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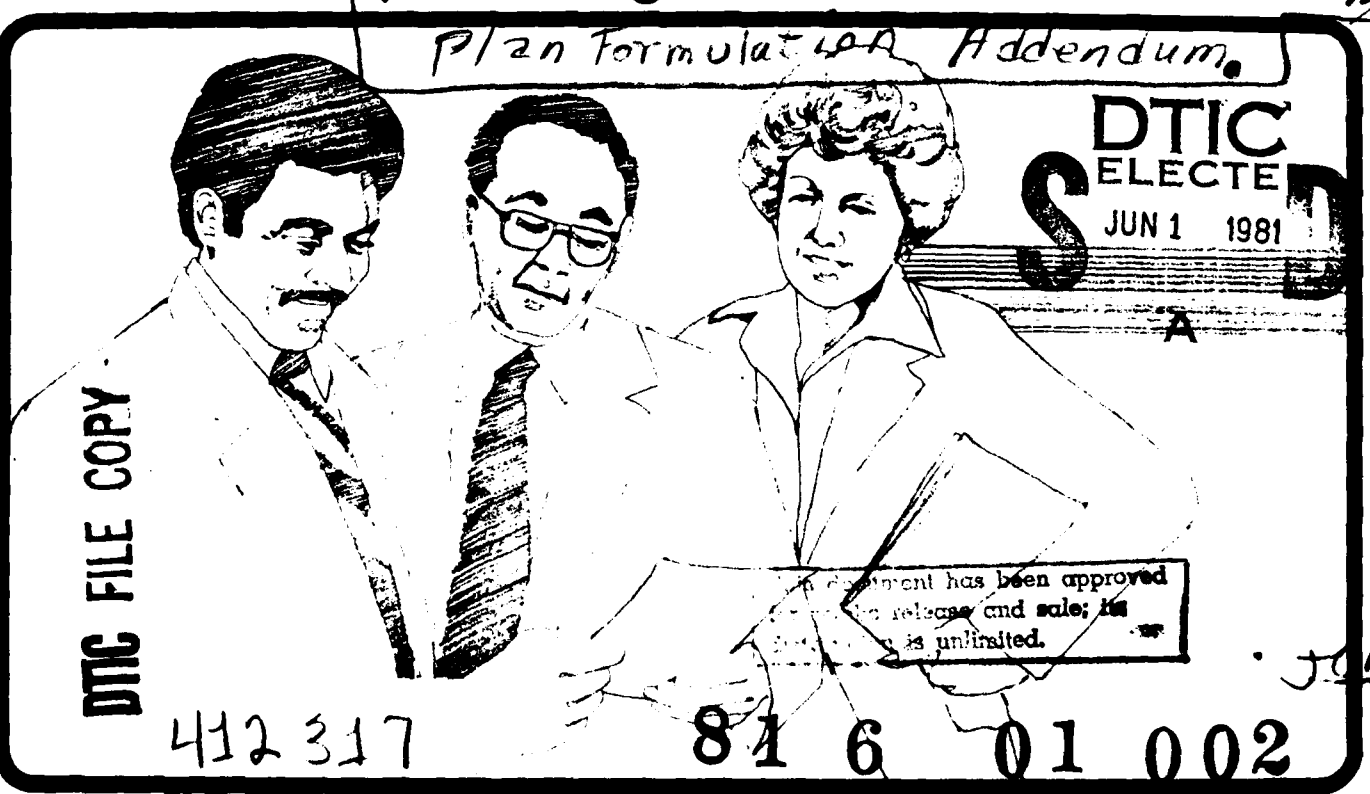
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**FINAL
DECEMBER
1980**

GREAT II

Upper Mississippi River
(Guttenberg, Iowa to Saverton, Missouri)

Plan Formulation Addendum



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Great River Environmental Action Team

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CHAPTER I
INTRODUCTION

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FOREWORD

The enclosed pages are addendum to the draft GREAT II Plan Formulation Technical Appendix. The draft appendix, when updated with the enclosed addendum represents the final GREAT II Plan Formulation Technical Appendix. (See Replacement Instructions which follow the Foreword.)

The purpose of this appendix is to provide a document that details the GREAT II plan formulation process. Essentially, the entire appendix represents this process. However, data and information developed through the GREAT II process are included as reference materials. The GREAT II plan formulation process came to an end when the draft GREAT II reports were published in May, 1980. The responsibilities of the Plan Formulation Work Group and the 12 functional work groups were absolved. The Team (based on public and agency comments), revised the GREAT II recommended plan. The results of Team activities are contained in the GREAT II Main Report and two supplements to the Main Report: 1) the Channel Maintenance Handbook and 2) the Environmental Report. Therefore, Team activities are not discussed in this appendix, except where necessary to provide continuity.

The following paragraphs discuss each chapter of this appendix, the nature of revisions made and where to locate related information, as updated by the Team.

Chapter I - This chapter was completely rewritten to reflect comments received and changes made to the Main Report.

Remove the "Note" under Figure #3. The flow chart is accurate as is and will not be updated. The GREAT II Main Report, and its two supplements: 1) the Environmental Report and 2) the Channel Maintenance Handbook represent (in greater detail) the Stage 3 activities and products of the GREAT II Team.

Chapter II - This chapter discusses the problem identification activities of the GREAT II work groups. Changes made to this chapter were to correct, update or clarify the information gathered by the work groups. A summary of this chapter is included in Chapter II of the Main Report.

Chapter III - This chapter discusses the study activities and conclusions of the GREAT II work groups. Changes made to this chapter were necessary only to correct errors made in the draft appendix. A summary of this chapter is included in Chapter II of the Main Report.

Chapter IV - This chapter explains the assumptions and criteria developed by the GREAT II PFWG and Technical work groups to guide them in the development of alterna-

- Chapter IV (Cont.) - tives and recommendations. Changes made were necessary to correct and/or clarify information presented in the draft appendix. A brief summary of this chapter is included in Chapter I of the Main Report. Also, a large segment of this chapter is devoted to the process used to develop a Channel Maintenance Plan for the Rock Island District/Corps of Engineers. The channel maintenance information and maps contained in this appendix have been superseded by that plan developed by the Team, and contained in the Channel Maintenance Handbook. No changes were made to the information contained in this appendix, as it is a documentation of the first seven steps of the Channel Maintenance process.
- Chapter V - This chapter contains the draft recommended plan as developed by the Plan Formulation Work Group. The plan as displayed in this appendix has been superseded by the final recommended plan, developed by the Team and contained in Chapter III of the Main Report. Changes made to this chapter were few and based mainly on typographic corrections.
- Chapter VI - This chapter displays the impact assessment developed by the PFWG, of the draft recommended plan. The Team modified and expanded this assessment to reflect changes in the final recommended plan and Team interpretations of environmental regulations (i.e., NEPA). The updated assessment is contained in the Environmental Report - Supplement to the Main Report. Changes were necessary mainly to correct computational errors presented in the draft appendix.
- Chapter VII - This chapter was a subjective assessment of the study results as contained in the draft reports. Due to the subjective nature, this chapter was deleted from the GREAT II Main Report. Therefore, no revisions were made to this chapter other than to make a few typographical and editorial corrections.
- Chapter VIII - This chapter provides a preliminary analysis of potential agency implementation requirements for the draft recommended plan. The Team updated this chapter based on revisions made to the recommended plan. The implementation analysis for the final recommended plan is contained in Chapter V of the Main Report. Therefore, no revisions were necessary to this chapter of the appendix.
- Exhibits - No changes were made to any of the exhibits, with one exception. The 1980 OSIT package was added to Exhibit B. Also, a new exhibit (Exhibit E) was added. This exhibit contains the wording of the recommendations after PFWG evaluation, prior to plan synthesis into PREP recommendations.

REPLACEMENT INSTRUCTIONS

January 7, 1981

Each of the pages contained in this addendum are to replace corresponding pages in the draft Plan Formulation Technical Appendix (i.e., Page 1A of this Addendum replaces Page 1 of the draft Plan Formulation Technical Appendix, etc.).

In some cases the changes made to the text covered more than one page (i.e., Pages 39A and 39B of this Addendum both replace Page 39 of the draft Plan Formulation Technical Appendix, etc.). These Addendum also contain Exhibit B-4 (1980 Dredging Package) and Exhibit E (PFWG Approved Recommendations). These pages were not included in the draft Plan Formulation Technical Appendix and should be inserted accordingly.

To facilitate replacement, it is recommended that a three-ring notebook be purchased to replace the bindings presently on the addendum and the draft appendix.

CHAPTER I

INTRODUCTION

A. STUDY DEVELOPMENT

The people of the Upper Midwest have long recognized that the Upper Mississippi River is one of the largest, most diverse, most productive river environments in the world. Man, in his progress, however, has put the river to many varied and sometimes conflicting uses. The pressures of man's use of the river are feared to be degrading the environmental qualities of the rivers' resources. The U.S. Army Corps of Engineers' (COE) 9-foot navigation channel project, authorized by Congress in 1930, has had the most influential effect on the natural character of the Upper Mississippi River, and its usefulness for other purposes, in the past 45 years.

Under threat of lawsuit initiated against the COE by the State of Wisconsin in 1973, the COE prepared an environmental impact statement (Upper Mississippi River 9-foot Navigation Channel; Environmental Impact Statement) in accordance with the National Environmental Policy Act of 1969. The statement dealt with the possible effects of the operation and maintenance program on the Upper Mississippi River. This document revealed that current methods of channel maintenance, especially dredging and deposition of dredged materials, were damaging the fragile backwaters, marshes and sloughs for which the river is famous. The environmental impact statement also revealed that little information was available on the complex interactions of the river's resources and these resource reactions to man's activities on the river. The lack of information would make it almost impossible for government agencies or Congress to evaluate alternative means of managing the river in a more balanced way without considerable additional study. The information, when and if obtained, could be used to determine where problems exist and the alternatives available to man to solve these problems and coordinate river uses to minimize conflicts.

As a result of growing congressional and public interest in the Upper Mississippi River management problems, the North Central Division Engineer of the COE and the North Central Regional Director of the U.S. Fish and Wildlife Service announced in September, 1974, that they planned to establish a partnership team. The team would work out long-range management strategy for the multi-purpose use of the river. This move soon led to organization of a broad-based interagency task force. The Upper Mississippi River Basin Commission (UMRBC) had established a special Dredged Spoil Disposal Practices Committee several months before to begin laying the groundwork for a cooperative effort. This committee was composed of delegates representing the five principal river basin states and five key resource-oriented federal agencies.

Thus, what finally became known as the Great River Environmental Action Team (GREAT) was set up in October, 1974, as a working partnership of Federal agencies and States under the auspices of the Upper Mississippi River Basin Commission.

1. AUTHORITY

The Great River Study was authorized by Congress in the Water Resources Development Act of 1976 (PL94-587). This legislation authorized the U.S. Army Corps of Engineers "...to investigate and study, in cooperation with interested States and Federal agencies, through the UMRBC, the development of a river system management plan in the format of the 'Great River Study' for the Mississippi River from the mouth of the Ohio River to the head of navigation at Minneapolis, incorporating total river resource requirements including, but not limited to, navigation, the effects of increased barge traffic, fish and wildlife, recreation, watershed management, and water quality at an estimated cost of \$9,100,000."

The total study program as developed by the COE included two Great River Environmental Action Teams (GREAT), which have the responsibility for the river reaches from St. Paul/Minneapolis, Minnesota to Guttenberg, Iowa (GREAT I); Guttenberg to Saverton, Missouri (GREAT II); and the Great River Resource Management Study which is responsible for the river from Saverton to the confluence of the Ohio River (GREAT III). See Figure #1.

2. PURPOSE

The Great River Study was an attempt to resolve conflicts arising from multiple demands on a valuable national resource. The overall goal of the study was to present to Congress and the people a river resource management plan that was, above all, realistic—a plan that was technically and economically sound, socially and environmentally acceptable, and capable of being put into action within a reasonable period of time.

In addition, the plan should provide for multiple-use management on the UMR. It should be comprehensive in terms of all the multiple uses we rely on the river to provide. The plan should present this multi-use management strategy so that the use of all the Upper Mississippi River resources can be managed in a combination which will provide the widest spectrum of benefits to the public without impairment and degradation. It should include consideration of the relative scarcity of the various finite resources so that it is not necessarily limited to the combination of uses that would give the greatest dollar return or the greatest unit output.

Nowhere is this concept, and its necessity, more appropriate than the Upper Mississippi River. It is a unique resource. This river performs a wide variety of functions for all Americans, among them providing recreational opportunity and navigation capability; supplying water for industries, utilities and human consumption; diluting waste products; and buffering flood flows. It is one, if not the only, dual purpose mandated resource in this country, as Congress has legislated it to be both a navigation project and a national wildlife and fish refuge. The economic values this system provides must be maintained, but in a manner so that the environmental integrity is preserved. This requires recognition of the tolerance the natural system can withstand without irreversible deterioration. As the environmental threshold can be hidden over time, safeguards must be instituted to prevent the surpassing of that threshold.

Realizing the immensity of this task, GREAT II has operated under the following policies since early in the study:

"The GREAT II Study will address all elements of a total river resource management plan; resolve as many of those elements as possible, but will produce a plan to resolve the element of an environmentally and economically acceptable channel operation and maintenance program. If, by the time of the final report, a particular element cannot be resolved, the report will put forth what must be done to resolve that element."

The following general objectives for the GREAT studies were adopted in October, 1974, by the Upper Mississippi River Basin Commission. The basic objectives dealt only with the environmental concerns and were developed before the Scope of Study was broadened by the 1976 Water Resources Act. The UMRBC did not develop additional objectives to meet multi-purpose use concepts. Additional objectives were developed by each work group within GREAT II and are stated in Chapter III.

- a. Devise means by which the volume of dredged material removed from navigation projects can be significantly reduced.
- b. Open those backwater areas that have been deprived of necessary freshwater flow as a result of navigation maintenance activity.
- c. Assure availability of necessary capability to maintain the total river resources on the Upper Mississippi River in an environmentally sound manner.
- d. Contain or stabilize all floodplain dredged material disposal sites in a manner to benefit the river resource.
- e. Assure all navigation project authorizations include fish and wildlife, and recreation resources as a project purpose.

- f. Develop physical and biological baseline data to identify parameters controlling the river system.
- g. Identify sites that can be developed to provide for fish and wildlife habitat irretrievably lost to water development projects.
- h. Identify and devise means to use dredge materials as a valuable resource for productive uses.
- i. Implement programs to provide for the present and projected recreation needs on the river system.
- j. Strive to comply with Federal and State Water Quality Standards.
- k. Strive to comply with Federal and State Floodplain Management Standards.
- l. Develop procedures for assuring an appropriate level of public participation.

3. SCOPE

The scope of the problem resolution in the GREAT II studies focused on channel maintenance activities and their associated biological, economical and social impacts. Other problems addressed by the GREAT II studies dealt with activities on the Upper Mississippi River, or those resources affected by activities on the river.

Where possible, the recommendations specify the type of project action needed or the additional studies which must be completed before specific action can be taken.

The geographic scope of the GREAT II study was limited to 314 miles of the Upper Mississippi River from Guttenberg, Iowa to Saverton, Missouri. These river boundaries coincide with those of the Rock Island District of the U.S. Army Corps of Engineers.

The study area was defined as the river itself, the backwater areas, and the land on either side contained within the counties immediately adjacent to its waters. The area includes 23 counties within the four states of Iowa, Illinois, Wisconsin and Missouri.

The following states and their respective counties were the land base considered in the GREAT II reach of the river.

Iowa ¹	- Clayton	Wisconsin	- Grant County
	Clinton	Illinois	- Adams
	Des Moines		Carroll
	Dubuque		Hancock
	Jackson		Henderson
	Lee		Jo Daviess
	Louisa		Mercer
	Muscatine		Pike
	Scott		Rock Island
Missouri	- Clark		Whiteside
	Lewis		
	Marion		
	Ralls		

The GREAT II Study was intended to address management needs and recommend implementation strategies for these needs up to and including the year 2025.

B. STUDY ORGANIZATION

1. PARTICIPANTS

Participants in the GREAT River study included Federal, State, regional and local agency representatives, as well as the general public.

Figure #1A shows the organization of agency and public representation for the GREAT river study in general. The representatives and/or participants and their respective roles as they related specifically to GREAT II are explained in the following paragraphs.

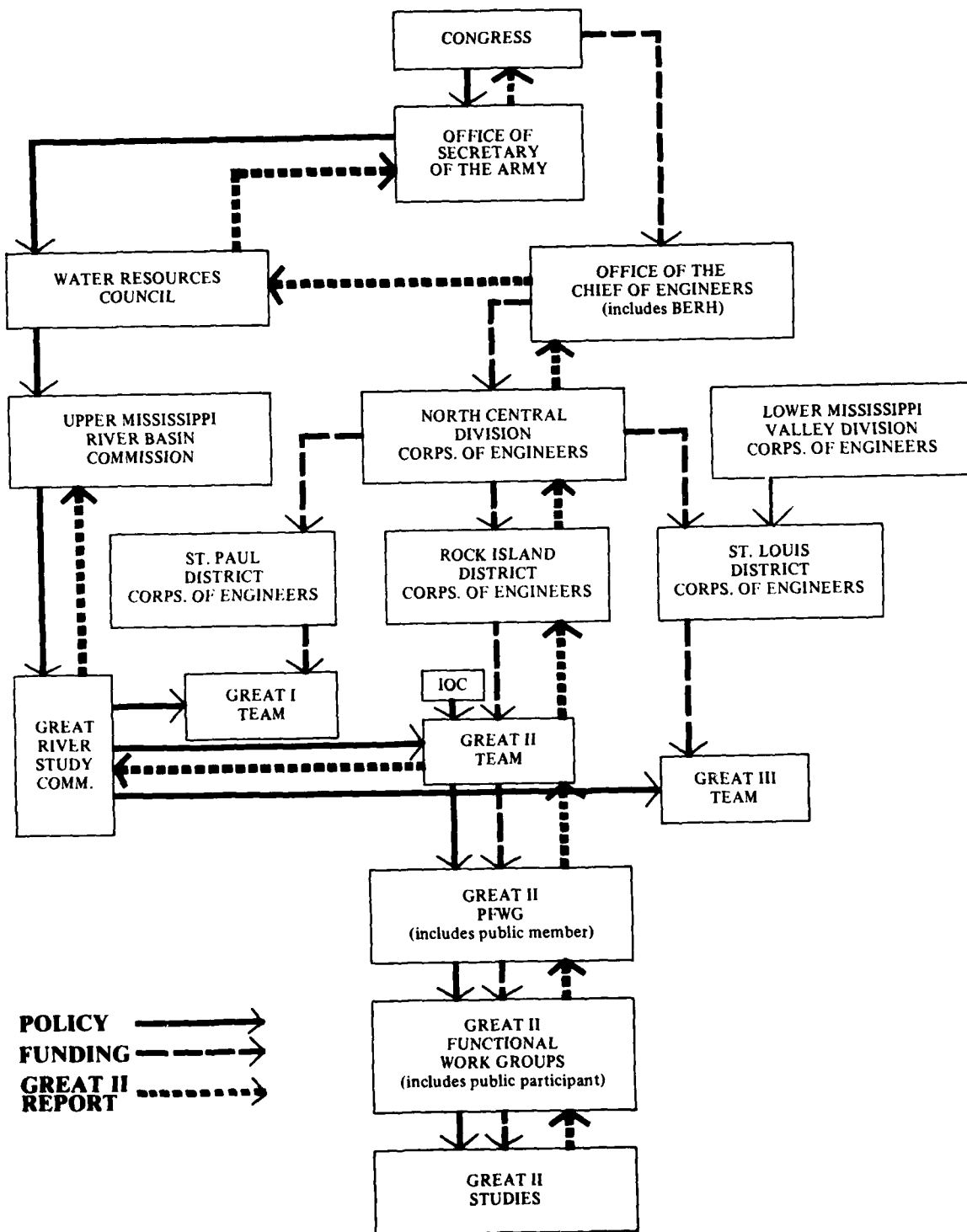
a) Team

The GREAT II Team was composed of representatives from the following Upper Mississippi Basin States and the Federal river resource-oriented agencies:

State of Illinois
State of Iowa
State of Missouri

¹ Studies conducted by the GREAT II Sediment and Erosion Control Work Group (SECWG) encompassed a much larger study area than most of the studies conducted for GREAT II. The SECWG study area included the entire hydrologic drainage area of the Upper Mississippi River (UMR). As the SECWG study area was extensive (approximately 55,000 square miles) and as it only applied to a limited number of studies, the land base used to determine the resource condition, including population and land use estimates, included only those counties immediately adjacent to the GREAT II reach of the UMR.

FIGURE #1A
ORGANIZATION OF GREAT II
POLICY AND FUNDING



State of Wisconsin

U.S. Department of the Interior - Fish and Wildlife Service
U.S. Department of Agriculture - Soil Conservation Service
U.S. Department of Defense - Department of the Army - Corps
of Engineers
U.S. Department of Transportation - U.S. Coast Guard
U.S. Environmental Protection Agency
Upper Mississippi River Conservation Committee (ex officio)

The role of the Team was to make final recommendations as a result of the GREAT II studies, to pass on to the Rock Island District, Corps of Engineers and eventually to Congress. (Figure #1A shows the paths that the final GREAT II report will take on its way to Congress.) The Federal Team members were to represent their agency viewpoint at this step in the decision making process. The State Team members were to represent the collective viewpoint of all participating agencies from within their respective state.

Members of the Team participated as equal partners. For organizational purposes the GREAT II Team was co-chaired by representatives from the U.S. Army Corps of Engineers and the State of Iowa. The equal partnership Team had one voting member from each State and Federal agency involved. The Team met at mutually agreed upon times to report on study assignments and to monitor general study progress. The Team operated under the bylaws of the UMRBC which required that attempts should be made to settle all issues unanimously. However, if all members could not agree, an issue could be decided by a majority vote of Federal representatives and a majority vote of State representatives.

b) Internal Overview Committee

The Internal Overview Committee (IOC) consisted of representatives from the four states and a representative of the Corps of Engineers and the Fish and Wildlife Service. The committee functioned as an advisory board to the Team. One of its duties was to recommend how GREAT II funds should be spent to best accomplish the study objectives. The USFWS chaired the Internal Overview Committee.

c) Plan Formulation Work Group

The Plan Formulation Work Group (PFWG) was composed of the chairman of each of the 12 functional work groups (see section on functional work groups for more information) and representatives from those participating states which did not chair a work group. Although Missouri and Illinois, at various points throughout the study did not chair a work group, Wisconsin was the only state which did not chair a work group.

The role of the GREAT II PFWG was to coordinate the activities of all of the functional work groups and to organize the

findings, conclusions and recommendations of each of the functional work groups into a comprehensive recommended plan, to be submitted to the GREAT II Team.

Members of the GREAT II PFWG were to represent the views of the functional work group they chaired while at the same time, identifying acceptable trade-offs that would provide for management of all of the Mississippi's resources.

As with the Team, members of the PFWG attempted to settle all decisions unanimously. In some cases unresolved issues were passed on to the GREAT II Team for resolution at an agency, rather than a resource level. The PFWG prepared a technical appendix to the GREAT II final report that summarized the technical data and processes used to develop the GREAT II recommended plan and reports. The GREAT II work groups and their chairmen were as follows:

<u>Work Group</u>	<u>TABLE #1</u> <u>Chairmen</u>
Commercial Transportation	Department of Transportation; U.S. Coast Guard
Cultural Resources	State Historical Department of Iowa; Division of Historic Preservation
Dredged Material Uses	Iowa Geological Survey
Dredging Requirements	Corps of Engineers
Fish and Wildlife Management	U.S. Fish and Wildlife Service
Floodplain Management	Missouri Department of Natural Resources
Material and Equipment Needs	Corps of Engineers
Public Participation and Information	Private citizens and public interest groups; private contractor
Recreation	Iowa Conservation Commission and Illinois Department of Conservation
Sediment and Erosion Control	Soil Conservation Service
Side Channel	U.S. Fish and Wildlife Service
Water Quality	Missouri Department of Natural Resources

The GREAT II PFWG was chaired by the Iowa Conservation Commission.

d) Functional Work Groups

The GREAT II functional work groups (see Table #1) identified problems, conducted studies, formulated conclusions and alternative solutions, and developed recommendations to best manage their respective areas of concern. Each work group prepared a report summarizing their activities, findings, and recommendations. These 12 reports are also appendices to the GREAT II final report and were used extensively in the preparation of this report.

Government and private interests that were not formal Team members were invited to participate in the activities of all work groups.

2. POLICY

The policy that guided and directed the GREAT II study was provided by the Great River Study committee of the UMRBC (see Figure #1A).

Specific regulations that guided the GREAT II study are discussed in a later section of this chapter.

3. FUNDING

Figure #1A shows the routing of the funds from Congress, through the Corps of Engineers to their Rock Island District and finally on to the GREAT II Team.

Although the Team had the final decision in budget matters, the PFWG first approved the concept of dollar expenditure. Concept approvals were needed on all proposed studies and/or scopes of works for proposed studies. Funding proposals for the work group chairmen's participation were also voted on by the PFWG. A study budget is shown in Table #2.

TABLE #2
GREAT II FUNDING SCHEDULE (X 1000 Dollars)

<u>Element</u>	<u>FY77</u>	<u>FY78</u>	<u>FY79</u>	<u>FY80</u>	<u>WG Total</u>
CTWG	0	130.0	15.0	16.0	161.0
CRWG	8.0	0	1.0	0	9.0
DRWG	0	67.0	52.0	56.0	175.0
DMUWG	12.0	48.0	47.0	35.0	142.0
FWMWG	8.0	74.0	201.0	81.0	364.0
FPMWG	1.0	31.0	36.0	34.0	102.0
MENWG	0	7.0	13.0	60.0	80.0
PPIWG	19.0	58.0	55.0	56.1	188.1

TABLE #2 (Cont.)

<u>Element</u>	<u>FY77</u>	<u>FY78</u>	<u>FY79</u>	<u>FY80</u>	<u>WG Total</u>
RWG	11.0	21.0	97.0	7.0	136.0
SECWG	10.0	59.0	102.0	5.0	176.0
SCWG	20.0	43.0	108.0	21.0	192.0
WQWG	0	29.0	134.0	25.0	188.0
PFWG	5.0	54.0	70.0	244.9	373.9
Contracting (COE)	24.0	62.0	91.0	44.0	221.0
Administration (COE)	57.0	42.0	108.0	113.0	320.0
FY TOTALS	175.0	725.0	1130.0	798.0	2828.0

NOTE: Participating agencies have absorbed costs and these are not included in the above figures.

C. STUDY GUIDANCE

A complex study such as the GREAT River Study must follow a multitude of regulations. In addition the study must be aware of and responsive to the activities of other and related studies.

The following sections summarize the studies that were closely related to the GREAT II study and the major regulations that guided development of the GREAT II study process.

1. RELATED STUDIES

Cognizance of and coordination with other related studies helps to avoid duplication of efforts and widens the scope of reference in any study. The GREAT II study is no exception. Presently there are four studies that are closely tied to one another and to the GREAT II study. These are the GREAT I and GREAT III Studies, the Main Stem Level B Study and the UMRBC Master Plan. The information gathered and recommendations made in each of these studies will eventually be organized and combined in order to more completely develop a management plan for the entire Upper Mississippi River. The Master Plan Study is presently responsible for completing this plan.

Although the three GREAT Teams have coordinated their study efforts, there may be inconsistencies between the findings, conclusions and recommendations of the three respective reports. These inconsistencies may be due to:

- a) differences in physical characteristics between the three areas
- b) differences in management philosophies of the participating agencies from within the three study areas
- c) differences in environmental, social, and economic values from agencies and the public within the three studies.

It is the responsibility of the Team members from the three GREATs to evaluate and try to resolve these differences. Differences which have not been resolved by the time the three GREATs have been completed will be handled by the Great River Study Committee of the UMRBC.

Table #3 lists other studies which have been undertaken or are ongoing on the Upper Mississippi River which relate to or affect the GREAT II studies.

2. PERTINENT REGULATIONS

The decision-making and plan development process developed for the GREAT II study reflected the many planning rules and regulations of the various participating agencies. The most important of these regulations are discussed below:

a) Water Resources Council

The Water Resources Planning Act of 1965 granted the Water Resources Council the authority to coordinate with other Federal water resource planning departments. Better coordination among these Federal agencies was necessary in order to improve the nation's water resources plans and programs. Congress, in particular, wanted to improve the analytical process for making decisions about river basin and project developments. The Act of 1965 specifically instructed the Water Resources Council to establish "principles, standards and procedures", which would apply to all agencies.

The "Principles and Standards" were built around the concept and process of multiple objective planning. The principles provide the broad policy framework for planning activities and include the conceptual basis for planning. The standards provide for uniformity and consistency in planning.

Under these proposals, planning for the use of the nation's water and land resources is directed toward improvement in the quality of life through contributions to national economic development and environmental quality.

b) U.S. Army Corps of Engineers

As the GREAT II Study is funded through the COE, the final report adhered to applicable COE rules and regulations as well as other applicable Federal regulations. The COE has developed Engineering Regulations in response to the Water Resources Council's "Principles and Standards", and were therefore used as the main planning guide in the development and writing of the GREAT II Study and final report.

TABLE #3
RELATED STUDIES

<u>Study Title</u>	<u>Responsible Agency</u>	<u>Status</u>
Nine-foot Channel EIS	Rock Island District, Corps of Engineers	Complete
Comprehensive Basin Study	Upper Mississippi River Basin Commission	Complete
Twelve-foot Channel Feasibility Study	North Central Division, Corps of Engineers	Complete
Proposed Wilderness Areas Study	Fish and Wildlife Service	Complete
Lock and Dam 26 Replacement EIS	St. Louis District, Corps of Engineers	Complete
Resource Management Plan	Rock Island District, Corps of Engineers	Complete
Upper Mississippi River Water Surface Profiles, Mile 0.0 to 847.5	Rock Island District, Corps of Engineers	Complete
Refuge Master Plan	Fish and Wildlife Service	Ongoing
Great River Road	States, Federal Highway Administration	Ongoing
Main Stem Level B Study	Upper Mississippi River Basin Commission	Ongoing
Assessing Flood Damage Potential	Rock Island District, Corps of Engineers	Ongoing
Biological/Recreational Studies	Upper Mississippi River Conservation Committee	Ongoing
Recreational Craft Locks Feasibility Study	St. Paul District, Corps of Engineers	Ongoing
Quad City Urban Study	Rock Island District, Corps of Engineers	Complete
Mississippi Year-Round Navigation Study	Rock Island District, Corps of Engineers	Complete
GREAT I Study	St Paul District, Corps of Engineers	Complete
GREAT III Study	St. Louis District, Corps of Engineers	Ongoing
The Master Plan	Upper Mississippi River Basin Commission	Ongoing

3. OTHER REGULATIONS

As this study was an interagency study, an attempt was made to observe the planning rules and regulations of the other participating agencies. Contacts with agency representatives revealed no major conflicts with or variations from those that the COE is presently using.

However, there were several other Federal regulations, applying to Federal resource projects, which had to be addressed. Two of the more important of these are listed below:

a) National Environmental Policy Act of 1969 (PL91-190)

This Act requires Federal agencies to prepare and environmental document on all proposed actions which could significantly affect the quality of the human environment.

b) Federal Water Pollution Control Acts of 1972 (PL92-500) as Amended by the Clean Water Act of 1977 (PL95-217)

These Acts require that the environmental impacts of the disposal of dredged and fill material in the nation's waterways be assessed and permits for such activities issued only when they "...will cause only minimal adverse environmental effects when performed separately, and will have only minimal cumulative adverse effects on the environment".

D. STUDY PROCESS

Although, this report, collectively represents the GREAT II planning process, the following sections highlight the key planning procedures used by the GREAT II PFWG, 12 functional work groups and other special task forces to: identify and research problems, analyze study results, draw conclusions, develop recommendations and through PFWG synthesis and final Team analysis, develop a recommended plan (see GREAT II Main Report for final recommended plan). Figure #3 summarizes the GREAT II planning process. Each functional work group was responsible for certain elements of the process, and specific items or detailed discussion concerning these elements may be found in respective work group appendices.

There are three stages of planning necessary in the development of a study. These are:

1. Stage 1 - Development of Study Plans
2. Stage 2 - Development of Intermediate Plans
3. Stage 3 - Development of Final Plans

At each stage of the planning process, there were four functional tasks to be accomplished:

1. Problem identification
2. Formulation of alternatives
3. Impact assessment
4. Evaluation of alternatives

This general process outline allowed the flexibility for new problems or alternatives to be identified and considered long after the project had begun.

1. STAGE 1

The emphasis in Stage 1 was on problem identification and formulation of objectives. The work groups identified problems, conflicts and concerns which related to their overall area of expertise.

Once the work groups had developed a set of problems and needs, they formulated a list of objectives designed to address and, at a minimum, partially resolve their problems. These objectives were then used to identify tasks and/or studies which the work group needed to accomplish in order to identify the possible alternative solutions to their respective problems. The problems, objectives and tasks therefore represent the plans-of-action each work group used to derive their final conclusions and recommendations.

The work group plans-of-action were reviewed by the PFWG and the public. Changes were made where necessary. The final product for Stage 1 was a Plan of Study for GREAT II; published in June, 1977.

2. STAGE 2

The emphasis in Stage 2 was on completion of tasks, development of results and conclusions and identification of alternative solutions.

The tasks that each work group chose to accomplish varied by work group, by type of problem they were addressing and by the existing knowledge they had about that problem. All work groups needed to collect and organize background information. This background information was used to identify further problems, to provide input and data for other work groups and as part of the narrative for their work group appendix. Where little background information

existed, baseline data was collected and/or research studies conducted.

As the studies progressed, tasks were completed and results and conclusions were made, the emphasis in Stage 2 shifted. A "Preliminary Feasibility Report" was prepared to show the progress of Stage 2. This report was published in September, 1978.

Once an alternative was selected; the rationale for its selection and all available supporting documents, information and studies supporting its selection were documented. This information (and other), was used to compile a brief summary of the types of impacts that would result if the recommendation were implemented. Based on the impact assessment and consequent evaluation of the recommendation the work group, through various voting procedures, either approved or rejected the recommendation.

Once the work group approved their recommendation(s) a more detailed impact assessment was completed for each recommendation. Work group approved recommendations were then brought to the PFWG for review. The purpose of this review was to insure that other PFWG members had an opportunity to provide input and/or information on the recommendation and its impact.

Once the PFWG recommended changes and/or additions were made by the responsible work group, the recommendation was ready to be evaluated by the PFWG for inclusion in the selected plan.

Stage 2 may be repeated several times in order to arrive at a minimal number of recommendations which have been selected in an orderly fashion.

3. STAGE 3

The emphasis in Stage 3 shifted from formulation of alternatives, selection of alternatives and general impact assessment of the selected alternatives to the synthesis and modification of the many work group recommendations into comprehensive, preliminary plans.

At this point, activities of the PFWG were focused simultaneously into two major areas: 1) evaluation of work group recommendations and, 2) formulation of preliminary comprehensive alternative action plans. A Plan Formulation Draft Main Report was published in May, 1980, to show the progress of Stage 3. The GREAT II Team analyzed and further modified the recommendations contained in the Draft Main Report. The Team based their analyses and modifications on public and agency comments. The final GREAT II Main Report contains the plan as approved by the Team.

CHAPTER II

PROBLEM IDENTIFICATION

1. GENERAL DESCRIPTION OF STUDY AREA

The GREAT II study area (Figure #3) starts at Guttenberg, Iowa and extends generally southward for 314.0 miles to Saverton, Missouri. There are 12 locks and dams within the GREAT II reach of the Mississippi River. These locks and dams form Pools 11 through 22. Locks and dams were constructed in the 1930's to maintain a navigation channel depth of 9-feet. Sedimentation in the channel requires periodic dredging to maintain this depth. Depths of the river within the navigation channel vary from the 9-foot minimum to 36 feet maximum at Dam 20. The width of the main navigation channel is generally 400 feet, while the average width for the entire pool ranges from 1,980 feet to 9,000 feet.

a. Water

There is a total of approximately 269 square miles of water surface area in the GREAT II area. The floodplain area covers, approximately, an additional 599 square miles of land, for a total floodplain of approximately 868 square miles. At least 44 creeks and 25 rivers flow into the Mississippi River within the GREAT II area. Of these, there are nine rivers flowing into the Mississippi which have drainage areas greater than 1,000 square miles. These major tributaries are listed below:

<u>* River</u>	<u>Drainage Area (sq.mi.)</u>
Iowa	4,770
Cedar	7,870
Turkey	1,696
Maquoketa	1,903
Wapsipinicon	2,563
Rock	10,850
Skunk	4,325
Des Moines	14,540
Fabius	1,570

* Figures taken from Upper Mississippi River Main Stem Level B Study - Selected Water and Related Land Resource Problems and Background for Planning October, 1977.

At its entrance into Pool 11, at Lock and Dam 10, the Mississippi River has a drainage area of 79,200 square miles and in 1968 had a mean daily flow of 42,400 cubic feet per second (cfs). Tributaries described above contribute 26,110 cfs to the mean daily flow of the Mississippi River.

At Lock and Dam 22, therefore, the drainage area is 137,606 square miles, and the mean daily flow was 68,510 cfs in 1968. A minimum flow of 4,900 cfs occurred in 1934 at Lock and Dam 10. A maximum flow of 414,000 cfs was recorded in 1973 at Lock and Dam 22. Minimum flows were generally recorded before installation of the locks and dams (U.S. Army Corps of Engineers - 9-foot Channel EIS).

Elevation of the river at flat pool at Lock and Dam 10 is 603 feet. The elevation drops an average of 11.9 feet per pool to a low of 459.5 feet at Lock and Dam 22. Average velocities in the main channel of the river vary from two miles per hour at ordinary flows to around four miles per hour during high flows.

b. Land

1. Topography

The topography of GREAT II is similar, in general, to that of GREAT I. The uplands areas, some of which are two miles wide, are flat-topped and are well drained by a dendritic pattern of wide, shallow valleys. The northern third and the southern third of the GREAT II area are hilly with local relief variations of 200 feet. The middle third is rolling uplands with local relief variations of 100 feet. Run-off is substantial and the area is subject to erosion and flooding (UMRBC Level B Study).

Along the UMR corridor, dissection has cut deeply into glacial deposits creating steep-walled, gorge-like ravines. From Dubuque, Iowa to the southern tip of GREAT II, the Mississippi River has broken topography with high bluffs and floodplains of varying width where the river valley is generally wide and flat the floodplains have been claimed for agricultural purposes. The floodplain varies from 1 to 8 miles. The gradient of the Mississippi River over the GREAT II region is about 0.5 feet per mile. The major wetland areas are concentrated in the river bottomlands.

2. Geology

The Mississippi Valley, in the GREAT II area, is cut primarily in sedimentary shale, sandstone, and limestone bedrock. The most important factor in the present morphology of the area was the advance and retreat of the Pleistocene glaciations, which helped shape the valleys and provided large volumes of sediment which formed floodplain deposits, as the outwash from melting glaciers flowed toward the Gulf of Mexico. Considerable quantities of glacial debris called "drift" were also deposited directly upon the eroded bedrock of the uplands. This drift was subsequently covered, in much of the GREAT II area, by silt and clay picked up by the wind from glacial outwash deposits and deposited downwind.

A section of about 20,000 square miles between Prescott, Wisconsin and Savanna, Illinois was apparently not glaciated by the most recent glacial advances and presents an older dissected topography. This "driftless" area did, however, receive a thick coating of the windblown glacial silt and clay called loess.

The glacial deposits are being eroded and reworked by fluvial processes and form the primary sediment load of the Mississippi and its tributaries. The rate of erosion and redeposition is directly related to energy supplied by running water, and since the sediment supply is essentially inexhaustible, the movement of material into the river system is a function of basin rainfall and relative topographic relief (COE Engineers; Operations Division).

3. Soils

Predominant soils of the northern GREAT II area are dark colored, developed mainly under prairie vegetation. Soils vary from well-drained sandy bottomland soils in the floodplains, to loess and in some cases, glacial till on the uplands.

Alluvial soils are more extensive in the GREAT II area than in GREAT I or III. Soils of the Genessee-Huntsville-Wabash association are nearly level, brown or black loams, ranging in silt and clay content and acidity. On associated terraces there are limited areas of well-drained soils with light colored, medium acid surfaces developed in silts and sands on calcareous gravel.

river lakes and ponds. Sloughs are relatively narrow branches or offshoots of other bodies of water. They are characterized by having little or no current at normal water stage, sand bottoms, and an abundance of submerged and emergent aquatic vegetation. Many sloughs are former side channels that have been cut off by sedimentation or deposition of dredge material. Side streams as identified by Hagen et al, are mainly small tributaries entering the river.

Sloughs, side streams, and some of the ponds and smaller lakes are most representative of the ecological succession taking place in the river bottoms, from aquatic to marsh habitat.

d. Main Channel

This includes only the portion of the river through which the large commercial craft can operate. There are approximately 17,123 acres of this habitat type in the study area. It is defined by combinations of various channel control structures, natural features, and navigation markers. It has a minimum depth of 9-feet and a minimum width of 300 feet. A current always exists, varying in velocity with water stages. The bottom type is mostly a function of current. The upper section usually has a sand bottom, changing to silt over sand in the lower section. Occasional patches of gravel are present in a few areas. Most of the main channel is subject to scouring action during periods of rapid water flow and by passage of towboats in the shallower stretches. Generally, no rooted aquatic vegetation is present.

e. Main Channel Border

This is the zone between the 9-foot channel and the main river bank, islands, or submerged definitions of the old main river channel. There are approximately 65,817 acres of this habitat type in the study area. Buoys often mark the channel edge of this zone. Where the main channel is defined only by the bank, a narrow border still occurs, and often the banks have rip rap.

The bottom is mostly sand along the main channel border in the upper sections of a pool and silt in the lower. Little or no rooted aquatic vegetation is present. The rock substrate found in wing dams, closing dams, and shoreline protection devices associated with the main channel border frequently provides much needed habitat for fish and invertebrates.

Main Channel Border

smallmouth buffalo	flathead catfish
shortnose redhorse	freshwater drum
channel catfish	

Side Channel

river carpsucker	smallmouth bass
smallmouth buffalo	white bass
bigmouth buffalo	sauger
shorthead redhorse	freshwater drum
channel catfish	

Sloughs

bowfin	flathead catfish
bullhead species	white bass
green sunfish	smallmouth bass
warmouth	sauger
crappie species	walleye
freshwater drum	

Tailwater

paddlefish	walleye
white bass	freshwater drum
sauger	

River Lakes and Ponds

paddlefish	bluegill
gar species	rock bass
northern pike	warmouth
river carpsucker	largemouth bass
bigmouth buffalo	crappie species

3. Wildlife Habitat

Terrestrial habitat within the reaches of the GREAT II study area can be placed into seven major cover type categories. They are wetlands, herbaceous growth, forestlands, agricultural lands, sand and mud, dredged material and developed lands. Open water areas support significant numbers of wildlife species including waterfowl, gulls, eagles, vultures, and insect eating birds. But for the purpose of describing cover types, open water will be considered for its associated value to wildlife and not be given a qualitative evaluation in this report. The acreages quoted below have been summarized from the "Upper

Mississippi River Habitat Inventory" (Hagen, Werth and Meyer, 1977). These figures should be considered on the low side because the entire UMR geologic floodplain was not inventoried.

a. Wetlands

Wetlands can be considered those zones of transition from open water to terrestrial habitat. Approximately 8,840 acres of this habitat type are found in the study area. Frequently flooded areas of this type support prolific populations of wildlife because of their cover diversity, available food, loafing and escape cover and breeding habitat. Species relying on this cover type include; ducks, coot, rails, bitterns, herons, egrets, numerous song bird species, associated resident hawks, wintering eagles and osprey. Many species of insects, amphibians, reptiles, and furbearers including muskrat, mink, fox, raccoon, opossum, beaver and otter are found in marshlands. In fact, the wetlands of the Mississippi River produce and sustain higher numbers of wildlife than any other land category.

b. Herbaceous Growth

Lands supporting herbaceous growth contain mixed stands of grasses including Reed's canary grass, rice cutgrass, other mixed forbs and broad-leaf weeds. Approximately 7,660 acres of this habitat type are found in the study area. Except for overlap occurring near marsh edges and occasional openings in timber that provide good habitat interspersion, these grassy areas are generally not as productive for wildlife compared to forest lands or marshland. They offer moderate loafing cover for deer and nesting cover for passerine bird species.

c. Forestlands

Forestlands comprise the lion's share of the Mississippi River's remaining undeveloped land. Approximately 75,000 acres of this habitat type are found in the study area. These floodplain forest communities range from the Cypress bottomlands in Missouri to the elm-ash-cottonwood-river birch-silver maple forests found in the middle and upper reaches of the river. Elm has diminished in status from a once common occurrence of 20 percent to less than 1 percent of the floodplain forest composition today. Other than that, much of the spectrum of tree species has remained the

Wildlife habitat along the Upper Mississippi River supports an abundant and diverse mammal population. Fifty-two mammal species with ranges overlapping the GREAT II study reach have been identified.

The lock and dam system greatly increased aquatic habitat in most areas of the UMR with a subsequent rise in aquatic-oriented mammals. Muskrat, beaver and raccoon are commonly found in the backwaters of the study area. River otter, mink, and nutria can also be observed, however, they are much rarer. Small mammal species typically associated with moist soil communities include the masked shrew, meadow vole, and southern bog lemming.

Small terrestrial mammals common to the study area include the Eastern mole, least shrew, short-tailed shrew, western harvest mouse, white-footed mouse, deer mouse, meadow vole, and prairie vole. Ten species of bat are known to occur in the study area. These animals forage throughout the floodplain returning to hollow trees and crevices in tree bark to roost.

The gray and fox squirrels are quite common in woodlands of the study area. The southern flying squirrel is also abundant in the densely forested areas.

Large mammals include the coyote, red and gray foxes. The red fox and coyote are extremely versatile and have been able to increase in numbers as man has altered the environment. The gray fox is at home in the forest, river bottoms, and bluffs.

White-tailed deer are common in the study area, although much of their habitat is not considered prime because of the advanced successional stage of the woodlands reducing foraging areas.

The diverse habitats found within the GREAT II study area also provide suitable habitat for a wide variety of amphibians and reptiles. However, because of their relatively insignificant economic importance and cryptic nature, they have not been as well studied as other species. A total of 20 amphibians and 41 reptiles have ranges which include all or part of the study area.

Detailed lists of species for all habitat types, as well as a discussion of endangered species, are found in the FWMWG Appendix.

Approximately one-quarter of this acreage was purchased by the USFWS. The rest of the refuge is on COE owned, cooperative agreement lands. Four divisions of the Mark Twain Refuge have been established on COE owned cooperative agreement lands in Pools 17, 18 and 21.

Wildlife refuges have also been established by the states within the GREAT II study area. No lands are owned or cooperatively managed by the State of Wisconsin within the GREAT II area.

The Iowa Conservation Commission manages 13,486 acres in Pools 13, 14, 16, 17, and 18.

The Green Island Wildlife Area in Pool 13 contains 2,722 acres of federal lands and 827 acres of state owned lands. The Princeton Wildlife Area contains 1,114 acres of which 722 are federally owned. The Lake Odessa (4,179 acres) and Mississippi River islands and shoreline (4,646 acres) units are both Corps owned lands in Pools 16, 17, and 18 that are managed by the Iowa Conservation Commission.

Just above Lock and Dam 12, the Illinois Department of Conservation leases approximately 500-600 acres from the Department of the Army's Savanna Proving Grounds. The 600 acre Andalusia Refuge on Andalusia Island in Pool 16 is owned by the State of Illinois.

Pool 18 contains two areas owned and managed by Illinois. Immediately above Lock and Dam 18 is the Oquawka Refuge, occupying 319 acres. Management is primarily for waterfowl. Big Timber State Forest, south of Keithsburg, includes part of the Mississippi River floodplain inundated during lock and dam construction. In addition to the above, the Department of Conservation manages 14,712 acres of Cooperative Agreement lands in Pools 16, 17, 18, 21, and 22.

There are no management areas owned by the State of Missouri in the GREAT II area. However, the Department of Conservation does manage 2,536 acres of Cooperative Agreement lands in Pools 21 and 22.

d. Cultural

There are about 1,100 archaeological sites (historic and prehistoric) in the GREAT II reach of the Mississippi River which represent the legacy of cultures 12,000 years long. Most of these sites are of the prehistoric period; although numerous historic sites are known. The importance of these sites varies, but so few have been intensively

FIGURE #4A
GENERALIZED CULTURAL-HISTORICAL SEQUENCES
OF PAST CULTURES IN THE STUDY AREA

TRADITION	CULTURAL PERIOD	NORTHERN	CENTRAL	SOUTHERN	MAJOR CULTURAL ADDITIONS
ONEOTA MISSISSIPPIAN	HISTORIC	various historical tribes		1500	tribal organization
	MISSISSIPPIAN	Oneota Phases	Mississippian Phases	1400	horticulture temple mounds
EFFIGY MOUND	LATE WOODLAND	named and unnamed Late Woodland Phases		1100	cultural mosaic
		numerous local phases		1000	increased localization of ceramic traditions
				700	
HAVANNA	MIDDLE WOODLAND			500	
		Hopewell Phase		100	interaction spheres incipient horticulture
		numerous local phases		0 AD 0 BC	burial mounds pottery
ARCHAIC	EARLY WOODLAND	unnamed Early Woodland Phases		500	
				1000	regionalization plethora of tool types primary forest efficiency
PALEO INDIAN	ARCHAIC			6000	
				12000 ?	fluted points big game hunting hunting and gathering

FIGURE #4B

POOL #	LOCK & DAM CLOSING DATE	AGE IN YEARS	LOCATION		POOL LENGTH (MILES)	SHORE-LINE LENGTH (MILES)	LIFT AT LOCK (FEET)	FLAT POOL DEPTH (FT.)		NUMBER OF RECORDED SITES *	
			TOWN	RIVER MILE				UPPER	LOWER	ARCHEO.	HIST./ARCHIT.
11	9/14/37	43	Dubuque	583.0	32.1	312	11	9	20	114	49
12	5/14/39	41	Bellevue	556.7	26.3	280	9	?	?	45	505
13	5/13/39	41	Clinton	522.5	34.2	503	9	?	?	81	34
14	5/13/39	41	LeClaire	493.3	29.2	277	11	9	20	48	40
15	3/07/34	46	Davenport	482.9	10.2	38	11	9	20	9	652
16	6/10/37	43	Muscatine	457.2	25.7	231	16	9	23	61	543
17	5/14/39	41	New Boston, Il.	437.1	20.1	203	9	9	30	185	84
18	9/08/37	43	Burlington	410.5	26.6	279	8	9	27	133	61
19	7/12/13	67	Keokuk	364.2	46.3	246	9.8	9	36	222	1023
20	5/09/36	44	Canton, Mo.	343.3	21.2	93	38.2	9	26	44	85
21	7/23/38	42	Quincy, Il.	324.9	18.4	146	10.5	9	20	39	798
22	?		Saver-ton, Mo.	301.2	23.7	126	10.5	9	20	92	74
TOTALS AS APPROPRIATE					314	2734				1073	3948

TABLE 1: Summary of General Cultural Resource Characteristics of the Navigation System, GREAT II Study Area.

* Base for these data is January, 1978

criss-crossing the country and nearly 3 million miles of surfaced roads. The GREAT II area is served by two interstate highways, I-80 and I-74. The railroad is the next most extensive transportation network serving most communities of economic significance. There are approximately 190,000 miles of railroad lines in the United States. Five railroads have routes parallel to the Mississippi River within the GREAT II area. These railroads also provide connecting service to cross-continent routes.

Air transportation is available to larger airports (St. Louis, Chicago, Minneapolis/St. Paul) which connect with most geographic areas of the nation.

Pipelines serve regions of the country with highly developed resources and demands. Pipelines are a practical low-cost means of transporting liquids and pressurized gases. There are 31 submarine gas and oil lines crossing the Mississippi River in the GREAT II area.

In contrast to the land based modes of pipeline, air, rail and truck, which are distributed across the entire breadth of the country, the 25,543 miles of usable navigable inland channels are found principally in the eastern one-half of the United States. Like the Mississippi River System, inland waterway routes have primarily followed natural watercourses.

Inland waterway navigation is an advantageous form of transportation for bulk commodities because of its low cost to the shippers. Although many factors are considered when determining transportation costs, the major factor attributing to the relatively low cost of navigation is the low amount of energy required for the barge movements.

The Upper Mississippi is a key section in the nation's commercial waterway, the Mississippi River System. Along with the Upper Mississippi, this system includes the Lower Mississippi, Illinois River, Ohio River and tributaries, Missouri River, the Ouachita River and tributaries and the Gulf Intracoastal Waterway.

The UMR extends from Cairo, Illinois to the head of navigation in Minneapolis, Minnesota. Between the Missouri River and Minneapolis, the river has been improved for navigation by a system of 29 locks and dams. These locks and dams have changed the river into a series of "steps". River tows and other boats either "climb" or "descend" as they travel upstream or downstream.

Before any navigation improvements were made, the Upper Mississippi was uncontrollable and treacherous for navigation. Spring flooding uprooted hundreds of trees and carried them into the river, forming snags that were a hazard to any vessel travelling on the river. The creation of pooled areas and other navigational improvements has reduced snags and eliminated rapids.

The present navigation system was initiated in 1930, when Congress passed the River and Harbor Act authorizing funds for its development. This legislation was interpreted by the COE that they were to provide for a navigation channel that would accommodate 9-foot draft vessels and was a minimum of 300 feet wide. In addition from 1946 to 1974 the COE practiced over-depth dredging and dredged to 13 feet in some areas. This channel was to be established by construction of a series of locks and dams to work in conjunction with regulatory structures and augmented by dredging. Various agencies and interest groups have taken issue with the COE interpretation of this legislation. Many believe that the intent of Congress was to provide for a channel that was nine feet deep. However, commercial interests feel that it was clearly the intent of Congress to provide a channel with sufficient depth of a 9-foot draft vessel. This controversy can only be resolved by litigation or Congressional action.

Water transportation developed to meet the needs of industry and because it provided a lower shipping cost than was available from other modes. Barge traffic figures for 1979 showed over 29 million tons of cargo transported into, out of, or through the GREAT II area (RID/COE lock records). The average barge capacity is approximately 1500 tons, 52,000 bushels or 453,000 gallons when loaded to a 9-foot draft. Tows consist of one or more barges up to a maximum of 15 barges in the pooled portions, while tows of 35-45 barges are not uncommon in the open river. According to barge forecast studies in GREAT II, an annual company growth rate of 3.69% is expected, which would result in a doubling of tonnage shipped by the year 2001. The navigation channel is maintained primarily by control structures such as wing dams and closing dams and by the gated pool dams. Were it not for stage fluctuations in both the main channel and tributaries these measures would probably insure an adequate channel. Since precipitation and rainfall are irregular, however, it is frequently necessary to remove sand from the main channel because of imbalances in the rivers sediment transport capability.

Insufficient channel widths and depths can cause delays to barges which costs the industry, and indirectly the consumers, money.

While the locks themselves were created for navigation on the one hand, they are an obstacle to navigation on the other.

have shown that most barge-bridge collision accidents can be avoided through proper bridge designs which take into account the needs of commercial navigation, river hydraulics and flow patterns. Other problems for barges result from inadequate mooring procedures/facilities for barge fleeting areas in the GREAT II area. Lengthy and time-consuming permitting procedures have caused expensive delays in the development of these facilities. A plan for terminal development in the GREAT II area is needed.

b. Channel Establishment and Maintenance

Between the 1820's and the 1860's, the river supported heavy traffic despite its shallowness and hazards. During this time, the river facilitated settlement and industrialization in the Upper Mississippi basin. As populations of the river towns increased, dependable transportation of farm equipment, livestock and domestic goods became imperative.

In 1878, Congress authorized an improvement program to provide a channel 4 1/2 feet deep in the Upper Mississippi. A canal was opened at Keokuk to bypass the Des Moines Rapids, and a channel was cut through the rapids above Rock Island. The COE dredged material from the riverbed and built wing dams, angled from the shore, to scour the channel. The COE also built closing dams to shut off sloughs and secondary channels. All these activities tended to direct the river into one main channel for navigational use.

By 1900, the railroads were surpassing river transportation. The channel was still too shallow for large towboats, and commercial river interests petitioned Congress for a deeper channel. In 1907, Congress authorized the deepening of the channel to six feet between St. Louis and St. Paul. This was to be accomplished by building wing dams, by dredging, by revetting the banks, and by constructing two locks at the Rock Island Rapids. The project was delayed as a result of World War I, but most of the activities were completed in the 1920's.

By 1930, the 6-foot channel in the Upper Mississippi was becoming obsolete due to insufficient depth and the relative inferiority of the existing regulatory structures to dams equipped with electrically controlled gates.

A 15 barge tow must break in half in order to get through the 600 foot locks. The average time to perform a lockage of this type is 1 1/2 hours. Safety problems occur when both recreational crafts and barges are waiting for passage through the locks.

Operating-type bridges (moveable - i.e., swing or lift bridges) cause delays and hazardous conditions for barges. Barge accidents involving these type of bridges also affect rail and highway traffic as well as barge traffic. Studies

The present lock and dam system was completed by 1940 and provided the increase of channel depth needed to accommodate modern barge traffic. As a result, cargo totals for the entire Upper Mississippi River increased from 0.5 million tons in 1930 to 54 million tons in 1970.

Twelve dams regulate the GREAT II reach of the Mississippi River. Except for the commercial power generating facility at Lock 19 in Keokuk, the dams are low structures intended exclusively for navigation purposes. Lock 19 is 110 feet wide and 1200 feet long. All other locks are 110 feet wide and 600 feet long. A small auxiliary lock has been constructed at Lock 15, and locks built before the 9-foot channel was constructed remain in service at Dams 14 and 19.

Control of water levels upstream of the dam is based on depth needed for navigation. This operation, therefore, is separate from the COE flood control program. Under normal conditions, the water level is controlled by systematically raising or lowering the dam gates. Much of the year the river is not free-flowing. During major flows, however, the gates are fully opened so that the operation of the dam gates, themselves, has no effect on flood crests.

Maintenance at the locks and dams is performed daily, and for certain major work, at 15 year intervals. Lock personnel perform day-to-day maintenance of the operating machinery and minor repair work on the physical facilities.

Immediately after the lock and dams were put into operation, the Mississippi River underwent change in its water surface profile and during low flows. Before 1940, within the constraints of the 6-foot channel training structures, the river was a free-flowing alluvial river. With the emplacement of the locks and dams, it became a stepped gradient river. The river was not characteristic of a step type gradient and, thus, has gradually tried to adjust itself, its bottom profile, sediment transport characteristics, and main channel location. Large quantities of material were dredged during this period to maintain a navigable channel. This is because the new channel did not follow the old meandering channel (see table below).

After several years of attempting to stabilize the river system from the time the dams were built, the river bottom is somewhat stabilized and does not meander as an uncontrollable river would. Consequently, dredging quantities also

have stabilized and were mainly a product of the hydrologic cycle. Dredging quantities have also been reduced in the past five years due to changes in RID/COE survey and dredging procedures and recommended changes by the GREAT II OSIT Team. See Table 3 for total yearly dredging statistics.

The following annual average volumes dredged in the Rock Island District were taken from the Dredging Requirements Work Group Appendix.

	Average Volume Dredged (cubic yards)	Average Annual Flow (cubic feet/second)
Past 39 years	1,102,000	65,400
Past 20 years	989,260	70,200
Past 10 years	761,970	74,600
Past 5 years	231,270	65,600
Past 3 years	121,000	66,200

The make-up of the material dredged is generally sand (over 94% quartz, 5% igneous/metamorphic rock and 1% other).

Problems in maintaining the navigation channel, based on experience and analysis of past dredging operations, indicate that regardless of how large a channel may be dredged, the characteristics of the river will only support an open channel with a specific size depending on the hydraulic conditions in the channel. For the Mississippi River, within the Rock Island District, this channel generally falls in a range between 200 and 800 feet. Excessive dredging beyond this range is usually ineffective, since these areas will refill at a rapid rate, then stabilize at the width that the channel can support (based on the flow of the water in that area).

Current channel widths are maintained up to approximately 600 feet as determined according to Engineering Technical Letter 1110-2-225 on river bends, and a minimum of 300 feet in areas with little or no directional change. Depth of dredging is currently done to 11 feet, unless site specifics indicate a need for a dredge depth of more than 11 feet. This determination is made after a fluvial hydrologist conducts a detailed study of the site, specific problems, and possible alternatives. These recommendations are based on river hydraulics only, and do not take into account the effects of channel depth.

In some areas of the river, the width and depth of natural supportable channel is less than that required for navigation. This is sometimes due to a reduction in flow or velocity of flow in an area. A reduction of flow in the main channel may occur when a large portion of the flow naturally directs itself out of the main channel and into off-channel areas. Closing dams constructed at the point of diversion direct the flow of water back to the main channel. Other channel control structures, such as wing dams, were constructed to produce a faster current as well as directing the flow regime in the main channel, with the intent of reducing the need for dredging. Also, banks along the channel have been protected with revetment, where necessary, to maintain channel position.

Continuous adjustments and repairs to the above-mentioned channel control structures are necessary to maintain their hydraulic effectiveness. Refer to pool maps in the DRWG Appendix for the location of wing dams, closing dams, and bank protection work in the GREAT II area.

Historically, each spring, as soon as river conditions permit, biweekly trips are made by river channel inspectors to check the channel's condition with electronic sounding equipment. The inspectors' reports are submitted to the Rock Island District's Operations Division where they are reviewed to identify problem areas. These problem areas are then scheduled for detailed hydrographic surveys. On the basis of the detailed surveys, the Operations Division determines areas that need to be dredged. The General Engineering Section, RID, checks each location and estimates the quantities that will be dredged and maintains the dredging records. Before the actual dredging begins, RID conducts conferences to discuss the potential dredge and disposal sites. A site is then selected which is accessible with available equipment and has considered comments from all concerned parties.

Beginning in the late 1960's, annual meetings were held with the RID/COE to provide personnel from natural resource agencies an opportunity to comment on dredging proposed for the upcoming year. With the advent of the Great River Studies an On-Site Inspection Team (OSIT) was developed to more effectively deal with site-specific dredged material problems. The intent was greater coordination of input from river biologists into the COE dredged material disposal decisions. In GREAT II, the OSIT evolved one step further, such that the OSIT now consisted of the GREAT II work group chairmen. The intent being greater coordination of input of all interest groups into the COE dredge material disposal decisions.

The channel maintenance activities of the UMR focus on dredging and consequent disposal of the dredged material. A portion of the dredging requirements may be caused by sedimentation.

1. Sedimentation

Sediment carried by tributary streams causes shoaling in the navigation channel of the Mississippi River Main Stem when the maximum tributary supply is not synchronous with main channel transport capability. Dredging and disposal of material is then required to maintain channel operation.

2. Dredging Requirements

Upland and streambank erosion account for a major portion of the sedimentation problems. Dredging requirements, however, are affected by other factors which influence the amount of material dredged in a given location; such as channel width and depth and the velocity and volume of water passing a point in a given time. A river system undergoes constant change, scouring and depositing continuously. Certain portions of the river are more prone to deposition of sediment

than others (i.e., dependent upon flow velocity, current patterns, etc.). Most pools in the RID have a number of chronic (recurrent or recent) dredging areas. Due to the influence of these hydraulic factors, even optimum control of upland erosion would probably not alleviate the dredging requirements.

3. Dredge Schedule

The time when the required maintenance dredging can be accomplished is dependent on the hydrologic-hydraulic conditions of the river (high or low water) and the time that the dredging equipment is available. Dredging could commence as early as late spring after the usual period of high water, or at any other time of low water conditions through to late fall.

The dredging in RID is performed by the dredge William A. Thompson, which is owned and operated by the St. Paul District Office. The RID does not own its own dredge and is dependent on renting the St. Paul District's equipment as the dredging season approaches. The Thompson is a cutter head suction dredge equipped with 1,850 feet of 20-inch floating pipe and a 2,000 horsepower pump. The dredge is capable of pumping 2,000 cubic yards of material per hour as far as 1,650 feet from the center of the dredge cut to shore. A shore pipe then can transport the dredge material up to an additional 800 feet to the disposal site. A booster pump boat, Mullen, also owned by the St. Paul District, is often used in conjunction with the Thompson to increase the capability to pump the dredge material. Together, the Thompson and the Mullen can pump the dredge material up to 8,000 feet to the disposal site.

Except for emergency dredging the navigation channel dredge season in RID usually starts in August or September. Under normal conditions, the Thompson starts from the northern end of the RID, working down the river after completion of work in the St. Paul District, dredging the most critical areas. On the return, northward trip, it dredges the less critical areas, usually finishing in October. In 1979 however, because of a late high river stage since the spring high water season and dredging that was scheduled on the Illinois waterway, the dredge Thompson was sent to the Chicago District to dredge the Illinois River. Therefore, dredging within the RID did not begin until late October, after the Illinois River was dredged and river stages on the Mississippi had fallen to very low levels.

The flexibility of the COE to change the type of equipment used or the methods used in dredging is somewhat restricted due to the legislative actions of the early 1970's -- these actions being the Moratorium on Purchase of Dredges and Dredging Equipment and implementation of the Industry Capability Program which was established. A description of these two items is provided later on in this appendix. The main thrust of this legislative activity, however, is to have as much dredging as possible done by private industry. However, because of the various uncertainties associated with dredging on the Mississippi River (i.e., quantities of dredged material, location of dredged material, emergency dredging required, and time frame when dredging should be accomplished), it is difficult to acquire private contract dredging for the maintenance of the UMR.

Dredging equipment, whether it be Corps or industry equipment, is available to do maintenance dredging on the Mississippi River. If the Corps were to contract dredging for all of its maintenance dredging except emergency activities, this could cause the contractor some problems due to the unpredictability of the dredging locations, quantities, and disposal areas.

4. Dredged Material Disposal

The most obvious way to reduce dredged material disposal (and thereby the impacts associated with disposal) is to reduce dredging volumes through reduction of dredging sedimentation and requirements. However, this cannot be totally accomplished due to hydraulic fluctuations in the river systems as previously stated. There will most likely always be a need for some channel maintenance dredging, and therefore, always a potential for dredge material disposal impacts.

All material dredged from the river must have a disposal site, be it land and/or water. Although the size of the disposal site is primarily dependent upon the amount of material dredged, other factors play an important part and must be considered. The length of time the material will remain on the site is a factor in determining the size of the disposal site needed. Thus a smaller site can be used if the material is periodically removed. If the material is removed for another use, the site can then be used to hold more material, for a given period of time.

Where and how the dredge material is placed can influence the potential for impacts of dredge material disposal on water quality, fish and wildlife habitat, side channel conditions, flood levels, cultural resources and recreation.

Dredged material has historically been used for various purposes in the Rock Island District. Due to the equipment and transport capability limitations, noted earlier, most dredged material has been deposited in such a manner as to create beaches either on islands or the banks of the river. In most cases the material is accessible only by boat. Historically the demand was relatively low and those demands were hard to satisfy for the following reasons:

- a) The lack of public knowledge of the characteristics, availability and uses of dredged material.
- b) The inability of the COE to predict when and where dredging will occur.
- c) COE policy restricting placement of dredged material.

One of the largest single reasons GREAT was organized was because of the opposition of various agencies and states to disposal sites and dredging methods used by the Corps of Engineers. Critics of the COE disposal methods have shown that the dredge material has been placed in areas where the material erodes back into the main stream rapidly and can potentially destroy aquatic habitat and mussel beds. Others have shown that the actual placement of dredged material in certain areas is destroying valuable wildlife habitat. Many people have claimed that any disposal of the dredged material in the floodplain not only adversely impacts the fish and wildlife resources and water quality, but also affects flood heights and consequently annual flood damages.

Other problems which have prevented widespread beneficial use of dredged material are the lack of knowledge by the potential users of the availability of the material and the lack of knowledge of the structural characteristics of dredged material.

c. Commercial/Industrial/Utility

Industrial development and community growth are dependent upon one another. Industry develops in those communities which offer those characteristics essential to their growth. Communities promote development of industries which will enhance their growth. Factors influencing the desirability of a particular community or location to an industry including, but are not limited to the following:

Iowa and East Moline, Moline and Rock Island, Illinois, all have industrial and commercial property affected by floods. Further downstream, Burlington and Keokuk, Iowa; Quincy, Illinois and Hannibal, Missouri are among the towns and cities built, in part, on the floodplain.

In order to protect these communities and the public and private investments in them, a series of levees have been constructed in the GREAT II area. Table 4 shows the miles of levee constructed by pool.

The continued conversion of natural floodplain lands to agricultural uses through levee construction will increase damages caused by flooding. The flood waters which would normally be distributed across the floodplain will be confined to the channel, increasing velocities downstream and raising flood stages upstream.

In addition, the changes made to the Mississippi River for navigation purposes may be affecting stage-discharge relationships. The combination of locks and dams, navigation works, and the placement of dredged material in the floodplain could be acting to reduce the storage capacity and conveyance, thereby raising flood heights. The cumulative impacts of these changes have not yet been evaluated.

5. Mineral Production

Production of residentiary mineral commodities such as sand and gravel, crushed stone, clay and shale occurs in nearly every county of the GREAT II area. Although these commodities are of low unit-value, their use in highway and building construction accounts for the highest mineral production value in the GREAT II area.

Commodities such as coal, petroleum, gypsum and lime are found locally in several counties and require transportation nationwide.

6. Agricultural Production

Land use in the GREAT II area is principally agricultural. Of its 6,840,600 acres of land and water, 6,250,000 acres are in agricultural uses, 405,600 acres are in non-agricultural uses and 185,000 acres are occupied by water (excludes main stem water area). The principal agricultural use is cropland with 4,227,700 acres; pasture and range is next with 951,100 acres. The principal non-agricultural use is urban and built-up with 320,300 acres. Acreages are further detailed in Table 5.

d. Recreation

The 12 pools (314 miles) of the GREAT II reach of the Mississippi River provide excellent opportunities for outdoor recreation enjoyment. The 9-Foot Channel Environmental Impact Statement prepared by the RID/COE, identified over 164,500 acres of water, 2,600 miles of shoreline (including islands) and 81,400 acres of publicly-owned land in Pools 11 through 22.

The 1977 GREAT II Recreation Facility Inventory shows a total of 15,448 acres of undeveloped and 3,879 acres of developed recreation land, not including dredged material beaches within the study area. In addition, there are approximately 255 boat launching lanes with over 5,145 adjacent parking spaces; 3,600 marina slips; and 3,200 private boats not in marinas. There are 3,200 individual camping units; 3,500 picnic tables; 50 miles of designated hiking trails; 10 miles of designated horseback riding trails; 5 miles of designated cross-country ski trails; and 20 miles of designated snowmobile trails. These facilities are provided by federal, state and local governmental agencies and commercial and private interests.

Pools 11 through 22 (GREAT II) of the UMR support a diverse quality sport fishery. Characteristics of that fishery vary considerably by pool, habitat, season and year. Within the GREAT II study area over 4,899,000 activity days (35% of the total recreation activity) are spent sport fishing on the UMR annually. This accounts for approximately \$50.3 million expenditures annually. Major species harvested are freshwater drum, channel catfish, crappies, bluegill, white bass, large-mouth bass, sauger, walleye, paddlefish, bullhead and carp.

Hunters spend an average 640,000 activity days annually in the GREAT II area and expend approximately \$8.3 million dollars annually (1975 dollars). Trappers harvest pelts worth approximately \$737,000 annually (1977 dollars).

Recreation use information is compiled on a yearly basis for Pools 11 through 22 by the RID/COE under the Recreation Resource Management System (RRMS). The Recreation Work Group assessed recent changes and improvements in the RRMS and utilized an average of 1977 and 1978 information to develop "Base Year" data. Table 6 represents recreation use in activity days for the GREAT II area.²

² An activity day is defined as: "The attendance of one person at the area for the purpose of engaging in one or more recreational activities for one day or a fraction thereof. An activity day does not refer to a specific number of hours and should not be confused with visitor day." Activities include, but are not limited to: picnicking, camping, swimming, water-skiing, boating, fishing and hunting. The RWG Appendix has shown the percentages of these activities in activity days for Pools 11 - 22. Data should be used only for comparison purposes. See RWG Appendix.

Presently there are recreation and recreation access facilities owned, operated and maintained by private entities and a cross-section of public agencies. A small portion of the facilities are owned in fee title and operated and maintained by private interests. Additional private facilities are operated and maintained under lease agreement with the Corps of Engineers, U.S. Fish and Wildlife Service, states or cities. This category includes the cabin site lease properties. The COE operate and maintain 26 recreation sites with a staff of seven permanent rangers.

The Fish and Wildlife Service operates portions of the Upper Mississippi River Wild Life and Fish Refuge and the Mark Twain National Wildlife Refuge. Portions of these refuges are in the GREAT II area. Although these refuges were established for fish and wildlife management purposes they also provide recreational opportunities (i.e., hiking, bird-watching, photography, hunting, fishing and trapping).

Illinois, Iowa, Missouri and Wisconsin each own and lease recreation areas. This also holds true for many counties and cities along the river.

Funding for acquisition, development, operation and maintenance is derived from many sources ranging from line items in budgets to general operation and maintenance funds, to Marine Fuel Tax Funds, to license and registration money, use fees, to Land and Water Conservation Fund and Public Law 89-72 monies, private contributions of time, etc.

If all dredged material were to be removed from the floodplain it could pose serious problems to some types of recreation. Many beaches in the GREAT II area are a result of channel maintenance activities by the COE. Since no agency, public or private, has overall authority or funding for maintaining recreation beach areas, one can only assume that a majority of existing beaches would deteriorate in the future.

Dredged material beaches have historically received large amounts of recreation use within the Mississippi River corridor. It has been noted by COE personnel that within hours after dredging operations cease, people utilize these beaches for recreation. Dredge material beaches provide primitive types of recreation with only make-shift facilities that individual recreationists may improvise. If such areas are to remain as future dredged material disposal sites, development of recreation facilities would complicate disposal practices and increase costs.

Conflicts also exist with relation to the navigation project and commercial navigation use. Portions of the pools created have very shallow areas and stump fields. While these areas provide good fish nursery and waterfowl areas, they are

hazards to the boater unfamiliar with the river. Channel structures, such as wing dams and closing dams, utilized to help maintain the navigation channel are also a hazard to the novice or inexperienced boater on the Mississippi.

The establishment and existence of outdoor recreational facilities can have an effect on various facets of the environment. These effects can be of a positive or negative manner depending on the management, design and use of the recreational areas. Through proper planning and design many of the negative impacts associated with the establishment of recreational facilities can be alleviated or reduced. Choosing a site for development with the proper carrying capacity in regard to the desired recreational activities can eliminate numerous negative impacts on the site's natural resources.

In the mid 1960's and continuing through the 1970's, society has become increasingly aware of the benefits of outdoor recreation. This can be attributed to an increase in leisure time and personal disposable income. As time goes on, there will be increased competition for land and water resources for all types of use. In the future, the concept of multiple use may need to be employed due to a shortage of available land. Every year more land is developed for residential and commercial use. In the future, the only land that may be available for recreational facilities is government land. It is highly possible that these same lands will be needed for wildlife, forest products, aesthetics, buffer zones, as well as other zones. If the land is to be managed under the multiple use concept, all of these needs can be accommodated to a certain degree. In order to provide data to facilitate multiple use management more guidelines on the types and location of recreational facilities will need to be established.

Having more accurate data on recreational use patterns and the incidence of hunting, trapping and fishing as the primary purpose of the visit is very important to recreational planning and natural resource aspects. Hunting, trapping and fishing require productive, healthy, undiminished environments to sustain populations and produce a harvestable surplus. If hunting, trapping and fishing are shown to be the primary recreational uses on the river, the justification for nourishing beaches to create and support the power boating and camping recreation visits becomes substantially diminished.

High density use recreation areas (beaches, picnic areas, etc.) should be developed in areas where habitat quality is marginal and impacts will be small, where alteration of the aesthetics will be minimal, and where centers of population will have easy access to the area.

e. Commercial Fishing

Commercial fishing on the UMR is a major consumptive use of the resource. During the period of 1953-1977 the reported commercial catch for the study area was 112,830,000 lbs. with an annual average harvest of 4,500,000 lbs. The reported total market value for the commercial catch over the 25 year period was \$9,900,000 or an average of \$397,000 per year. Commercial fishing provides a much needed source of protein, an opportunity for self-employment to the fishermen, and an important management tool for the fish biologist.

limited to urban areas and is affected by warm air trapped under a layer of cool air which cause pollutants to remain near points of emission and periodic undesirable and threatening conditions thus result. More detailed information about air quality is not available at this time. Additional information will be sought for the final report.

b. Noise

There is little, quantifiable information about noise pollution in the study area. It is recognized that noise levels in the river corridor exceed levels of safety (OSHA Standards) at site-specific locations associated with manufacturing and construction activities. "Out on the river" noise levels are impacted primarily by commercial and recreational vessels. Noise levels, even in these instances are site-specific and time-specific and have an effect on enjoyment of the resource. Increasing use of the river by recreational and commercial vehicles and vessels may require some limitations on these uses in the future.

c. Aesthetics and Cultural

The definition and management of "aesthetic quality" and "natural areas" is an extremely difficult task. It implies that aesthetic and natural area qualities are definable. It also assumes that the ability exists to appropriately manage that "quality" for the public.

The use of the word aesthetic or natural implies "preference". A person's preference is based on judgements he or she made as a result of an experience. That experience is created by: sight, sound, smell, taste, touch, and movement. Because these senses vary so greatly between individuals and are influenced by so many factors, it is extremely difficult to predict individual preferences. A particular "setting" may be viewed or perceived differently by a number of individuals even though the elements which make up the setting do not change. Perception can be affected by many factors such as: weather conditions, an individual's background (experience), method of travel, reason for travel, etc.

How to properly define aesthetic quality and how to manage for it has not been resolved. A natural history survey is being started which will address this issue.

Change in the landscape by natural and cultural agents results in direct and indirect influences upon cultural resources. There are obvious results of inundation and urban development. Inundation by water directly affected an unknown number of historic and prehistoric archaeological sites. In addition many buildings and other structures which might have been important historic resources if judged by today's standards were lost. This number is probably reconstructable but the results would be more of historic interest rather than having direct use in more practical applications. More importantly the identification of historical settlement patterns would be of interest to the scholar and for interpreting the relative significance of surviving structures which might be located outside the area of inundation.

An obvious result of urban development, which clearly was influenced by inundation is that growth was away from the area of inundation. Towns and cities developed between the inundation area and then toward the land areas away from the river. This displacement, influenced to a great extent by inundation and by transportation networks (primarily railroads), resulted in further depletion of prehistoric and historic archaeological sites as well as standing structures in the areas of intensive development.

The pattern of development in bands roughly paralleling the river continues to deplete the nonrenewable cultural resources. In the valley proper there are lasting effects of inundation which continue to impact upon cultural resources, particularly archaeological sites. The effect of inundation was to raise the level of the river to higher levels in many areas than had ever occurred prehistorically. The high pool elevations cross-cut natural landforms, resulting in completely inundating many archaeological sites but also only partially covering numerous sites. There are several known instances where the latter has occurred; the remaining portions of the site not underwater are presently under a condition of erosion due to wave action, bank slumpage, and vandalism. Several examples of such sites are found in the Cultural Resources Work Group Appendix.

As development occurs away from the river proper and further toward the base of the bluffs which line the UMR valley, all ground disturbance has the potential for destroying additional archaeological sites. Many of the most important known prehistoric villages sites are located along the higher terraces which roughly parallel the UMR. Since urbanization takes place in these areas, urban development tends to eradicate any traces of some of these villages, as well as any traces of unknown sites.

There are more subtle, long-term changes which also take their toll on cultural resources. For example the buildings and other structures of the early period of industrial and urban development are gradually lost as these are replaced by newer structures. Although loss of the early historic period structures due to urban development is relatively concentrated in and around towns, the spread of urbanization, out from these centers, also depletes the finite resource base. Also, the historic landscape changes markedly. Rural landscapes become more developed, vernacular architecture and the rural settlement pattern are gradually replaced by architectural styles of more recent vintage. The context in which rural architecture and landscape exist is changed to one of pockets of more concentrated development, or the buildings and other structures associated with a rural landscape may be razed in order to use the land for agricultural purposes.

The demand for additional services increases in expanding developed areas. Transportation networks, and sanitary facilities increase in size and usually in complexity. Recreation demands also tend to increase, both for parks and structural facilities within developed areas, and for recreation development.

The result of these many uses of the river and its associated resources is that nonrenewable cultural resources are depleted. In effect the surviving remnants of the resource base increase in relative value in terms of their educational, scientific, aesthetic, and environmental characteristics, and to an extent these resources increase in economic value. The Federal government, particularly the Corps of Engineers and the U.S. Fish and Wildlife Service, own or have jurisdiction over much of the remaining cultural resource base in the river valley proper. To these can be added the much less extensive base of cultural resources which no doubt exists between the levee system and the base of the bluffs. In the upland areas bordering the river valley the bulk of known cultural resources is in the jurisdiction of private property owners.

Since in each landscape situation the resources differ considerably, particularly prehistorically, public agencies have under their control the future of what vestiges of the past will survive, and for how long. So, how the river is used and how it is managed by the responsible public agencies and by the private sector will determine what is left of the past for the future.

changes to a species or group of species in a changed environment versus a non-changed environment (the control). Destruction or widespread disturbances to species or habitat results in our inability to truly test our impacts in those cases where a control cannot be identified for comparison.

There is a lack of information available to describe what we mean by a fragile ecosystem other than to say that habitat types and species have differing tolerances to disturbance. These tolerances, once defined, will allow us to more clearly describe these areas and measure their ability to withstand manipulation.

4. EXISTING LEGAL AND INSTITUTIONAL ARRANGEMENTS

The institutional framework for water and related land resources management in the GREAT II area is a complex, inter-related mix of Federal, state and local laws and policies. The various mandates of these laws and policies are carried out by administrative agencies at the respective levels of government. The present lack of cooperation between agencies and their inconsistent management objectives and policies have significantly contributed to the present day use conflicts which are jeopardizing both the economic and environmental value of river offers. Federal, state and local agencies are all actively involved in water resources planning and management in the GREAT II area and will be discussed in the following sections.

a. Federal Agencies

Ten federal departments, agencies or councils are considered to have major resource management responsibilities in the Upper Mississippi River Basin and surrounding area. The roles and responsibilities of these federal authorities are discussed below.

1) Department of Agriculture

The major water resource related functions of the Department of Agriculture include aid to farmers in planning and installing erosion control and other soil and water conservation measures, water supply and sewage facilities on farms and in rural communities, flood prevention and control works and management of watersheds included in the national forests. Responsibilities in these fields are divided among the Agricultural Stabilization and Conservation Service, the Farmer's Home Administration, the Forest Service and the Soil Conservation Service. In addition, departmental agencies such as Agricultural Research Service,

Economic Research Service and the Cooperative State Research Service are engaged in or provide funds for research in matters relating to water resources. The Rural Electrification Administration parti-

Public regulation of water quality had its origins in the common law doctrine of "public nuisance". A public nuisance exists when a person uses his property in such a way as to interfere with the health, safety, or welfare of the public. The common law has been buttressed in all of the Upper Mississippi Basin area states by statutes which specifically declare that water pollution is a public nuisance subject to abatement and penalties. These statutes vary from state to state with respect to the type of polluting activities which are covered. Many of these statutes, however, have been superseded by administrative regulation.

Administrative regulation is a result of legislation which set up special administrative agencies with broad powers to implement comprehensive plans for water quality control. The enabling acts which created these agencies and which define their powers and duties, vary with each state, but are similar in their overall approach to water pollution control.

Most state statutes grant authority to abate existing sources of pollution in all waters of the state. Some states even have authority to halt potential sources of pollution (as from garbage laying near a watercourse). Most states are authorized to establish receiving water standards for the protection of human health, and propagation of fish and aquatic life. Other states have additional authority to establish effluent discharges limitations. All states administer a permit system to regulate the construction, operation and/or repair of waste treatment facilities and have authority to invoke a fine for violation of permit guidelines.

3.) Land Use and Flood Control

The right of a landowner to protect his lands from, or to rid his lands of, diffused surface water is governed by three different doctrines. These are the "common enemy rule", the "civil law rule", and the "rule of reasonableness". The right of a landowner to protect his lands from the overflow of waterways is governed by the doctrines of private and public nuisance.

Diffused surface water flows, in accordance with the laws of gravity, from areas of high ground to areas of low ground. Most of the cases of common law have involved the issue of the extent to which a person can interfere with the natural flow of water in order to protect his lands

d. Public Participation

Because of the multiplicity of agencies having policy, management and regulatory authority in the river corridor, public involvement in governmental decision-making has been sporadic with little coordination. Each agency, historically has involved public interests through fragmented programs on a project by project basis. This often times confuses the public and provides agencies with partial input on projects affecting the river.

C. PROJECTED RESOURCE CONDITIONS (WITHOUT ACTIONS OF GREAT)

The purpose of this section is to describe the expected resource conditions for the study area for the year 2025, with the assumption that there would be no new programs developed and implemented between now and then. The projections are developed on the basis of information contained in work group appendices for their area of concern.

By comparing resource conditions as they exist versus projected future conditions one can then more clearly define new and existing problems that are likely to occur or continue to occur if no action is taken to address them. Information in this section follows the same format as in Section B. Projected conditions are described for the study area as a whole only, and no pool-by-pool analysis is included as projected conditions cannot be developed on as detailed a basis as existing conditions.

1. PROJECTED DESCRIPTION OF THE RESOURCES

The physical boundaries, inherent physical and political boundaries and climatic conditions are likely to be the same in 2025 as 1979.

a. Water

No significant changes in water volumes are expected, but water surface areas are expected to decrease (see Section C1; Aquatic Habitat below).

b. Land

Land acreages will increase accordingly as the projected decrease in water surface area (explained in C1 below) occurs. In addition, many upland soils are eroding much faster than they can regenerate themselves and reduction in topsoil depths and in suitability for agricultural uses is occurring (SECWG).

No backwater alterations have been performed in the past. However, the Long Range Fish and Wildlife Management Plan may provide for such options to counteract the truncating effects of Dam 12 on the backwaters.

With regard to the future of land management practices and their relationship to backwater characteristics, it appears that the authority, management objectives and desire exists within the resource agencies to address side channel and backwater problems. However, their action is severely limited by the funding available to them for habitat improvement. In general, physical alterations are costly and would involve long range planning and funding requests. It is questionable, even, whether a state or federal agency would be willing to expend large amounts of money on lands they don't even own. Consequently, none of the natural resource agencies contemplate future backwater rehabilitation projects, or if they do, have relegated them to a low priority.

The Corps of Engineers, on the other hand, owns most of the river lands but lacks authority to perform physical alterations for the benefit of fish and wildlife unless it can be demonstrated that channel maintenance activities clearly caused the problem.

2. Species Associated with Aquatic Habitat

Mussels and fish species will be affected by changes in aquatic habitat. Briefly, the projected changes will be as follows:

The status of mussels in the year 2025 will depend on how factors influencing and controlling mussel populations change. If control of point sources continues at the same level or increases, populations will accordingly stay the same or increase, especially in areas that have been heavily impacted. However, the cumulative impacts of low level pollution from additional industry and increasing population in the area may lead to increasing impacts on mussels, reducing mussel populations.

Agricultural run-off including silt and chemicals will if uncontrolled probably increase as increased demands are made for food production. The impact of this pollution could seriously impact mussel populations.

Harvesting of mussels should be self-limiting because of industry size limitations. Unless size limits are substantially reduced or there is an increase in the use of damaging mechanical dredges there should be little lasting impact on mussel populations.

Any organism dependent on aquatic or moist-soil habitats, however, will experience a different fate. Muskrats will remain abundant until marsh vegetation is converted to terrestrial. They will then shift to a low density, bankdwelling population. Beaver will continue at present levels and may increase as long as pioneer woody vegetation (willow) remains abundant. They could, however, begin to experience population losses near the end of the projection period. Many species will undoubtedly be reduced in numbers and range.

Colonially nesting birds will continue to experience population reductions as backwater habitat continues to be lost. The Forster's tern, like the muskrat, is dependent upon the marshes so will continue its trend of increased numbers until the marshes are gone. Increased human disturbance and utilization of the river will be a factor in reducing the numbers and range of these birds.

Waterfowl production will remain high as long as the off-channel wetlands exist. As this habitat ultimately decreases due to encroachment of terrestrial vegetation, waterfowl numbers and composition will return to pre-impoundment levels. As food resources dwindle, less numbers of migrating waterfowl will be supported during migration.

Fish will probably be impacted the most over the next 50 years. Funk's and Robinson's studies (1974) of the lower Missouri River blamed the decline of an immense fishery resource on habitat changes, particularly a reduction in the number and quality of chutes and backwaters. The fish population became less varied and diverse, dominated by a few species adapted to survival in a swift, turbid stream (catfish and carp).

Jackson and Starrett (1969) described the changes in the fishery of Lake Chatauqua (Illinois River) as a result of sedimentation. Yellow perch and largemouth bass numbers decreased. Carp became a contributing factor in the lake's turbidity as they stirred up the bottom sediments through their feeding behavior. In another backwater lake of the Illinois River, Patterson Bay, it was reported that siltation completely eliminated the fish population (Anon., 1965).

The question might be raised, is the river attempting to reach a so-called state of equilibrium by returning to pre-impoundment conditions? It can not, primarily because of man's attempt to control the river with dams, wing and closure dikes, rip-rap and revetments, all of which prevent the creation of backwaters to replace those that will be lost. The river may approximate a pre-impoundment cross-section, but it can never again approximate a natural, free-flowing condition. Man's actions may have temporarily improved conditions for many species, but will ultimately result in even less abundance and diversity of fish and wildlife populations than were experienced by pre-impoundment investigators.

All of the above acts have one thing in common, they provide for proper land use and land use planning. In order to have a significant impact on sedimentation in the backwaters of the river, it is necessary to attack the problem at the source and on a large scale. Even if all of the above programs were implemented to their fullest extent and concentrated on the problem of suspended sediment, however, we could not completely eliminate the problem. GREAT I Sediment and Erosion Work Group estimates that if existing land treatment measures were fully implemented, erosion would be reduced by only one-half to one-third. Clearly new and innovative measures need to be adopted to conserve our natural resources.

d. Cultural Resources

1) Changes in the Role of Cultural Resources in Federal and State Government

It is anticipated that every 14 to 18 years (a subjective assessment) there will be major legislative changes in the way in which federal agencies are expected to manage cultural resources. Legislative change will be brought about, in part, by the concerns of the public and the manner in which these concerns are expressed to Congress. The extent to which new or restructured Congressional mandates are translated into implementing regulations is not possible to determine. The degree to which these responsibilities are relegated to the states, and the extent to which State legislation creates new responsibilities, will determine the future role of cultural resource preservation and conservation in State government.

Minimally, barring changes in the substantive requirements of existing federal laws, it is reasonable to anticipate substantial completion of location and identification surveys to inventory cultural resource sites of all classes (architecture, history, and archaeology). It would appear that with existing authority the management requirements can be implemented in order to protect numerous significant cultural properties on federal lands. The desirability of making existing authority more specific may develop in the future, with particular regard for defining more clearly the manner in which funds can be computed for such activities, and how these funds may be expended. The adequacy of funding, under present circumstances, is less than minimal. Future funding may actually decrease. As the resource base is depleted further there will probably be increased attention toward surviving unique examples of the past whether these be archaeological, historical, or architectural features.

2) Changes in Knowledge of Value and Location of Cultural Resources

Additional knowledge about the location and relative importance of cultural resources will most certainly accrue. This knowledge will become available as survey coverage is increased; more properties will be identified. Much of this information will be obtained by surveys supported, in part, by federal funds, and will occur on public and private lands. Public education (about historic preservation), particularly if it is implemented in educational curricula, will have the broad effect of increasing sensitivity to conservation of the past. This can be anticipated to have subtle long-term changes in attitudes at many levels of society regarding attitudes about conserving such resources.

3) Public Concerns

If long-term education does bring about increased sensitivity to cultural resources there will no doubt be increased public concern for the resources. They may always be a minority of instances in which preservation concerns are identified too late in the planning and design process to integrate alternative designs to lessen the effects of development. These will be fewer in number as a result of greater sensitivity for preservation and conservation, but also because there will no doubt be fewer resources.

4) The Future of Cultural Resources in the Economy

It is anticipated that more of the built environment will be conserved, if not preserved, in the future if the costs of energy continue to be increased. As shown for part of the study area between 11 and 15 percent of the pre-1940 housing stock in most communities of the UMR may meet the present criteria for listing on the National Register of Historic Places. This represents a relatively substantial number of properties but only from the perspective of what is considered to be of historical and architectural importance. There are numerous additional properties which were constructed prior to 1940. It is very likely that conservation of the built environment will turn more toward all older structures, rather than only those listed on or eligible for the National Register, as a means of conserving energy.

Property values may increase as well in the study area. It is anticipated that as the values increase there will be a tendency toward additional conservation efforts.

The preservation and conservation of properties, including archaeological sites, simply for the data they contain may become more accurate as fewer and fewer resources remain. As time passes there will be additional properties identified which attain their significance after 1940. Thus, unlike archaeological sites, buildings significant for their historical and architectural value will be added to the resource base. All the while, however, archaeological sites will only be depleted. The use of public funds to recover data from these increasingly unique sites will increase as the value of goods and services increases. There may however be fewer and fewer site-specific efforts at data recovery with the use of public funds, although basic scientific research will no doubt continue.

e. Human Population

See discussion of project population changes in Recreation Section.

2. PROJECTED RESOURCE USES

The GREAT II area's population is expected to grow. Subsequently there will be increasing demands on the resources of the area and a continued need to manage the resource for a multiplicity of uses, perhaps even uses that are not even now known. The following sections will describe some of the more important activities that will impact upon the resources of the study area in the year 2025.

a. Transportation

People and goods will continue to be transported via five principal modes of transport: motor carrier, railroad, pipeline, airline and waterway, through an intermodal transportation system. Energy efficiency will become increasingly important as conventional sources of fuel (principally petroleum products and coal) become increasingly scarce and more expensive to extract and process. Those modes (i.e., commercial navigation, pipeline and unit trains) which are most fuel efficient are likely to grow at rates exceeding less efficient modes. Consequently the demand for support facilities for commercial navigation, large high-speed trains and pipeline transport will grow. At the same time there will be emphasis on development of alternative energy sources and efforts to make all modes more efficient.

For the UMR corridor the likely conditions in 2025 will include increased commercial navigation traffic and perhaps more pipeline crossings, and upgrading of rail facilities. This will mean an increased need for fleetings and support facilities (i.e., fleetings areas and terminals). The system lock capacity will be exceeded and there will be increased congestion at locks.

Vessel movements will aid the navigation channel in maintaining itself, thus a reduction in dredging requirements. The Commercial Transportation Work Group projects an annual company growth rate of 3.69% which would result in a doubling of tonnage shipped by the year 2001. While tonnage will double from 1979 - 2001, traffic and support facilities will grow at a somewhat lesser rate due to improved operational efficiencies. Towboats will still be an average of 4,000 hp per vessel, with some exceeding 10,000 horsepower. Barge fleets will continue to be composed of deck, hopper and tank barges.

b. Channel Maintenance

As there may not be any changes in channel depth or width authorization, the channel will probably continue to be maintained for vessels with a draft of 9-feet and the lock and dam system will continue to limit tow size to 3 wide and 5 long (tow and 15 barges per unit maximum).

1) Dredging Requirements

Predicting the future dredging quantities of the UMR is a formidable task to undertake because we are dealing with an alluvial river with major tributary influence. In 1974, the RID had a statistical analysis performed by John S. Rambert (1974) of the University of Iowa, concern-

ing the predictability of dredging sites and volumes. Among the conclusions that he made in his report was, "statistical analysis discussed in this report does not lead to 'highly reliable' predictions of dredging sites". With this in mind, the following is our methodology for predicting dredging sites and quantities for the next 50 years.

The baseline data to make dredging predictions should be for the previous 40 years of the 9-foot navigation project. However, emphasis was placed on dredging done during the last 20 years, since we know that the channel has acquired some stability that it did not have immediately after the lock and dam system was put into operation. The river has gradually readjusted its slope and cross-section to be more compatible with the lock and dam system, Simons, et. al. (1976), and has resulted in dredging volumes continuously declining, especially in the last 20 years.

The projections made by the Dredging Requirements Work Group for future dredging requirements, based on the 20 year history of dredging volumes, may prove inappropriate for the future due to "State of the Art" changes in soil conservation, the practices of managing navigable rivers, and other socio-economic factors. From the baseline data used, no effort was made to predict new sites nor to predict a shift of dredging volumes to the lower pool area which may occur within 50 years (currently most of the dredging occurs in the upper and middle reaches of each pool). The predictions also do not consider changes made at a site, or in a reach, to reflect changes in river control or regulating structures which could drastically reduce dredging volumes at a given location. The placement of wing and closing dams to alter the river's hydraulics in order to reduce dredging volumes is going to be a program for continuing study development. Future placement of such structures was not considered in these predictions.

The predictions are based on the assumptions that dredging to 11 feet would be done at almost all locations and that a slight increase in frequency of dredging at some sites may occur because of lesser depths of dredging. In actual practice, due to local hydrological conditions, dredging will be accomplished to 11, 12 and 13 feet, based on consultation between the hydrology experts and operations personnel in order to maintain a safe channel for navigation. Included in the predictions are the facts that some reductions in dredging quantities per event has occurred where we are currently maintaining narrower channel widths than was the historic practice and that some of the narrower channels may require increased frequency of dredging as a result.

In summation, the dredging volume projections were made on historical precedence, combined with engineering skills and personal experience of the persons making the projections. Anything more definitive at this time would require a rather expensive study. Furthermore, those results probably would not be much better than what the current "cheap and dirty" analysis made.

The projections are site specific and linear, with no greater weight given to near or long term. Table 9 is an example of how the projections were developed.

Table 9 has not been analyzed for accuracy; it is intended only to serve as a format example. The predictions made are listed on a pool-by-pool basis in the Dredging Requirements Appendix and should be reasonably accurate for the next decade. However, short-term flow conditions, such as high- and low-water levels and durations, could alter actual dredging substantially during any given season, on the high or low side. The 50 year linear projection should be close, except when and where changes are made to the channel's hydraulic characteristics, as mentioned before, with regulatory structures. These may alter dredging requirements, either at specific sites, or throughout the river system.

Although these volume assumptions are based on 11-foot dredging, many sites will be dredged to 12 or 13 feet in the foreseeable future, until more data is developed that will insure the integrity of the 9-foot channel project with 11-foot dredging.

The overall dredging volume, based on a straight line 50 year projection, is approximately 300,000 cubic yards at ten sites in an average year. This compared with a previous historical average of in excess of 1,000,000 cubic yards per year. It must be noted, of course, that in both the predicted future and the historical base, there are a few "average" years.

2) Disposal Impacts

Because of the continued need to dredge, there will be continued need to find locations to dispose of material. As existing disposal sites reach capacity they will have to be expanded or new sites located. The immediate impacts will depend upon the type of habitat that is selected for expanding existing sites or selecting new sites within the capability of existing equipment. Without any change in

base condition policy there will be continued degradation of wetland habitat and encroachment in the floodplain. Without the development of new uses or increased beneficial use of material for known uses, disposal impacts will continue to be a problem.

If shortages of sand in existing markets develop in the future, exploration for the resource will expand. If that happens dredged material may be "discovered" and be occasionally used for sanding roads, construction fill, and possibly as an aggregate in concrete. If shortages do not develop the value and availability of dredged materials as a resource would not be known. The projected uses (without action) would probably not change from base conditions.

Without any further action dredged material would be regarded as a rather worthless inaccessible resource, with demand for it being about the same as outlined in 1979 Base Conditions. Dredging equipment would probably remain the same, resulting in limitations as to where material can be placed. Historic sites would probably be used extensively. Demand and uses for the sand would change only if shortages for the material developed in existing markets.

4.) Material and Equipment Needs

Advances in equipment technology will continue over the next 50 years. However, the existing equipment and technology appear to be adequate to dredge and move material to disposal sites. Economic considerations will set the limits and it is likely that the Corps would continue to use existing equipment. There would be continued disposal in the floodplain.

One possible change that could take place would be the use of private industry capability. The following discussion from the Material and Equipment Needs Appendix, describes efforts in that direction.

"Industry Capability Program

The original intent of the ICP (Industry Capability Program) as proposed by the Chief of Engineers was to determine the capability of the dredging industry to perform, at reasonable cost and in a timely manner with hopper dredges and sidecasting dredges, the dredging done in the past by the Corps. The use of cutterhead, dustpan, and mechanical dredges was added.

Several meetings were held with industry representatives to discuss details of the program during the development of procedures. Significant differences in cost accounting,

The overall population of the study area is expected to steadily increase through the year 2025. A total of 51 of the counties studied will gain population while 15 are expected to lose population. With exception of Cedar County, Iowa, and Stark County, Illinois, those counties losing population comprise a continuous region in far Southeast Iowa and far Northeast Missouri. Those counties having the largest projected gain in population are Dane in Wisconsin and Winnebago in Illinois. The population of each is expected to increase by more than 100,000 persons. Other counties where substantial expected increases of 20,000 persons or more are Grant and Greene in Wisconsin; Dubuque, Scott and Johnson in Iowa; and Whiteside, Rock Island, and McDonough in Illinois. Adair County is expected to undergo the greatest increase in Missouri with a net change of nearly 15,000 persons, or 61%.

The Quad Cities area is expected to remain the major metropolitan center in the study area and will probably show a substantial increase in population over the study.

Taken as a whole, the study area is projected to grow at a faster rate than the United States with an overall increase of 27% compared to 18%. The areas share of United States population will grow from 1.3% to 1.4%. The share percentage may seem small, but this is a share of over 250,000 people.

The basic composition of the total population study is not expected to vary greatly. In each of the states it is expected that future populations will have greater percentages of people age 15-65 and 65 and above. The percentages of people age 0-14 are projected to decrease. These three age categories were chosen in order to roughly isolate the segment having income and mobility independence. It is the segment of population age 15-65 which, of course, will provide the greatest recreation demand for water resources.

Another indication of potential demand for services and water resources is income. The per capita income for each of the four states is expected to increase sharply in the future. If the general price level of goods and services does not rise as quickly as income (as has been experienced through 1977), this will result in a greater ability to pay for recreational activities.

Recreation use in activity days totaled 16.8 million for the base year in the GREAT II area, Pools 11 through 22. Recreation use was projected to increase 16% to the year 2000. Use was projected to increase 21% to the year 2025.

1978 recreation use figures revealed three areas of use that should be noted. They are:

Pool 19, the Quincy-Hannibal Area (Pools 21 and 22) and the Quad Cities Area (Pools 14, 15 and 16). Pool 19 experienced the heaviest use, 14 percent of the total activity days, during the base year. Pool 21 followed with 12 percent of the total activity days and third was Pool 16 with 11 percent of the total activity days. Pool 14 ranked fourth and Pool 22 ranked fifth.

Year 2000 figures showed that Pool 19 still ranked first at 12 percent of the total activity days, Pool 16 moved to second at 11.7 percent of the total activity days and Pool 21 dropped to third at 11.2 percent of the total activity days. Pool 14 and Pool 22 held their respective fourth and fifth positions.

The year 2025 figures revealed that Pool 16 moved into the first position as the heaviest used pool at 11.6 percent of the total activity days, Pool 19 was second at just under 11.4 percent of the total activity days and Pool 21 was third at 11.3 percent of the total activity days. Again, Pools 14 and 22 ranked fourth and fifth respectively. See Table 11.

While the southern portion of the GREAT II area, Pools 19-22, are the heaviest used in the base year and remain heavily used through the years 2000 and 2025, the northern portion (Pools 11 through 16) experience the largest increases in use, both in percentage and in activity days.

Picnicking, camping, swimming, water skiing, boating, fishing and hunting were the seven activities used as indicators for use trends and facility needs. Boating and fishing were the most preferred activities in the GREAT II area and account for over one-half of the total base year use. This holds true for the year 2000 and 2025 projection data.

The largest increases in activity days to the year 2025 occur in boating, 1.2 million activity days, and fishing, 1.1 million activity days. The largest percentage increase in use over the same period occurs in camping. Detailed information on projected use for the seven activities by pool is contained in the RWG Appendix.

Recreation use in the GREAT II area was projected to increase 16% from the base year to year 2000 and 21% to year 2025. This amounted to an increase of over 3.8 million activity days over the 45 plus year projection. This increased use points out that present recreation facilities would experience increased use pressure and may prove to be inadequate for the provision of a "quality" recreation experience.

Projected increases in recreation use could lead to over-use, safety problems and degradation of the quality of the recreation experience. The development of management objectives for each pool as to the type and level of recreation service provided would form the basis on which future management decisions could be based.

f. Sport Fishing and Hunting

1) Fishing

With a decrease in available habitat, sportfishing will be largely restricted to tailwaters and main channel borders. Primary species in the creel will probably be drum, carp, channel catfish, and white bass. In addition to a change in species composition, the catch rate will likely decrease. A decreasing catch rate usually leads to less fishing pressure and total harvest.

However, fishing pressure may increase as the population expands. Pressure may also increase with improved or increased access to many pools.

Losses in fishable habitat and declining angler success may be offset by the increase in pressure. Total harvest will not decrease significantly and may, in fact, increase. However, the quality of the angling experience and fish caught will deteriorate.

2) Hunting

Opportunities available for hunting and trapping in future years, without implementation of GREAT II recommendations, will be a product of the interaction of several variables including:

- a) Productive capacity of the habitat for harvestable wildlife species.
- b) Demand for hunting and trapping experiences.
- c) Availability of lands and waters for these activities.
- d) Degree of tolerance among competing user groups of the river's resources.

Assuming that 1) recreational demand for hunting and trapping will continue, and that 2) river lands will continue to be available for these pursuits, habitat and population characteristics will therefore largely determine opportunities available for hunting and trapping.

d. Water Quality

Increased population in the study area should be reflected in an increase in all major water uses. Municipal and industrial point sources should increase in number and in total pollutant load discharged to the river. However, point source pollution load should decrease as best available or best practicable technology standards are met by industrial and municipal discharges. More intensive use of riparian land (commercial or industrial development, more barge fleeting areas, or cultivation to near river edges) will result in greater non-point source pollution in the Mississippi.

An increase in river water use as projected above can be expected to decrease water quality. There are however, some trends that may help mitigate or offset this regression in water quality.

- 1) Continued local, state and federal government funding for collection systems, construction of new sewage treatment facilities and upgrading of existing plants.
- 2) Increased emphasis on industrial pretreatment and recovery of materials as byproducts rather than their discharge as wastes.
- 3) Use of organic wastes from large sources (i.e., grain processing) as alternative energy sources for the production of methane or alcohol, as a livestock feed or fertilizer.
- 4) Development of urban non-point pollution abatement plans.

Like air quality - this combination of factors makes it difficult to make quantifiable predictions for 2025.

e. Erosion and Sedimentation

As more funds are made available to the USDA to continue upland treatment programs, the rate of upland erosion will decrease. However if the level at which the programs are administered is not increased, the rate of upland erosion will probably not be reduced to tolerable levels (where soil fertility is maintained).

Studies conducted by the SECWG indicate that sedimentation in the UMR cannot be directly correlated (if at all) to upland erosion. Therefore it is unlikely that a reduction in rates of upland erosion will have any effect on sedimentation in the UMR.

f. Endangered Species

Use of land for agriculture, transportation, residential and industrial property and recreation should all increase. This will decrease the amount of land left in a natural undisturbed state and degrade remaining habitat. Exploration will continue unless adequately regulated.

Shallow aquatic habitat will be spared because of increased awareness of its importance and legislative mandates. Woodlands, prairies and bogs will decrease. The limited number of

caves will be identified for their importance and preserved or protected from disturbance. Cliffs and wooded bluffs will be spared from intense use however, their scenic appeal will increase recreational use making them unsuitable for some species.

In the river area the general trend should be towards a more uniform channel in terms of hydrology and vegetation. Effects of siltation and channel maintenance will lead to a reduction of backwaters.

The use of some of the most lethal pesticides has been banned, so their effect should diminish. However the effect of pesticides currently in the soil, water, plants or animal tissue is unknown. Controls on sources of air and water pollution are being improved. However an increase of pollution sources may offset these actions. Construction along and in streams will be closely scrutinized to minimize impacts. The spread of urbanized areas will increasingly impact isolated areas.

Exploitation of all species will continue. Commercial and sport harvest regulations will attempt to keep their harvest within the limits imposed by productivity of the species. However, productivity and species diversity is expected to decline as habitat quality decreases.

On the positive ledger, there are several factors which should lead to the retention and improvement of habitat for many species. Increased awareness of their plight, monitoring of status, Federal and State Legislation, and research on their ecology will allow resource managers to preserve needed habitat. Because the phenomena of species extinction is still largely not understood, but is known to be a product of many complex factors, it is impossible to predict in quantifiable fashion, the condition in 2025.

g. Fragile Ecosystems

Ecosystem diversity will continue to be threatened by land alteration for man's needs. It is likely that, if anything, ecosystems now fairly stable and abundant will become less abundant and thus fragile by virtue of their rarity.

4. LEGAL AND INSTITUTIONAL ARRANGEMENTS

The existing condition described earlier in this chapter will continue into the future contingent upon Federal, State and local commitments to existing programs (primarily budgetary and institutional stability). A continuation of single purpose management objectives of each participating agency will contribute to the further decline of environmental and economic values on the UMR.

The "most probable future" conditions in the study area were identified based on present conditions. Problems identified in this manner were anticipated problems if present trends were not altered.

If present trends in governmental programs are not altered, the general public "mistrust" of the agencies would continue. The public would be forced to have input only through newspapers, letters, position papers, etc.

There probably would be an increased effort on the part of the agencies to keep the public informed and gain input from them but this would probably occur on a project by project basis only.

D. PROBLEMS ADDRESSED

The preceding sections have described the existing and projected conditions of the UMR system, and, in doing so, noted a number of problems that already exist or are likely to exist if no action is taken. The 13 work groups of GREAT II, on the basis of these identified concerns and additional public concerns selected problems on the basis of criteria noted in Part A of this chapter. Following is a discussion of the problems addressed by the work groups. (Note: for detailed lists of all problems identified by work groups for consideration, see individual work group appendices. Also see additional information in this document about work group organization, etc.)

1. COMMERCIAL TRANSPORTATION WORK GROUP (CTWG)

The CTWG developed an original list of 47 problems for consideration. Based on the GREAT II criteria for problem selection, the work group selected 25 of them to be addressed by work group activities. The complete list is contained in the work group appendix. Those problems selected and addressed are listed below:

- 1) The demand and capacity for existing and potential commercial river transportation and its effect upon loading/off-loading facilities, intermodal consideration, and the result of Lock and Dam 26 is unknown.
- 2) Channel closures and some dredging practices have an adverse impact on navigation.
- 3) Fleeting areas are insufficient for industry needs.
- 4) Minimum channel widths for each bend is unknown.
- 5) Multitude of regulatory agencies cause delays, confusion and duplication.

- 6) Legislation preserving, protecting and enhancing the river unduly inhibit necessary development.
- 7) Riverfront development is constrained by legal and institutional requirements.
- 8) Commercial and recreational craft conflicts.
- 9) Reductions in the depth and width of the navigation channel are being/may be implemented in the GREAT II area without adequate knowledge of the direct and indirect consequences of these actions. Areas of significant concern include navigation and economic effects on commercial river transportation.
- 10) Unnecessary dredging sometimes occurs in the GREAT II area which could have been avoided by more appropriate positioning of channel marking buoys.
- 11) There is no generally recognized forecast(s) of changes in the magnitude/nature of barge traffic in the GREAT II area.
- 12) There is no generally recognized prediction of changes which may occur in the management of the navigation project as a result of the imposition of user fees on the barge and towing industry.
- 13) There is a perceived current and projected shortage of adequate barge fleeting areas in the GREAT II area.
- 14) The legal and institutional constraints on obtaining/retaining permits for barge fleeting areas in the GREAT II area are sometimes excessive.
- 15) Mooring procedures/facilities for barge fleeting area in the GREAT II area are sometimes inadequate and lead to damage to the shoreline and/or breakaways.
- 16) The legal and institutional constraints on obtaining/retaining permits for terminal areas in the GREAT II area are excessive.
- 17) The operating-type bridges in the GREAT II area cause delays and hazardous conditions for commercial river transportation. (Note: Operating-type bridges are those of the movable type such as swing or lift bridges.)

- 18) Various changes to past disposal practices are being/may be implemented in the GREAT II area without adequate knowledge of the direct and indirect consequence of these actions.
- 19) There is inadequate knowledge of the potentially least expensive (albeit potentially most environmentally damaging) disposal method - i.e., riverine disposal.
- 20) Passage of recreation boaters through locks in the GREAT II area frequently caused hazardous conditions and delays to commercial river transportation.
- 21) Recreational boaters frequently create hazardous conditions for themselves and commercial river transportation by not obeying established rules of the road.
- 22) Problem with trash disposal (i.e., locations of dumpsters) for barges.
- 23) Need formal tie up facilities for barges - not trees on islands.
- 24) There is a need for piling to tie barges to instead of trees - why do barges have these privileges and private citizens would be arrested?
- 25) Will holding tanks on boats be required (enforced) beginning in 1978 and thereafter?

2. CULTURAL RESOURCES WORK GROUP (CRWG)

The CRWG developed an original list of 11 problems for consideration. Based on the GREAT II criteria for problem selection, the work group selected eight of them to be addressed by work group activities. The complete list is contained in the work group appendix. Those problems selected and addressed are listed below:

- 1) Cultural resources are currently being impacted by river management.
- 2) Comprehensive summary of baseline literature and inventory of known resources is needed.
- 3) Systematic survey data are lacking for past, present and probably most future dredged material placement sites.
- 4) Many cultural resources are inferred to exist in the reach but the location of them is not known.

- 8) Determine needs for dredged material: should equal study emphasis be given to all portions of the river even though in some areas dredging has never occurred within ten miles of a specific location.
- 9) Legal Study: Many legal problems may arise if new uses are found for dredged material. There may be difficulties in disposing of material on private, county, or state land.
- 10) Use dredged material to build road on river side of tracks in Cassville.
- 11) Sabula, Iowa - Dredge south side/fill north side to expand city. Use channel fill.
- 12) Need areas for dredged material where the public can get it.
- 13) Possible area for material placement between Dallas City, Illinois and Niota - possibly good area for recreational development.
- 14) Eastern Iowa Power has problem with sediment at docks - barges cannot get in. They don't know what to do with material that is dredged.
- 15) The Quincy Park District can use all the spoil from dredging that becomes available. We have many sites to suggest.
- 16) Why not put dredged material on drainage levees to help protect the district in times of high water.

4. DREDGING REQUIREMENTS WORK GROUP (DRWG)

The DRWG developed an original list of 20 problems for consideration. Based on the GREAT II criteria for problem selection the work group selected ten of them to be addressed by work group activities. The complete list is contained in the work group appendix. Those problems selected and addressed are listed below:

- 1) There is a need to determine sites that are available for placement of dredge material.
- 2) There is a need to reduce, as much as possible, the quantity of material dredged each dredging occurrence, short-term.
- 3) There is a need to determine the flow versus depth versus dredging requirements relationships.

- 4) The environmental and hydrological impacts of riverine disposal of dredge material are unknown.
- 5) There is a need for long-term reduction of dredging requirements through evaluation of the hydraulic factors of the river as they relate to navigation and channel maintenance.
- 6) What are the possible impacts of contract dredging on capabilities?
- 7) Dredged material disposal sites and secondary movement of material.
- 8) What, if any, has come from the University of Iowa Study - Fox Island Study in Pool 20?
- 9) Current regulatory laws may inhibit maintenance of a safe navigation channel.
- 10) Current conditions of the regulatory structures is unknown.

5. FISH AND WILDLIFE MANAGEMENT WORK GROUP (FWMWG)

The FWMWG developed an original list of 13 problems for consideration. Based on the GREAT II criteria for problem selection the work group selected 12 problems to be addressed. The complete list is contained in the work group appendix. Those problems selected and addressed are listed below:

- 1) Fish and wildlife are affected by turbidity and sedimentation resulting from upland and streambank erosion.
- 2) Fish and wildlife are affected by operation and maintenance practices associated with the 9-foot navigation project.
- 3) Information on the distribution and abundance of fish and wildlife resources is inadequate for many management decisions.
- 4) There is a lack of ability to predict response of fish and wildlife to certain alterations of the river environment.
- 5) Fish and wildlife are affected by industrial, recreational, agricultural and municipal encroachment.
- 6) Effluent from municipal, agricultural and industrial activities affects fish and wildlife resources.
- 7) Fish and wildlife are affected by commercial and recreational boat traffic.

- 49) Need policing on spoil islands - trash cans, etc.
- 50) Need locking schedule for recreational craft.
- 51) Recreational area developed from Fenway Landing N. to some extent and from Fenway down to Canton. Need access to it.
- 52) Recreational area: ramp, harbor, marina docking - need fill for recreation area below Lock and Dam 20 - rock ledge exists that could be built up to form marina.
- 53) Have small riverfront park and potential for marina development.
- 54) Recreational development for riverfront - have area available adjacent to Pete's Boat House.
- 55) Can they get some help from the Corps to develop recreational area.
- 56) Interested in upgrading or developing Turtles, Shuck, and Classcow (Jackson) Islands, for recreation. They would like some guidance on this.
- 57) Blanchard Island below Muscatine is submerged slightly and boats are getting hung up on it.
- 58) Need policing of islands/beaches.
- 59) Need to educate boaters on river locations of wing dams, why they are there, etc.
- 60) Need marina facility in Niota area.
- 61) Dallas City interested in developing a marina/harbor in Bay area.
- 62) Need more recreational beaches.
- 63) Don't like the rip-rap at the public use area below Andalusia. It is too hard to get to the water.
- 64) Would like to expand harbor. Right now there is only room for boats from residents. Would like a boat ramp and more slips.
- 65) Would also like that land surrounding the harbor (river side of dike) kept up better. Right now they have no management control since it is federal property.
- 66) Concerned with inexperienced boaters on the river.

- 67) Heavy use on Albany Island. Problem of policing beach.
- 68) Need to develop some way of policing the dredge beaches.
- 69) Generally need more recreational beaches.
- 70) Need more dredge spoil islands in the Dubuque area.
- 71) How will the GREAT Study affect cottages and homes on leased riverfront land? What is status of government leases now? Will it be changed?
- 72) Will holding tanks on boats be required (enforced) beginning in 1978 and thereafter?
- 73) Burlington has quite a few sandbars, and it is a greatly used recreation area; but there are very few accesses over the levees to these areas so that people can get to them. We need some new accesses to the river.
- 74) Levees along the channel are seriously affected by wake from recreational craft.
- 75) A joint effort between states to clean up litter on islands should be made.
- 76) Need to have some other type of program for development of new recreational areas.
- 77) There is a need for coordinated effort to consider all benefits of dredged material placement.
- 78) Dredged material has not always been placed with recreation use potential in mind.
- 79) Dredged disposal practices do not consider natural features for recreation enhancement.
- 80) There is a need to insure that the coordinating activities of the GREAT efforts are continued after the completion of the GREAT studies.
- 81) There is a need for planning and design guidelines for public access areas.

10. SEDIMENT AND EROSION CONTROL WORK GROUP (SECWG)

The SECWG developed an original list of 26 problems for consideration. Based on the GREAT II criteria for problem selection the

18) Have they ever decided to do anything about the Des Moines River? They talk about it washing so much sand into the Mississippi.

19) Important to look at sediment sources outside the river corridor.

20) Doing a fine job of showing what is needed but I would like to know how can these things be accomplished. The backwaters need to be opened. We all know that, but how are they doing this? Is that part of your survey and finding out how these backwaters are going to be opened, or what ones are going to be needed to be opened? Also bank stabilization, how is it going to be done.

11. SIDE CHANNEL WORK GROUP (SCWG)

The SCWG developed an original list of 164 problems for consideration. The vast majority of these are site-specific and identify side channel/backwater areas having problems with sedimentation. The SCWG grouped these problems into ten categories. The complete list is contained in the work group appendix. The ten categories of problems selected and addressed are listed below:

- 1) Natural sedimentation has caused blockages of access and loss of habitat in backwaters and side channels.
- 2) Deposition of dredged material has caused blockages of access and loss of habitat in side channels and backwaters.
- 3) Regulatory structures have caused blockages of access and loss of habitat in side channels and backwaters.
- 4) The effects of altering flows into backwaters are not adequately documented or understood.
- 5) The equipment required to alter a backwater in an environmentally sound manner may not exist.
- 6) Side channels requiring alteration need to be identified and documented.
- 7) Resource managers need the capability to predict the biological consequences of backwater alterations.
- 8) The fixed portions of dams prevent river flows into the backwaters immediately below them.

14. SUMMARY DISCUSSION OF PROBLEM IDENTIFICATION

The problems addressed by work groups were derived from agency and public perception of existing and potential concerns about management of the UMR as a total river resource. Because of time and funding constraints GREAT II was not capable of addressing fully all problems in the study reach for all resource conditions and uses. A review of work group appendices reveals that even all problems selected by work groups for inclusion in their work efforts could not be fully addressed. Work groups, in determining the extent to which they would address selected problems, prioritized the problems and analyzed them to determine manpower and time requirements. They also developed objectives for each work group which, in part, determined the extent to which identified problems would be addressed.

E. WORK GROUP OBJECTIVES

Along with work group problem selection each work group also developed a set of objectives which generally described the broad goals of the work groups and formed a basis for development of specific work group activities (also called tasks). The following is a list of objectives, and, in some cases, sub-objectives, by work group. (From work group appendices.)

1. COMMERCIAL TRANSPORTATION WORK GROUP (CTWG)

Overall objectives were to: Identify present and future problems of commercial river transportation, the needs created by these problems, and alternative ways to meet these needs; to seek means of improving economic efficiency and service; to insure sufficient channel width and depth to provide for safe and efficient passage of 9-foot draft vessels; to improve safety. The sub-objectives are as follows:

- a. To develop recommendations for future maintenance practices for the authorized 9-foot navigation channel.
- b. To develop a forecast(s) of future changes in the magnitude/nature of barge traffic in the GREAT II area.
- c. To identify current and projected barge fleet needs in the GREAT II area, and alternatives to satisfy these needs.
- d. To identify current and projected barge terminal needs in the GREAT II area, and alternatives to satisfy these needs.
- e. To identify those operating-type bridges in the GREAT II area which cause the greatest problems for commercial river traffic and to develop recommendations to ameliorate these problems.

f. To develop a forecast(s) of changes in the magnitude/nature of bridge traffic in the GREAT II area, and to identify 1) problems which may arise due to capacity shortages, 2) the needs created by these problems, 3) alternatives to meet these needs, 4) the economic impact of meeting and not meeting each need.

g. To identify new and/or improved methods for marking the navigation channel.

h. To identify GREAT II fleeting areas which have experienced a high degree of shoreline damage and/or breakaways, and to develop alternative ways to prevent or reduce occurrence.

i. To identify those channel maintenance activities which are performed by the COE for the benefit (in whole or in part) of the barge and towing industry, and also to identify the costs associated with these activities which could be considered attributable to the industry.

j. To identify changes which may occur in the management of the 9-foot navigation project as a result of the imposition of user fees for non-passenger shallow navigation (i.e., the barge and towing industry).

k. To develop a draft work group appendix which presents the results of the previous objectives.

2. CULTURAL RESOURCES WORK GROUP (CRWG)

To determine means, and to make recommendations, for preserving and protecting the cultural resources of the GREAT II reach.

3. DREDGED MATERIAL USES WORK GROUP (DMWG)

The overall objective of the work group was to identify and develop ways to use dredged material as a valuable resource for productive uses. In order to realize the objective the following sub-objectives were developed:

a. Analyze and describe the constituents and properties of dredged material.

b. Determine productive uses for dredged material.

c. Determine needs for dredged material.

- d. Select sites for dredged material disposal.
- e. Study the legal and institutional framework regarding the placement of dredged material.
- f. Conduct a study of sand and gravel producers to determine their needs for dredged material.

4. DREDGING REQUIREMENTS WORK GROUP (DRWG)

Near Term Objective:

- a. To reduce the quantity of dredged material (site-specific each dredging occurrence), and still maintain a safe navigable channel.

Long Term Objective:

- a. To reduce quantities of material dredged by determining channel depths and widths to minimize dredging quantities, yet maintain an adequate navigation channel, and to make better use of regulatory structures to prevent shoaling.

5. FISH AND WILDLIFE MANAGEMENT WORK GROUP (FWMWG)

The primary objective was to determine the means and make recommendations for preserving, protecting and enhancing fish and wildlife resources of the UMR.

This work group also coordinated the development of short-term recommendations for each years' dredging operation and maintenance season for the entire partnership team.

6. FLOODPLAIN MANAGEMENT WORK GROUP (FPMWG)

The initial objective of the work group was to strive to comply with state and local regulations concerning dredge material disposal; and;

To perform those studies necessary to develop unified floodplain management along the GREAT II reach of the Mississippi River.

7. MATERIAL AND EQUIPMENT NEEDS WORK GROUP (MENWG)

The overall objective was to define equipment capabilities necessary to maintain the total river resources on the UMR in an environmentally sound manner. To do this, the following sub-objectives are identified:

- a. Identify and evaluate all known types of dredging equipment appropriate to the area of GREAT II.
- b. Develop cost data for the identified dredging equipment.
- c. Investigate technologically advanced methods and equipment used in the dredging industry.

8. PUBLIC PARTICIPATION AND INFORMATION WORK GROUP (PPIWG)

The overall objective was to develop procedures for assuring an appropriate level of public participation. Sub-objectives were as follows:

- a. To keep the general public informed of highlights of the study and gather public input on a periodic basis.
- b. To communicate with "local experts" to assure their input to the study.
- c. To provide independent staff assistance for the citizens to assure credible input on a constant basis equal with agencies.
- d. To generate more public interest in the river and the GREAT study in general.
- e. To provide detailed information on specific study elements to specific segments of the public on an as-needed basis.

9. RECREATION WORK GROUP (RWG)

Near Term: Represent recreational interests in the process of developing recommendations for channel maintenance for the upcoming navigation seasons.

Long Term: Represent recreational interests in the process of developing recommendations related to operation and maintenance activities of the 9-foot navigation channel. Long-term sub-objectives are as follows:

- a. Eliminate adverse effects to recreation resulting from channel operation and maintenance activities.
- b. Enhance recreational benefits of the river corridor from channel maintenance activities.
- c. Enhance recreational use of the river corridor consistent with maintaining quality of the corridor's natural resources by adequate distribution of related recreational opportunities.
- d. Maintain the integrity of the recreation viewshed.
- e. Distribute information on study findings.

10. SEDIMENT AND EROSION CONTROL WORK GROUP (SECWG)

- a. Determine source and quantity of sediment entering the river corridor.
- b. Propose land treatment and land management alternatives.

11. SIDE CHANNEL WORK GROUP (SCWG)

Overall objectives: To make resource management recommendations that will insure the protection and/or enhancement of fish and wildlife resources and their enjoyment and utilization by the public in off-channel (side channel, backwater) areas; this being in the context of an artificially controlled, riverine ecosystem operated and maintained for commercial navigation. To accomplish this the following sub-objectives were developed:

- a. To inventory and characterize backwaters with respect to their physical and biological components.
- b. To estimate the losses of backwater habitat due to sedimentation since lock and dam construction.
- c. To identify instances of dredge spoil disposal where it has adversely affected backwater and side channel habitat.
- d. To identify specific side channels and backwaters requiring remedial action to improve productivity, extend their functional life and/or improve recreational access.
- e. To recommend the type of action and methodology or the studies to determine the necessary action to alleviate the problems identified by the above.

- f. To alter specific backwaters and side channels should such projects prove beneficial.
- g. To develop the capability to predict the biological consequences of physical alterations to side channels and backwaters.
- h. To recommend the design specifications of equipment capable of working in backwaters in the most environmentally sensitive manner.

12. WATER QUALITY WORK GROUP (WQWG)

The overall objective of the work group was to promote the maintenance or improvement of water quality in the GREAT II study area. To accomplish this the following sub-objectives were developed:

- a. Characterize present water quality in the study area, including spatial and temporal water quality trends, and locations and frequencies of water quality standards violations.
- b. Assess the effectiveness of present water quality monitoring programs in the study area.
- c. Develop modeling procedures to predict the water quality impacts of dredging and dredge disposal on a site-specific basis.
- d. Promote the formation of a uniform set of guidelines for all agencies involved in water quality management in the study area.
- e. Provide for mitigation of the adverse water quality effects of dredging and disposal, during the period prior to development of final water quality criteria for dredging and disposal.

13. PLAN FORMULATION WORK GROUP (PFWG)

The overall objective of the work group was to formulate planning alternatives to address all elements of a river resource management plan, resolve as many of those elements as possible, and produce a plan for a balanced environmentally and economically acceptable channel maintenance program.

CHAPTER III

ACTIVITIES AND ACCOMPLISHMENTS

Each work group was asked to develop a plan of action which described the activities it would pursue in the forthcoming fiscal years and documented funding needs for the individual work activities. Further, the plans of action included activities that were consistent with work group objectives and, if pursued, would lead to solving the problems that the work group had decided to address. Funding for work group activities required approval by the Plan Formulation Work Group and the GREAT Team. Although some of the activities were accomplished by work group members, many were accomplished by contracts with private firms, educational institutions, or agencies. A number of activities were also undertaken by ad hoc task forces established by the GREAT Team or the PFWG. The completion of these task forces generally called for a multidisciplinary approach as part of the activity itself. In summarizing the activities and accomplishments of GREAT, this chapter presents all of the activities of GREAT II including those of the individual work groups and other special task forces.

For the purpose of clarification, work group tasks can be described as a set of proposed accomplishments that will directly fulfill work group sub-objectives. Each work group, as part of GREAT II's planning process was required to fill out a work sheet entitled "Formulation of Tasks", define the overall scope of the work group's efforts. Any given task may address one or more problems. Work group activities can be described as a series of actions which need to be done in order to successfully complete each task, and lead to a product (a physical action and/or a report providing information). The products obtained from a combination of completion of activities and tasks enabled work groups to eventually display recommended alternatives, and from these a selected alternative (i.e., a recommendation) which presents a solution to one or more problems. This process is further described in the next chapter.

The following information was extracted from individual work group "Formulation of Tasks" work sheets and the discussion of work activities contained in their appendices. The exception is the activities of the PFWG and special task forces. Their activities are described in detail at the end of this chapter. Products derived from work group and other activities are listed in Table 12.

TABLE 12

GREAT II - FORMULATION OF TASKS

A. COMMERCIAL TRANSPORTATION WORK GROUP

<u>Description of Task</u>	<u>Purpose of Task</u>	<u>Person(s) or Group(s) Responsible for Completion of Task</u>
1. Barge Traffic Forecast	To develop a traffic forecast on the magnitude and nature of barging; to develop needs and to forecast needs & alternatives to do bibliography and literature review.	A. T. Kearney Co. (Contract) Chicago, Illinois
2. Identify Traffic Constraints	To determine the constraints there will be on barging if traffic increases-including legal and institutional constraints.	A. T. Kearney Co. (Contract) Chicago, Illinois
3. Constraint Analysis	To determine factors important to removal of constraints, additional facilities needed, and the economic impact	A. T. Kearney Co. (Contract) Chicago, Illinois
4. Drawbridge Analysis	To identify those bridges in the GREAT II area which the greatest problems for commercial transportation and to develop recommendations to ameliorate the delays and hazardous conditions caused by drawbridges.	CTWG
5. Bridge Traffic Analysis	To develop a statement of work for study which would develop a forecast of changes in bridge traffic in GREAT II and to identify problems and needs which may arise.	CTWG
6. Navigation Channel Markers	To identify new and/or improved methods for marking the navigation channel.	CTWG

<u>Description of Task</u>	<u>Purpose of Task</u>	<u>Person(s) or Group(s) Responsible for Completion of Task</u>
4. Cultural Resource Management Policies	Using information to be gathered in Task 3, would develop a management framework and maximize effective long-term management practices and reduce duplication of efforts.	CRWG
5. Work Group Meetings & Discussions	To disseminate new or existing information about cultural resources and related projects to other work group members.	CRWG
6. Pre Lock & Dam Conditioning Assessment	To determine what cultural resource sites existed prior to lock & dam construction which are now inundated by water.	CRWG
7. Analysis of Lock & Dam Construction	To determine the effects that lock & dam construction & the resultant use have had on cultural resource sites.	CRWG
8. Generic Model Development	Would be used to assess the effects of wave action on shoreline archeological sites.	CRWG
9. Cost Analysis	To determine the types and amounts of costs associated with identification of cultural resources surveys.	CRWG

C. DREDGED MATERIAL USES WORK GROUP

1. Market Study	Study sand & gravel producers and consumers to see if they can use dredged material and set up schedule for use if they can use product: set of maps showing demand.	Iowa Geological Survey - Contract
2. Analyze and describe constituents and properties of dredged material.	Data will be used to aid in determining whether dredge material can be used in construction (in connection with aggregate study).	Iowa Geological Survey and Iowa State University

CHAPTER III
ACTIVITIES AND ACCOMPLISHMENTS

<u>Description of Task</u>	<u>Purpose of Task</u>	<u>Person(s) or Group(s) Responsible for Completion of Task</u>
3. Floodway/Flood-plain delineation	Mapped the 1965 & 1973 floods within the GREAT II reach.	MO. DNR - provided maps
4. Disposal site screening	To establish a screening process for evaluating disposal sites and flood plain development according to flood plain encroachment regulations.	FPMWG
5. Analysis of Stage - Discharge Relations	To analyze for a given rainfall and discharge the effects of historical channel control structures and levees on flood heights.	Past Work Group Chairman - Jim Doesburg
6. Education Program	To increase public awareness to discuss problems perceived by public are assessing the present program - not implementing a new one.	FPMWG
7. Model Legislation	To develop model legislation which would unify flood-plain management in the Upper Mississippi River Basin - which would be compatible with present state legislation.	Past Work Group Chairman & Employee
8. UMRBC Technical Flood Plain Management Task Force River Model Study	To determine the effects of flood plain management practices on flood levels. To develop modeling program addressing sediment aggradation, levee construction & nav. project operation flooding.	UMRBC Task Force
9. Work Group Meetings & Discussions	To disseminate information to other work group members about newly identified information or study progress or to share current information viewpoints, etc. about pertinent work group problems.	FPMWG

<u>Description of Task</u>	<u>Purpose of Task</u>	<u>Person(s) or Group(s) Responsible for Completion of Task</u>
<u>G. MATERIAL AND EQUIPMENT NEEDS WORK GROUP</u>		
1. Update "Cook-book" Information	To guide other work groups - provide comparison of dredging costs, equipment capabilities, and environmental concerns	Work Group chairman
2. Provide Technical Assistance	To provide other work groups with various dredging costs depending on equipment, also estimate disposal costs based on site specific parameters - to determine present equipment capabilities.	Work group chairman
3. Inventory of Dredging Equipment	To determine the equipment available in GREAT II area - to identify data that could provide more flexibility in selection of disposal sites	Work group chairman
4. Investigation of Advances in Dredging Technology	To look at equipment used in Japan and Western Europe to update American Technology to conduct new equipment demonstrations.	Work group chairman
5. Equipment Needs Identification based on Disposal Site Selection	To look at the disposal sites selected by the disposal site selection task force and determine what piece(s) of equipment is (are) necessary to reach these sites.	MENWG
6. Work Group Meetings and Discussions	To disseminate news or existing information to other work group members and to discuss information and suggestions from other work groups	MENWG

<u>Description of Task</u>	<u>Purpose of Task</u>	<u>Person(s) or Group(s) Responsible for Completion of Task</u>
<u>J. SEDIMENT AND EROSION CONTROL WORK GROUP</u>		
1. Sediment Source Identifications	To identify sources of sediment that are causing dredging and sedimentation problems - erosion source maps will be prepared depicting relative rates of sheet erosion and stream terrace erosion-very limited info on streambank erosion.	Iowa State Univ. Economics Dept. (contract)
2. Determination of Sediment Quan- tities	To determine the actual quantities of bedload and suspended sediment delivered to Mississippi River Corridors and navigation channels by tributary sources-will provide long-range monitoring information that will rate the effectiveness of present sediment control measures.	U. S. Geological Survey
3. Alternative Costs of Upland Treatment	To establish a cost estimate for reducing sedimentation & erosion from all lands to a predetermined tolerable level. - for <u>just</u> upland treatment - <u>does not</u> include structural items.	Soil Conservation Service
4. Alternative Costs of Stream- bank treatment	To show various streambank stabilization treatments and the costs associated with those treatments.	SECWG
5. Evaluation of Alternatives	Evaluate the alternatives of reducing the sediment at its source, and evaluate effects of the alternatives on Miss. - will coordinate with info. from other work groups.	SECWG

<u>Description of Task</u>	<u>Purpose of Task</u>	<u>Person(s) or Group(s) Responsible for Completion of Task</u>
4. Lab Simulation of Desorption of Pollutants	Develop a mathematical model describing desorp- tion of potentially toxic materials from dredge material.	Institute of Hydraulic Studies, Univ. of Iowa, Dr. Jerald Schnoor
5. Develop recom- mendations for final report con- sistent with water quality objectives.	Promote objectives of the work group.	WQWG
6. Assist in writ- ing water quality appendix for final report.	To assist in completion of report document.	WQWG
7. Member of On- Site Inspection Team	Make recommendations on disposal sites to be used	WQWG
8. Post-Disposal Evaluation Task Force Member	Evaluate impact of disposal on the chosen site after dredging is complete. Summ- arize water quality impacts.	WQWG
9. Water Quality Work Group Meet- ings & Discussions	Formulate and execute acti- vities of water quality work group.	WQWG

8) Fleeting Area Survey

- a) Fleeting is a necessary and vital link in the economic health of the GREAT II area.
- b) Fleeting acts to serve existing industry and does not create new industry.
- c) Physical damage to the shoreline as a direct result of fleeting seems to be minimal, particularly when considered in contrast to the damage due to natural causes.
- d) Fleeting is not a significant user of the available shoreline. In Pool 16 where fleeting is relatively heavy compared to other pools, there are 231 miles of shoreline and fleeting may occupy a little more than 1/2 of 1%.

9) Navigation Aids

- a) The Coast Guard needs to investigate the navigational aid requirements of commerce more thoroughly.
- b) Better sounding equipment is needed to perform the A/N mission.
- c) Better coordination is needed with the COE on the working level.
- d) Stability in tour length assignments of aids to navigation personnel are needed to enhance the Coast Guards mission performance in the Second Coast Guard District.
- e) Buoy placement will not affect channel dredging.

10) Hazardous Waste Transport

Existing regulations and procedures relating to water transportation of hazardous materials were satisfactory.

11) Commercial/Recreational Craft Conflicts

- a) Conflicts are minimal. Competition for lockage is most serious conflict.
- b) During peak locking periods delays occur to both commercial and recreational users.

12) Barges and Turbidity

Barges themselves probably have little effect on turbidity - propeller wash has the most effect. Propeller turbulence, however, has a minimal effect on water quality since pollutants attach themselves to clay not found in the main channel.

c. Major Findings and Conclusions

On the basis of work completed the PMUWG presented a number of conclusions.

1) Market Study

- a) As a result of the market study and greater public awareness of the potential availability of dredged material, demand for it has increased markedly. In Pools 11, 12, 14, 15, 16 and 17 all the dredged material would be utilized if made available. In Pools 13, 18, 19, 20, 21 and 22 demand for material is not as great as the amount of material dredged.
- b) Current equipment limitations of the COE prohibit much of the demand from being satisfied in the short-term (5 years). With the addition of a three mile transport capability all demand can be met over the 50 year planning time frame.
- c) The overall value of sand in the study area is \$2.62 per cubic yard.
- d) In order to generate demand for dredged material placed at selected disposal sites, the COE should modify its present day dredged material disposal policy.
- e) COE must initiate a legal review to analyze the problem of productive uses of material interfering with existing markets.

2) Aggregate Study

The objective of this research was to investigate the suitability of dredged materials along the UMR as fine aggregates in construction. Five dredged samples (Pools 11, 16, 18, 21 and 22) were used in this study. Each sample number represented the pool where dredged samples were collected.

After basic properties of dredged samples were determined, organic impurities and mortar strength tests were performed. Portland cement concretes and asphalt concretes containing the dredged samples were made and evaluated. Stabilization of dredged material was tested. These results were tabulated and analyzed. The following conclusions were drawn from investigation:

3. The sediment causing the problem in the Fox and Buzzard Island areas originates from the Des Moines River Drainage Basin.

4. The flow of the river was found to bifurcate at Hunt and Huff Islands, with an excess of 25% of the flow passing between these islands. It was concluded from examination of the field data collected that this bifurcation and the attendant channel velocity reduction downstream from it, is responsible for the recurrent shoaling in the Buzzard Island reach. Replacing the closure in the channel between Hufford and Hunt Islands would increase the velocity in the main channel by about 25%.

5. In the Fox Island reach, it was found that about 10% of flow passes through the secondary channel between Hackley Island and the Illinois shore. Closure of this channel would increase the sediment-transport capacity of the main channel by about 40%, and would significantly reduce the problem in the Fox Island reach.

6) Sediment-Transport Model Studies

a) Existing one-dimensional and two-dimensional sediment transport models have been tested for use in the GREAT II area. However, due to the lack of basic data, no model has been calibrated for use in the GREAT II reach.

b) Training works near Hunt, Huff, and Fox Islands need to be repaired so that dredging in the Fox and Buzzard Island areas can be reduced. (Phase I). Phase II to be completed.

7) Hydrographic Surveys

The present method of laying out dredge cuts on detailed hydrographic surveys to find the location, depth, and width of the best channel to minimize dredging requirements and the aligning of buoys as necessary to maintain a safe channel is utilizing the best method to reduce the quantity of material dredged each dredging occurrence in the short term.

8) A Committee for Assessment of Regulatory Structures (CARS) is needed immediately and permanently within the RID/COE to provide for continued assessment and repair of regulatory structures.

9) The four states, Illinois, Iowa, Missouri and Wisconsin, that border the GREAT II reach of the Mississippi River have different regulatory laws for dredging, dredge material dis-

5) Wing Dam Classification Study

This study groups wing dams by physical and hydrological features. Selected types of wing dams are to be studied under separate contract to determine relationships between wing dam specifications and fishing characteristics. This will enable development of design criteria.

6) Submergent Features Study

This study obtains information on the depths, and velocities, and the submergent vegetation and substrates associated with these depths and velocities. It is to be a tool to determine habitat availability and suitability but was not completed due to lack of an adequate Plan-of-Action and time to complete.

7) Pool Level Fluctuation Studies

These studies were to have identified all areas where water level manipulations were used for habitat improvement. A field study was to be conducted to determine the effects of pool level manipulation of vegetative growth. Results were to be used to develop a management technique for regulating pool levels to promote vegetative growth. This study was not completed due to unstable water levels in all years of the study period.

8) Dredge Material Disposal Plan Terrestrial Habitat Assessment

This assessment evaluated the habitat impacts of dredged material disposal plans, developed by PFWG and the Team. It also recommended site selection priorities and mitigation measures.

9) Restoration of Backwater Complex

A plan-of-action was developed to deepen silt-laden backwaters and to experiment with habitat development of the silt spoil. This project is to be undertaken in conjunction with the Fulton Local Flood Protection Project - Stage III.

c. Major Findings and Conclusions

On the basis of work completed the FWMWG presented a number of conclusions.

1) Annotated Bibliography of Fish and Wildlife Resources
of the Upper Mississippi River

The three volume report provides a very useful source
of information to anyone proposing to conduct studies on
the UMR.

2) Study of Fish in Main Channel of the Mississippi River

a) The main channel of navigation Pool 14 is utilized
as habitat by a diversity of fishes, 39 species have
been represented in the collections.

b) Channel catfish, silver chub, mooneye, shovelnose
sturgeon, freshwater drum, flathead catfish and river
darter typify the fishery of the main channel. However,
the importance of this habitat needs to be evaluated.

c) The presence and/or abundance of young-of-the-year
channel catfish indicates the channel may serve as a
nursery ground for this and probably other species.

d) The bottom trawl was the most effective gear type; seining and electrofishing were ineffective. The other gear types were intermediate in effectiveness.

e) Water quality data reflect a reasonably well-mixed system and little difference was observed among stations.

3) Classification of Training Structures

A total of 595 wing and closing dams were inventoried along the Iowa border; 36% had been completely eroded or covered with bottom sediment, 3.8% were physically removed by the Corps, and the remaining 273 were sorted into 12 definable groups. This study is being followed up by research investigating the utilization of these structures by aquatic organisms and the relationships between physical/hydrological features and use by organisms.

4) Wing Dam Modification Study

At this time only the data collected before notching (Phase I) of the wing dams has been analyzed. The results are:

a) Fifty-two species of fish were captured in the study area. Overall, emerald shiner, bluegill and freshwater drum, respectively, were the most abundant species in numbers. Carp and smallmouth buffalo were most abundant by weight.

b) Caddisflies and mayflies were the most dominant taxa in terms of numbers and weight.

c) Total benthic biomass and number of taxa each were positively, significantly related to percent silt-clay in substrate.

d) With the exception of the sample site upstream of Wing Dam 26, total biomass at upstream sites compared favorably with sites located downstream of wing dams, (and) total biomass for sites above and below wing dams was greater than total biomass for sites in the side channel.

Phase II analysis will compare pre- and post-notching results. Emphasis will be placed on analysis of hydrographic relief, current velocity, substrate, and fish data and will be contained in a graduate thesis.

6. FLOODPLAIN MANAGEMENT WORK GROUP (FPMWG)

a. Formulation of Tasks

The FPMWG developed eight tasks as shown in Table 12. A discussion of the products completed to achieve these tasks and the conclusions follow.

b. Major Products

1. Floodplain Management Legal and Institutional Study

This study inventoried, compared and analyzed significant Federal, State and local laws, regulations, policies and procedures relating to floodplain land use controls; identified the range of restriction of floodplain regulation in the UMR Basin; and provided basis for developing uniform regulatory framework.

2) Floodway/Floodplain Delineation

In this task, the extent of the 1965 and 1973 floods were mapped to provide an estimate of flood prone areas in the UMR corridor.

3) Stage Discharge Relations

This task analyzes, for a given rainfall and discharge, the effects of historical channel control structures and levees on flood heights.

4) Model Legislation Development

In this task, the FPMWG helped develop a draft for a Compact between the five UMR Basin states creating an Interstate Authority to develop and advance a policy of national floodplain management for the UMR floodplain.

c) Major Findings and Conclusions

On the basis of work completed the FPMWG presented a number of conclusions.

1) Legal and Institutional Study

The Legal and Institutional Study enumerated three possibilities for improving interstate consistency in floodplain management:

a) The federal government could take over flood plain management for the states using the powers given to them under the commerce power.

b) The states could attempt to adopt uniform legislation.

c) The states could enter into a compact.

2) Floodplain/Floodway Delineation

a) The maps showing the location of flood waters within the Mississippi River Corridor are useful in locating dredged material disposal sites. These maps will also be useful to communities for development planning, as long as managers are aware that the maps show approximate boundaries.

b) Flood profiles are continually being re-examined and updated. The Mississippi River is also monitored continuously for changes in hydraulics and hydrology. These two fields are current and do not need any further study.

Topographic mapping is an expensive and complicated process. The U.S. Geological Survey has a program to review and update all of the 7 1/2' topographic maps. This process will eventually provide new maps for the Mississippi River corridor. Flood plain maps at a two-foot contour interval would be expensive and would require a reallocation of U.S. Geological Survey mapping priorities or a large contract with a commercial firm.

7. MATERIAL AND EQUIPMENT NEEDS WORK GROUP (MENWG)

a. Formulation of Tasks

The MENWG developed six tasks as shown in Table 12. A discussion of the products completed to achieve these tasks and the conclusions follow.

b. Major Products

1) Guide to Dredging Operations, Costs and Equipment

This guide provides a description of dredging equipment and operations; dredging equipment capabilities, limitations, advantages and disadvantages; dredging costs; and environmental considerations.

2) Dredging Equipment Inventory

In this task, the MENWG analyzed literature on different types of dredging equipment as to the characteristics and availability of the equipment.

3) Dredging Equipment Review

In addition, gaging data is needed for ungaged tributaries to the Main Stem Mississippi River.

2) Upland Treatment

Accelerated land treatment and conservation measures are needed on 9.5 million acres of cropland to reduce erosion to tolerable levels. Adequate programs exist to accomplish the goals if additional funding can be provided.

11. SIDE CHANNEL WORK GROUP (SCWG)

a. Formulation of Tasks

The SCWG developed seven tasks as shown on Table 12. A discussion of the products completed to achieve these tasks and the conclusions follow.

b. Major Products

1) Orton-Fabius Side Channel Opening and Study

This study was to determine the effects of a side channel opening on side channel limnology and the abundance, distribution and composition of fish communities in side channels of the UMR. However, since the opening could not be accomplished, the study changed from pre- and post-opening research to backwater characterization resulting in three years of empirical data collected and added to the data base to increase our knowledge of backwater habitat and its value.

2) Burnt Pocket Backwater Opening and Study

In this study, pre- and post-opening physical, chemical, and biological data were collected and the pre-opening data applied to a regression simulation model to produce a set of predictions of biological changes prior to the backwater opening. The post-opening data were used to evaluate the accuracy and applicability of the model as a tool for predicting changes in backwater areas as a result of altering flows through them.

3) Side Channel Inventory

In this task, the physical and biological elements of side channels and backwaters were characterized and des-

cribed; problems associated with side channels and backwaters were identified; and losses of fish and wildlife habitat due to sedimentation, channel maintenance, diking, and private, urban, and recreational development were documented.

4) Equipment Specifications

In this task, a listing of specifications for equipment that can be used to perform alterations in side channels and backwaters in the most environmentally sound manner was developed.

c. Major Findings and Conclusions

On the basis of work completed the SCWG presented a number of conclusions.

1) Side Channel Inventory

a) Dredged material disposal has impacted side channels and backwaters. In the period between 1956 and 1975, approximately 1800 acres of off-channel, open-water habitat has been affected including the blockage of several side channels.

b) The magnitude of impacts of dredged material disposal on backwaters is slight compared to those related to sedimentation.

c) It is projected that as much as 4500 acres of backwaters would be affected over the next 50 years by dredged material disposal assuming historical practices.

d) Of historical type disposal practices, the method which least impacts backwaters is disposal on the highest and driest portions of floodplain woodlands where wave action and flood-flows cannot resuspend and re-deposit the material.

e) Sedimentation of backwaters is the number one problem affecting aquatic habitat in the UMR today.

f) Unless something is done to reverse, or at least slow the trend of backwater sedimentation, a near complete loss of backwaters is inevitable. It is projected that between 12,000 - 28,000 acres of backwater habitat will be lost over the next 50 years.

g) The primary source of the fine sediment being deposited in backwaters is farmland erosion. Secondarily is stream-bank erosion.

h) Man's attempts to control the river (dams, regulating structures) has contributed to the backwater sedimentation problem.

i) Physical alterations made to backwaters and side channels can be beneficial in decreasing the amount of sediment entering backwaters.

2) Backwater Alterations

a) The U.S. Fish and Wildlife Service as well as state resource management agencies have the authority to alter backwaters and side channels (assuming compliance with the permit requirements of various regulatory agencies) on lands they manage through Ccooperative Agreement with the Corps of Engineers.

b) State and federal agencies with management authority generally lack the funding for such alterations.

c) The backwaters of the Upper Mississippi River should be managed as an integrated unit, i.e. on an ecosystem level.

d) The Corps of Engineers has within their agency the expertise and resources necessary to design and construct physical alterations to backwaters but lacks the statutory authority.

e) Side channel and backwater openings can be beneficial in improving the quality of aquatic habitat in certain circumstances.

f) Side channel openings are not appropriate nor effective in all cases.

g) The model developed by the River Studies Center (LaCrosse, WI) and tested at Burnt Pocket is applicable to conditions found in the GREAT II reach and is at least accurate in predicting macrophytic biomass changes resulting from flow augmentation.

c. Major Findings and Conclusions

On the basis of work completed the WQWG presented a number of conclusions.

1) Water Quality Assessment Report

Detailed technical information contained in Water Quality Assessment Report as part of the WQWG Appendix.

2) Point Source Discharge Map

Information only - no conclusions.

3) Dredge Disposal Assessment

The mathematical models of suspended sediment dispersion were evaluated to predict water quality impacts of disposal site return flows. A modification of the Weschler-Cogley model proved most useful. Twenty-seven solutions of this model spanning most of the range of variables encountered in the GREAT II Study area will be given to the RID/COE to assist them in predicting water quality impacts of dredging.

4) Laboratory Simulation of Desorption of Pollutants from Dredged Material

The pollution potential of water and sediments from 10 locations within GREAT II was examined. Four heavy metals, iron, lead, copper and manganese are mostly bound onto sediments or other particles. Only manganese appears to desorb from sediments during agitation (such as dredging or dredge disposal) in quantities which may cause water quality problems. The water quality standard for DDT (and analog DDE) a restricted insecticide was exceeded at two locations near the Maquoketa River. No violations were noted for another insecticide, Dieldrin, for two herbicides, Lasso and Atrazine, or for PCB's.

13. PLAN FORMULATION WORK GROUP (PFWG)

The members of the PFWG, collectively, functioned as study coordinators. Monthly decisions had to be made regarding study funding, study progress and study needs. A continuous overview of the study, including monthly status reports of the 12 functional work groups, helped to identify areas where the GREAT II study needed help or additional efforts. The PFWG strove to meet these needs by developing special groups or task forces to look into these areas.

The following discussion explains the functions and accomplishments of the PFWG. While detailed discussion of the 12 work group's activities and accomplishments may be found in their respective work groups appendices, this document, as the Plan Formulation Work Group Appendix, contains the detailed discussion of the Plan Formulation Work Group.

As the study coordinators, the roles of the PFWG members fell into four major areas:

- a. Study Process and Progress
- b. Reports - Development, Organization and Publication
- c. Special Studies/Activities
- d. Development of Plans.

The activities of the PFWG within each of the above listed areas are discussed below.

a. Study Process and Progress

All studies require a person or group of persons to oversee the study to insure that the study is progressing according to schedule, that adequate funding is available for study activities, and that a process exists by which knowledgeable decisions can be made. The most important of these is to establish a voting procedure which will be used to make all decisions of large or small consequence. Almost as important is the development of a study schedule, which defines the step-by-step products and the dates when these products will be due. Other activities necessary to regulate the study process and progress, especially in an interdisciplinary study of this nature, are concept approvals for proposed studies or actions, coordination of work group activities through status reports, coordination and dissemination of new or newly discovered pertinent information and development of a process by which the entire group will arrive at their final decisions and recommendations.

1) Voting Procedure

The PFWG made all of its decisions by consensus (approval of all) of all members present. Voting members present could abstain without affecting the final decision. An abstention was, however, noted in the meeting minutes.

There were 15 voting members on the PFWG. They were the chairmen of the 12 functional work groups, a representative from the State of Wisconsin, and the chairman of the PFWG. The chairman of the PFWG was also one of the Team co-chairmen. A quorum (8) was required to be present in

TABLE 13
GREAT II STUDY SCHEDULE
April 4, 1980

<u>Activity</u>	<u>Completion Date</u>
Initial Public Meetings ¹	September, 1977
Approved Plan of Study UMRBC/COE	November, 1977
Work Group Problem Identification	February, 1978
Revised Work Group Plans-of-Action	April, 1978
Preliminary Feasibility Report (P.F.R.)	September, 1978
Public Meetings to Review P.F.R. ¹	September, 1978
COE Checkpoint I Conference	October, 1978
Preliminary Draft Work Group Appendices	September, 1979
Review Recommendations (Work Groups to PFWG)	August - February, 1980
Impact Assessments	February, 1980
Develop NED/EQ Alternatives	March, 1980
Complete Public/Agency Review Draft Work Group Appendices, Main Report, Executive Summary	April, 1980
Distribute Public/Agency Review Documents	May, 1980
Public Meetings ¹	June/July, 1980
Final GREAT II Reports Complete (Executive Summary, Main Report, All Work Group Appendices)	February, 1981

¹ Public participation was active throughout the study. See PPIWG Appendix for schedule of all PPIWG activities.

Key: UMRBC - Upper Mississippi River Basin Commission
PFWG - Plan Formulation Work Group
COE - Corps of Engineers

order for a vote to be taken. An absentee voting member lost his or her voting authority. Items could be re-evaluated by the PFWG at a later time if one of the absentee members had concerns that had not been previously addressed.

The PFWG evaluated recommendations to be sent to the Team for final approval. The PFWG agreed by consensus for final approval. The PFWG agreed by consensus to the overall evaluation of the recommendation. Under this evaluation procedure, the PFWG agreed, by consensus, that recommendations could be forwarded to the Team with one or two negative work group evaluations, however. (The PFWG strived to resolve any negative work group evaluations.) The PFWG was not to approve or disapprove recommendations, but rather to provide the Team with detailed evaluation of the recommendations.

The PFWG consolidated and/or modified work group recommendations as was necessary. In some cases, the PFWG developed recommendations which had not been initiated by other work groups. PFWG modifications to the recommendations, and PFWG-originated recommendations are displayed in Exhibit E.

2) Study Schedule

A study schedule (Table 13) was developed by the chairmen of the PFWG and presented to the PFWG for approval. In May, 1979, the study schedule was revised to include additions to the study process. Each work group chairman was to devise their own work group study schedule based on the PFWG schedule.

3) Budget and Funding

Although the Team had the final decision in budget matters, the PFWG first approved the concept of the dollar expenditure. Concept approvals were needed on all proposed studies and/or scopes-of-works for proposed studies. Funding proposals for the work group chairmen's participation were also voted on by the PFWG. A study budget is shown in Chapter I (Table 2).

4. Work Group Coordination

In an interagency study such as GREAT II, it was especially important for each work group to be kept up to date on the activities, concerns and opinions of the other work groups. In addition to participating on other work groups, the work group chairmen were kept informed at the monthly PFWG meetings, by status reports. These status reports were given (either oral or written) by each work group chairman present.

b. Reports - Development, Organization and Publication

An important area of responsibility for PFWG members was that of organizing and publishing the numerous reports that were developed throughout the GREAT II study. The following is a list of the products that were developed in GREAT II and the associated responsibilities of the PFWG.

<u>Product</u>	<u>PFWG Involvement</u>
Plan of Study	Done by committee of the Team for Stage I of the study.
Preliminary Feasibility Report	Prepared by a Task Force of the PFWG - discussed the study activities and preliminary conclusions and recommendations of the work groups. (Stage II document.)
Functional Work Group Appendices: Commercial Transportation Cultural Resources Dredged Material Uses Dredging Requirements Fish & Wildlife Management Floodplain Management Material & Equipment Needs Public Participation & Information Recreation Sediment & Erosion Control Side Channels Water Quality	The actual reports were prepared by the work groups. The PFWG, developed report cover graphics and, through a consultant report-writer/editor, developed a uniform report outline and series of information display forms. It also advised work group chairmen regarding format, graphic design and number of copies of reports required at various study stages.
Base Maps	A uniform set of base maps showing all the latest study area features were developed and published. Four modules were prepared, with topography, without topography, floodway/floodplain, and channel structures. These maps were made available to all work groups for study and report use.

Product

PFWG Involvement

Industrial and Economic
Development Study

Because this was a designated study component not having its own work group, the PFWG, through a modification to a CTWG study, obtained a report identifying problems, needs, opportunities and possible management strategies for increasing the industrial and economic development of the UMR.

Plan Formulation Work
Group Appendix

Under the leadership of the work group, with report writing assistance from the consultant report-writer/editor, the PFWG developed this document.

Draft and Final Main
Report

Prepared by the PFWG with assistance from the consultant report writer/editor for the GREAT II Team.

Draft and Final Executive
Summary

Prepared by the PFWG with assistance from the consultant report writer/editor, for the GREAT II Team.

Draft and Final Environ-
mental Evaluation

Prepared under a contract by a consultant for PFWG and the GREAT II Team.

c. Special Studies/Activities

There were many problems identified by the public and various others which did not apply to any particular work group but needed to be addressed by the GREAT II study. There were also problems identified which did apply to a certain work group, but due to either lack of funding or lack of manpower, these problems could not be addressed by that work group alone. In both of the above situations, the role of the PFWG was to insure that these problems were addressed by the GREAT II study. The following paragraphs discuss the special studies which required PFWG assistance and the PFWG actions taken to address these problems.

- 1) On-Site Inspection Team (OSIT), Annual Recommendations, and Post-Disposal Evaluation

Even before GREAT II was officially underway the RID/COE and other agencies managing the river resources felt it was desirable to communicate their concerns about dredging and dredge material disposal. While one of the end results of the GREAT II study would be an environmentally and economically acceptable channel maintenance plan, there was a desire to provide guidance to the RID/COE for the annual dredging program while GREAT II developed a long-term plan.

Therefore the PFWG developed a task force (OSIT) to provide on-site guidance to the RID/COE, by developing site parameters that would minimize adverse impacts and maximize benefits of each dredge material disposal operation.

In 1977 and 1978 the OSIT consisted of agency and state representatives. In 1979 and 1980 the OSIT membership included chairmen or their representatives, plus other interested parties, thereby insuring adequate input for all concerns (economic, environmental and recreational).

Prior to each dredging season the OSIT presented to GREAT II the following information in the form of an "annual dredging package". This package included:

- a) Proposed GREAT II recommendations for pools 11 through 22.
- b) Proposed GREAT II membership and procedure for OSIT.
- c) Proposed GREAT II OSIT.
- d) Proposed Dredged Material Disposal Placement Activity Report Form.
- e) Proposed Material Disposal Habitat Evaluation Forms.
- f) Evaluation of (past) dredging season.

Once the GREAT II PFWG and Team approved the package, the guidelines and procedures became the operational program for the OSIT. In general, the procedure called for the RID/COE to notify the OSIT chairman once potential dredging and disposal sites were identified. The OSIT would meet on the proposed disposal site, check to see if the method of dredging and disposal was in accordance with recommendations, evaluate the habitat and complete the Dredged Material Disposal Placement Activity Form. A process of reviewing and evaluating alternatives was also carried out. The final re-

sult of the OSIT pre-operational activity was a formal recommendation to the RID/COE for each proposed dredging and disposal action.

During the actual dredging/disposal operation one or more representatives of OSIT observed the operation and evaluated it in terms of adherence to OSIT recommendations and the actual observed impacts of the operation. These observations formed a basis for a follow-up post season evaluation of the dredging/disposal operation and aided the OSIT in developing recommendations for the next season.

The cumulative OSIT processes aided GREAT II in the development of a short and long-term channel maintenance plan. (see below). See Exhibit B for the 1977, 1978, 1979 and 1980 OSIT "packages".

2) Disposal Site Selection

In late February, 1978, the PFWG recognized the need to review and evaluate short and long term dredged material disposal sites for recommendation to the PFWG and Team. The PFWG was too large a group to operate efficiently. On February 22, 1978, the Disposal Site Selection Task Force was appointed by the PFWG chairmen to make recommendations for dredged material disposal sites and procedures. The main purpose of this task force was to assure effective and timely completion of the selected disposal site portion of the Channel Maintenance Plan.

The task force was to present to the PFWG, by January 1, 1980, maps, matrices, tables and charts which displayed information on projected dredging requirements, identified disposal sites, equipment requirements, environmental impacts and estimated costs.

3) Dredging Equipment Review

On April 10, 1979, the PFWG decided that the Material and Equipment Needs Work Group (MENWG) was not adequately addressing dredging equipment alternatives. As a result, the Dredging Equipment Review Task Force was appointed to prepare a scope of work for an equipment review. The purpose of the dredging equipment review was to provide an analysis of the dredging equipment required to implement the PFWG recommended Disposal Site Plan and to provide a recommendation for long term equipment acquisition.

In October, 1979, the PFWG saw the need to develop a small workable group of people to coordinate and manage the plan formulation process and to prepare, for PFWG review, the Plan Formulation Appendix, NED and EQ alternatives, impact assessments, selected plan, and the main report. The P-REP Task Force was established with the following membership:

Mark Ackelson, Co-Chair (State of Iowa)
Dick Fleischman, Co-Chair (Corps of Engineers)
Paul Soyke (Corps of Engineers)
Dennis Miller (Soil Conservation Service)
Mark Riebau (State of Wisconsin)
Nancy Beckwith, Report-Writer (Dan McGuinness & Associates)
Dan McGuinness, Report-Writer (Dan McGuinness & Associates - as needed)
Other Work Group Chairmen - As Needed.

The task force met as-needed (usually 2-3 times per month). The major accomplishments of the task force were as follows:

- a) Development of detailed report preparation schedule and definition of responsibilities.
- b) Refinement of the definition of NED, EQ alternatives (as stated in Principals and Standards), to aid in developing the procedure for formulation of these alternatives.
- c) Development of procedure/process for categorizing recommendations and organizing them into a selected plan.
- d) Initiation of coordination with GREAT I and II reports and Master Plan Study of the UMRBC.
- e) Provision of assistance to individual work group chairmen in developing their final appendices, developing environmental assessments and evaluating and documenting their recommendations

d. Development of Plans

A detailed discussion of the plan formulation process which lead to the categorization of the EQ and NED alternatives and the development of the Selected Plan is contained in the next chapter. In effect this entire appendix describes the full planning process GREAT II used to develop the recommended plans.

According to the original direction from the UMRBC for the GREAT study, and as written in the GREAT II Preliminary Feasibility Report the commercial, industrial and economic development problems and needs must be addressed as an element of a total river resource management plan.

These elements were not being addressed by any work group in GREAT II. As a result, the PFWG appointed the Commercial, Industrial and Economic Development Task Force to prepare a scope of work. The task remained a task of the PFWG.

A contract was added on to an existing contract underway with the CTWG. The purpose of the contract was to identify the problems along the reach of the Mississippi River with respect to commercial, industrial and economic development. The contractor provided the PFWG, in November, 1979, a report summarizing and identifying (but not addressing) the problems, constraints and/or opportunities for commercial, industrial and economic development in the GREAT II area.

7) Aesthetic and Natural Areas

The GREAT study objectives and the PFWG GREAT II Preliminary Feasibility Report also identified management of Aesthetic and Natural Areas as an element which must be addressed in a total river resource management plan. No work groups within the GREAT II study were assigned this responsibility.

As a result, the chairman of the PFWG, with the assistance of GREAT I and GREAT II members, prepared 1) proposed guidelines for the preparation of an aesthetic/natural area management plan, and 2) a recommendation for "wilderness designation".

The PFWG determined that wilderness designation was not appropriate for the GREAT II area and decided to make no recommendation on this issue. Guidelines for "aesthetic management" were also presented to the PFWG which agreed that it was covered, for now, under the Natural History Survey Program and that PFWG would not make any more definitive recommendations. For the final report the Aesthetic/Natural Area component was combined with the Cultural Resources component.

8) Plan Formulation Report Evaluation and Preparation Task Force (P-REP)

CHAPTER IV
PLAN FORMULATION

CHAPTER IV

PLAN FORMULATION

A. PROCESS OVERVIEW

The final GREAT II recommended plan was developed by a complex process. Chapter IV explains the process starting at the individual work group level, and leading the reader through the formulation and evaluation of alternative plans to finally, the preparation and synthesis of the PFWG recommended plan (Team recommended plan is contained in the final GREAT II Report). To avoid confusion regarding terminology the following terms are explained in the context of the 'building' philosophy used in the process (alternatives, recommendation, alternative plans, recommended plans):

1. Each work group developed potential alternatives to address and/or resolve their respective priority problems, based on the results and conclusions of their tasks.
2. Through work group assessment and evaluation of their alternatives, the work group voted to select one alternative. The selected alternative was given a number and became a work group recommendation to the Plan Formulation Work Group (PFWG).
3. All work group recommendations to the PFWG were categorized into alternatives to promote National Economic Development (NED) and Environmental Quality (EQ).
4. Simultaneously to the development of alternatives, the work group recommendations were reviewed and evaluated by the PFWG.
5. PFWG approved work group recommendations were given a PFWG number and became part of the recommended plan.

This process is schematically shown in Figure #5. The entire planning process is displayed in Chapter I.

B. WORK GROUP RECOMMENDATIONS

1. ALTERNATIVES TO THE PROBLEMS

As the studies progressed, tasks were completed and necessary data were obtained. These data were used by the 12 work groups to draw conclusions to their problems.

The conclusions developed by each work group led to the identification and consequent development of potential alternatives to their problems. The results of some tasks indicated that there still was not enough available information to ensure a knowledgeable

FIGURE #5A
GREAT II PLANNING PROCESS

STAGE ONE

October 1976

WORK GROUPS

with guidance from PFWG and TEAM

↓
IDENTIFY PROBLEMS
DEFINE OBJECTIVES
DEVELOP TASKS
↓

PLAN OF STUDY

April 1978

STAGE TWO

WORK GROUPS

with guidance from PFWG and TEAM

↓
COLLECT INFORMATION
COMPLETION OF TASKS
↓

PRELIMINARY FEASIBILITY REPORT

September 1978

↓
RESULTS AND CONCLUSIONS
IDENTIFICATION OF ALTERNATIVE SOLUTIONS
SELECTION OF WORK GROUP RECOMMENDATIONS
IMPACT ASSESSMENT OF RECOMMENDATIONS
↓

January 1980

STAGE THREE

PFWG/NED/EQ
↓

DEVELOPMENT OF ALTERNATIVE PLANS

PFWG
↓

EVALUATION OF RECOMMENDATIONS

↓
DRAFT RECOMMENDED PLAN

May 1980

↓
PUBLIC AND AGENCY REVIEW OF DRAFT RECOMMENDED PLAN
PLAN MODIFICATION
↓

FINAL GREAT II RECOMMENDED PLAN

DECEMBER 1980

<u>WORK GROUP</u>	<u>ASSIGNED NUMBERS</u>	<u>UTILIZED RECOMMENDATION NUMBERS</u>
Water Quality	001 - 500	001 - 010
Sediment and Erosion Control	501 - 1000	501 - 503
Recreation	1001 - 1500	1001 - 1062
Public Participation and Information	1501 - 2000	1501 - 1506
Material and Equipment Needs	2001 - 2500	2001
Floodplain Management	2501 - 3000	2501 - 2506
Fish and Wildlife	3001 - 3500	3001 - 3040
Side Channel	3501 - 4000	3501 - 3523
Dredging Requirements	4001 - 4500	4001 - 4012
Dredged Material Uses	4501 - 5000	4501 - 4506
Cultural Resources	5001 - 5500	5001 - 5008
Commercial Transportation	5501 - 6000	5501 - 5526
Plan Formulation	6001-7000	6001 - 6322

3. IMPACT ASSESSMENT

Each work group was required to complete an impact assessment worksheet for each work group recommendation. The impact assessment worksheet was composed of two forms. The first form was used to describe in detail, the primary direct and indirect impacts. The worksheet contained the following information: the resource or element to be impacted, the most probable conditions (2025) without the recommendation and the most probable conditions (2025) with the recommendation. The impact is measured by comparing the difference between the most probable future conditions without action to those conditions if the recommendation was implemented.

The second form of the impact assessment worksheet contained 17 elements. Each work group was to analyze each of these elements and determine if each recommendation had:

- No direct impact,
- Negligible direct impact,
- No direct impact, indirect impacts may need further assessment, or
- Significant direct impact,

on these elements. The 17 elements were: noise, displacement of people, aesthetic values, community cohesion, (desired) community growth, tax revenues, property values, public facilities, public services, (desired) regional growth, employment/labor force, business/industrial activity, displacement of farms, man-made resources, natural resources, air quality, water quality/quantity.

If the work group recommendation caused significant direct or indirect impacts to any of these elements, the impact was displayed in greater detail on the first form. The impact assessment worksheets for each work group recommendation may be found in each work group appendix in their recommendation chapter.

Each work group was responsible for obtaining or estimating the necessary information for their impact assessment through their studies, work group meetings, discussions with other work groups, discussions with other agencies having expertise in that particular field, discussions with economists and/or discussions with the impact assessment coordinator (provided by the RID/COE).

When the impact assessment for a recommendation was complete to the work groups capability, the recommendation was ready for two simultaneous activities: 1) development of alternative plans and 2) PFWG review and evaluation of work group recommendation for inclusion in the recommended plan.

C. ALTERNATIVE PLANS

As specified in Principles and Standards (P&S) one alternative plan will be formulated in the planning process, in which optimum contributions are made to promote national economic development (NED). Additionally, during the planning process at least one alternative plan will be formulated which emphasizes the contributions to promote environmental quality (EQ). Other alternative plans reflecting significant physical, technological, legal or public policy constraints or reflecting significant trade-offs between the NED and EQ plans may be formulated so as not to overlook a best overall plan. A precise number of alternative plans cannot be specified in advance but will be governed by the relevancy of the objectives to the planning setting, the extent of the component needs and their complementarity, the available alternatives and the overall resource capabilities of the area under study.

A true NED-EQ analysis and development of such plans is difficult to apply to a study of this complexity and specificity. Procedures for the development of NED and EQ plans are most suited to a single purpose, action-oriented study. The GREAT II Study is a multi-purpose, planning-oriented study, and although specific actions or plans will be recommended, the majority of the study does not lend itself to application of P & S procedures. The following process represents the GREAT II PFWG's interpretation of how to apply P & S to GREAT II's plan formulation process.

1. PROCESS OVERVIEW

The Plan Formulation, Report, Evaluation and Preparation Task Force (PREP) developed assumptions and criteria to aid the PFWG in the categorization of work group recommendations into NED and/or EQ

alternatives. All work group recommendations, prior to PFWG review modification and/or approval, were categorized into 1) NED alternative, 2) EQ alternatives, or 3) a category which includes both alternatives. The rationale used in categorization of the recommendations is displayed in Exhibit C. The recommendation categorized into NED and/or EQ alternatives may or may not be totally acceptable to the PFWG.

a. General Criteria

Two main assumptions were used to guide the development of NED and EQ categories:

- 1) that the recommendation was adequately justified by the work group. The justification for the recommendation would be displayed as references or rationale in the respective work group appendixes and on the recommendation worksheets.
- 2) that the recommendation delineates a specific implementable action (excludes recommendations for further study). Further studies will identify alternatives that may contribute to NED or EQ. The study itself may make contributions to both or neither.

Two sets of criteria were formulated to further guide the categorization of work group recommendations into NED and EQ alternatives.

b. NED Criteria

NED alternatives include policies, plans or studies which could:

- 1) criteria -Increase the value of the nation's output of goods and services and improve national efficiency.

assumes -That government expenditures will increase total national output (a Benefit/Cost Ratio of greater than 1.0).

examples -Increase crop yields, expand recreational use, reduce flood damage, employ previously unemployed resources.

OR

- 2) criteria -Reduce the cost of a present output.

assumes -That government, private or resource expenditures can be reduced while still providing at least the same level of services.

examples -Reduce access costs, reduce transportation costs, reduce or eliminate certain management costs, reduce energy costs.

c. EQ Criteria

EQ alternatives include policies, plans or studies which could:

- 1) criteria - Create, conserve, or improve the quality of certain natural and cultural resources and ecological resources and ecological system.
- assumes - EQ alternatives are usually characterized by their non-market, non-monetary nature.
- examples - Reduce or eliminate wetland impacts, protect cultural resource sites, improve water quality,
- OR
- 2) criteria - Enhance the quality of life.
- assumes - Same as above.
- examples - Improve natural beauty, preserve valuable archaeological, historical, biological and geologic resources and ecological systems, enhance water, air and land quality, avoid irreversible commitments of resources to future uses.

The NED and EQ categorizations are displayed below and were developed using all work group recommendations, in conjunction with the above explained assumptions and criteria.

Refinement and reorganization of the categories will be necessary before they can be considered a plan. Development of detailed NED and EQ plans was not within the time and funding constraints of the GREAT II study. Presently, the categories are organized by work group and respective recommendations within those work groups. The wording of the recommendations as displayed in the NED and EQ categories does not represent the recommended plan as selected by the PFWG.

2. NATIONAL ECONOMIC DEVELOPMENT (NED) ALTERNATIVES

<u>WORK GROUP RECOMMENDATION</u>	<u>WORK GROUP</u>	<u>WORK GROUP RECOMMENDATION NUMBER</u>
Accelerated land treatment and soil conservation measures on croplands in counties along the UMR.	Sediment & Erosion	502
Develop auxiliary locks for recreational craft use; provide information signs at locks for recreation craft.	Recreation	1005
Consider recreation as a factor in dredged material placement; formally establish the On-Site Inspection Team as an on-going organization.	Recreation	1001
Beach nourishment should be used to re-establish recreation areas during dredging operations; dredged material sites located adjacent to water should be located to minimize erosion.	Recreation	1002
Dredged sites characteristic of a potential disposal site should be assessed and developed for recreation benefits.	Recreation	1003
Recreational sites accessible by automobile should be developed and managed whenever possible to provide recreational opportunities to users without boats.	Recreation	1010
Maintain abandoned railroad right-of-ways along the river in public ownership for recreation use, acquire and develop new trails in coordination with the Great River Road activities and state trail programs.	Recreation	1011
Relocate or redesign problem harbors and access areas.	Recreation	1013
Maintain auxiliary lock in Pool 14 for recreational craft.	Recreation	1014

<u>WORK GROUP RECOMMENDATION</u>	<u>WORK GROUP</u>	<u>WORK GROUP RECOMMENDATION NUMBER</u>
Maintain auxiliary lock in Pool 15 for recreational craft.	Recreation	1015
Consider recreation as an additional project purpose of the UMR.	Recreation	1019
Improve signage at recreation areas, development and distribution of pamphlets and facility guides, develop canned programs, films, slide shows, etc., for public use.	Recreation	1020
Increase the educational programs; increase safety education/enforcement officers and patrolling; require boat users of UMR to obtain an operators safety certificate prior to operations of water craft; require better craft lighting for night operations, enforce speed limits in no wake zones, in high use areas; outlaw consumption of alcohol while water craft is in operation; channel control structures should be makred, notched, lowered or modified when suitable safe passage of recreation craft; equip new survey boats with capability to mark hazard areas; establishment of no wake areas in high density use areas, around lock and dams, holding areas, and in marinas.	Recreation	1030
Obtain Heritage Conservation and Recreation Service approval prior to placement of dredged material on recreation sites funded by Land and Water Conservation Fund.	Recreation	1031
Coordinate activities of the SCORP planners, and include the UMR as a SCORP subject.	Recreation	1033

<u>WORK GROUP RECOMMENDATION</u>	<u>WORK GROUP</u>	<u>WORK GROUP RECOMMENDATION NUMBER</u>
Develop no wake zones with a designated distance from recreation facilities, relocate recreation facilities affected by wave erosion, construct protective structures around recreation facilities affected by wave erosion.	Recreation	1036
Amend PL 89-72 to allow COE to develop and maintain recreation areas on COE managed land without local cost sharing; to create and maintain dredge material beaches and expand the ranger staff; to expand the RID/COE's role to provide additional recreation resource management.	Recreation	1037
Enhance the designated beaches in each pool, for recreational use through the placement of dredged material. (See RWG for list of sites.)	Recreation	1051-1062
Establish an independent office for educational information on the UMR, funded cooperatively by states and agencies on the river.	Public Participation and Information	1501
Each management study should hire an independent contractor to develop a public information program with the help of interested members of the public and the states and/or agencies involved in the study.	Public Participation and Information	1502
Reimburse individuals that are taking an active part in a public participation/information program.	Public Participation and Information	1505
Establish an interstate compact to guide consistent use and development of the UMR corridor. An interim agreement should be established until the compact is completed.	Floodplain Management	2501
Provide a detailed floodplain/floodway map for the UMR corridor, based on detailed hydraulic studies.	Floodplain Management	2502

<u>WORK GROUP RECOMMENDATION</u>	<u>WORK GROUP</u>	<u>WORK GROUP RECOMMENDATION NUMBER</u>
Establish a broad public education program for floodplain management information, including land use management risks.	Floodplain Management	2503
Arrange and manage the archives of the Rock Island District/Corps of Engineers.	Floodplain Management	2504
Intensify efforts in the GREAT II watershed to gain acceptance and implementation of no-till and minimum till farming methods, in order to reduce erosion on all tillable lands.	Fish & Wildlife Side Channel	3003 3505
Evaluate all recurrent dredging sites to determine if training structures could reduce dredging in the area. Where beneficial, appropriate training structures should be constructed.	Fish & Wildlife	3008
Utilize dredged material to maintain, repair or upgrade levees surrounding specified state and federal refuge and management areas.	Fish & Wildlife	3010
Dispose of dredge material utilizing disposal guidelines and procedures established in GREAT II.	Dredging Requirements	4001
Reduce quantities of material dredged in the short term by performing detailed hydrographic surveys of each prospective dredge cut to find the location, depth and width of the best channel for that stretch of the river.	Dredging Requirements	4002
Refine existing sediment transport model to assess regulatory structures effectiveness and further needs near chronic dredge areas, and to determine the optimum channel size for a given stretch of the river.	Dredging Requirements	4003
The COE adopt as a permanent means, the Committee for Assessment of Regulatory Structures, to evaluate regulatory structures and physical and mathematical models utilized, and further determine the need for regulatory structures.	Dredging Requirements	4006

<u>WORK GROUP RECOMMENDATION</u>	<u>WORK GROUP</u>	<u>WORK GROUP RECOMMENDATION NUMBER</u>
The COE determine the optimum location to maintain dredge equipment for emergency and spot dredging, and contract out the average annual amount of dredging to the private sector.	Dredging Requirements	4007
Restore the bank channel closure structures near the Huff Hunt Island to reduce dredging volumes.	Dredging Requirements	4009
Develop an interstate compact to guide consistent regulatory laws relating to dredging, dredge material disposal, definition of emergency dredging, permitting requirements, and time frame for permit actions.	Dredging Requirements	4011
Modify present day COE policy regarding charging for dredged material transport or putting material up for bid when there is a productive use request.	Dredged Material Uses	4501
Promote dredged material as a satisfactory fine aggregate source rather than a waste product.	Dredged Material Uses	4503
Dredged material be disposed of in such a manner that it is available to the people, organizations, and agencies that have requested it through GREAT II market studies.	Dredged Material Uses	4504
That where feasible, beneficial use sites recommended by the Dredged Material Uses Work Group (DMUWG) be utilized for dredged material disposal during normal channel maintenance dredging.	Dredged Material Uses	4505
That open water disposal sites not be considered when DMUWG market study identified beneficial use sites are within the reach of equipment. Beneficial use values derived from the action must be great enough to offset the extra cost of transport and containment or it must be shown that en-	Dredged Material Uses	4506

3. ENVIRONMENTAL QUALITY (EQ) ALTERNATIVES

<u>WORK GROUP RECOMMENDATION</u>	<u>WORK GROUP</u>	<u>WORK GROUP RECOMMENDATION NUMBER</u>
All dredged material disposal sites be located out of the floodplain.	Water Quality	3
All dredged disposal material, including water, must be contained at the disposal site. Release of water back into the river should not occur until the quality of the contained water equals that of the river.	Water Quality	4
State water quality management agencies should have industrial waste pretreatment programs and resource recovery processes in operation as soon as possible (see WQWG Appendix for list of priority areas).	Water Quality	5
All NPDES permit holders in the GREAT II study area required to submit quarterly thermal monitoring reports should submit such reports identical in format (see WQWG Appendix for standards).	Water Quality	7
An On-Site Inspection Team attended by the RID/COE and officials of the Savanna Proving Grounds shall precede any disposal of dredged material on the Savanna Proving Grounds.	Water Quality	10
Accelerated land treatment and soil conservation measures on croplands in counties along the UMR.	Sediment and Erosion	502
Provide 200 ft. land buffer on river-side of levees; improve road access over levees; and provide adequate parking on either side of levee. Install planting buffers and fencing to direct traffic away from levees and retard wave action upon levees.	Recreation	1004
Existing dredged disposal sites that are badly affected by current and wave action should be identified and stabilized, but not maintained in the future for recreation.	Recreation	1009

<u>WORK GROUP RECOMMENDATION</u>	<u>WORK GROUP</u>	<u>WORK GROUP RECOMMENDATION NUMBER</u>
Establish a broad public education program for flood plain management information, including land use management risks.	Floodplain Management	2503
COE should request necessary appropriations to purchase effective and efficient dredging equipment or contract with private firms to accomplish same.	Fish and Wildlife	3001
Intensify efforts in the GREAT II watershed to gain acceptance and implementation of no-till and minimum till farming methods, in order to reduce erosion on all tillable lands.	Fish and Wildlife Side Channel	3003 3505
Designate and fund a Fish and Wildlife Interagency Committee (FWIC) to provide direction and guidance regarding fish and wildlife matters associated with main channel dredging, dredged material disposal, physical river modifications, backwater modifications, and river management studies and investigations.	Fish and Wildlife	3004
Improve fish and wildlife habitat modified/destroyed by placement of dredged material. First priority should be given to past disposal sites on state and federal refuge and management lands.	Fish and Wildlife	3005
COE be given authority and funding to modify specific backwaters - listings of backwaters for consideration may be found in the SCWG Appendix and the FWMWG Appendix.	Fish and Wildlife	3006
Consider fish and wildlife needs in any decision to repair, alter or construct training or revetment structures. Coordinate with FWIC (FWMWG 3004).	Fish and Wildlife	3007

<u>WORK GROUP RECOMMENDATION</u>	<u>WORK GROUP</u>	<u>WORK GROUP RECOMMENDATION NUMBER</u>
Improve flow and decrease sedimentation and bank erosion in high priority backwater and side channel areas (see SCWG and FWMWG Appendices for list).	Fish and Wildlife Side Channel	3035 3040 3504
Develop a plan to protect the Brown's Lake Complex by constructing a new levee using dredged material.	Fish and Wildlife	3036
USEPA and U.S. Coast Guard should strictly enforce existing regulations and complete with due haste proposed regulations which protect the waters of the UMR from potential spills from barging related transport, transfer, storage and handling of toxic and hazardous materials.	Fish and Wildlife	3037 3038
Provide COE with capability to dispose of dredged material in out-of-the-floodplain sites.	Side Channel	3501
Prohibit the placement of dredged material in wetlands, side channels, sloughs and other, aquatic habitat unless such disposal clearly benefits fish and wildlife.	Side Channel	3502
Develop model to further test and refine the capability to predict the biological consequences of physical alterations to backwaters, using data from Burnt Pocket, Fountain City Bay and any other side channel alteration study.	Side Channel	3512
Dispose of dredged material by utilizing existing and new disposal sites and procedures identified in GREAT II.	Dredging Requirements	4001
Perform detailed hydrographic surveys of each prospective dredge cut to find the location, depth and width of the best channel for that stretch of river - to minimize dredging volumes.	Dredging Requirements	4002

<u>WORK GROUP RECOMMENDATION</u>	<u>WORK GROUP</u>	<u>WORK GROUP RECOMMENDATION NUMBER</u>
RID/COE and USFWS implement incremental approach to collecting cultural resource locational data on federal lands on a pool by pool sampling basis.	Cultural Resources	5001
RID/COE conduct reconnaissance surveys of dredged material placement sites proposed by GREAT on a systematic basis.	Cultural Resources	5002
NCD/COE conduct workshops at Division level for district staffs and state preservation programs staff using case examples resulting from application of 33 CFR 305.	Cultural Resources	5003
Encourage state and local governments to conduct reconnaissance surveys and develop ordinances facilitating multiple passive uses of sensitive areas.	Cultural Resources	5004
COE expand their administrative policy on removal of sunken wrecks and obstructions to include navigable waters other than navigable channels.	Commercial Transportation	5519
State and federal agencies concerned with permitting procedures should streamline their permitting procedures.	Commercial Transportation	5521
COE update navigation charts of the UMR and reorganize pages in consecutive order.	Commercial Transportation	5524

4. FURTHER STUDY PROPOSALS

The following work group recommendations, advocate either initiation of further studies and/or support of on-going studies and were therefore not included in either the NED or EQ categories. These recommendations as displayed here have not received PFWG approval and are not necessarily part of the recommended plan.

<u>WORK GROUP RECOMMENDATION</u>	<u>WORK GROUP</u>	<u>WORK GROUP RECOMMENDATION NUMBER</u>
"The States of Wisconsin, Iowa and Illinois should encourage USEPA through the state - EPA agreement process to address the extensive and frequent apparent violations of the copper and lead standards in the Mississippi River."	Water Quality	6
Continue current COE policy until November 1980 of terminating leases where there is a need for expansion of existing or creation of new public facilities and use areas.	Recreation	1006
Formulate River Coordinating Committee.	Recreation	1007
Establish management objectives for each pool segment of the river to determine proper recreation use levels, activities and facilities (Master Plan to develop pool management objectives).	Recreation	1008
Assess and clarify land ownership and land management in the river corridor.	Recreation	1017
Coordinate recreation access development within the framework of a total river management plan.	Recreation	1019
Develop a statistically reliable recreation survey of the total river corridor and total incurred; implement a recreation use monitoring system including a facility inventory and use data. All agencies should coordinate recreation aspects to work toward a set of common goals.	Recreation	1021
A study to determine the feasibility of the creation of a multiple purpose island in the lower portion of Pool 13.	Recreation	1026
Continue present policy of not charging for recreational craft lockage.	Recreation	1029

<u>WORK GROUP RECOMMENDATION</u>	<u>WORK GROUP</u>	<u>WORK GROUP RECOMMENDATION NUMBER</u>
State and federal DOT policies focus on an intermodal transportation system to capitalize on the unique advantages of each mode.	Commercial Transportation	5522
Federal government conduct a study to forecast the magnitude and nature rail and vehicle bridge traffic over the UMR operating-type bridges and quantify its effect on the safety and operation of commercial vessel navigation.	Commercial Transportation	5523
Support the recommendations of the CTWG study, "Human and Physical Factors affecting collisions."	Commercial Transportation	5525
Further research on water quality and aquatic habitat impacts of suspended and sedimentation rates should be conducted and water quality criterion developed based on this research.	Water Quality	1
The COE should improve their water quality assessment capabilities using mathematical modeling based upon data collection and existing model modifications undertaken by the GREAT study.	Water Quality	2
A large group of water quality monitoring stations should be established below a major urban area within the GREAT II study segment. This group of stations will be used to show the impacts of the discharges of a large urban area on water quality in the UMR.	Water Quality	8
Additional gauging data is needed for ungauged tributaries to the Main Stem Mississippi River. These gauges should be maintained for a period long enough to provide a statistically accurate record at each site.	Sediment and Erosion	501
Study streambank erosion on tributary streams to the Main Stem UMR. This study should identify sources and volumes of sand	Sediment and Erosion	503

<u>WORK GROUP RECOMMENDATION</u>	<u>WORK GROUP</u>	<u>WORK GROUP RECOMMENDATION NUMBER</u>
area. Support a proposed study for a flood control levee at Fulton, Illinois.		3508 (Cont.)
Conduct UMR bank survey, pool by pool to locate and identify unknown archaeological sites and locate and determine present status of known sites abutting on bank edge (includes remnants of preinundation islands).	Cultural Resources	5005
Conduct studies of present land surface and literature and document search of preinundation landscape to determine likely areas of location of buried archaeological sites.	Cultural Resources	5006
Conduct historical architectural/engineering survey of as-built navigation system structures as a significant historic network (transportation, economic and engineering history).	Cultural Resources	5007
Conduct thorough historical records search and evaluation to identify location of known steamboat wrecks in the reach.	Cultural Resources	5008

D. EVALUATION OF RECOMMENDATIONS

At the same time as the NED-EQ alternatives, were being categorized, the Plan Formulation Work Group was evaluating work group recommendations to determine if they were eligible for inclusion in the recommended plan. All work group recommendations are included in the NED, EQ and further studies categories. Only those recommendations approved by the PFWG are included in the recommended plan.

The work group recommendations were brought, when complete, to the PFWG meetings for review. PFWG members were given time to review the recommendations and to suggest any additions, deletions or revisions. If there were no suggested changes, the recommendation was evaluated by the PFWG. If there were changes, the submitting work group made the requested changes and re-submitted the recommendation at a consequent meeting for evaluation.

1. EVALUATION CRITERIA

To ensure that evaluation of these work group recommendations was consistent from one evaluation to the next, each work group was requested to develop a set of evaluation criteria. The following criteria were developed by all the GREAT II work groups to evaluate any recommendations presented to the Plan Formulation Work Group (PFWG). The PFWG reviewed the work group evaluations and agreed by consensus to the PFWG evaluation of the recommendation. The PFWG evaluation was based upon the criteria developed by the PFWG. The PFWG attempted to resolve all conflicts between work groups but passed on to the GREAT II Team recommendations which were not agreed to by one or two members of the PFWG (see PFWG criteria).

A. Commercial Transportation Work Group Criteria

- (+) (-) 1. Recommendation will create safety benefit or hazard.
- (-) 2. Recommendation would inhibit commercial navigation and increase operating cost without any clear or overriding benefit to the resource or economy.
- (-) 3. Costs
 - a. Costs charged to the 9-foot channel project that are not channel maintenance related. Such costs provide false costs for providing service and also detract from current budget, and COE's ability to perform channel maintenance.
 - b. Costs for other purposes, even though included as a project purpose should be authorized by Congress on their own merit.
 - c. Administration policy favors user charges. If commercial transportation must pay maybe others should pay too. In any event 3A applies.
- (O) 4. Recommendation would have no effect on commercial transportation.
- (C) 5. Recommendation needs clarification of purpose or wording change or may only be acceptable under certain conditions.

B. Cultural Resources Work Group Criteria

- (+) 1. The recommendation will benefit the preservation of a significant cultural resource.

(In cases where criterion 1 or 2 may contradict criterion 3, criterion 3 takes priority.)

- (+) should improve water quality
- (-) should worsen water quality
- (0) should have no effect on water quality
- (C) effects on water quality unknown

2. EVALUATION RESULTS

The recommendations evaluated by the PFWG were categorized into the following four groups:

- a. Recommendations which presented no measurable conflicts to any work group's evaluation criteria. These recommendations became part of the 'draft' recommended plan.
- b. Recommendations that presented conflicts with some work group's evaluation criteria but were resolvable upon PFWG discussion of the recommendation; if 'certain' conditions were met. These 'certain' conditions were added to the recommendation, and the recommendation became part of the 'draft' recommended plan.
- c. Recommendations that presented conflicts which were unresolvable according to more than two work groups' evaluation criteria. These recommendations were considered rejected by the PFWG and did not become part of the 'draft' recommended plan.
- d. Recommendations that presented unresolvable conflicts to only one or two work groups. Although every attempt was made to arrive at consensus, there were cases where a recommendation was objectionable to only one or two work groups, and the PFWG voted to accept the recommendations as part of the 'draft' recommended plan. In these cases, the unresolved conflicts were added to any PFWG discussion of the recommendation.

The PFWG evaluated, 166 work group recommendations. Of these 166 recommendations:

- 84 recommendations were approved by the PFWG for inclusion in the draft recommended plan (wording changes only, if necessary).
- 62 recommendations were approved only if certain specified conditions were met.
- 5 recommendations were rejected and were not brought back to the PFWG for re-evaluation.
- 2 other recommendations were also rejected, but were re-submitted and conditionally approved.

3 recommendations presented unresolvable conflicts to only one or two work groups. These recommendations, however, will be passed on as part of the recommended plan.

10 recommendations originally submitted, were either withdrawn and/or combined with other recommendations and therefore eliminated.

See Exhibit 5 for a display of the modifications made to the work group recommendations at the PFWG level of the process.

E. PLAN SYNTHESIS

The recommendations as evaluated and approved by the PFWG did not fully represent a 'plan'. The recommendations duplicated one another in some areas and were not specific enough in others. In order to aid the PFWG in developing a cohesive 'recommended' plan, the 'PREP' Task Force refined, reorganized and combined the recommendations.

1. COMBINATION

Of the 166 original work group recommendations, 151 were approved by the PFWG for inclusion in the recommended plan. Through the combination of similar and/or identical recommendations process, the 151 recommendations were condensed into 64 action areas. Each of the 64 action areas was given a 'PREP' number to facilitate indexing.

2. COMPONENT ORGANIZATION

The GREAT II Preliminary Feasibility Report defined river management and therefore a river management plan, as being composed of ten components. These 10 components were identified as: commercial transportation, channel maintenance, commercial/industrial/utility, floodplain management, recreation, water quality, sediment and erosion, fish and wildlife, cultural and aesthetic and wild.

The cultural and aesthetic and wild components were combined, however, as the areas of concern that each addressed overlapped considerably. The new component is called "Cultural and Aesthetic". Presently, GREAT II is addressing 9 components of a management plan.

The 'PREP' Task Force categorized the 64 action areas by components. Within each component, the action areas were further organized into plans of action. In the final GREAT II report, the Team further modified the plan. Also, the 'PREP' prefix was dropped from the recommendations to avoid confusion in the final Team approved plan.

3. INDEXING

The draft recommended plan is displayed by component, and by 'PREP' number in Chapter V. Three charts were prepared to show the disposition of each of the work group recommendations. Chart I displays by the work group recommendation number, the results of the PFWG evaluation and, where appropriate, the PFWG and PREP numbers.

CHART I

<u>WATER QUALITY WORK GROUP</u>			<u>RECREATION WORK GROUP</u>		
<u>WG #</u>	<u>PFWG #</u>	<u>PREP #</u>	<u>WG #</u>	<u>PFWG #</u>	<u>PREP #</u>
1	6158	PREP 31	1001	6193	c-PREP 12 a-PREP 60
2	6159	PPEP 12	1002	6215	PREP 12
3	- -	Rejected	1003	6216	PREP 12
4	- -	Rejected	1004	6217	PREP 24
5	6160	PREP 51	1005	6218	c-PREP 1
6	6161	PPEP 52	1006	6219	PREP 27
7.	6162	PPEP 34	1007	6220	PREP 60
8	6163	PREP 35	1008	6221	PREP 23,60
9.	6164	withdrawn	1009	- -	eliminated
10	6165	PREP 12	1010	6222	PREP 24
<u>SEDIMENT AND EROSION CONTROL WORK GROUP</u>			1011	6223	PREP 28
501	6242	PREP 42	1012	6224	PREP 30
502	6243	PREP 8	1013	6225	PREP 64
			1014	6226	PREP 1
503	6244	PREP 44	1015	6227	PREP 1

RECREATION WORK GROUP (CONT)

<u>WG #</u>	<u>PFWG #</u>	<u>PREP #</u>
1016	6228	PREP 40
1017	6229	PREP 60
1018	6230	PREP 54
1019	6231, 6232	PREP 61, 24
1020	6233	PREP 60
1021	6266	PREP 22, 60
1022	6267	PREP 53
1023	6265	PREP 53, 60
1024	6279	PREP 36
1025	6280	PREP 37
1026	6268	PREP 21, 60
1027	6173	PREP 21, 60
1028	6269	PREP 25,
1029	6270	PREP 60
1030	6271	PREP 58
1031	6281	PREP 12
1032	6282	PREP 22
1033	6283	PREP 62
1034	6284	PREP 29
1035	6174	PREP 60, 23, 24
1036	6285	PREP 26, 44
1037	6286	PREP 61
1038-1049	6320	PREP 23
1050	6321	PREP 24

PUBLIC PARTICIPATION & INFORMATION WORK GROUP

<u>WG #</u>	<u>PFWG #</u>	<u>PREP #</u>
1501	6273	PREP 58
1502	6274	PREP 58
1505	6275	PREP 59

MATERIAL & EQUIPMENT NEEDS WORK GROUP

2001	—	Rejected

FLOODPLAIN MANAGEMENT WORK GROUP

2501	6154	PREP 60
2502	6155	PREP 18
2503	6156	PREP 58
2504	6157	PREP 17
2505	6202	PREP 20
2506	6203	PREP 19

FISH & WILDLIFE MANAGEMENT WORK GROUP

3001	6287	PREP 11
3002	6234	PREP 43
3003	6288	PREP 8
3004	6235	PREP 45, 60
3005	6236	PREP 45
3006	6237	PREP 49, 61

SIDE CHANNEL WORK GROUP CONT.

<u>WG #</u>	<u>PFWG #</u>	<u>PREP #</u>
3511	6315	PREP 45
3512	6316	PREP 45,49

DREDGING REQUIREMENTS WORK GROUP

4001	6196	PREP 12
4002	6197	PREP 9
4003	6198	PREP 9
4004	- -	withdrawn
4005	- -	eliminated
4006	6199	PREP 9
4007	6200	PREP 11
4008	- -	dropped
4009	6172	PREP 9
4010	- -	dropped
4011	6201	PREP 60
4012	6272	PREP 9

DREDGE MATERIAL USES WORK GROUP

4501	6166	PREP 13
4502	6167	PREP 13
4503	6168	PREP 14
4504	6169	PREP 14
4505	6170	PREP 12
4506	6171	PREP 15

CULTURAL RESOURCES WORK GROUP

<u>WG #</u>	<u>PFWG #</u>	<u>PREP #</u>
5001	6210	PREP 55
5002	6211	PREP 12
5003	6212	PREP 56
5004	6213	PREP 57
5005	6214	PREP 44,55
5006	6262	PREP 55
5007	6263	PREP 55
5008	6264	PREP 55

COMMERCIAL TRANSPORTATION
WORK GROUP

5501	6178	PREP 61
5502	6276	PREP 10
5503	6179	PREP 3
5504	6180	PREP 1
5505	6181	PREP 1
5506	6175	PREP 1
5507	6176	PREP 1
5508	6177	PREP 1
5509	6182	PREP 1
5510	6183	PREP 10
5511	6184	PREP 10
5512	6185	PREP 4
5513	6186	PREP 5

Chart II shows the recommendations by PREP number, as they were grouped by component.

CHART II

<u>COMPONENT</u>	<u>PREP NUMBER</u>	<u>PFWG NUMBER</u>
Commercial Transportation	1	6182, 6218, 6189, 6180, 6181, 6226, 6227, 6175, 6176, 6177, 10
	2	6277
	3	6179
	4	6185
	5	6187, 6186, 6195, 6188, 6278
	6	6194
	7	6192
Channel Maintenance	41	6243, 6314, 6288
	9	6199, 6197, 6198, 6298, 6239, 6238, 6172, 6207, 6272
	10	6184, 6183, 6276
	11	6287, 6204, 6200
	12	6309, 6193, 6215, 6216, 6159, 6303 6001-6122, 6245-6261, 6165, 6170, 6196, 6240, 6281, 6211, 6318, 6322
	13	6166, 6167
	14	6168, 6169
	15	6171
Commercial/ Industrial/Utility	16	6324
Floodplain Development	63	6154
	17	6157
	18	6155
	19	6203

<u>COMPONENT</u>	<u>PREP NUMBER</u>	<u>FWG NUMBER</u>
Floodplain Development cont.	20	6202
Recreation	21	6268
	27	6219, 6173
	22	6282, 6266
	62	6283
	23	6221, 6174, 6320
	24	6174, 6217, 6222, 6231, 6232, 6321
	25	6269
	26	6285
	28	6223
	30	6224
	29	6284
Water Quality	31	6158
	32	6310, 6311
	33	6295
	34	6162
	35	6163
	36	6279
	51	6160
	52	6161
	37	6280
	40	6228, 6190
	38	6293
	39	6294

<u>COMPONENT</u>	<u>PREP NUMBER</u>	<u>PFWG NUMBER</u>
Sediment & Erosion	41	6243, 6314, 6288
	42	6242
	43	6234, 6205
	64	6225
	44	6244, 6214, 6285
Fish & Wildlife	45	6315, 6208, 6312, 6292, 6235, 6236, 6238, 6316, 6209, 6301
	46	6304, 6297, 6299, 6290, 6319
	47	6289, 6309, 6302
	48	6307
	49	6300, 6208, 6308, 6313, 6237, 6206, 6316
	50	6305, 6306, 6296
Cultural & Aesthetic	53	6267, 6265
	54	6230
	55	6210, 6214, 6262, 6263, 6264, 6217
	56	6212
	57	6213
Public Information	58	6273, 6274, 6156, 6269, 6271, 6233
	59	6275
Miscellaneous	60	6220, 6214, 6235, 6297, 6221, 6161, 6291, 6174, 6173, 6268, 6265, 6191, 6229, 6201, 6154, 6304, 6233, 6270, 6218, 6266
Legislation	61	6241, 6231, 6232, 6286, 6178, 6237

Final recommendation numbers (as approved at the Team level) have also been added (Chart III), even though the final recommendations are not included in this report. This index will serve as a reference to locate recommendations now in the final Main Report.

CHART III

<u>PREP NUMBER</u>	<u>FINAL RECOMMENDATION NUMBER</u>		<u>COMPONENT</u>
PREP 1	1		Commercial Transportation
PREP 2	2		Commercial Transportation
PREP 3	-	Moved to CM Component	Commercial Transportation
PREP 4	3		Commercial Transportation
PREP 5	4		Commercial Transportation
PREP 6	5		Commercial Transportation
PREP 7	6		Commercial Transportation
PREP 48	7		Commercial Transportation
PREP 12	8		Channel Maintenance
PREP 16	9		Commercial/Industrial/Utility
PREP 63	10		Floodplain Management
PREP 17	-	Moved to PPI Component	Floodplain Management
PREP 18 & 19	11	Combined	Floodplain Management
PREP 20	12		Floodplain Management
PREP 21	-	Deleted	Recreation
PREP 27	13		Recreation
PREP 22	14		Recreation
PREP 62	15		Recreation
PREP 23	16		Recreation
PREP 24 & 26	17	Combined	Recreation
PREP 25	18		Recreation
PREP 28	19		Recreation
PREP 30	20		Recreation
PREP 29	21		Recreation
PREP 69	22		Recreation
PREP 31	23		Water Quality
PREP 32	24		Water Quality
PREP 33	25		Water Quality
PREP 34	26		Water Quality
PREP 35	27		Water Quality
PREP 36	28		Water Quality
PREP 51	29		Water Quality
PREP 52	-	Defeated-Unresolved Conflict	Water Quality
PREP 37	30		Water Quality
PREP 40	31		Water Quality
PREP 38	32		Water Quality
PREP 39	33		Water Quality

CHART III
(Continued)

<u>PREP NUMBER</u>	<u>FINAL RECOMMENDATION NUMBER</u>		<u>COMPONENT</u>
PREP 8/41	34	Combined	Sediment & Erosion
PREP 42	35		Sediment & Erosion
PREP 44	36		Sediment & Erosion
PREP 72	37		Sediment & Erosion
PREP 64	38		Sediment & Erosion
PREP 45	39	Deleted	Fish & Wildlife
PREP 46	40		Fish & Wildlife
PREP 47	41		Fish & Wildlife
PREP 71	42		Fish & Wildlife
PREP 49	-		Fish & Wildlife
PREP 50	43		Fish & Wildlife
PREP 53	44		Cultural & Aesthetic
PREP 54	45		Cultural & Aesthetic
PREP 55	46		Cultural & Aesthetic
PREP 56	47		Cultural & Aesthetic
PREP 57	48		Cultural & Aesthetic
PREP 58	49		Public Information & Education
PREP 59	50		Public Information & Education
PREP 17	51		Public Information & Education
PREP 60	52		Coordination
PREP 66	53		Coordination
PREP 73	54		Coordination
PREP 61	55		Legislation
PREP 68	56		Legislation

d. Regarding Detectability of Bridges - Plans to replace or rebuild bridges are costly and time-consuming. While these plans are being developed the USCG can reduce navigation hazards by immediately improving: 1) the detectability of bridge piers through the use of radar transponders, conical reflectors or marking with reflective tape and, 2) the aids to navigation on approaches to bridges. An innovative system is needed which allows pilots to line up and maintain alignment with greater accuracy, especially where the bridge approach includes a bend.

5. STATE AND FEDERAL/DEPARTMENT OF TRANSPORTATION (DOT)

PREP 6 - Each transportation mode has unique advantages and disadvantages. The public interest will best be served by focusing public policy on the development of an efficient inter-modal transportation system.

The State and Federal DOT's should develop policies which focus on an inter-modal transportation system.

6. STATE AND FEDERAL REGULATORY AGENCIES

PREP 7 - Industry attempts to comply with permitting procedures in order to acquire a permit for fleeting facilities and/or river development are often time-consuming, costly and frustrating.

State and Federal agencies concerned with permitting of fleeting and river development should streamline, where applicable (all criteria may not be applicable to both State and Federal governments), permitting procedures by instituting the following procedures:

- a. Establish time limits in which comments may be received or project reviews conducted.
- b. Coordinate responses between various agencies or departments within a state.
- c. Establish more precise evaluation criteria so that environmental impact assessment can be accomplished at a reasonable cost and in a timely fashion.
- d. Require some degree of documentation supporting objections or concerns expressed by agencies or individuals.
- e. Investigate issuance of general permits for minor and similar activities.

B. CHANNEL MAINTENANCE

1. REDUCTION IN SEDIMENTATION

a. U.S. Department of Agriculture (USDA)

PREP 41 - The USDA should encourage accelerated land treatment measures on 9.5 million acres of cropland to reduce erosion. The USDA should utilize cost sharing and tax incentive programs to encourage accelerated land treatment. Some funding may also be available from the USEPA through their 208 programs. A study (conducted by the SECWG) is presently near completion, and is expected to show whether or not a reduction in the sediment load to the UMR would result in reduced dredging requirements.

A mixture of the following erosion control measures were considered in estimating the reduction of erosion and sedimentation. Variations of these general types of erosion control measures are all applicable for implementation depending upon local conditions.

- 1) Rotations - A system of planned crop sequence on the same land.
- 2) Contouring - consists of performing cultural operations such as plowing, planting, cultivating and harvesting on the contour. It generally consists of following a line of the same elevation.
- 3) Conservation Tillage - Any tillage system which reduces loss of soil or water compared to clean tillage. It includes a variety of non-plow systems that retain some or all of the residue on the surface.
- 4) Terracing - An embankment or combination of an embankment and channel constructed across a slope to control erosion by diverting or storing surface run-off instead of permitting it to flow uninterrupted across the slope.
- 5) Grass waterways and green belts.

PREP 12 - The RID/COE should utilize the dredged material disposal sites selected by the GREAT II Disposal Site Selection Task Force (DSSTF) and the PFWG through the Disposal Site Selection Process described in Chapter IV.

Chapter IV also includes maps depicting the location of "preliminary" selected disposal sites; the physical characteristics of these sites and the alternatives to these sites.

The RID/COE ability to implement this recommendation is contingent upon implementation of PREP 11. Although the type of equipment capability the RID/COE should obtain has not been specified yet, the disposal sites were selected by making assumptions as to the type of equipment which would be used. When the type of equipment has been specified portions of the plan for disposal site selection may need to be revised.

The preliminary disposal plan contains two plans of action: short-term and long-term sites. The short-term disposal plan was developed in cognizance of the fact that presently, the RID/COE does not have an equipment capability to reach the 'selected' long-term sites. The long-term disposal plan represents the 'desired' PFWG preliminary disposal plan. The final long-term disposal plan is to be implemented as soon as the RID/COE obtains or can contract the equipment capability.

The preliminary disposal plan, displayed in Chapter IV, shows the results of Step 5 of the Disposal Site Selection Process. A discussion of the preliminary results of Step 6 is also included in Chapter IV. The preliminary disposal plan will be revised based on the results of Steps 6, 7 and 8.

General conditions, which apply to all 'selected' disposal sites were developed in the evaluation process. The RID/COE should observe all of these guidelines when using the disposal sites selected by the PFWG. These general guidelines require the RID/COE to:

- 1) Minimize water quality impacts of return flows.
- 2) Develop and maintain PFWG approved recreation beach areas according to the beach nourishment guidelines prepared by RWG II:

- a) Regarding existing sites:

Existing sites should be developed to their maximum desirable dredged material carrying capacity before establishing new sites in the same area. The carrying cap-

is to provide for efficient, coordinated and effective action to minimize damage from oil and hazardous substances discharges, including containment, dispersal and removal.

The USFWS represents fish and wildlife resources on the RRT. In many cases the chemical composition and source of a hazardous spill is unknown and mortality of biological species is the only indicator of a spill. A quick response of the RRT could avert a natural disaster on the UMR. The RRT's collection of biological and water quality samples could be facilitated by establishment of a contingency plan for each of the pools of the UMR. This plan would ensure necessary equipment (booms, staging areas, collection bottles, etc.) and trained personnel would be available in each pool for quick response to any spill.

Contingency plans for the resource agencies which stress the protection of fish and wildlife resources should be developed for quick response to toxic spills in each pool. These plans should be coordinated by USFWS in conjunction with state resource agencies and the Regional Pollution Response Team.

G. SEDIMENT AND EROSION CONTROL

As discussed in Chapter II the major source of sediment in the UMR originates from upland erosion. In rural areas, improper agricultural practices increase the potential for erosion and consequently, sedimentation. Sedimentation was also discussed in the Channel Maintenance Component as it related to dredging. Erosion and sedimentation, however, must be considered on a broader scale. Erosion reduces the value of croplands and the amount of good topsoil, it reduces the value of recreational areas and may wash away valuable cultural resources. Sediment fills in backwaters, creates turbid water conditions and affects growth and spawning of fish. To deal with these problems effectively, they must be managed first, at the source.

1. U.S. DEPARTMENT OF AGRICULTURE (USDA)

PREP 41 - Accelerated land treatment, as discussed in the Channel Maintenance Component, is needed on 9.5 million acres of cropland to reduce erosion to tolerable levels. This will protect and preserve the soil resource base and reduce a potential source of sediment to the UMR.

The USDA and other appropriate state and federal agencies should be funded to provide additional technical assistance and cost sharing to agricultural landowners. Adequate programs exist if the funding can be provided..

2. U.S. GEOLOGICAL SURVEY (USGS)

PREP 42 - Another potential source of sediment in the UMR is from the tributaries themselves. Additional gauging data is needed for ungauged tributaries to the UMR.

The USGS should install gauges on selected tributaries (see Table 44 for list). These gauges should be maintained for a period long enough to provide a statistically accurate record at each site.

TABLE 44
RECOMMENDED GAUGING STATIONS

<u>Waterway</u>	<u>Location</u>
Turkey River	Garber, Iowa
Grant River	Potosi, Wisconsin
Maquoketa River	Monmouth, Iowa
Rock River	Joslin, Illinois
Green River	Geneseo, Illinois
Iowa River	Wapello, Iowa
Skunk River	Augusta, Iowa
Des Moines River	St. Francisville, Missouri
Fabius River	Monticello, Missouri
Lock and Dam 13	Lock and Dam 13
Lock and Dam 16	Lock and Dam 16
Lock and Dam 20	Lock and Dam 20
Galena River	Galena, Illinois
Apple River	Hanover, Illinois

PREP 43 - As mentioned earlier sedimentation results in the filling in the backwaters. However, exact rates of sedimentation are not known. In order to provide resource managers with more complete information on the specific problems with sedimentation in the backwaters, the USGS should monitor off-channel areas to provide an estimate of the rate of sedimentation. Sites recommended for monitoring are listed in the SCWG and FWMWG Appendices.

cultural resources) by state historic preservation officers and state preservation program staffs is that sections of the regulations are vague and are applied differently in different districts of the COE. The solutions to this problem are communication and education within the Division.

In order to increase the amount of accurate and precise communication at the level where it is more frequently applied (among the staff which work with the regulations on a daily basis), the NCD/COE should conduct regular workshops at the Division level for district staffs and state preservation program staff using case examples resulting from application of 33 CFR 305.

5. HERITAGE CONSERVATION AND RECREATION SERVICE (HCRS)

PREP 57 - Other than private land owners, local governments maintain control over the majority of public lands within urban areas and corporate limits of municipalities. Contained on and within these public lands are potentially many non-renewable resources including archaeological sites, as well as standing structures of architectural and historical interest. So that HCRS and the preservation programs of the involved states will work more closely and intensively with local governments to develop local ordinances which, will, at a minimum, consider the preservation and conservation aspects of the built environment prior to development.

The HCRS and the involved states should: encourage state and local governments in the GREAT II area to conduct surveys and develop ordinances which incorporate the existence of important cultural resources prior to development and preservation and/or conservation of UMR resources.

J. PUBLIC INFORMATION AND EDUCATION PROGRAM

1. STATE RESOURCE MANAGEMENT AGENCIES

PREP 58 - There is a need to provide public information that will increase public knowledge and understanding of the UMR resource; and its problems, opportunities, benefits and hazards. Improving public understanding and education will aid state resource agencies in managing the river through increased cooperation, and will help to reduce the dangers to the public associated with use of the UMR. Many GREAT II work groups recommended initiation of a public education and information program for their areas of study.

State resource management agencies presently have public education and information departments. In the past, the UMR has not been recognized as a valuable entity in these departments. Consequently, development of information for the public about the UMR has been limited or nonexistent.

The state resource management agencies of the GREAT II area should develop a comprehensive public education and information program in coordination with each other, the UMRBC and federal agencies as appropriate. The goals of this program would be:

- a. To promote the idea of land use management as a viable tool for conservation and preservation of UMR resources.
- b. Provision for a centralized, independent public information and education program about the UMR and UMR studies.

CHAPTER VII
PRELIMINARY ANALYSIS OF STUDY RESULTS

DISPLAY OF ACCOUNTS
RECOMMENDED PLAN
COMMERCIAL TRANSPORTATION COMPONENT (PAGE 2 OF 3)

ENVIRONMENTAL QUALITY ACCOUNT			NATIONAL ECONOMIC DEVELOPMENT ACCOUNT	
CULTURAL AND SOCIAL	BIOLOGICAL PHYSICAL/CHEMICAL	ECONOMIC	PROPOSED ACTION	DOLLAR BENEFITS
F. Improved safety. G. -- H. Improved charts aid to pleasure boaters - improved safety. I. -- J. Improved safety to river users. K. -- L. --	F. Aquatic habitat could be destroyed or altered. G. -- H. -- I. Reduce potential for toxic chemical spills. J. Greater potential for dredging. K. -- L. --	F. Deferred replacement of locks. G. Cost of study. H. Cost for reorganization etc, of charts will be recovered through chart sales. I. Charts improve efficiency of commercial tows. J. Potential for increased dredging and associated costs. K. Reduction in time lost due to groundings or waiting. L. Fewer accidents. M. Less transferring of USCG personnel. N. Fewer accidents and associated bridge repairs. O. Potential for increased costs to railroads. P. --	F. Extension of guidewalls-PREP 1. G. Advance planning and design of lock system - PREP 1. H. Reorganize navigation charts - PREP 2. I. Definition of emergency dredging - PREP 3. J. Aids to navigation program - PREP 4. K. Enforce bridge regulations - PREP 5. L. Rebuild, replace or remove underutilized bridges - PREP 5.	F. \$17 million G. * H. * I. \$7.5 million J. \$2.3 million K. \$37.6 million L. -- P. \$800 thousand G. * H. * I. * J. \$600 thousand K. * L. -- (on-going program)

* Non-quantifiable economic benefits and costs are displayed in the Environmental Quality Account.

DISPLAY OF ACCOUNTS
RECOMMENDED PLAN

FLOODPLAIN DEVELOPMENT COMPONENT

ENVIRONMENTAL QUALITY ACCOUNT			NATIONAL ECONOMIC DEVELOPMENT ACCOUNT	
CULTURAL AND SOCIAL	BIOLOGICAL	ECONOMIC	PROPOSED ACTION	DOLLAR BENEFITS
A. -- B. -- C. Damage minimized to residential and commercial proper- ties if new devel- opment restricted to areas which are higher than projec- ted flood heights. D. --	A. -- B. Preservation of 306 thousand acres of crop- land from loss due to encroachment. C. -- D. --	A. -- B. Reduced flood dam- age costs through better control of community development. C. -- D. --	A. Interstate compact - PREP 63 B. Detailed flood way maps - PREP 18. C. Support math modeling study by UNRBC - PREP 19. D. Sediment acc- retion versus flood stages study - PREP 20.	A. -- B. \$308 million. C. -- D. --
				DOLLAR COSTS
				A. \$11.5 million B. \$8 million C. \$42 thousand D. \$28 thousand
				* Non-quantifiable economic benefits and costs are displayed in the Environmental Quality Account.

DISPLAY OF ACCOUNTS
RECOMMENDED PLAN
RECREATION COMPONENT (PAGE 1 OF 2)

ENVIRONMENTAL QUALITY ACCOUNT			NATIONAL ECONOMIC DEVELOPMENT ACCOUNT		
CULTURAL AND SOCIAL	BIOLOGICAL	ECONOMIC	PROPOSED ACTION	DOLLAR BENEFITS	DOLLAR COSTS
A. Development of a plan to increase user satisfaction and reduce conflicts. B. Better understanding of the numbers and types of users. C. Increased pleasure to users through wise management. D. Conversion of 3200 acres of agricultural land to recreation use. E. Improved access and meeting places. F. Increased littering. G. -- H. Improved aesthetic appearance of recreation use areas.	A. -- B. -- C. Consideration of environment in recreation development. D. Protection of 2300 acres of wildlife habitat. E. Increased use may increase potential for trampling in vegetation. F. Access construction may damage vegetation and decimate some wildlife. G. Improved water quality - less debris.	A. Potential for increased recreational opportunities and beneficial use of dredged material. B. Increased potential for planners to meet the needs of UMR users. C. Increased recreational opportunities. D. Increased management efficiency. E. Cost for development of planning guidelines. F. Reduced levee maintenance costs. G. Increased use opportunities. H. Reduced costs of trash pick-up.	A. Multiple purpose islands study - PREP 21. B. Surveys and inventories of recreation areas and uses - PREP 22. C. Pool needs and establish objectives - PREP 23. D. Recreation access improvements PREP 24. E. Access land acquisition and development - PREP 24. F. Litter program PREP 25.	A. * B. * C. * D. \$644 thousand E. * F. *	A. \$400 thousand B. \$540 thousand C. \$500 thousand D. \$2.5 million E. \$15 million F. \$14 million
				* Non-quantifiable economic benefits and costs are displayed in the Environmental Quality Account.	

DISPLAY OF ACCOUNTS
RECOMMENDED PLAN
RECREATION COMPONENT (PAGE 2 OF 2)

ENVIRONMENTAL QUALITY ACCOUNT			NATIONAL ECONOMIC DEVELOPMENT ACCOUNT	
CULTURAL AND SOCIAL	BIOLOGICAL	ECONOMIC	PROPOSED ACTION	DOLLAR BENEFITS
G. Reduction in injuries. H. -- I. Landscape preservation. J. Increased leisure opportunity. K. -- L. Reduced noise levels.	G. Reduction in erosion - preservation of aquatic and terrestrial habitat. H. Benefits to fish and wildlife through the restoration, enhancement or creation of habitat. I. Preservation of wildlife habitat. J. -- K. -- L. A decrease in disturbance to wildlife.	G. Increased facility life. H. Increased recreation use. I. Increased recreation. J. More efficient recreation management increased use and services. K. More efficient management of UMR. L. Reduced duplication of agency efforts. M. Increased enforcement.	G. Erosion protection measures PREP 26. H. Termination of leases - PREP 27. I. Improve UMR trail system - PREP 28. J. Funding to recreation management agencies PREP 29. K. Include UMR in SCORP plans - PREP 62. L. Noise level limits and enforcement - PREP 30.	G. \$300 thousand H. -- (on-going program) I. \$7 million J. \$35 million K. \$92 thousand L. \$110 thousand
				G. * H. * I. * J. * K. * L. --
				* Non-quantifiable economic benefits and costs are displayed in the Environmental Quality Account.

DISPLAY OF ACCOUNTS
RECOMMENDED PLAN
WATER QUALITY COMPONENT (PAGE 1 OF 2)

ENVIRONMENTAL QUALITY ACCOUNT			NATIONAL ECONOMIC DEVELOPMENT ACCOUNT		
CULTURAL AND SOCIAL	BIOLOGICAL	ECONOMIC	PROPOSED ACTION	DOLLAR BENEFITS	DOLLAR COSTS
A. More useful water quality criteria.	A. A realistic criterion for resuspended and deposited sediments would be established.	A. --	A. New water quality criteria - PREP 31.	A. --	A. --
B. Will protect public health.	B. Protection of UMR biota.	B. Will reduce costs associated with spill cleanup.	B. Enforce regulations to prevent toxic spills - PREP 32.	B. *	B. \$3.5 million
C. Protect human health.	C. Accidental toxic spills (chemical) would be prevented or contained.	C. Reduced property damage and costs.	C. Enforce floodproofing regulations - PREP 33.	C. *	C. \$2 million (enforcement costs only)
D. --	D. More accurate evaluation of the effects of thermal effluents.	D. --	D. Revise quarterly thermal monitoring report format - PREP 34.	D. --	D. \$170 thousand
E. --	E. Documentation of water quality impacts of urban areas - improved knowledge of the pollution and rate of river recovery.	E. --	E. Monitoring stations - PREP 35.	E. --	E. \$158 thousand
F. Reduce the potential for the exposure of the public to hazardous substances.	F. Benefits to fish and wildlife.	F. Government and private sectors costs to administer and participate in program. For certain industries, resource recovery will generally offset costs.	F. Recreation and fish and wildlife weighting factor - PREP 36.	F. *	F. --
G. --	G. Improved water quality.	G. Cost of waste load allocation study.	G. Waste pretreatment programs - PREP 51.	G. *	G. *
H. --	H. Improved management of water quality.	H. --	H. Compatible water quality management regulations - PREP 52.	H. *	H. *
H. Interagency work group management activities simplified and less costly.			* Non-quantifiable economic benefits and costs are displayed in the Environmental Quality Account.		

fied problems overlapped each other. Many others identified site-specific sub-problems where the general problem was always the same but the specific sub-problem was peculiar to a certain area or site. The original laundry list of work group sub-problems might be better thought of in terms of the following categories:

- 1) Problems identified but not addressed - this category consists of those problems not addressed due to lack of time, lack of funds, lack of need (not really a problem or addressed somewhere else) and/or lack of applicability (was out of the scope of GREAT II).
- 2) Problems identified, addressed and totally resolved - this category consists of those identified problems which would be "totally" resolved upon implementation of the draft recommended plan. It must be kept in mind that no problems may ever be completely and totally resolved. However, "totally" resolved as used in this report, signifies those problems addressed and resolved within the time and funding limits of the GREAT II Study.
- 3) Problems identified, addressed and partially resolved - this category consists of those identified problems which would only be partially resolved when the draft recommended plan was implemented. This category usually signifies that some further action is necessary in order to resolve the problem (i.e., gathering of more data, implementation of a recommended program, etc.).
- 4) Problems identified, addressed and not resolved - this category consists of those identified problems which will not be resolved when the recommended plan is implemented due to lack of documenting data, lack of consensus as to the solution and/or lack of need (solution considered too expensive for the expected benefits).

Table 56 displays by work group, a summary of their original sub-problems and the disposition of these sub-problems.

Column 1:	Total number of sub-problems identified by each work group in the problem identification process.
Column 2:	Total number of sub-problems identified and addressed by each work group.
Column 3:	Total number of sub-problems identified, and totally resolved by each work group (includes those problems not addressed because they were not considered a problem after further analysis).
Column 4:	Total number of sub-problems identified and partially resolved by each work group (includes

The Channel Maintenance Component was probably the most important component, and given the most emphasis in the GREAT II studies. Channel maintenance activities were the largest single reason that GREAT was started. A majority of the work group studies and special task force activities were devoted to developing an interdisciplinary channel maintenance plan. Consequently, a large number of recommendations, which covered a broad spectrum of concerns, were developed, evaluated and approved by the PFWG for inclusion in the GREAT II recommended plan. Over 186 individual work group and task force recommendations were synthesized into eight recommendations by PREP (PREP numbers 8 through 15).

3) Commercial/Industrial/Utility

- a) River development for commercial use has legal and institutional constraints.
- b) Fish and wildlife are affected by industrial, recreational, agricultural and municipal encroachments.

Although no work groups were developed to address this component, several Commercial Transportation Work Group recommendations addressed a portion of this component. PREP 16 and PREP 47, as developed by the PFWG identify the additional work needed to more completely address the Commercial/Industrial/Utility Component.

4) Floodplain Development

- a) There is a lack of consistent floodway/floodplain mapping.
- b) A single modeling program needs to be developed and accepted by all agencies that will address the effects of man's activities on flood stages.
- c) The adequacy of state and federal disaster assistance programs is unknown.
- d) There is a need for review of the permitting process in each of the states and for development of guidelines to assist local governments in handling permits.

Five recommendations which dealt with the above problems were developed by the Floodplain Management Work Group. All of these recommendations were evaluated and approved by the PFWG for inclusion in the recommended plan. They were not further refined by PREP, however, they were given PREP numbers 17 through 20 and 63 in the draft recommended plan.

5) Recreation Component

- a) Data is lacking on river users, their perceptions and preferences.
- b) Data is lacking on the numbers and location of recreational facilities.
- c) Data is lacking on present and future demands for recreation.
- d) Recreational use may create some adverse environmental impacts.
- e) Resource management uses and encroachments may degrade recreational sites.
- f) Recreation use areas have litter problems.
- g) Access areas and harbors are not adequate and/or maintained - causes secondary problems to levees.
- h) Law enforcement is inadequate on recreation areas.
- i) There is inadequate agency funding to maintain recreational areas.
- j) There are conflicts between commercial and recreational users of the UMR.

The Recreation Work Group identified a broad number of problems and conducted a wide variety of tasks in response to these problems. Some of the study activities solved the problems, while others only provided the data necessary to recommend the solution to the problem. The Recreation Work Group developed 20 recommendations in response to their many problems within this component, which were evaluated and approved by the PFWG for inclusion in the draft recommended plan. PREP synthesized the RWG recommendations into PREP numbers 21 through 30, and 64.

6) Sediment and Erosion Component

- a) Natural sedimentation has caused blockages of access and loss of habitat in backwaters and side channels.
- b) Silt and clay sediments from upland accelerated erosion activities are destroying aquatic habitat in pool backwater areas and navigation pools.

- c) Backwater and side channels are filling in with sediment, thus cutting off fishing and hunting areas and access to the channels.
- d) There is a lack of actual data on suspended sediment bedload, bed material sizes and delivery ratios.
- e) Sources and volumes (from each source) of sediment in the UMR are unknown.
- f) Operation of barge tows during low flow periods re-suspends sediments that ultimately may settle in backwater areas.

The Sediment and Erosion Component covers a wide variety of concerns. The loss of upland soils not only degrades croplands, cultural resources and aesthetics, but the resultant sedimentation affects water quality and fish and wildlife habitat by filling in backwaters and impairing fish reproduction. Eight recommendations were developed through efforts of the Sediment and Erosion Control Work Group, the Fish and Wildlife Management Work Group and the Side Channel Work Group. These recommendations could only begin to address problems of this range and magnitude. Much more work is necessary to collect all of the information required to help solve the above listed problems in their entirety. PREP synthesized the individual recommendations into five recommendations (PREP numbers 8, 42 through 44 and 64).

7) Water Quality Component

- a) Effluent from municipal, agricultural and industrial activities affect fish and wildlife resources.
- b) There is insufficient knowledge of water quality and water quality processes in the UMR.
- c) Waterbourne or riparian activities present water pollution problems for the UMR.
- d) Poor water quality limits recreation in the UMR.

Water is universally used and needed. Therefore, poor water quality inherently affects a broad range of concerns. The Water Quality Work Group, the Recreation Work Group, and the Fish and Wildlife Management Work Group, developed recommendations in response to the above listed problems. A total of 14 recommendations were developed, evaluated and approved by the PFWG for inclusion in the draft recommended plan. PREP synthesized these recommendations into PREP numbers 31 through 40, 51 and 52.

k. Side Channel Work Group

Objective: "To make resource management recommendations that will insure the protection and/or enhancement of fish and wildlife resources and their enjoyment and utilization by the public in off-channel (side channel, backwater) areas, this being in the context of an artificially controlled, riverine ecosystem operated and maintained for commercial navigation."

Implementation of the GREAT II recommended plan will fulfill to the degree possible the overall objective of the SCWG. Recommendations were made to guide alterations to backwaters. Total protection and preservation of the backwaters may not be feasibly possible, mostly due to river hydraulics and the high cost of physical alterations.

1. Water Quality Work Group

Objective: "To promote the improvement and/or maintenance of water quality in the GREAT II area."

Implementation of the GREAT II recommended plan will improve water quality data collection and analysis and streamlined water quality management on the UMR.

B. ACCEPTABILITY

The "acceptability" of a plan is dependent upon public and agency acceptance or approval. The process by which the GREAT II draft recommended plan was developed incorporated continuous public input and agency review. However, the public and concerned agencies have not at this time reviewed the information as portrayed in this 'draft' document. The final edition of this report will reflect all comments and viewpoints of concerned publics and agencies.

A plan must also be acceptable to those who have prepared it. Although the GREAT II study is on-going at this time and the preliminary results and recommendations may be updated and/or revised, the PFWG, through their evaluation procedures have identified conflicts that have not been resolved at this time. Certain recommendations were rejected by the PFWG and are not included as part of the recommended plan. These are:

1. All dredged material disposal sites be located out of the floodplain.
2. All dredged disposal material, including water, must be contained at the disposal site. Release of water back to the river should not occur until the quality of the contained water equals that of the river. Impacts of return flows on lands and receiving water-courses shall be minimized.

CHAPTER VIII
IMPLEMENTATION

CHAPTER VIII

IMPLEMENTATION

This chapter displays by PREP recommendation number the agency/agencies responsible for implementation and/or coordination. The final GREAT II Main Report contains a narrative discussion of implementation procedures and a Responsible Implementation Agency Table for the Team approved recommended plan.

CHAPTER VI
IMPACT ASSESSMENT

EXHIBIT B

1. GREAT II 1977 DREDGING PACKAGE	B-2
2. GREAT II 1978 DREDGING PACKAGE	B-16
3. GREAT II 1979 DREDGING PACKAGE	B-31
4. GREAT II 1980 DREDGING PACKAGE	B-59

Report of the
Post Disposal Evaluation Task Force (PDETF)
on the
1980 Dredging Season - GREAT II

Introduction

This comprises the final report of the GREAT II Post Disposal Evaluation Task Force and includes (1) a site specific evaluation of each disposal occurrence as recorded on the Post-Dredged Material Disposal Placement and Site Evaluation Forms and (2) an evaluation of the Rock Island District, Corps of Engineers' (RID/COE) response to the GREAT II recommendations for the 1980 dredging season (see Attachment 1).

The PDETF, which consisted of representatives of the U.S. Fish and Wildlife Service (USFWS) and the RID/COE, visited all of the 1980 dredge disposal sites at the close of the dredging season. The On-Site Inspection Team (OSIT) evaluated each site prior to disposal and the Pre-Dredged Material Disposal Placement and Site Evaluation Forms are on file at the RID/COE Operations Division. The post-disposal evaluation was made by comparing the pre-disposal forms with the actual disposal.

Water quality was monitored at selected dredge and disposal sites. These data have not been completely analyzed as of this writing so the results are not recorded here. The final report of the water quality monitoring will be on file at the RID/COE Operations Division.

General Comments

Dredging operations in the RID were influenced this season by unusual, but not unprecedented, flow and stage conditions. A more "normal" hydrograph for the Mississippi River in the RID would be a spring high water, a reduced flow period followed by a slight rise in June with levels tapering off through July and August, remaining fairly low and stable. A slight rise would again be seen in September.

In 1980 the flow at L/D 22 was 79,000 cfs on May 1 and 69,000 cfs on May 19. The flow fell off rapidly after this time and a bar formed in the lower approach to L/D 22. Three tows grounded in two days and it was determined that immediate dredging was necessary to alleviate this unsafe condition. The 12" dredge Dubuque was employed and shoreline disposal performed.

Through this period, the flow averaged 44,000 cfs. The emergency dredging was completed May 30 and by June 2 the flow had increased to 88,000 cfs and the dam was taken out of operation. Subsequent shoaling caused this same area to be redredged later in the season.

In July, river flow fell off rapidly to only 24,500 cfs at L/D 14. On July 17, river mile 547.0 (Maquoketa River Cut) became closed and an emergency dredging situation was declared. Subsequent to this closure, dredging continued throughout the RID until October 15 to maintain a viable channel.

July is very early for routine maintenance dredging in the RID. Although

river stages were not unusually low, the rapid fall in flow caused shoaling in several locations. In August and September, the flow increased to a high of 120,000 cfs at L/D 22 causing dredging operations to be ceased temporarily on two occasions. Several surveys had to be redone to ascertain changes in the riverbed from the rapid increase and decrease in flow.

In all, ten locations were dredged in the main channel and one small boat harbor. The 452,322 cubic yards of material dredged from the main channel was the highest amount since 1974 and roughly twice the amount in 1979. However, this volume is significantly lower than the historical annual average of 1.2 million cubic yards prior to 1974. The predicted average volume of 300,000 cubic yards is still realistic considering the current dredging management philosophy. It must be recognized, however, that in any given year, dredging requirements can vary drastically due to the annual hydrograph and subsequent shoaling conditions.

The dredge Thompson was utilized at all cuts except the emergency situation at L/D 22 and the Hannibal Boat Harbor where a mudcat was used. The booster Mullen was utilized at five cuts.

Dredge volume estimates were significantly different from actual volumes in several instances. Table 1 lists the actual and estimated volumes for each cut. It is uncertain whether these discrepancies are a result of the survey techniques used by the Corps or the dynamic state of the river or both.

A cost breakdown by dredge cut is seen in Table 2. The average cost of all channel dredging was \$2.90/cubic yard.

In all cases, the dredged material was placed in OSIT approved sites although in several instances they were not the sites preferred by most members. In these instances, new sites had to be found by the OSIT. In two cases, the preferred site could not be reached by the Thompson. In one case, a preferred site could not be used because the limited lead time did not allow for site preparation and/or negotiation with the property owner. A beneficial use was made of the material in six cases and another two offer a potential beneficial use depending on extraneous factors. At four sites, additional encroachment of sand into aquatic habitat was experienced.

Site Evaluations

Following Table 2 are the post-disposal evaluation forms for each disposal instance. Three disposal sites were used at the LaGrange dredge cuts and are evaluated separately.

Table 1
Summary of Activities

Dredge Cut	Depth Dredged	Estimated Volume	Real Volume
Maquoketa River (Emergency)	12'	(None)	73,300
Lock and Dam 15 Lower Approach	11'	24,600	20,559
Buffalo RM 472.3	11'	30,000	62,578
Keithsburg RM 425.5	12'	26,400	30,969
Buzzard Island RM 349.5	12'	65,700	68,996
LaGrange and LaGrange Upper RM 337.0 - 338.0	11'	35,000	47,503
Lock and Dam 18 Upper Approach RM 411.2	12'	22,104	39,411
Whitney Light RM 313.0	11'	35,000	44,436
Lock and Dam 22 Lower Approach RM 300.5-301.0 (Emergency)	12'	(None)	33,741
Lock and Dam 22 Lower Approach RM 300.5-301.0	12'	30,000	30,829
Hannibal Boat Harbor		8-9,000	*
TOTAL MAIN CHANNEL DREDGING			452,322

*No accurate pre- and post-dredging surveys were conducted to determine volume.
Dredging was contracted on an areal basis rather than on volume.

COMMENTS AND DEFINITIONS CONCERNING
THE "OPERATION AND COST ANALYSIS" SHEET

The operation and cost analysis for 1980 channel dredging was derived from the actual billing for rental for the Dredge Thompson and the Dredge Dubuque from the St. Paul District to the Rock Island District. This total price was divided by the number of hours the dredge and booster were in use in the RID to arrive at an operating cost of slightly over \$790.00 per hour. It must be remembered in using these costs that only the actual dredging and disposal operation is being considered and no monies are included for water quality work, mussel surveys, hydrographic survey, District supervision and administration, engineering, and any other costs associated with dredging operations. Again, these are dredge rental costs only. Due to some rounding off, not all columns will add to exact totals, but they are very close.

Explanation of Column Headings

"Location and Name" are self-explanatory and also indicate booster usage as well as square yards dredged.

1. "Pipeline and Lift" - Ft. is the total pipeline length, floating and shore pipe, and the maximum elevation above the water surface that the material was pumped.
2. "Cubic yards" - is self-explanatory.
3. "Mob at Site" - is the time spent from time of arrival of the dredge onsite until pumping operations commence (job setup time).
4. "Demob at Site" - is the time between cessation of pumping and the dredge departure from the site (breakdown of job).
5. "Disposal Operation" - is all time spent after initial setup concerning handling of pipelines, tractor work in the disposal area, or any other shutdown of the dredging operation for disposal connected reasons. This is not dredging time, but shutdown time for disposal related work items.
6. "Passing Vessels" - is time shutdown while the pipeline is open or the dredge moved out of the channel for safe passage of commercial navigation.
7. "Total Disposal Related" - is the total of columns 3, 4, 5, and 6 as being specifically related to the disposal portion of the operation.
8. "Pumping" - is the actual time on the job the dredge is pumping or engaged in excavation of the material to be dredged.
9. "Misc." - is all of the other non-specific time, such as mechanical downtime, downtime for adverse weather, waiting for survey or direction of work, and clearing of the cutterhead, suction, pump, or pipeline of lodged objects such as rocks, debris, etc.

10. "Total Onsite" - is the total time spent from the time the dredge arrives at the site until it departs for the next job.

11. "Travel" - is time spent in tow between job sites including lock delays, weather delays, etc. This cost was divided equally between the nine jobs as being most rational to not weigh any one job with excessive travel costs, as the dredge usually travels through most, if not all, of the District regardless of the number of sites dredged.

12. "Total" - is total time and money spent per job including the travel element.

13. "Cost per Yard" - is given in both cubic yards and square yards.

Table 2

OPERATION AND COST ANALYSIS			1980 CHANNEL DREDGING - ROCK ISLAND DISTRICT - DIRECT RENTAL COST							DREDGE VN. A. THOMPSON				
JOB #	LOCATION AND NAME	PIPE AND LIFT-FT.	YARDS DREDGED	MOB. AT SITE	DEMOB. AT SITE	DISPOSAL OPERATION	PASSING VESSELS	TOTAL DISPOSAL RELATED	PUMPING	MISC.	TOTAL ONSITE	TRAVEL	TOTAL	COST PER YARD
1	Pool 13 UMR Mile 547.4 Maquoketa River Booster Not Used	Total	73,300	5 hrs 06 min \$4,042	7 hrs 00 min \$5,547	39 hrs 07 min \$30,998	2 hrs 35 min \$2,047	53 hrs 48 min \$42,634	74 hrs 00 min \$58,642	11 hrs 39 min \$9,232	139 hrs 27 min \$110,507 cyd \$1.51 syd \$1.18	33 hrs 14 min \$26,336	172 hrs 41 min \$136,843	cyd \$1.87 Cost per sq yd \$1.47
		FL 1249 SH 70 Lift 22	cu yds sq yds % of onsite											
2	Pool 16 UMR Mile 472.0 Buffalo, IA Booster Used	Total	62,578	5 hrs 20 min \$4,226	11 hrs 31 min \$9,127	34 hrs 34 min \$27,393	13 hrs 23 min \$10,605	64 hrs 48 min \$51,351	82 hrs 00 min \$64,981	11 hrs 12 min \$8,876	158 hrs 00 min \$125,207 cyd \$2.00 syd \$1.13	33 hrs 14 min \$26,336	191 hrs 14 min \$151,543	cyd \$2.42 Cost per sq yd \$1.37
		FL 4616 SH 50 Lift 10	cu yds sq yds % of onsite											
3	Pool 18 UMR Mile 426.0 Keithsburg, IL Booster Used	Total	30,969	5 hrs 25 min \$4,292	7 hrs 50 min \$6,208	7 hrs 4 min \$5,600	3 hrs 5 min \$2,443	23 hrs 24 min \$18,543	26 hrs 00 min \$20,604	6 hrs 25 min \$5,084	55 hrs 49 min \$44,231 cyd \$1.43 syd \$0.73	33 hrs 14 min \$26,337	89 hrs 3 min \$70,568	cyd \$2.28 Cost per sq yd \$1.17
		FL 2170 SH 80 Lift 12	cu yds sq yds % of onsite											
4	Pool 20 UMR Mile 349.0 Buzsard Island Booster Used	Total	68,996	9 hrs 35 min \$7,594	9 hrs 27 min \$7,489	17 hrs 25 min \$13,801	19 hrs 44 min \$15,638	56 hrs 11 min \$44,522	62 hrs 15 min \$49,331	13 hrs 49 min \$10,949	132 hrs 15 min \$104,802 cyd \$1.52 syd \$1.22	33 hrs 14 min \$26,335	165 hrs 29 min \$131,137	cyd \$1.90 Cost per sq yd \$1.52
		FL 2806 SH 460 Lift 32	cu yds sq yds % of onsite											
5	Pool 21 UMR Mile 338.0 Howard's Crossing Booster Used	Total	47,503	5 hrs 5 min \$4,028	4 hrs 00 min \$3,170	29 hrs 29 min \$23,364	13 hrs 32 min \$10,725	52 hrs 6 min \$41,287	68 hrs 50 min \$54,547	68 hrs 31 min \$54,296	189 hrs 27 min \$150,130 cyd \$3.16 syd \$1.28	33 hrs 14 min \$26,336	222 hrs 41 min \$176,466	cyd \$3.71 Cost per sq yd \$1.51
		FL 2908 SH 40 Lift 11	cu yds sq yds % of onsite											

OPERATION AND COST ANALYSIS										1980 CHANNEL DREDGING - ROCK ISLAND DISTRICT - DIRECT RENTAL COST										DREDGE WM. A. THOMPSON																																							
JOB #	LOCATION AND NAME	PIPE AND LIFT-FT.	YARDS DREDGED	MOB. AT SITE	DEMOB. AT SITE	DISPOSAL OPERATION	PASSING VESSELS	DISPOSAL RELATED	PUMPING	MISC.	TOTAL ONSITE	TRAVEL	TOTAL	COST PER YARD	JOB #	LOCATION AND NAME	PIPE AND LIFT-FT.	YARDS DREDGED	MOB. AT SITE	DEMOB. AT SITE	DISPOSAL OPERATION	PASSING VESSELS	DISPOSAL RELATED	PUMPING	MISC.	TOTAL ONSITE	TRAVEL	TOTAL	COST PER YARD																														
6	Pool 18 UMR Mile 411.0 Lock #18 Upper Booster <u>Not</u> Used	Total 2259 FL 2069 SH 190 Lift 14	39,411 cu yds 48,333 sq yds % of onsite	4 hrs 42 min \$3,725 9%	9 hrs 10 min \$7,264 18%	5 hrs 26 min \$4,305 10%	2 hrs 10 min \$1,717 4%	21 hrs 28 min \$17,011 41%	27 hrs 5 min \$21,462 51%	4 hrs 7 min \$3,262 8%	52 hrs 40 min \$41,735 cyd \$1.06 eyd \$0.86	33 hrs 15 min \$26,349	85 hrs 55 min \$68,084 Cost per eq yd \$1.41		7	Pool 24 UMR Mile 300.0 Lock #22 Lower Booster <u>Not</u> Used	Total 1141 FL 1141 SH 0 Lift 5	30,829 cu yds 43,333 sq yds % of onsite	2 hrs 35 min \$2,047 5%	5 hrs 20 min \$4,226 11%	2 hrs 43 min \$2,153 6%	11 hrs 34 min \$9,166 24%	22 hrs 12 min \$17,592 46%	18 hrs 40 min \$14,792 39%	6 hrs 58 min \$5,521 15%	47 hrs 50 min \$37,905 cyd \$1.23 eyd \$0.87	33 hrs 15 min \$26,349	81 hrs 5 min \$64,254 Cost per eq yd \$1.48		8	Pool 22 UMR Mile 313.0 Armstrong Island Booster <u>USED</u>	Total 3542 FL 3252 SH 290 Lift 17	44,436 cu yds 76,389 sq yds % of onsite	5 hrs 55 min \$4,688 7%	12 hrs 37 min \$9,998 14%	18 hrs 49 min \$14,911 21%	11 hrs 14 min \$8,902 13%	48 hrs 35 min \$38,499 55%	35 hrs 20 min \$28,000 40%	4 hrs 20 min \$3,434 5%	88 hrs 15 min \$69,933 cyd \$1.57 eyd \$0.92	33 hrs 15 min \$26,350	121 hrs 30 min \$96,283 Cost per eq yd \$1.26		9	Pool 16 UMR Mile 483.0 Lock #15 Lower Booster <u>Not</u> Used	Total 2890 FL 2600 SH 290 Lift 19	20,559 cu yds 51,000 sq yds % of onsite	4 hrs 35 min \$3,632 5%	7 hrs 45 min \$6,142 8%	23 hrs 22 min \$18,516 24%	16 hrs 33 min \$13,115 17%	52 hrs 15 min \$41,405 54%	28 hrs 20 min \$22,453 30%	15 hrs 40 min \$12,415 16%	96 hrs 15 min \$76,273 cyd \$3.71 eyd \$1.50	33 hrs 14 min \$26,336	129 hrs 29 min \$102,609 Cost per eq yd \$2.01	
1980 TOTAL FOR DREDGE WM. A. THOMPSON										TOTAL										STAND-BY STATUS FOR HIGH WATER																																							
TOTAL										TOTAL										TOTAL																																							
DISPOSAL RELATED										DISPOSAL RELATED										DISPOSAL RELATED																																							
PUMPING										PUMPING										PUMPING																																							
MISC.										MISC.										MISC.																																							
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COST PER YARD										COST PER YARD										COST PER YARD																																							
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\$312,844 cyd \$0.75										\$312,844 cyd \$0.75										\$312,844 cyd \$0.75																																							
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\$1,113,395 eyd \$1.63										\$1,113,395 eyd \$1.63										\$1,113,395 eyd \$1.63																																							

1980 TOTAL FOR DREDGE DUBUQUE

YARDS DREDGED	EMERGENCY DREDGING	TOTAL	COST PER YARD
33,741 cubic yards 37,722 square yards	Lock #22 Lower Approach 20 - 30 May 1980	\$189,018	cyd \$5.60 syd \$5.01

1980 DREDGING

YARDS DREDGED	TOTAL	COST PER YARD
452,322 cubic yards 722,278 square yards	\$1,302,413	cyd \$2.88 syd \$1.80

GREAT RIVER ENVIRONMENTAL ACTION TEAM

POST

DREDGED MATERIAL DISPOSAL PLACEMENT AND SITE

EVALUATION FORM

NOTE: This post-evaluation form should be completed by Post Disposal Evaluation Task Force (PDETF). The completed form should be submitted by the Chairman of the PDETF to the OSIT and the GREAT II cochair no later than 30 days after the dredging season has been completed. This form will be filed with the Pre Dredge Material Disposal Placement and Site Evaluation Form in the Rock Island District's Operations Division.

I. Dredging Inspection and Post Dredging Evaluation

Location of dredged material: Maquoketa River Cut (Emergency)
(River mile, right or left descending bank, county, state).

Against Green Island Levee, Jackson Co., Iowa RM 548.0R (new site).

A. Corps Attempted to Minimize Dredge Material Volume: Yes _____ No _____
Final Volume 73,300 cy

If Yes, by what means?

B. Dredge Material Was Put to Beneficial Use: Yes X No _____
If Yes, how?

Will be used for levee repair and maintenance

C. Corps Attempted to Follow GREAT Recommendations By:
Stockpiling material adjacent to levee for future use. Material was not allowed to reenter the water. Trees left intact where possible. Material was not allowed to overrun levee. Corps will later place sand on levee.

D. Actual Dredging Costs:
\$58,642 (see Table 2)

Actual Disposal Costs:
(Itemized)
\$42,634 (see Table 2)

E. Water Quality Evaluation
Data not available at this time.

II. Summary of Any Failures to Comply with Recommendations of On-Site Inspection Team:

USFWS Refuge manager wants sand mulched and seeded after it has been repositioned on the levee so as not to become attractive as a recreation site. It is unknown at this writing whether or not the Corps will comply with this request.

(Due to the shortness of time, no OSIT meeting was held. However, the Corps coordinated this action with all concerned agencies.)

III. Post Disposal Photos Attached (Latest available aerial and on-site) (on file RID/COE)

Photos are to be registered.

IV. Future Recommendations:

V. Additional Discussion:

The manager of the Green Island Wildlife Management Area wants the material stockpiled further downstream at RM 546.0R but equipment limitations precluded this.

Remedial work required in reshaping and revegetating the disposal site is estimated to cost \$75,000. Work will commence January 12, 1981.

GREAT RIVER ENVIRONMENTAL ACTION TEAM

POST

DREDGED MATERIAL DISPOSAL PLACEMENT AND SITE

EVALUATION FORM

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I. Dredging Inspection and Post Dredging Evaluation

Location of dredged material: L/D 15 Lower Approach Cut
(River mile, right or left descending bank, county, state).
Arsenal Island, Rock Island, Illinois RM 482.5L (Site 16.1)

A. Corps Attempted to Minimize Dredge Material Volume: Yes _____ No _____
Final Volume 20,559 cy
If Yes, by what means?

B. Dredge Material Was Put to Beneficial Use: Yes _____ No X
If Yes, how?

C. Corps Attempted to Follow GREAT Recommendations By: Contacting city of Davenport to pursue use of site 16.2. On 16.1, existing pipeline corridors were used and the depth of material minimized to prevent tree damage.

D. Actual Dredging Costs:
\$22,453 (see Table 2)
Actual Disposal Costs:
(Itemized)

\$41,405 (see Table 2)

E. Water Quality Evaluation

Data not available at this time.

- II. Summary of Any Failures to Comply with Recommendations of On-Site Inspection Team: It was hoped that higher than normal water conditions would minimize the encroachment of sand into the slough bordering the spoil site. However, additional encroachment occurred as the sand travelled along the inside of the dike adjacent to Sylvan Slough toward the outlet to the pond. In fact, some sand carried out of the outlet and into Sylvan Slough. Furthermore, it was recommended last dredging season that the Corps promote the beneficial use of this material by the city of Davenport. However, the Corps did not contact the City regarding possible disposal at site 16.2 until shortly prior to dredging, leaving little time for negotiation.
- III. Post Disposal Photos Attached (Latest available aerial and on-site)
(On file RID/COE)
Photos are to be registered.

IV. Future Recommendations:

Continue to seek the ways and means whereby the material from this cut could be put to a beneficial use by the cities of Davenport, Iowa or Rock Island, Illinois. If 16.1 must be used in the future, the Corps should dike the perimeter of the aquatic area behind the spoil site to prevent additional encroachment. The Corps might also consider making the material available for a beneficial use by removal from the site.

V. Additional Discussion:

Site 16.1 can only be used in the short term and is at its capacity. Additional disposal may necessitate clearing of trees in order to confine the material to the site. This action may adversely impact bald eagle use of the site.

Blockage of the inlet to the slough by dredged material will prevent a water connection to Sylvan Slough, thus preventing the ingress and egress of fish species during certain times of the year. The stagnant water conditions which may result will cause depressed dissolved oxygen levels in the water. The result will be the death of any aquatic organisms that have been trapped in the backwater.

GREAT RIVER ENVIRONMENTAL ACTION TEAM

POST

DREDGED MATERIAL DISPOSAL PLACEMENT AND SITE

EVALUATION FORM

NOTE: This post-evaluation form should be completed by Post Disposal Evaluation Task Force (PDETF). The completed form should be submitted by the Chairman of the PDETF to the OSIT and the GREAT II cochair no later than 30 days after the dredging season has been completed. This form will be filed with the Pre Dredge Material Disposal Placement and Site Evaluation Form in the Rock Island District's Operations Division.

I. Dredging Inspection and Post Dredging Evaluation

Location of dredged material: Buffalo Cut
(River mile, right or left descending bank, county, state)
shoreline (beach) disposal, city of Buffalo, Scott Co., Iowa. RM 472.5 R
(16.32, 16.33).

A. Corps Attempted to Minimize Dredge Material Volume: Yes _____ No _____
Final Volume 62578
If Yes, by what means?

B. Dredge Material Was Put to Beneficial Use: Yes X No _____
If Yes, how?

Beach nourishment

C. Corps Attempted to Follow GREAT Recommendations By:
Utilizing the GREAT selected site.

D. Actual Dredging Costs:
\$64,981 (see Table 2)
Actual Disposal Costs:
(Itemized)
\$51,531 (see Table 2)

E. Water Quality Evaluation

Data not available at this time.

II. Summary of Any Failures to Comply with Recommendations of On-Site Inspection Team: The mayor of Buffalo requested that the sand be placed closer to the boat launching ramp than the OSIT had indicated. This request was complied with by RID/COE without coordination with the OSIT.

III. Post Disposal Photos Attached (Latest available aerial and on-site)
(On file RID/COE)
Photos are to be registered.

IV. Future Recommendations:

OSIT meetings should include a representative of local interests if there are any so conflicts can be resolved prior to dredging.

V. Additional Discussion:

Local cabin owners downstream of the disposal site complained that the sand is shoaling their boating access. The validity of this claim should be determined prior to any additional disposal at this site. The disposal of material was in fact moved further upstream than originally intended due to these complaints.

GREAT RIVER ENVIRONMENTAL ACTION TEAM

POST

DREDGED MATERIAL DISPOSAL PLACEMENT AND SITE

EVALUATION FORM

NOTE: This post-evaluation form should be completed by Post Disposal Evaluation Task Force (PDETF). The completed form should be submitted by the Chairman of the PDETF to the OSIT and the GREAT II cochair no later than 30 days after the dredging season has been completed. This form will be filed with the Pre Dredge Material Disposal Placement and Site Evaluation Form in the Rock Island District's Operations Division.

I. Dredging Inspection and Post Dredging Evaluation

Location of dredged material: Keithsburg Cut
(River mile, right or left descending bank, county, state).
RM 425.4 R, Des Moines Co., Iowa (new site)

A. Corps Attempted to Minimize Dredge Material Volume: Yes _____ No _____
Final Volume 30,969
If Yes, by what means?

B. Dredge Material Was Put to Beneficial Use: Yes _____ No X
If Yes, how?

Potential beneficial use if State of Iowa develops the area for recreational access.

C. Corps Attempted to Follow GREAT Recommendations By:

Utilizing the OSIT approved site. However, this site was not the PFWG preferred site.

D. Actual Dredging Costs:
\$20,604 (see Table 2)
Actual Disposal Costs:
(Itemized)

\$18,543 (see Table 2)

E. Water Quality Evaluation

Data not available at this time.

II. Summary of Any Failures to Comply with Recommendations of On-Site Inspection Team: Some minor encroachment of sand into an ephemeral slough occurred. A beneficial use (preferred) site was not utilized (behind levee) because of conflicts between the Corps and Drainage District officials over the removal of the return water and lack of site preparation time. Sand depths may exceed 6'.

III. Post Disposal Photos Attached (Latest available aerial and on-site)
(On file RID/COE)
Photos are to be registered.

IV. Future Recommendations:

No more sand should be placed at this site until Iowa has finalized plans for development of the site and construction is assured. Plans and negotiations should be commenced immediately to secure the GREAT preferred site behind the levee at RM 426R. If dike work is required, it should be done well in advance of impending dredging. This dredge cut is the most chronic one in the district and an effort should be made to develop a permanent disposal site behind the Drainage District #4 levee. Consideration should be given to placing a permanent pipeline to the site.

V. Additional Discussion:

GREAT RIVER ENVIRONMENTAL ACTION TEAM

POST

DREDGED MATERIAL DISPOSAL PLACEMENT AND SITE

EVALUATION FORM

NOTE: This post-evaluation form should be completed by Post Disposal Evaluation Task Force (PDETf). The completed form should be submitted by the Chairman of the PDETf to the OSIT and the GREAT II cochair no later than 30 days after the dredging season has been completed. This form will be filed with the Pre Dredge Material Disposal Placement and Site Evaluation Form in the Rock Island District's Operations Division.

I. Dredging Inspection and Post Dredging Evaluation

Location of dredged material: LD 18 Upper Approach
(River mile, right or left descending bank, county, state).
RM 411.0 L. Adjacent to levee (18.47)

A. Corps Attempted to Minimize Dredge Material Volume: Yes _____ No _____
Final Volume 39,411
If Yes, by what means?

B. Dredge Material Was Put to Beneficial Use: Yes X No _____
If Yes, how?
Material can be utilized for levee maintenance and repair.

C. Corps Attempted to Follow GREAT Recommendations By: Utilizing selected disposal site. All material placed on existing sand pad - minimal encroachment into water.

D. Actual Dredging Costs:
\$21,462 (see Table 2)
Actual Disposal Costs:
(Itemized)

\$17,011 (see Table 2)

E. Water Quality Evaluation

Data not available at this time.

II. Summary of Any Failures to Comply with Recommendations of On-Site Inspection Team:

III. Post Disposal Photos Attached (latest available aerial and on-site)
(On file RID/COE)
Photos are to be registered.

IV. Future Recommendations:

Sand must be removed before additional dredged material can be placed at this site.

V. Additional Discussion:

GREAT RIVER ENVIRONMENTAL ACTION TEAM

POST

DREDGED MATERIAL DISPOSAL PLACEMENT AND SITE

EVALUATION FORM

NOTE: This post-evaluation form should be completed by Post Disposal Evaluation Task Force (PDETF). The completed form should be submitted by the Chairman of the PDETF to the OSIT and the GREAT II cochair no later than 30 days after the dredging season has been completed. This form will be filed with the Pre Dredge Material Disposal Placement and Site Evaluation Form in the Rock Island District's Operations Division.

I. Dredging Inspection and Post Dredging Evaluation

Location of dredged material: Buzzard Island Cut
(River mile, right or left descending bank, county, state).
RM 349.0 (20.25)

- A. Corps Attempted to Minimize Dredge Material Volume: Yes _____ No _____
Final Volume 69,000
If Yes, by what means?
- B. Dredge Material Was Put to Beneficial Use: Yes _____ No X
If Yes, how?
Potential beneficial use if access roads and bridges are upgraded.
- C. Corps Attempted to Follow GREAT Recommendations By:
Utilizing GREAT selected disposal site. Disposal not allowed to runover
levee. Extended downstream as necessary.
- D. Actual Dredging Costs:
\$49,331 (see Table 2)
Actual Disposal Costs:
(Itemized)
\$44,522 (see Table 2)
- E. Water Quality Evaluation
Data not available at this time.

II. Summary of Any Failures to Comply with Recommendations of On-Site Inspection Team:

Most of dead trees had to be downed due to a safety hazard from falling branches.

III. Post Disposal Photos Attached (Latest available aerial and on-site)
(On file RID/COE)
Photos are to be registered.

IV. Future Recommendations:

V. Additional Discussion:

GREAT RIVER ENVIRONMENTAL ACTION TEAM

POST

DREDGED MATERIAL DISPOSAL PLACEMENT AND SITE

EVALUATION FORM

NOTE: This post-evaluation form should be completed by Post Disposal Evaluation Task Force (PDETF). The completed form should be submitted by the Chairman of the PDETF to the OSIT and the GREAT II cochair no later than 30 days after the dredging season has been completed. This form will be filed with the Pre Dredge Material Disposal Placement and Site Evaluation Form in the Rock Island District's Operations Division.

I. Dredging Inspection and Post Dredging Evaluation

Location of dredged material: LaGrange Upper Cut
(River mile, right or left descending bank, county, state).
RM 338.2 R (new site), Lewis Co., Missouri

A. Corps Attempted to Minimize Dredge Material Volume: Yes _____ No _____
Final Volume 47,503 (in 3 cuts)

If Yes, by what means?

B. Dredge Material Was Put to Beneficial Use: Yes _____ No X
If Yes, how?

C. Corps Attempted to Follow GREAT Recommendations By:
Utilizing the disposal site selected by the OSIT.

D. Actual Dredging Costs:
\$54,547 combine three disposals (see Table 2)
Actual Disposal Costs:
(Itemized)

\$41,287 combined three disposals (see Table 2)

E. Water Quality Evaluation
Data not available at this time.

II. Summary of Any Failures to Comply with Recommendations of On-Site Inspection Team:

The recommendation not to exceed 6 feet was not followed although there was adequate space available.

III. Post Disposal Photos Attached (Latest available aerial and on-site)
(On file RID/COE)
Photos are to be registered.

IV. Future Recommendations:

V. Additional Discussion:

GREAT RIVER ENVIRONMENTAL ACTION TEAM

POST

DREDGED MATERIAL DISPOSAL PLACEMENT AND SITE

EVALUATION FORM

NOTE: This post-evaluation form should be completed by Post Disposal Evaluation Task Force (PDETF). The completed form should be submitted by the Chairman of the PDETF to the OSIT and the GREAT II cochair no later than 30 days after the dredging season has been completed. This form will be filed with the Pre Dredge Material Disposal Placement and Site Evaluation Form in the Rock Island District's Operations Division.

I. Dredging Inspection and Post Dredging Evaluation

Location of dredged material: LaGrange Cut
(River mile, right or left descending bank, county, state).
RM 337.0 R (new site), Lewis Co., Missouri

- A. Corps Attempted to Minimize Dredge Material Volume: Yes _____ No _____
Final Volume 47,503 (in 3 cuts)
If Yes, by what means?
- B. Dredge Material Was Put to Beneficial Use: Yes _____ No X
If Yes, how?
Potential beneficial use as fill if the area is developed in to a campground (see Discussion)
- C. Corps Attempted to Follow GREAT Recommendations By:
Utilizing the disposal site selected by OSIT.
- D. Actual Dredging Costs:
\$54,547 combined in three disposals (see Table 2)
Actual Disposal Costs:
(Itemized)
\$41,287 combined in three disposals (see Table 2)
- E. Water Quality Evaluation
Data not available at this time.

II. Summary of Any Failures to Comply with Recommendations of On-Site Inspection Team:

III. Post Disposal Photos Attached (Latest available aerial and on-site)
(On file RID/COE)
Photos are to be registered.

IV. Future Recommendations:

No beach creation should be considered at this site unless plans for a proposed campground by the city have been finalized and development assured. This includes all negotiations regarding title to the property (which is currently in federal ownership), access and construction permits.

V. Additional Discussion:

Preliminary plans for a campground at this site include a recreational beach. The dredged material placed at the site would have been too rocky for beach material. Furthermore, experience with the beach in LaGrange indicate that silt deposits on top of the sand is likely in this area and would reduce the aesthetic value of the beach.

GREAT RIVER ENVIRONMENTAL ACTION TEAM

POST

DREDGED MATERIAL DISPOSAL PLACEMENT AND SITE

EVALUATION FORM

NOTE: This post-evaluation form should be completed by Post Disposal Evaluation Task Force (PDETF). The completed form should be submitted by the Chairman of the PDETF to the OSIT and the GREAT II cochair no later than 30 days after the dredging season has been completed. This form will be filed with the Pre Dredge Material Disposal Placement and Site Evaluation Form in the Rock Island District's Operations Division.

I. Dredging Inspection and Post Dredging Evaluation

Location of dredged material: LaGrange Cut
(River mile, right or left descending bank, county, state).
RM 336.5R (21.21), Lewis Co., Missouri

A. Corps Attempted to Minimize Dredge Material Volume: Yes _____ No _____
Final Volume 47,503 (in three cuts)
If Yes, by what means?

B. Dredge Material Was Put to Beneficial Use: Yes X No _____
If Yes, how?
Placed for use by city of LaGrange

C. Corps Attempted to Follow GREAT Recommendations By: Utilizing the disposal site selected by the OSIT - provided for beneficial use by city of LaGrange.

D. Actual Dredging Costs:
\$54,547 combined in three disposals (see Table 2)
Actual Disposal Costs:
(Itemized)
\$41,287 combined in three disposals (see Table 2)

E. Water Quality Evaluation

Data not available at this time.

II. Summary of Any Failures to Comply with Recommendations of On-Site Inspection Team:

Return water caused severe erosion in the drainage ditch. Some aquatic encroachment of sand occurred (40' x 300'). No beach nourishment was performed at this site.

III. Post Disposal Photos Attached (Latest available aerial and on-site)
(On file RID/COE)
Photos are to be registered.

IV. Future Recommendations:
Stockpiling at this site should be continued for beneficial use by LaGrange.

V. Additional Discussion:

Recreational interests desire beach nourishment in LaGrange. However, past experience indicates that this beach is not heavily used because (1) silt deposits on the sand and (2) lack of shade near the beach reduces its aesthetic value and (3) a large beach area located 4 miles downstream of LaGrange (Hogback Island) provides a better recreational experience and is very heavily used.

GREAT RIVER ENVIRONMENTAL ACTION TEAM

POST

DREDGED MATERIAL DISPOSAL PLACEMENT AND SITE

EVALUATION FORM

NOTE: This post-evaluation form should be completed by Post Disposal Evaluation Task Force (PDETf). The completed form should be submitted by the Chairman of the PDETf to the OSIT and the GREAT II cochair no later than 30 days after the dredging season has been completed. This form will be filed with the Pre Dredge Material Disposal Placement and Site Evaluation Form in the Rock Island District's Operations Division.

I. Dredging Inspection and Post Dredging Evaluation

Location of dredged material: Whitney Light Cut
(River mile, right or left descending bank, county, state).
RM 313.0 R adjacent to South River Drainage District Levee. (22.10).

A. Corps Attempted to Minimize Dredge Material Volume: Yes _____ No _____
Final Volume 44,436
If Yes, by what means?

B. Dredge Material Was Put to Beneficial Use: Yes X No _____
If Yes, how?

Will be used for levee repair and maintenance

C. Corps Attempted to Follow GREAT Recommendations By:
Utilizing selected site.

D. Actual Dredging Costs:
\$28,000 (see Table 2)
Actual Disposal Costs:
(Itemized)

\$38,499 (see Table 2)

E. Water Quality Evaluation

Data not available at this time.

II. Summary of Any Failures to Comply with Recommendations of On-Site Inspection Team:

III. Post Disposal Photos Attached (Latest available aerial and on-site)
(On file RID/COE)
Photos are to be registered.

IV. Future Recommendations:

Corps should negotiate with drainage district officials for a permanent stockpile site inside the levee in this area.

V. Additional Discussion:

During dredging, the dredge pipe broke allowing some material to flow back toward the river causing additional shoreline and near-shore aquatic damage. Otherwise, the material was well placed and is easily accessible for levee repair and maintenance.

GREAT RIVER ENVIRONMENTAL ACTION TEAM

POST

DREDGED MATERIAL DISPOSAL PLACEMENT AND SITE

EVALUATION FORM

NOTE: This post-evaluation form should be completed by Post Disposal Evaluation Task Force (PDETf). The completed form should be submitted by the Chairman of the PDETf to the OSIT and the GREAT II cochair no later than 30 days after the dredging season has been completed. This form will be filed with the Pre Dredge Material Disposal Placement and Site Evaluation Form in the Rock Island District's Operations Division.

I. Dredging Inspection and Post Dredging Evaluation

Location of dredged material: L/D 22 Lower Approach
(River mile, right or left descending bank, county, state).
Shoreline Disposal RM 300.4 - 300.8 R (22.40 and 22.41).

A. Corps Attempted to Minimize Dredge Material Volume: Yes _____ No _____
Final Volume 64,500 in two disposals
If Yes, by what means?

B. Dredge Material Was Put to Beneficial Use: Yes X No _____
If Yes, how?

Material placed on recreational beach although nourishment was not needed at this time.

C. Corps Attempted to Follow GREAT Recommendations By:
Permission of property owner was obtained for disposal in the trees per OSIT recommendations. However, that permission was subsequently withdrawn which necessitated beach disposal.

D. Actual Dredging Costs:
\$14,792 Thompson only (see Table 2);

Actual Disposal Costs:

(Itemized)

\$17,592 Thompson only (see Table 2);

E. Water Quality Evaluation

Data not available at this time.

II. Summary of Any Failures to Comply with Recommendations of On-Site Inspection Team:

Approximately 50' x 2000' encroachment into water at first disposal. No additional encroachment with second disposal.

III. Post Disposal Photos Attached (Latest available aerial and on-site)
(On file RID/COE)
Photos are to be registered.

IV. Future Recommendations:

Repair the wing dams in the area in an effort to cure this dredging problem. A cannon pipe should be obtained for the Dubuque to increase its flexibility in disposal.

V. Additional Discussion: Because the first disposal was an emergency situation necessitating the use of the 12" dredge Dubuque, three passes had to be made to complete the dredge cut (due to shortness of the dredge and its narrow arc of swing). It was hoped that a 12" dredge would be good in this instance because of the lower volume of water required with pumping. However, the Dubuque lacks a cannon pipe and cannot gain much elevation in its disposal. Consequently, shoreline disposal resulted in a low, flat beach encroaching about 50' into the water. If beach nourishment is the only concern, the Dubuque appears to be ideal. The second disposal by the dredge Thompson confined all the material above the water line.

GREAT RIVER ENVIRONMENTAL ACTION TEAM

POST

DREDGED MATERIAL DISPOSAL PLACEMENT AND SITE

EVALUATION FORM

NOTE: This post-evaluation form should be completed by Post Disposal Evaluation Task Force (PDETf). The completed form should be submitted by the Chairman of the PDETf to the OSIT and the GREAT II cochairs no later than 30 days after the dredging season has been completed. This form will be filed with the Pre Dredge Material Disposal Placement and Site Evaluation Form in the Rock Island District's Operations Division.

I. Dredging Inspection and Post Dredging Evaluation

Location of dredged material: Hannibal Boat Harbor
(River mile, right or left descending bank, county, state).
RM 308.8 on-land disposal

A. Corps Attempted to Minimize Dredge Material Volume: Yes _____ No _____
Final Volume _____
If Yes, by what means?

B. Dredge Material Was Put to Beneficial Use: Yes _____ No X
If Yes, how?

C. Corps Attempted to Follow GREAT Recommendations By:
An OSIT meeting was not called and the Corps chose to coordinate this project through the Section 404 permit procedures. No OSIT recommendations were made.

D. Actual Dredging Costs:

Actual Disposal Costs:
(Itemized)

E. Water Quality Evaluation

Data not available at this time.

II. Summary of Any Failures to Comply with Recommendations of On-Site Inspection Team:

III. Post Disposal Photos Attached (latest available aerial and on-site)
(On file RID/CQE)
Photos are to be registered.

IV. Future Recommendations:

Excellent job. Encourage city of Hannibal to preserve the disposal site for future use. The use of a mudcat appears to be very appropriate in small boat harbors and should be used at others.

V. Additional Discussion:

Evaluation of RID/COE Response To
1980 Recommendations

Objective 1: Insure adequate advance notification of impending dredging.

- A. 1. In general, notice of impending dredging was given far enough in advance to allow an OSIT meeting to be scheduled and held but on one occasion did not allow enough lead time for negotiation of a preferred site.
2. Detailed channel surveys were prepared for each dredge cut but were not always available to the OSIT at the time of their meetings. The lack of timely surveys complicates the selection of disposal sites and the determination of the site preparations and disposal parameters required. It also appeared that the RID was forced to adjust its dredging activities to accommodate the lack of available survey data. This in turn decreased the lead time available to the OSIT to recommend appropriate disposal sites. The Corps should evaluate its survey capability to insure that surveys are available at least two weeks before dredging is to begin.
3. Dredging did not commence for at least two days following site inspection.
- B. Emergency procedures were complied with.

Objective II: Minimize volume of dredged material while maintaining the authorized navigation channel.

The efforts by the Corps to minimize dredging volumes are the result of a basic change in philosophy over the GREAT study period. In general, the RID waits until the latest possible (safe) time to dredge on the chance that the river may cure a particular shoaling problem itself. Reduced depth dredging (11 feet) is practiced whenever possible. An analysis of dredging data revealed that dredging to 12 or 13 feet does not necessarily increase the time between dredging occurrences. During the 1980 dredging season, however, six of the ten cuts were dredged to 12 feet. Corps hydrologists and channel maintenance personnel felt dredging to 12 feet was justified at certain sites with local hydraulic problems to insure a viable channel for the balance of the navigation season.

- A. Realignment of the channel as an alternative to dredging was considered in all cases, but was not performed this season.

- B. Written recommendations of a fluvial hydrologist for dredging depths over 11 feet were not available to the OSIT nor are they attached to the pre-disposal forms as of this writing. A verbal recommendation was obtained from a hydrologist prior to dredging.
- C. The District continued to survey towboat operators on an informal basis.
- D. No dredging or surveys were conducted during bankfull conditions. Dredging was suspended in two occasions, for a total of approximately 8 days due to local high water conditions.

Objective III:

The resource values of the river system should be protected from degradation resulting from dredging and disposal of dredged material.

- A. Private sector capability was used at the Hannibal Boat Harbor. In addition, RID/COE advertized a contract for dredging in the main channel but there were no bidders.
- B. Beneficial use was made of the material in six cases and another two have a potential beneficial use depending on exterraneous factors.
- C. Removal from floodplain was given consideration.
- D. Sand-on-sand placement was given consideration
- E. Such sites were given consideration.
- F. RID/COE has taken steps towards implementing a Riverine Disposal Pilot Project Feasibility Stucy. Dye materials have been obtained and a test of the tracking method will be performed in the Spring of 1981.
- G. Recommendation complied with.
- H. Recommendation complied with.
- I. Water quality monitoring at some (but not all) dredge sites and of disposal effluents was conducted and the results subject to the appropriate statistical tests.
- J. The Corps did not confer with the Iowa Hygenic Laboratory regarding the presence of the herbicide Atrazine in July water samples. However, it is felt that this presence reflects its application to farm fields in the watershed during the Spring and that by October/November, the substance has worked its way out of the system.
- K. Water quality monitoring is done on a district-wide basis and for programs other than channel maintenance. Parameters analyzed were the same as the previous year

and this recommendation was therefore not complied with.

- L. A complete file of all future dredge disposal sites including photographic records, etc., has not yet been established by the RID/COE.

Objective IV: Coordination of river activities with other federal agencies.

It is felt that the Corps did improve direct coordination with the U.S. Coast Guard resulting in proper placement of buoys.

Objectives V & VI: As the GREAT II report is not yet final, the RID/COE response to the Channel Maintenance Plan and the continuation of the OSIT cannot yet be evaluated.

ATTACHMENT 1.

RECOMMENDATIONS FOR THE 1980 DREDGING SEASON

This being the last opportunity for the GREAT River Environmental Action Team to submit recommendations to the RID/COE for their Annual Maintenance dredging operations, the Team would like to express its appreciation to the Corps for its spirit of cooperation and sincere efforts over the past few years in attempting to reduce dredging volumes and in reducing the impacts of spoil disposal. The TEAM realizes the limitations that are placed on the District in terms of equipment flexibility and government regulations regarding purchase of new equipment and contracting as well as state laws regarding spoil disposal. We trust that the Corps will take a positive attitude toward the recommendations of GREAT II, in particular the Channel Maintenance Plan, and will take a leadership role in implementing that plan as soon as possible.

The recommendations below have been developed by GREAT II to guide the Rock Island District in their dredging operations for 1980. These recommendations are not intended to, nor should they be interpreted to, advocate actions contrary to the authority and responsibilities of the Corps of Engineers, to maintain the authorized navigation channel.

An On-Site Inspection Team (OSIT) was formed to assist the Corps to more effectively manage dredging placement in the Rock Island District. The OSIT has actively participated in site evaluations in 1977, 1978 and 1979. This on-site evaluation has benefited both the Corps and the concerned agencies by increasing everyone's awareness of each other's problems and concerns.

I. Objective: Insure adequate advance notification of impending dredging.

A. Operation & Maintenance Dredging.

1. General channel notices of potential dredge cuts should be forwarded by the Corps as soon as possible to those on the OSIT mailing list.
2. Detailed dredging surveys (including O&M dredging in small boat harbors) should be forwarded by the Corps 15 days in advance of the dredging to the OSIT voting members and others as requested by states and agencies.
3. Dredging should not commence for at least two working days following site inspection except in cases of emergency; for example, grounding or channel blockage.

Particular emphasis should be given to allowing adequate lead time prior to dredging so that disposal sites which require permits, right-of-way, owner's permission and site preparation can be utilized. If adequate lead time cannot be insured, the Corps should embark on a program of securing GREAT II selected sites and preparing them if necessary so when dredging in the area does occur, they will be ready to use.

B. Emergency Dredging.

1. Notification is requested as soon as possible.
2. Members of the on-site inspection team or alternates should be contacted by the Corps of Engineers, Rock Island District.

II. Objective: Minimize volume of dredge material while maintaining the authorized navigation channel.

- A. Continue to utilize the realignment of channel as an alternative to dredging in all cases possible, following Coast Guard concurrence.
- B. Written recommendations for dredging depths, including justification, should be obtained from a fluvial hydrologist. These should be attached to the pre-evaluation report.
- C. Continual informal survey of UMR towboat operators should be conducted by the District in an effort to determine optimum widths (bend widths in particular) to improve navigability. This should be done with the goal of reducing dredging and improving safety.
- D. Detailed dredging surveys and/or dredging in the 9-foot navigation channel should be suspended during bankfull conditions.

III. Objective: The resource values of the river system should be protected from degradation resulting from dredging and disposal of dredged material.

- A. Dredging capability in the private sector should be considered in all instances to expand capability of the Corps of Engineers to insure the protection of river values through using equipment most appropriate to the individual project sites.
- B. Effort should be made in every case where dredging is required to find a beneficial use for material. Material should be placed in those beneficial use areas recommended by GREAT II. If necessary, in order to accomplish the above objective, private sector capability should be utilized.
- C. If a beneficial use cannot be found, removal of dredged material from the floodway or floodplain should be given consideration at each site.
- D. In instances where beneficial uses cannot be accomplished and material cannot be removed from the floodplain, use of previous disposal areas with sand-on-sand placement will receive consideration.
- E. Disposal areas with a natural ability to contain runoff will receive priority consideration. Pre and post modifications of disposal sites may be necessary.
- F. A Riverine (thalweg) Disposal Pilot Project Feasibility Study should be initiated through GREAT II and the Rock Island District.
- G. New disposal sites developed or expansion of existing disposal sites on lands or in waters within the boundaries of any proposed wilderness area should be avoided whenever possible.
- H. A regulatory evaluation of potential contaminants in dredge sediments should be made prior to commencement of dredging activities and be made a part of the pre-dredging evaluation form. This evaluation should include effects on municipal water supplies; shellfish beds; fishery; wildlife or recreation areas; or archaeological/historical sites.
- I. The Corps should initiate water quality monitoring of dredge sites and disposal effluents that will provide for refinement and/or verification of water quality models developed during GREAT II. These data should be accompanied by a statistical analysis using the "Students T", the "Wilcoxon", and the "Sign" tests unless other tests can be demonstrated to be more appropriate.

- J. The RID/COE should confer with Iowa Hygienic Laboratory and USGS Laboratory in Denver, to find out why Atrazine was detected in all July samples by the former lab and none was detected in any October and November samples by the latter.
- K. RID/COE should consider reducing the large number of pesticides and herbicides for which analyses were made in 1979 and for which no detectable levels were found in any samples. The states of Iowa, Illinois and Missouri participated in a pesticide user survey in 1978. Results for the State of Missouri have just become available. Results include the total number of pounds of active ingredient applied within the state for all major pesticides. By gathering this information for the various states, RID/COE could reduce the number of pesticides sampled for and still monitor for those most frequently used. In Missouri, the five most common pesticides used by weight are:
 - 1. Atrazine - herbicide
 - 2. Alachlor - herbicide
 - 3. Butylate - herbicide
 - 4. Cyanazine - herbicide
 - 5. Carbofuran - insecticide
- L. The Rock Island Corps of Engineers should establish a file of all future dredge disposal sites and any available information on past disposal areas that includes photography, with reference points, evaluations of each site, material location changes, and vegetation shifts.

IV. Objective: Coordination of river activities with other federal agencies.

Improve coordination with the Coast Guard in providing hydrographic survey information to insure the proper placement of buoys.

V. Objective: Continuation of the On-Site Inspection Team.

September 30 will see the end of the GREAT II study, and therefore the On-Site Inspection Team. A recommendation of GREAT II will be the continuation of the multi-disciplined OSIT through the Great River Study Committee of the UMRBC. Assuming it may take several years for such a recommendation to be implemented, there is no provision for such coordination in the interim. Therefore, the Team recommends that the RID continue with the 1979 OSIT procedures, including chairmanship by the U.S. FWS and notification of the states and agencies represented on GREAT II. Participation by those states and agencies will be up to their discretion since funding for such participation ceases as of September 30. The OSIT will make and forward a recommendation for each dredging instance to the RID/COE for their consideration. The OSIT will also be responsible for the post-disposal evaluation phase of these procedures.

VI. Objective: Implementation of GREAT II CMP.

Following completion and adoption of the GREAT II final report including a Channel Maintenance Plan, RID/COE should strive to implement the CMP as soon as possible. This should include obtaining permission from owners of private land for use as spoil sites and advance preparation of sites as necessary.

F. DISPOSAL SITE SELECTION

One of the GREAT II objectives, in reference to the Channel Maintenance Component, was to reduce disposal impacts. A special task force of the PFWG, the Disposal Site Selection Task Force (DSSTF), was established: to develop and implement procedures for selecting disposal sites and parameters for disposal at these sites, which would incorporate the concerns of all participating agencies. The DSSTF, although subject to the same regulations which guided the GREAT II process in general (i.e., P & S and ER's), developed by necessity, a more detailed process. This section of Chapter IV discusses the process developed by the DSSTF, the alternative disposal sites identified, and all criteria and assumptions used to identify the disposal site alternatives.

The disposal site selection process can be broken down into the following general steps:

1. Mapping of Potential Disposal Sites
2. Review of Potential Sites
3. Projection of Dredging Volumes
4. Review and Selection of Sites by DSSTF
5. Summary of Dredged Material Disposal Plans
6. Obtain Cost and Impact Data
7. Re-evaluate Disposal Plan Based on Costs, Impacts; and Distance Limitations
8. Resolve Conflicts at the Team Level

The following discusses Steps 1 - 7. The results of Step 8 are contained in the GREAT II Channel Maintenance Handbook.

1. MAPPING OF POTENTIAL DISPOSAL SITES

All potential disposal sites were identified by the Dredged Material Uses Work Group (DMUWG), and other sources, mapped, photographed and indexed on 1" = 500' aerial photographs (Habitat Inventory Maps).

The DMUWG then located the potential disposal sites for each pool on Navigation Charts to aid the functional work groups to visualize the dredging and disposal impacts for an entire pool. Disposal sites were designated by three prefixes - D, HD, and TF. "D" represents a new disposal site that was reviewed by all work groups, "HD" represents an historic disposal or an historic type disposal site, and "TF" represents a disposal site that was selected and revised by the Disposal Site Selection Task Force but not by all the work groups. (Navigation Charts, complete with disposal sites are displayed for all pools in Section F-5.)

2. REVIEW OF POTENTIAL DISPOSAL SITES

The mapped potential disposal sites were reviewed by all GREAT II work groups. General information for sites was contained on the Disposal Site Evaluation Form. This general information was compiled by the DMUWG and the forms were used by each work group during their review (Pool 13, Fish and Wildlife Evaluation example is shown in Figure #6).

The work group then reviewed the sites and determined whether the site was acceptable to that work group by applying the criteria for Disposal Selection. Disposal site criteria developed by each work group were the following:

WORK GROUP CRITERIA FOR DISPOSAL SITE SELECTION

A. Commercial Transportation

- 1) The site will physically impede navigation - e.g., by obstructing the channel, necessary off-channel maneuvering space or visibility.
- 2) The site will change the river's flow characteristics so as to impede navigation, to undermine structural foundations, or to impair the placement and/or station keeping of aids to navigation.
- 3) The site will pose a navigation-related hazard to the safety of life and property not covered by criteria numbers 1 and 2.
- 4) The site will infringe on existing or proposed barge fleeting areas.
- 5) The site will infringe on existing or proposed barge terminal areas.
- 6) The site will involve costs which are greater than would have existed prior to GREAT.

B. Cultural Resources

- 1) The site has a significant adverse impact on known cultural resources.

C. Dredged Material Use

- 1) No beneficial uses for material.
- 2) No access road to area of disposal.

- c) roosts - wood duck
 - d) submerged zones - plants
 - e) unique animal species
- 3) Open water
- a) areas used by diving ducks - feeding
 - b) submersed area - plants
 - c) shoreline feeding and cover areas

F. Flood Plain Management

- 1) Site not in flood plain-approved
- 2) Site in flood plain, but not in floodway or effective flow area
 - a) Local flood plain ordinance exists: approval only as allowed by local ordinance.
 - b) No ordinance exists: approval subject to state review and conditional stipulations.
- 3) Site in floodway, but not in effective flow area - rejected subject to other considerations.
- 4) Site in effective flow area - rejected subject to other considerations
- 5) Other considerations
 - a) Sites which are not in the floodway or flood plain of the Mississippi River may not be approved if there is a potential significant loss of storage in specifically designed ponding areas associated with flood control structures.
 - b) Consideration will be given, on a site-by-site basis, to approving sites within an effective flow area or floodway if all material deposited is removed from the area prior to the next seasonal high water.
 - c) Consideration will be given, on a site-by-site basis, to approving sites within an effective flow area or floodway which would involve filling a local depression or pothole to a level no greater than the adjacent ground surface.
 - d) Consideration will be given, on a site-by-site basis, to approving sites within an effective flow area or floodway where material would be used for beach nourishment as recommended by the Recreation Work Group.
- 6) If questions arise during preliminary review as to the location of a site with respect to the flood plain, floodway or effective flow area, or possible impacts on tributary flows, the site is temporarily set aside for further detailed study.

G. Public Participation and Information

Criteria will be public perception and local knowledge of the site by the citizens of the area.

CHAPTER V
PFWG RECOMMENDED PLAN

CHAPTER V

PFWG RECOMMENDED PLAN

This chapter describes by component and PREP number, the preliminary GREAT II PFWG recommended plan. Revisions, additions and/or deletions made by the Team are contained in the GREAT II Main Report. Note, this chapter does not represent the final GREAT II recommended plan.

A. COMMERCIAL TRANSPORTATION

1. ROCK ISLAND DISTRICT/CORPS OF ENGINEERS (RID/COE)

PREP 1 - Significant increases in commercial vessel and recreational craft traffic are forecast for the UMR in the next 20 years. Lock traffic will become more congested, resulting in greater delays and higher shipping costs to commercial interests and an increased safety hazard to boats waiting for passage through the locks.

The RID/COE should develop a program to conduct advance planning and design of the UMR navigation system so that locks whose capacity will be exceeded can be enlarged, modernized or replaced to meet the future needs of navigation in a timely manner before critical conditions exist.

In order to improve the safety and locking efficiency of the existing locks for both commercial and recreational interests, while this plan is being developed, the RID/COE should conduct a study and develop a plan to institute non-structural and structural measures. Non-structural measures would include, but not be limited to the following:

- a. Improvement of efficiency by providing average lock processing times for each lock to the barge and towing industry. These processing times could be used as a standard against which to judge their crew performance and provide for improved crew training where necessary to reduce locking times.
- b. Improvement of safety by installing 'locking' information signs at each lock. These signs would give recreational boaters an indication of the next 'locking through'

EXHIBIT E
PFWG APPROVED RECOMMENDATION

1. WATER QUALITY WORK GROUP	E-1
2. SEDIMENT AND EROSION CONTROL WORK GROUP	E-12
3. RECREATION WORK GROUP	E-15
4. PUBLIC PARTICIPATION AND INFORMATION WORK GROUP	E-56
5. MATERIAL AND EQUIPMENT NEEDS WORK GROUP	E-59
6. FLOODPLAIN MANAGEMENT WORK GROUP	E-60
7. FISH AND WILDLIFE MANAGEMENT WORK GROUP	E-67
8. SIDE CHANNEL WORK GROUP	E-105
9. DREDGING REQUIREMENTS WORK GROUP	E-117
10. DREDGED MATERIAL USES WORK GROUP	E-127
11. CULTURAL RESOURCES WORK GROUP	E-133
12. COMMERCIAL TRANSPORTATION WORK GROUP	E-141
13. PLAN FORMULATION WORK GROUP	E-167

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: November 9, 1979

ORIGINATING WORK GROUP: Water Quality

1. WORK GROUP RECOMMENDATION NUMBER: 1

2. RECOMMENDATION:

Present water quality criteria for suspended and deposited sediments are insufficient for proper management of natural resources (water quality, protection of fish and wildlife, aesthetic values of the backwaters) in the GREAT II study area. USEPA should discard the present criteria which assesses the impact on in-stream photosynthesis (a relatively unimportant process in large rivers) in favor of a set of criteria which address more serious problems, i.e., loss of habitat through sedimentation by natural river process and by dredge material disposal.

3. PFWG CONFLICTS WITH WORK GROUP RECOMMENDATION:

Discussion: Comments noted below.

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

- a. Att. 4, changes made #5; dropped 'b' alternative, changed alternative 'c' to: "a new water quality criterion should not be developed for suspended sediments."
- b. Att. 4, changes made #7; added to rationale: "Present standards practically unusable as written. Present standards affect only in-stream photosynthesis. Many other processes should be considered."

5. PFWG NUMBER: 6158

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED:

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: November 9, 1979

ORIGINATING WORK GROUP: Water Quality

1. WORK GROUP RECOMMENDATION NUMBER: 2

2. RECOMMENDATION:

RID/COE should improve their assessment techniques for documenting water quality impacts of dredging and disposal. Compliance with specific water quality criteria requires quantitative measurement of impacts. Impact assessment of COE dredging and disposal on water quality should use mathematical models to predict the magnitude of suspended sediment and desorbed pollutant plumes. Such models will be a product of the GREAT II Water Quality Work Group and these models, along with user manuals will be presented to RID/COE. Further refinement and verification of these models is planned in the GREAT III Study. It is further recommended that RID/COE put these models into use at 2 locations each during the 1980 and 1981 dredging seasons. RID/COE should design their water quality monitoring schemes during dredging to check the accuracy of the model predictions.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion prior to Evaluation: Recommended changes are described below.

Evaluation: One conflict listed by MENWG: "if the money is in the 1980-81 budget they can do it. However, it may be too late, as the budgets are usually developed 1 - 2 years ahead."

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

- a. First sentence of recommendation changed to read: "RID/COE should supplement their assessment techniques using WQWG mathematical models for documenting water quality impacts of dredging and disposal."
- b. Att. 7, Impact #1, Column #5, changed to: "GREAT II expenditures are \$77,000 for 1980-81."
- c. Att. 7, Impact #1, Column #6 changed to: "Development costs estimated at \$125,000 - \$150,000."

5. PFWG NUMBER: 6159 6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: Do not know status of COE, 1980-1981 budget.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: November 9, 1979

ORIGINATING WORK GROUP: Water Quality

1. WORK GROUP RECOMMENDATION NUMBER: 3

2. RECOMMENDATION:

All dredge material disposal sites be located out of the floodplain.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: No changes made.

Evaluation: CTWG - costs would be prohibitive

CRWG - resources more likely to be affected if use all
'out of floodplain' sites

DMUWG - in some lower areas of the river the material is
used for beach nourishment, etc. If taken out of
the river area, it would prohibit to materials use
for recreation, etc.

FWMWG - there are sites within the floodplain where levees
should be repaired by the material and/or changes
made to existing habitat.

Voting: PFWG voted and approved by consensus (-2); not to pass this
recommendation on to the Team. DMUWG will be incorporating this recom-
mendation into a similar recommendation of theirs.

4. PFWG RECOMMENDATION MODIFICATIONS:

5. PFWG NUMBER: Rejected 6. TYPE OF ALTERNATIVE:

7. CONFLICTS NOT RESOLVED: See above.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: November 9, 1979

ORIGINATING WORK GROUP: Water Quality

1. WORK GROUP RECOMMENDATION NUMBER: 4

2. RECOMMENDATION:

All dredge disposal material, including water, must be contained at the disposal site. Release of water back to the river should not occur until the quality of the contained water equals that of the river. Impacts of return flows on lands and receiving watercourses shall be minimized.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Comment 'a' below was added to recommendation.

Evaluation: MENWG - equipment must be made available.

CTWG - cost prohibitive

RCWG - would prohibit use of most of the sites already selected and approved by the PFWG in the Channel Maintenance Plan. On some of these sites, containment is almost impossible. Would also prohibit open water disposal.

Voting: PFWG voted by consensus to 'reject' the recommendation.

4. PFWG RECOMMENDATION MODIFICATIONS:

a. This comment was added to the recommendation: "Expertise for determining this would lie within the responsibility of the COE."

5. PFWG NUMBER: Rejected 6. TYPE OF ALTERNATIVE:

7. CONFLICTS NOT RESOLVED: See above.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: December 11, 1979

ORIGINATING WORK GROUP: Water Quality

1. WORK GROUP RECOMMENDATION NUMBER: 5

2. RECOMMENDATION:

The States of Wisconsin, Iowa, Illinois and Missouri with the assistance of USEPA, should have industrial waste pretreatment and resource recovery process in operation as soon as possible.

Pretreatment programs should consider the industrial discharges to the municipal sewage systems of these cities as their first priorities (see recommendation for listing).

Where possible, more effective waste treatment and/or resource recovery should be accomplished with priority on these industrial discharges to the Mississippi. Significant pollutants are shown if known (see recommendation for listing).

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: No conflicts, however, there were concerns as to what the recommendation would accomplish. In response, Ford explained that the recommendation is intended to give direction to those agencies who are starting to intensify their efforts to treat industrial waste. The recommendation guides these agencies to look at specific areas and/or discharges needing priority attention.

Evaluation: Benefits to Fish and Wildlife, Side Channel and Material and Equipment Needs Work Groups.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

No modifications made

5. PFWG NUMBER: 6160

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: December 11, 1979

ORIGINATING WORK GROUP: Water Quality

1. WORK GROUP RECOMMENDATION NUMBER: 6

2. RECOMMENDATION:

The water quality management activities of the States of Wisconsin, Iowa, Illinois and Missouri should treat the Upper Mississippi River as an entity and not as an aggregate of political units. Although various segments of the river differ and may require different segments or use designations, the adjoining states along any given segment of the river should be consistent in their management to this degree:

1. Identical water quality standards for that segment (identifying and protecting the same beneficial uses).
2. Similar limitations on the concentrations of pollutants in discharges to the river. As a general rule, effluent limits for one state should not exceed those of the adjoining state by more than 100%.
3. Identical chlorination policies. In addition the USEPA should conduct a waste load allocation study to project future waste treatment levels for the various urban centers along the Upper Mississippi needed to protect in-stream water quality.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: DRWG - The recommendation could possibly hamper dredging if states were to set up a stringent program, such as Minnesota's, which designates dredging as a point source discharge. Do not want this to happen.

CTWG - Concerned that movement of barges in certain areas could possibly be restricted based on whatever program is developed.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

As a result of above concerns, one minor modification was made to the recommendation, in statement 2, the words 'municipal and industrial' were added to read: "2. Similar limitations on the concentrations of municipal and industrial pollutants....by more than 100%."

In the evaluation; the PFWG voted by consensus (+4) with the following condition expressed by Dredging Requirements and Material and Equipment Needs Work Groups: "that dredging does not become, by program definition, a point-source discharge."

* NOTE: Addition to Recommendation: "The recommendation will be sent to the ASWPCA."

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5. PFWG NUMBER: 6161 6. TYPE OF ALTERNATIVE: Selected
7. CONFLICTS NOT RESOLVED:

Conflicts resolved based on already stated conditions (see #4).

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: December 11, 1979

ORIGINATING WORK GROUP: Water Quality

1. WORK GROUP RECOMMENDATION NUMBER: 7

2. RECOMMENDATION:

All NPDES permit holders in the GREAT II study area required to submit quarterly thermal monitoring reports, should submit such reports identical in format. The process of heat dispersion is well understood and adequate site specific mathematical models have been developed for some power plants. It is recommended that all NPDES permit holders who must file quarterly monitoring reports develop a mathematical model of heat dispersion of their effluent in the Mississippi River. The model should be able to predict the following attributes of the thermal plumes:

1. Length, width and depth of the 5° over ambient thermal plume.
2. The percent of the river cross-section passing through the 5° over ambient plume.
3. The percent of river flow passing through the 5° over ambient plume.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to fish and wildlife and recreation.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Only comment was to expand impact assessment to include more economic benefits.

5. PFWG NUMBER: 6162 6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: December 11, 1979

ORIGINATING WORK GROUP: Water Quality

1. WORK GROUP RECOMMENDATION NUMBER: 8

2. RECOMMENDATION:

A group of water quality monitoring stations should be established below a major urban area within the GREAT II study segment (Quad Cities is recommended). This group of stations will be used to show the impact of the discharges of a large urban area on water quality in the Mississippi River. Such a study would be an integral part of any waste-load allocation project for the Mississippi. Therefore, it is recommended that this monitoring program be implemented by the USEPA.

Study design should provide for at least 4 stations that will show the rate and spatial extent of the recovery and/or dispersion process. Water quality variables to be monitored for should include as a minimum: temperature, pH, conductivity, DO, BOD, COD, NH₃-N, NO₂+NO₃-N, Total P, Total Filterable P, FC, and the total and dissolved fractions of these metals: iron, manganese, cadmium, chromium, copper, lead, zinc and mercury.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to fish and wildlife, side channels and recreation.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

No modifications.

5. PFWG NUMBER: 6163 6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: December 11, 1979

ORIGINATING WORK GROUP: Water Quality

1. WORK GROUP RECOMMENDATION NUMBER: 9

2. RECOMMENDATION:

A regular fish sampling program should be instituted on the Upper Mississippi to document levels of toxic materials in fish, and spatial and temporal trends in the accumulations of toxics by fish. It is recommended that the following agencies establish fish collection for analysis of toxic materials at these locations (see recommendation for listing).

The minimum elements in such a sampling program include:

1. Annual collection at each site.
2. Samples composited from at least five individuals of a species or separate samples from each of at least 5 individuals of a species.
3. At least three species will be sampled, although it is not always possible to collect the same species. The carp, cuprinus carpio; the channel catfish, ictolarius punctatus; and the walleye, stizostedion vitreum; are suggested for collection.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Benefits to fish and wildlife, recreation and side channels.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team. The Water Quality Work Group withdrew the recommendation after the PFWG passed it.

4. PFWG RECOMMENDATION MODIFICATIONS:

No modifications.

5. PFWG NUMBER: 6164

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: December 11, 1979

ORIGINATING WORK GROUP: Water Quality

1. WORK GROUP RECOMMENDATION NUMBER: 10

2. RECOMMENDATION:

An on-site inspection attended by the RID/COE and officials of the Savanna Proving Grounds shall precede any disposal of dredge materials on the Savanna Proving Grounds.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: CRWG - Savanna Proving Grounds have never been adequately surveyed - would have unknown effects on unknown resources.

Evaluation: Benefits to fish and wildlife and side channels.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Cultural Resources - No modification to recommendation - contingent upon adequate review of site for cultural resources prior to disposal.

5. PFWG NUMBER: 6165 6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Sediment and Erosion Control

1. WORK GROUP RECOMMENDATION NUMBER: 501

2. RECOMMENDATION:

Additional gaging data is needed for ungaged tributaries to the Main Stem Mississippi River. These gages should be maintained for a period long enough to provide a statistically accurate record at each site.

Funding should be provided to the U.S. Geological Survey for the operation and maintenance of the gages, and the analyses of data. The information would become available to all state and federal agencies.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Wisconsin concerned that collection of additional gaging data was unnecessary and that future funding should be directed towards corrective actions rather than "unnecessary studies".

Evaluation: Possible benefits to floodplain management, side channels.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6242 6. TYPE OF ALTERNATIVE: Future Studies - Neither

7. CONFLICTS NOT RESOLVED: Wisconsin objections.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Sediment and Erosion Control

1. WORK GROUP RECOMMENDATION NUMBER: 502

2. RECOMMENDATION:

Accelerated land treatment is needed on 9.5 million acres of cropland to reduce erosion to tolerable levels. This will protect and preserve the soil resource base and reduce a potential source of sediment to the UMR corridor.

Agencies of the U.S. Department of Agriculture should be funded to provide additional technical assistance and cost sharing. Adequate programs exist to accomplish the goals if additional funding can be provided.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Some PFWG members were confused as to the definition of and intent of "tolerable erosion levels" as used by the SECWG. Dennis Miller explained that "tolerable erosion levels" as that rate of erosion at which soils can still maintain their productivity.

Conflicts: FWMWG - Feels that "tolerable erosion levels" is not stringent enough to protect fish and wildlife resources.
CRWG - Possible impacts on cultural resources.

Evaluation: Possible benefits to floodplain management, recreation, side channels, water quality.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Second paragraph changed to read: "Agencies of the U.S. Department of Agriculture, and other appropriate agencies....".

Conditions: FWMWG - That the PFWG consider a more stringent recommendation.

CRWG - That "procedural compliance measures" be made a part of appropriate technical assistance actions (i.e., consideration of cultural resources in implementing erosion correction measures).

5. PFWG NUMBER: 6243

6. TYPE OF ALTERNATIVE: NED-EQ

7. CONFLICTS NOT RESOLVED: FWMWG concerns - see Conditions.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Sediment and Erosion Control

1. WORK GROUP RECOMMENDATION NUMBER: 503

2. RECOMMENDATION:

An additional study should be initiated to study streambank erosion on tributary streams to the Main Stem Mississippi River. This study should identify sources and volumes of sand sized material generated in erosion and estimated to be delivered to the Main Stem.

This should be a joint effort between state and federal agencies. The lead federal agency could be the Corps of Engineers and/or the Soil Conservation Service in cooperation with at least one state agency from each of the states involved.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6244

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1001

2. RECOMMENDATION:

Formally establish and support an On-Site Inspection Team (OSIT) which gives recreation a full voice in dredged material placement. OSIT should consider recreation as a factor in dredged material placement with the attached guidelines.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Guidelines not consistent with Channel Maintenance Plan. Should not recommend beach creation at every disposal site, only at selected disposal sites (contained sites inland are preferred). South to west orientation for all disposal is opposed. North to east orientation for disposal is preferred for maximum revegetation (FWMWG and SCWG).

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Re-organization necessary at PFWG level to avoid redundancy in placement guidelines as identified in Recommendations 1001, 1002, 1003 and 1009.

Conditions added to recommendation are discussed in '3' above.

5. PFWG NUMBER: 6214

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None - if conditions are met (see #3).

PH APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1002

2. RECOMMENDATION:

Dredged material sites located adjacent to the water should be located to minimize erosion with attached guidelines.

Beach nourishment should be used to reestablish recreation areas during dredging operations, with attached guidelines.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: SCWG - Material could enter backwaters if not properly placed.

CTWG - Recreation areas could interfere with navigation if located too close to main channel.

Recommendation would be used on a common sense basis so as not to draw recreationists to an area where barges have trouble maneuvering.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

RID/COE should consider the following guidelines when placing dredge material at sites located adjacent to the water and when nourishing beaches to minimize erosion and to enhance the beach areas. (See RWG Appendix.)

Conditions: Material should be placed so as not to enter the backwaters. Disposal sites should be developed and located away from the main channel, especially in areas where the main channel is constricted.

5. PFWG NUMBER: 6215 6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None - See Conditions in '3'.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1003

2. RECOMMENDATION:

Dredge site characteristics of a potential dredge site should be assessed and if appropriate, developed for recreation benefits with attached guidelines.

3. PFWG CONFLICTS WITH RECOMMENDATION:

SCWG - Must insure that material does not directly or indirectly enter backwaters.

FWMWG - Disposal for recreation and use of guidelines should occur at approved CMP sites only. Opposed to beach nourishment or establishment on federal refuge or state management areas.

WQWG - Appears that use of guidelines would result in placement of more material in areas where there would be more potential for erosion.

RWG - Philosophy is that if the RID/COE is going to place material there anyway, then they may as well utilize placement guidelines.

Evaluation: Possible benefits to Dredged Material Uses, and Material and Equipment Needs Work Group.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Added: "by the RID/COE" after the word assessed.

Conditions: SCWG - Keep material out of backwaters.

WQWG - Need to demonstrate a recreational need so that no more beaches than necessary are developed in floodplain.

5. PFWG NUMBER: 6216 6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None - See conditions in 3 and 4.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1004

2. RECOMMENDATION:

- a. Provide 200 ft. land buffer on riverside of levee.
- e. Improve road access over levees and provide adequate parking on either side of levee.
- f. Install planting buffers and fencing to direct traffic away from levees and retard wave action upon levees.
- g. Increase funding for recreation access improvements over levees (i.e., LAWCON, Great River Road and/or State Grant Programs).

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: PFWG had problems with part 'a' of the recommendation. They felt that the authority for maintenance of the levees is in the commissioners hands. It should be their problem to enforce levee laws.

Also felt that 'a' would: increase erosion, adversely affect side channels, possibly increase flood heights.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

PFWG eliminated part 'a' of the recommendation. The following conditions were also added:

WQWG - None of the activities should increase erosion off the site(s) into the river.

CRWG - Must have adequate reconnaissance (identification) surveys and provide mitigation measures for damage to cultural resources.

Purpose of e, f and g is to provide for access over levee and to prohibit access on levee; so would not involve additional lands in implementation.

5. PFWG NUMBER: 6217

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None - See conditions in #3.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1005

2. RECOMMENDATION:

- a. Develop auxiliary lock for recreational craft use. Should be done during replacement or reconstruction of existing locks.
- c. Develop time schedule, provide information signs for locking recreation craft.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Recommendations made according to recreation craft locking study. "A" dropped. CTWG feels dedicated locking time is not justifiable - would like to see more supporting rationale. Did not identify in recommendation the need for access ramps in each pool. It is more fuel efficient to load boat into desired pool than to wait for lockage.

Evaluation: Possible benefits to Commercial Transportation.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

- 'a' dropped. Also dropped words "develop time schedule" - now reads:
- provide information signs for locking recreation craft
 - establish holding areas
 - build access ramps above and below each dam

Conditions: CRWG - Identification survey must be done of navigation system (potential historical structure).

5. PFWG NUMBER: 6218 6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None - see Conditions under '4'.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1006

2. RECOMMENDATION:

Terminate leases where there is a need for expansion of existing or creation of new public facilities and use areas.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: The recommendation is a short-term recommendation which matches current COE policy of a blanket termination of all leases in 1988. Some public members (cabin-site lease holders) have voiced opposition to this policy.

Evaluation: Possible benefits to Floodplain Management and Sediment and Erosion Control.

Voting: PPIWG voted negative. PFWG voted by consensus (C6) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: FWMWG - Provided new or expanded facilities will not induce encroachment on federal refuge or state management areas.

5. PFWG NUMBER: 6219 6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: Not sufficient data to show the recreational need for early termination of selected camp-site leases.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1007

2. RECOMMENDATION:

Formulate River Coordinating Committee.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Committee needs to look at all resources. Presently the UMRBC has this function and should take this responsibility.

Evaluation: Possible benefits to cultural resources.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: SCWG and FWMWG - Provided the committee includes the resource management agencies.

No modifications, however, the philosophy that this recommendation was passed on was that all PFWG recommendations that dealt with on-going coordination would be synthesized into one.

5. PFWG NUMBER: 6220

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1008

2. RECOMMENDATION:

Establish management objectives for each pool segment of the river, (will require further study) to determine proper recreation use levels, activities and facilities.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to side channels.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6221

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1009

2. RECOMMENDATION:

- a. Existing dredged disposal sites that are badly affected by current and wave action should be identified and stabilized with attached guidelines but not maintained in the future for recreation.
- d. Future dredged disposal sites should be selected and developed to enhance recreation opportunities through use of guidelines as referenced in recommendation #1003.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: COE concerned that if RWG is not recommending beach nourishment, but is recommending rip rap for stabilization, that the site would be gone by the time they got funding for the rip rap. PFWG felt recommendation is covered in the channel maintenance plan.

Evaluation: Possible benefits to side channels, sediment and erosion control, material and equipment needs and water quality.

Voting: PFWG voted by consensus (-1) to reject the recommendation.

4. PFWG RECOMMENDATION MODIFICATIONS:

Eliminated 'd'.

Conditions: FWMWG - Recommend experimental plants (shrubs, etc.) on disposal sites.

5. PFWG NUMBER: - 6. TYPE OF ALTERNATIVE: Rejected

7. CONFLICTS NOT RESOLVED: -

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1010

2. RECOMMENDATION:

- a. Recreational sites accessible by automobile should be developed and managed whenever possible to provide recreation opportunities to users without boats (may include those areas presently not in public use - see recommendation #1006).
- b. Where potential or existing mainland recreation sites occur, but no legal and/or physical public access exists, efforts should be made to obtain such access.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Site-specific recommendations are presented in recommendations 1038 - 1049.

Evaluation: No conflicts - see conditions.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: SCWG - Sites should not impact on backwater areas.
FWMWG - Sites must be compatible with the objectives of federal refuge and state management areas.
CRWG - Appropriate reconnaissance surveys should be completed to locate cultural resources on easement areas.

5. PFWG NUMBER: 6222 6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None - See Conditions.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1011

2. RECOMMENDATION:

- a. Maintain any abandoned railroad right-of-ways along the river in public ownership for recreation use.
- c. Acquire and develop new trails and coordinated with the Great River Road activities and state trail programs.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Should be concerned with enhancement of cultural resources in areas of abandonment. Also, management and access to these trails have been a problem.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: FWMWG - Provided need is shown, may adversely affect remnant prairies, for adequate assessment RWG needs to specify which railroad lines and types of use.

CRWG - Recreation developments should tie to and enhance natural and cultural resource opportunities.

5. PFWG NUMBER: 6223 6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: Possible impacts on fish and wildlife resources - conflict in determination of appropriate use.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1012

2. RECOMMENDATION:

- b. Encourage manufacturers to reduce noise levels on new engines.
- c. Establishment of decibel limits and enforcement of these limits.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion of Implementing Agency: Felt it should be a Federal function. States could make stronger laws where desired.

Evaluation: Possible benefits to fish and wildlife and side channels.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6224

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1013

2. RECOMMENDATION:

Relocate or redesign problem harbors and access areas.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Need identification of problem areas.

Evaluation: Possible benefits to water quality.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: FWMWG - Need site-specific evaluation of potential impact to fish and wildlife habitat.

SCWG - Provided they (new harbors or access areas) do not impact on backwater areas.

CRWG - Need a reconnaissance survey for identification of cultural resources.

PFWG - Need identification of problem areas.

5. PFWG NUMBER: 6225

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None - See Conditions.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1014

2. RECOMMENDATION:

Maintain auxiliary lock for recreation craft (Pool 14).

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to commercial transportation.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: FWMWG - Design of lock should preclude use for commercial navigation.

5. PFWG NUMBER: 6226

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1015

2. RECOMMENDATION:

Maintain auxiliary lock for recreation craft (Pool 15).

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to commercial transportation.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: FWMWG - Design of lock should preclude use for commercial navigation.

5. PFWG NUMBER: 6227

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1016

2. RECOMMENDATION:

- b. Provide sanitary pump-outs at marinas.
- c. Provide sanitary pump-outs at urban areas along the river.
- e. Change existing public health laws to require marinas to provide such services.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Should insure that pump-outs are routed back to sewage treatment plants. Should include as an alternative the pretreatment of waste on board and reasons why the alternative was not selected.

Evaluation: No conflicts. Possible benefits to water quality and side channels.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: FWMWG - Alternatives b and c should be a requirement.

5. PFWG NUMBER: 6228

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1017

2. RECOMMENDATION:

- a. Assess and clarify land ownership and management in the river corridor.
- b. States should standardize land ownership boundaries in the river corridor.
- c. Coordinate laws regarding recreation use of the river corridor.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Requires legislative change. Iowa and Missouri own to center of river - conflicts with ownership. Will probably require up to 50 years to achieve this standardization.

Evaluation: No PFWG conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: FWMWG - Standardization of state laws should not preclude or limit management actions on federal refuge and state management areas (i.e., extension of private landowner rights).

5. PFWG NUMBER: 6229 6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1018

2. RECOMMENDATION:

- a. Use permit authority to allow commercial terminal complexes rather than commercial strip development.
- d. Industrial development in the form of commercial terminal complexes should be encouraged through tax incentives, municipal development and etc., as a means of limiting strip development.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Need definition of commercial strip development. Problem is that it's hard to negate a permit that requests only an additional 1000 feet in area for development. CTWG felt alternative 'a' too negative as worded and would force people into an adversary position. Also need to consider other impacts such as additional dredging, etc. Permit system in this case sometimes would defeat the purpose of the recommendation. A large complex is easily defeated by environmental impacts because a smaller addition to an existing complex does not have as many single impacts.

Evaluation: Possible benefits to water quality, side channels, floodplain management and fish and wildlife.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Reworded to read: "Industrial development in the form of commercial terminal complexes should be encouraged through tax incentives, municipal development and etc., as a means of limiting strip development. In addition, the development of commercial terminal complexes should be encouraged through the coordination process in obtaining a permit.

Conditions: CRWG - Appropriate cultural resource surveys as needed.

5. PFWG NUMBER: 6230 6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None - See conditions and re-wording of recommendation.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1019A

2. RECOMMENDATION:

Coordinate recreation access development within the framework of a total river management plan.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to cultural resources and side channels.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6231

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1019D

2. RECOMMENDATION:

Consider recreation as an additional project purpose for the Mississippi River.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Recreation and fish and wildlife are not presently project purposes although there are some clauses in the law which pertain to enhancement of these resources.

Evaluation: Possible benefits to side channels.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: FWMWG - Federal funding should not support commercial operations that provide a selective segment of recreational uses on the UMR.

CTWG - Costs incurred as a result of this recommendation should be provided and accounted for, by the COE, separately for each type of activity.

5. PFWG NUMBER: 6232

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None - See Conditions

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 13, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1020

2. RECOMMENDATION:

- a. Improve signage - better placement, common logo and more signage.
- c. Pamphlets, facility guides and the continual upgrade and distribution of these items.
- d. Canned programs, films, slide shows, etc., available for public use.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6233

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1021

2. RECOMMENDATION:

Develop a statistically reliable recreation survey of the total river corridor and total use incurred.

Implement a recreation use monitoring system including a facility inventory and use data.

Recommend one agency take a lead in the coordination of recreation aspects along the river.

All agencies coordinate recreation aspects to work toward a set of common goals.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6266

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1022

2. RECOMMENDATION:

Complete natural history survey of important natural/scenic areas.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to cultural resources.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Added "cultural" to read: "Complete natural history survey of important cultural/natural/scenic areas."

5. PFWG NUMBER: 6267

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1023

2. RECOMMENDATION:

Prepare a base plan to identify scenic and other natural resources throughout the river corridor and develop a system to protect from loss through development or change the existing controls. Control entities should be established in areas where none exist.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: CTWG - Felt there was a bias to commercial development implied when decision to protect precedes area inventory and identification.

Voting: Negative vote by CTWG. PFWG voted by consensus (C6) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6265 6. TYPE OF ALTERNATIVE: Future study-neither

7. CONFLICTS NOT RESOLVED: See CTWG concerns

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 5, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1024

2. RECOMMENDATION:

In certain areas, water quality limits body contact recreation and reduces the recreation experience. There are insufficient funds in time to meet the 1983 standards. As a result only the worst pollution areas may be rehabilitated. Improvement of these areas may have little impacts on the valued recreation resource. Therefore, Federal and States funding should be directed towards the improvement of those areas where major recreation resource will benefit directly. State selection processes for priority funding of public wastewater treatment systems should include a weighting factor for recreation benefits of the proposed project.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to fish and wildlife, side channels.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6279

6. TYPE OF ALTERNATIVE: EQ

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 5, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1025

2. RECOMMENDATION:

Lack of water quality information presents health hazard problems for recreational resource managers and users. Adequate information would allow resource managers to manage the use of body contact activities accordingly. The states should develop a coordinated program to monitor the water quality for fecal coliform and industrial chemicals at major recreation areas for body contact recreation activities.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Words "and industrial chemicals" deleted from recommendation.

5. PFWG NUMBER: 6280

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1026

2. RECOMMENDATION:

There are no island recreation opportunities in the lower portion of this pool plus there is a need for an area of refuge during high winds and rest areas. The RID/COE in conjunction with the USFWS and states should investigate the feasibility of creating multiple purpose island in the lower portion of the pool. The creation of this island would reduce the number of conflicts between the recreationist and natural resources on other areas. The location and size of the proposed island must be coordinated with all interests to provide a beneficial island.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: Possible impacts on fish and wildlife and navigation.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: CTWG - Providing islands don't impact on navigation.
FWMWG - Providing islands aren't developed for recreational use.

5. PFWG NUMBER: 6268

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: December 12, 1979

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1027

2. RECOMMENDATION:

Create multiple purpose islands in the lower portion of Pool 19.
(Reworded - see Section #4.)

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: MENWG - Equipment constraints - portions outside of
present capability.

Evaluation: Benefits to commercial transportation and dredged
material uses.

Voting: PFWG voted by consensus (+4) to pass the recommendation on
to the Team, contingent upon recognition of above conditions.

4. PFWG RECOMMENDATION MODIFICATIONS:

"The Rock Island District/COE in conjunction with the USFWS and States
investigate the feasibility of creating a multiple purpose island in
the lower portion of Pool 19."

PREP Task Force needs a dollar figure on the study!

NOTE: No Attachment 7 was available when this recommendation was eval-
uated. One is still required.

5. PFWG NUMBER: 6173 6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None - See #3 for conditions.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1028

2. RECOMMENDATION:

Litter is degrading the quality of existing recreational sites. There are two approaches to resolving litter problems. These approaches would be directed at educating the public and actual clean-up activities. Federal and State resource management agencies should promote additional public education programs to deal with litter problems on the UMR. All Federal, State and local resource management agencies should provide increased protection of recreation areas from litter degradation through the following activities:

- Coordinate the enforcement of litter laws at peak use periods.
- Provide trash receptacles at all marinas and access points.
- Promote local litter clean-up activities through local clubs and public interest groups.
- Promote a 'take-it-home' campaign.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: WQWG - Ensure trash doesn't go into river.

Evaluation: No conflicts. Possible benefits to water quality.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6269

6. TYPE OF ALTERNATIVE: EQ

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1029

2. RECOMMENDATION:

User charges are being developed for the UMR. There are concerns that recreationists may be required to pay for recreational craft lockages. If recreational user charges were imposed, recreational use of the river would decline.

Implementation of recreational user charges would not result in a reduced waiting time for recreational craft lockages, and the administration cost for the collection of recreation lockage fees would be greater than the amount collected.

Therefore, there should be no lockage fees for recreation craft lockages.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: CTWG - Concerns that increased recreational lock usage, would interfere with commercial locking.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: CTWG - That free lockages not result in unrestricted use by recreation craft.

5. PFWG NUMBER: 6270

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None - See Conditions

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1030

2. RECOMMENDATION:

There are many natural and man-induced hazards to recreational users of the UMR. People inexperienced in use of the river are not familiar with the associated hazards. Also law enforcement is insufficient to meet the increasing demands of the UMR system. The RID/COE in coordination with the USCG and state resource agencies should promote boater safety and enhance the recreational experience on the UMR. Their programs should include legislative, hazard identification and enforcement measures.

New laws should include but not be limited to:

- Requirement of a boat operator's safety certificate.
- Requiring better craft lighting for night operations.
- Outlawing consumption of alcohol during operation of craft.

Hazard identification measures would include at a minimum:

- Establishment of no-wake areas in high density use areas.
- Marking of common boat hazards.
- Marking, notching, lowering or modifying channel control structures when suitable.
- Equipping new survey boats with the capability to mark hazard areas.

Enforcement measures would include:

- A public education program.
- Increased patrolling.
- Enforced speed limits in no-wake zones in high use areas.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: CTWG - Feels recommendation should be more specific.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: CTWG - That type of lighting and location of no-wake areas be more specific.

5. PFWG NUMBER: 6271 6. TYPE OF ALTERNATIVE: NED

7. CONFLICTS NOT RESOLVED: See Conditions

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 5, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1031

2. RECOMMENDATION:

Areas funded by the Land and Water Conservation Fund (LAWCON) may be adversely affected by the deposition of dredged material. Placement of dredged material on such sites will require prior approval from HCRS. Such approval is required to protect the project purpose of that LAWCON site and the financial responsibilities related thereto. Current regulations provides most flexibility for meeting both recreation and dredged material placement needs. In order to assist both HCRS and the COE, the RWG has developed a listing of current (1979) LAWCON funded sites which are adjacent to the UMR.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Some PFWG confusion over intent of recommendation.

Evaluation: Possible benefits to cultural resources.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Added wording: "The COE should use this list when preparing to dredge, to identify areas where LAWCON approval may be required."

5. PFWG NUMBER: 6281 6. TYPE OF ALTERNATIVE: NED

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 5, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1032

2. RECOMMENDATION:

- Utilize existing facility inventory.
- Inventory undeveloped areas used by the public.
- Inventory undeveloped areas that have potential for recreation development.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to cultural resources.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6282

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 5, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1033

2. RECOMMENDATION:

Coordinate activities of the SCORP planners.
Include UMR as a SCORP subject.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: Possible benefits to cultural resources.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6283

6. TYPE OF ALTERNATIVE: NED

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 5, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1034

2. RECOMMENDATION:

Resource managers and planners at all levels of government have expressed concern in meeting future recreation use with existing manpower and funds for such purposes. In researching the alternatives, no one source or solution was identified appropriate to address the general problems. It was determined that funding sources and mechanisms existed. However, some modifications to meet increased needs will be required.

The following continuing programs could be modified to provide the required funds for meeting future recreation needs. (See list in Volume I, Chapter V of PFWG Appendix.)

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to cultural resources.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6284

6. TYPE OF ALTERNATIVE: Future Studies-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: December 12, 1979

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1035

2. RECOMMENDATION:

Prepare recreation plan for public access and use for Pool 19 including acquisition and development of facilities with all concerned parties. (Reworded - see #4.)

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

"The States of Iowa and Illinois in conjunction with the RID/COE, Union Electric and the USFWS, prepare a recreation plan for public access and use for Pool 19 including acquisition and development of facilities with all concerned parties."

5. PFWG NUMBER: 6174

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 5, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1036

2. RECOMMENDATION:

Recreation facilities and moored water craft within marinas are damaged by wakes created by moving water crafts. Proper measures should be taken by appropriate agencies to protect lives and property within these high density use areas. The following are potential solutions to most of these problem areas:

- Provide no wake zones for recreation crafts within designated distances of marinas entrance and within marinas themselves.
- Construct protective measures (i.e., jetties and flooding wave breakers) around recreation facilities.
- Relocation of recreation facilities.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6285

6. TYPE OF ALTERNATIVE: NED

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 5, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1037

2. RECOMMENDATION:

Presently, the RID/COE is restricted from developing and maintaining additional recreational areas on COE lands without a cost sharing partner. There is a need to include recreation as a project purpose and to amend PL-89-72 to allow the RID/COE to develop and maintain recreation areas on COE managed lands without local cost sharing. Such action would create and maintain dredged material beaches and expand the existing ranger staff. These changes would greatly enhance the recreational potential, development and use of the river for the benefit of the general public.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: FWMWG - Don't want to give the COE the authority and funding to build or create dredged material beaches.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Second sentence changed "develop" to "manage".
Changed third sentence to read: "Such action would include management and maintenance of dredged material beaches and expansion of the existing ranger staff."

Conditions: CRWG - Appropriate surveys as required.

5. PFWG NUMBER: 6286

6. TYPE OF ALTERNATIVE: NED

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 27, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1038 - 1049

2. RECOMMENDATION:

Study and evaluate the pool specific recreation needs and potentials for further recreational use and development.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Need coordination with fish and wildlife personnel.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: FWMWG - Must coordinate planning with fish and wildlife personnel.

5. PFWG NUMBER: 6320

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 27, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1050

2. RECOMMENDATION:

RID/COE should develop a set of generalized planning guidelines to be used in locating and designing public access areas.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6321

6. TYPE OF ALTERNATIVE: NED

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 5, 1980

ORIGINATING WORK GROUP: Recreation

1. WORK GROUP RECOMMENDATION NUMBER: 1051 - 1062

2. RECOMMENDATION:

RWG selected dredged material disposal sites for recreation beaches in each pool in the GREAT II area. Sites are listed in RWG Appendix, by pool.

3. PFWG CONFLICTS WITH RECOMMENDATION:

4. PFWG RECOMMENDATION MODIFICATIONS:

Not evaluated. PFWG evaluated these sites already in the context of the Channel Maintenance Plan.

5. PFWG NUMBER: -

6. TYPE OF ALTERNATIVE: -

7. CONFLICTS NOT RESOLVED: -

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 5, 1980

ORIGINATING WORK GROUP: Public Participation and Information

1. WORK GROUP RECOMMENDATION NUMBER: 1501

2. RECOMMENDATION:

Experience with the GREAT II study has shown that there is a need for an Active River Information/Education Program. This program should be designed to inform and educate school classes, interest groups, citizen groups, etc., about the total spectrum of river resources. The office for this program would serve as a river information center for interested individuals or tourists to stop and obtain information about areas of interest, history, management, recreation areas, etc. This program should be funded cooperatively by the states and agencies on the river. An independent contractor should be chosen by a panel of people from the federal and state agencies to insure total independence.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to recreation.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6273

6. TYPE OF ALTERNATIVE: NED-EQ

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 5, 1980

ORIGINATING WORK GROUP: Public Participation and Information

1. WORK GROUP RECOMMENDATION NUMBER: 1502

2. RECOMMENDATION:

Principles and Standards of the U.S. Water Resources Council require public participation in water management studies. The public needs to be represented through an active public participation program which is implemented at the very early stages of the planning process. The program should be developed in accordance with the following guidelines:

- a. The program should be coordinated by an independent contractor to insure the unbiased representation of the public's views as well as the study's needs and accomplishments to the public.
- b. The public should be represented at a level equal to the other members of the management study.
- c. The coordinator or responsible individual, must strive to involve individuals that have sufficient time to devote to the program on an active level as well as keeping those interested citizens with less time available informed of the highlights of the study.
- d. The coordinator, or responsible individual, must strive to involve individuals with experience in this type of public participation program. In a study with a limited time frame, these experienced individuals could help save a sufficient amount of time by guiding new individuals through the planning and organizational portion of program development.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Not in current authority and that public should not participate in the final decision making.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Added wording to 'b': "at the planning development level".

Conditions: CTWG - Public representation in the form of input and not decision making is essential. Public input is generally special interest groups and does not represent the public per se, public participants are not responsible for their voting where as agencies are responsible to the voters through elected representatives.

5. PFWG NUMBER: 6274

6. TYPE OF ALTERNATIVE: NED-EQ

7. CONFLICTS NOT RESOLVED: None - See Conditions

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 5, 1980

ORIGINATING WORK GROUP: Public Participation and Information

1. WORK GROUP RECOMMENDATION NUMBER: 1505

2. RECOMMENDATION:

In a study such as GREAT II that covers a large geographical area, there is a need to reimburse active public participants on boards and committees for travel expenses to and from public meetings or meetings they are requested to attend. The Public Participation Coordinator or responsible individual would determine who is eligible for reimbursement based on their amount of participation. This group of people would probably not exceed 25 individuals.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Need more criteria for reimbursement eligibility.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Added wording to end of second sentence: "...and area of interest."

5. PFWG NUMBER: 6275

6. TYPE OF ALTERNATIVE: NED-EQ

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Material and Equipment Needs

1. WORK GROUP RECOMMENDATION NUMBER: 2001

2. RECOMMENDATION:

Expand existing equipment and purchase/contract for additional equipment to dispose of dredged material at GREAT II selected sites which are within 3 river miles and 1 land mile of dredge cuts and do not require wetland crossing. This will require a dredge similar to the Thompson (possibly with a dustpan head), 3 floating boosters; 3,000 feet of floating pipe; 18,000 feet of submerged pipe; 15,000 feet of shore pipe; and attendant equipment.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Several PFWG members felt the work group consideration of alternatives was inadequate. Need equipment which is more responsive to dredging requirements within a specified time period and is able to perform all dredging required. MENWG recommendation does not include transportation required for barging. The impact assessment was felt inadequate, and the MENWG could come up with more information.

Evaluation: Possible benefits to dredged material uses and water quality.

Voting: Negative votes by FWMWG, SCWG and CTWG. PFWG then voted by consensus (-5) to reject the recommendation.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: Rejected 6. TYPE OF ALTERNATIVE: None

7. CONFLICTS NOT RESOLVED: See #3 above

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: November 9, 1979

ORIGINATING WORK GROUP: Floodplain Management

1. WORK GROUP RECOMMENDATION NUMBER: 2501

2. WORK GROUP RECOMMENDATION:

The States of Minnesota, Wisconsin, Iowa, Illinois and Missouri should develop and implement a compact to guide consistent development and use of the Mississippi River Corridor under the auspices of the UMRBC and the National Water Resources Council. All states on the Upper Mississippi River Corridor should develop interstate agreements to cooperate with each other while the compact authority is being developed.

3. PFWG CONFLICTS WITH WORK GROUP RECOMMENDATIONS:

Discussion: Concern as to what the content of the compact would be. The compact, however, was not described. The intent of the recommendation was to provide the authority to form the compact; not the secondary impacts of forming the compact.

Evaluation: With the above understanding; there were no conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

- a. Recommendation will have the implementing bodies identified.
- b. Recommendation will include a general description of the content of the compact.
- c. Statement added to recommendation was: "The criterion of this compact will be to provide uniform administration, standards, and forum for resolving conflicts."
- d. Att. 4, #5, an alternative 'e' was added: "Interim agreement should be developed between states."
- e. Att. 4, #6, alternatives D and E are now the selected alternatives.
- f. Att. 4, #7, rationale will be expanded when legal study is completed.
- g. Att. 4, #8, added Davis' Legal and Institutional Study to list of references.
- h. Att. 4, #10 impact 'a' changed to read: "increased administrative cost to states".
- i. Att. 7, Impact 18, Column 4, changed to: "average annual damages, \$19,363,100."

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4. k. Att. 7, will be changed to reflect only those impacts of forming a interstate effort to develop a compact, not the real or imagined impacts of the actual compact, which hasn't been developed yet.

5. PFWG NUMBER: 6154 6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED:

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: November 9, 1979

ORIGINATING WORK GROUP: Floodplain Management

1. WORK GROUP RECOMMENDATION NUMBER: 2502

2. RECOMMENDATION:

The Federal Emergency Management Agency (FEMA) should seek funding for and provide a detailed floodplain/floodway map for the Upper Mississippi River Corridor.

3. PFWG CONFLICTS WITH RECOMMENDATIONS:

Discussion: Concern with wording of recommendation. Wording changes are noted below.

Evaluation: No conflicts were voiced.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

- a. The recommendation wording was changed to read: "Congress should appropriate funding to the FEMA to provide a detailed flood boundary/floodway map based on detailed hydraulic surveys, for the Upper Mississippi River Corridor, to be used for flood insurance and floodplain management programs.
- b. Att. 4, #7, the cost for mapping was changed to \$8.0 million.
- c. Att. 4, #7, the following rationale was added: "Current mapping is of an inadequate scale. Lack of data makes it difficult to assess flood boundaries.

5. PFWG NUMBER: 6155

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: November 9, 1979

ORIGINATING WORK GROUP: Floodplain Management

1. WORK GROUP RECOMMENDATION NUMBER: 2503

2. RECOMMENDATION:

The FEMA should establish a broad public education program for floodplain management information, including land use management risks. This program should be aimed at all segments of society including schools and universities.

3. PFWG CONFLICTS WITH WORK GROUP RECOMMENDATIONS:

Discussion: Concern with wording of recommendation. Wording changes are shown below.

Evaluation: No conflicts were heard.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

- a. The recommendation wording was changed to read: "The FEMA in cooperation with the COE and States should establish a broad public education program for floodplain management information, including land use management risks. This program should be aimed at all segments of society including schools and universities. Initiation will begin with implementation of a pilot program for the UMR."
- b. Att. 7, needs to be changed to reflect only the primary impacts of establishing the program - not the secondary impacts of implementing a specific program.

5. PFWG NUMBER: 6156

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED:

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: November 9, 1979

ORIGINATING WORK GROUP: Floodplain Management

1. WORK GROUP RECOMMENDATION NUMBER: 2504

2. RECOMMENDATION:

The Rock Island District/Corps of Engineer's institute a major program to inventory, arrange and manage the archives of the District.

3. PFWG CONFLICTS WITH RECOMMENDATIONS:

Discussion: Concerned that recommendation should address a broader subject area than the RID/COE. However, further discussion revealed that the specific problem, especially in relation to floodplain management was within the RID/COE. Also, concern with the wording of the recommendation, wording changes are shown below.

Evaluation: No conflicts with the recommendation were voiced.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

- a. The recommendation's wording was changed to read as follows:
"The Rock Island District/Corps of Engineers arrange and manage the archives of the District."
- b. Att. 4, #7, the rationale was expanded by the following statement:
"The Floodplain Management Work Group spent an unreasonable amount of time in trying to gather this data."
- c. Att. 4, #9, the rationale was expanded by the addition of:
"...and ultimately the loss of very valuable data."

5. PFWG NUMBER: 6157

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED:

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 15, 1980

ORIGINATING WORK GROUP: Floodplain Management

1. WORK GROUP RECOMMENDATION NUMBER: 2505

2. RECOMMENDATION:

A lead agency should be chosen to examine the results of GREAT I and GREAT II Fish and Wildlife, Side Channels, and Sediment and Erosion Work Groups along with any other pertinent information, to determine if sediment accretion and subsequent plant succession is affecting flooding. All assumptions relative to data manipulation should be identified and upon completion of this review, the results should be published which either supports or refutes the contention that back-water sediment accretion is raising flood levels.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: COE is now responsible for providing flood heights.

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

The words "A lead agency should be chosen" were stricken from the recommendation. The words "The COE should seek funding" were added in their place.

5. PFWG NUMBER: 6202

6. TYPE OF ALTERNATIVE: NED/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 15, 1980

ORIGINATING WORK GROUP: Floodplain Management

1. WORK GROUP RECOMMENDATION NUMBER: 2506

2. RECOMMENDATION:

GREAT II supports and endorses the recommendation of the UMRBC Technical Floodplain Management Task Force Report dated August 1978 requesting a feasibility study on math modeling of the Mississippi River Floodplain for management purposes.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Recommendation will provide a standardized approach to floodplain management. Need to clarify recommendation.

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Reworded to read: "GREAT II supports and endorses the recommendation of the UMRBC Technical Floodplain Management Task Force Report dated August 1978 requesting a feasibility study on math modeling of the flood flows and flood heights of the Mississippi River Floodplain for management purposes."

5. PFWG NUMBER: 6203 6. TYPE OF ALTERNATIVE: NED-EQ/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 19, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3001

2. RECOMMENDATION:

In order to preserve existing fish and wildlife habitat, the RID/COE should request the necessary appropriations to purchase effective and efficient dredging equipment or contract with private firms to accomplish same. Furthermore, all State and Federal agencies should seek Congressional support for the Corps request.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to side channels and material and equipment needs.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Deleted last sentence.

5. PFWG NUMBER: 6287

6. TYPE OF ALTERNATIVE: EQ

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3002

2. RECOMMENDATION:

Off-channel areas should be monitored by the U.S. Geological Survey to provide an estimate of sedimentation. If necessary, specific funding and authority should be provided to USGS.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to floodplain management, recreation, sediment and erosion control, side channels, water quality.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Priorities to be added

5. PFWG NUMBER: 6234

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 19, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3003

2. RECOMMENDATION:

USDA, SCS and USEPA should intensify their efforts, in the GREAT II watershed to gain acceptance and implementation of non-till and minimum till farming methods, in order to reduce erosion on all tillable lands.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to water quality, side channels, sediment and erosion control, recreation.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6288

6. TYPE OF ALTERNATIVE: NED-EQ

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3004

2. RECOMMENDATION:

A Fish and Wildlife Interagency Committee (FWIC) should be designated and funded to provide direction and guidance regarding fish and wildlife matters associated with main channel dredging spoil disposal, physical river modifications, backwater modifications, and river management studies and investigations. The FWIC should be composed of fish and wildlife biologists from Wisconsin, Iowa, Illinois, Missouri, USFWS and COE. Additional personnel and funding should be made available to the agencies to accomplish this work.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Essentially this calls for a continuation of the FWMWG.

Evaluation: No conflicts. Possible benefits to side channels, recreation.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6235

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3005

2. RECOMMENDATION:

The COE should be given the authority and the funding to improve fish and wildlife habitat modified/destroyed by placement of dredged material. Sites for restoration should be recommended by the FWIC. First priority should be given to past disposal sites on state and federal refuge and management lands.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: COE already has authority. CTWG has problems with the source of funding for implementation of this recommendation.

Evaluation: Possible benefits to side channels, recreation, material and equipment needs.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: CRWG - Appropriate surveys of cultural resources as needed.

CTWG - Funds not be channel maintenance funds to improve past disposal sites. Congress should approve funds through the Fish and Wildlife Service budgetary process for sites destroyed in past. Present and future sites destroyed will be improved out of channel maintenance funds.

5. PFWG NUMBER: 6236

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None - See Conditions

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3006

2. RECOMMENDATION:

The COE should be given the authority and the specific funding to modify backwaters recommended by the FWIC (Recommendation #3004).

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None.

5. PFWG NUMBER: 6237

6. TYPE OF ALTERNATIVE: EQ

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3007

2. RECOMMENDATION:

To optimize benefits to both navigation and fish and wildlife resources, the Rock Island District/Coe should consider fish and wildlife needs in any decision to repair, alter or construct training or revetment structures. These actions should be fully coordinated with the FWIC.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: RID/COE also modifies training or revetment structures.

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Wording added: "and/or modify" after construct. Recommendation now reads: "To optimize...to repair, alter, construct and/or modify training or revetment structures. These...with the FWIC."

5. PFWG NUMBER: 6238

6. TYPE OF ALTERNATIVE: EQ

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3008

2. RECOMMENDATION:

The RID/COE evaluate all recurrent dredging sites to determine if training structures could reduce dredging in the area. Where beneficial, appropriate training structures should be constructed in accordance with FWMWG #3007.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Possible impacts on cultural resources.

Evaluation: Possible benefits to commercial transportation and water quality.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: CRWG - Surveys required as appropriate.

5. PFWG NUMBER: 6239

6. TYPE OF ALTERNATIVE: EQ

7. CONFLICTS NOT RESOLVED: None - See Conditions.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 19, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3009

2. RECOMMENDATION:

RID/COE, in coordination with the federal and state resource agencies, assess the impact of controlled water level changes of fish and wildlife resources of each pool of the UMR and reevaluate District operating policies. The FWIC should develop criteria using the Districts assessment and evaluation and that the RID/COE adopt these criteria. The criteria should protect and enhance fish and wildlife resources consistent with the mandate to maintain navigation.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Do not feel should 'approve' criteria adoption without knowing what they are.

Evaluation: Possible benefits to recreation and side channels.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

The last two sentences were deleted.

Conditions: CTWG - That if there are to be any fluctuations of pool levels, that the impacts on navigation be identified.

DRWG - A safe navigable channel must be maintained during this study.

5. PFWG NUMBER: 6289

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None - See conditions and wording changes.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3010

2. RECOMMENDATION:

The RID/COE utilize dredged material to maintain, repair or upgrade levees surrounding the following state and federal refuge and management areas:

1. Spring Lake - R.M. 531.7 to 534.6 LB
2. Green Island - R.M. 546.0 to 548.5 RB
3. Princeton - R.M. 503.5 to 506.0 RB
4. Odessa - R.M. 435 RB
5. Keithsburg - R.M. 428 to 431 LB

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: FPMWG - Possible impacts on flood levels.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: FPMWG - Evaluate impacts on flood flows.

5. PFWG NUMBER: 6240

6. TYPE OF ALTERNATIVE: EQ

7. CONFLICTS NOT RESOLVED: None - See Conditions

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 19, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3011

2. RECOMMENDATION:

Close coordination between district lockmasters is necessary to avoid extreme fluctuations in the pools bordering St Paul and Rock Island Districts.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Already coordinated.

4. PFWG RECOMMENDATION MODIFICATIONS:

Withdrawn by FWMWG.

5. PFWG NUMBER: Withdrawn 6. TYPE OF ALTERNATIVE: n/a

7. CONFLICTS NOT RESOLVED: n/a

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3012

2. RECOMMENDATION:

The Corps be provided the needed authority and means to establish fish and wildlife as a project purpose of the 9-foot channel project, provided that all measures carried out under this purpose are coordinated fully with and agreed to by all agencies having state and federal fish and wildlife resource management responsibilities in the area.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: CTWG - Problems with possible funding through RID/COE channel maintenance funds.
RWG - Does not include recreation.

Evaluation: Possible benefits to side channels.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Wording changes: "The Corps...and means to establish recreation and fish and wildlife as project purposes....in the area."

Conditions: CTWG - Funding for new project purposes should be other than channel maintenance funds.

5. PFWG NUMBER: 6241

6. TYPE OF ALTERNATIVE: EQ

7. CONFLICTS NOT RESOLVED: None - See conditions and wording changes.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 27, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3013

2. RECOMMENDATION:

Pending results of Stages 1 and 2 of the Submergent Characteristics Study, Stage 3 should be completed. Upon completion of Phase 3, data should be incorporated into the on-going GIS Study to ascertain its value in identifying fish habitat. Phase 4 should be completed if data in Phase 3 warrants further action.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6319

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 19, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3014

2. RECOMMENDATION:

Populations of colonial birds nesting in the study area have been declining. The USFWS be responsible to ensure that colonial bird nesting sites be monitored and all new sites be located and mapped. Information obtained should be incorporated into the GIS.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to side channels.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Added "annually" after 'monitored'.

5. PFWG NUMBER: 6290

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3015

2. RECOMMENDATION:

Conduct studies to assess the cumulative effect of the small, innocuous projects which are subtly altering fish and wildlife habitat.

3. PFWG CONFLICTS WITH RECOMMENDATION:

4. PFWG RECOMMENDATION MODIFICATIONS:

Combined with 3029.

5. PFWG NUMBER: Eliminated 6. TYPE OF ALTERNATIVE: n/a

7. CONFLICTS NOT RESOLVED:

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3016

2. RECOMMENDATION:

A comprehensive land use plan for the UMR corridor should be developed and implemented by all entities with an interest in the river. The plan should consist of the necessary strategic and operational components to make explicit the background, authority and justification and objectives, policies, coordination measures and procedures by which to operate.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to cultural resources, recreation, sediment and erosion control, side channels.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: That the wording be rewritten to reflect the same meaning as a similar recommendation developed in GREAT I.

5. PFWG NUMBER: 6291

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3017

2. RECOMMENDATION:

Development of comprehensive plans for the management of fish and wildlife resources within the river corridor by the agencies responsible for fish and wildlife resources. The FWIC should be responsible for development of the plan and should guide and coordinate the plan so that it is compatible for inclusion in the comprehensive land use plan for the UMR corridor.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6292

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3020

2. RECOMMENDATION:

The Federal Railroad Administration should direct all railroad companies with lines along the UMR to give priority to upgrading and for maintaining these lines. Every effort should be made to have railroads comply with established speed limits.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Possible impacts on cultural resources.

Evaluation: Possible benefits to commercial transportation, recreation, side channels and water quality.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: CRWG - Consultation with FRA by appropriate State Historic Preservation Officers.

5. PFWG NUMBER: 6293

6. TYPE OF ALTERNATIVE: EQ

7. CONFLICTS NOT RESOLVED: None - see Conditions.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3021

2. RECOMMENDATION:

Contingency plans for the resource agencies which stress the protection of fish and wildlife resources should be developed for quick response to toxic spills in each pool. These plans should be coordinated by the USFWS in conjunction with state resource agencies and the Regional Pollution Response Team.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: CTWG - Feels recommendation is unnecessary. Rationale for recommendation says recommendation has already been done.

Evaluation: Possible benefits to recreation and side channels.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: CTWG - That the recommendation apply only to spill response capability.

5. PFWG NUMBER: 6294

6. TYPE OF ALTERNATIVE: EQ

7. CONFLICTS NOT RESOLVED: None - See Conditions.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3022

2. RECOMMENDATION:

The USEPA expedite and strictly enforce regulations that require all industries located in the floodplain, which produce or store toxic materials, to be floodproofed.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to water quality and floodplain management.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: CRWG - Coordination by EPA with appropriate State Historic Preservation Officers.

5. PFWG NUMBER: 6295

6. TYPE OF ALTERNATIVE: EQ

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3023

2. RECOMMENDATION:

The RID should complete the biological studies necessary to understand the fish and wildlife impacts of providing a year-round navigation or establishing a closed navigation season. The biological studies should be thoroughly coordinated with all resource agencies on the UMR and the UMRBC master management plan effort.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6296

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3024

2. RECOMMENDATION:

Funding and manpower should be made available to the U.S. Fish and Wildlife Service in conjunction with state resource agencies to complete the GIS throughout the UMR corridor. Information collected should be incorporated into the GIS on a regular basis.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6297

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3025

2. RECOMMENDATION:

The State of Iowa should continue the wing dam study to ascertain relationships between biological and physical parameters of various types of wing dams. Further, they should develop recommendations for the construction/repair of wing dams in a manner which optimizes fish and wildlife habitat without detracting from their intended purpose.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6298

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3026

2. RECOMMENDATION:

Information on the distribution, abundance, population characteristics, and harvest of all fish and wildlife species in the UMR should be collected on a systematic basis. The effort should be coordinated by the UMRCC with funding provided by the UMRBC for state and federal participation. This information can be incorporated into the GIS and made readily available to UMR biologists.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6299

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3027

2. RECOMMENDATION:

The RID should complete the dredging and habitat development project and monitoring program described in the Technical Report for the Fulton Local Flood Protection Project - Stage IIIC.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6300

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3028

2. RECOMMENDATION:

The COE should initiate a research and development program to determine the equipment (or pieces of equipment or equipment system) necessary for performing large scale backwater alterations.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: COE lacks the funding and authority.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: MENWG & DRWG - Contingent upon receipt of funding and authority.

5. PFWG NUMBER: 6301

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3029

2. RECOMMENDATION:

The RID should document the cumulative impacts of modifications and encroachments to fish and wildlife habitats of the UMR corridor.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6302

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3030

2. RECOMMENDATION:

The RID in coordination with the UMRCC monitor all short-term disposal sites to document the impacts of dredge spoil disposal on fish and wildlife resources.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6303

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3031

2. RECOMMENDATION:

A program should be established to monitor federal and state endangered or threatened species to obtain information on the distribution, abundance, and population characteristics. Particular emphasis should be placed on present habitat utilization within the UMR floodplain so that habitat management techniques may be developed for the species. This program should be coordinated by the USFWS in conjunction with the state resource agencies. If necessary, additional funding should be sought by the USFWS.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6304

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3032

2. RECOMMENDATION:

GREAT II support the UMRBC master planning effort to conduct a three year study to address the impacts of commercial and recreational navigation on the fish and wildlife resources of the UMR. The study should include development of a predictive model to evaluate impacts of increased navigation on the river.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6305

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3033

2. RECOMMENDATION:

The FWMWG recommends that GREAT II support the UMRBC master planning effort to:

1. Identify measures that can be used for mitigation, restoration, protection, management and enhancement of environmental resources.
2. Determine the adverse and beneficial impacts of each measure identified with respect to:
 - a. The environment
 - b. National and regional economies
 - c. The social character of the region
3. Determine which of those measures identified can be immediately implemented.
4. Determine costs and studies for those measures identified which will require demonstration projects to evaluate adverse and beneficial impacts.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6306

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3034

2. RECOMMENDATION:

The RID immediately protect fish and wildlife resources through their Section 10 authority under the Rivers and Harbors Act by eliminating all mooring to trees. The RID should also undertake studies in coordination with the state and federal resource agencies to assess the impacts of barge fleeting on the UMR. This assessment should be used to identify needed fleeting sites and measures which will protect fish and wildlife resources.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: CTWG - Which is worse - loss of trees due to mooring or the loss of trees due to land clearing to build fleeting sites.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Eliminated first sentence. Deleted "also" in the second sentence, and changed "assess" to "document". Deleted "assessment" in the last sentence.

5. PFWG NUMBER: 6307

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3035

2. RECOMMENDATION:

The attached list of backwater and side channel areas should be given highest priority to determine and implement specific methods to improve flow and decrease sedimentation and bank erosion in these areas.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: Possible impacts on cultural resources.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: CRWG - Conduct appropriate surveys.

5. PFWG NUMBER: 6308

6. TYPE OF ALTERNATIVE: EQ

7. CONFLICTS NOT RESOLVED: None - See Conditions.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3036

2. RECOMMENDATION:

The RID and Iowa Conservation Commission should develop a plan to protect the Brown's Lake Complex by constructing a new levee using dredge spoil material. The levee would be located from the Green Island Levee along the right bank of Lainesville Slough to the Iowa Bluff.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: Possible impacts on cultural resources, flood stages and water quality.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: CRWG - Conduct surveys where appropriate.
FPMWG - Evaluate impacts on flood stages.
WQWG - Take actions to mitigate water quality impacts during construction.

5. PFWG NUMBER: 6309

6. TYPE OF ALTERNATIVE: EQ

7. CONFLICTS NOT RESOLVED: Effects on flood stages

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3037

2. RECOMMENDATION:

The USCG should strictly enforce existing regulations and complete with due haste proposed regulations which protect the waters of the UMR from potential spills from barging related transport, transfer, storage and handling of toxic and hazardous materials. Specific funding should be sought to give priority to the UMR to adequately enforce these regulations.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Added "continue to" after 'should' in the first sentence. Deleted "specific" in the last sentence.

5. PFWG NUMBER: 6310

6. TYPE OF ALTERNATIVE: EQ

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3038

2. RECOMMENDATION:

The USEPA and state implementing agencies strictly enforce existing regulations and complete with due haste proposed regulations which protect the waters of the UMR from potential spills from industrial or municipal related transport, transfer, storage and handling of toxic and hazardous materials. Specific funding should be sought to give priority to the UMR to adequately enforce these regulations.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6311

6. TYPE OF ALTERNATIVE: EQ

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3039

2. RECOMMENDATION:

A comprehensive plan for the management of the fish and wildlife resources of Pool 19 should be developed and implemented by the agencies responsible for these resources. The FWIC should be responsible for development of the plan and should guide, coordinate, and give highest priority to this plan in the plan developed in FWMWG 3017. This plan should consider methods to place more lands in the pool under public management.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: Possible impacts on navigation.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Added sentence to end of recommendation: "Additional fleeting will be required in Pool 19 and this need should be considered in any public land additions."

5. PFWG NUMBER: 6312

6. TYPE OF ALTERNATIVE: Future Studies-Neither

7. CONFLICTS NOT RESOLVED: None - See Conditions.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Fish and Wildlife Management

1. WORK GROUP RECOMMENDATION NUMBER: 3040

2. RECOMMENDATION:

The attached list of backwater and side channel areas should be given highest priority to determine and implement specific methods to improve flow and decrease sedimentation and bank erosion in these areas.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: Possible impacts on cultural resources and an increase in dredging requirements.

Voting: Negative vote by DRWG, due to potential for increase in dredging requirements. PFWG voted by consensus (C6) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: CRWG - Conduct surveys as appropriate.

5. PFWG NUMBER: 6313

6. TYPE OF ALTERNATIVE: EQ

7. CONFLICTS NOT RESOLVED: Dredging Quantities

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 15, 1980

ORIGINATING WORK GROUP: Side Channel

1. WORK GROUP RECOMMENDATION NUMBER: 3501

2. RECOMMENDATION:

Provide the Corps of Engineers, through legislative authority and funding, with the capability to dispose of dredged spoil in out-of-the-floodplain sites.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Recommendation assumes that you can also use that equipment to dispose of dredge material 'in' the floodplain.

Evaluation: No conflicts. Possible benefits to Dredged Material Uses, Dredging Requirements, Fish and Wildlife, Floodplain Management, Material and Equipment Needs, Water Quality and Sediment and Erosion Control Work Groups

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Modified during evaluation to include the following conditions:

- Maintain the recreation beaches as necessary
- The new COE authority would be consistent with existing or improved cultural resources legislation.

5. PFWG NUMBER: 6204

6. TYPE OF ALTERNATIVE: NED-EQ/Selected

7. CONFLICTS NOT RESOLVED: None - See conditions of recommendation.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 15, 1980

ORIGINATING WORK GROUP: Side Channel

1. WORK GROUP RECOMMENDATION NUMBER: 3502

2. RECOMMENDATION:

The Corps should be prohibited from placing spoil in wetlands, side channels, sloughs and other aquatic habitat unless such spoiling clearly benefits fish and wildlife.

- Relates only to non-navigable or non-project areas.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: CRWG - Purported exclusion of multiple-use resources.
CTWG - Precludes other legitimate uses.
DMUWG - Too single purpose.
MENWG - Not sure of how this recommendation would affect present day COE authority.
RWG - Would affect boat harbor construction.

Evaluation: Possible benefits to fish and wildlife, floodplain management and sediment and erosion control concerns.

Voting: PFWG voted by consensus (-2) to reject the recommendation.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

4A. PFWG RE-EVALUATION - MARCH 27, 1980:

Wording changed to read: "COE should avoid whenever and wherever possible the placing of dredged material in backwaters, side channels and sloughs."

Conditions: DMUWG - Abide by channel maintenance approved sites.
RWG - That this doesn't prohibit recreational development or enhancement.

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4A. (Cont.)

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

5. PFWG NUMBER: 6322 6. TYPE OF ALTERNATIVE: EQ/Selected
7. CONFLICTS NOT RESOLVED: See #3.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 15, 1980

ORIGINATING WORK GROUP: Side Channel

1. WORK GROUP RECOMMENDATION NUMBER: 3503

2. RECOMMENDATION:

Off channel areas should be monitored to provide an estimate of sedimentation rates. This data would serve as a basis on which to place priorities in addressing backwater restoration.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to fish and wildlife, floodplain management, recreation and sediment and erosion control concerns.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6205

6. TYPE OF ALTERNATIVE: EQ/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 15, 1980

ORIGINATING WORK GROUP: Side Channel

1. WORK GROUP RECOMMENDATION NUMBER: 3504

2. RECOMMENDATION:

Perform alterations to backwater areas as a remedy to the loss of fish and wildlife habitat due to sedimentation where the action will not significantly alter habitat elsewhere.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: SCWG will provide a list of those backwater areas where action is needed and the priorities for those actions. Criteria for construction alternatives is included.

Evaluation: No conflicts. Possible benefits to fish and wildlife, floodplain management, material and equipment needs, recreation and sediment and erosion control concerns.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6206

6. TYPE OF ALTERNATIVE: EQ/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Side Channel

1. WORK GROUP RECOMMENDATION NUMBER: 3505

2. RECOMMENDATION:

USDA should seek additional funding to increase cost-sharing specifically for no-till and conservation-till practices and give them immediate priority. EPA should seek funding under the 208 Water Quality Program to promote reduction of soil losses through standard conservation practices and new technology. Current conservation practices should be continued with the exception of those that increase water runoff rates (i.e., tiling) or result in habitat losses (i.e., conversion of wooded or brushy ravines to grassed waterways). Tax incentives should be provided to promote use of Best Management Practices in soil conservation.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Whether or not tiling actually increases water runoff rates.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Deleted "increase water runoff rates (i.e., tiling)" in third sentence.

5. PFWG NUMBER: 6314

6. TYPE OF ALTERNATIVE: NED-EQ

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Side Channel

1. WORK GROUP RECOMMENDATION NUMBER: 3506

2. RECOMMENDATION:

Provide COE with the funding a post-authorization change of the 9-foot navigation project, to perform alterations to backwaters and side channels for the benefit of fish and wildlife.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Covered in other recommendations.

4. PFWG RECOMMENDATION MODIFICATIONS:

Withdrawn by SCWG.

5. PFWG NUMBER: Withdrawn 6. TYPE OF ALTERNATIVE: n/a

7. CONFLICTS NOT RESOLVED: n/a

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 15, 1980

ORIGINATING WORK GROUP: Side Channel

1. WORK GROUP RECOMMENDATION NUMBER: 3507

2. RECOMMENDATION:

The COE construct, maintain and alter regulatory structures to provide beneficial effects to fish, wildlife and recreation as well as navigation according to criteria and parameters identified by wing dam modification studies of GREAT II.

* Assumes studies will show that these measures are effective!

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Presently, COE authority only exists to alter for navigation - recommendation is contingent upon fish and wildlife becoming a project purpose.

Evaluation: Possible benefits to Fish and Wildlife, Floodplain Management, Recreation, Sediment and Erosion Control Work Groups.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Condition added during evaluation: That the modifications to the structures not reduce the intended purpose of the structures of maintaining the navigation channel.

5. PFWG NUMBER: 6207 6. TYPE OF ALTERNATIVE: EQ/Selected

7. CONFLICTS NOT RESOLVED: COE presently does not have authority

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 15, 1980

ORIGINATING WORK GROUP: Side Channel

1. WORK GROUP RECOMMENDATION NUMBER: 3508

2. RECOMMENDATION:

Conduct a pilot project and study to determine the feasibility and impacts of dredging a silted backwater to restore its previous depths and hence prolong its productive life.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to Fish and Wildlife, Floodplain Management and Sediment and Erosion Control Work Groups.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

"The FWIC was added as the responsible agency" to the recommendation.

5. PFWG NUMBER: 6208

6. TYPE OF ALTERNATIVE: EQ/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 15, 1980

ORIGINATING WORK GROUP: Side Channel

1. WORK GROUP RECOMMENDATION NUMBER: 3510

2. RECOMMENDATION:

Initiate a research and development program to determine the equipment (or prices of equipment or equipment system) necessary for performing large scale backwater alterations.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to fish and wildlife, floodplain management.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6209

6. TYPE OF ALTERNATIVE: EQ/Selected

7. CONFLICTS NOT RESOLVED: Need implementing agency - otherwise None.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Side Channel

1. WORK GROUP RECOMMENDATION NUMBER: 3523 (3511)

2. RECOMMENDATION:

Apply the physical, chemical and biological data from Burnt Pocket, Fountain City Bay, and any other side channel alteration study to other computer models or methodologies as may be available (i.e., On Stream Flow Group) or which may be developed in the future to further test and refine the capability to predict the biological consequences of physical alterations to side channels and backwaters.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6316

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Side Channel

1. WORK GROUP RECOMMENDATION NUMBER: 3515

2. RECOMMENDATION:

The FWIC should be responsible for the development of a comprehensive fish and wildlife management plan for Pool 19. The plan should include, and federal and state resource agencies should pursue, cooperative agreements with the primary landowners of the pool in an effort to get more of these lands in public management (see FWMWG 3039).

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6315

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 14, 1980

ORIGINATING WORK GROUP: Dredging Requirements

1. WORK GROUP RECOMMENDATION NUMBER: 4001

2. RECOMMENDATION:

Dredge material should be disposed of by utilizing existing and new disposal sites following guidelines established by GREAT II Task Force and investigate open water disposal methods using the Main Channel Disposal Demonstration Project.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Need to update fish and wildlife impacts. Need to identify additional costs. The second portion of the recommendation should be a separate recommendation.

Evaluation: See above. Possible benefits to cultural resources, dredged material uses, fish and wildlife, floodplain management, material and equipment needs, recreation, side channel and water quality work groups.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Recommendation changed to read: "Dredge material should be disposed of by utilizing existing and new disposal sites following guidelines established by GREAT II."

5. PFWG NUMBER: 6196

6. TYPE OF ALTERNATIVE: NED-EQ/Selected

7. CONFLICTS NOT RESOLVED: Cost Identification

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 14, 1980

ORIGINATING WORK GROUP: Dredging Requirements

1. WORK GROUP RECOMMENDATION NUMBER: 4002

2. RECOMMENDATION:

To reduce the quantities of material dredged each dredging occurrence in the short-term, detailed hydrographic surveys of each prospective dredge site needs to be done to find the location, depth, and width of the best channel for that stretch of the river to minimize the amount of dredging required. Navigation buoys should be realigned as necessary by the U.S. Coast Guard and they should be supported by the Corps of Engineers personnel and equipment to assure a safe and navigable channel. Buoys should be realigned to where the channel might stabilize as determined by the Corps of Engineers.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Portion of recommendation is covered by a Commercial Transportation Work Group recommendation.

Evaluation: No conflicts. Possible benefits to fish and wildlife, floodplain management, material and equipment needs, side channel concerns.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

The second sentence was completely removed from the recommendation. Recommendation changed to read: "To reduce the quantities of material dredged each dredging occurrence in the short-term, detailed hydrographic surveys of each prospective dredge site needs to be done to find the location, depth and width of the best channel for that stretch of the river to minimize the amount of dredging required. Buoys should be realigned to where the channel might stabilize as determined by the Corps of Engineers."

5. PFWG NUMBER: 6197

6. TYPE OF ALTERNATIVE: NED-EQ/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 15, 1980

ORIGINATING WORK GROUP: Dredging Requirements

1. WORK GROUP RECOMMENDATION NUMBER: 4003

2. RECOMMENDATION:

Develop a true two-dimensional sediment transport by modifying existing partial two-dimensional model to assess the regulatory structures effectiveness and further needs near chronic dredge areas. Use model to determine the optimum channel size for a given stretch of the river knowing the flow and depth conditions that exist there.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: A model of this type already exists. Need to spell out what refinements of this model would give you. However, Dredging Requirements doesn't feel existing model would serve the needs of the river in the RID.

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Reworded to read: "Refine the existing two-dimensional sediment transport model to assess the regulatory structures effectiveness and further needs near chronic dredge areas. Use model to determine the optimum channel size for a given stretch of the river knowing the flow and depth conditions that exist there."

5. PFWG NUMBER: 6198

6. TYPE OF ALTERNATIVE: NED/Selected

7. CONFLICTS NOT RESOLVED: Identify refinements and expand recommendation rationale.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 5, 1980

ORIGINATING WORK GROUP: Dredging Requirements

1. WORK GROUP RECOMMENDATION NUMBER: 4004

2. RECOMMENDATION:

The RID/COE should review existing Corps studies and results of USCG tow model tests presently being conducted to determine present state of the art and need for future studies.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Are now doing in Master Plan. Also found to not be legal in GREAT I.

4. PFWG RECOMMENDATION MODIFICATIONS:

Withdrawn by the DRWG.

5. PFWG NUMBER: Withdrawn 6. TYPE OF ALTERNATIVE: n/a

7. CONFLICTS NOT RESOLVED: n/a

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: April 29, 1980

ORIGINATING WORK GROUP: Dredging Requirements

1. WORK GROUP RECOMMENDATION NUMBER: 4005

2. RECOMMENDATION:

Conduct main channel disposal experiment as described in the Scope-Of-Work for Main Channel Disposal developed for GREAT II to determine the environmental and hydrological impacts of riverine disposal.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: FWMWG & SCWG - Subject to review of final Scope-Of-Work.
WQWG - Suspended solids must not exceed levels occurring naturally.

5. PFWG NUMBER: 6323

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 15, 1980

ORIGINATING WORK GROUP: Dredging Requirements

1. WORK GROUP RECOMMENDATION NUMBER: 4006

2. RECOMMENDATION:

Corps of Engineers, Rock Island District, Committee for the Assessment of Regulatory Structures (CARS), should be adopted as a permanent means to evaluate regulatory structures. Physical and mathematical models should be utilized to determine the need for regulatory structures in chronic dredge areas, with the goal of long-term reduction of dredging requirements through evaluation of river hydraulics.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to fish and wildlife, floodplain management, sediment and erosion control and side channel concerns.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6199

6. TYPE OF ALTERNATIVE: NED/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 15, 1980

ORIGINATING WORK GROUP: Dredging Requirements

1. WORK GROUP RECOMMENDATION NUMBER: 4007

2. RECOMMENDATION:

Corps of Engineers should determine the optimum location to maintain dredge equipment for emergency and spot dredging and should contract out the average annual amount of dredging to the private sector (i.e., chronic areas, boat hazards).

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to commercial transportation.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Added words "attempt to" in place of "should". Recommendation now reads: "....and attempt to contract out the average....to the private sector."

5. PFWG NUMBER: 6200

6. TYPE OF ALTERNATIVE: NED/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: December 13, 1980

ORIGINATING WORK GROUP: Dredging Requirements

1. WORK GROUP RECOMMENDATION NUMBER: 4009

2. RECOMMENDATION:

The bank channel closure structures near Fox Island in Pool 20 should be modified to reduce dredging required in the main channel.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Concern that flow in side channel would be cut off. Also modification of control structure may degrade it as a cultural resource.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: CRWG - That a cultural survey of the control structure be conducted.

FWMWG - That flow in the side channel be maintained.

5. PFWG NUMBER: 6172

6. TYPE OF ALTERNATIVE: NED

7. CONFLICTS NOT RESOLVED: None - See Conditions.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 15, 1980

ORIGINATING WORK GROUP: Dredging Requirements

1. WORK GROUP RECOMMENDATION NUMBER: 4011

2. RECOMMENDATION:

St. Paul, St. Louis, and Rock Island Districts, Corps of Engineers, Federal EPA, the Five Upper Mississippi States EPA's, Water Regulation and Conservation Departments should form a joint committee to evaluate current state and federal laws and regulations relating to dredging and recommend needed changes to the laws and regulations so there will be consistent laws and regulations between the Federal Government and States pertaining to when dredging is required, dredge material disposal, definition of emergency dredging, permitting requirements and time frame for permit action.

The States of Minnesota, Wisconsin, Iowa, Illinois and Missouri should develop and implement a compact to guide consistent regulatory laws relating to dredging, dredge material disposal, definition of emergency dredging, permitting and time frame for permit actions.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: First paragraph of recommendation is essentially what GREAT is doing.

Evaluation: No conflicts. Possible benefits to fish and wildlife.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

First paragraph deleted. The words "based on GREAT II report" were added to second paragraph to read: "The States of Minnesota, Wisconsin, Iowa, Illinois and Missouri should develop and implement a compact, based on GREAT II report, to guide consistent regulatory laws relating to dredging, dredge material disposal, definition of emergency dredging, permitting requirements, and time frame for permit action."

5. PFWG NUMBER: 6201

6. TYPE OF ALTERNATIVE: NED/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 5, 1980

ORIGINATING WORK GROUP: Dredging Requirements

1. WORK GROUP RECOMMENDATION NUMBER: 4012

2. RECOMMENDATION:

There are thirty potential "recurrent" dredging sites from Mississippi River Mile 300.0 to 614.0, under the RID/COE channel maintenance responsibility. The improvement of the regulatory structures will improve the adequacy of the river to keep sediments in the main channel and minimize or eliminate dredging in these reaches of the river.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Possible impacts on cultural resources. Impacts to flooding not evaluated.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: FPMWG - Include in impact assessment the possible effects on flood levels.
CRWG - Appropriate cultural resource surveys, as needed.

5. PFWG NUMBER: 6272

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: December 12, 1979

ORIGINATING WORK GROUP: Dredged Material Uses

1. WORK GROUP RECOMMENDATION NUMBER: 4501

2. RECOMMENDATION:

Modify present day COE policy regarding charging for dredged material transport or putting material up for bid, when there is a productive use request. A recommended policy is outlined (see recommendation).

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: CTWG - What about the additional costs for Plan Form approved sites that are beyond present day COE policy. Feels that a cost allocation should be made of dredging costs and benefits in providing dredged material for beneficial uses.

MENWG - Some of the Plan Form approved sites are beyond the present capability of the COE equipment.

Evaluation: Benefits to floodplain management.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team - contingent upon the conditions explained above.

4. PFWG RECOMMENDATION MODIFICATIONS:

Reworded: "Present day COE policy regarding charging for dredged material transport or putting material up for bid should be modified by the Chief of Engineers, when there is a productive use request. A recommended policy is outlined (see recommendation)."

NOTE: Wording in the policy was also changed to specify that sites be selected by "Plan Form procedures for disposal site selection". This wording should be entered in the policy wherever the words 'Plan Form approved sites' were in the original recommendation.

NOTE: May come up with a more stringent recommendation through Plan Form.

5. PFWG NUMBER: 6166

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: Conflicts resolved contingent upon conditions in Section #3.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: December 12, 1979

ORIGINATING WORK GROUP: Dredged Material Uses

1. WORK GROUP RECOMMENDATION NUMBER: 4502

2. RECOMMENDATION:

It is recommended that a legal review be initiated to determine what the Corp's liabilities are if dredged material is made available to either public or private entities, and such availability interferes with an existing market and/or distributor of sand. (Reworded see Section #4.)

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to floodplain management concerns.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

It is recommended that a legal review be initiated by the Chief of Engineers' to determine what the Corps liabilities are if dredged material is made available to either public or private entities, and such availability interferes with an existing market and/or distributor of sand.

5. PFWG NUMBER: 6167 6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: December 12, 1979

ORIGINATING WORK GROUP: Dredged Material Uses

1. WORK GROUP RECOMMENDATION NUMBER: 4503

2. RECOMMENDATION:

Dredged material should be considered as a satisfactory fine aggregate source rather than a waste product. (Reworded - see Section #4.)

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Benefits to fish and wildlife, floodplain management, side channels and water quality.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

"Dredged material should be promoted by Rock Island District/Corps of Engineers as a satisfactory fine aggregate source rather than a waste product."

5. PFWG NUMBER: 6168

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: December 12, 1979

ORIGINATING WORK GROUP: Dredged Material Uses

1. WORK GROUP RECOMMENDATION NUMBER: 4504

2. RECOMMENDATION:

It is recommended that dredged material be disposed of in such a manner that it is available to the people, organizations and agencies that have requested it through the DMUWG Market Study. Guidelines for distribution are included after Attachment 4.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: MENWG - Constraints in fulfilling this recommendation based on present equipment capabilities.

Evaluation: Benefits to fish and wildlife, floodplain management, side channels and recreation.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team, contingent upon conditions placed on recommendation by MENWG.

4. PFWG RECOMMENDATION MODIFICATIONS:

"It is recommended that dredged material be disposed of in such a manner that it is available to the people, organizations and agencies who have requested it through the DMUWG Market Study. In doing so, guidelines for distribution, as set forth in 4501, are included after Attachment 4."

5. PFWG NUMBER: 6169 6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: See Section #3.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: December 12, 1979

ORIGINATING WORK GROUP: Dredged Material Uses

1. WORK GROUP RECOMMENDATION NUMBER: 4505

2. RECOMMENDATION:

It is recommended that where feasible, beneficial use sites recommended by the DMUWG be utilized for dredged material disposal during normal channel maintenance dredging. It is necessary that the sites be justified based upon economic and/or environmental considerations. If transport beyond an environmentally acceptable site is required, beneficial use values derived from the action must be great enough to offset the extra cost of transport.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: CRWG - Ensure adequate identification of cultural resources at alternative sites not recommended by DMUWG.
MENWG - Equipment constraints.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team, contingent upon above conditions (Section #3) and additions (Section #4).

4. PFWG RECOMMENDATION MODIFICATIONS:

Added to recommendation: "Plan Form disposal site selection procedures to be used in identifying sites."

5. PFWG NUMBER: 6170 6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None - See Section 3.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: December 12, 1979

ORIGINATING WORK GROUP: Dredged Material Uses

1. WORK GROUP RECOMMENDATION NUMBER: 4506

2. RECOMMENDATION:

Open water disposal should not be considered when market study identified productive (includes recreational) use sites are within the reach of equipment. Beneficial use values derived from the action must be great enough to offset the extra cost of transport and containment and/or it must be shown that environmental impacts can be significantly reduced by using the productive use sites.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: MENWG - Equipment constraints.

Evaluation: Benefits to fish and wildlife and side channels.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

No modifications, although two clarifications were made:

1. Definition of productive and/or beneficial uses, includes recreation benefits.
2. Recommendation is not recommending open water disposal.

5. PFWG NUMBER: 6171

6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None - See Section 3 for conditions.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 15, 1980

ORIGINATING WORK GROUP: Cultural Resources

1. WORK GROUP RECOMMENDATION NUMBER: 5001

2. RECOMMENDATION:

Implement incremental approach to collecting resource locational data on federal lands on a pool by pool sampling basis.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Recommendation needs clarification.

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

The RID/COE and USFWS implement an incremental approach to collecting cultural resource locational data on federal lands on a pool by pool basis, until all pools in the RID have been completed.

5. PFWG NUMBER: 6210 6. TYPE OF ALTERNATIVE: EQ/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 15, 1980

ORIGINATING WORK GROUP: Cultural Resources

1. WORK GROUP RECOMMENDATION NUMBER: 5002

2. RECOMMENDATION:

Conduct surveys of dredge spoil placement sites proposed by GREAT on a systematic basis.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Recommendation needs clarification.

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Reworded to read: "The RID/COE should conduct reconnaissance surveys of dredge spoil placement sites proposed by GREAT on a site by site basis."

5. PFWG NUMBER: 6211

6. TYPE OF ALTERNATIVE: EQ/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 15, 1980

ORIGINATING WORK GROUP: Cultural Resources

1. WORK GROUP RECOMMENDATION NUMBER: 5003

2. RECOMMENDATION:

Conduct workshops at Division level for district staffs and state preservation programs staff using case examples resulting from application of 33 CFR 305.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: A program already exists. However the program needs to be emphasized as want greater attendance at the District level.

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Reworded to read: "The NCD/COE should take the lead role and conduct regular workshops at Division level for district staffs and state preservation programs staff using case examples resulting from application of 33 CFR 305.

5. PFWG NUMBER: 6212 6. TYPE OF ALTERNATIVE: EQ/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 15, 1980

ORIGINATING WORK GROUP: Cultural Resources

1. WORK GROUP RECOMMENDATION NUMBER: 5004

2. RECOMMENDATION:

Encourage states and local governments to conduct surveys and develop ordinances facilitating multiple passive uses of sensitive areas.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: As written the recommendation could have precluded multiple use of resources in many areas - and possibly could be interpreted to mean encouragement of floodplain development. "However, the recommendation is talking about a broader area than the floodplain and does not imply floodplain development."

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Recommendation was reworded to read: "HCRS should encourage states and local governments to conduct reconnaissance surveys and develop ordinances which take into account the existence of important cultural resources prior to development."

5. PFWG NUMBER: 6213

6. TYPE OF ALTERNATIVE: EQ/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG. January 15, 1980

ORIGINATING WORK GROUP: Cultural Resources

1. WORK GROUP RECOMMENDATION NUMBER: 5005

2. RECOMMENDATION:

Conduct streambank survey pool by pool to locate and identify unknown archaeological sites and locate and determine present status of known sites abutting on bank edge (includes remnants of preinundation islands).

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Would require people in a boat checking the shores, etc. Recommendation needs clarification.

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Recommendation reworded to read: "RID/COE conduct UMR bank surveys pool by pool - to locate and identify unknown archaeological sites and locate and determine present status of known sites abutting on bank edge (includes remnants of preinundation islands)."

5. PFWG NUMBER: 6214

6. TYPE OF ALTERNATIVE: EQ/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Cultural Resources

1. WORK GROUP RECOMMENDATION NUMBER: 5006

2. RECOMMENDATION:

Conduct geomorphic studies of present land surface and literature and document search of pre-inundation landscape to determine likely areas of location of buried archaeological sites.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Would involve field checking after literature search has been completed.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6262

6. TYPE OF ALTERNATIVE: Future Studies-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Cultural Resources

1. WORK GROUP RECOMMENDATION NUMBER: 5007

2. RECOMMENDATION:

Conduct historical, architectural/engineering survey of as-built navigation system structures as a significant historic network (transportation, economic and engineering history).

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: No intent to slow down or stop navigation.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6263

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: February 14, 1980

ORIGINATING WORK GROUP: Cultural Resources

1. WORK GROUP RECOMMENDATION NUMBER: 5008

2. RECOMMENDATION:

Conduct thorough historical records search and evaluation to identify location of known steamboat wrecks in the reach.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Present locations only known by pool.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6264

6. TYPE OF ALTERNATIVE: Future Studies-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 14, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5501

2. RECOMMENDATION:

Congress define the 9-foot navigation project as including allowances required for advance maintenance dredging, dredging tolerances, squat and trim for the class vessels using the project, wave action, shoaling rates, and other over depth allowance necessary to afford safe navigation for vessels with a draft of 9 feet.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Wisconsin did not agree with definition felt Congress should word the definition as they intended. However, further discussion countered that if the recommendation doesn't 'define' now how it is recommended to be interpreted, then Congress would most likely turn to the COE for a definition - and would therefore inhibit input from other agencies.

Evaluation: Benefits to Dredging Requirements Work Group.
May or may not affect a cultural resource.
No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

No modifications.

5. PFWG NUMBER: 6178

6. TYPE OF ALTERNATIVE: NED/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 5, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5502

2. RECOMMENDATION:

The RID/COE dredging program should insure that channel depths not fall below 11.0 feet to insure reasonable degrees of safety and operating efficiency for commercial vessels.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: DRWG felt if strictly enforced, this recommendation would result in increased dredging. However they did not feel it was a change in policy, rather it was a change in historic precedent. WQWG did not see the need for the recommendation if it defined current policy. However, CTWG said recommendation would insure that channel never reaches 9 feet. DRWG explained that there were areas where the channel stabilized at say 10.0 or 10.5 feet, which are not presently dredged, that would have to be dredged.

Voting: Negative votes by the FPMWG and WQWG. PFWG voted by consensus (C6) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Wording added: "Under certain hydraulic conditions the RID/COE may allow the channel to fall below 11 feet normal pool."

Conditions: SCWG, DRWG, FPMWG, MENWG - That dredging not exceed present levels.

5. PFWG NUMBER: 6276 6. TYPE OF ALTERNATIVE: NED

7. CONFLICTS NOT RESOLVED: See conflicts. Effects on dredging quantities still unknown.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 14, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5503

2. RECOMMENDATION:

The Corps of Engineers adopt a definition of emergency dredging as follows:

- a. When actual water depth is projected by the District Engineer to be 10 feet or less within 14 days or less, or
- b. When channel width is less than 85% of the normal channel width, or
- c. When required to free a grounded vessel or to remove shoals in the channel as a result of a vessel freeing itself.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Present policy allows a vessel to ground before emergency dredging will occur.

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Recommendation had one modification to part 'b' - It now reads: "When channel width is less than 85% of the normal 'maintained' channel width." The rest of the recommendation remained the same.

5. PFWG NUMBER: 6179

6. TYPE OF ALTERNATIVE: NED/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 14, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5504

2. RECOMMENDATION:

That the Corps of Engineers conduct advance planning and design of the UMR navigation system to meet future needs of navigation by enlarging, modernizing, or replacing locks whose capacity will be exceeded.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Studies which support the recommendation should be spelled out in the rationale.

Fish and Wildlife concerned that by approving the recommendation they would be indirectly condoning navigation increases.

However, the recommendation only recommends planning to determine if future needs can be met by the present system, and includes non-structural as well as structural alternatives.

According to Barge Forecast Traffic Studies - traffic will increase.

Evaluation: Benefits to recreation concerns.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

No modifications.

5. PFWG NUMBER: 6180 6. TYPE OF ALTERNATIVE: NED/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 14, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5505

2. RECOMMENDATION:

The Corps of Engineers should develop a plan to institute non-structural and structural measures to improve the safety and locking efficiency of existing locks; i.e., guidewalls, mooring cells, sequenced locking, etc.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6181

6. TYPE OF ALTERNATIVE: NED/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: December 12, 1979

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5506

2. RECOMMENDATION:

The Corps of Engineers should construct a mooring cell just north of Lock 22 and extend the locks upper and lower guide walls.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: CRWG - Need to evaluate the significance of the structure in relation to overall navigation.
FWMWG - Need to provide adequate mitigation of fish and wildlife impacts.
WQWG - Need mitigation to prevent bank erosion.
RWG - Nearby boat ramp needs to be considered when locating the cell.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team, contingent upon above conditions.

4. PFWG RECOMMENDATION MODIFICATIONS:

Add COE Study to rationale.

5. PFWG NUMBER: 6175 6. TYPE OF ALTERNATIVE: Selected

7. CONFLICTS NOT RESOLVED: None - See #3 for conditions.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: December 12-13, 1979

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5507

2. RECOMMENDATION:

The Corps of Engineers should construct an extension to the upper and lower guidewall at Lock 21.

3. PFWG CONFLICTS WITH RECOMMENDATION:

See conditions and wording changes below.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Added sentence: "Structural as well as non-structural alternatives should be considered."

Conditions: CRWG - Evaluate significance of this structure in relation to overall navigation.

FWMWG - Provide adequate mitigation of fish and wildlife impacts.

WQWG - Mitigation to prevent bank erosion.

RWG - Consider recreation access needs.

5. PFWG NUMBER: 6176

6. TYPE OF ALTERNATIVE: NED

7. CONFLICTS NOT RESOLVED: None - See Conditions

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: December 12-13, 1979

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5508

2. RECOMMENDATION:

The Corps of Engineers should construct an extension to the upper and lower guidewalls at Lock 20.

3. PFWG CONFLICTS WITH RECOMMENDATION:

See Conditions.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Added sentence: "Structural as well as non-structural alternatives should be considered."

Conditions: CRWG - Evaluate the significance of this structure in relation to overall navigation.

FWMWG - Provide adequate mitigation of fish and wildlife impacts.

WQWG - Mitigation to present bank erosion.

RWG - Consider recreation access needs.

5. PFWG NUMBER: 6177

6. TYPE OF ALTERNATIVE: NED

7. CONFLICTS NOT RESOLVED: None - See Conditions

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 14, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5509

2. RECOMMENDATION:

The Corps of Engineers make average lock processing times for each lock available to the barge and towing industry. Barge and towing industry should seek to reduce lock processing time by continuing to improve crew training.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6182

6. TYPE OF ALTERNATIVE: NED/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 14, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5510

2. RECOMMENDATION:

The Corps of Engineers straighten the channel alignment and remove rocks in the vicinity of river mile 489. As an interim measure the U.S. Coast Guard should increase the number of navigation aids and frequency of visits to the area.

3. PFWG CONFLICTS WITH RECOMMENDATION:

None.

Evaluation: Benefits to the Material and Equipment Needs Work Group were noted.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

"The Corps of Engineers should be provided funds to straighten.... river mile 489."

The words "should be provided funds" were added to the recommendation. No other changes were made.

5. PFWG NUMBER: 6183 6. TYPE OF ALTERNATIVE: NED/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 14, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5511

2. RECOMMENDATION:

The Corps of Engineers perform additional dredging on the downbound approach to Lock 15 to prevent vessel groundings during Pool 15 drawdowns.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Would institute dredging where there hasn't been any in the past. Cost/benefit ratios are presently unknown.

Evaluation: Would like to see cost figures on this recommendation.
Benefits to Material and Equipment Needs Work Group.

Voting: PFWG voted by consensus (c6) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6184

6. TYPE OF ALTERNATIVE: NED/Selected

7. CONFLICTS NOT RESOLVED:

Need cost figures. Would increase dredging in area.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 14, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5512

2. RECOMMENDATION:

That the U.S. Coast Guard improve its navigation aids program in the following manner:

- a. Conduct an evaluation of industry requirements and the necessary level of aids to navigation resources to satisfy those requirements.
- b. Obtain better portable sounding equipment to perform high speed, low cost channel surveys for the effective placement of buoys.
- c. Institute better coordination with the Corps of Engineers at the working level.
- d. Provide greater experience levels and stability of aids to navigation personnel through increased tour lengths and prerequisite assignments.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Possible alternative of having COE handle this.

Evaluation: No conflicts. Possible benefits to recreation concerns.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6185

6. TYPE OF ALTERNATIVE: NED/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 14, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5513

2. RECOMMENDATION:

Obstructive bridges should be rebuilt to provide adequate horizontal and vertical clearances. The Truman-Hobbs Act should:

- a. Continue to be used in rebuilding bridges on the basis of navigation needs.
- b. Be amended to include replacement or repair of bridge protection systems.
- c. Be amended to include benefits to land as well as marine interests. Because public money is being spent, the total public benefit should be considered in benefit/cost ratios.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Parts B & C would require legislation. COE presently has responsibility to remove hazards to navigation. Would help to reduce waiting time to (also) rail and/or automobile traffic which occurs when bridge is open for barge traffic (and vice versa).

Evaluation: May or may not affect a cultural resource.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6186 6. TYPE OF ALTERNATIVE: NED/Selected

7. CONFLICTS NOT RESOLVED: The impact on cultural resources is unknown.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 14, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5514

2. RECOMMENDATION:

Operating regulations for drawbridges must be vigorously enforced by the U.S. Coast Guard. To accomplish this, the Acts of 18 August 1864 and 3 March 1899, the Bridge Act of 1906, and the General Act of 1946 should be amended to provide for civil penalties in certain circumstances and for other purposes as recommended by the U.S. Coast Guard.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: The actual problems and/or regulations which need to be enforced need to be listed in the rationale.

Evaluation: No conflicts. Possible benefits to recreation concerns.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6187

6. TYPE OF ALTERNATIVE: NED/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 14, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5515

2. RECOMMENDATION:

The U.S. Coast Guard should require the improved detectability of bridge piers and other obstructions through the use of radar transponders, conical reflectors, or marking with reflective tape.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts. Possible benefits to recreation concerns.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6188

6. TYPE OF ALTERNATIVE: NED/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 14, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5516

2. RECOMMENDATION:

The Corps of Engineers consider the following alternatives in reducing lock congestion caused by recreation craft and to facilitate their safe and speedy passage (in priority order):

- a. Establish lock waiting areas.
- b. Establish sufficient boat launching facilities in each pool preclude the necessity for recreation locking.
- c. Provide boater information on lockages through local radio stations or a Corps low power AM radio network.
- d. Install CB radio at locks.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Eliminates problems that arise when you have dedicated locking times. Regardless of what system you set up - will always have boats in lock vicinity - there will always be a need for a boat waiting area to improve safety.

Evaluation: No conflicts. Possible benefits to recreation.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6189

6. TYPE OF ALTERNATIVE: NED/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 14, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5517

2. RECOMMENDATION:

Barge tie-offs in fleeting areas should be accomplished through the use of permanently installed shore or in-water mooring facilities. As an inducement for voluntary compliance, mooring cleats, deadmen, cells, etc., used only for mooring purposes should be permitted to be constructed at sites that have historically been used for fleeting without being subject to Corps permit requirements.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: - Would not want to 'grandfather' in all 'existing' sites as there are some which would be denied a permit if the permit expired (i.e., Cassville Slough and/or those which border on refuge areas).
- Would want to be able to enforce certain areas so that barges would not tie up 'anywhere'.
- If used general permit for existing and proposed sites could set all permitting criteria and limitations.
- Rationale for recommendation was too strongly worded for fish and wildlife concerns.

4. PFWG RECOMMENDATION MODIFICATIONS:

Modifications recommended to rationale. PFWG reworded original recommendation to:

"The Corps issue a general permit for fleeting areas (existing and proposed) that would develop criteria for installation of mooring cleats, deadmen, cells, etc., that are used only for mooring purposes."

CTWG at this point, withdrew recommendation. No PFWG was developed. No evaluation was made. CTWG may formulate another recommendation.

5. PFWG NUMBER: - 6. TYPE OF ALTERNATIVE: Withdrawn

7. CONFLICTS NOT RESOLVED: See discussion - #3 above.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 14, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5518

2. RECOMMENDATION:

The Corps of Engineers provide public use trash disposal and pump-out facilities at locks.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: No need for pump-out facilities at locks for barges as the barges already contain pump-out facilities. A recreation recommendation will cover pump-out facilities for recreational craft.

Evaluation: No conflicts. Possible benefits to fish and wildlife, side channel, recreation.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

The words "and pump-out" were removed from the recommendation. It now read: "The Corps of Engineers provide public use trash disposal facilities at locks."

5. PFWG NUMBER: 6190

6. TYPE OF ALTERNATIVE: EQ/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 20, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5519

2. RECOMMENDATION:

The COE expand their administrative policy on removal of sunken wrecks and obstructions to include navigable waters other than navigable channels.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: Possible impacts on cultural resources.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: CRWG - Give special considerations to historic wrecks.

5. PFWG NUMBER: 6317

6. TYPE OF ALTERNATIVE: NED

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 14, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5520

2. RECOMMENDATION:

If user charges are implemented all beneficiaries/users of the 9-foot navigation project should be identified and their share of project costs be equitably allocated by water resource managers.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Recommendation is not saying there should be user charges!

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Dredged Material Uses added the following condition to recommendation: "That DMUWG criteria (GREAT II) be adhered to when determining cost allocation of material."

5. PFWG NUMBER: 6191

6. TYPE OF ALTERNATIVE: NED/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 14, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5521

2. RECOMMENDATION:

State and Federal agencies concerned with permitting of fleeting and river development should streamline their permitting procedures by instituting the following procedures:

- a. Establish time limits in which comments may be received or project reviews conducted.
- b. Coordinate responses between various agencies or departments within a state.
- c. Establish more precise evaluation criteria so that environmental impact assessment can be accomplished at a reasonable cost and in a timely fashion.
- d. Require some degree of documentation supporting objections or concerns expressed by agencies or individuals.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: COE already has a permitting procedure. Essentially, the Federal government uses criteria as listed in recommendation. Therefore, all criteria may not be applicable to both State and Federal governments.

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Added Part 'e': "Investigate issuance of general permits for minor and similar activities."

5. PFWG NUMBER: 6192 6. TYPE OF ALTERNATIVE: EQ/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 27, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5522

2. RECOMMENDATION:

State and Federal DOT policies focus on an intermodal transportation system to capitalize on the unique advantages of each mode.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6318

6. TYPE OF ALTERNATIVE: NED-EQ

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: January 14, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5523

2. RECOMMENDATION:

The Federal government conduct a study to forecast the magnitude and nature of rail and vehicle bridge traffic over Mississippi River operating-type bridges and quantify its effect on the safety and operation of commercial vessel navigation.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Information from study could be utilized by those enforcing the 'Truman-Hobbs' Act.

Evaluation: No conflicts.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6195

6. TYPE OF ALTERNATIVE: NED/Selected

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 5, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5524

2. RECOMMENDATION:

The Corps of Engineers update navigation charts of the UMR and reorganize pages in consecutive order.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Need to include environmental data on maps.

Evaluation: No conflicts. Possible benefits to recreation.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: That additional phrasing be added to encourage the inclusion of additional information on the maps (i.e., bridge clearances, highline clearance, navigational aid, fish and wildlife refuges, etc.).

5. PFWG NUMBER: 6277

6. TYPE OF ALTERNATIVE: NED-EQ

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 5, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5525

2. RECOMMENDATION:

That the USCG implement the recommendations of the study on HUMAN AND PHYSICAL FACTORS AFFECTING COLLISIONS, RAMMINGS AND GROUNDINGS ON WESTERN RIVERS AND GULF INTRACOASTAL WATERWAYS, CG-D-30-78 as soon as possible.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Items not listed for support, are those which have already been acted on.

Evaluation: No conflicts. Possible benefits to recreation.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6278

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: None

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: March 27, 1980

ORIGINATING WORK GROUP: Commercial Transportation

1. WORK GROUP RECOMMENDATION NUMBER: 5526

2. RECOMMENDATION:

That riverine disposal be used by the COE whenever practicable as the preferred method of dredged material disposal for the 9-foot navigation project.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: DMUWG - Precludes beneficial use of material.
FWMWG - Don't know impacts on aquatic habitats.
RWG - Precludes beach nourishment
WQWG - Potential for increased turbidity

4. PFWG RECOMMENDATION MODIFICATIONS:

Recommendation rejected after lengthy debate.

5. PFWG NUMBER: Rejected 6. TYPE OF ALTERNATIVE: n/a

7. CONFLICTS NOT RESOLVED: See above

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: April 28, 1980

ORIGINATING WORK GROUP: Plan Formulation

1. WORK GROUP RECOMMENDATION NUMBER: PREP 16

2. RECOMMENDATION:

The GREAT II studies addressed the commercial/industrial/utility component only briefly through a contract to "identify the problems and needs of commercial river use". A report was prepared by the contractor and recommendations were made. A number of the recommendations in the report have already been made by other work groups (i.e., CTWG and RWG). However, the overall need, a lack of complete, accurate data regarding economic use of the UMR corridor, has not been addressed.

There is a need to document economic development problems. In compiling sources for the report, the contractor observed that little information was available on certain subjects. In order to do an accurate analysis of the commercial/industrial/utility needs of the UMR corridor, state and federal resource management agencies should, in cooperation with each other, initiate a program which would include the following studies:

1. Development studies that show the interrelated economic impacts that industries have on the general economy.
2. Detailed regional studies that assess prime waterway related industries that are attractive to selected communities.
3. Detailed analysis of the development requirements for these industries.
4. The report did not specifically address the economic impacts of land uses in the UMR corridor. The state and federal resource management agencies should develop a study as part of their program that investigates the relationship of all land uses in the UMR, to industrial development, and the problems and the needs as a result of this relationship. These studies are a necessary part of a complete land use management plan.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6325

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: Wisconsin abstained.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: April 28, 1980

ORIGINATING WORK GROUP: Plan Formulation

1. WORK GROUP RECOMMENDATION NUMBER: PREP 60

2. RECOMMENDATION:

Many of the recommendations developed by GREAT II promote the idea of continuing and improving inter-agency and inter-resource coordination, especially as it relates to the UMR. The UMRBC was established especially to provide this coordination service. The GREAT II studies have identified areas requiring further study before a comprehensive management plan can be developed for the UMR. The UMRBC Master Plan efforts are completing some, but not all of these needed studies.

In order to ensure continued inter-agency coordination and continued development of comprehensive management plans on and for the UMR, the UMRBC through the Great River Study Committee (GRSC) should develop a total river system management plan comprised of sub-plans fully coordinated with each other. For purposes of division of labor, we recommend that the GRSC consider four major study areas:

1. River System Management related to overall coordination (inter-agency, inter-resource) data organization needs.
2. Ecological Resources related principally to sedimentation, fish and wildlife, water quality, etc.
3. Human Resources/Use related principally to floodplain management, commercial navigation, channel maintenance, recreation, cultural resources, etc.
4. Public Information and Education duties related principally to overall public education, information, coordination, needs, activities.

The above is a partial excerpt from the draft GREAT II Main Report.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: CTWG and Wisconsin organizational and funding concerns.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

None

5. PFWG NUMBER: 6326

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: CTWG and Wisconsin abstained.

PFWG APPROVED RECOMMENDATION

DATE APPROVED BY PFWG: June 20, 1980

ORIGINATING WORK GROUP: Plan Formulation

1. WORK GROUP RECOMMENDATION NUMBER: PFWG Recommendation

2. RECOMMENDATION:

A demonstration dredging project should be conducted during 1980 or 1981 by the St. Paul and Rock Island Corps of Engineers to determine the feasibility and cost effectiveness of accomplishing channel maintenance by the following methods:

1. Mechanical dredging with a backhoe directly loading onto barges.
2. Mechanical unloading of barges at disposal sites.
3. Hydraulic dredging with direct loading onto barges.
4. Hydraulic unloading of barges at disposal sites.

3. PFWG CONFLICTS WITH RECOMMENDATION:

Discussion: Lengthy discussions dealt with the propriety of using St. Paul cost program and more specifically, the assumptions inherent in that program, for developing alternative dredging proposals. No clear resolution reached.

Voting: PFWG voted by consensus (+4) to pass the recommendation on to the Team.

4. PFWG RECOMMENDATION MODIFICATIONS:

Conditions: CRWG - Conduct appropriate surveys.
WQWG - Suspended solids must not exceed levels occurring naturally.

5. PFWG NUMBER: 6324

6. TYPE OF ALTERNATIVE: Future Study-Neither

7. CONFLICTS NOT RESOLVED: See conflicts listed