



REPLY TO
ATTENTION OF

DEPARTMENT OF THE ARMY
NORTH ATLANTIC DIVISION, US ARMY CORPS OF ENGINEERS
FORT HAMILTON MILITARY COMMUNITY
BROOKLYN, NEW YORK 11252-6700

DEC 5 2012

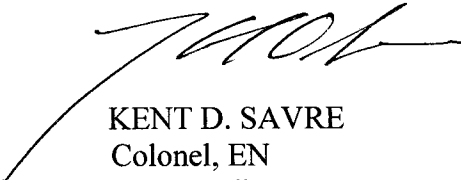
CENAD-PD-PP

MEMORANDUM FOR Commander, Baltimore District, ATTN: CENAB-PL-P

SUBJECT: Review Plan Approval for Chesapeake Bay Shoreline Erosion, Phase II

1. The attached Review Plan for the subject study has been prepared in accordance with EC 1165-2-209, Civil Works Review Policy.
2. The Review Plan has been coordinated with the Coastal Storm Damage Reduction Planning Center of Expertise of the North Atlantic Division, which is the lead office to execute this plan. For further information, contact Mr. Larry Cocchieri at 347-370-4571. As no specific projects for construction will be evaluated or recommended, the Review Plan does not include independent external peer review, as it is not applicable to this effort.
3. I hereby approve this Review Plan, which 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 will require new written approval from this office.

Encl
as


KENT D. SAVRE
Colonel, EN
Commanding

REVIEW PLAN

Chesapeake Bay Shoreline Erosion, Phase II

Baltimore District

MSC Approval Date: Pending

Last Revision Date: November 2012



**US Army Corps
of Engineers** ®

REVIEW PLAN

Chesapeake Bay Shoreline Erosion, Phase II

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1. PURPOSE AND REQUIREMENTS

a. **Purpose.** This Review Plan defines the scope and level of peer review for the Chesapeake Bay Shoreline Erosion, Phase II, Maryland study.

b. References

- (1) Engineering Circular (EC) 1165-2-209, Civil Works Review Policy, 31 Jan 2010
- (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) Chesapeake Bay Shoreline Erosion, Phase II PMP, under development
- (6) Planning Division, Civil Project Development Branch, Quality Management Plan, 7 October 2009

c. **Requirements.** This review plan was developed in accordance with EC 1165-2-209, 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 1165-2-209) 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 the Coastal Storm Damage Reduction PCX (CSDR-PCX).

No feasibility level cost estimates (M-CACES) will be included in this phase, nor will any cost estimates be generated.

3. STUDY INFORMATION

a. **Study Document.** Chesapeake Bay Shoreline Erosion, Phase II, Maryland builds on the information generated during Phase I and Phase II outputs will be used in formulating Phase III. The study is an evolution of current tools for 1) greater understanding of pollutants in near shore environments, 2) greater understanding of shoreline erosion processes, leading to 3) the restoration and protection of critical coastal habitats. Approval of the Phase II will be with the MSC and no Congressional authorization will be required. No National Environmental Policy Act (NEPA) documentation will be generated during Phase II and the study will not lead to USACE construction.

- b. Study/Project Description.** On 29 December 29 2010, the U.S. Environmental Protection Agency (USEPA) established the Chesapeake Bay Total Maximum Daily Load (TMDL), a historic and comprehensive water quality standard with rigorous accountability measures to initiate sweeping actions to restore clean water in the Chesapeake Bay and the region's streams, creeks, and rivers.

The Chesapeake Bay TMDL is required under the federal Clean Water Act and responds to consent decrees in Virginia and the District of Columbia from the late 1990s. The TMDL identifies the necessary pollution reductions from major sources of nitrogen, phosphorus, and sediment across the District of Columbia and large sections of Delaware, Maryland, New York, Pennsylvania, Virginia, and West Virginia, and sets pollution limits necessary to meet water quality standards in the Bay and its tidal rivers.

Pollution limits, for the Bay and for major river basins, are based on extensive monitoring data, peer-reviewed science, and state-of-the-art modeling tools. The study outlined here is, in part, the evolution and of these modeling tools for 1) greater understanding of pollutants in near shore environments, 2) greater understanding of shoreline erosion processes, leading to 3) the protection and restoration of critical coastal habitats. Phase II will help enable Bay jurisdictions to meet their obligations for pollutant reduction, and will be used in formulating Phase III of the Chesapeake Bay Shoreline Erosion study, which could focus on cliff and bluff habitats, which are some of the most threatened shoreline habitats in the Maryland portion of the Bay.

The EPA Chesapeake Bay Program (CBP) recently completed a set of TMDLs for Chesapeake Bay. Hydrodynamic and water quality models provided by the US Army Engineer Research and Development Center (ERDC) were crucial components in development of the TMDL's. As with previous load management plans, a reassessment is scheduled in order to incorporate new technology and to evaluate progress towards the management goal. Plans call for reassessment of the Phase III Watershed Implementation Plans (WIP's) in 2017. In order to complete the reassessment on schedule, all newly-developed technology must be on-line and available by December 2015. Activities sponsored by the EPA to prepare for the 2017 Midpoint Assessment are commencing in the first quarter of FY 2013. This work plan incorporates products from the EPA-sponsored activities and commences in the final quarter FY 2013.

USACE tools currently in use by the CBP include the CH3D hydrodynamic model and the ICM eutrophication model. These models perform well and are completely satisfactory in the expansive channel reaches of the bay and major tributaries. In view of the proven technology and the large investment, CBP wishes to retain the CH3D/ICM combination in the regions where it is most effective. Under this scope of work, we will extend and improve the current CH3D/ICM combination to improve their capacity for the 2017 Midpoint Assessment. Results from the existing models are less satisfactory in shallow water systems with complex geometry. The structured grid of CH3D cannot conform to complex geometry and specific shallow-water processes may be missing from the eutrophication model. A second objective of this scope is to develop and apply appropriate technology to the "Living Resource Ribbon," the region of the Bay system between the shoreline and the 2 to 3 m depth contour.

This study phase will be focused on the shoreline and shallow-water near shore environments of the Chesapeake Bay. Pilot sites and validation of Phase II tools will be done within the state of Maryland, though the tools will have applicability for the Bay within Maryland and Virginia. The non-Federal sponsor is the Maryland Department of Natural Resources (MDDNR). Study

authorization is by a resolution of the U.S. Senate Committee on Environment and Public Works dated 23 May 2001.

- c. **Factors Affecting the Scope and Level of Review.** Phase II will advance, expand, and refine existing tools in use by the Chesapeake Bay Program (CBP) in order to produce satisfactory hydrodynamic, eutrophication, and other model results in the shallow water systems of the Bay that have complex geometry. Previous iterations of tools used by CBP have been thoroughly reviewed by CBP, by expert panels, and through peer review. CBP review was primarily through quarterly reports to the Model and Research Subcommittee (MARS). Reports were also made to, and reviews solicited from, the Scientific and Technical Advisory Committee (STAC). As necessary, expert panels were assembled from academia and private enterprise to advise and review on specific aspects of the modeling activity. Expert panels have been assembled, for example, for the purposes of modeling primary production, submerged aquatic vegetation, and suspended solids. Peer review was provided through the peer-review publication process. To date, more than 20 peer-reviewed publications about the Chesapeake Bay model have appeared in international journals and several more are in press. The updates and revisions that are being undertaken as part of Phase II will also be reviewed by CBP committees and by expert panels, as necessary. The level of review undertaken is commensurate with standards for academic review.

The development of updated and revised tools will be challenging, as state-of-the art modeling techniques are adapted to previously developed models and applied to the Chesapeake Bay. The technical challenges in implementing the Living Resources Ribbon and extending the CH3D/ICM combination are largely known and, as past experience has proven, are achievable. The PDT will be working closely with the CBP, the regional modeling community, and the CBP STAC in particular, which will alleviate institutional and social challenges to the acceptance of the models and their output.

This study will not result in USACE construction or project authorization. Phase II tools will be utilized during Phase III of the Chesapeake Bay Shoreline Erosion project as well as being utilized by Environmental Protection Agency to prepare for the 2017 midpoint assessment of Chesapeake Bay TMDL implementation.

- d. **In-Kind Contributions.** Products and analyses provided by non-Federal sponsors as in-kind services are subject to DQC, ATR, and IEPR. No in-kind contributions will be made by the non-Federal sponsor, MDDNR.

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 review report (QCRR), which summarizes the reviewed product, review process, and major issues and their resolution. This QCRR, signed by the project delivery team (PDT) and the DQC team, will be provided with any

product submittal. The DQC process is outlined in the "Planning Division, Civil Project Development Branch, Quality Management Plan" from Baltimore District dated 7 October 2009.

- b. **Products to Undergo DQC.** Although not a decision document, the documentation of the study products will undergo DQC, as well as the technical products that are documented. DQC will be conducted in accordance with the Baltimore District Planning Division Quality Management Plan of 2009.

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 is managed within USACE by the designated RMO and is conducted by a qualified team from outside the home district that is not involved in the day-to-day production of the project/product. 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.** Because this study will not lead to project implementation, it is not anticipated that there will need to be interim meetings with higher authority. Therefore, there will not likely be a need to review read-ahead documents. Furthermore, Phase II will result in documentation of technical tools and no decision document will be produced. The review process will be conducted within the CBP through the MARS and STAC. These committees are composed of local stakeholders as well as nationally recognized experts in modeling, ecosystem process, nutrient cycling, sediment transport, and other relevant fields. Members are drawn from academia, Federal agencies (EPA, USACE, USFWS, and others), State agencies, and other organizations. Past experience has shown that MARS and STAC provide a rigorous review process. USACE ATR would be duplicative of the CBP review process, particularly because there will be no USACE policy issues to be addressed. While it is anticipated that the products developed during Phase II will be utilized in subsequent study phases, USACE ATR, if necessary will be deferred to those study phases. In subsequent study phases, ATR and ATR team involvement will be consistent with SMART Planning paradigm. It is envisioned that subsequent phases of the study would require ATR of report documentation and possible ATR and approval of modeling applications that support a USACE decision document.

- b. **Required Review Team Expertise.** Not-Applicable

- c. **Documentation of ATR.** Not-Applicable

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 1165-2-209, 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 1165-2-209.
 - **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.** This study does not meet any mandatory trigger for Type I IEPR: there is no threat to human life, there will be no construction and the total study cost is less than \$2 million – well under the \$45 million ceiling, the study is not controversial, and there has been no request by a Governor of an affected state for independent technical review. EC 1165-2-209 states that “Meeting the specific conditions identified for possible exclusions is not, in or of itself, sufficient grounds for recommending an exclusion. A deliberate, risk-informed recommendation whether to undertake IEPR shall be made and documented by the project delivery team (PDT).” The PDT has performed a risk assessment for Phase II and for the reasons stated below, determined that IEPR is not applicable. To finalize this conclusion, a request for IEPR exclusion will be prepared and forwarded to North Atlantic Division and HQUSACE for approval.
- 1) There is no design associated with Phase II and Phase II does not directly lead to construction.
 - 2) Phase II will result in the development and refinement of tools for the evaluation of water quality in near-shore, shallow water environments in the Chesapeake Bay. Pilot studies to test the efficacy of these tools will be undertaken but no project alternatives will be evaluated. Alternative approaches in tool development will be evaluated.
 - 3) Phase II will not result in a recommendation; rather it will result in tools that may be used for recommendations.
 - 4) No formal cost estimate will be developed.
 - 5) No NEPA document is required and no document will be produced.
 - 6) No structure or feature of a structure whose performance involves potential life safety risks will be impacted through this study.
 - 7) This study will not lead to project implementation. However, if the study is not completed in a timely manner, the 2017 midpoint evaluation of Chesapeake Bay TMDLs may be compromised

which could lead to uncertainty and confusion within the watershed by state and local governments over TMDL implementation.

- 8) The study has an estimated cost of approximately \$1.5M and no investment of public monies are required beyond the study cost.
- 9) This study does not directly lead to project implementation and does not support a budget request.
- 10) This study will not directly lead to a change in operation of any USACE project.
- 11) This study does not involve ground disturbances.
- 12) This study does not affect any special features.
- 13) This study does not involve activities that trigger regulatory permitting.
- 14) This study does not involve activities that could potentially generate hazardous wastes and/or disposal of hazardous materials.
- 15) This study does not reference use of or reliance on manufacturers' engineers and specifications.
- 16) This study does not involve utility systems and therefore does not rely on local authorities for inspection/certification.
- 17) This study is unlikely to generate controversy.

b. Products to Undergo Type I IEPR. Not-Applicable

c. Required Type I IEPR Panel Expertise. Not-Applicable

d. Documentation of Type I IEPR. Not-Applicable

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. The technical modeling documentation will not require policy review.

8. COST ENGINEERING DIRECTORY OF EXPERTISE (DX) REVIEW AND CERTIFICATION

All decision documents shall be coordinated with the Cost Engineering DX, located in the Walla Walla District. The DX 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 DX will also provide the Cost Engineering DX certification. The RMO is responsible for coordination with the Cost Engineering DX. No feasibility level cost estimates (M-CACES) will be included in this phase, nor will any cost estimates be generated.

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 USACE 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: No decision document prepared and no planning models used.
- b. **Engineering Models.** The following engineering models are anticipated to be used in the development of the decision document: No decision document prepared and no engineering models used.

10. REVIEW SCHEDULES AND COSTS

- a. **CBP Review Schedule and Cost.** The primary review process will be conducted by the CBP through the MARS and STAC. MARS meetings are scheduled quarterly, in January, April, July, and October and customarily extend two days. The first MARS review of this project will likely take place October 2013. Reviews will be conducted quarterly thereafter until completion of the project. STAC reviews are usually scheduled as required and extend for two or three days. We anticipate one per annum. At least one review session is in preparation for calendar year 2014 to review Task 5 of the project, Wetlands and Shallow Water Processes. These reviews are conducted by the CBP at no cost to this project.
- b. **Type I IEPR Schedule and Cost.** Not-Applicable
- c. **Model Certification/Approval Schedule and Cost.** No planning models will be used in the study and no USACE decisions will be made in the execution of the study.

11. PUBLIC PARTICIPATION

This study will be coordinated extensively with the CBP MARS and STAC. These committees will have the opportunity to review the tools as they develop, provide comment and feedback, and will be given the opportunity to review the final tools. MARS membership is drawn from a wide community of stakeholders, government agencies, and community members. STAC provides scientific and technical guidance to the Chesapeake Bay Program and is an independent body primarily composed of academic researchers from institutions within the watershed. The final tools and their documentation will be publically available through the CBP website.

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, will be posted on North Atlantic Division's approved review plan webpage. The latest Review Plan should also be provided to the RMO.

13. REVIEW PLAN POINTS OF CONTACT

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

- Andrew Roach, Study Manager, Baltimore District
410-962-8156, Andrew.A.Roach@usace.army.mil
- Joseph Vietri, Chief, Planning and Policy Division, North Atlantic Division
718-765-7070, Joseph.R.Vietri@usace.army.mil
- Lawrence Cocchieri, Program Manager, CSDR- PCX, North Atlantic Division
347-370-4571, Lawrence.J.Cocchieri@usace.army.mil

ATTACHMENT 1: TEAM ROSTERS

PDT

Discipline	Name	Email	Phone Number
Project Manager	Kim Gross	Kimberly.U.Gross@usace.army.mil	410-962-3457
Study Manager	Andrew Roach	Andrew.A.Roach@usace.army.mil	410-962-8156
Model Development	Carl Cerco	Carl.F.Cerco@usace.army.mil	601-634-4207

Study Review

Discipline	Name	Email	Phone Number	Credentials	Years of Exp.
Manager	Not Assigned	TBD	TBD	TBD	TBD
Engineering	Not Assigned	TBD	TBD	TBD	TBD
Research	Not Assigned	TBD	TBD	TBD	TBD
	Not Assigned	TBD	TBD	TBD	TBD
	Not Assigned	TBD	TBD	TBD	TBD
	Not Assigned	TBD	TBD	TBD	TBD
	Not Assigned	TBD	TBD	TBD	TBD

Vertical Team

Title	Name	Email	Phone Number
District Planning Coordinator	Dan Bierly	Daniel.M.Bierly@usace.army.mil	410-962-6139
Program Manager, CSDR-PCX	Lawrence Cocchieri	Lawrence.J.Cocchieri@usace.army.mil	347-370-4571
RIT Lead	Cathy Shuman	Catherine.M.Shuman@usace.army.mil	202-761-1379
NAD Division Planning Chief	Joe Vietri	Joseph.R.Vietri@usace.army.mil	718-765-7070

ATTACHMENT 2: REVIEW PLAN REVISIONS

Revision Date	Description of Change	Page / Paragraph Number

ATTACHMENT 3: 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/MS	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