

Quality Control Review Plan
Endangered Mussel Conservation - Measures for Managing Zebra Mussels
St. Croix and Upper Mississippi Rivers
Feasibility Study with Integrated Environmental Impact Statement

1. Purpose and Requirements. This quality control review plan was developed in accordance with EC 1105-2-408, "Peer Review of Decision Documents," dated 31 May 2005. The EC establishes procedures to ensure the quality and credibility of Corps decision documents. The EC outlines the requirement of the two review approaches (independent technical review (ITR) and external peer review (EPR)) and provides guidance on Corps Planning Centers of Expertise (PCX) involvement in the approaches. It applies to all feasibility studies and reports and any other reports that lead to a decision.

2. Project Description.

a) **Goals and Objectives.** The overall goal of the feasibility study is to identify cost effective and environmentally sustainable alternatives for managing zebra mussel populations in the St. Croix and adjacent Upper Mississippi River pools and/or for the conservation of winged mapleleaf if zebra mussel control is determined to be unfeasible or only partially effective. The feasibility study's level of detail must be sufficient to determine preferred alternatives and to meet the requirements of the National Environmental Policy Act (NEPA) and other pertinent environmental laws.

b) **Study Area.** The present study will be confined to St. Croix River Basin and adjacent Upper Mississippi pools (pool 2 through 4), Minnesota and Wisconsin.

c) **Problems and Opportunities.** Zebra mussels (*Dreissena polymorpha*) in the Upper Mississippi River system are a significant threat to the continued survival of the endangered native mussels, Higgins' eye pearly mussel (*Lampsilis higginsii*) and winged mapleleaf (*Quadrula fragosa*).

d) **Study Scope.** A risk-based model is being developed to evaluate the most likely pathway for further zebra mussel invasion, a timeline, estimated long-term population characteristics, sensitive areas, and potential ecological consequences. This model would be used to focus the development and evaluation of potential management actions. In the event that zebra mussel control is only partially effective and/or determined to not be feasible, a structured, consistent, and fully transparent decision-making process will be needed to determine triggers and criteria for relocation and/or artificial propagation of winged mapleleaf mussels.

Management of zebra mussels in the system may need to include measures to control/manage dispersal of zebra mussels, reduce/manage zebra mussels already present, and prevent future introductions of zebra mussels and/or other exotics. Alternatives to be studied will include large-and small-scale alterations of the habitat conditions to manage

zebra mussels, closing portions of the system to recreational and/or commercial traffic, cleaning/coating technologies, and barriers to prevent transport of zebra mussels.

e) **Project Delivery Team (PDT).** The Corps of Engineers St. Paul District and Engineering Research and Development Center – Vicksburg are jointly conducting this study. The U.S. Fish and Wildlife Service, National Park Service, and the States of Minnesota and Wisconsin are collaborating partners. The PDT also includes external experts in the fields of data management and risk assessment modeling. The Corps' project manager, Mr. Dennis Anderson, is the primary point of contact. Contact Mr. Anderson by telephone at (651) 290-5272 or by e-mail at: dennis.d.anderson@usace.army.mil .

3. Review and Quality Control.

a) **Independent Technical Review (ITR) Plan.** The ITR is the primary method of quality control. ITR review will be ongoing through product development, rather than a cumulative review performed at the end of the investigation. Value Engineering and External Peer Reviews are integrated into the overall Independent Technical Review at critical points in the planning and review process (see 3.b. and 3.e.). These will further assure the quality of the product and enhance the overall ITR. The ITR review will be performed by a sister Corps District, MVR, in coordination with the Ecosystem Restoration Planning Center of Expertise. The ITR team will include at least two people from ERDC – Vicksburg, an expert in risk assessment and an expert in invasive species management. The expertise and technical backgrounds of the ITR team members will qualify them to provide a comprehensive technical review of the product. The following disciplines will be required for the ITR team: risk assessment expert, invasive species management expert, navigation, hydraulics/hydrology, geotechnical engineering, general engineering/layout, structural engineering, cost engineering, plan formulation, social and economic, environmental, and real estate. Others may be added depending on the alternatives selected for detailed evaluation.

b) **Value Engineering (VE) Plan.** Value Engineering (VE) evaluations provide another method for ensuring quality. The goal of VE on this project is to ensure that a full array of alternatives is considered in order to maximize cost effectiveness. A VE study will be conducted during the plan formulation before the final array of alternatives has been defined. The VE study objectives will be to build upon the design team's preliminary plan formulation efforts, clarify the functional requirements of project features, and recommend additional conceptual alternatives to meet those requirements. The same team that performs ITR will conduct the VE study with additional technical representatives from the Partners.

c) **Other Review.** Quality control will also be monitored via internal/District functional element reviews, public meetings, partner and stakeholder reviews, and higher authority/vertical team conferences and reviews.

d) **Review of Sponsor Deliverables.** The study has no local Sponsor or deliverables.

e) **External Peer Review Plan.** This feasibility study will undergo an External Peer Review (EPR). The study may generate influential scientific information that may be either controversial or of sufficient risk and magnitude to require External Peer Review as described in Engineering Circular 1105-2-408. External experts in the field of risk assessment for invasive species management will be assisting in the development and application of the risk assessment model. For the EPR a two step approach is proposed: 1. the model and planning approach will be presented at International and/or National Conferences to ensure acceptance in the scientific community and 2. an independent external expert in the field of risk assessment for invasive species, with no vested interest in the outcome of the study, would provide a critique at critical junctions in the planning process specifically at the following 2 steps:

- A Risk Assessment Model is being developed to assist in the identification, development, and evaluation of various alternative management measures. The EPR would provide a critique of the Risk Assessment Model, the overall approach being used in the study, and on the preliminary list of management alternatives.
- This EPR would also provide a review on the Preliminary Draft Feasibility Study Report and Environmental Impact Statement. The EPR team will ensure that assumptions and conclusions stated in the report and EIS are supported by the data presented, the data appears to be sound, and the judgments are reasonable.

f) **Process.** ITR (including EPR) comments and responses will be recorded in the online DRChecks system (www.projnet.org). Documentation of the independent technical review will be included with the submission of the reports to Mississippi Valley Division and HQUSACE. All comments resulting from the independent technical review will be resolved prior to forwarding the feasibility study to higher authority and local interests. The report will be accompanied by a certification, indicating that the independent technical review process has been completed and that all technical issues have been resolved.

4. Schedule. The schedule for study tasks related to review and public input are shown in the following table:

ID	Task Name	Duration	Start Date	Finish Date
1	Start Project	0 days	2-Mar-06	2-Mar-06
5	Public NEPA Scoping Meeting	3 events	1-Jun-07	4-Sep-07
11	ITR & EPR Review & VE Study	4 wks	18-Oct-07	15-Nov-07
12	Feasibility Scoping Meeting	4 wks	7-Dec-07	7-Jan-08
20	ITR Review	4 wks	20-Sep-09	19-Oct-09
22	Alt. Formulation Briefing	4 wks	2-Nov-09	2-Dec-09
25	HQ/MVD/EPR/public review	6 wks	9-Jul-10	19-Aug-10
26	Public meetings	3 events	30-Jul-10	5-Aug-08
28	Division Engineer transmit to HQ	0 days	16-Sep-10	16-Sep-08
29	HQUSACE policy review	4 wks	17-Sep-10	14-Oct-10
30	CWRB briefing	1 day	15-Oct-10	15-Oct-10
31	Write Draft Chief's report	1 wk	16-Oct-10	22-Oct-10
32	Agency and Public Review	6 wks	23-Oct-10	3-Dec-10

5. More Information. For more information about this study, please contact the project manager:

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More information on this study, including available documents associated with this study, can also be found at the following links:

<http://mvp.usace.army.mil/environment>
<http://el.ercd.usace.army.mil/ecocx/corps.html>