DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, NORTH ATLANTIC DIVISION
FORT HAMILTON MILITARY COMMUNITY
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CENAD-PD-P

JUL 0 8 2015

MEMORANDUM FOR Commander, Norfolk District, (CENAO-PM-C/Robert Pretlow) 803 Front St. Norfolk, Va. 23510-1096

SUBJECT: Review Plan Approval for Norfolk Harbor and Channels Deepening Project, Hampton Roads, VA General Reevaluation Report

1. Reference Norfolk Harbor and Channels Deepening Project, Hampton Roads, VA General Reevaluation Report prepared by Norfolk District, 15 June 2015.

2. The Deep Draft Navigation Planning Center of Expertise of the South Atlantic Division 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, 347-370-4571, Lawrence.J.Cocchieri@usace.army.mil.

Encl
as

WILLIAM H. GRAHAM
Colonel, EN
Commanding

REVIEW PLAN

Norfolk Harbor and Channels Deepening Project, Hampton Roads, VA
General Reevaluation Report

Norfolk District

MSC Approval Date: Pending
Last Revision Date: 6/15/ 2015

US Army Corps
of Engineers ®

REVIEW PLAN

Norfolk Harbor and Channels 55ft Deepening Project, Hampton Roads, VA
General Reevaluation Report

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1. PURPOSE AND REQUIREMENTS

a. Purpose. This Review Plan defines the scope and level of peer review for the Norfolk Harbor and Channels 55ft Deepening Project, Hampton Roads, VA general reevaluation report.

b. References

(1) Engineering Circular (EC) 1165-2-214, Civil Works Review Policy, 15 Dec 2012
(2) EC 1105-2-412, Assuring Quality of Planning Models, 31 Mar 2011
(3) Engineering Regulation (ER) 1110-1-12, Quality Management, 30 Sep 2006
(4) ER 1105-2-100, Planning Guidance Notebook, Appendix H, Policy Compliance Review and Approval of Decision Documents, Amendment #1, 20 Nov 2007
(5) Norfolk Harbor and Channels 55ft Deepening Project Management Plan (PMP)
(6) Norfolk District Quality Management Plan

c. Requirements. This review plan was developed in accordance with EC 1165-2-214, which establishes an accountable, comprehensive, life-cycle review strategy for Civil Works products by providing a seamless process for review of all Civil Works projects from initial planning through design, construction, and operation, maintenance, repair, replacement and rehabilitation (OMRR&R). The EC outlines four general levels of review: District Quality Control/Quality Assurance (DQC), Agency Technical Review (ATR), Independent External Peer Review (IEPR), and Policy and Legal Compliance Review. In addition to these levels of review, decision documents are subject to cost engineering review and certification (per EC 1165-2-214) and planning model certification/approval (per EC 1105-2-412).

2. REVIEW MANAGEMENT ORGANIZATION (RMO) COORDINATION

The RMO is responsible for managing the overall peer review effort described in this Review Plan. The RMO for decision documents is typically either a Planning Center of Expertise (PCX) or the Risk Management Center (RMC), depending on the primary purpose of the decision document. The RMO for the peer review effort described in this Review Plan is Deep Draft Navigation Planning Center of Expertise (DDNPCX).

The RMO will coordinate with the Cost Engineering Mandatory Center of Expertise (MCX) to ensure the appropriate expertise is included on the review teams to assess the adequacy of cost estimates, construction schedules and contingencies.

3. STUDY INFORMATION

a. Decision Document. A General Reevaluation Report (GRR) will be prepared for the Norfolk Harbor and Channels 55ft Deepening Project, Hampton Roads, Virginia project. A GRR documents the results of a General Reevaluation of a previously completed study, in this case the Norfolk Harbor and Channels Project, which is required due to a proposal to deepen the channel and take into account any changed conditions and/or assumptions. The results may affirm the previous plan; reformulate and modify it, as appropriate; or find that no plan is currently justified. The level of approval for a GRR is Headquarters, U.S. Army Corps of Engineers (HQUSACE) and is expected to require Congressional authorization. In accordance with the National Environmental Policy Act (NEPA), a Supplemental Environmental Impact Statement (EIS) or Environmental Assessment (EA)

will be developed in addition to the GRR to address any environmental impacts associated with the project.

b. **Study/Project Description.** The Norfolk Harbor and Channels, Virginia, Project is a single purpose deep draft navigation project located in the Port of Hampton Roads, a 25-square mile natural harbor serving the port facilities in the cities of Norfolk, Newport News, Portsmouth, Chesapeake, and Hampton in southeastern Virginia. The Port is situated at the southern end of Chesapeake Bay, midway on the Atlantic Seaboard, approximately 170 miles south of Baltimore, Maryland, and 220 miles north of Wilmington, North Carolina. The harbor is formed by the confluence of the James, Nansemond, and Elizabeth Rivers (please reference Attachment 5 for a map of the study area). The project consists of a network of Federally-improved channels extending from the Atlantic Ocean, through the Chesapeake Bay, and into the Port of Hampton Roads. Since its authorization in 1986, the project has been constructed in separable elements based on the needs of the port community and the financial capability of the Commonwealth of Virginia, acting through its agent, the Virginia Port Authority, the non-Federal sponsor for the project. The 50-Foot Outbound Element was completed in 1989; the 50-Foot Anchorage in 1999; and 50-Foot Inbound Element in 2007.

The 55-Foot Deepening Project consists of a network of Federally-improved channels extending from the Atlantic Ocean, through the Chesapeake Bay, and into the Port of Hampton Roads. The Authorized Project consists of a system of two-way, full-width channels that are authorized for construction to a depth of 55 feet in the Norfolk Harbor and Thimble Shoal Channels and 60 feet in the Atlantic Ocean Channel. The non-Federal sponsor, the Virginia Port Authority, has requested that the Norfolk District dredge the project to the originally authorized channel dimensions. However, due to the lapse in time since the project was initially constructed, the North Atlantic Division has required that a General Reevaluation be conducted to consider whether deepening the existing project, according to the originally authorized plan, is still in the Federal Interest and to allow for reformulation of the plan, as appropriate, to develop new alternatives. The estimated cost of deepening the existing channels to the authorized project dimensions is approximately $200M. The General Reevaluation will be a three-year, $3M, cost-shared (50% Federal—50% Non-Federal) study.

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

- It is not likely that the study will be challenging, as it is the reevaluation of a previously authorized and partially constructed project. There is already a large quantity of existing information and prior reports available for use in the study and the reevaluation of the previously authorized plan is not expected to be extraordinarily technically challenging. The non-Federal sponsor, the Virginia Port Authority, has requested and fully supports the study and because the project has already been constructed, it is unlikely that there would be significant social and/or institutional concern for the acceptability of modifying the project;
- This project is relatively low risk, considering that it is only the continued construction of an existing Federal Navigation Project to meet the authorized design criteria. However, there is some uncertainty, as in any study, as to whether deepening the project to the authorized depth (or a reformulated alternative) is still economically justified, environmentally acceptable, and engineeringly feasible. There may be environmental constraints, considering the size of the project and the fact that it is located in the Chesapeake Bay watershed. These potential risks are inherent to any USACE study or project and are not expected to inhibit successful implementation of this project;

- This project is not expected to have significant interagency interest;
- The decision document is not likely to contain influential scientific information or a highly influential scientific assessment;
- The project will not be justified by life safety and does not involve significant threat to human life. The Norfolk Harbor project is a single use deep draft navigation project that will be economically justified based on the reduction in the value of resources required to transport commodities, or NED benefits, as outlined in ER 1105-2-100. Should the project not perform as expected, the impact would be a lower than expected benefit to National Economic Development, which does not impact human life and/or safety. Non-performance of the project would not affect the well-being of the general public and/or environment, but may negatively affect vessels that utilize the project. There is no residual risk to account for in this project due to the fact that the project purpose does not address or directly affect human health and safety. Climate and sea level change would not be a risk to this project and would instead likely improve the function of the project by providing a deeper channel as sea level increases;
- There has not been a request for a peer review by independent experts by the Governor of Virginia;
- The study/project is not likely to involve significant public dispute as to its size, nature, or effects of the project or to the economics costs or benefits of the project due to the fact that it is only a reevaluation of an authorized and partially constructed project. The proposed deepening of the existing project would only increase the size of the channels as consistent with the design criteria of originally authorized plan which, upon its approval, was economically justified, environmentally acceptable, and engineeringly feasible;
- The study/project is not likely to involve significant public dispute as to the economic cost or benefit of the project. The non-Federal sponsor requested that the project be constructed to its authorized design criteria and is very supportive of the project. Their eagerness reflects the importance of maintaining and completing the project to authorized depths to accommodate existing and future commercial vessel traffic in the Port of Hampton Roads. The maritime industry also supports the project, as it is expected to increase the efficiency of the Port of Hampton Roads, which is a significant economic driver in the region and the nation;
- The project is not anticipated to have more than negligible adverse impacts on scarce or unique tribal, cultural or historic resources;
- The project is not anticipated to have more than negligible adverse impacts on species listed as endangered or threatened or to the critical habitat of such species, under the Endangered Species Act, prior to implementation of mitigation;
- The information in the GRR or anticipated project design is not likely to be based on novel methods, involve the use of innovative materials or techniques, present complex challenges for interpretation, contain precedent-setting methods or models, or present conclusions that are likely to change prevailing practices. It is a reevaluation of an authorized, existing Federal Navigation Project;
- The project design is not anticipated to require redundancy, resiliency and/or robustness, unique construction sequencing, or a reduced or overlapping design construction schedule. The project design has already been authorized and does not present unique considerations or challenges for construction.

d. In-Kind Contributions. Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. The in-kind products and analyses to be

provided by the non-Federal sponsor will be added to the review plan as soon as more details become available.

4. DISTRICT QUALITY CONTROL (DQC)

All decision documents (including supporting data, analyses, environmental compliance documents, etc.) shall undergo DQC. DQC is an internal review process of basic science and engineering work products focused on fulfilling the project quality requirements defined in the Project Management Plan (PMP). The home district shall manage DQC. Documentation of DQC activities is required and should be in accordance with the Quality Manual of the District and the home MSC.

a. **Documentation of DQC.** DQC is documented in a Quality Control Report (QCR), which summarizes the reviewed product, review process, and major issues and their resolution. The QCR, which is signed by the project delivery team (PDT) and the DQC team, will be provided to the ATR team at each review.

b. **Products to Undergo DQC.** The draft and final GRR, as well as all technical products, appendices, environmental compliance documents, read ahead materials (if required), and products developed in coordination with outside sources, will undergo DQC.

5. AGENCY TECHNICAL REVIEW (ATR)

ATR is mandatory for all decision documents (including supporting data, analyses, environmental compliance documents, etc.). The objective of ATR is to ensure consistency with established criteria, guidance, procedures, and policy. The ATR will assess whether the analyses presented are technically correct and comply with published USACE guidance, and that the document explains the analyses and results in a reasonably clear manner for the public and decision makers. ATR will be managed within USACE by the DDNPCX and will be conducted by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. The DDNPCX will identify the ATR team members; candidates will not be nominated by the Norfolk District or North Atlantic Division. ATR teams will be comprised of senior USACE personnel and may be supplemented by outside experts as appropriate. The ATR team lead will be from outside the home MSC.

a. **Products to Undergo ATR.** ATR will be conducted on the draft and final GRR as well as all accompanying technical products, appendices, and environmental compliance documents. As consistent with the new SMART Planning process and increased vertical team involvement throughout the study process, ATR will also be performed on various technical products as they are completed. Examples of products to undergo ATR using this approach are economic, mitigation, and engineering model outputs. Conducting ATR on technical products as they become available will ensure that the analyses and assumptions developed during the study have been reviewed and accepted before major milestones are reached. ATR will also be performed on documentation prepared for the Agency Decision Milestone and Final Report Milestone. Additional ATR of key technical and interim products, MSC-specific milestone documentation, and In-Progress Review (IPR) documentation will occur depending on the study needs and the requirements of the MSC/District Quality Management Plans.

b. **Required ATR Team Expertise.** Due to the nature of the analyses, it is appropriate that the ATR team include experts from various relevant disciplines that have experience in deep draft navigation studies/projects. In particular, it is important that the economist and plan formulation reviewers also are familiar with the planning principles and procedures associated with a general reevaluation study. The DDNPCX, in cooperation with the PDT and vertical team will determine the final make-up of the ATR team (i.e., technical disciplines). The following table lists the disciplines that should be included on the ATR team and the descriptions of the expertise required for each. It is recommended that at minimum, these eight disciplines are represented in the final ATR team. However, in the interest of efficiency, team members with more than one expertise are preferred if possible.

ATR Team Members/Disciplines	Expertise Required
ATR Lead	The ATR lead should be a senior professional with extensive experience in preparing Civil Works decision documents and conducting ATR. The lead should also be familiar with SMART Planning processes and 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).
Plan Formulation	The plan formulation reviewer should be a senior water resources planner with experience in deep draft navigation studies and be familiar with general reevaluation study requirements and the SMART Planning process. The plan formulation reviewer must be certified by the Plan Formulation Sub-CoP.
Economics	The economics reviewer should be a senior economist/water resources planner with experience in deep draft navigation studies and be familiar with general reevaluation study requirements, HarborSym, and plan formulation process. The economics reviewer must be certified by the Economics Sub-CoP.
Environmental Resources	The environmental reviewer should have expertise in the impacts associated with navigation projects and dredging as well as extensive knowledge of estuarine and coastal ecology. The reviewer should also be familiar with the environmental coordination and NEPA requirements for deep draft navigation projects. The environmental resources reviewer must be certified by the Environmental Sub-CoP.
Hydraulic Engineering	The hydraulic engineering reviewer should be an expert in the field of hydraulics and have a thorough understanding of open channel dynamics and have experience in deep draft navigation studies/projects. The reviewer should also be familiar with computer modeling techniques that will be used in the study.
Geotechnical Engineering	The reviewer will have an understanding of the behavior of soils, site characterization, material management, slope

	stability as well as the analysis and disposal of dredged material.
Cost Engineering	The cost engineering reviewer should be an expert in the field, be certified by the Cost Engineering MCX, and have experience in deep draft navigation studies/projects.
Operations	The operations reviewer should have expertise in the operations of deep draft navigation studies/projects.
Real Estate	The real estate reviewer should have expertise in the real estate requirements of deep draft navigation projects.

c. **Documentation of ATR.** DrChecks review software will be used to document all ATR comments, responses and associated resolutions accomplished throughout the review process. Comments should be limited to those that are required to ensure adequacy of the product. The four key parts of a quality review comment will normally include:

(1) The review concern – identify the product's information deficiency or incorrect application of policy, guidance, or procedures;
(2) The basis for the concern – cite the appropriate law, policy, guidance, or procedure that has not be properly followed;
(3) The significance of the concern – indicate the importance of the concern with regard to its potential impact on the plan selection, recommended plan components, efficiency (cost), effectiveness (function/outputs), implementation responsibilities, safety, Federal interest, or public acceptability; and
(4) The probable specific action needed to resolve the concern – identify the action(s) that the reporting officers must take to resolve the concern.

In some situations, especially addressing incomplete or unclear information, comments may seek clarification in order to then assess whether further specific concerns may exist.

The ATR documentation in DrChecks will include the text of each ATR concern, the PDT response, a brief summary of the pertinent points in any discussion, including any vertical team coordination (the vertical team includes the district, RMO, MSC, and HQUSACE), and the agreed upon resolution. If an ATR concern cannot be satisfactorily resolved between the ATR team and the PDT, it will be elevated to the vertical team for further resolution in accordance with the policy issue resolution process described in either ER 1110-1-12 or ER 1105-2-100, Appendix H, as appropriate. Unresolved concerns can be closed in DrChecks with a notation that the concern has been elevated to the vertical team for resolution.

At the conclusion of each ATR effort, the ATR team will prepare a Review Report summarizing the review. Review Reports will be considered an integral part of the ATR documentation and shall:

- Identify the document(s) reviewed and the purpose of the review;
- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions;
- Identify and summarize each unresolved issue (if any); and

- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

ATR may be certified when all ATR concerns are either resolved or referred to the vertical team for resolution and the ATR documentation is complete. The ATR Lead will prepare a Statement of Technical Review certifying that the issues raised by the ATR team have been resolved (or elevated to the vertical team). A Statement of Technical Review should be completed, based on work reviewed to date, draft report/NEPA document and supporting analyses, and final report/NEPA document and supporting analyses. A sample Statement of Technical Review is included in Attachment 2.

6. INDEPENDENT EXTERNAL PEER REVIEW (IEPR)

IEPR may be required for decision documents under certain circumstances. IEPR is the most independent level of review, and is applied in cases that meet certain criteria where the risk and magnitude of the proposed project are such that a critical examination by a qualified team outside of USACE is warranted. A risk-informed decision, as described in EC 1165-2-214, is made as to whether IEPR is appropriate. IEPR panels will consist of independent, recognized experts from outside of the USACE in the appropriate disciplines, representing a balance of areas of expertise suitable for the review being conducted. There are two types of IEPR:

- Type I IEPR. Type I IEPR reviews are managed outside the USACE and are conducted on project studies. Type I IEPR panels assess the adequacy and acceptability of the economic and environmental assumptions and projections, project evaluation data, economic analysis, environmental analyses, engineering analyses, formulation of alternative plans, methods for integrating risk and uncertainty, models used in the evaluation of environmental impacts of proposed projects, and biological opinions of the project study. Type I IEPR will cover the entire decision document or action and will address all underlying engineering, economics, and environmental work, not just one aspect of the study. For decision documents where a Type II IEPR (Safety Assurance Review) is anticipated during project implementation, safety assurance shall also be addressed during the Type I IEPR per EC 1165-2-214.

- Type II IEPR. Type II IEPR, or Safety Assurance Review (SAR), are managed outside the USACE and are conducted on design and construction activities for hurricane, storm, and flood risk management projects or other projects where existing and potential hazards pose a significant threat to human life. Type II IEPR panels will conduct reviews of the design and construction activities prior to initiation of physical construction and, until construction activities are completed, periodically thereafter on a regular schedule. The reviews shall consider the adequacy, appropriateness, and acceptability of the design and construction activities in assuring public health safety and welfare.

a. **Decision on IEPR.** Type I IEPR will be conducted on the general reevaluation study because the total project cost is expected to possibly exceed $200M, which is the maximum total project cost allowed without triggering Type I IEPR per WRRDA 2014. There is no significant threat to human life and there has not been an official request by the Governor of Virginia or by the head of a Federal or state agency. Because the project is not justified by and is not expected to impact human life or safety, Type II IEPR is not considered appropriate for this project. This determination is based on the criteria for Type II IEPR in

Appendix E of EC 1165-2-214 and the project design does not require redundancy, resiliency, robustness, or a unique construction sequencing and/or overlapping design construction schedule. The project does not involve the use of innovative materials or techniques where the engineering is based on novel methods, presents complex challenges for interpretations, contains precedent-setting methods or models, or present conclusions that are likely to change prevailing practices. There are no currently identified *significant* environmental, cultural or socioeconomic impacts as a result of this project. The project primarily exists in a previously disturbed channel with known resources and impacts. An Environmental Assessment (EA) will be prepared unless a significant impact is identified as a result of public and agency scoping or data collection.

b. **Products to Undergo Type I IEPR.** The GRR and accompanying NEPA documentation will undergo TYPE I IEPR. Public comments will also be reviewed by the Panel for information purposes. The intent is to insure that the Panel is aware of the public's concerns and determine whether there are any technical issues that were raised by the public that they had not previously considered.

c. **Required Type I IEPR Panel Expertise.** At minimum, the IEPR panel should include the necessary expertise to assess the engineering, environmental, and economic adequacy of the decision document as required by EC 1165-2-214, Appendix D. The PDT will make the initial assessment of what expertise is needed based on the PMP and the factors affecting the scope and level of review outlined in Section 3 of the review plan and may suggest candidates. The Outside Eligible Organization (OEO) will determine the final participants on the panel; the Corps will not make recommendations for candidates and the public will not be asked for nominations. The following table provides the types of disciplines that might be included on the IEPR team. Additional panel members will be added if deemed necessary by the PDT and vertical team.

IEPR Panel Members/Disciplines	Expertise Required
Plan Formulation	The panel member should be an expert in the USACE plan formulation process, procedures, and standards with experience in the evaluation of alternative plans for deep draft navigation studies.
Economics	The Economics Panel Member should have extensive experience working on deep draft navigation studies and especially be familiar with the attributes of harbors in the region of the study area.
Environmental	The Environmental Panel Member should have experience with preparing environmental impact statements for large navigation projects. The panel member should also be familiar with state agency regulations and compliance.
Engineering	The Engineering Panel Member should have extensive experience working on deep draft navigation projects and especially be familiar with channel design and ship simulation.

d. **Documentation of Type I IEPR.** The IEPR Panel will be selected and managed by the OEO per EC 1165-2-214. Panel comments will be compiled by the OEO and should address

the adequacy and acceptability of the economic, engineering, and environmental methods, models, and analyses used. IEPR comments will include the same four key parts as described for ATR comments. The OEO will use DrChecks to document the IEPR process. . The OEO will prepare a final Review Report that will accompany the publication of the final decision document and shall:

- Disclose the names of the reviewers, their organizational affiliations, and include a short paragraph on both the credentials and relevant experiences of each reviewer;
- Include the charge to the reviewers;
- Describe the nature of their review and their findings and conclusions; and
- Include a verbatim copy of each reviewer's comments (either with or without specific attributions), or represent the views of the group as a whole, including any disparate and dissenting views.

The final Review Report will be submitted by the OEO no later than 60 days following the close of the public comment period for the draft decision document. USACE shall consider all recommendations contained in the Review Report and prepare a written response for all recommendations adopted or not adopted. The final decision document will summarize the Review Report and USACE response. The Review Report and USACE response will be made available to the public, including through electronic means on the internet.

7. POLICY AND LEGAL COMPLIANCE REVIEW

All decision documents will be reviewed throughout the study process for their compliance with law and policy. Guidance for policy and legal compliance reviews is addressed in Appendix H, ER 1105-2-100. These reviews culminate in determinations that the recommendations in the reports and the supporting analyses and coordination comply with law and policy, and warrant approval or further recommendation to higher authority by the home MSC Commander. DQC and ATR augment and complement the policy review processes by addressing compliance with pertinent published Army policies, particularly policies on analytical methods and the presentation of findings in decision documents.

8. COST ENGINEERING MANDATORY CENTER OF EXPERTISE (MCX) REVIEW AND CERTIFICATION

All decision documents shall be coordinated with the MCX, located in the Walla Walla District. The MCX will assist in determining the expertise needed on the ATR team and Type I IEPR team (if required) and in the development of the review charge(s). The MCX will also provide the MCX certification. The DDNPCX is responsible for coordination with the MCX.

9. MODEL CERTIFICATION AND APPROVAL

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

purposes of the EC, are defined as any models and analytical tools that planners use to define water resources management problems and opportunities, to formulate potential alternatives to address the problems and take advantage of the opportunities, to evaluate potential effects of alternatives and to support decision making. The use of a certified/approved planning model does not constitute technical review of the planning product. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

EC 1105-2-412 does not cover engineering models used in planning. The responsible use of well-known and proven USACE developed and commercial engineering software will continue and the professional practice of documenting the application of the software and modeling results will be followed. As part of the USACE Scientific and Engineering Technology (SET) Initiative, many engineering models have been identified as preferred or acceptable for use on Corps studies and these models should be used whenever appropriate. The selection and application of the model and the input and output data is still the responsibility of the users and is subject to DQC, ATR, and IEPR (if required).

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

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Certification / Approval Status
HarborSym Suite	The HarborSym Program is a Monte Carlo simulation of vessel traffic for coastal harbors that estimates transportation cost changes due to harbor improvements including: vessel time in harbor, inefficient delay times, and the transportation cost from prior/next port and overseas distance. It also incorporates risk and uncertainty. It will be used to measure potential benefits of proposed harbor and/or channel improvements.	Certified

b. **Engineering Models.** The following engineering models are anticipated to be used in the development of the decision document:

Model Name and Version	Brief Description of the Model and How It Will Be Applied in the Study	Approval Status
CH3D Numerical Modeling System	CH3Dwould be utilized to investigate sedimentation on bendways, crossings, and tributaries. These applications address dredging, channel evolution, and channel training structure evaluations.	HH&C CoP Preferred Model
SMS Surface Water Modeling System	The Surface-Water Modeling System (SMS) is an intuitive pre- and post-processor for building grids, viewing solutions, and many other specialized tasks including particle tracking, wave analysis and sedimentation.	HH&C CoP Preferred Model
TABS MDS (RMA 10)	The TABS-MD (Multi-Dimensional) Numerical Modeling System is a collection of generalized computer programs and utility codes, designed for studying multi-dimensional hydrodynamics in rivers, reservoirs, bays, and estuaries.	HH&C CoP Preferred Model

	These models can be used to study project impacts on flows, sedimentation, constituent transport, and salinity.	
Crystal Ball	Used to account for risk and uncertainty of alternatives and the recommended plan	Enterprise
@Risk	Used to account for risk and uncertainty of alternatives and the recommended plan	Enterprise
CEDEP	Corps-proprietary, Excel add-on for Cost Engineering; used to estimate costs of alternatives and the recommended plan	Enterprise
eProUCL Version 4.00.04	Statistical software used to estimate costs of alternatives and the TSP	Enterprise
MiniTab	Statistical software used to estimate costs of alternatives and the TSP	Enterprise
ArcGIS	Used to visually represent alternatives and the TSP	Enterprise
Automated Risk Assessment Modeling System	Used to visually represent risks of alternatives and the TSP	Enterprise

10. REVIEW SCHEDULES AND COSTS

a. **ATR Schedule and Cost.** A detailed schedule has not yet been developed at this early stage of the study, but it is expected that the draft GRR will be available for ATR in November of 2016. The DDNPCX has advised that 45 days be allotted for ATR of the draft decision document. The estimated cost of ATR for the draft decision document is approximately $50,000. This does not include ATR lead participation in milestone conferences, the CWRB, and any other required coordination. These costs have not been estimated at this time and will be included in subsequent review plan updates. The cost of final ATR is estimated at an additional $30,000, making the total ATR cost $80,000 plus the aforementioned ATR lead participation cost. This review plan will be updated when more specific cost and schedule details are available.

b. **Type I IEPR Schedule and Cost.** IEPR will occur in November of 2016 and the estimated cost for the IEPR contract is $200,000. This review plan will be updated once a more accurate schedule for IEPR is available.

c. **Model Certification/Approval Schedule and Cost.** All the models anticipated to be used are already certified.

11. PUBLIC PARTICIPATION

Public participation for this effort will be conducted as appropriate and required by USACE, NEPA, and other Federal and non-Federal laws and policies.

A Stakeholder Involvement Plan will be developed near the beginning of study initiation. Stakeholders will be updated and involved throughout the study as appropriate. All documents developed during the study will be posted on the Norfolk District website. The NEPA scoping process will also provide a means for public participation in the study process. The ATR team will be provided any significant public comments.

Additionally, the public will be able to comment during the study process. Comments and responses will be documented by the date the comment was received, and provided as an attachment that will follow the assessment through the development, review, and approval process. This will include comments from all ATRs and comments received from the public throughout the study process.

12. REVIEW PLAN APPROVAL AND UPDATES

The North Atlantic Division Commander is responsible for approving this Review Plan. The Commander's approval reflects vertical team input (involving district, MSC, RMO, and HQUSACE members) as to the appropriate scope and level of review for the decision document. Like the PMP, the Review Plan is a living document and may change as the study progresses. The home district is responsible for keeping the Review Plan up to date. Minor changes to the review plan since the last MSC Commander approval are documented in Attachment 3. Significant changes to the Review Plan (such as changes to the scope and/or level of review) should be re-approved by the MSC Commander following the process used for initially approving the plan. The latest version of the Review Plan, along with the Commanders' approval memorandum, should be posted on the Home District's webpage. The latest Review Plan will also be provided to the RMO and home MSC.

13. REVIEW PLAN POINTS OF CONTACT

Public questions and/or comments on this review plan can be directed to the following points of contact:

- Robert Pretlow, Project Manager: 757-201-7385
- Chris Ricciardi, NAD Program Manager: 347-370-4534
- Kimberly Otto, Deep Draft Navigation PCX: 251-694-3842

ATTACHMENT 1: TEAM ROSTERS

Project Delivery Team				
Name	**Role**	**Phone**	**E-Mail**	**Credentials/Years Experience{YEARS NOT SHOWN}**
USACE				
Robert Pretlow	Project Manager	757-201-7385	Robert.N.Pretlow@usace.army.mil	PM/20 years of experience
Rachel Haug	Planning Technical Team Lead	757-201-7589	Rachel.L.Haug@usace.army.mil	Plan Formulation/5.5 years of experience
Idris Dobbs	Lead Economist	757-201-7320	Idris.L.Dobbs@usace.army.mil	RTS Economist/5.5 years of experience
Sherida Bonton	Economist	757-201-7886	Sherida.Bonton@usace.army.mil	Regional Economist/1 year of experience
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Mark Hudgins	Engineering Technical Team Lead	757-201-7107	Mark.H.Hudgins@usace.army.mil	Chief, Hydraulic and Hydrology Section
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Stephen Powell	Operations Specialist	757-201-7788	Stephen.J.Powell@usace.army.mil	Operations/26 years of experience
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Frank Pinion	Real Estate	757-201-7739	Frank.A.PinionJr@usace.army.mil	Real Estate/1 year of civil works experience
Michael Hall	Cost Engineering Specialist	757-201-7615	Gary.Szymanski@usace.army.mil	Cost Engineer/29 years of experience
• **Non-Federal Sponsor**				
Jeff florin		757-683-8000	jflorin@PortofVirginia.com	Virginia Port Authority
• **ATR Team**				
TBD	ATR Lead			
TBD	Plan Formulation			
TBD	Economics			
TBD	Environmental Resources			
TBD	Hydraulic Engineering			
TBD	Geotechnical Engineering			
TBD	Cost Engineering			
TBD	Operations			
TBD	Real Estate			
• **Vertical Team**				
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ATTACHMENT 2: SAMPLE STATEMENT OF TECHNICAL REVIEW FOR DECSION DOCUMENTS

COMPLETION OF AGENCY TECHNICAL REVIEW

The Agency Technical Review (ATR) has been completed for the *<type of product>* for *<project name and location>*. The ATR was conducted as defined in the project's Review Plan to comply with the requirements of EC 1165-2-214. During the ATR, compliance with established policy principles and procedures, utilizing justified and valid assumptions, was verified. This included review of: assumptions, methods, procedures, and material used in analyses, alternatives evaluated, the appropriateness of data used and level obtained, and reasonableness of the results, including whether the product meets the customer's needs consistent with law and existing US Army Corps of Engineers policy. The ATR also assessed the District Quality Control (DQC) documentation and made the determination that the DQC activities employed appear to be appropriate and effective. All comments resulting from the ATR have been resolved and the comments have been closed in DrChecks[sm].

SIGNATURE _____ Date _____
Name
ATR Team Leader
Office Symbol/Company

SIGNATURE _____ Date _____
Name
Project Manager
Office Symbol

SIGNATURE _____ Date _____
Name
Architect Engineer Project Manager[1]
Company, location

SIGNATURE _____ Date _____
Name
Review Management Office Representative
Office Symbol

CERTIFICATION OF AGENCY TECHNICAL REVIEW

Significant concerns and the explanation of the resolution are as follows: *Describe the major technical concerns and their resolution.*

As noted above, all concerns resulting from the ATR of the project have been fully resolved.

SIGNATURE _____ Date _____
Name
Chief, Engineering Division
Office Symbol

SIGNATURE _____ Date _____
Name
Chief, Planning Division
Office Symbol

[1] Only needed if some portion of the ATR was contracted

ATTACHMENT 3: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 4: ACRONYMS AND ABBREVIATIONS

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

ATTACHMENT 5: PROJECT LOCATION MAP