DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NORTH ATLANTIC DIVISION
FORT HAMILTON MILITARY COMMUNITY
302 GENERAL LEE AVENUE
BROOKLYN NY 11252-6700

CENAD-PD-P

24 January 2019

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 Hudson-Raritan Estuary, New York and New Jersey Ecosystem Restoration Feasibility Study Review Plan

1. Reference Memorandum, CENAN-DE, dated 28 November 2018, subject as above.

2. The Ecosystem Restoration Planning Center of Expertise of the Mississippi Valley Division (MVD) 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.

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Date: 2019.01.25 15:25:39 -05'00'

Encl

JEFFREY L. MILHORN
Major General, USA
Commanding

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NEW YORK DISTRICT
JACOB K. JAVITS FEDERAL BUILDING
26 FEDERAL PLAZA
NEW YORK, NEW YORK 10278-0090

CENAN-DE

28 November 2018

MEMORANDUM FOR COMMANDER: North Atlantic Division, Fort Hamilton Military Community, 301 General Lee Avenue, Brooklyn, New York 11252-6700 (Attn: Cocchieri)

SUBJECT: Request for Approval of the Hudson-Raritan Estuary, New York and New Jersey Ecosystem Restoration Feasibility Study Review Plan

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 draft Review Plan is enclosed for your approval in accordance with Appendix B of Reference 1 (Enclosure 1). The Review Plan complies with all applicable policy and provides an adequate approach to District Quality Control and Agency Technical Review of the plan formulation, engineering and environmental analyses, and other required planning considerations.

3. The Review Plan was prepared in coordination with CENAD Planning Division Programs Directorate, and the National Ecosystem Restoration Planning Center of Expertise (ECO-PCX). The Review Plan was updated in November 2018 and complies with the new July 2018 template format. Mr. Gregory Miller, ECO-PCX Operating Director, has reviewed the Review Plan and has endorsed the plan for approval. The ECO-PCX has allowed their prior endorsement provided in September 2016 to serve as the recommendation for approval (Enclosure 2).

4. If you should require more information, my point of contact is Ms. Lisa Baron, Project Manager at lisa.a.baron@usace.army.mil.

THOMAS D. ASBERY
COL, EN
Commanding

2 Encls
1 Review Plan
2 ECO-PCX Endorsement

REVIEW PLAN

November 2018

Project Name: Hudson-Raritan Estuary (HRE) Ecosystem Restoration, NY & NJ (including HRE-Lower Passaic River; HRE-Hackensack Meadowlands; Bronx River Basin; Jamaica Bay, Marine Park, Plumb Beach; and Flushing Bay and Creek)

P2 Number: 108384 (108989, 109091, 109130, 108904, 108896)

Decision Document Type: Feasibility Report

Project Type: Ecosystem Restoration

District: New York District
District Contact: Lisa Baron, Project Manager, 917-790-8306

Major Subordinate Command (MSC): North Atlantic Division
MSC Contact: Hank Gruber, 347-370-4566

Review Management Organization (RMO): National Ecosystem Restoration Planning Center of Expertise (ECO-PCX)
RMO Contact: Charles (Chip) Hall, ECO-PCX Lead, 615-736-7666

Key Review Plan Dates

Date of RMO Endorsement of Review Plan: 09/09/2016

Date of MSC Approval of Review Plan: 11/2012 and 11/2013

Date of IEPR Exclusion Approval: N/A

Has the Review Plan changed since PCX Endorsement? No (with exception of new template, dates and addition of certified models)

Date of Last Review Plan Revision: 09/06/2016 (endorsed by PCX)

Date of Review Plan Web Posting: 12/14/2012

Date of Congressional Notifications: N/A

Milestone Schedule

	Scheduled	Actual	Complete
Alternatives Milestone:	-	01/25/2010	Yes
Tentatively Selected Plan:	04/27/2016	08/05/2016	Yes
Release Draft Report to Public:	02/24/2018	02/28/2018	Yes
Agency Decision Milestone:	03/22/2018	09/05/2018	Yes
Final Report Transmittal:	06/18/2019	TBD	No
Senior Leaders Briefing:	09/04/2019	TBD	No
Chief's Report:	10/31/2019	TBD	No

Project Fact Sheet
November 2018

Project Name: Hudson-Raritan Estuary Ecosystem Restoration, New York & New Jersey

Location: The Hudson Raritan Estuary (HRE) is within the boundaries of the Port District of New York and New Jersey, and is situated within a 25 mile radius of the Statue of Liberty National Monument. The HRE study area includes 8 Planning Regions: 1) Jamaica Bay; 2) Lower Bay; 3) Lower Raritan River; 4) Arthur Kill/Kill Van Kull; 5) Newark Bay, Hackensack River and Passaic River; 6) Lower Hudson River; 7) Harlem River, East River, and Western Long Island Sound; and 8) Upper Bay.

Authorities:

HRE, HRE-Lower Passaic River, and HRE-Hackensack Meadowlands: House of Representatives Committee on Transportation and Infrastructure Resolution dated April 15, 1999, Docket Number 2596.

Flushing Bay and Creek: Congress Resolution dated September 28, 1994, Docket Number 2442.

Bronx River Basin: U.S. House of Representatives Committee on Transportation and Infrastructure Resolution dated March 24, 1998, Docket Number 2551

Jamaica Bay, Marine Park, Plumb Beach: Committee on Public Works and Transportation of the United States House of Representatives Resolution dated August 1, 1990.

Sponsors:

HRE: Port Authority of NY and NJ (PANYNJ)
HRE-Lower Passaic River: New Jersey Department of Transportation (NJDOT)
HRE-Hackensack Meadowlands: New Jersey Sports & Exposition Authority (NJSEA)
Flushing Creek and Bay: New York City Department of Environmental Protection (NYCDEP) and PANYNJ
Bronx River Basin: NYCDEP and Westchester County Planning
Jamaica Bay, Marine Park and Plumb Beach: NYCDEP

Type of Study: Feasibility Study

SMART Planning Status: Approved Agency Decision Milestone (5 Sept 2018). District informed November 2018 that waiver for schedule is required.

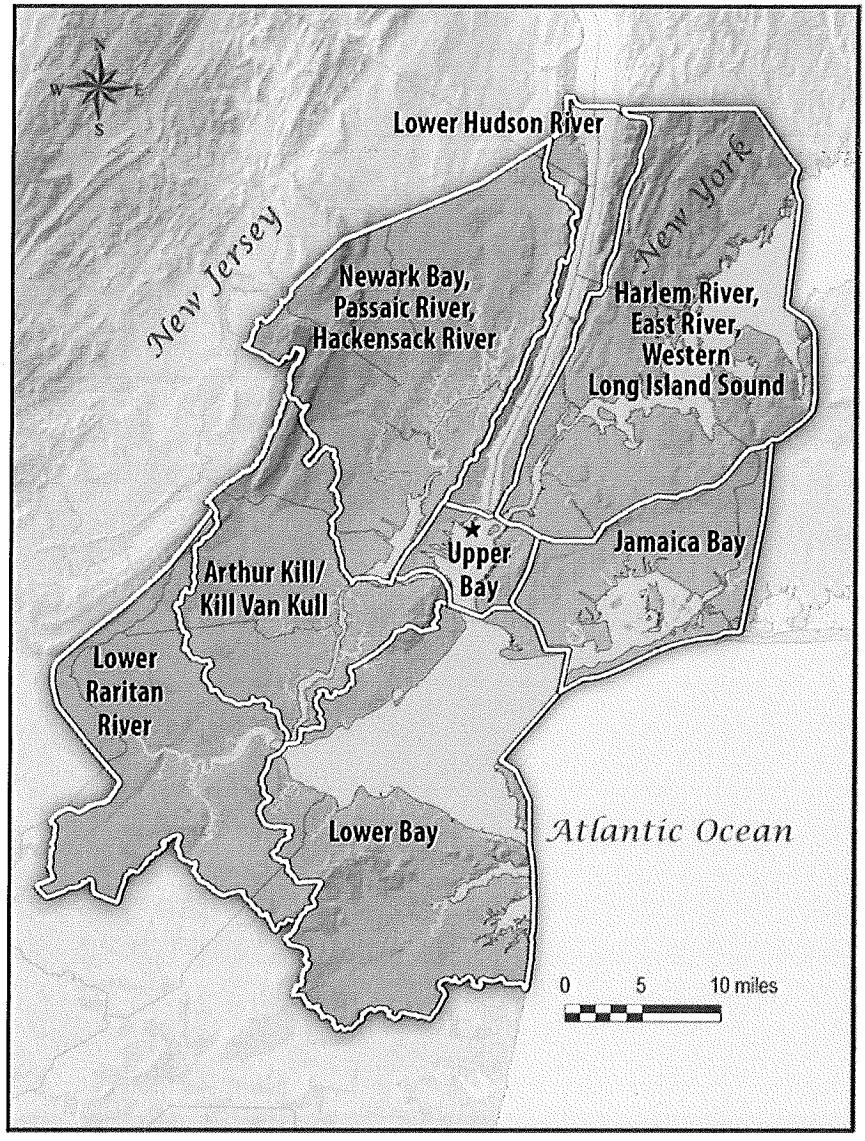
Project Area: Hudson Raritan Estuary (See Location above and map)

Problem Statement: The HRE has a long history of habitat degradation and loss due to unchecked industrial and residential development, along with vast navigation and infrastructure improvements. Over the years, the HRE study area has suffered extensive losses in wetland habitat and aquatic vegetation communities. Approximately 300,000 acres of tidal wetlands and subtidal waters have been filled in the study area and only about 20% of historic tidal wetlands remain. Almost all of the approximately 224,000 acres of freshwater wetlands that existed in New York City prior to the American Revolution have been filled or otherwise eliminated (>99% Freshwater wetlands lost). Physical and chemical habitat alteration has led to changes in the populations of organisms that use the HRE study area. The historically abundant eastern oyster has all but disappeared over their once

expansive range. In Jamaica Bay, thousands of acres of marsh islands have disappeared since 1924. In addition to eliminating much of the HRE study area's aquatic habitat, the construction of bulkheads, piers, and placement of shoreline fill have greatly reduced the physically diverse near-shore habitats. Impediments to fish passage also serve as barriers that prevent fish species from using that use both the freshwater tributaries and the ocean for spawning.

Federal Interest: The overall objective of the HRE is to restore ecological function and diversity that have been lost or degraded as a result of human activities. The HRE Ecosystem Restoration Program will enable the USACE, its non-Federal cost-sharing sponsors, and other regional stakeholders to restore and protect lost or degraded aquatic, wetland and terrestrial habitats within the HRE study area. These activities will be accomplished by implementing various site-specific ecosystem restoration projects formulated within the context of an overall strategic plan.

Risk Identification: The current and future conditions do not pose a significant threat to human life or the environment.



1. FACTORS AFFECTING THE LEVELS OF REVIEW

Scope of Review. The study is the integration of 6 different ecosystem restoration feasibility studies that all aim to identify ways to restore habitat throughout the HRE and support the HRE Program. The studies were combined to streamline work and efficiently utilize remaining funds. The technical work and plan formulation conducted in support of each study is in some instances different. It is important for reviewers to understand the history of decisions made and direction given by the Vertical Team. The factors affecting the risk informed decisions on the appropriate levels of reviews are provided below.

- The study is challenging given its scope and scale and the integration of other studies.
- The project risks occur mostly in the implementation phase, where risk of not receiving federal and non-federal funds would increase the project costs and delay the implementation and receipt of benefits to the environment. The risks of the project not performing as designed would result in those environmental restoration improvements not being realized and the HRE would retain the existing poor aquatic habitat quality and water quality.
- There are no significant threats to human life or safety as the alternatives involve restoration of habitat. The purpose of the project does not involve storm damage reduction or flood risk management and there is no expectation from any stakeholder that the implementation of this project would provide any storm damage protection. As per the Deputy Chief, Engineering Division, New York District "The alternatives to be analyzed for the ecosystem restoration measures for the HRE will not be designed to increase potential flood risk from its existing condition. The alternatives identified are traditional/routine in nature and the use of or unique or innovation, technology, materials or construction methodologies are not envisioned or anticipated and does not pose a significant threat to human life."
- There has not been a request by the Governors of the States of New Jersey or New York for a peer review by independent experts.
- There has not been any significant public dispute as to the size, nature, effects, or the projected economic or environmental benefits of the project.
- The information in the decision document or anticipated project design is not 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.
- The project will not require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule.
- The study nor its recommendations is not highly controversial. The resource agencies and members of the public all support ecosystem restoration within the HRE. Implementation of the HRE program will provide National Ecosystem Restoration benefits to the Nation, in terms of habitat units. There is no influential scientific information presented in this study, as the study is essentially a larger-scale ecosystem restoration study.

- The estimated total cost of the project is greater than $200 million. The Recommended Plan includes 22 restoration sites with an estimated total first cost of $496 million.
- An Environmental Assessment was integrated into the Feasibility Report.
- The projects will not have more than negligible adverse impacts on scarce or unique tribal, cultural, or historic resources.
- The projects improve and benefit fish and wildlife species and their habitat.
- The projects will benefit endangered or threatened species and will improve their designated critical habitat.

2. REVIEW EXECUTION PLAN

This section describes each level of review to be conducted. Based upon the factors discussed in Section 1, this study will undergo the following types of reviews:

District Quality Control. All decision documents (including data, analyses, environmental compliance documents, etc.) will undergo DQC. This internal review process covers basic science and engineering work products. It fulfils the project quality requirements of the Project Management Plan.

Agency Technical Review. ATR is performed by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. These teams will be comprised of certified USACE personnel. The ATR team lead will be from outside the home MSC. If significant life safety issues are involved in a study or project a safety assurance review should be conducted during ATR.

Independent External Peer Review. Type I IEPR was required for the decision documents. This is the most independent level of review, and is applied in cases that meet criteria where the risk and magnitude of the project are such that a critical examination by a qualified team outside of USACE is warranted.

Cost Engineering Review. All decision documents shall be coordinated with the Cost Engineering Mandatory of Expertise (MCX). The MCX will assist in determining the expertise needed on the ATR and IEPR teams. The MCX will provide the Cost Engineering certification. The RMO is responsible for coordinating with the PCX for the reviews. These reviews typically occur as part of ATR.

Model Review and Approval/Certification. EC 1105-2-412 mandates the use of certified or approved models for all planning work to ensure the models are technically and theoretically sound, compliant with USACE policy, computationally accurate, and based on reasonable assumptions.

Policy and Legal Review. All decision documents will be reviewed for compliance with law and policy. ER 1105-2-100, Appendix H provides guidance on policy and legal compliance reviews. These reviews culminate in determinations that report recommendations 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. These reviews are not further detailed in this Review Plan.

Table 1 provides the schedules and costs for reviews. The specific expertise required for the teams are identified in later subsections covering each review. These subsections also identify requirements, special reporting provisions, and sources of more information.

Table 1: Levels of Review

Product(s) to undergo Review	Review Level	Start Date	End Date	Cost	Complete
Planning Model Review- Evaluation of Planned Wetlands (EPW)	Model Review (see EC 1105-2-412)	-	06/30/2016	n/a	Yes
Planning Model Review – Watershed Scale Upstream Connectivity Toolkit (WUCT)	Model Review (see EC 1105-2-412)	7/18/2018	10/28/2018	$7,000	Yes
Draft Feasibility Report and EA	District Quality Control	08/17/2016	12/30/2016	-	Yes
Draft Feasibility Report and EA	Agency Technical Review	02/28/2018	08/17/2018	$82,000	Yes
Draft Feasibility Report and EA	Type I IEPR	02/27/2017	02/28/2018	$92,000	Yes
Draft Feasibility Report and EA	Policy and Legal Review	02/06/2017	02/24/2017	n/a	Yes
Final Feasibility Report and EA	District Quality Control	03/27/2019	04/25/2019	$40,000	No
Final Feasibility Report and EA	Agency Technical Review*	02/13/2019 04/10/2019	03/26/2019 05/23/2018	$40,000	No
Final Feasibility Report and EA	Policy and Legal Review	03/27/2019	04/09/2019	n/a	No

**ATR will occur for specific appendices as each are completed to ensure ATR concurrence which is expected to improve efficiency of review of final completed report scheduled for 04/10/2019 through 05/23/2019 including comment resolution.*

a. DISTRICT QUALITY CONTROL

The home district shall manage DQC and will appoint a DQC Lead to manage the local review (see EC 1165-2-217, section 8.a.1). The DQC Lead should prepare a DQC Plan and provide it to the RMO and MSC prior to starting DQC reviews. Table 2 identifies the required expertise for the DQC team.

Table 2: Required DQC Expertise

DQC Team Disciplines	Expertise Required
DQC Lead	A senior professional with extensive experience preparing Civil Works decision documents and conducting DQC. The lead may also serve as a reviewer for a specific discipline (such as planning, economics, environmental resources, etc).
Planning	A senior water resources planner with experience in the plan formulation process. Familiar with evaluation of alternative plans for ecosystem restoration projects in urban settings.
Economics	Ability to evaluate the appropriateness of cost effectiveness and incremental cost analysis (CE/ICA), using IWR-Planning Suite. The reviewer should also have experience with National Ecosystem Restoration analysis procedures.
Environmental Resources	Particular knowledge of ecosystem restoration, including the methods used to evaluate benefits. Familiarity with all National Environmental Policy Act (NEPA) requirements. Experience in wetland ecology of urban regions, preferably experience in the densely populated mid-Atlantic or Northeast.
Cultural Resources	Familiar with Section 106 requirements, USACE practices and ERs.
Engineering – Civil and Hydrology	Experience with engineering analysis and design of wetland restoration or related projects in urban areas and have a thorough understanding of hydrologic transport models.
Cost Engineering	A senior Certified Cost Engineer familiar with cost estimating for similar projects using MII.
Real Estate	Experienced in civil works real estate laws, policies and guidance and have experience working with sponsor real estate issues.

Documentation of DQC. Quality Control should be performed continuously throughout the study. A specific certification of DQC completion is required at the draft and final report stages. Documentation of DQC should follow the District Quality Manual and the MSC Quality Management Plan. An example DQC Certification statement is provided in EC 1165-2-217, on page 19 (see Figure F).

Documentation of completed DQC should be provided to the MSC, RMO and ATR Team leader prior to initiating an ATR. The ATR team will examine DQC records and comment in the ATR report on the adequacy of the DQC effort. Missing or inadequate DQC documentation can result in delays to the start of other reviews (see EC 1165-2-217, section 9).

Recommended Best Planning Practice: Use DrChecks software to document DQC. Attach a DrChecks Report to the DQC Certification to help illustrate the thoroughness of the DQC.

b. AGENCY TECHNICAL REVIEW

The ATR will assess whether the analyses are technically correct and comply with guidance, and that documents explain the analyses and results in a clear manner. An RMO manages ATR. The review is conducted by an ATR Team whose members are certified to perform reviews. Lists of certified reviewers are maintained by the various technical Communities of Practice (see EC 1165-2-217, section 9(h)(1)). Table 3 identifies the disciplines and required expertise for this ATR Team.

Table 3: Required ATR Team Expertise

ATR Team Disciplines	Expertise Required
ATR Lead	A senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The lead should 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	A senior water resources planner with experience in the plan formulation process. Familiar with evaluation of alternative plans for ecosystem restoration projects in urban settings.
Economics	Ability to evaluate the appropriateness of cost effectiveness and incremental cost analysis (CE/ICA), using IWR-Planning Suite, as applied to dollar costs and ecosystem restoration benefits. The reviewer should also have experience with National Ecosystem Restoration analysis procedures.
Environmental Resources	Particular knowledge of ecosystem restoration, including the methods used to evaluate benefits. Familiarity with all NEPA requirements. Experience in wetland ecology of urban regions, preferably experience in the densely populated mid-Atlantic or Northeast.
Cultural Resources	Familiar with Section 106 requirements, USACE practices and ERs.
Hydrology/Hydraulic Engineering	Be familiar with ecosystem restoration planning and have a thorough understanding of hydrologic transport models, including point source and surface area run-off inputs, for the analysis of sediment and pollutant movements within the river system.
Civil Engineering	Experience with engineering analysis and design of wetland restoration or related projects in urban areas.
Cost Engineering	Be familiar with cost estimating for similar projects using MII. Team member will be a Certified Cost Technician, Certified Cost Consultant, or Certified Cost Engineer. A separate process and coordination is required through the Walla Walla District DX for cost engineering.
Real Estate	Experienced in civil works real estate laws, policies and guidance and have experience working with sponsor real estate issues.
Climate Preparedness and Resilience CoP Reviewer	A member of the Climate Preparedness and Resiliency Community of Practice (CoP) will participate in the ATR review. This individual will participate in the Final Report ATR.

ATR Team Disciplines	Expertise Required
Risk and Uncertainty	For decision documents involving hydrologic, hydraulic, and/or coastal related risk management measures, include a subject matter expert in multi-discipline flood risk analysis to ensure consistent and appropriate identification, analysis, and written communication of risk and uncertainty.
Hazardous, Toxic and Radioactive Waste (HTRW)	Be familiar with HTRW investigations, USACE practices and ERs.

Documentation of ATR. DrChecks will be used to document all ATR comments, responses and resolutions. Comments should be limited to those needed to ensure product adequacy. If a concern cannot be resolved by the ATR team and PDT, it will be elevated to the vertical team for resolution using the EC 1165-2-217 issue resolution process. Concerns can be closed in DrChecks by noting the concern has been elevated for resolution. The ATR Lead will prepare a Statement of Technical Review (see EC 1165-2-217, Section 9), for the draft and final reports, certifying that review issues have been resolved or elevated. ATR may be certified when all concerns are resolved or referred to the vertical team and the ATR documentation is complete.

Recommend Best Planning Practice: All members of the ATR team should use the four part comment structure (see EC 1165-2-217, Section 9(k)(1)).

c. INDEPENDENT EXTERNAL PEER REVIEW

(i) Type I IEPR.

Type I IEPR was managed outside of the USACE and was conducted on this study. 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.

Decision on Type I IEPR. The factors described in Section 1 (of this Review Plan) resulted in a determination that Type I IEPR was required. Specifically, the HRE recommendation exceeded the $200 million threshold.

Products to Undergo Type I IEPR. The full draft report underwent IEPR.

Required Type I IEPR Panel Expertise. The Panel consisted of independent, recognized experts from outside of the USACE in disciplines representing a balance of areas of expertise suitable for the review being conducted. Table 4 lists the required panel expertise.

Table 4: Required Type I IEPR Panel Expertise

IEPR Panel Member Disciplines	Expertise Required
Economics	A degree in economics or a related field and should be able to evaluate the appropriateness of CE/ICA, as applied to dollar costs and ecosystem restoration benefits, and preferably be familiar with the USACE tool for CE/ICA called IWR-Planning Suite. Experience with National Ecosystem Restoration analysis procedures.
Environmental	At minimum a Master's Degree in ecology or biology. Particular knowledge of ecosystem restoration and be familiar with all NEPA requirements. Experience in wetland ecology of urban regions, preferably experience in the densely populated mid-Atlantic or Northeast.
Engineering	A degree in civil engineering and have demonstrated experience in performing cost engineering/construction management for all phases of ecosystem restoration or related projects. Be familiar with similar projects across US and related Cost Engineering. Experience in associated contracting procedures, total cost growth analysis and related cost risk analysis is desired. Be familiar with construction industry and practices used in wetland restoration.
Planning	A degree in planning or a related field plus experience in the plan formulation process. Be familiar with evaluation of alternative plans for ecosystem restoration projects. Familiarity with USACE standards and procedures is required.

Documentation of Type I IEPR. The OEO will submit a final Review Report no later than 60 days after the end of the draft report public comment period. USACE considered all recommendations in the Review Report and prepared a written response for all recommendations. The final decision document will summarize the Review Report and USACE response and will be posted on the internet.

Recommend Best Planning Practice: Begin coordination with the RMO very early in the study to allow adequate time for scoping and contracting for the Type I IEPR.

(ii) Type II IEPR.

The second kind of IEPR is Type II IEPR. These Safety Assurance Reviews are managed outside of the USACE and are conducted on design and construction for hurricane, storm and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. A Type II IEPR Panel would be convened to review the design and construction activities before construction begins, and until construction activities are completed, and periodically thereafter on a regular schedule.

Decision on Type II IEPR. Type II IEPR was not warranted, as this is an ecosystem restoration study and little to no threat to human life or safety is at risk if the project fails. The consequences of non-performance on project economics would mean that the region and nation do not realize the National Ecosystem Restoration benefits that this project would provide.

d. MODEL CERTIFICATION OR 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 are any models and analytical tools used 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 a planning product. The selection and application of the model and the input and output data is the responsibility of the users and is subject to DQC, ATR, and IEPR.

Table 5: Planning Models. The following models may be used to develop the decision document:

Model Name and Version	Brief Model Description and How It Will Be Used in the Study	Certification / Approval
IWR-PLAN	This model for Cost Effectiveness/Incremental Cost Analysis (CE/ICA) was used to evaluate alternatives.	Certified
Evaluated Planned Wetlands (EPW)	EPW is a rapid assessment procedure that documents and highlights differences between a wetland assessment area and a planned wetland based on their capacity to provide six functions: shoreline bank erosion control, sediment stabilization, water quality, wildlife, fish (tidal, non-tidal stream/river, and non-tidal pond/lake), and uniqueness/heritage. The differences between wetlands are expressed in terms of individual elements: Functional Capacity Indices, and Functional Capacity Units. The results provide information on individual design elements and measures of functional capacity which are a necessity under current regulatory programs that require tangible goals and a method for calculating planned wetland size. The model is approved for use in the Northeastern Coastal Zone, Northern Piedmont, and Atlantic Coastal Pine Barrens Level III Ecoregions.	Approved for regional use, 30 Jun 16
Oyster Habitat Suitability Index (OHSI)	The OHSI (Swannack et al., 2014) was used to identify the environmental benefits resulting from oyster reef restoration based on habitat requirements associated with salinity and suitable cultch (potential hard bottom structure). Habitat Units (HUs) were quantified for three oyster restoration designs at three locations (Naval Station Earle, Bush Terminal and Head of Jamaica Bay). The HUs were used as CE/ICA input to identify the recommended plan for oyster restoration.	Approved for regional use, 20 April 2015
Watershed-Scale Upstream	The total amount of accessible, quality-weighted habitat available upstream for migratory fishes were applied to the Bronx Zoo Dam and Stone Mill Dam sites. A Watershed-Scale	Approved for National Use, 30 Oct 18

Model Name and Version	Brief Model Description and How It Will Be Used in the Study	Certification / Approval
Connectivity Toolkit	Upstream Connectivity Toolkit (WUCT) was developed to assess these benefits (based on prior work in McKay et al. 2013, 2016, and 2017) and was submitted to the ECO-PCX for model certification (6 July 2018). Habitat units were combined with EPW Functional Capacity Units (FCUs) at each site by summation.	

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. The professional practice of documenting the application of the software and modeling results will be followed. The USACE Scientific and Engineering Technology Initiative has identified many engineering models as preferred or acceptable for use in studies. These models should be used when 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.

Table 6: Engineering Models. These models may be used to develop the decision document:

Model Name and Version	Brief Model Description and How It Will Be Used in the Study	Approval Status
Coastal Modeling System (CMS)	CMS was used to model the hydrodynamics of the Meadowlark Marsh Alternatives. The Meadowlark marsh site is characterized by complex hydrology, where multiple (currently non-functional or patially functional) culverts communicate tidal waters to different regions of the site.	HH&C CoP Preferred Model

Recommend Best Planning Practice: Hold an early coordination call (prior to the Alternatives Milestone) with the appropriate Planning Center(s) of Expertise to discuss model applications and any review needs for approval or certification of the planning models to be employed.

e. POLICY AND LEGAL REVIEW

Policy and legal compliance reviews for draft and final planning decision documents are delegated to the MSC (see Director's Policy Memorandum 2018-05, paragraph 9).

(i) Policy Review.

The policy review team is identified through the collaboration of the MSC Chief of Planning and Policy and the HQUSACE Chief of the Office of Water Project Review. The team is identified in Attachment 1 of this Review Plan. The makeup of the Policy Review team will be drawn from Headquarters (HQUSACE), the MSC, the Planning Centers of Expertise, and other review resources as needed.

- The Policy Review Team will be invited to participate in key meetings during the development of decision documents as well as SMART Planning Milestone meetings. These engagements may include In-Progress Reviews, Issue Resolution Conferences or other vertical team meetings plus the milestone events.

- The input from the Policy Review team should be documented in a Memorandum for the Record (MFR) produced for each engagement with the team. The MFR should be distributed to all meeting participants.

- In addition, teams may choose to capture some of the policy review input in a risk register if appropriate. These items should be highlighted at future meetings until the issues are resolved. Any key decisions on how to address risk or other considerations should be documented in an MFR.

(ii) Legal Review.

Representatives from the Office of Counsel will be assigned to participate in reviews. Members may participate from the District, MSC and HQUSACE. The MSC Chief of Planning and Policy will coordinate membership and participation with the office chiefs.

- In some cases legal review input may be captured in the MFR for the particular meeting or milestone. In other cases, a separate legal memorandum may be used to document the input from the Office of Counsel.

- Each participating Office of Counsel will determine how to document legal review input.

ATTACHMENT 1: TEAM ROSTERS

PROJECT DELIVERY TEAM			
Name	Office	Position	Phone Number
Lisa Baron	CENAN-PP-C	Project Manager	917-790-8306
Danielle Tommaso	CENAN-PL-F	Project Planner (Draft Report)	917-790-8527
Maya Dehner	CENAN-PL-F	Project Planner	917-790-8630
Diana Kohtio	CENAN-PL-E	Project Biologist	917-790-8619
Steven Weinberg	CENAN-EN-MC	Chief, Civil Works Section	917-790-8391
Gail Woolley	CENAN-EN-H	Project Engineer	917-790-8246
Carlos Gonzalez	CENAN-RE	Real Estate Specialist	917-790-8465
Ellen Simon	CENAN-OC	Office of Counsel	917-790-8158
Cynthia Zhang	CENAN-EN-C	Cost Engineer	917-790-8006

DISTRICT QUALITY CONTROL TEAM (for Draft Report)			
Name	Office	Position/Team Discipline	Phone Number
Jason Shea	CENAN-PL-F (currently PP-C)	DQC Lead/Planning	917-790-8727
Peter Weppler	CENAN-PL-E	Chief/Environmental and Cultural Resources	917-790-8634
Thomas Hodson	CENAN-PL-F	Chief/Economics	917-790-8602
Mukesh Kumar	CENAN-EN-C	Chief/Cost Engineering	917-790-8421
Michael Morgan	CENAN-EN-H	Team Leader/Engineering Civil & Hydrology	917-790-8629
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DEPARTMENT OF THE ARMY
MISSISSIPPI VALLEY DIVISION, CORPS OF ENGINEERS
P.O. BOX 80
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REPLY TO
ATTENTION OF:

CEMVD-PD-L

09 September 2016

MEMORANDUM FOR Commander, North Atlantic Division
ATTN: (Joseph Vietri, CENAD-PD-P)

SUBJECT: Hudson – Raritan Estuary, New York and New Jersey, Ecosystem Restoration Feasibility Study, New York District; National Ecosystem Restoration Planning Center of Expertise, Recommendation to Approve Review Plan

1. References:
   a. Engineer Circular (EC) 1165-2-214, Civil Works Review, 15 December 2012
   b. EC 1105-2-412, Planning, Assuring Quality of Planning Models, 31 March 2011
   c. Engineer Regulation (ER) 1110-2-12, Quality Management, 30 September 2006

2. The National Ecosystem Restoration Planning Center of Expertise (ECO-PCX) has reviewed the enclosed draft Review Plan. It complies with all applicable policy and provides an adequate approach to District Quality Control and Agency Technical Review of the plan formulation, engineering and environmental analyses, and other required planning considerations. The ECO-PCX recommends the Commander of the North Atlantic Division approve the Review Plan in accordance with EC 1165-2-214.

3. The Review Plan uses criteria in EC 1165-2-214 to assess the risk of excluding the study from Type I Independent External Peer Review (IEPR). The New York District's risk assessment shows that the study meets some of the criteria for mandatory Type I IEPR. The draft Review Plan calls for conducting Type I IEPR on the feasibility report and environmental assessment. The ECO-PCX concurs with the proposal to conduct Type I IEPR based on the District's risk assessment.

4. The Review Plan identifies two planning models for use in the study. The IWR Planning Suite is certified for use in Corps of Engineers feasibility studies. A second tool, the Evaluated Planned Wetlands model, has been recommended by the ECO-PCX for approval for regional use in feasibility studies. The ECO-PCX concurs with the model selections and supports the District's efforts to comply with the requirements of EC 1105-2-412.

5. Upon approval by the MSC Commander, please provide the ECO-PCX copies of the Review Plan, the MSC Commander's approval memorandum, and the web link to the New York District's online posting of the plan. If substantive revisions are made to the plan, due to any changes associated with IEPR, planning models, project scope, or Corps policy, a revised Review Plan should be provided to the ECO-PCX for review. After review and coordination of the substantive revisions, the ECO-PCX will recommend re-approval of the plan to the MSC

CEMVD-PD-L
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Commander. Non-substantive changes do not require further review but these should be recorded in Attachment 3 of the updated plan and provided to the ECO-PCX.

5. Thank you for the opportunity to assist in the preparation of the Review Plan. We look forward to working with the project delivery team during the study.

Gregory Miller

Encl

Gregory Miller
Operating Director,
National Ecosystem Restoration
Planning Center of Expertise

CF:
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CENAN-PL (Jones)
CENAN-PL-F (Hodson)
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CENAN- PP-C (Baron)
CEMVD-PD-L (Chewning, Lachney, Miller)
CELRN-PM-P (Hall)
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