DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS
NORFOLK DISTRICT
FORT NORFOLK
803 FRONT STREET
NORFOLK VA 23510-1011

CENAO-ZA-(800C) 9 June 2025

MEMORANDUM FOR U.S. Army Corps of Engineers, North Atlantic Division (CENAD-PD-X /Christopher Ricciardi), 301 John Warren Avenue, Fort Hamilton Community, Brooklyn, NY 11252-6700

SUBJECT: Submission of the Review Plan for Peninsula Regional, Virginia Coastal Storm Risk Management Feasibility Study for North Atlantic Division Approval

1. Reference Engineer Regulation 1165-2-217 (Civil Works Review Policy), 2 Sep 2024.

2. Background: The Norfolk District developed the enclosed Review Plan (Enclosure 2), for the Peninsula Regional Coastal Storm Risk Management Feasibility Study. The Review Plan, dated June 2025, has been reviewed for technical sufficiency and policy compliance by the Planning Center of Expertise for Coastal Storm Risk Management (PCX-CSRM). The Review Plan does not include Independent External Peer Review (IEPR) and therefore reflects a requested IEPR Exclusion. The PCX-CSRM endorsement (Enclosure 1) is dated 29 May 2025.

3. Request: The Norfolk District requests that North Atlantic Division approve the Review Plan. Approval of the Review Plan also constitutes approval of the IEPR exclusion.

4. The Point of Contact for this action is Abbegail Preddy, Project Manager, who can be reached at (757) 201-7732 or via email at abbegail.m.preddy@usace.army.mil.

2 Encls

ANTHONY C. FUNKHOUSER, PMP
LTC, EN
Commanding

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

CENAD-PDP (1105-2-10c)

MEMORANDUM FOR Commander, U.S. Army Corps of Engineers, Norfolk District, 803 Front Street, Norfolk, VA 23510-1011

SUBJECT: Submission of the Review Plan for Peninsula Regional, Virginia Coastal Storm Risk Management Feasibility Study for North Atlantic Division Approval.

1. Reference:

a. CENAO-ZA (800C) Transmittal Memorandum (Submission of the Review Plan for Peninsula Regional, Virginia Coastal Storm Risk Management Feasibility Study for North Atlantic Division Approval), 9 June 2025.

b. CENAD-PD-P (1105-2-10c) Endorsement Memorandum (Endorsement of the Review Plan for the Peninsula Regional Coastal Storm Risk Management (CSRM) Feasibility Study". The PCX Review Plan endorsement), 29 May 2025.

2. The National Planning Center for Expertise for Coastal Storm Risk Management (PCX-CSRM) of the North Atlantic Division (NAD) is the lead office to execute the referenced Review Plan. The Review Plan does not require an Independent External Peer Review.

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

4. The point of contact is Mr. R. Brian Paul, NAD Planning Program Manager at 347-622-2878 or Robert.B.Paul@usace.army.mil.

3 Encls
1. Transmittal Memo
2. CSRM PCX Endorsement Memo
3. Peninsula Feasibility Study Review Plan

JOHN P. LLOYD
Brigadier General, USA
Commanding

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

CENAD-PD-P (1105-2-10c) 29 May 2025

MEMORANDUM FOR Commander, Norfolk District, U.S. Army Corps of Engineers, (CENAO-PMC/ Abbegail Preddy) 803 Front Street, Norfolk, VA 23510-1011

SUBJECT: Endorsement of the Review Plan for the Peninsula Regional Coastal Storm Risk Management (CSRM) Feasibility Study

1. The National Planning Center of Expertise for Coastal Storm Risk Management (PCX-CSRM) has reviewed the review plan for the Peninsula Regional CSRM Feasibility Study and concurs that it complies with current peer review policy requirements contained in ER 1165-2-217, entitled “Civil Works Review Policy,” and complies with the CECW memo (07 May 2025), “Feasibility Study Vertical Team Alignment and Command Validation.”

2. Endorsement of the review plan, along with the required model user and coordination questionnaires, documents compliance with CECW-P memo (28 July 2023), "Model Coordination for Civil Works Planning Studies," to coordinate models and confirm assigned modelers possess the requisite knowledge and experience to complete modeling tasks and to ensure the feasibility study is successful.

3. The review was performed by the PCX-CSRM in coordination with representation from Headquarters Engineering & Construction - Hydrology, Hydraulics, and Coastal (HQ E&C - HH&C).

4. As detailed in Section 2034 of WRDA 2007 (33 USC 2343) and ER 1165-2-217, the review plan requests an Independent External Peer Review (IEPR) exclusion as the study meets all exclusion criteria. The PCX-CSRM agrees with this request.

5. The PCX-CSRM has no objection to review plan approval by the North Atlantic Division (NAD).

6. The PCX-CSRM is prepared to lead the Agency Technical Review for the Peninsula Regional CSRM Study and will continue to coordinate with the project delivery team. For further information, please contact me at 347-370-4591.

DONALD E. CRESITELLO
Technical Director, PCX-CSRM

Review Plan
June 2025

1. Project Summary

Project Name: Peninsula Regional Coastal Storm Risk Management (CSRM) Feasibility Study
Location: City of Hampton and City of Poquoson, Coastal Peninsula Region, Virginia
P2 Number: 452955

Decision and Environmental Compliance Document Type: Integrated Feasibility Report and Environmental Assessment (IFR/EA)

Congressional Authorization Required: Yes

Project Purpose(s): Coastal Storm Risk Management

Non-Federal Sponsor: City of Hampton

Points of Public Contact for Questions/Comments on Review Plan:

District: Norfolk District (NAO)

District Contact: Planning Technical Lead, (904) 616-6593

Major Subordinate Command (MSC): North Atlantic Division (NAD)
MSC Contact: Review Manager, (347) 622-2878

Review Management Organization (RMO): National Planning Center of Expertise for Coastal Storm Risk Management (PCX-CSRM)
RMO Contact: Technical Director, (347) 370-4591

Key Review Plan Dates

Date of RMO Endorsement of Review Plan	Pending
Date of MSC Approval of Review Plan	Pending
Date of IEPR Exclusion Approval	N/A
Has the Review Plan changed since RMO Endorsement?	N/A
Date of Last Review Plan Revision	None
Date of Review Plan Web Posting	Pending

Milestone Schedule and Other Dates

	Scheduled	Actual
FCSA Execution		26 Jul 2024
Alternatives Milestone		28 Mar 2025
Tentatively Selected Plan	26 Mar 2026	
Release Draft Report to Public	25 May 2026	
Command Validation Milestone/Site Visit	23 Oct 2026	
Final Report Transmittal	30 Mar 2027	
State & Agency Briefing	24 May 2027	
Chief's Report	26 Jul 2027	

2. References

Engineer Regulation 1165-2-217 – Water Resources Policies and Authorities – Civil Works Review Policy, 2 September 2024.

Engineer Circular 1105-2-412 – Planning – Assuring Quality of Planning Models, 31 March 2011.

Planning Bulletin 2013-02, Subject: Assuring Quality of Planning Models (EC 1105-2-412), 31 March 2013.

Office of Management and Budget, Final Information Quality Bulletin for Peer Review, Federal Register Vol. 70, No. 10, January 14, 2005, pp 2664-267

CECW-P Memorandum, Model Coordination for Civil Works Planning Studies, 28 July 2023.

Engineer Pamphlet 1105-2-61 – Planning – Feasibility and Post-Authorization Study Procedures and Report Processing Requirements, 1 July 2023

CECW Memorandum, Subject: Vertical Team Alignment Memorandum (VTAM) Guidance, 29 July 2022

CECW Memorandum, Subject: Feasibility Study Vertical Team Alignment and Command Validation, 07 May 2025

Engineer Regulation 1105-2-102 – Water Resources Policies and Authorities – Watershed Studies – 01 April 2022

The online USACE Planning Community Toolbox provides more review reference information at: https://planning.erdc.dren.mil/toolbox/current.cfm?Title=Peer%20Review&ThisPage=Peer&Side=No.

3. Review Execution Plan

The general plan for executing all required independent reviews is outlined in the following two tables.

Table 1 lists each study product to be reviewed. The table provides the schedules and costs for the anticipated reviews. Teams also determine whether a site visit will be needed to support each review. The decisions about site visits are documented in the table. As the review plan is updated the team will note each review that has been completed.

Table 2 identifies the specific expertise and role required for the members of each review team. The table identifies the technical disciplines and expertise required for members of review teams. In most cases the team members will be senior professionals in their respective fields. In general, the technical disciplines identified for a District Quality Control (DQC) team will be needed for an Agency Technical Review (ATR) team. Each ATR team member will be certified to conduct ATR by their community of practice. If Independent External Peer Review (IEPR) is warranted, panel membership will reflect disciplines representing the areas of expertise applicable to the review being conducted. The table is set up to concisely identify common types of expertise that may be applicable to one or more of the reviews needed for a study.

Table 1: Schedule and Costs of Reviews

Product to undergo Review	Review Level	Site Visit	Start Date	End Date	Cost	Complete
G2CRM FWOP Condition[1] for Draft IFR/EA	Targeted ATR	No	10/13/2025	11/12/2025	$30,000	No
Draft IFR/EA	DQC	No	03/26/2026	04/26/2026	$50,000	No
Draft IFR/EA	Public Comment under National Environmental Policy Act (NEPA)	Yes	05/25/2026	06/25/2026	N/A	No
Draft IFR/EA	ATR	No	05/25/2026	06/25/2026	$50,000	No
Draft IFR/EA	Policy and Legal Compliance (P&LC) Review	No	05/25/2026	07/25/2026	N/A	No
Final IFR/EA	DQC	No	01/21/2027	02/21/2027	$50,000	No
Final IFR/EA	ATR	No	02/21/2027	03/23/2027	$50,000	No
Final IFR/EA	P&LC Review	No	03/30/2027	05/15/2027	N/A	No
Final IFR/EA	Release Final Report under NEPA	No	05/26/2027	06/26/2027	N/A	No

[1]The economic analysis utilizing G2CRM is not anticipated to involve significant complexity due to both the limited nonstructural measures-only focus and the level of experience of the lead economic modeler. As a result of these considerations, and coordination with the PCX-CSRM, the team is moving forward with a Targeted ATR of only the FWOP condition. However, the team will ensure that a description of the proposed (but not yet modeled) FWP model criteria and assumptions will be included in the Targeted ATR to still allow for technical review of the intended FWP path forward.

Table 2: Review Teams - Disciplines and Expertise

Discipline / Role	Expertise	DQC	ATR
DQC Team Lead	Extensive experience preparing Civil Works decision documents and leading DQC. The lead may serve as a DQC reviewer for a specific discipline (planning, economics, environmental, etc.).	Yes	No
ATR Team Lead	Professional with extensive experience preparing Civil Works decision documents and conducting ATR. Skills to manage a virtual team through an ATR. The lead may serve on the ATR team for a specific discipline (such as planning, economics, or environmental work).	No	Yes
Planning	Skilled water resources planner knowledgeable in complex planning investigations and the application of SMART principle to problem solving.	Yes	Yes
Economics	Experience with applying theory, methods and tools used in the economic evaluation of water resources projects to include experience utilizing G2CRM.	Yes	Yes
Environmental Resources	Experience with environmental evaluation and compliance requirements, national environmental laws and statutes, applicable Executive Orders, and other planning requirements.	Yes	Yes
Cultural Resources	Experience with cultural resource survey methods, area of potential effects, National Historic Preservation Act Section 106, and state and federal laws pertaining to American Indian Tribes.	Yes	Yes
Hydraulic , Hydrology, and Coastal Engineering	Experience applying hydraulic hydrologic and coastal engineering principles and technical tools to project planning, design, construction, and operation to include experience withG2CRM	Yes	Yes
Cost Engineering	Experience using cost estimation software; working knowledge of water resource project construction; capable of making professional determinations using experience.	Yes	Yes
Geotechnical Engineering	Experience with applying geotechnical principles and analysis methods to project planning, design, and construction of nonstructural measures. Should also be familiar with geotechnical conditions of the coastal peninsular region.	Yes	Yes
Construction/ Operations	Extensive construction management experience and operations work.	Yes	Yes
Real Estate	Experience developing Real Estate Plans and experience in real estate fee/easement acquisition and residential/business relocations for Federal and/or Federally Assisted Programs for implementation of Civil Works projects.	Yes	Yes
Infrastructure and Installation Resilience	A member of the Infrastructure and Installation Resilience (IIR CoP) knowledgeable of changing conditions of coastal hydrology policy and practice.	No	Yes
Risk and Uncertainty	Expert on multi-discipline flood risk analysis to ensure consistent and appropriate identification, analysis, and written communication of risk and uncertainty.	No	Yes

4. Documentation of Reviews

Documentation of DQC. Quality Control will be performed continuously. A specific certification of DQC completion will be prepared at the base conditions (existing and future), draft and final report stages. Documentation of DQC will follow the District Quality Manual and the MSC Quality Management Plan. DrChecks will be used for documentation of DQC comments. An example DQC Certification statement is provided in ER 1165-2-217, Appendix D. Documentation of completed DQC, to include the DQC checklist, will be provided to the MSC, RMO and the ATR Team leader. The ATR team will examine DQC records and comment in the ATR report on the adequacy of the DQC effort.

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. All members of the ATR team will use the four-part comment structure (see ER 1165-2-217, Section 5). If a concern cannot be resolved by the ATR team and PDT, it will be elevated to the vertical team to resolve using the issue resolution process in ER 1165-2-217, Section 5.9. Unresolved concerns will be closed in DrChecks by noting the concern has been elevated. ATR documentation will include an assessment by the ATR team of the effectiveness of DQC. The ATR Lead will prepare a Statement of Technical Review (see ER 1165-2-217, Section 5.11, and Appendix D), for the draft and final reports, certifying that review issues have been resolved or elevated. ATR will be certified when all concerns are resolved or referred to the vertical team and the ATR documentation is complete.

5. Supporting Information

Study Background

The Peninsula Region is comprised of the cities of Hampton, Newport News, Poquoson, Williamsburg and the Counties of James City and York, and is bounded by the James River to the south, Chesapeake Bay to the east and the York River to the north. Recent storm events that have impacted the region were Hurricane Isabel in 2003, the November 2009 Nor'easter, Tropical Storm Irene in 2011, and Hurricane Sandy in 2012. The areas to be evaluated include primarily the low-lying areas of City of Hampton, with potential critical infrastructure in low-lying areas of City of Poquoson. The cities of Hampton and Poquoson experienced the highest number of repetitive losses within Virginia, according to the Commonwealth of Virginia Hazard Mitigation Plan, dated March 2013, totaling over $85 Million in flood insurance claims paid as of 2011.

Study Authority

The Study is authorized under Public Law 84-71, enacted June 15, 1955, which authorizes the Secretary of the Army, in cooperation with the Secretary of Commerce and other Federal agencies, to examine and survey the coastal and tidal areas of the eastern and southern United States, with particular reference to areas where severe damages have occurred from hurricane winds and tides.

Study Area

The Coastal Peninsula Region, Virginia is comprised of the cities of Hampton, Newport News, Poquoson, Williamsburg and the Counties of James City and York and is located approximately 210 miles southeast of Washington, D.C. and bordered by York and James Rivers and Chesapeake Bay. The focused study area for this feasibility effort is primarily City of Hampton, with potential inclusion of City of Poquoson.

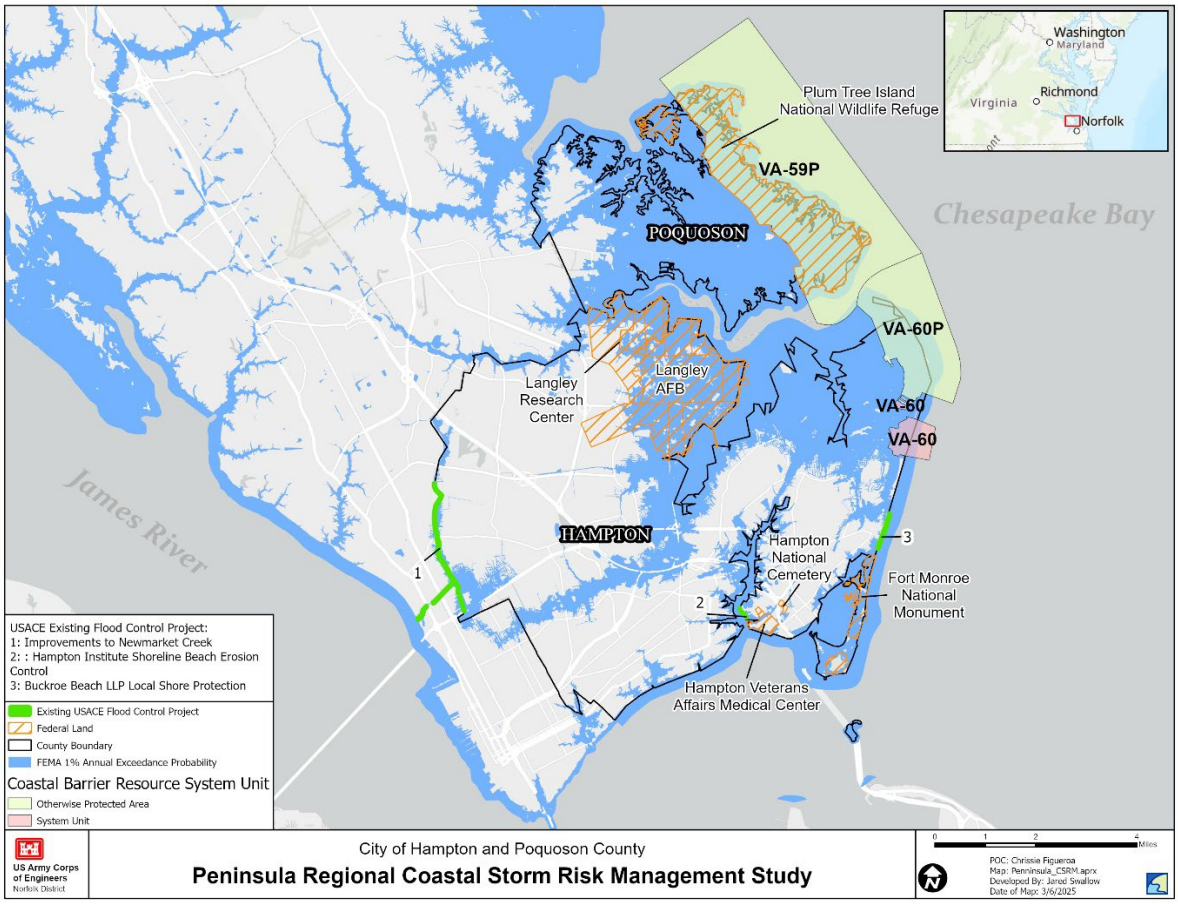

Figure 1 – Peninsula Regional CSRM Study Area Map

Problem Statement

There are three primary problems in Hampton and Poquoson, Virginia associated with coastal storm risk:

- The geographic proximity to the coast, low-lying elevation, and dense population increases the Peninsula Region's vulnerability to coastal storm risks and associated human health and life safety risks.
- Increasing high tides (including exceptionally high tides, sometimes referred to as king tides) result in exacerbated coastal storm risks and risks of damages to infrastructure, natural resources, and communities.
- Incorporating changing conditions such as sea level change, land subsidence, and regional groundwater withdrawals exacerbate flooding during storm events.

Goals and Objectives

The Federal objective of water and related land resources project planning is to contribute to national economic development consistent with protecting the nation's environment, pursuant to national environmental statutes, applicable executive orders, treaties, and other Federal planning requirements. The goal of this study is to identify, evaluate, and recommend a suite of measures that seek to manage the risks to life safety and human health, as well as to existing infrastructure and natural resources, that are presented by coastal storm events. The objectives of the study include the following:

- Manage coastal storm risk and the risk to human health and life safety during coastal storm events in Hampton and Poquoson, Virginia over the 50-year period of analysis.
- Improve resiliency during and after coastal storm events by reducing economic damages to critical infrastructure, incorporating the needs and considerations of all at risk communities, and existing natural resources in Hampton and Poquoson, Virginia over the 50-year period of analysis.

Future Without Project Conditions

The Virginia Coastal Peninsula is a highly urbanized with significant portions of the region below elevation 15 feet North American Vertical Datum of 1988 (NAVD88). The low elevation places the region at risk from flooding due to high tides, northeasters, and hurricanes, changing conditions such as. sea level change and land subsidence, including the Chesapeake Bay Impact Crater and regional groundwater withdrawals, exacerbates flooding during storm events. NOAA Tide Stations around the project area, including Sewells Point, Virginia measuring at 4.6 mm/year, record some of the highest relative sea level rise rates along the Atlantic Coast. Two communities, cities of Hampton and Poquoson, experience the highest repetitive loss, within Virginia according to the Commonwealth of Virginia Hazard Mitigation Plan, dated March 2013.

Types of Measures/Alternatives Being Considered

This study will develop alternative plans for managing coastal storm risk involving nonstructural measures and potentially nature-based solutions. Nonstructural measures include elevating residential buildings, dry or wet floodproofing nonresidential/commercial buildings, and dry floodproofing Critical Infrastructure. Consistent with planning policy, acquisitions will also be considered. It should be noted that the Commonwealth of Virginia is a Dillon Rule State which means that local governments have limited authority and can pass ordinances only in areas where the General Assembly has granted clear authority. This became evident during the Newmarket Creek, Continuing Authorities Program Section 205. The City of Hampton expressed potential capability to acquire structures within the limits of the published FEMA floodway. However, other properties initially considered for acquisition were unofficially determined as outside of the city's eminent domain authority. Structural measures such as floodwalls or surge barriers will not be considered during this study effort due to the known study resource constraints that limit the analyses and feasibility-level design that can be accomplished leading up to a policy-compliant actionable recommendation and signed Chief's Report by July 2027.

Estimated Cost/Range of Costs

Costs of alternatives are unknown at this time and can vary greatly depending on the number of buildings being recommended for a nonstructural measure. Costs are expected to be well over $200 million for a recommended plan.

6. Models to be Used in the Study

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 following planning models may be used to develop the decision document:

Table 3: Planning Models, Tools, and Data

Model Name and Version	Brief Model Description and How It Will Be Used in the Study	Certification/ Approval
IWR Planning Suite II Version 2.0.9	The IWR Planning Suite is a water resources investment decision support tool built for the formulation and evaluation of ecosystem restoration alternative plans; however, it is now more widely used by all USACE business lines for evaluation of actions involving monetary and non-monetary cost and benefits.	Certified
G2CRM Version 0.4.564	G2CRM is a Probabilistic Life Cycle Analysis (PLCA) model developed by ERDC that provides incorporation of quantified uncertainty in the driving forces, physical system, and system response. The model is designed for the evaluation of CSRM projects involving static protective measures. G2CRM is able to perform event-driven Monte Carlo simulation of environmental forcing (storms), estimate event-based damages, and protective system response, over the project life cycle. G2CRM will also be the primary model used to quantify life loss and life safety risk.	Certified
Regional Economic System (RECONS) 2.0	A regional economic impact modeling tool that estimates jobs, income, sales, and value added associated with Corps Civil Works and ARRA spending, as well as stemming from effects of additional economic activities (for example, water transportations, tourism spending, etc.) at more than 1,400 Corps project areas.	Certified
ArcGIS PRO 3.0.3	Software used for spatial analysis and inundation mapping purposes to delineate the extend of coastal flooding hazards.	Enterprise

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. For example, HH&C models need to comply with the requirements of HH&C CoP Enterprise Standard 08101.

The Peninsula CSRM study's coastal modeling efforts will follow a two-iteration approach to ensure robust and regionally consistent results. In the first iteration, the team will validate the Coastal Hazards System (CHS) data developed as part of the North Atlantic Coast Comprehensive Study (NAACS) and carefully select an appropriate set of savepoints that represent the hydraulics of the area appropriately. The initial version of the G2CRM model will be run and calibrated based on this existing CHS data. In the second iteration, a regionally congruent ADCIRC model's results will be provided by ERDC, prompting an update to the coastal inputs for the model. The ADCIRC model that ERDC is developing is in support of two other Norfolk District projects, Norfolk CSRM in the PED phase and Virginia Beach CSRM, an ongoing feasibility study, and encompasses the Chesapeake Bay region. The G2CRM model will then be re-run and re-calibrated to reflect the improved savepoint data,

ensuring alignment with regional coastal dynamics and improved accuracy in the modeling outputs. The mesh refinement effort in line with the coordinated/confirmed schedules for Norfolk and VB CSRM is completed at this time, and the updated statistical output will also be utilized once complete.

The following engineering models may be used to develop the decision document:

Table 4: Engineering Models, Tools, and Data

Model Name and Version	Brief Model Description and How It Will Be Used in the Study	Approval Status
MII version 4.4	MCACES is a cost estimating program used by cost engineering to develop and prepare all Civil Works cost estimates. Using this system, estimates are prepared uniformly allowing cost engineering throughout USACE and the A-E community to function as one virtual cost engineering team. The latest HQUSACE approved version of MCACES is mandatory beginning at the feasibility phase for the Federal recommended plan.	Enterprise
Oracle Crystal Ball	Crystal Ball is a DOD-licensed application applied on top of Excel to provide the capability of evaluating risks associated with the project and how they affect the construction costs. This spreadsheet-based application is utilized for predictive modeling, forecasting, Monte Carlo simulation, and optimization to enable the user to measure and report on the risk inherent in key cost assumptions and metrics.	Enterprise
CEDEP	Corps-proprietary, excel add-on for Cost Engineering; used to estimate costs of alternatives and the recommended plan.	Enterprise
Coastal Hazards System Version 2.0	The Coastal Hazards System (CHS) (https://chs.erdc.dren.mil) is a national coastal storm hazard data resource for probabilistic coastal hazard analysis (PCHA) results and statistics, storing numerical and probabilistic modeling results including storm surge, astronomical tide, waves, currents, and wind. It serves as the basis of coastal engineering data within the USACE. CHS will be used will be used in G2CRM, for inundation mapping, and for any design considerations.	HH&C CoP Preferred
HEC-RAS 6.6 (Riverine Analysis System)	This software allows the user to perform one-dimensional steady/unsteady flow, one and two-dimensional unsteady flow calculations, sediment transport/mobile bed computations, simulates and analyzes the hydraulics of rivers and natural and constructed channels to include overland shallow flow equations, inundation mapping, and water temperature/water quality modeling. This software continues to see advancements and can be used with spatially varying boundary conditions (can represent surge conditions), wave forces, wind forcings, spatially varied rainfall, and air pressure variation.	HH&C Approved

All civil works planning studies must document compliance with CECW-P memo (28 July 2023), Model Coordination for Civil Works Planning Studies, to coordinate models and confirm assigned modelers possess the requisite knowledge and experience to complete modeling tasks. A questionnaire for each model is attached in Appendix E.

7. Factors Affecting Level and Scope of Review

All planning products are subject to the conduct and completion of DQC. Most planning products are subject to ATR and a smaller sub-set of products may be subject to IEPR and/or Safety Assurance Review. Information in this section helps in the scoping of reviews through the considerations of various potential risks.

Objectives of the Reviews

The objectives of the DQC, the ATR, and the P&LC reviews include the following:

1. Ensure decision document quality and completeness.
2. Ensure decision document is compliant with federal laws and policies including NEPA, as well as USACE policies and plan formulation standards for coastal storm risk management feasibility studies.
3. Ensure sound assumptions, modeling and analyses methods, feasibility-level design, and plan formulation methods were utilized to develop the recommended measures/alternatives and appropriately documented in the decision document and supporting appendices.
4. Ensure external coordination with the non-Federal Sponsor, stakeholders, environmental resource agencies, and public throughout the study are appropriately documented in the decision document.

Assessing the Need for IEPR

Mandatory IEPR Triggers

- Has the Chief of Engineers determined the project is controversial? **No**
- Has the Governor of an affected state requested an IEPR? **No**
- Is the cost of the project more than $200 million? **Yes**

Discretionary IEPR

- Has the head of another Federal agency requested an IEPR? **No**

Potential IEPR Exclusion

- Is the project cost greater than $200 million? **Yes**; and
- Does the project have an Environmental Impact Statement (EIS)? **No / not anticipated**

IEPR Exclusion Condition A.

- Does the study include an EIS? **No / not anticipated**
- Is the project controversial? **No / not anticipated**
- Does the project have more than negligible adverse impacts on scarce or unique tribal, cultural, or historic resources? **No / not anticipated**
- Does the project have substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures; **No / not anticipated**
- Does the project, before implementation of mitigation measures, have more than a negligible adverse impact on a species listed as endangered or threatened species under the Endangered Species Act of 1973 (16 U.S.C. § 1531 et seq.) or the critical habitat of such species designated under such Act. **No / not anticipated**

Assessing Other Risk Considerations

- Will the study likely be challenging? If so, describe how?
    - **No**

- Provide a preliminary assessment of where the project risks are likely to occur and assess the magnitude of those risks.
    - **Project risks with nonstructural measures can vary since buildings in a nonstructural plan are not looked at on an individual structure by structure basis. While teams ground truth data obtained during the feasibility study, it can still vary from when those buildings are surveyed during the Preconstruction Engineering and Design Phase. The uncertainties in construction type, foundation type, and foundation condition can lead to additional risk. The cost of nonstructural measures can also vary due to these uncertainties. After further inspection, it is possible a homeowner may be responsible to fix newly discovered issues and bring them up to building code standards. These additional costs may result in the homeowner not willing to participate in the program.**

- Is the project likely to be justified by life safety or is the study or project likely to involve significant life safety issues? Briefly describe the life risk, including the District Chief of Engineering's assessment as to whether there is a significant threat to human life associated with aspects of the study or failure of the project or proposed projects.
    - **Yes, it is possible that the project can be justified by life safety. There may be significant life safety issues and the project alternatives will be evaluated for their impacts on the life safety risk.**

- Is the information in the decision document or anticipated project design likely to be based on novel methods, involve 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? If so, how?
    - **No**

- Does the project design require redundancy, resiliency, and/or robustness, unique construction sequencing, or a reduced or overlapping design/construction schedule? If so, how?
    - **No**

- Is the project expected to have more than negligible adverse impacts on scarce or unique tribal, cultural, or historic resources? If so, what are the anticipated impacts?
    - **To be determined. There is an abundance of tribal, cultural, and/or historic resources in the study area, including but not limited to historic Fort Monroe, Hampton Downtown Historic District, and Aberdeen Gardens.**

- Is the project expected to have substantial adverse impacts on fish and wildlife species and their habitat prior to the implementation of mitigation measures? If so, describe the impacts?
    - **No**

- Is the project expected to have, before mitigation measures, more than a negligible adverse impact on an endangered or threatened species or their designated critical habitat? If so, what are the anticipated impacts?
    - **No**

8. Risk Informed Decisions on Level and Scope of Review

Targeted ATR. Will a targeted ATR be conducted for the study? **Yes. A Targeted ATR will be completed for the technical modeling contributing to the G2CRM Future Without Project condition.** The economic analysis utilizing G2CRM is not anticipated to involve significant complexity due to both the limited nonstructural measures-only focus and the level of experience of the lead economic modeler. As a result of these considerations, and coordination with the PCX-CSRM, the team is moving forward with a Targeted ATR of only the FWOP condition. However, the team will ensure that a description of the proposed (but not yet modeled) FWP model criteria and assumptions will be included in the Targeted ATR to still allow for technical review of the intended FWP path forward.

In-Progress Reviews. In-Progress Reviews (IPR) will be scheduled as needed per coordination with the vertical team, including at minimum an IPR to evaluate the Future Without Project condition and an IPR following the new CVM consistent with updated guidance. Additional IPRs can be scheduled as required to address technical or policy challenges during the study.

IEPR Decision. The District's recommendation is to pursue an IEPR exclusion based on the limited scope and complexity of the feasibility analysis contributing to an anticipated EA. The integrated feasibility report and NEPA document is not anticipated to include an EIS.

Safety Assurance Review. Safety Assurance Reviews are managed outside of the USACE and are conducted on design and construction products for hurricane, storm and flood risk management projects, or other projects where existing and potential hazards pose a significant threat to human life. In some cases, significant life safety considerations may be relevant to planning decisions. These cases may warrant the development of relevant charge questions for consideration during reviews such as ATR or IEPR. In addition, if the characteristics of the recommended plan warrant a Safety Assurance Review, a panel will be convened to review the design and construction activities on a regular schedule before construction begins and until construction activities are completed.

Decision on Safety Assurance Review. Insufficient detail is known about the need for Safety Assurance Review in the design and construction phases. Therefore, a decision will be made at a later time when more detailed information is known.

9. Policy and Legal Compliance Review

Policy and legal compliance review of draft and final planning decision documents is delegated to the MSC (see EP 1105-2-61).

(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 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 IPRs, 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.
- 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.

10. Vertical Alignment Memo

The Vertical Team Alignment Memo (VTAM) is established in the CECW Memorandum, Subject: "Vertical Team Alignment Memorandum Guidance", 29 July 2022, clarified in CECW Memorandum, Subject: "Feasibility Study Vertical Team Alignment and Command Validation," 07 May 2025, and procedurally documented in EP 1105-2-61, "Feasibility and Post-Authorization Study Procedures and Report Processing Requirements," 1 July 2023.

The VTAM is to ensure development of an adequate study scope, establish a realistic schedule and budget early in the study process, and actively manage towards achieving the schedule and budget. The VTAM establishes alignment on study path forward and either verifies the study is within 3x3x3 requirements or explains the need and path ahead for a policy exception request (Additional Resource Request).

Timelines for initial VTAM submission:

- The initial VTAM for the entire study schedule and funding stream for feasibility studies, limited reevaluation studies, and general reevaluation studies will be signed and transmitted to Headquarters within 60 days of the Alternatives Milestone Meeting. If the study's Alternatives Milestone Meeting is delayed beyond nine months of study initiation, the

planned milestone date will be communicated to the Headquarters Chief of the Office of Water Project Review (OWPR).

- The initial VTAM for the entire study schedule and funding stream for validation studies will be signed and transmitted to Headquarters within 120 days of the study initiation.

- The initial VTAM for the entire study schedule and funding stream for watershed studies will be signed and transmitted to Headquarters within six months of the study initiation (ER 1105-2-102).

- If the VTAM will be transmitted later than the timelines above, the District Planning Chief will notify the Headquarters Chief of OWPR of the delay as soon as practicable. In no cases will VTAM submittals be delayed more than 30 days beyond the timelines above.

11. Public Comment

This Review Plan will be posted on the District's website. Public comments on the scope of reviews, technical disciplines involved, schedules and other considerations may be submitted to the District for consideration. If the comments result in a change to the Review Plan, an updated plan will be posted on the District's website.

12. Documents Distributed Outside the Government

For information distributed for review to non-governmental organizations, the following disclaimer shall be placed on documents:

"This information is distributed solely for the purpose of pre-dissemination review under applicable information quality guidelines. It has not been formally disseminated by USACE. It does not represent and should not be construed to represent any agency determination or policy."

Appendix A - Brief Description of Each Type of Review

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 and accompanying components will undergo DQC. This internal review covers basic science and engineering work products. It fulfils the project quality requirements of the Project Management Plan. The DQC team will read all reports and appendices. The review must evaluate the correct application of methods, validity of assumptions, adequacy of basic data, correctness of calculations (error-free), completeness of documentation, and compliance with guidance and standards. Districts are required to check all computations and graphics by having the reviewer place a highlight (e.g., place a "red dot") on each annotation and/or number indicating concurrence with the correctness of the information shown. DQC will be conducted in DrChecks.

Agency Technical Review. ATR will be performed by a qualified team from outside of Norfolk District that is not involved in the day-to-day production of the project/product. These teams will be comprised of certified USACE personnel identified by the ATR lead. The ATR lead is determined by PCX-CSRM. ATR will be conducted in DrChecks.

Cost Engineering Review. All decision documents will be coordinated with the Cost Engineering Mandatory Center of Expertise (MCX). The MCX assisted 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 MCX for the reviews. These reviews occur as part of ATR.

Policy and Legal Compliance Review. 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.

Public Review. The District will post the Review Plan and approval memo on the District's internet site. Public comment on the adequacy of the Review Plans will be accepted and considered. Additional public review will occur when the report and environmental compliance document(s) are released for public and agency comment.