), a generalized frequency analysis on not only flow data but other hydrologic data as well, a volume frequency analysis on high and low flows, a duration analysis, a coincident frequency analysis, and a curve combination analysis.	HH&C CoP Preferred Model
MII	MII is the second generation of the Micro-Computer Aided Cost Estimating System (MCACES). It provides an integrated cost estimating system (software and databases) that meets USACE requirements for preparing cost estimates.	Certified

10. REVIEW SCHEDULES AND COSTS

a. ATR Schedule and Cost. ATR review will be performed for the tentatively selected plan. It is anticipated that each review should not exceed 11 weeks.

Event	Kick-Off	Reviewers Comments End	PDT Evaluation	Back-Check	Complete	Cost

ATR TSP	27 Mar 13	24 Apr 13	22 May 13	29 May 13	12 Jun 13	\$40,000
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b. Type I IEPR Schedule 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.

Estimated IEPR Schedule

Event	Kick-Off	Reviewers Comments End	PDT Evaluation	Back-Check	Complete	Cost
IEPR (Draft Feasibility Report)	27 Mar 13	1 May 13	29 May 13	5 Jun 13	19 Jun 13	Estimated \$150,000

c. Model Certification/Approval Schedule and Cost. N/A

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, 215.656.6575
- FRM-PCX Regional Manager, 917.790.8720
- FRM-PCX Program Manager, 415.503.6852

ATTACHMENT 1: TEAM ROSTERS

PDT			
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ATR Team			
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Economics	TBD	TBD	TBD
Environmental	TBD	TBD	TBD
Hydrology & Hydraulics	TBD	TBD	TBD
Risk Analysis	TBD	TBD	TBD
Geotechnical	TBD	TBD	TBD
Civil Engineering	TBD	TBD	TBD
Real Estate	TBD	TBD	TBD
Cost Engineering	TBD	TBD	TBD
GeoEnvironmental	TBD	TBD	TBD
Cultural Resources	TBD	TBD	TBD

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 Tentatively Selected Plan Decision Point documentation for Delaware River Basin Comprehensive New York, New Jersey, Pennsylvania, Maryland and Delaware – Interim Feasibility Study for New Jersey. 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 DrCheckssm.

SIGNATURE

Roger Setters
ATR Team Leader
CELRL

Date

SIGNATURE

Theresa Fowler
Project Manager
CENAP

Date

SIGNATURE

Jodi McDonald
Review Management Office Representative
CENAN

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

Peter Tranchik
Chief, Engineering Division
CENAP

Date

SIGNATURE

Minas Arabatzis
Chief, Planning Division
CENAP

Date

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

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