DEPARTMENT OF THE ARMY
MISSISSIPPI VALLEY DIVISION, CORPS OF ENGINEERS
P.O. BOX 80
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http://www.mvd.usace.army.mil/

REPLY TO
ATTENTION OF:

07 APR 2000

CEMVD-PM-E (1105-2-10c)

MEMORANDUM FOR HQUSACE (CECW-PE), WASH DC 20314-1000

SUBJECT: Upper Mississippi River-Illinois Waterway System Navigation Study--Responses to Policy Review Comments

1. Reference memorandum, CECW-PE, 16 Mar 00, subject: Upper Mississippi River Navigation System Study.

2. Policy review comments provided by referenced memorandum have been considered by the study team. Responses and proposed plan of action to be taken are enclosed in accordance with the Issue Resolution Conference held at HQUSACE on 27 Mar 00. The Issue Resolution Conference was held in lieu of the Alternative Formulation Briefing discussed in referenced memorandum.

3. Pending approval of the enclosed responses, the study team will resume coordination of the feasibility study in accordance with the following schedule:

1 May 00	Release final array of alternatives to USFWS
1 Aug 00	Receive Fish and Wildlife Coordination Act Report from USFWS
30 Sep 00	Release Draft Feasibility Report and DEIS to HQUSACE and public for review (report will include a recommended plan).
1 Mar 01	Division Commander's Notice

4. As you are aware, I have suspended the award of new AE contracts, or new work items to be covered by MIPR, for preconstruction engineering and design (PED) as authorized by WRDA 99 until your office completed the policy review. I have closely examined the policy review comments and our responses. This review leads me to conclude that we are on track with our analyses and that uncertainty with regard to our assumptions will be adequately covered by sensitivity analyses. I remain

convinced that some future work on the lower locks on the Upper Mississippi is economically justified. I do note however, that the timing and exact scope of construction is still in question and is a major issue to be addressed in the draft report. In summary, because of the potential for saving time to get to construction, the authorizing language in WRDA 99 and the language included in the Energy and Water Development Appropriations Bill for FY 2000, I believe that it is a wise and prudent measure to continue with PED activities for this project.

5. Request approval to proceed with answering the policy review comments in accord with the enclosed responses, the study schedule shown above and to continue with PED activities.

Phillip R. Anderson

Encl

PHILLIP R. ANDERSON
Major General, USA
Commanding

CEMVR-PM-M

31 March 2000
Tipple/5399

SUBJECT: UMR-IWW System Navigation Study, Draft Responses to CECW-PE Policy Review Comments, dated 16 Mar 00

RESPONSES TO POLICY REVIEW COMMENTS

QUALITY MANAGEMENT

The economics and plan formulation independent technical review teams should be expanded to include other Corps districts, navigation industry representatives, and public sector interests. Overlap of membership on the independent technical review teams would also substantially enhance the overall product quality.

Response:

The following paragraphs describe the quality management process being used for the study. The number and background of participants plus the interaction between ITR teams will be further assessed as additional work products are completed.

a. The quality management for the Navigation Study is established in its Quality Control Plan (QCP) dated December 1997, and the Quality Control and Quality Assurance Guidance from CEMVD. ITR's are not only performed on the draft Feasibility Report and Environmental Impact Statement (EIS), but also for many of the numerous interim products of this system navigation study. Components of the overall review process are: internal review by the product production team and management; independent technical review performed by qualified individuals not involved with the specific product development or production; and review by appropriate members of the study coordinating committees or their representatives. The lead study team member for the specific product, in coordination with the applicable work group technical leader and Project Management Work Group, distributes the product and comment to the identified ITR members. ITR members provide comments to the lead study team member within 30 calendar days (unless otherwise specified) of receipt of the review package by their organization. Upon receipt of comments, the lead member coordinates with appropriate study team members to provide responses to comments. Comments that cannot be resolved by these parties follow the issue resolution process specified in the QCP. The comment sheets, response sheets, and other applicable documentation are attached to a copy of the draft report and provided with a copy of the final report to CEMVR-PM-M.

b. The study has engaged technical expertise to produce or review interim study products. These include: various Corps Districts (Rock Island, St. Louis, St. Paul, New Orleans, Jacksonville, Huntington, Pittsburgh, Louisville, Omaha, Seattle); the Corps' Navigation Region Design Team and a Corps Headquarters rep; CEWES; CERL; IWR; engineering, economic, and environmental consulting firms; universities (Oregon State, Wisconsin, Iowa State, Iowa, Illinois, Louisville, Texas, Mississippi State, Michigan, Southern Illinois, New Mexico State, Ohio State, Marshall, Maryland, Tennessee, Purdue); Oak Ridge National Laboratory; US Geological Survey; US Fish and Wildlife Service; and, the Illinois State Water Survey. Coordinating committees have also been engaged to participate in the review of many interim products as well as participate in the ongoing dialogue of interim study scope development and refinement, and the ongoing plan formulation process. The coordinating committees are the Governors' Liaison Committee (GLC), Navigation Environmental Coordination Committee (NECC), Economics Coordinating Committee (ECC), Engineering Coordinating Committee (EnCC), and the Public Involvement Coordinating Committee (PICC). The GLC membership is comprised of governor appointees from Illinois (Don Vonnahme, DNR), Iowa (Jim Hall, DOT), Minnesota (Dick Lambert, DOT), Missouri (Stephen Mahfood, DNR), and Wisconsin (Chris Spooner, Governor's Office). The NECC membership includes: DNR reps from MN, IA, IL, and WI; MO DOC; USFWS; and USEPA Regions 5 and 7. The ECC membership includes: reps from the five state DOT's; the Maritime Administration; the Midwest Area River Coalition 2000 (MARC 2000); and the USDA. The EnCC consists of reps from the five study area states from DOT's, DNR's, and Iowa State University for Iowa. The PICC consists of reps from the states DNR's or DOT's. All the coordinating committees are open to the public, and many local, environmental, navigation industry, and agricultural interests attend various forums on a regular basis.

c. A discussion of the general ITR process will be included in the draft Feasibility Report. Also included in the draft Feasibility Report will be a list of interim products that have been ITR's, and a synopsis of the ITR for the draft Feasibility report and EIS. The ITR documentation for the draft Feasibility Report and EIS will be available to the public via a separate volume, as are/will the ITR documentation for the interim products.

d. The size of the ITR team depends on the complexity of the interim product. Many products have also been reviewed by appropriate members of the coordinating committees as part of the review process, as well as input from the public forums, and industry and Corps Operations personnel. **Environmental & Historic Properties:** The 38 environmental and 8 historic properties interim products that have been ITR'd to date have involved some 40 different technical experts from Corps Districts, Corps Labs, academia, state and Federal resource agencies, contractors, the appropriate State Historic Preservation Offices, as well as review by the NECC. **Plan Formulation:** The interim plan formulation documents (Location Screening of Large-Scale Measures, Summary of Small-Scale Measures Screening, and Summary of Large-Scale Measures Screening) have been ITR's by three Corps staff from New Orleans (now at CEMVD), Omaha, and IWR (now Seattle). In addition, information, input, and review discussion for the formulation process of these documents were received from the coordinating committees, public interaction, and focus meetings with industry to discuss viability and safety issue associated with the lockage process for operations in the without-project and with-project conditions and the improvement measures in the with-project condition. **Economics:** Eight economic interim products have been ITR'd to date. Six technical professionals (New Orleans District (2), Huntington District (2), University of Tennessee (1), and Purdue University (1)) have been utilized as ITR members. In addition to these ITR members, most economic products have been afforded input and review by the ECC and technical reps they had participate, some by the NECC, as well as District team and management. **Engineering:** Nine engineering interim products, including an early draft of the Engineering Appendix which rolled up the analysis of earlier interim products, received an ITR from an 11 member team. ITR team members included Jacksonville District (1), Huntington (2), Pittsburgh (4), Louisville (1), New Orleans (1), and Headquarters (1). In addition, multiple presentations to, input from, and discussions with the coordinating committees, and industry and Corps Operations personnel. **Draft Feasibility Report and draft EIS:** In addition to review by the study team and management and quality assurance by CEMVD, the draft Feasibility Report and draft EIS will be reviewed by a full multi-disciplinary teams with members from all work group disciplines. Members will be pulled from the list of previous ITR members as well as engage new members. Total ITR team membership is anticipated at 26: plan formulation (3), economics (4), environmental (5), historic properties (2), engineering (7), operations (3), and public involvement (2). The actual ITR will be performed by Corps staff in view of both technical and Corps policy review requirements.

ENGINEERING

(a) The district should reexamine the major rehabilitation scheduling and costs in the without and with project conditions by factoring in the projected number of lockages.

Response: The schedules for the future rehabilitation of the lock improvements at Locks 20-25 will be analyzed to determine impacts of reduced cycles. This could result in a positive benefit by delaying the need for rehabilitation at these sites. This could potentially have a negative impact on Locks 14-18, as with project cycles could result in accelerating the need for rehabilitation at this sites. The draft report will contain the results of this investigation.

(b) The district should complete a rigorous engineering independent technical review of the final array of plans, including operational characteristics, reliability, and cost estimate contingencies.

Response: All engineering products and efforts on the final array of plans will receive an engineering ITR prior to issuance of the draft Feasibility Report for public review.

ECONOMICS

(a) The district should review forecasted traffic volumes in light of actual, observed traffic volumes and any changes that have occurred since the forecasts were made to determine if the assumptions in the underlying model are still valid. Differences between actual and forecasted traffic volumes shall be explained. A statistical analysis demonstrating the relationship of actual traffic volumes to confidence bands associated with the forecasted volumes should be included. Such an analysis may need to consider both the unconstrained, forecasted traffic as well as the demand curves for barge transportation.

Response: The district will review recent actual traffic (1994-1999) and the underlying assumptions in the traffic forecasts. The purpose of the review will be to determine if actual traffic developments reflect sufficient cause to change the assumptions that form the basis of the traffic projections. The district will employ the original contractor that conducted the analysis of grain forecasts to perform this review. The results of the analysis will be reported in the Draft Feasibility Report.

(b) The district should reexamine the demand curves and the assumptions regarding the most-likely and potential range on N values. Such reexamination may include time series data, information on markets and prices in states in addition to Iowa, and expert panels.

Response: In order to further examine assumptions regarding demand curve shape (N Values), the district will perform additional sensitivity analyses. One sensitivity scenario will be based on data from a 1985 work performed by Robert Hauser, Jeffrey Beaulieu and Philip Baumel (HBB). A second scenario will be based on data from a 1999 work performed by Abner Womack. Dr. Womack is the Co-Director of The Food and Agricultural Policy Research Institute (FAPRI). Both works deal exclusively with grain. Both works are based on data that are not restricted to the state of Iowa. A third scenario will be based on the results produced by the Corps contractor, Mark Burton.

The HBB work estimated grain (corn, soybeans and wheat in aggregate) barge demand elasticity individually for the Upper Mississippi River and the Illinois Waterway. The estimated elasticity for the Illinois Waterway is approximately half of that for the Upper Mississippi River. This difference is attributable to its location relative to other rivers and to production. The waterway specific demand elasticities will be translated to movement specific N values for use in the sensitivity scenario. The scenario will assume the mid elasticity estimates for non-grain commodities and will evaluate a select list of alternatives as required to address NED formulation. In general, the HBB elasticities are lower, in absolute value terms, than the "low elasticity" scenario (N=1.0 for grain) that has previously been evaluated. The results of the analysis will be reported in the Draft Feasibility Report.

The Womack work estimated U.S. export demand elasticity individually for corn, soybeans, and wheat. The commodity specific demand elasticities will be translated to movement specific N values for use in the sensitivity scenario. The scenario will assume the mid elasticity estimates for non-grain commodities and will evaluate a select list of alternatives as required to address NED formulation. In general, the Womack elasticities are lower, in absolute value terms, than the "low elasticity" scenario (N=1.0 for grain) that has previously been evaluated. The results of the analysis will be reported in the Draft Feasibility Report.

The Burton work was based on a theoretical case for the shape of grain transportation demand curves. This work estimated grain N values (N=2.0). The elasticities for this scenario are higher, in absolute value terms, than the "high elasticity" scenario that has been previously evaluated. The results of the analysis will be reported in the Draft Feasibility Report.

(c) Consideration should be given to disaggregating the grain movement data by distance from the river and applying demand curves to reflect the distances as well as regional and/or area differences in alternative markets.

Response: As described above, the HBB work estimated barge demand elasticity individually for the Upper Mississippi River and the Illinois Waterway. These waterway specific estimates should capture the effects of such factors as production area distances to the water and the presence of regional alternative markets as they existed at the time of the analysis. As such, the HBB scenario will be used to reflect, in a general way, the presence of these two effects.

(d) To the extent practicable, the district should review the reasonableness of the aggregated data to determine if the model accurately reflects seasonal peak usage and costs of movement.

Response: The issue of seasonal peak demand has been previously addressed and is documented in the minutes of the Economic Coordinating Committee Meeting of May 24, 1995. The minutes document the conclusion that seasonal peak usage is not a significant consideration. The complete minutes of this meeting are available on the study's web page.

(e) The district should consider estimating land transport rates to alternative pools for river loading to account for this type of alternative transportation opportunity.

Response: The district will investigate the sensitivity of estimating land transportation rates to alternative pools for river loading to account for such an alternative transportation opportunity. The investigation will address this notion of alternative transportation opportunity for grain exclusively. The analysis will be based on land transportation rate data to St. Louis from originating inland locations as estimated by the Tennessee Valley Authority in the original rate analysis conducted for the study. For a select group of movements, a comparison of the pure land transportation rate and the land-to-St. Louis/water-to-export point rate will be made. Based on this comparison, approximated adjustments to the alternative mode costs will be made in the economic model. Selected model runs will be performed to determine a general level of sensitivity. The results of the analysis will be reported in the Draft Feasibility Report.

(f) The district should consider consulting with USDA and other experts to determine if there is a potential for measuring national economic development benefits from maintaining net income to producers and export markets by reducing transportation costs. Such effects that cannot be measured in the national economic development account should be addressed in the regional economic development account.

Response: Farmer net income maintenance that may potentially result from reduced transportation costs would not generally qualify as a national economic development (NED) benefit as described by ER 1105-2-100. Such an effect would typically be considered to be part of the regional economic development account. The National Corn Growers Association has recently completed a study describing farmer net income impacts resulting from water transportation cost increases. The findings of this study will be described in the Draft Feasibility Report.

ENVIRONMENTAL ANALYSIS

(a) More information of the impacts on recreational boating is necessary.

Response: Recreational boating physical effects and impacts in channel border areas will be discussed in the EIS. Forecasts of future boating by vessel size and areas navigated have been developed. Comparisons of wake wave and drawdown effects of commercial and recreation craft will be made. It has been determined that Recreational craft use of the system will not change in response to any of the Alternatives being considered for lock improvements. Therefore the future without project and future with project are the same in relation to Recreational Craft impacts. Thus, no mitigation will be recommended for recreational craft impacts. Impacts which are occurring from recreation craft (like impacts from other stressers on the system) will be addressed in the cumulative impacts assessment. These cumulative impacts will be considered as we develop mitigation measures to offset the impacts from commercial Navigation traffic increases.

(b) Mitigation for navigation impacts needs to consider the extent of other impacts. For example, if sedimentation from other sources results in losses of biological resources, then any additional sedimentation from proposed changes in navigation in these areas will not increase the losses and mitigation will not be required.

Response: Using best available information and expert opinion (as determined after extensive scoping and internal coordination including a SAACR) a cumulative impacts report was prepared. The results of this investigation will be summarized in the draft EIS and has been used in assessing the significance and magnitude of direct effects. The cumulative impact assessment documented geomorphic changes, which have occurred, on the system since construction of the 9-foot channel project and forecast changes that will occur in the future. Using a guild approach, ecological changes were forecasted based on projected geomorphic changes. The cumulative impacts were considered in determining the significance of direct effects of Navigation traffic increases and in developing an appropriate adaptive mitigation strategy. This information will also be useful in the implementation phase of the mitigation process.

(c) Translate benefits into fish or habitat, rather than using the cost of hatchery reared replacement fish.

Response: The Draft EIS will describe how alternative mitigation measures will be assessed based on effects to habitat and fish. The design phase of the mitigation implementation will require additional information on site specific conditions that will support both design and evaluation of habitat benefits.

(d) Provide more detailed information on how significance was determined.

Response: Resources of concern were identified through an extensive scoping process. The geographic extent of threshold impacts was developed using a system screening process. Concepts of acceptable loss were considered at numerous interagency meetings. Areas and resources recommended for impact avoidance, minimization or compensation were developed and presented to the Navigation Environmental Coordination Committee (NECC) in an initial adaptive mitigation strategy. Based on comments from the NECC modifications were made to the mitigation strategy. The EIS will discuss how we arrived at levels of significance for each resource using best available information and interagency coordination.

(e) An incremental analysis in compliance with ER 1105-2-100 is required.

Response: Many of the measures proposed are avoid and minimize measures and a cost effectiveness analysis of methods to be used to protect the resources of concern will be conducted in the PED phase pursuant to the programmatic EIS and System Feasibility Study. An Incremental Analysis will be completed to supplement the programmatic system document for each lock construction site where mitigation is required. An incremental analysis will be completed for Systemic Environmental mitigation measures during the Design Phase. Pursuant to the tiered programmatic approach used in the Navigation study detailed information needed to complete an incremental analysis will be available in the design and implementation phase.

(f) Further discussions in the report are necessary to identify appropriate tools and management framework for working with the mitigation proposed now and into the future.

Response: Alternative coordination frameworks for implementing the adaptive mitigation strategy will be discussed in the draft EIS. Initial discussions have been ongoing with the NECC. The tiered programmatic approach necessitates a structured follow on coordination framework. The success of adaptive mitigation is dependent on a good coordination framework. The final EIS will recommend a coordination framework.

(g) Further discussion in the report is needed to substantiate or quantify the impacts associated with increased traffic on alternative modes.

Response: Following up on previous studies by contractors and the Corps (MVS), a report was prepared by Dr. Denver Tolliver of North Dakota State University, entitled 'Analysis of the Energy, Emission, and Safety Impacts of Alternative Improvements to the Upper Mississippi River and Illinois Waterway System'. An interim final report (currently undergoing ITR and coordinating committee review) was submitted in March 2000. Based on this report and previous studies, the EIS will describe the with- and without-project impacts of a modal shift (to rail) in three major sections: emissions and fuel use, accidents and hazardous spills, and safety/noise impacts. Where possible the analysis (and EIS discussion) has included estimated costs for compliance or abatement of increased emissions, and costs for increased accidents, injuries and fatalities. Noise impacts will be discussed qualitatively. Threshold levels of emissions for EPA attainment and non-attainment areas will be discussed briefly, but detailed analysis in this area was not conducted.

PLAN FORMULATION

(a) The district should critically review utilization of mooring devices and industry self help as well as projected traffic growth under the alternative future without conditions.

Response: The study team has involved industry and OD personnel in the discussion of industry self-help (line haul boats leaving their barges to assist other waiting tows), as well as evaluated the LPMS database. This coordination, LPMS data, and environmental concerns lead to a maximum 5-percent use assumption for reasonable application of industry self-help on the UMR & IWW in the without-project condition. Additional concerns with increased use above the 5-percent level include safety, risk/liability, variability in achieving timesavings, and dependability. Note that helper boats will continue to be utilized at their existing high percentage rates for approach assists in both the future without-project and future with-project conditions in view of varying site-specific and flow conditions primarily for downbound vessels. The study assumes that mooring facilities can be placed at sites as part of the without-project condition for purposes such as safety, and avoid & minimize. However, mooring facilities placed for the purpose of gaining system efficiency are considered part of the with-project condition. The draft report will contain additional documentation and text to further explain these aspects and expected traffic growth of the without-project condition.

(b) The district should conduct a sensitivity analysis on its self-help analysis and assumptions.

Response: The current without-project formulation assumes that industry self help will be used only during those occasions when the queue of waiting tows reaches twelve (operating 6 up / 6 down). In addition, the without-project formulation further constrains the use of industry self help such that self-help lockages are not permitted to exceed five percent of total lockages. The district will perform a sensitivity analysis of industry self-help assumptions. These scenarios will be evaluated for a select list of alternatives and will be presented in the Draft Feasibility Report.

(c) The district should conduct sensitivity analysis on the timing and cost of major rehabilitations in the with and without project conditions.

Response: The district will perform a sensitivity analysis on the timing and cost of major rehabilitations in both the without-project and with-project conditions. Scenarios will separately consider alternative expenditure requirements and timing assumptions that will be developed through coordination between engineering, economics and plan formulation team members. This analysis and assumptions will be presented in the draft Feasibility Report.

(d) The district should conduct and document the sensitivity analyses prescribed in the P&G for navigation projects (Paragraph 2.6.15(d)).

Response: A traffic projection scenario reflecting most-likely traffic growth for a period of 20 years, followed by constant traffic for the remainder of the period of analysis, will be evaluated for the complete array of alternatives. A user fee scenario reflecting 100 percent recovery of project cost will be evaluated and presented in the Draft Feasibility Report. A uniform fee per ton will be applied to all potential waterway traffic in the with-project condition. The impact of the fee on transportation savings and waterway traffic will be presented. This user fee scenario will be evaluated for a select list of alternatives. These analyses will be presented in the draft Feasibility Report.

(e) The district must assure that all key inputs and outputs (delays, queues, tonnage benefits, etc.) of the formulation process are well documented and are certified by an appropriate independent technical review team.

Response: The draft Feasibility Report will document and discuss the rationale for key assumption, inputs and outputs. An introductory ITR meeting will be held with the ITR team members to quickly present the study process, assumptions, and findings, and highlight any items that have been at issue in different forums throughout the study process. Specific items will include those items mentioned in this HQ policy comment. ITR comments will be responded to and outstanding issues resolved in accordance with the QCP discussed under the Quality Management section of this memorandum.

(f) If the district plans to include Peoria and LaGrange as deferred construction, costs and benefits for such a plan must be included in the district's report.

Response: Costs and benefits (gained or foregone) associated with these sites and others will be documented in the draft report in consideration of implementation timing within a 50-year planning horizon.

(g) In order to recommend the tentatively selected plan, the reporting officers need to address other Federal, state, local, and international concerns including regional economics, risk and uncertainty, trade considerations, and environmental effects of alternative modes of transportation. The district should also compute the potential benefits foregone that could result from a delay in completion of the project.

Response: The draft report will fully discuss data, information, and evaluations of alternative plans, and the rationale for identifying the tentatively selected plan. The factors mentioned in this HQ policy comment will be considered and documented as well as a discussion of benefits foregone.