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

APR - 3 2025

CENAD-PD-P (1105-2-10c)

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

SUBJECT: Miami-Dade Back Bay, Florida Coastal Storm Risk Management Feasibility Mega Study

1. Reference Memorandum, CENAO-ZA dated 11 February 2025, Subject: Submission of the Review Plan for Miami-Dade Back Bay, Florida Coastal Storm Risk Management Feasibility Mega Study for North Atlantic Division Approval.

2. The Coastal Storm Risk Management Planning Center of Expertise of the North Atlantic Division (NAD) is the lead office to execute the referenced Review Plan. The Review Plan does not include Independent External Peer Review, as it is not required.

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 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. Larry Cocchieri, NAD Planning Program Manager at 347-370-4571 or Lawrence.J.Cocchieri@usace.army.mil.

LLOYD.JOHN.PHILLIP.1021070595 Digitally signed by LLOYD.JOHN.PHILLIP.1021070595 Date: 2025.04.03 07:42:53 -04'00'

Encl

JOHN P. LLOYD
Brigadier General, USA
Commanding

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

CENAO-ZA (800C) 11 February 2025

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

SUBJECT: Submission of the Review Plan for Miami-Dade Back Bay, Florida Coastal Storm Risk Management Feasibility Mega Study for North Atlantic Division Approval

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

2. Background: The Norfolk District developed the enclosed Review Plan (enclosure 2), for the Miami-Dade Back Bay Coastal Storm Risk Management Feasibility Mega Study. The Review Plan, dated January 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 notes a request for an IEPR Exclusion. The PCX-CSRM's endorsement (enclosure 1) is dated 24 January 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 requested 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.

AVICHAL.SONNY.BIMAL.1030732339 Digitally signed by AVICHAL.SONNY.BIMAL.1030732339 Date: 2025.02.10 15:38:01 -05'00'

2 Encls

SONNY B. AVICHAL, PE
COL, 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-PD-P (1105-2-10c) 24 Jan 2025

MEMORANDUM FOR Commander, Norfolk District, U.S. Army Corps of Engineers, (CENAO-WRP-F/ Mr. Faraz Ahmed) 803 Front St., Norfolk, VA 23510

SUBJECT: Miami-Dade Back Bay Coastal Storm Risk Management Feasibility Study (2027)

1. The National Planning Center of Expertise for Coastal Storm Risk Management (PCX-CSRM) has reviewed the Review Plan (RP) for the subject study and concurs that the RP complies with current peer review policy requirements contained in ER 1165-2-217, entitled "Civil Works Review Policy".

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 to ensure the feasibility study is successful. The review was performed by our PCX-CSRM RP Review Team.

3. The review was performed by the PCX-CSRM in coordination with representatives from the National Ecosystem Restoration Planning Center of Expertise (ECO-PCX), and Headquarters Engineering & Construction - Hydrology, Hydraulics, and Coastal (HQ E&C- HH&C).

4. PCX-CSRM has no objection to RP approval by the North Atlantic Division.

5. Thank you for the opportunity to assist in the preparation of the RP. PCX-CSRM is prepared to lead the Agency Technical Review for the subject study and will continue to coordinate with the PDT. For further information, please contact me at 347-370-4571.

COCCHIERI.LAWRENCE.J.1228780622 Digitally signed by COCCHIERI.LAWRENCE.J.1228780622 Date: 2025.01.24 16:58:35 -05'00'

LARRY COCCHIERI
Deputy, National Planning Center of Expertise for Coastal Storm Risk Management

Review Plan
May 2025

1. Project Summary

Project Name: Miami-Dade Back Bay Coastal Storm Risk Management Feasibility Study (2027)
Location: Miami-Dade County, Florida
P2 Number: 476677

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

Congressional Authorization Required: Yes

Project Purpose(s): Single-Purpose Coastal Storm Risk Management

Non-Federal Sponsor: Miami-Dade County

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

District: Norfolk District
District Contact: Project Manager (757) 201-7732

Major Subordinate Command (MSC): North Atlantic Division
MSC Contact: Senior Coastal Planner (347) 370-4591

Review Management Organization (RMO): National Planning Center of Expertise for Coastal Storm Risk Management (PCX-CSRM)
RMO Contact: Deputy Director, PCX-CSRM (347) 370-4571

Key Review Plan Dates

Date of RMO Endorsement of Review Plan	January 24, 2025
Date of MSC Approval of Review Plan	April 3, 2025
Date of IEPR Exclusion Approval	April 3, 2025
Has the Review Plan changed since RMO Endorsement?	Yes
Date of Last Review Plan Revision	May 28, 2025
Date of Review Plan Web Posting	May 29, 2025

Milestone Schedule and Other Dates

	Scheduled	Actual
Study Kickoff		8/26/24
Alternatives Milestone		1/31/25
Tentatively Selected Plan Milestone	2/23/26	
Release Draft Report to Public	4/22/26	
Command Validation Milestone	8/20/26	
Final Report Transmittal	4/3/27	
State & Agency Briefing	6/3/27	
Chief's Report or Director's Report	8/2/27	

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	09/25/2026	10/25/2026	$40,000	No
Draft IFR/EA	DQC	No	03/10/2026	04/10/2026	$50,000	No
Draft IFR/EA	Public Comment under National Environmental Policy Act	No	04/22/2026	05/22/2026	N/A	No
Draft IFR/EA	ATR	No	04/22/2026	05/22/2026	$50,000	No
Draft IFR/EA	Policy and Legal Compliance Review	No	04/22/2026	06/30/2026	N/A	No
Final IFR/EA	DQC	No	01/24/2027	02/28/2027	$50,000	No
Final IFR/EA	ATR	No	02/28/2027	03/27/2027	$50,000	No
Final IFR/EA	Policy and Legal Compliance Review	No	04/03/2027	05/23/2027	N/A	No
Final IFR/EA	Release Final Report under National Environmental Policy Act	No	06/03/2027	07/03/2027	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 (senior economist and member of the PCX-CSRM). As a result of these considerations, and per coordination with additional members of 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. Experience with G2CRM is required.	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
Hydrology and Hydraulic Engineering / Coastal Engineering	Engineer with experience applying coastal hydrologic and hydraulic principles and technical tools to project planning, design, construction, and operation. Experience with G2CRM is required.	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
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 Climate Preparedness and Resiliency Community of Practice knowledgeable of coastal hydrology climate change assessment policy and practice.	No	Yes
Risk and Uncertainty	For decision documents involving hydrologic, hydraulic, and/or coastal related risk management measures, include on the ATR team an 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

Study Authority

The study authority is Public Law 84-71, June 15, 1955, which authorizes an examination and survey of 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. Notwithstanding Section 105(a) of the Water Resources Development Act of 1986 (33 U.S.C. 2215(a)), which specifies the cost-sharing requirements generally applicable to feasibility studies, Title IV, Division B of the Bipartisan Budget Act of 2018, Public Law 115-123, enacted February 9, 2018 (hereinafter "BBA 2018"), authorizes the Government to conduct the Study at full Federal expense to the extent that appropriations provided under the Investigations heading of the BBA 2018 are available and used for such purpose.

Study Area

The study area is Miami-Dade County, located on the southeast coast of Florida next to the Biscayne Bay. The county includes 34 municipalities and has a population of approximately 2.8 million people, making it the most populous county in Florida and the seventh most populous in the United States. Based on its low-lying topography and dense population, the Miami-Dade County area is recognized for high vulnerability to sea level rise and coastal storms. Focus areas will be developed by the Project Delivery Team for the 2027 study.

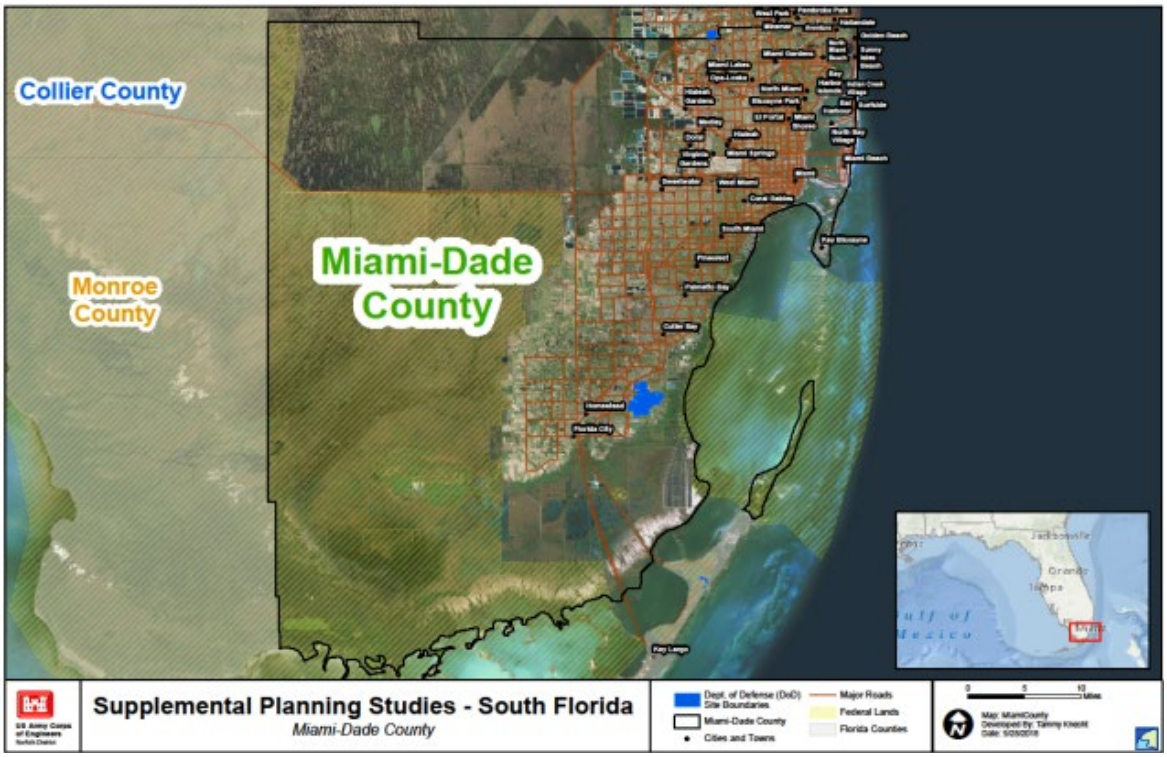

Figure 1 – Study Area Map.

Problem Statement

There are two primary problems in Miami-Dade County associated with coastal storm risk:

- The geographic proximity to the coast, low-lying elevation, and dense population increases Miami-Dade County's vulnerability to coastal storm risks and associated human health and life safety risks.
- Increasing sea level change impacts result in exacerbated coastal storm risks and risks of damages to infrastructure, natural resources, and communities in Miami-Dade County.

Goals and Objectives

The primary goal of the feasibility study is to investigate and recommend solutions that minimize coastal storm risks and damages to existing infrastructure and resources, including critical infrastructure, while avoiding loss of life.

Objectives over a 50-year period of analysis from 2045-2094 are to:

1. Increase the resilience of Miami-Dade County to function effectively before, during, and after coastal storm events by decreasing the vulnerability of CI to flooding damage from storm surge with consideration for sea level change over the period of analysis.
2. Manage coastal storm risk to populations and buildings in Miami-Dade County communities that have been identified as vulnerable to severe damage from storm surge with consideration for sea level change over the period of analysis.
3. Manage the risk to life safety, community health, and resilience by managing direct and indirect consequences of coastal storm impacts in Miami-Dade County over the period of analysis.

Future Without Project Conditions

Miami-Dade County is a densely populated, topographically flat, low elevation community with an average elevation of approximately five feet North American Vertical Datum of 1988 (NAVD88) and a natural high point at 25 feet NAVD88 (Source: 2016 US Geological Survey). The low elevations, sub-tropical location, and hydrologic connections to Biscayne Bay through canals place a significant percentage of the county at risk to flooding from high tides, hurricanes, and other storms. Exacerbating the flooding is the phenomenon of sea level rise, which is the combination of water level rise and land subsidence. South Florida is documented as having a significant rate of relative sea level rise which, coupled with climate change, makes this region and Miami-Dade County increasingly vulnerable to flood risk and coastal storm risk.

Many of the barrier islands between the Atlantic Ocean and Biscayne Bay (Miami Beach, Bal Harbour, Surfside, Sunny Isles Beach, etc.) and coastal portions of the mainland are shown to be mostly inundated by three to four feet of sea level change alone according to NOAA's sea level rise viewer. FEMA's base flood elevation (BFE), or one percent annual exceedance probability, is on average approximately 6.5' NAVD88 across the entire county. The BFE's inundation area covers approximately 24 percent of the county. Miami-Dade County has an urban development boundary (UDB) from the 1980s to limit urbanization and protect agriculture. The UDB identifies areas where urban development may occur through the year 2030. FEMA's BFE covers approximately 47 percent of the area within the UDB.

Miami-Dade County has several on-going and recently completed USACE studies described below. Depending on the completion date, they may need to be considered as part of future without project conditions prior to the completion of this 2027 study.

- **Miami-Dade Back Bay Coastal Storm Risk Management Study (2024)**
  - Completed in August 2024, recommendations included elevating 2,052 residential buildings, floodproofing 403 nonresidential buildings, and floodproofing 27 Critical Infrastructure facilities throughout Miami-Dade County.
- **Miami-Dade Coastal Storm Risk Management Study**
  - Completed in 2022, solutions included periodic beach renourishment and construction of five groins. The project was authorized under Water Resources Development Act (WRDA) 2022.
- **Miami Harbor Improvements Feasibility Study**
  - The study focuses on navigation improvements such as widening and/or deepening specific areas within Miami's federally authorized channels to achieve transportation cost savings through increased economic efficiencies within Miami Harbor.
- **Biscayne Bay Coastal Wetlands**
  - The project is part of the CERP Generation 2 projects authorized in WRRDA 2014. The project will restore wetland and estuarine habitats and divert an average of 59 percent of the annual coastal structure discharge into freshwater and saltwater wetlands instead of direct discharges to Biscayne Bay and Biscayne National Park. Scheduled completion is in 2028.
- **Biscayne Bay and Southeastern Everglades Ecosystem Restoration**
  - The study focuses on formulating plans to restore parts of the South Florida ecosystem in freshwater wetlands of the Southern Glades and Model Lands, the

coastal wetlands, and subtidal areas (including mangrove and seagrass areas) of Biscayne Bay, Biscayne National Park, Manatee Bay, Card Sound, and Barnes Sound.

- **Central and Southern Florida Flood Resilience (Section 216) Study**
    - The Jacksonville District and the South Florida Water Management District will continue to partner on the ongoing C&SF Flood Resiliency (Section 216) study, which will focus on advancing the feasibility and engineering studies for four coastal structures within Miami Dade County, aiming for inclusion in WRDA30.
- **Key Biscayne Coastal Storm Risk Management Study**
    - The study, conducted in partnership with Miami-Dade County, kicked off in late 2023 and will focus on providing solutions for coastal storm impacts to both the beach side and the bay side of Key Biscayne.

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 buildings (i.e.: commercial, educational, industrial, governmental, agricultural, and religious, hotel/motel, and institutional buildings), and dry floodproofing Critical Infrastructure. Larger structural measures such as floodwalls or surge barriers are not being considered for the 2027 study since that is part of a larger comprehensive framework that is being scoped concurrently. Depending on the Critical Infrastructure, it's possible a smaller structural solution may be analyzed such as a ringwall surrounding a wastewater treatment plant.

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
G2CRM version 0.4.564	The program integrates hydrologic engineering and economic analysis to formulate and evaluate plans using risk-based analysis methods. It will be used to evaluate /compare plans to aid in selecting a recommended plan. It will also be used to determine potential life loss with the alternatives.	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 mapping purposes.	Enterprise
UMAM	The Uniform Mitigation Assessment Method (UMAM) is a methodology for determining the amount of mitigation needed to offset adverse impacts to existing environmental resources. The UMAM will be used accordingly to determine mitigation needs of the proposed study recommendations and to assess the ecological function of wetlands.	Approved for use
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

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.

These 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
Coastal Hazards System (CHS 2.0)	National coastal storm hazard data resource for probabilistic coastal hazard assessment (PCHA) results and statistics, storing numerical and probabilistic modeling results including storm surge, astronomical tide, waves, currents, and wind. This data will be used in G2CRM, for inundation mapping, and for any design considerations.	HH&C CoP Preferred
HEC-HMS (Hydrologic Modeling System), version 4.12	This system simulates the complete hydrologic processes of dendritic watersheds. It includes many traditional hydrologic analysis procedures such as event infiltration, unit hydrographs, and hydrologic routing. It includes procedures for continuous simulation including evapo-transpiration, snowmelt, and soil moisture accounting. Advanced capabilities are provided for gridded runoff simulation using the linear quasi-distributed runoff transform (ModClark). Supplemental analysis tools are provided for parameter estimation, depth-area analysis, flow forecasting, erosion and sediment transport, and nutrient water quality.	HH&C CoP Preferred
HEC-RAS (River Analysis System), version 6.6	This hydraulic model 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 (ADCIRC data), wave forces, rainfall, and surge.	HH&C CoP Preferred
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

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 F.

ERDC-CHL modeling is currently ongoing and will be completed for the 2027 Final Report. The modeling will provide a foundation for a future Comprehensive Study as it will analyze the water level, wave, and water quality impacts to Biscayne Bay. Proposed alignments of a leveed system that

includes floodwalls and storm surge barriers will be evaluated using hydraulic and water quality modeling from ERDC-CHL. Those resultant impacts will be included in the scoping for the Comprehensive Study. ERDC-CHL plans on using the following engineering models: CSTORM-MS (Coastal STORM – Modeling System), ADCIRC (Advanced CIRCulation), SWAN (Simulating WAves Nearshore) or STWAVE (Steady State Spectral Wave). The results will undergo review by staff at ERDC-CHL using their typical DQC process as well as by Norfolk District Engineering and Environmental Leads with support from the Jacksonville District. A formal DQC and ATR of the modeling will take place during the DQC and ATR of the report developed for any future Comprehensive Study.

7. Factors Affecting Level and Scope of Review

All planning products are subject to the conduct and completion of District Quality Control. Most planning products are subject to Agency Technical Review and a smaller sub-set of products may be subject to Independent External Peer Review 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 study reviews include the following:

1. Ensure decision document quality and completeness.
2. Ensure decision document is compliant with federal laws and policies including but not limited to the National Environmental Policy Act, as well as USACE policies, guidance, 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?
    - **No**

- 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.

IEPR Decision. The District's recommendation is to pursue an IEPR exclusion based on the assessment provided above.

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 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.

- 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 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. 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.