

REVIEW PLAN

RED RIVER BASIN WATERSHED FEASIBILITY STUDY

March 26, 2008

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.

2. Project Description.

a. The Red River Basin Watershed Feasibility Study is slated to begin in the Fall of 2008 with the execution of a Feasibility Cost Sharing Agreement between the St. Paul District US Army Corps of Engineers, the Minnesota Red River Watershed Management Board and the North Dakota Red River Joint Water Resource District (sponsors). The sponsors 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 \$6,600,000. The study was recommended in the Red River Reconnaissance Study, Section 905(b) (WRDA 1986) Analysis, Red River Basin, Minnesota, North Dakota, South Dakota, and Manitoba, dated September 2001 and finalized July 2002 and is authorized by a 30 Sep 1974 Resolution of Senate Committee on Public Works:

“RESOLVED BY THE COMMITTEE ON PUBLIC WORKS OF THE UNITED STATES SENATE, That the Board of Engineers for Rivers and Harbors be, and is hereby, requested to review reports on the Red River of the North Drainage Basin, Minnesota, South Dakota and North Dakota, submitted in House Document Numbered 185, 81st Congress, 1st Session, and prior reports, with a view to determining if the recommendations contained therein should be modified at this time, with particular reference to flood control, water supply, waste water management and allied purposes.”

Funds to conduct the feasibility study were provided in the Consolidated Appropriations Act, 2008, approved 26 December 2007 (**Public Law 110-161**). The study will result in the development of a basin wide watershed management plan. If that plan identifies areas where federal construction could be justified a decision document will be developed and the PMP and PRP will be updated and approved accordingly.

b. The Red River Basin study will develop a watershed management plan for the Red River Basin with a focus on flood damage reduction, ecosystem restoration, water quality, and the development of a Decision Support System. The Red River Basin is a mostly rural basin with two major metropolitan areas. The area is primarily used for agriculture. Federal (Corps of

Engineers) interest in the Red River Basin could be based on flood damage reduction or ecosystem restoration benefits.

c. The primary planning objective is to:

- To develop a basin wide watershed management plan that incorporates improved water quality, ecosystem restoration, flood damage reduction, and water supply.

Secondary Objectives and Outputs:

- Create a high accuracy digital elevation dataset for the entire US portion of the RRB.
- Determine the flow regime in the RRB that meets both human and ecosystem needs using modeling and stakeholder input.
- Identification of effective management and restoration actions will be assisted by a decision support system which will be included in the existing Red River Basin Decision Information Network, www.rrbdin.org.
- Identify specific goals and measureable objectives for each of the study phases.
- Investigate options for improving the chemical and physical quality of surface water in rivers, creeks and lakes throughout the basin.
- Integrate public recreation features into multipurpose project formulation whenever possible.
- Preserve, protect and restore the natural appearance and function of riparian/shoreline ecosystems throughout the watershed.
- Reduce the severity and frequency of flood and drought impacts in the RRB.

d. The study will develop a decision support system which will be used in the identification of sites which may have a Federal interest. On those sites where a Federal interest has been identified the study will evaluate a wide range of measures dependent on the identified problem. The major features of this project include the development of a Comprehensive Watershed Management Plan, the collection of LiDAR for the entire basin, development of basin wide hydraulic and hydrologic models, the development of a decision support system along with the identification of areas where Federal construction may be justified.

3. Product Delivery Team (PDT). The St. Paul District, Corps of Engineers, the Minnesota Red River Watershed Management Board and the North Dakota Red River Joint Water Resource District are jointly conducting this study. The Corps' project manager, Aaron Snyder, is the primary point of contact for the PDT. Contact the project manager by telephone at (651) 290-5489 for a list of team members. The team is multidisciplinary and consists of members from nearly all Corps disciplines. Coordination between the PDT and the Planning Center of Expertise will be coordinated with the PCX POC Camie Knollenberg, Rock Island District, 309-794-5487.

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 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 Red River Basin Feasibility Study, we will coordinate accordingly with the Ecosystem Restoration Planning Center of Expertise.

g. The hydraulic and hydrologic models that are being proposed are models that have been developed by the Corps. It is possible that other models may be used and those models would be certified prior to use as a decision making tool. As noted above ITR of input data will be required for these models.

h. It is anticipated at this time that if any flood damage reduction models are required for this study they will be typical Corps planning models that have been used in numerous prior studies. It will be determined at a later time what specific models will be used if any and these will be subject to the ITR process.

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 a Corps of Engineers sister district, possibly Rock Island District, in coordination with the National Ecosystem Planning Center of Expertise and the Walla Walla District Cost Engineering Directory of Expertise. The expertise and technical backgrounds of the ITR team members will qualify them to provide a comprehensive technical review of the product. The ITR team members have not yet been identified but will consist of the following disciplines.

Discipline
Recreation planning
Real Estate
Cultural resources
Economics
Environmental engineering/NEPA
Cost/value engineering
Plan formulation/team lead
Environmental/NEPA
Hydrology and hydraulics/water control
Structural engineer
Geotechnical

In coordination with the PCX, the ITR members, including an ITR team leader from outside of the Mississippi Valley Division, will be determined in the future since no work is currently ongoing which would require ITR.

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 Sponsors, and this effort will be coordinated with the St. Paul Value Engineer. The local sponsors participation will be included as 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. The vertical team will be involved in the plan formulation process and will be presented with information during the standard Corps checkpoints including a Feasibility Scoping Meeting, Alternatives Formulation Briefing, and the Civil Works Review Board Meeting. As with other Corps studies the team plans to use the ITR process as a way to ensure quality in the products being produced.

f. The Sponsors will be responsible for quality control over deliverables provided as in-kind contributions. These contributions will also be reviewed as a part of the overall project ITR. The Corps will verify that such contributions meet negotiated requirements and standards before granting cost-sharing credit for those contributions.

g. External Peer Review. At this time it is uncertain if this study will be subject to External Peer Review. The primary output of this study is a basin wide watershed management plan which will not require external peer review. There is a possibility that Federal projects will be identified and the magnitude of those projects could exceed the costs limits that trigger an external peer review. At subsequent Corps planning checkpoints, the level of peer review will be reviewed to determine if changes have occurred which would necessitate external peer review. If so, the PDT will coordinate with the PCX to ensure that the peer review is properly administered and conducted. As currently scoped, 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. The project is not anticipated to generate controversy the public and many state and federal agencies are participating in the project and there has been a great deal of prior work done in the Red River Basin. There will be no significant negative impacts to the area or the environment. The main impacts will be beneficial and the outputs of the project will be within current policy and will not impact future policies. Implementation costs are uncertain at this time and the project area although large, approximately 39,400 square miles, has limited project risks.

h. Public Review. The Corps and the project sponsors plan to conduct a number of public involvement activities during the development of the Comprehensive Watershed Management Plan. This study will incorporate public input and provide additional opportunities for public involvement. The draft feasibility report and environmental assessment or environmental impact statement 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. If significant comments are received the information will be incorporated as necessary and additional reviews from the ITR and the vertical teams will be incorporated if needed.

i. Vertical Team Coordination. The district has informed MVD of their review plan and the plan to proceed. MVD has concurred with the current approach.

6. Schedule. The schedule for study tasks related to review and public input are shown in the following table, the schedule is subject to the availability of funds and further development of the study. In addition the schedule currently indicates that a decision document will be developed, which may or may not occur:

ID	Task Name	Duration	Start Date	Finish Date
1	Start Project (Sign FCSA)	0 days	August-08	August-08
2	Phase 1 (LiDAR)	1.5 yrs	August-08	July-10
3	Phase 2 (Modeling)	2 yrs	May-09	March-11
4	Phase 3 (Decision Support System)	1 yr	October-10	October-11
5	Publish Draft Watershed Plan	45 days	October-11	December-11
6	IPR	4 weeks	October-11	November-11
7	Publish EIS Notice of Intent	0 days	October-11	October-11
8	Federal Interest Site ID Complete	0 days	April-11	April-11
9	Begin analysis of specific projects	1 day	April-11	April-11
9a	ITR – Watershed Plan/Alts		Ongoing	Ongoing
10	Feasibility Scoping Meeting	4 wks	June-11	June-11
11	Complete Initial Analysis	1 day	October-11	October-11
12	ITR/VE Review	4 wks	January-12	January -12
13	Alt. Formulation Briefing	4 wks	March-12	March-12
14	EIS notice of availability	60 days	September-12	September-12
15	Civil Works Review Board	1 day	October-12	October-12
16	HQ/MVD/public review	6 wks	October-12	October-12
17	Public meeting (local)	1 day	November-12	November-12
18	Division Engineer transmit to HQ	0 days	December-12	December-12
19	Write Draft Chief's report	1 wk	November-12	November-12
20	EIS Record of Decision Signed	1 day	December-12	December-12