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NOV 9 2017

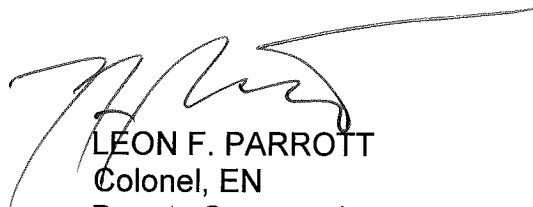
CENAD-PD-P

MEMORANDUM FOR Commander, U.S. Army Corps of Engineers, New York District,  
26 Federal Plaza, New York, NY 10278-0090

SUBJECT: Request for Approval of the Denville, New Jersey Continuing Authorities  
Program Section 205 Flood Risk Management Feasibility Study Review Plan

1. Reference Memorandum, CENAN-DE, dated 3 Oct 2017, subject as above.
2. The Flood Risk Management Planning Center of Expertise of the South Pacific Division (SPD) is the lead office to execute the referenced Review Plan. The Review Plan includes Independent External Peer Review.
3. The enclosed Review Plan is 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 require new written approval from the NAD Commander.
4. The point of contact is Mr. Larry Cocchieri, NAD Planning Program Manager at 347-370-4571 or [Lawrence.J.Cocchieri@usace.army.mil](mailto:Lawrence.J.Cocchieri@usace.army.mil).

Encl

  
LEON F. PARROTT  
Colonel, EN  
Deputy Commander



DEPARTMENT OF THE ARMY  
U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT  
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CENAN-DE

OCT 03 2017

MEMORANDUM FOR: Commander, North Atlantic Division, CENAD-EX, 301 General Lee Avenue, Fort Hamilton Community, Brooklyn, New York 11252, (Attn: Mr. Larry Cocchieri)

SUBJECT: Request for Approval of the Review Plan for the Denville, New Jersey, Continuing Authorities Program Section 205 Flood Risk Management Feasibility Study

1. References

- a. Engineer Circular (EC) 1165-2-214, Civil Works Review, 15 DEC 12
- b. EC 1105-2-412, Planning, Assuring Quality of Planning Models, 31 MAR 11
- c. Engineer Regulation (ER) 1110-2-12, Quality Management, 30 SEP 06

2. The subject Review Plan is enclosed for your approval in accordance with Appendix B of Reference 1 (Enclosure 1). The Review Plan complies with all applicable policies and provides an adequate approach to District Quality Control, Agency Technical Review, and Independent External Peer Review of the plan formulation, engineering and environmental analyses, as well as other required planning considerations. It has been endorsed by the Flood Risk Management Planning Center of Expertise (FRM-PCX); that endorsement is also enclosed.

3. If you should require more information, my point of contact is Mr. Nathanael T. Wales, P.E., Study Manager, at [Nathanael.T.Wales@usace.army.mil](mailto:Nathanael.T.Wales@usace.army.mil) or 917-790-8731.

Encl

THOMAS D. ASBERY  
COL, EN  
Commanding

CF:

Chief, CENAD Planning Division Programs Directorate (Vietri)  
Deputy Chief, CENAD Planning Division Programs Directorate (Gruber)

# **REVIEW PLAN**

**Denville, NJ  
Flood Risk Management  
Feasibility Study**

**New York District**

**MSC Approval Date: Pending  
Last Revision Date: September 2017**



**US Army Corps  
of Engineers®**

## REVIEW PLAN

### Denville, NJ Flood Risk Management Feasibility Study

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## 1. PURPOSE AND REQUIREMENTS

a. **Purpose.** This Review Plan defines the scope and level of peer review for the Denville, NJ, Flood Risk Management Feasibility Study.

### b. References

- (1) Engineering Circular (EC) 1165-2-214, Civil Works Review Policy, 15 Dec 2012
- (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 F – Amendment #2, Continuing Authorities Program, 31 Jan 2007
- (5) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
- (6) New York District Quality Management Plan

c. **Requirements.** This review plan was developed in accordance with EC 1165-2-214 and PB 2016-02, 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

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 the Flood Risk Management Planning Center of Expertise (FRM-PCX), South Pacific Division.

The RMO will coordinate with the Cost Engineering 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. Because there is potential risk for life safety, the Risk Management Center of Expertise (RMC) will be consulted during the development of the scope of the Type I IEPR to include those Safety Assurance Review factors that should be reviewed for this study.

## 3. STUDY INFORMATION

a. **Decision Document.** The study is the Denville, New Jersey, Flood Risk Management Study and will be documented in a Detailed Project Report (DPR). The anticipated length of this main report will be 40 to 50 pages. The Denville feasibility study is being conducted under the USACE's Continuing Authorities Program (CAP). The purpose of the Denville feasibility study is to formulate and evaluate potential alternatives for reducing flood damages within the study area; assess the Federal interest in participating in flood risk management plans; identify the plan which maximizes net economic

benefits; and if consistent with Administration policy, recommend a project for Federal implementation. The legislative authority for the Denville study is Section 205 of the Flood Control Act of 1948 (Public Law 80-858), as amended. The New Jersey Department of Environmental Protection (NJDEP) is the non-Federal sponsor for this study.

The decision document, including EA, will present planning, engineering and implementation details of the recommended plan to allow final design and construction to proceed subsequent to approval of the plan. The study effort is funded by the Continuing Authorities Program – Section 205, undertaken to evaluate structural and non-structural flood risk management measures. For this study, measures include but are not limited to structural measures (including levees and floodwalls, road raising, and channel bypass) and nonstructural measures (such as structure elevation, removal of existing piers in waterways, and floodproofing). In addition to the without project future condition no action alternative, one structural alternative and one nonstructural alternative will be developed and analyzed.

The level of approval for the decision document is delegated by the Chief of Engineers to the Division Commander. The National Environmental Policy Act (NEPA) documentation will be an Environmental Assessment (EA) which will be integrated with the document (that is, an integrated feasibility report and EA will be prepared).

- b. **Study/Project Description:** An initial evaluation of flooding problems and potential solutions in Denville was documented in the Rockaway River and Den Brook, Denville, Morris County, New Jersey, Federal Interest Determination (FID) dated February 2016. The FID demonstrated that there was a Federal interest in, and non-Federal support for, pursuing solutions to the flooding problems in Denville. **A Project Management Plan (PMP) and Feasibility Cost-Sharing Agreement are currently being negotiated with the non-Federal sponsor.**

The Rockaway River flows through the Township of Denville, Morris County, New Jersey. Denville is located about 25 miles northwest of Newark, New Jersey in the northern central part of the state. The village is mostly developed, with the densest development a mix of residential and commercial land uses located south of Rockaway River. As of the 2010 census, it had a population of 16,635 people.

Denville is highly vulnerable to fluvial flooding from the Rockaway River and has endured numerous severe flooding events, the latest and perhaps most severe occurring during Hurricane Irene on August 27 - 28, 2011. The primary source of this flooding is the Rockaway River and its tributaries. The Rockaway River receives flow from Beaver Brook just before entering Denville Township from Rockaway Borough to the west. The River then flows to the east under Interstate 80 (where the reported tributary drainage area is 87.1 square miles) and through the central portion of the Township where it receives flow from Den Brook just prior to turning to the northeast. The River continues flowing to the northeast through Denville Township and into Boonton Township, where it eventually turns to the east and flows through the Town of Boonton and into the Boonton Reservoir.

Township residents and businesses have suffered extensive losses and damage from several severe flooding events in recent decades. The central business district has been hard hit and approximately 100 residential properties have been affected. Irene's aftermath caused the Denville Police Department to order evacuations for residents and businesses, including its own operations. Significant developed portions of the Township are subject to flooding: in some areas the 100-year

flood depth can exceed 6 feet, several homes and other structures are in the floodway, and velocities range from 12 to 14 feet per second in the most high risk area.

The FID identified flood risk management measures that are in the Federal interest to study, including but not limited to structural measures (including levees and floodwalls, road raising, and channel bypass) and nonstructural measures (such as structure elevation, removal of existing piers in waterways, and floodproofing). The project shall be subject to cost sharing, financing, and other requirements of the Water Resources Development Act (WRDA) of 1996 (Public Law 104-303).

**c. Factors Affecting the Scope and Level of Review.**

- As the proposed project is relatively modest in scale and involves conventional flood risk management measures, significant economic, environmental, and/or social effects to the Nation are not anticipated.
- Because levees and floodwalls are included in this study at this point, it is determined that there is significant threat to human life/safety assurance from non-performance or catastrophic failure as well as the significant probability of residual risk of damages, including residual risk to human life/safety assurance, even after the recommended project is implemented.
- The project is likely to have significant interagency coordination with the NJDEP, and the study is not expected to be highly controversial as long as public expectations are managed effectively, per the Communications Plan Appendix to the PMP.
- The report is unlikely to contain influential scientific information because the proposed flood risk management measures are conventional and straightforward.
- It is unlikely that the information in the decision document or proposed project design will 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 because the proposed measures are conventional.
- The proposed project design is unlikely to require redundancy, resiliency, and/or robustness because of its relatively modest scale and use of conventional techniques, however, this assumption may be revisited as more data are collected and developed.
- The proposed project is not expected to involve unique construction sequencing or a reduced or overlapping design construction schedule because of its relatively modest scale and use of conventional techniques.

- d. In-Kind Contributions.** Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. No in-kind products and analyses to be provided by the non-Federal sponsor have been identified. This Review Plan will be updated if in-kind services are identified.

**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. 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 conducted on all decision documents and interim reports as noted below in Section 4(b) of this Review Plan. Documentation for all DQC reviews will be provided in DrChecks and included in a Quality Control Appendix of all decision documents and interim reports and/or in a memorandum signed by the DQC team.
- b. **Products to Undergo DQC.** Products under this study to undergo DQC include IPR technical documents should they become required and Draft/Final Reports.
- c. **Required DQC Expertise.** The expertise required for this study will be extensive. Expertise will be required for structural engineering, civil engineering, geotechnical engineering, cost engineering, hydraulic engineering, hydrologic engineering, environmental resources, cultural resources, HTRW, plan formulation, real estate and economics. Additional expertise may be required by Public Affairs and the Office of Counsel.

## 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.** Products under this study to undergo ATR include IPR technical documents should they become required and the Draft/Final DPR. Additionally, where practicable, technical products that support subsequent analyses may be reviewed prior to being used in the study and may include: surveys & mapping, hydrology & hydraulics, geotechnical investigations, economic, environmental, cultural, and social inventories, annual damage and benefit estimates, cost estimates, etc.
- b. **Required ATR Team Expertise.** The appropriate RMO, in cooperation with the PDT, vertical team members at the MSC, and other appropriate centers of expertise, will determine the final make-up of the ATR team. The following table provides the types of disciplines that should be included on the ATR team and the expertise required. Some ATR team members may be able to fulfill up to two review disciplines. The names, organizations, contact information, credentials, and years of experience of the ATR members will be included in Attachment 1 once the ATR team is established.

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 formulation of flood risk management studies especially in urban, highly developed areas.
Economics / Risk Reviewer	The economics reviewer should have extensive experience in urban flood risk management studies and a thorough understanding of HEC-FDA. This team member will also 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.
Environmental Resources	Team member will have independently completed EA/EIS's and be well versed in the NEPA process, partnerships with other environmental resource agencies and environmental concerns and constraints within urban settings. The team member should also have knowledge of HTRW issues common to urban environments and developed areas.
Cultural Resources	Team member will have experience with Section 106 actions and documentation including mitigation for historical structures and archeological artifacts.
Hydrology and Hydraulic Engineering/Climate Change	Team member should be an expert in the field of urban hydrology and hydraulics, have a thorough understanding of flash flooding and open channel systems, and have a thorough understanding of the use of HEC computer modeling systems. The member should also have the ability to perform H&H analyses in consideration of anticipated climate change. A certified professional engineer is required.
Geotechnical Engineering	Team member should have expertise with levees and floodwalls. A certified professional engineer is required
Civil Engineering	Team member will have a thorough understanding of design of levees and floodwalls in an urban setting. A certified professional engineer is required.
Structural Engineering	Team member will have a thorough understanding of both structural and non-structural measures to include, but not be limited to, retaining walls, channel improvements and tunnels. A certified professional engineer is required.
Cost Engineering	Team member will be familiar with cost estimating for similar projects in MII. Review includes construction schedules and contingencies for any document requiring Congressional authorization. The team member will be a registered Professional Engineer, 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 or

	IEPR team lead in conjunction with the geographic district's project manager.
Real Estate	Team member will have at least 5 years experience with flood risk management studies and be familiar with urban planning and acquisition strategies and preparation of Real Estate Plans.

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, and MSC), 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, 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 1165-2-214, 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:

- **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.
  - **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.
- a. **Decision on IEPR.** This section should document the risk informed decision on whether IEPR (Type I, Type II, both or neither) will or will not be conducted for the decision document and, if appropriate, follow-on project implementation. The decision should be based on the criteria in EC 1165-2-214 and the discussion in Section 3 – Factors Affecting the Scope and Level of Review. If an exclusion to Type I IEPR is being requested, the basis for and status of the exclusion should be discussed. Furthermore, the recommendation must make the case that the study is so limited in scope or impact that it would not significantly benefit from Type I IEPR. If Type II IEPR is not considered appropriate, the basis for this decision should also be discussed. The risk informed decision should explicitly consider:

- If the decision document meets the mandatory triggers for Type I IEPR described in Paragraph 11.d.(1) and Appendix D of EC 1165-2-214; and if it does not, then also:
  - the consequences of non-performance on project economics, the environmental and social well-being (public safety and social justice); This is applicable to Denville.
  - whether the product is likely to contain influential scientific information or be highly influential scientific assessment; This is not applicable to Denville.

and

- if and how the decision document meets any of the possible exclusions described in Paragraph 11.d.(3) and Appendix D of EC 1165-2-214.
- The status of any request to conduct IEPR from a head of a Federal or state agency charged with reviewing the project, if applicable; This is not applicable to Denville.

and

- If the proposed project meets the criteria for conducting Type II IEPR described in Paragraph 2 of Appendix D of EC 1165-2-214, including:
  - if the Federal action is justified by life safety or failure of the project would pose a significant threat to human life; This is applicable to Denville.
  - if the project involves the use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent-setting methods or models, or presents conclusions that are likely to change prevailing practices; This is not applicable to Denville.
  - if the project design requires redundancy, resiliency, and/or robustness; This is not applicable to Denville.

and/or

- if the project has unique construction sequencing or a reduced or overlapping design construction schedule. This is not applicable to Denville.

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

- IEPR (Type I and Type II) will be conducted for the decision document and, if appropriate, follow-on project implementation. This decision is based on the criteria in EC 1165-2-214 and the discussion in Section 3 – Factors Affecting the Scope and Level of Review. The proposed project meets the criteria for conducting Type II IEPR described in Paragraph 2 of Appendix D of EC 1165-2-214, therefore, Safety Assurance will also be addressed during the Type I IEPR per Paragraph 2.c.(3) of Appendix D of EC 1165-2-214.

Type 1 IEPR will be required for the Denville, NJ, Flood Risk Management Study, as this is a Continuing Authorities Program (CAP) study where Type I IEPR is required, also due to the potential for life and safety impacts from non-performance or catastrophic failure of one of the alternatives being developed. Close coordination with the sponsor and public meetings are expected to negate significant public dispute with regard to a recommended plan as are coordination with USFWS and EPA and cultural/archeological interests. Flood risk management methods and models used in this study are typical of all Corps flood risk management studies with little room for interpretation and are not expected to change prevailing practices on this or future studies.

As this is a flood risk management (FRM) study, a Safety Assurance Review as part of a Type I IEPR is presumed to be warranted due to the potential for risk to life safety involved in any FRM study. However, it is too early in the study process to accurately predict the level of risk involved to human life as well as the probability (likely) for residual risk of damages after the recommended project is implemented. Therefore, the risk informed assessment of significant threat to human life will be revisited once the recommended plan is identified.

- b. Products to Undergo Type I IEPR. Products to Undergo Type I IEPR.** At minimum, Type I IEPR will be performed for the entire decision document (including supporting documentation), which is typically available at the draft report stage; however, it is anticipated to initiate IEPR early in the study process to reduce the chances of significant changes to the decision document occurring at the end of the study due to IEPR panel findings and recommendations.
- c. Required Type I IEPR Panel Expertise.** If Type I IEPR will not be conducted for this study, 'Not-Applicable' should be indicated; otherwise this section should provide an estimate of the number of Type I IEPR panel members and briefly describe the types of expertise that should be represented on the panel (not just a list of disciplines). The expertise represented on the Type I IEPR panel will be similar to those on the ATR team. The IEPR panel is anticipated to involve as many disciplines/individuals as the ATR team. At minimum, the panel should include the necessary expertise to assess the engineering, environmental, and economic adequacy of the decision document as required by EC 1165-2-214, Appendix D. The PDT has made the initial assessment of what expertise is needed and the factors affecting the scope and level of review outlined in Section 3 of the review plan. The Outside Eligible Organization (OEO) will determine the final participants on the panel. The following table provides the types of disciplines that might be included on the IEPR team and a description of the expertise required.

IEPR Panel Members	Expertise Required
Plan Formulation/Economics	The Planning/economics reviewer should be a senior water resources planner with experience in formulation of flood risk management studies especially in urban, highly developed areas and a thorough understanding of HEC-FDA.
Environmental Resources	Team member will have independently completed EA/EIS's and be well versed in the NEPA process, partnerships with other environmental resource agencies and environmental concerns and constraints within urban settings. The team member should also have knowledge of HTRW issues common to urban environments and developed areas and have experience with Section 106 actions and documentation including mitigation for historical structures and archeological artifacts.
Hydrology and Hydraulic Engineering	Team member should be an expert in the field of urban hydrology and hydraulics, have a thorough understanding of flash flooding and open channel systems, and have a thorough understanding of the use of HEC computer modeling systems. A certified professional engineer is required

Civil Engineering	Team member will have a thorough understanding of design of levees and floodwalls in an urban setting along with a thorough understanding of geotechnical engineering principles (including subsurface investigations; field & laboratory testing and the determination of in-situ material properties; soil compaction and earthwork construction; soil mechanics; seepage and piping; landslide and slope stability evaluations; bearing capacity and settlement; liquefaction analyses and analysis of earthquake-induced embankment/structural deformation; design and construction of foundations on alluvial soils; foundation inspection and assessment; foundation grouting and other foundation treatment methods including construction of foundation seepage barriers; the determination and evaluation of dynamic site-specific response spectra analysis and the evaluation of soil-structure interaction; levee and stream bank protection including soil cement, grouted riprap and stone protection, sheet piling, and retaining wall design). A certified professional engineer is required.
Structural Engineering	Team member will have a thorough understanding of both structural and non-structural measures to include, but not be limited to, retaining walls, channel improvements and tunnels. A certified professional engineer is required.

d. **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:

- 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 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.

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.

- a. **Planning Models.** The following planning models are anticipated to be used in the development of the decision document:

<b>Model Name and Version</b>	<b>Brief Description of the Model and How It Will Be Applied in the Study</b>	<b>Certification / Approval Status</b>
HEC-FDA (Flood Damage Analysis) version 1.4.1	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-	Certified

	project plans in Denville to aid in the selection of a recommended plan to manage flood risk.	
Habitat Evaluation Procedures (HEP)	HEP is an established approach to assessment of natural resources. The HEP approach has been well documented and is approved for use in Corps projects as an assessment framework that combines resource quality and quantity over time, and is appropriate throughout the United States. The Habitat Suitability Index (HSI) models are the format for quantity determinations that are applied within the HEP framework.	New HSI models developed by the Corps are subject to certification. Published HSI models, while peer reviewed and possibly tested by the developers are subject to review and approval by the PCX. Modifications to published HSI models where relationships or formulas are changed may be subject to certification.
Evaluation of Planned Wetlands	EPW is a rapid-assessment procedure for use in determining whether a planned wetland has been adequately designed to achieve defined goals. EPW provides 1) a technique for assessing 6 wetland functions, 2) guidance in applying EPW throughout the various steps of the planning process, and 3) a method for calculating the size of the planned wetland required to meet planning/mitigation goals.	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 5.0.3 (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 will be used for steady/unsteady flow analysis to evaluate the future without- and with-project conditions along the Rockaway and its tributaries (such as Den Brook)	HH&C CoP Preferred Model
HEC-HMS 4.2.1	This model will be used to define the watersheds' physical features; describe the metrological conditions; interior drainage analysis; estimate parameters; analyze simulations; and obtain GIS connectivity	HH&C CoP Preferred Model

## 10. REVIEW SCHEDULES AND COSTS



- a. **ATR Schedule and Cost.** The estimated schedule for ATR has ATR next taking place for the submission of the draft report in FY18. The ATR budget of \$30,000 includes participation of the ATR Lead in milestone conferences to address the ATR process and any significant and/or unresolved ATR concerns. Additional assumptions for this budget are effectively conducted and documented DQC; minimal changes between draft and final reports, requiring very limited review of the final to support ATR certification; and that the FRM-PCX can identify reviewers capable of covering multiple disciplines (e.g., risk analysis and climate change reviews covered by the
- b. Econ and H&H reviewers, respectively), though the PDT recognizes that this may not always be possible. The specific schedule for ATR review is for the draft report in July 2018.
- c. **Type I IEPR Schedule and Cost.** The estimated schedule for IEPR has IEPR scheduled concurrent with MSC review of the draft report in FY18. The IEPR budget, not to exceed \$150,000 (including USACE contract labor to administer the contract with the OEO), includes participation of the IEPR Lead in milestone meetings, including with the MSC, to address the IEPR process and any significant and/or unresolved IEPR concerns.
- d. **Model Certification/Approval Schedule and Cost.** N/A.

## **11. PUBLIC PARTICIPATION**

Members of the public have opportunities to comment on the development of the study throughout the study process. Also, as significant changes or developments in the study occur, the District will present this information. Any significant comments or concerns raised at public meetings will be brought to the attention of the ATR and IEPR panels. In addition, at the end of the study process, there will be a public meeting to outline the analysis, results and any residual risk to the public as a result of the decision. The final report will be available to the State of New Jersey and the local municipalities and will be available on the New York District Website. It is not anticipated that the public or state partner would recommend IEPR panel members, although that option is not precluded. Further, to ensure appropriate public communication regarding the study, a Public Affairs officer will be assigned to the PDT.

## **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, and RMO members) as to the appropriate scope and level of review for the decision document. 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:

- Nathanael T. Wales, P.E., Plan Formulation, Coastal Section, (917) 790-8731
- Christopher Ricciardi, Ph.D., NAD Civil Works Integration Division (347) 370-4534
- Deputy Director, Flood Risk Management Planning Center of Expertise, (415) 503-6852

**ATTACHMENT 1: TEAM ROSTERS (To be updated accordingly)**

Project Manager	Mark Lulka	Mark.F.Lulka@usace.army.mil	917-790-8205
Project Planner	Nathanael T. Wales, P.E.	Nathanael.T.Wales@usace.army.mil	917-790-8731
Technical Manager	TBD	TBD	TBD
Economist	TBD	TBD	TBD
Biologist	TBD	TBD	TBD
Cultural Specialist	TBD	TBD	TBD
Real Estate Specialist	TBD	TBD	TBD

ATR Team Members to be designated by the PCX

## 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 Flood Risk Management Study for Denville, NJ. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-214. 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

Date

Mark Lulka

Project Manager

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.

???

Chief, Engineering Division

Date

Cliff Jones

Chief, Planning Division

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>
March 2017	First Submittal	All

#### 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 of 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/MS	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