

REVIEW PLAN

MARSH LAKE AQUATIC ECOSYSTEM RESTORATION FEASIBILITY STUDY

August 28, 2007

1. General. This 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. It applies to all feasibility studies and reports and any other reports that lead to decision documents that require authorization by Congress. Early coordination with the Corps’ Ecosystem Restoration Planning Center of Expertise was conducted in September 2006.

2. Project Description.

a. The Marsh Lake Aquatic Ecosystem Restoration Feasibility Study began on May 2, 2007 with the execution of a Feasibility Cost Sharing Agreement between the St. Paul District US Army Corps of Engineers and the Minnesota Department of Natural Resources (DNR). The DNR will provide 50% of all study costs through non-federal cash and in-kind contributions. The Corps of Engineers funds the remaining 50% of study costs. The study is currently estimated to cost \$900,000.00. The study was recommended in the December 2004 Minnesota River Reconnaissance study (approved January 13, 2005) and is authorized by a May 10, 1962 resolution of the House Committee on Public Works.

b. The Marsh Lake study will evaluate a variety of measures to restore the ecosystem in Marsh Lake, an impoundment on the Minnesota River near Appleton, Minnesota. Federal (Corps of Engineers) interest in Marsh Lake is based on the potential benefits of aquatic ecosystem restoration and the fact that the existing Marsh Lake Dam is owned and operated by the Corps of Engineers as part of the Lac qui Parle Flood Control Project.

c. The planning objectives are to restore aquatic and riparian habitat in Marsh Lake and restore connectivity between Lac qui Parle and the Pomme de Terre River. Marsh Lake is a shallow 5,000 acre reservoir with an average depth of approximately 3 feet. The Marsh Lake Dam, built by the Works Progress Administration in 1938, has a fixed crest elevation. The dam increased lake-like fish and wildlife habitat and created new colonial waterbird habitat, but it also disrupted natural flood plain functions and processes and blocked fish movement. The lack of natural flooding and drying cycles combined with increased sedimentation in the reservoir have caused a decline in plant diversity, water quality and associated fish and wildlife benefits over the years since the dam was built.

d. The study will evaluate a wide range of measures, including but not limited to those described in the “Agreement in Principle” signed by DNR Senior Managers in June 2003. The major features include modifying the Marsh Lake Dam to allow for periodic drawdowns, fish passage and more natural variation in water surface; returning the Pomme de Terre River to its pre-dam alignment; and developing a management plan to define how the new features would be

used. The study will also investigate policy issues and cost sharing requirements for implementation, considering the current Federal ownership of the dam and implications for future operation and maintenance responsibilities. The study team recognizes that many of the problems in Marsh Lake are symptoms of larger watershed issues. However, the team has chosen to limit the scope of this study to actions within the Lac qui Parle Wildlife Management Area. The study team believes that modifications in the vicinity of the dam and Marsh Lake are critical to restoring more natural habitat conditions. Opportunities to further enhance Marsh Lake habitat using actions in the greater watershed will be explored outside of this study.

3. Product Delivery Team (PDT). The St. Paul District, Corps of Engineers and the Minnesota Department of Natural Resources are jointly conducting this study. The Corps' project manager, is the primary point of contact for the PDT. Contact the project manager by telephone at (651) 290-5594.

4. Methodology and Model Certification.

a. EC 1105-2-407 provides the following definition of a planning model:

“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.”

b. Habitat outputs will be assessed and derived primarily using the Habitat Evaluation Procedures (HEP) developed by the U.S. Fish and Wildlife Service and other agencies. An area can have various habitats and the habitats can have different suitabilities for species that may occur in that area. The suitabilities can be quantified (via Habitat Suitability Indices, or HSIs). The overall suitability of an area for a species can be represented as a product of the areal extent of each habitat and the suitability of the habitats for the species.

c. As habitat changes through time, either by natural or human-induced processes, we can quantify the overall suitability through time by integrating the areal extent-suitability product function over time. Thus, we can quantitatively compare the forecasted future without-project condition to future conditions with alternative plans

d. The Habitat Evaluation Procedures (HEP) is an established approach to assessment of natural resources. The HEP approach has been well documented and is approved for use in Corps projects as an assessment framework that combines resource quality and quantity over time, and is appropriate throughout the United States. The Habitat Suitability Index (HSI) models are the format for quantity determinations that are applied within the HEP framework. The following guidelines are provided to help determine the need for certification. ITR of input data is required in all instances.

- New HSI models developed by the Corps are subject to certification.
- Published HSI models, while peer-reviewed and possibly tested by the developers, are subject to review and approval by the PCX.

- Modifications to published HSI models, where relationships or formulas are changed, are subject to certification.

e. Cost effectiveness and incremental cost analyses will be based upon the IWR PLAN program and other standard methods of analysis.

f. We do not anticipate using any planning models that are not currently certified. If new HSI models are developed for use in the Marsh Lake Feasibility Study, we will coordinate accordingly with the Ecosystem Restoration Planning Center of Expertise.

5. Review and Quality Control.

a. Independent Technical Review (ITR) is the primary method of quality control. ITR is a critical examination by a qualified person or team that was not involved in the day-to-day technical work that supports the decision document. ITR is intended to confirm that such work was accomplished in accordance with clearly established professional principles, practices, codes, and criteria, and that recommendations are in compliance with laws and policy.

b. ITR will be ongoing throughout product development, rather than a cumulative review performed at the end of the investigation. The ITR will be performed by the Corps of Engineers, Rock Island District in coordination with the Ecosystem Restoration Planning Center of Expertise and the Walla Walla District Cost Estimating Directory of Expertise. The ITR team also includes one person from Lakes and Rivers Division. The expertise and technical backgrounds of the ITR team members qualify them to provide a comprehensive technical review of the product. The ITR team members are identified in the following table:

Discipline	Office Symbol	Org Code
Recreation planning	CEMVR-PM-A	B5H4500
Real Estate	CEMVR-RE-P	B5N0200
Cultural resources	CEMVR-PM-A	B5H4500
Economics	CEMVR-PM-A	B5L1450
Environmental engineering/NEPA	CELRN-PM-P	H3H4D00
Cost/value engineering	CEMVR-EC-DE	B5L1440
Plan formulation/team lead	CEMVR-PM-F	B5H4600
Environmental/NEPA	CEMVR-PM-A	B5H4500
Hydrology and hydraulics/water control	CEMVR-EC-HH	B5L1210
Structural engineer	CEMVR-EC-DS	B5L1430
Geotechnical	CEMVR-EC-G	B5L1300
Mechanical engineering	CEMVR-EC-DG	B5L1420
Electrical engineering	CEMVR-EC-DG	B5L1420
Project operations	CEMVR-OD	B5R0###

c. ITR 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.

d. Value Engineering 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 Sponsor. Sponsor participation will be an item of in-kind services.

e. Quality control will also be monitored via internal/District functional element reviews, Local Sponsor reviews, and Higher Authority/vertical team conferences and reviews.

f. The Sponsor will be responsible for quality control over deliverables provided as in-kind contributions. The Corps will verify that such contributions meet negotiated requirements and standards before granting cost-sharing credit for those contributions.

g. External Peer Review. This feasibility study will not be subject to External Peer Review. The study is not anticipated to generate influential scientific information that would be either controversial or of sufficient risk and magnitude as to require External Peer Review as described in Engineering Circular 1105-2-408. Implementation costs are expected to be in the \$2 million to \$5 million range.

h. Public Review. The Minnesota Department of Natural Resources (DNR) conducted extensive public involvement activities between 2001 and 2003 leading up to their "Agreement in Principle" attached to the Project Management Plan. This study will incorporate that public input and provide additional opportunities for public involvement. The draft feasibility report and environmental assessment will be distributed for public review as part of the normal NEPA review process. The formal public review will be scheduled after the Alternative Formulation Briefing and before submitting the report to the Civil Works Review Board in accordance with the study schedule defined in the Project Management Plan.

6. 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 (Sign FCSA)	0 days	2-May-07	2-May-07
11	ITR Review & VE Study	4 wks	18-Sep-07	15-Oct-07
12	Feasibility Scoping Meeting	4 wks	16-Oct-07	12-Nov-07
20	ITR Review	4 wks	20-Feb-08	18-Mar-08
22	Alt. Formulation Briefing	4 wks	2-Apr-08	29-Apr-08
25	HQ/MVD/public review	6 wks	9-Jul-08	19-Aug-08
26	Public meeting (local)	1 day	30-Jul-08	30-Jul-08
28	Division Engineer transmit to HQ	0 days	16-Sep-08	16-Sep-08
29	HQUSACE policy review	4 wks	17-Sep-08	14-Oct-08
30	CWRB briefing	1 day	15-Oct-08	15-Oct-08
31	Write Draft Chief's report	1 wk	16-Oct-08	22-Oct-08
32	Agency and Public Review	6 wks	23-Oct-08	3-Dec-08