

QUALITY CONTROL (QC) AND INDEPENDENT TECHNICAL REVIEW (ITR) PLAN

1.0 PURPOSE

This Review Plan presents the process that assures quality products for the Maryland Coastal Management (Chesapeake Bay Shoreline Erosion) General Investigation (GI) Feasibility Study. This QC and ITR Plan define the responsibilities and roles of each member on the study and technical review team.

The product to be reviewed by the technical review team is the integrated Feasibility Report. Under the provisions of new U.S. Army Corps of Engineers (USACE) policy, as detailed in EC1105-2-408 dated May 31, 2005, the ITR will be conducted by specialists from organizations outside of the district responsible for the study. Independent Technical Review will be conducted for all decision documents and will be independent of the technical production of the project. This QC and ITR Plan is, by reference, a part of the PMP for this Feasibility Study.

2.0 APPLICABILITY

This document provides the Quality Control Plan for the Feasibility Study. It identifies quality control processes and independent technical review for all work to be conducted under this study authority, including in-house, sponsor and contract work.

3.0 REFERENCES

EC 1105-2-408 "Peer Review of Decision Documents" (May 31, 2005)
EC 1105-2-407 "Planning Models Improvement Program: Model Certification" (May 31, 2005)
EC 1105-2-409 "Planning in a Collaborative Environment" (May 31, 2005)
ER 1105-2-100 "Planning Guidance Notebook & Appendices"

4.0 GENERAL PROJECT DESCRIPTION

The original authorizing language states: "That, the Secretary of the Army is requested to review the report of the Army Corps of Engineers on the Chesapeake Bay Study, dated September 1984, and other pertinent reports, with a view to conducting a comprehensive study of shoreline erosion and related sediment management measures which could be undertaken to protect the water and land resources of the Chesapeake Bay watershed and achieve the water quality conditions necessary to protect the Bay's living resources. The study shall be conducted in cooperation with other Federal agencies, the State of Maryland, the Commonwealth of Virginia, and the Commonwealth of Pennsylvania, and their political subdivisions and agencies and instrumentalities thereof and the Chesapeake Bay Program, and shall evaluate structural and nonstructural environmental enhancement opportunities and other innovative protection measures in the interest of ecosystem restoration and protection, and other allied purposes for the Chesapeake Bay."

The District, with approval from Headquarters, developed a separate feasibility study solely for the state of Maryland portion of the Chesapeake Bay shoreline. During the reconnaissance study

for the Chesapeake Bay watershed, preliminary shoreline management opportunities were developed. The reconnaissance report discussed opportunities such as the development of a revised shoreline protection manual, comprehensive regional shore erosion projects, and the need for environmental restoration of marsh, beach, and bluff habitat as well as other coastal habitats. The study also identified the critical need for data collection and analysis. Additional issues include addressing hydrologic changes associated with sea level rise, developing innovative solutions to erosion, and improving the water quality within the Chesapeake Bay. The study recommended studies that addressed comprehensive environmental restoration and storm/flood damage reduction, moving away from site by site analysis.

5.0 REVIEW REQUIREMENTS

Initial Quality Control (QC) review will be handled within the Section or Branch performing the work or by staff in the corresponding Sponsor Department when it involves In-Kind Services. Additional QC will be performed by the Project Delivery Team (PDT) during the course of completing the integrated Feasibility Study. The detailed checks of computations and methodology should be performed at the District level, and the processes for this level of review are well established.

Pursuant to EC 1105-2-408, item 2 c (2), Models used in the preparation of decision documents covered by this Circular will be reviewed in accordance with EC 1105-2-407, Planning Models Improvement Program: Model Certification, and are not subject to the requirements of this [1105-2-408] Circular. The uses and applications of models in individual studies that lead to the preparation of decision documents covered by this Circular will be reviewed in accordance with the requirements of this Circular.

Pursuant to EC 1105-2-408, due to the somewhat complex nature of the planning phase of this project the integrated Feasibility Report will need an ITR team assigned by the Planning Center of Expertise (PCX) for Environmental Restoration (National Ecosystem Planning) Projects. Dr. Dave Vigh (CEMVD-RB-T) will assign this team. It is recommended that the ITR be handled entirely within USACE, as the scope and level of technical complexity do not warrant an External Peer Review (EPR), based upon the initial Risk Screening Process conducted by the PDT noted in Section 9. It is anticipated that while this study will be challenging and beneficial, it will not be novel, controversial or precedent setting, nor have highly significant national importance. As a result, the ITR will focus on:

- Review of the planning process and criteria applied.
- Review of the methods of preliminary analysis and design.
- Compliance with authority and NEPA requirements.
- Completeness of preliminary support documents.
- Spot checks for interdisciplinary coordination.

6.0 REVIEW PROCESS

It is anticipated that the ITR Team Review Process will begin after the ITR Team has been assigned, and will initially cover the Project Management Plan and the models to be used in the

analysis. As alternative plans are formulated, the Review Process will focus on data, assumptions and the engineering, scientific, economic, social & environmental analysis process. Major Review Process milestones are listed below:

- Approval of Review Plan by NAD
- ITR team assigned by PcX
- P-6 RAM to EITR
- P-6 Feasibility Scoping Meeting
- Formulation Analysis Notebook (P-7 RAM) to ITR Team
- P-7 Plan Formulation Meeting
- P-8 Milestone – AFB RAM
- AFB
- Draft Report Review
- Final Report Review

7.0 REVIEW COST

The cost of the ITR is to be determined \$. It is assumed that documents to be reviewed will be transmitted electronically. Comments will be made and addressed in Dr. Checks. It is also assumed that the external ITR team will be working virtually. Only under extreme circumstances should the external ITR team, or a representative of that team, be required to physically attend team or milestone meetings. The team should participate in all P milestone meetings; however, via conference call or video tele-conference.

8.0 REVIEW SCHEDULE

Note that since the commencement of this study preceded the requirement for PcX involvement and development of this Review Plan, the review schedule below does not match the major review process milestone list above.

TASK	START DATE	FINISH DATE
Develop ITR Plan & post to Web Site, PCX	20-March-07	30-Apr-07
Identify Regional ITR resources & Recommend ITR Plan to PCX	TBD	
PCX Approves or Assigns ITR Team	TBD	
Review of Models	TBD	
ITR Team Review of FSM documents	Waived	
Feasibility Scoping Meeting	Waived	
Review of Formulation Analysis Notebook	TBD	
P-7 Meeting	TBD	
Preparation for AFB	TBD	
Alternative Formulation Briefing	TBD	
Review of Draft Feasibility Report	TBD	
Review Final Feasibility Report	TBD	

9.0 PROJECT RISK

The PDT members were asked to assess the risk associated with this project based upon five factors and rate the project quantitatively among five levels of project risk of failure ranging from low to high (risk score class). The PDT scored each Project Risk Item in the Review Plan Score Guide (Table 9.1) and calculated an overall Average Project Risk Assessment Score. The exact value of the scores were not as important as compared to what risk score class (low, medium or high) the Average Project Risk Assessment Score was classified. Based upon the PDT analysis, the project is projected to be moderate (medium) in risk because the project did not receive a high risk score class for all five project risk items considered.

The PDT considered previous District project experience when making this analysis. No attempt was made to tie this to a national scale of rating, so it is likely that the risk level would have been lower if the team were to have compared the risk of this project to a large ecosystem restoration project elsewhere. The Project Schedule and Cost were assessed as a low degree of risk if they both remained flexible and a high degree of risk if the Project schedule and cost was fixed. Staff Technical Experience was assessed as a low degree of risk if the staff had a high level of ecosystem restoration experience and a high degree of risk if the staff had a low level of ecosystem restoration experience. The results of the evaluation are tabulated as follows:

Table 9.1 Review Plan Score Guide

Project Risk Item	Risk Assessment Score (Low Degree to High Degree)					Score
	Low	Medium	High			
Project Complexity	1 2	3 4	5			4
Customer Expectations	1 2	3 4	5			5
Product Schedule/Cost	1 2	3 4	5			3
Staff Technical Experience	1 2	3 4	5			4
Failure Impact and Consequences	1 2	3 4	5			2
Average Project Risk Assessment Score						3.6 (Medium Risk)

10.0 REVIEW PLAN

The components of the Review Plan (external ITR only not Peer Review) were developed pursuant to the requirements of EC1105-2-408.

10.1 Team Information

The decision documents that will be the ultimate focus of the peer review process are the integrated Feasibility Report, the Division Commander's Public Notice, and the Environmental Record of Decision (ROD) for the Maryland Coastal Management (Chesapeake Bay Shoreline Erosion) Project General Investigation Feasibility Study. The purpose of the decision document will be to begin the approval process leading to the authorization to begin Plans & Specifications. The PDT is listed as follows. This list provides the names and points of contact of NAB team members that are available to answer specific technical questions as part of the Review Process. The list also provides the names and organization of participating outside entities.

District PDT Members:

CENAB-PPMD
Project Manager
410.962.3377

CENAB-PL
Biologist
410.962.6134

CENAB-PL
Study Team Leader
410.962.6141

CENAB-EN
Civil (Hydraulic) Engineer
410.962.6759

CENAB-EN
Design Team Leader
410.962.6757

CENAE
Regional Economist Support
978.318.8140

Non-District PDT Members:

Marcia Berman PhD.,
Virginia Institute of Marine Science
GIS and Erosion Vulnerability Modeling

Institute for Water Resources
Economic Analysis Coordination

Doug Lipton PhD.,
University of Maryland
Economic Modeling (Hedonic Pricing)

Elgin Perry, PhD.
Statistical Analysis

ERDC-EL-MS
Chesapeake Bay Modeling

Independent Technical Review Team:

NEP PCX to Provide the Name, Organization, Discipline, Phone, & E-Mail for these disciplines-
Coastal (Hydraulic) Engineering
Economics
Ecology
Planning

**Pending Approval by Division

10.2 Scientific Information

Based upon the self-evaluation by the PDT, it is unlikely that the USACE report to be disseminated will contain highly influential scientific information. The environmental restoration measures that were identified within the 905 (b) analysis will be evaluated using standard hydrologic, hydraulic, coastal, geotechnical and economic processes.

Economic and planning processes will additionally consider the Collaborative Planning EC (EC 1105-2-409). This EC describes the economic accounts that can be used to describe economic benefits. The four main economic accounts are national economic development (NED), national ecosystem restoration (NER), regional economic development (RED), and the other social effects (OSE). Supporting Hedonic Pricing economic modeling will be performed to attempt to quantify the “Other Social Effects” account. The District’s intent is to use the OSE account in plan formulation because we are taking seriously the Collaborative Planning EC. The District does not intend to use the Hedonic Pricing Model to determine a recommended plan but rather to follow the Collaborative Planning EC which allows the District to use the OSE account as one of the parameters to justify selecting one of the best buy plans (out of X number of best buy plans) as the NER plan. Therefore, the use of the OSE account to justify a plan is a post formulation but pre-NER selection activity.

The use of the Virginia Institute of Marine Science (VIMS) Erosion Vulnerability Assessment Tool (EVA) will allow for planning level problem identification and will not be used for the development of concept or detailed designs.

While the restoration and/or protection of shoreline living resources will require innovative steps to achieve quality habitat along the shoreline of a state that has laws allowing landowners “the right to hold back the sea,” the efforts envisioned to date will not result in a highly influential scientific assessment.

10.3 Timing

The ITR process is envisioned to begin spring 2007 with an assessment of key models to be used in the evaluation and comparison of alternative plans in this feasibility study. It is anticipated that work would start within days of naming the external ITR team. The estimated schedule is noted in Part 8 of this Review Plan.

10.4 External Peer Review Process

No External Peer Review process is envisioned at this time. This assessment is supported by the evaluation of the PDT in March 2007 and tabulated as shown in Section 9 of this Review Plan.

10.5 Public Comment

Public involvement is anticipated throughout the Feasibility Study. The Public Involvement meeting dates have not been scheduled at this time.

It is anticipated that minutes of Public Involvement Meetings will be disseminated to the ITR Team following the meetings. This will allow the public response to be available to the ITR team.

10.6 ITR Reviewers

It is anticipated that four to five reviewers total should be available in the following disciplines:

1) Coastal (Hydraulic) Engineering, 2) Economics, 3) Ecology, and 4) Planning. The reviewer contact information should be stated in Section 10.1 of this Review Plan.

The expertise that should be brought to the review team includes the following:

1) Coastal (Hydraulic) Engineering – The reviewer(s) should have extensive knowledge of estuary hydraulic modeling, wave dynamics and analysis. The reviewer(s) should also have a solid understanding of the hard (e.g. breakwaters) and soft (living; e.g. wetlands) shoreline protection measures

2) Economics – The reviewer should have a solid understanding of Economic Models including cost effective incremental cost analysis (e.g. IWR Plan Suite) and Hedonic Pricing and their application to ecological restoration and public perception of risk.

3) Ecology – The reviewer should have a solid background in the restoration of tidal wetlands, beach and other shoreline habitats, and understand the factors that influence the reestablishment of native species of plants and animals.

4) Planning – The reviewer should have recent experience in reviewing Plan Formulation processes for multi-objective studies and be able to draw on “lessons learned” in advising the PDT of best practices.

10.7 External Peer Review Selection

Because an External Peer Review is not anticipated for this study, there is no EPR selection