FLOOD CONTROL, MISSISSIPPI RIVER & TRIBUTARIES

MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT AND SEEPAGE CONTROL

CAPE GIRARDEAU, MISSOURI TO HEAD OF PASSES, LA

US Army Corps Of Engineers
Vicksburg, Memphis and New Orleans Districts

FINAL

JULY 1998

VOLUME II:

APPENDICES 5-6

MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT
AND SEEPAGE CONTROL

SUPPLEMENT NO. 1 TO THE
FINAL ENVIRONMENTAL IMPACT STATEMENT
MISSISSIPPI RIVER AND TRIBUTARIES PROJECT
MISSISSIPPI RIVER LEVEES AND CHANNEL IMPROVEMENT

VOLUME II
TABLE OF CONTENTS

NO.	TITLE
Appendix 5.	Public Involvement and Coordination
Appendix 6.	Engineering

APPENDIX 5
PUBLIC INVOLVEMENT AND COORDINATION

MISSISSIPPI RIVER AND TRIBUTARIES PROJECT
MISSISSIPPI RIVER MAINLINE LEVEES
ENLARGEMENT AND SEEPAGE CONTROL
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

APPENDIX 5
PUBLIC INVOLVEMENT AND COORDINATION

Table of Contents

LIST OF TABLES

No.	Title	Page
5-1	LOCATION OF PUBLIC MEETINGS	5-1

LIST OF ATTACHMENTS

No.	Title
A	PUBLIC INVOLVEMENT AND COORDINATION
B	RESPONSES TO DRAFT REPORT AND DRAFT SEIS COMMENTS
C	TRANSCRIPTS OF PUBLIC MEETINGS

MISSISSIPPI RIVER AND TRIBUTARIES PROJECT
MISSISSIPPI RIVER MAINLINE LEVEES
ENLARGEMENT AND SEEPAGE CONTROL
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

APPENDIX 5
PUBLIC INVOLVEMENT AND COORDINATION

1. Intensive coordination activities were undertaken by the U.S. Army Corps of Engineers, Vicksburg, Memphis, and New Orleans Districts, during the conduct of the Mississippi River Mainline Levees Enlargement and Seepage Control Supplemental Environmental Impact Statement (SEIS) studies. The public involvement accomplished by contract as a part of the SEIS studies is summarized in Attachment A.

2. The draft report and draft SEIS were disseminated in February 1998 for review and comment to various agencies and organizations. Attachment B presents the formal comments received (and summarizes the comments and provides responses thereto) regarding the draft report findings.

3. Public meetings held in March 1998 to present the study findings documented in the draft report and draft SEIS are listed in Table 5-1. Attachment C is comprised of transcripts of those meetings.

TABLE 5-1
LOCATION OF PUBLIC MEETINGS

Date	Location
16 March 1998	Cape Girardeau, Missouri
17 March 1998	Blytheville, Arkansas
18 March 1998	Greenville, Mississippi
19 March 1998	Lake Providence, Louisiana
30 March 1998	Natchez, Mississippi
31 March 1998	Baton Rouge, Louisiana

ATTACHMENT A

PUBLIC INVOLVEMENT AND COORDINATION

ATTACHMENT A

PUBLIC INVOLVEMENT AND COORDINATION

OVERVIEW

1. The purpose of this document is to describe the public involvement and coordination program that was developed and conducted in connection with the Supplemental Environmental Impact Statement (SEIS).

2. The public involvement and coordination program was conducted by the Vicksburg, Memphis, and New Orleans Districts of the U.S. Army Corps of Engineers, with Vicksburg serving as the lead District, and assistance provided by a contractor, Gulf South Research Corporation of Baton Rouge, Louisiana.

3. The contractor had primary responsibilities with respect to many of the major features of the program. In some cases, responsibilities were limited to guidance and participation. In addition, the Corps conducted activities in which the contractor was not a participant, including contacts and meetings with local interest groups, public officials, local project sponsors, state and Federal agencies, the news media, and individuals.

4. This document attempts to describe all aspects of the public involvement and coordination program during its development and execution.

BACKGROUND

5. The SEIS is a study to determine the environmental impact of remaining unconstructed mainline levee-raising and seepage control projects that are part of the Mississippi River and Tributaries (MR&T) Project. The levee-raising projects stemmed from the nation's worst flooding in 1927 when Mississippi River levees were breached and an estimated 500 persons lost their lives when over 26,000 square miles were flooded. The following year, Congress passed the 1928 Flood Control Act, and efforts have been underway ever since to bring deficient levees up to authorized grade and cross-section to handle a "Project Flood." The Project Flood is a theoretical flood projected from data of past floods. It is the largest Mississippi River flood that has a reasonable probability of occurring.

6. Since the MR&T Project was launched in 1928, its progress has depended on funding availability and prioritized construction demands, and it is now scheduled for completion as early as 2020. Since the 1970's and 1980's, public consciousness about environmental impact of project development has accelerated and, as a result, the Corps of Engineers has become intimately involved in environmental stewardship. The Corps primary missions already included

developing and managing the nation's water resources for flood control, navigation, and related purposes such as hydropower production and water supply. Its "civil works" mission also includes regulating dredge and fill activities in the waters of the United States, including wetlands, and in 1990 Congress added environmental protection to the principal missions of the Corps.

7. In the early part of this decade, the Corps of Engineers significantly changed its approach to the environment from one of compliance to one of seeking opportunities to directly attack environmental problems as one of the purposes of the engineering effort. The Corps began a program to systematically utilize its talent in the solution of the Nation's present environmental problems and the prevention of future ones.

8. In the view of the contractor and based on brief, informal research, it was assumed that many of the publics who would be directly affected by the mainline levee-raising project, and the SEIS and publics who were not affected but would be interested in it were largely unaware of the MR&T Project history and the Corps new and growing environmental role and commitment. Informal research also confirmed a widely held opinion within the Corps that a dominant majority of the general public knew little about the civil works role of the Corps and what little it knew involved a stereotypical perception that the Corps was simply a group of military construction workers who built bridges and dug canals.

9. The contractor also assumed that since the mainline levee-raising project was entering its 70th year, and since the levee system was functioning successfully, the vast majority of the general public was unaware of the various project needs, details surrounding them, and their importance. Therefore, it was determined that the public involvement and coordination program must not only define and communicate with its publics, it also must educate them about details of the levee-raising project and the Corps and its civil role.

10. Also, a primary, parallel, long-term goal was to establish lines of communication between Corps personnel and interested individuals and representatives of organized environmental groups and other government agencies which also have environmental protection concerns, so that these channels also could be used immediately and in future public involvement and coordination projects.

PROGRAM PLANNING

11. The first step in developing the public involvement and coordination program was for the contractor to meet with the Corps project manager and representatives of the lead District's environmental technical teams for briefings on previously identified public involvement and coordination program needs. The group also identified potential future needs. The contractor then identified a group of elements it determined would be necessary to develop as a foundation for implementing a successful public involvement and coordination program.

12. The program was to be based on (1) an estimation of the major environmental, communication, and educational concerns that likely would arise during the course of the SEIS project, (2) an identification of the various interest groups and individuals that should be included in the coordination program process, and (3) an understanding of the desires of the public with respect to the level of public involvement activity.

13. The program was devised through three procedures--reading, observation, and conversation. The first step was to assemble and review all of the available documents, including previous correspondence, news articles, project documents, studies concerning site-specific projects, and related meeting transcripts. This amounted to dozens of documents and hundreds of pages. In addition, the general political, social, and natural history of impacted areas was reviewed.

14. The next step was for the public involvement and coordination program consultants to meet with technical teams from all three Corps of Engineers Districts involved in the SEIS--Vicksburg, Memphis, and New Orleans. These meetings revealed to the contractor another area that would require improved communication systems--the interrelationship between the three Districts themselves.

15. The mainline levee project covers an area of the Mississippi River from Cape Girardeau, Missouri, to its exit into the Gulf of Mexico via Southwest Pass in Louisiana. Although this length of river falls within the jurisdiction of the Memphis, Vicksburg, and New Orleans Districts, the three Districts' technical team members rarely had previous occasions to work together as one on a project of this magnitude and for this length of time and, therefore, were not familiar with each other's level of expertise.

16. Furthermore, the number of miles of levees remaining to be enlarged varied widely from District to District--14.2 miles in the New Orleans District, 32 miles in the Memphis District, and 216.8 miles in the Vicksburg District. It appeared to the contractor that the differences formed potential underpinnings for differing priorities being placed by each District on its remaining levee projects.

17. It was concluded that the public involvement and coordination program should (1) assist the Planning Division of the Vicksburg District, along with the Memphis and New Orleans Districts, in maintaining effective two-way communication with the affected publics in the SEIS study area, (2) ensure early agency and public participation be planned and incorporated into all SEIS actions, (3) identify and develop solutions for the coordination needs specifically affiliated with the SEIS, (4) establish a proactive philosophy which would guide the Corps in aggressively and systematically taking charge of its coordination future, (5) identify all specific publics impacted by the SEIS project and establish information interchange systems with them, and (6) fully inform the publics of the modern Corps capabilities and expertise and establish the "new" Corps as an environmentally sensitive, preferred leader in those areas.

18. To accomplish those goals, the following basic areas were explored:

a. Strategy and planning.

b. Review of existing and developing documents.

c. Public meetings.

d. Public depositories for study materials.

e. Development of media program.

f. Contractor/Corps liaison.

g. Monthly activity summaries.

PROGRAM ELEMENTS

19. The following elements describe the major procedures, materials, and activities upon which the public coordination program was based. Although they are segmented for discussion, many are intimately related to each other in their goals of communicating and educating. Some of the measures were initiated simultaneously, while others were undertaken in a planned sequence after the coordination program got underway.

a. Mailing List.

(1) A mailing list is fundamental to any large-scale public coordination program, particularly one involving meetings and newsletters and involving several states. In the case of this program, impacted and interested parties lived in Louisiana, Mississippi, Arkansas, Tennessee, Kentucky, Illinois, and Missouri. The objective in the approach to a mailing list was to design one that was project-specific and that could be used for rapid mailings and/or reference.

(2) The nucleus of the first mailing list was built around organized mailing lists from previous projects in the area, environmental groups, state and Federal agencies, trade publications and news media, Corps sponsors and Federal, state, and local governmental bodies--especially including those which were involved in policy concerning flood control, navigation, and activities on the Mississippi River. After the first scoping meetings were held, attendees were added to the list. Throughout the SEIS project, additions were made as requested.

(3) Eventually, a list approaching 1,000 persons was formed and utilized for the program. The list was compiled and preserved in a computerized database. It was sorted alphabetically and by ZIP code, providing a reference base.

b. Public Meetings.

(1) Scoping Meetings.

(a) Scoping meetings were held in May 1997, in Baton Rouge and Vidalia, Louisiana; Greenville, Mississippi; Memphis and Newbern, Tennessee; and Cape Girardeau, Missouri. The meetings were held to provide a forum for public comment on the potential environmental impact of the levee-raising effort and to ensure that the public had an opportunity to offer input and direction for the Corps preparation of the SEIS.

(b) All meeting sites were chosen so that they could easily be accessible and that they could provide an opportunity for reaching a diverse cross-section of the public. The sites included public convention centers, schools, and a hotel.

(c) The meetings were evenly distributed throughout and near the SEIS project area, which involved a narrow strip that included the levees, the land between the levees and the river, and 3,000 feet landward of the levees.

(d) To gain maximum input, meeting notices were sent to 680 individuals, organizations, agencies, and the news media. News releases also were prepared for the news media. Attendance generally increased as the meetings moved from Baton Rouge to Cape Girardeau, apparently reflecting concern about the proximity to widespread flooding that had occurred in the upper portions of the Mississippi River Basin in the weeks prior to the meetings.

(e) The composition of the attendees was uniform in that almost all meetings included news media representatives, environmental interests, landowners, public officials, representatives of local sponsoring organizations such as levee districts, Corps contractors, and Corps personnel.

(f) Representatives of the Corps, including technical team members and each District's District Engineer, made presentations and then invited public comment. Public representatives entered prepared remarks into the record and also made oral comments, which were recorded and transcribed into the meeting minutes. Each meeting ended with attendees invited to send written comments to their respective Corps District for inclusion in the scoping process.

(g) The meetings followed one of two formats--presentations were made and comments were taken in one general meeting area or presentations were made in a common area and individuals then broke up into smaller groups for detailed discussions.

(h) All attendees were registered at a reception desk, which, among other things gave the Corps names to be added to the mailing list.

(i) Summaries of the comments received through the scoping meetings were shared with all individuals via the newsletter.

(2) Update Meetings.

(a) Meetings also were held in October 1997 to update the public on the status of the SEIS study. They were held in New Orleans, Vicksburg, and Memphis. Public attendance was less than the attendance at the scoping meetings, apparently because the meetings were primarily "information only" meetings.

(b) The purpose of the update meetings was to give the public an opportunity to hear technical team members provide a detailed description of the ongoing studies in their areas of expertise and the status of their particular study.

(c) Once again, everyone in attendance was registered so that the mailing list could be updated.

(d) The update meetings also were marked by displays of materials from technical team members so that the public could view the materials after presentations were made. Materials ranged from maps to reports and findings.

(3) Public Meetings.

(a) Public meetings were held in March 1998 in Cape Girardeau, Missouri; Blytheville, Arkansas; Greenville and Natchez, Mississippi; and Lake Providence and Baton Rouge, Louisiana. The meetings were held to provide a forum for public comment on the findings of the draft Project Report, draft SEIS, and supplementing appendixes on Mississippi River Mainline Levees Enlargement and Seepage Control Project. The Corps presented the findings of the draft Project Report and draft SEIS, the public presented oral comments during the meetings, and written public comments were accepted until 30 April 1998.

(b) All meeting sites were chosen so they would be easily accessible and provide an opportunity for reaching a diverse cross section of the public. The sites included public convention center, public schools, motel, hotel, and state office building.

(c) The meeting locations were distributed throughout the SEIS project area which is a narrow strip that includes the levees, the land between the levees, the river, and 3,000 feet landward of the levees.

(d) To gain maximum attendance, meeting notices were mailed to over 900 individuals, organizations, agencies, and the news media. Also, news releases were prepared for the news media.

(e) The composition of the attendees was uniform in that almost all meetings included news media representatives, environmental interests, landowners, public officials, representatives of local sponsoring organizations (such as levee districts), Corps contractors, and Corps personnel.

(f) Representatives of the Corps, including technical team members and each District's District Engineer, made presentations and then invited public comment. Public representatives entered prepared remarks into the record and made oral comments which were recorded and transcribed into the meeting minutes. Each meeting ended with attendees invited to send written comments to their respective Corps District office for inclusion in the final SEIS.

(g) The format of the meetings consisted of a formal presentation and then comments were taken in one meeting room.

(h) All attendees were registered at a reception desk which, among other things, gave the Corps names to be added to the mailing list.

(i) Comments received through the public meetings and Corps responses to the comments are included in Appendix 5.

c. Depositories.

(1) Depositories at 18 sites in 7 states were selected so that notices, documents, and newsletters concerning the SEIS would be available for public viewing. After the depositories were selected, the Corps then added the depositories to the mailing list for the newsletter and other documents.

(2) The depositories were selected from the 1996 membership directory of the American Library Association. A telephone spot check was utilized to ensure that the depositories had a system for displaying documents for public view. In response to a library director's request, prompted by a sometimes lack of space for public document postings, a separate letter was sent all depositories informing them that past documents could be removed when updated versions arrived. This applied primarily to the newsletter since meeting notices that included dates were self-canceled when they became outdated.

(3) The locations reflected sites where the public scoping meetings were held and other sites that would ensure public access locations evenly spaced from Cape Girardeau to New Orleans.

(4) An article in the newsletter identified the depositories and provided their addresses and telephone numbers.

(5) No attempt was made to formally evaluate the depositories. Information conversations with some of the library directors indicated the materials were welcomed, but were lightly used.

(6) The sites were the Mississippi County Library System in Blytheville, Arkansas; Paducah Public Library in Paducah, Kentucky; Homochitto Valley Library Service in Natchez, Mississippi; Warren County/Vicksburg Library in Vicksburg, Mississippi; Washington County Library in Greenville, Mississippi; Carnegie Public Library in Clarksdale, Mississippi; McIvers Grant Public Library in Dyersberg, Tennessee; Memphis/Shelby County Public Library in Memphis, Tennessee; Newbern City Library in Newbern, Tennessee; Tiptonville Public Library in Tiptonville, Tennessee; Cairo Public Library in Cairo, Illinois; State Library of Louisiana and East Baton Rouge Parish Library, both in Baton Rouge, Louisiana; Ascension Parish Public Library in Donaldsonville, Louisiana; Ferriday/Concordia Parish Library in Ferriday, Louisiana; Madison Parish Library in Tallulah, Louisiana; New Orleans Public Library in New Orleans, Louisiana; and the Cape Girardeau Public Library in Cape Girardeau, Missouri.

d. Newsletters.

(1) The newsletter was envisioned as the primary tool for informing the public about study progress and, subsequently, filled that role. In keeping with the overall goals of the public coordination program, the goal of all newsletters was to inform and educate.

(2) Four issues of the newsletter have been produced thus far, approximately every 3 months beginning with the July 1997 issue. Each newsletter is computer-generated, professional printed on 8.5- by 11-inch green paper and folded so that the address block appears on the outside. A modern one-third/two-third page format was used. The newsletters were addressed by labels printed from the mailing list and were secured by stapling. They were mailed from the Vicksburg District office, which also made the newsletter available to a broader audience by publishing it on the District's Internet home page.

(3) All issues carried (1) an update on the progress of the SEIS study, (2) information on locating the newsletter on the Internet, (3) names and telephone numbers of project managers in the Vicksburg, New Orleans, and Memphis Districts, (4) and at least one article explaining a major element of the Mississippi River. Those feature stories included such topics as "the mechanics of the levee system" and "a profile of the riverside lands" and timely news announcements such as the locations of the depositories.

(4) The rest of the newsletter was devoted to articles on technical aspects of the SEIS project, general interest features, personal interviews, and background. The purpose of the articles was not only to inform, but also to educate and place the readership in a better position to evaluate the project.

(5) The concerted effort was made to avoid the automatic use of Corps-friendly technical terms and produce the newsletter in everyday language, which would be easily understood by the general public. This goal apparently was achieved because several members of the readership attending public meetings and in private conversations volunteered positive, spontaneous compliments and also said they looked forward to each issue.

(6) Besides providing pertinent information, the newsletter has enabled the public to have a greater appreciation of the study process and apparently has been taken by its readership as a sign that the Corps is open about the process. This was underscored when invitations were issued to public meeting attendees to send letters and/or articles of mutual interest to the contractor for inclusion in the newsletter. To extend the invitation further, the contractor even singled out persons representing special groups who spoke publicly at the update meetings or wrote letter to the Corps and personally invited their participation. Those invitations were accepted and their articles included in the newsletter, no matter whether they were negative or positive.

e. Media.

(1) The news media was used primarily as a conduit to help notify the public about public meetings. News releases prepared by the Vicksburg District were sent through normal channels and the news media responded accordingly.

(2) All of the initial scoping meetings were attended by news media representatives, ranging from a writer for a weekly newspaper in Tennessee to television video crews in Baton Rouge, Greenville, and Vidalia.

(3) The contractor contacted the News Editor for The Associated Press (AP) in New Orleans and spent time relaying background information to the editor about flood control on the Mississippi River after learning that the AP was considering producing a major feature piece on the topic. The AP was given a copy of John Barry's 1997 popular book, "Rising Tide--The Great Mississippi Flood of 1927 and How It Changed America," for background purposes.

(4) The news organization also was provided with names, telephone numbers, and addresses of all Public Affairs Officers in the Memphis, New Orleans, and Vicksburg Districts and the name, telephone, and address of the Mississippi Valley Division Public Affairs Officer in Vicksburg.

(5) Copies of all newspaper stories involving the Corps, not just the SEIS-related articles, were forwarded to appropriate District offices as a backstop for their regular clipping service files.

(6) The contractor also informed the news organization when it reported erroneous information about the settlement of SEIS issues between the Corps and plaintiffs in a lawsuit.

f. Brochure.

(1) A color brochure was prepared for distribution to the general public. One of the brochure's main goals was to provide a compact and easily understood, visual portrait of the Mississippi River as a major and extremely important element impacting the United States' economy and natural resources. Equally important goals were for the brochure to be available for distribution to the general public and other groups and for it to be capable of serving as a informational tool long after the SEIS was completed.

(2) The brochure was designed to be folded to road-map size so that it would be available for distribution through free-standing brochure boxes such as those found in District offices, motels, tourist centers, etc.

(3) The brochure filled the need for a colorful, easily understandable publication that could accompany any specific SEIS documentation that was requested by individuals or groups. Its primary message focused on the value of the river to the Nation and to the international community.

(4) It also provided a brief history concerning the evolution of the levee system and the establishment of other control systems such as spillways and reservoirs.

(5) Announcement of the brochure's publication was made in the newsletter and the Memphis, Vicksburg, and New Orleans Districts' Public Affairs Offices were advised of its availability for distribution to interested persons.

(6) The Corps was encouraged to distribute the brochure to school systems so that students could begin to develop an appreciation of the river's importance at an early age and so that teachers might be encouraged to explore the river and its management as an educational topic.

(7) Other groups suggested for brochure presentation included Chambers of Commerce at towns and cities along the river and civic groups.

ATTACHMENT B

RESPONSES TO DRAFT REPORT AND DRAFT SEIS COMMENTS

ATTACHMENT B
RESPONSES TO DRAFT REPORT AND
DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT
STATEMENT (SEIS) COMMENTS

1. Letter, Earthjustice Legal Defense Fund, Inc., 30 April 1998 (Exhibit 1).

a. Comment. Given the flaws in the SEIS, a revised SEIS should be prepared and redistributed for public comment.

Response. The SEIS has been prepared using the latest technology and is based on current laws and the latest policies and regulations of the U.S. Army Corps of Engineers. The Corps has allowed for proper public comment and involvement. Comments received as a part of the process will be addressed and included in the final SEIS. Comments received do not justify a change to the recommended plan or the methods of construction to be utilized. Based on comments received, the Corps does not plan to redistribute the SEIS for public comment. The public can still comment on the final report and their comments will be forwarded with the draft Record of Decision for review by decision makers prior to the preparation of the final Record of Decision.

b. Comment. The Corps has selected an alternative without mandated careful consideration of detailed information concerning significant environmental impacts of this project.

Response. The Corps selected the recommended plan after carefully considering detailed information contained in the Project Report, SEIS, and appendixes.

c. Comment. The SEIS fails to adequately analyze and discuss the value of bottom-land hardwood wetlands. Absent recognition of importance of these wetlands and the role of projects such as this one in causing losses of these wetlands, an informed decision cannot be made as to the true level of importance to be placed on avoiding future impacts.

Response. The high value of bottom-land hardwood habitat is explicitly and implicitly recognized throughout the Project Report, SEIS, and appendixes. Examples include Sections 1.4.1, "Public Concerns"; 3.1.2, "Significant Resources"; 6.1.1, "Public Scoping"; page 1-3, Appendix 1, "Mitigation"; and paragraph c, page 25, Project Report. As stated in the SEIS Summary, the Project Report and the appendixes are incorporated by reference and should be referred to for specific methodologies and other detailed information. Separate analyses and appendixes were conducted and prepared on waterfowl, terrestrial resources, bats, Neotropical migrants, wetlands, endangered species, water quality, recreation/esthetics, and socioeconomics, all of which depend on bottom-land hardwoods to various degrees. The cumulative effects section does recognize that Federal flood control projects, among other

factors, have influenced the conversion of bottom-land hardwoods. That the impacts to bottom-land hardwoods have been reduced by approximately two-thirds when compared to the original project design is a clear indication of the significance of this resource. In addition, the remaining unavoidable impacts will be fully compensated. This, in conjunction with reforestation of selected borrow areas, will produce not only a net increase resource value, but also a net gain in bottom-land hardwood acreage over the life of the project. These efforts were undertaken in recognition of the significant value of bottom-land hardwoods.

d. Comment. The SEIS fails to adequately analyze and discuss cumulative losses of bottom-land hardwood wetlands and other wetlands in the project area and includes no discussion of impacts of these cumulative losses on fish and wildlife species utilizing the project area or impacts of these losses on such things as flood protection. The SEIS also fails to analyze or discuss the U.S. Fish and Wildlife Service's (FWS) determination that "any further loss of forested wetlands within the project area should be considered significant considering the cumulative losses."

Response. The EIS clearly indicates that of the original 24 million acres of bottom-land hardwoods, only 5.2 million remained in 1988. This section has been revised to reflect the associated fish and wildlife losses. Concerning your reference to the FWS determination, the temporal context of that determination is important. That letter was written prior to the Corps decision to prepare a SEIS and provide compensatory mitigation. This is evidenced by the last sentence of the next paragraph, ". . . the Service continues to recommend that loss of forested wetlands should be fully compensated." In this context (without compensatory compensation), it is possible to conclude that any further loss of forested wetlands could be significant. However, as detailed in the SEIS, over the life of the project, there will be an increase in bottom-land hardwood acreage.

e. Comment. The SEIS rejects without analysis the landside borrow alternative and fails to analyze or discuss environmental benefits that could be gained by utilizing nonwetland landside borrow areas.

Response. As documented in the final Project Report, preliminary analysis of a typical reach of work eliminated Plan 2 (landside borrow) from detailed evaluations due to cost, environmental, and implementability concerns.

Plan 4 is an environmental design which incorporates measures to avoid and minimize environmental damages to bottom-land hardwoods and wetlands. To develop the layout of the plan, interdisciplinary teams of state and Federal agencies representatives, local sponsors, and Corps staff were formed. They initially focused on relocating the construction borrow areas using the following placement prioritization criteria as a guide.

(1) Landside cropland from willing sellers.

(2) Landside cropland when riverside locations were unavailable.

(3) Riverside prior-converted cropland.

(4) Riverside tree plantations.

(5) Riverside farmed wetlands (cropland).

(6) Riverside farmed wetlands (pasture).

(7) Riverside herbaceous wetlands.

(8) Riverside forested nonwetland.

(9) Riverside forested wetland.

(10) Landside and riverside bottom-land hardwoods with black bear presence.

(11) Landside cropland condemnation.

However, as various methods of construction were evaluated for each work item, it became apparent that the prioritization criteria could not be strictly and consistently applied to the entire MRL study area. For example, in the New Orleans District, the area between the top bank of the river and the levee is relatively narrow and often developed, whereas in the Vicksburg District, these areas are relatively wide and undeveloped. Riverside land use in the Vicksburg District is split between cropland and forested, but in the Memphis District, the riverside land use becomes predominantly cropland.

Rather than apply the prioritization scheme mechanically, the study team evaluated each individual item and applied the avoid-and-minimize techniques as was most reasonable, considering the environmental, economic, and engineering solutions available for that item. As a part of the team evaluation of the location of borrow areas, there was little evidence of willing sellers which would have been useful for such feasibility level investigations. However, use of criteria "b" above led to the relocation of selected borrow areas associated with 12 items of work (and totaling over 1,200 acres) to landside sites. Analyses of the other alternatives in the SEIS further indicated that the use of landside borrow was not in the best interest of the area or the resources due to the poor water quality of landside borrow areas and the higher cost involved. In addition, previous real estate experience in the study area indicated landside borrow would be more costly.

In future development of final plans on each item, the Corps will secure detailed surveys, land use data, and soil borings and meet with the levee boards to determine the best course of action. This information will be utilized in the design and construction to further avoid and minimize damage to environmental resources to the maximum extent practicable, but would generally follow a progression from the least damaging location to the most damaging. Detailed studies are planned for each item prior to completion of design to ensure the best plan is constructed for each work item. The SEIS represents the maximum impacts from the project.

In addition, and just as important, the adverse environmental impacts associated with landside borrow render that alternative imprudent. The observed pesticide levels in fish from landside borrow areas exceeded the Environmental Protection Agency (EPA) risk levels for human health for DDE and dieldrin. These high levels of pesticides in fish tissue constitute a risk to public health. The Executive Order on wetland protection (Executive Order 11990) states that the actions to preserve wetlands are to be taken only if they do not pose a risk to public health or safety. Our studies concluded that riverside borrow for the majority of work items is preferable. Where unavoidable impacts to bottom-land hardwoods occur, compensation would replace lower quality bottom-land hardwoods with higher quality bottom-land hardwoods and aquatic habitat. Although the wetland functional values of the bottom-land hardwoods would be similar, the terrestrial and waterfowl foraging benefits are greater on the mitigation lands, primarily because of a larger oak component. For example, in the Vicksburg District, the cumulative Habitat Suitability Index (HSI) value for existing terrestrial habitat was 3.12, but the HSI for the fully developed mitigation lands would be 4.98. The existing forested habitat was given no waterfowl foraging value because of the low red oak component (6 percent), but the mitigation lands will provide 235 duck-use days per acre. These analyses are presented in Appendixes 10 and 9, respectively. In contrast, use of landside borrow would create poor quality, isolated habitat, unless costly associated remedial measures were also incorporated.

f. Comment. The SEIS fails to analyze or discuss uncertainties associated with successful mitigation, assuming that estimates of wetland impacts will prove to be 100 percent accurate and that proposed mitigation will be 100 percent successful, both in total number of acres reforested and in restoration of lost functional values.

Response. The Vicksburg, Memphis, and New Orleans Districts have been involved with this form of mitigation since 1990 and has planted approximately 20,000 acres of frequently flooded agricultural lands that are successfully restored. Across all sites and species, survival has averaged approximately 70 percent. The areas where poor survival occurred were replanted. It is not necessary to have 100 percent survival to achieve mitigation goals. Monitoring is being conducted to ensure habitat units are being replaced. Monitoring of wetland functional values will be conducted or mitigation lands acquired for the project. This program has successfully planted the acquired lands and has been coordinated with FWS; Mississippi Department of Wildlife, Fisheries and Parks (MDWFP); and EPA. In fact, FWS and

MDWFP manage the majority of these lands for the Corps. We believe that sufficient work has been accomplished to demonstrate the certainty of establishing this form of mitigation.

g. Comment. The SEIS does not include the Fish and Wildlife Planning Report normally provided to the public at this stage. The public should have benefit of this analysis by FWS.

Response. The Fish and Wildlife Planning Aid Report is included in the final Project Report and SEIS. It was not available when the draft SEIS was distributed in February 1998.

h. Comment. The SEIS does not fully consider one of the alternatives required to be analyzed and discussed pursuant to the Consent Decree. Paragraph E(1) of the Consent Decree requires the SEIS to analyze and discuss "the use of site-specific techniques to achieve the project purposes. Such techniques shall include, but not be limited to: use of conservation easements and other nonstructural alternatives; use of relief wells; use of innovative construction techniques; and obtaining construction material for the project from nonsensitive, nonwetland areas on the landside of the levees, and from dredging the Mississippi River." Use of conservation easements and other nonstructural alternatives as a component of site-specific techniques is not analyzed. Obtaining construction material from nonsensitive, nonwetland areas landside of the levees as a component of site-specific techniques also is not adequately discussed.

Response. The use of all of the techniques listed in this comment was considered and discussed in both the SEIS and supporting documents. Plan 1 discusses use of a nonstructural alternative (which we refer to as flowage easements) that would need to be acquired on about 16 million acres to compensate for substitution of this alternative in lieu of completing flood protection to the Project Design Flood (PDF) level. These easements would likely cost in the multibillion dollar range. Additionally, flowage easements (or conservation easements as referred to in the comment) cannot be applied as site-specific techniques for replacing levee protection. Even though the SEIS discusses the impacts of levee failures at only a few locations, substandard levee grades or section at any location would have similar impacts to the valley; i.e., catastrophic damage and potential loss of human life. In the lower Mississippi River Valley, the levees protect vast urban areas, farmlands, and infrastructure vital to the welfare of this Nation. Flooding resulting from a levee failure at any "site-specific" location would not be localized. Allowing the levee to fail at any location would result in flooding and destruction of large areas similar to that which occurred during the 1927 flood. Much as a chain is only as strong as its weakest link, the lower Mississippi River levees must contain the design flood throughout their length in order to provide protection to the lower Mississippi River Valley.

Other site-specific techniques have also been analyzed. However, as in our adoption of the "avoid-and-minimize" techniques, we considered and adopted other methodologies mentioned in the comment that significantly reduced environmental impacts of the project.

The methodology for locating the borrow areas was discussed fully in the response to Comment 1e.

i. Comment. The Corps is attempting to use the SEIS to shield design and construction of individual work items from further review. The SEIS seeks to satisfy all Section 404 review for the entire 128 construction items through the SEIS process. The Corps also seeks to obtain only one Section 401 Water Quality Certification from each state for all work items to be constructed. This is extremely problematic since the selected alternative requires the Corps to utilize a variety of site-specific avoid-and-minimize techniques and because the SEIS bases its impact analysis on the assumption that such techniques will be used to the maximum extent practicable. Absent Section 404 and 401 reviews for each construction item, there can be no assurance that meaningful avoid-and-minimize techniques will be employed or that adequate mitigation will be implemented.

Response. The comment reflects a general lack of trust in the commitment of the Corps to construct the remaining features of the project in accordance with the criteria of the SEIS, particularly the last sentence of the comment. Adequate safeguards are available to the members of the public should they believe that the SEIS is not being properly implemented. Public hearings on the Mississippi River and Tributaries Project are held semiannually at various locations on the Mississippi River. Any member of the public who has concerns over how the project is being executed is free to comment at these hearings and those comments will be answered in writing.

j. Comment. Project Report, Page 1, Paragraph 3. Notably absent is recognition that decision to supplement the 1976 Final EIS was made to settle lawsuit filed by Plaintiffs.

Response. We disagree that this paragraph is misleading to the public. However, we have revised the fifth line to read, "Federal agencies, and litigation by private environmental groups, ..."

k. Comment. Project Report, Page 23, Paragraph 46a. It is incorrect to state that the "Mississippi River has always been a threat to the security of the valley through which it flows." The Mississippi River created the valley and productive ecosystem through which it flows.

Response. Security is defined as "the quality or state of being secure: as freedom from danger, freedom from fear or anxiety, or freedom from want or deprivation." While the reviewer is correct that large flood plain rivers are highly productive ecosystems and human civilizations prosper near large flood plain rivers, such prosperity does not remove or diminish the "fear or anxiety" of flooding for those living in the area. Our point will be clarified by adding the words "of the inhabitants" following "security."

l. Comment. Project Report, Pages 26-27, Paragraph 49. Analysis of project impacts is based on a wetland delineation prepared by the Corps. This paragraph states that the assumptions of the wetland delineation were validated by an interagency team during the field review process. Since the wetland delineation forms the basis for determining project impacts,

at least the following information should be included in order to evaluate whether or not the assumptions upon which the delineations are based are accurate: (a) the total number of acres that were reviewed in the field; (b) the total number of acres in each state that were reviewed in the field; (c) the percentage of the entire project area that was reviewed in the field; (d) the percentage of the total project area in each state that was reviewed in the field; and (e) the percentage of field review necessary to ensure statistical predictability of the entire wetland delineation.

Response. Due to the magnitude of the area to be delineated, the Corps elected to use offsite procedures (Level 1) of the 1987 Corps of Engineers Wetlands Delineation Manual. This procedure requires assessment of all three parameters (vegetation, soils, and hydrology) based on available data. The Corps was able to obtain excellent hydrology data for the batture and used an existing vegetative study of the project area to assess vegetation and land use. Soils data were derived from available soil survey maps and conclusions derived from the hydrology and vegetative analysis. The manual does not require field sampling to validate the jurisdictional determination when sufficient evidence is available to reach a reasonable analysis of all three parameters. However, in order to gain some level of confidence that the offsite determination was adequate for its intended use (planning and analysis), the Corps decided to assemble an interagency team to conduct random field examinations of wetlands depicted by the preliminary maps. Your organization was invited to participate in this ground truthing, but chose not to attend. Interagency representatives visited over 50 sites in seven states representing a wide variety of habitats. Point samples were taken at each location. This type investigation does not delineate entire tracts of land, but merely validates the wetland determination at a particular location. Therefore, no acreage figure could be applied to determine the percent of the overall project area sampled. We do not view this sampling as statistically valid by any measure; however, it did give the agency representatives a high degree of confidence that the original assumptions used to delineate wetlands for the preliminary maps were valid and the resulting maps were sufficient for use in the SEIS.

m. Comment. Project Report, Page 27, Paragraph 52. This paragraph states that creation of borrow areas is the major project feature affecting water quality. Construction of the levees, berms, and haul roads also will have a major impact on water quality. The construction impacts on water quality are not fully analyzed.

This paragraph also states that borrow areas are "heavily utilized by sportsmen for fishing and hunting." Plaintiffs contend that this is incorrect. The Corps should provide factual support for this assertion and should provide results of any borrow areas use surveys conducted. The Corps also should include factual support that shows that borrow areas are utilized more heavily than other areas riverside of the levees.

Response. Paragraph 52 of the Project Report is summarizing the findings of the Water Quality Appendix. In Appendix 17, within the section discussing the direct impacts to water quality (page 20, paragraph 25) is the following statement: "Those impacts will be localized to

the area immediately adjacent to the borrow area, the haul roads, and the levee or berm item being constructed." Because the construction season is limited by higher stages on the Mississippi River, construction generally only occurs during summer and fall (1 June through 31 December for most contracts), when storm events are infrequent. A stormwater pollution prevention plan (SWPPP) will be prepared during the final design of each project and will become part of the contract plans and specifications. The contractor will be responsible for implementing the contract's SWPPP and complying with the appropriate state's stormwater discharge permit for construction activities. The construction sites normally have some period of weeks for vegetation to establish after construction is completed before winter rains and high stages return. Furthermore, as the total area disturbed in any year is small relative to the total land area available within that reach of the Mississippi River, no significant impacts to water quality are anticipated.

Although construction items can be 10 miles long, the contractors generally subdivide the items into smaller subitems. Construction activity is generally limited to one or two subitems at any time. Because the impacts due to construction are localized, are not long-term, and affect a relatively small area of the total area, the Corps does not consider them to be major water quality impacts. Borrow areas, on the other hand, become permanent features of the batture environment, and therefore have major impacts.

The referenced statement regarding fishing utilization was paraphrased from the following quote, "Sport and commercial fishing in borrow pits is productive and these waters are commonly known as valuable fishing areas" (Cobb, et al., 1984). We acknowledge there are no creel surveys to support the statement, and it will be removed from the text.

n. Comment. Project Report, Page 28, Paragraph 53. As written, this paragraph contradicts later statements that water quality in landside borrow pits is not good. This paragraph also illustrates that the Corps places significant emphasis on value or lack thereof of habitat incidentally created by borrow areas. The relative quality of landside versus riverside borrow areas, however, is irrelevant to the Corps obligation to avoid, minimize, and mitigate (in that order) wetland losses.

Response. This section of the Project Report is describing the existing conditions within the project area and the studies that the Corps performed in determining the base conditions and the with-project conditions. It is appropriate to discuss differences observed in water quality between two project alternatives. The subject sentence is summarizing the findings of the Water Quality Appendix. The word "riverside" will be inserted before borrow areas in the subject sentence to improve clarity.

It is the Corps policy that the planning process will ensure that projects are engineeringly feasible, economically justifiable, and environmentally sustainable. The construction of landside borrow areas, where high levels of pesticides accumulate in fish and pose a threat to human health, does not fit our definition of "environmentally sustainable."

o. Comment. Project Report, Page 28, Paragraph 54. Wetlands provide many values for migratory waterfowl in addition to the caloric value of foraging habitat. These other values should be analyzed and discussed and should be accounted for in any necessary mitigation.

Response. The sentence will be rewritten as follows: "The loss and degradation of breeding and wintering habitat have been identified as the major waterfowl management problems in North America. Therefore, quantifying the impacts of the Mississippi mainline levee enlargement project to the winter waterfowl carrying capacity and foraging habitat in the project area is the primary purpose of this analysis. The impact methodology for this analysis was based on food as an index of wintering waterfowl carrying capacity. The waterfowl analysis was conducted by FWS. Their report constitutes Appendix 9."

p. Comment. Project Report, Page 36, Paragraph 72. This paragraph should clarify that the "reasonableness" constraint does not alter the Corps legal obligation to first avoid impacts and then minimize and mitigate. This paragraph also should make clear that the Corps has authority and obligation to locate borrow areas to meet these and other applicable legal obligations. The alternative selected should comport with these legal obligations.

Response. Developing alternatives for completing the project was subject to several constraints. While the project was to be designed in an environmentally sustainable manner through the avoidance, minimization, and mitigation of impacts, this goal was subject to a "reasonableness" constraint; i.e., the work must be acceptable to local project sponsors (levee boards), local landowners, and the public (concerned citizens). The work must be accomplished in a cost-effective manner while being environmentally and engineeringly viable.

q. Comment. Project Report, Page 41, Paragraph 83. This paragraph should clarify that alternatives were identified through more than the scoping process. The Consent Decree identifies some of the alternatives; while who identified alternatives is not as important as the fact that alternatives were identified and a SEIS is being prepared, failure to provide this information is misleading.

Response. We disagree that the information provided in the referenced paragraph is misleading. However, we will add the following after the first sentence. "In addition to alternatives specified in the Consent Decree, alternatives were developed at six scoping meetings that were held in Baton Rouge, Louisiana; Vidalia, Louisiana; Greenville, Mississippi; Memphis, Tennessee; Newbern, Tennessee; and Cape Girardeau, Missouri.

r. Comment. Project Report, Page 45, Paragraph 94. We do not agree that nonstructural alternatives cannot accomplish congressionally mandated project purposes that provide a prescribed level of flood protection. Even in implementing projects authorized decades ago, the Corps must utilize current knowledge and engineering practices and abide by current laws and policies. The Corps Circular No. 1105-2-214 (Planning Project Modifications for Improvement of the Environment and Aquatic Ecosystem Restoration) also allows modifications of projects to enhance the quality of the environment.

Response. We agree in general that nonstructural alternatives can be used to accomplish congressional flood damage reduction mandates. However, not for this project from the present nor historical perspective.

As discussed in the response to Comment 1h, nonstructural alternatives such as conservation easements or flowage easements (Plan 1) would not provide the required protection. In the lower Mississippi River Valley, the levees protect vast urban areas, farmlands, and infrastructure vital to the welfare of this Nation. Flooding resulting from a levee failure at any site-specific location would not be localized. Allowing the levee to fail at any location would result in flooding and destruction of large areas and many of these features along with potential loss of life. The use of nonstructural alternatives in lieu of providing flood protection by raising of the Mississippi River levees was therefore eliminated because of potential excessive costs of easements on 16 million acres and because such an alternative did not meet the planning objective of providing protection from the PDF. The recommended plan and SEIS were developed using the state-of-the-art engineering and environmental practices and abide with current laws and policies.

The Corps is using state-of-the-art technology and current guidance in implementing this work, including the proposed modifications for environmental quality improvements. However, the referenced Corps Engineer Circular is not applicable to this project, but to two specific authorized small environmental/aquatic restoration programs.

s. Comment. Project Report, Page 46, Paragraph 96a(3). Potential poor water quality in landside borrow is irrelevant to the mandate to avoid impacts to bottom-land hardwood and other wetlands and does not deter from significant benefits gained by avoiding wetland impacts altogether--an outcome that can most easily be attained by locating borrow in nonwetland areas landside of the levees.

Response. The National Environmental Policy Act (NEPA) process requires that alternatives be considered. This section of the report is describing the various alternatives that were considered. The landside option was included due to comments received in the scoping process. Due to the high levels of pesticides that have accumulated in fish from previously

constructed landside borrow areas, the straight landside Option 2A was not considered environmentally sustainable. The information on pesticide fish tissue levels was provided to inform the reader as to why the environmentally sustainable landside design Options 2B and 2C were included in the study.

The water quality in the landside borrow areas is far from irrelevant. Executive Order 11990, "Protection of Wetlands," which declares the Government policy for the protection of wetlands of avoid, minimize, and mitigate loss to wetlands, first states that these actions are to be taken only if they do not risk public health and safety (Executive Order 11990, Section 2a). Because the pesticide levels in the fish tissue of existing landside borrow areas exceed both the FDA action level and the EPA risk level for the protection of human health, the Corps finds the creation of landside borrow areas to be a public health risk. Therefore, the landside only portion is not a viable option in most cases. There are instances where we must utilize landside borrow and we incorporate the most favorable environmental design features for these locations.

t. Comment. Project Report, Page 51, Paragraph 106. See comment above on paragraph 96a(3). This paragraph concludes that landside borrow would exhibit far fewer fish and wildlife attributes than riverside borrow areas periodically flooded. This conclusion ignores the fact that cropland--where the landside borrow would be taken--also exhibits far fewer fish and wildlife attributes than the riverside bottom-land hardwood wetlands or farmed wetlands where the borrow would be taken.

Response. We have considered your position and find it logically flawed. The referenced paragraph of the report makes a valid comparison between two potential end products of construction--a riverside borrow area and a landside borrow area. The paragraph concludes that a riverside borrow area shows more fish and wildlife attributes than a landside borrow area. Refer to the aquatic resources and water quality sections of the SEIS (Appendix 9, Aquatic Resources, and Appendix 17) for more detailed discussions.

Your comment attempts to compare a preconstruction riverside wetland to preconstruction landside cropland. Although you correctly note that the riverside wetland exhibits more fish and wildlife attributes than the landside cropland, this does not further a logical analysis of construction impacts. Logically, you should compare a preconstruction riverside wetland with a postconstruction riverside borrow area or a preconstruction landside agricultural field with a postconstruction landside borrow area.

A riverside borrow area still exhibits wetland functions and values as compared to its preconstruction state and its values as forest are being replaced with compensation. A landside borrow area has lost its usefulness as productive cropland and is replaced by a sump for agricultural runoff. This condition is virtually permanent.

The paragraph makes a valid statement and will not be altered.

u. Comment. SEIS 1-9, Table 1-3. Only 33 anticipated construction items are identified in Table 1-3. The locations and deficiencies should be broken down into all 128 currently anticipated work items.

Response. Table 1-3 is a summary of the 128 individual items of work identified in Appendix 6. The summary is by levee reaches rather than individual items for simplicity.

v. Comment. SEIS 1-10, Section 1.5. Plaintiffs fully support "avoiding and minimizing adverse environmental impacts to the maximum extent practicable." Unfortunately, this goal almost certainly will not be attained as the SEIS does not identify the steps that must be taken to ensure that this happens. To meet this goal, the Corps should select an alternative that mandates location of borrow in nonwetland areas landside of the levee or that mandates location of borrow areas in nonwetlands landside of the levee in all instances where no other means exist to avoid locating riverside borrow areas in forested or other wetlands or in forested nonwetlands.

Response. Steps were identified as to how the Corps of Engineers plans to avoid and minimize adverse environmental impacts to the maximum extent practicable. The Corps has also indicated that through the design phase using detailed information that they will attempt to minimize losses beyond those shown in the report. A landside alternative was evaluated, but was rejected for several reasons as discussed in the report.

w. Comment. SEIS 1-11, Section 1.6.1. Clean Water Act Section 404 Review should be conducted for each item of construction so the public may review these designs and ensure that all possible avoid-and-minimize techniques are being utilized for each item or that proper mitigation requirements are being assessed and implemented.

Should the Corps refuse to require Section 404 review for individual construction items, the SEIS must explain how a single Section 404(b)(1) analysis can suffice. This single Section 404 analysis has no basis for concluding that the Section 404 sequencing requirements have been met for the entire project, since the vast majority of construction items have not yet been designed. The SEIS must also explain how this single Section 404 analysis can ensure compliance with Section 404 sequencing requirements to first avoid and then minimize and mitigate for all unavoidable losses.

For similar reasons, a Section 401 Water Quality Certification should be required for each construction item. There is no way for a state to properly issue a Section 401 Water Quality Certification until design for each item is complete, because until that time there is no basis for determining whether water quality standards will be maintained.

Response. See response to Comment 1i above.

The SEIS describes avoid-and-minimize techniques for each work item as well as a full compensatory mitigation plan for the entire remaining project. The SEIS adequately discloses the location of each levee and berm to be constructed as well as the borrow areas. The Section 404(b)(1) evaluation adequately discloses the proposed sites for the discharge of dredged and fill material associated with this construction. These locations have been specified through application of the Section 404(b)(1) guidelines.

x. Comment. SEIS 1-13, Section 1.6.3. The second paragraph suggests that the Corps only efforts for relocating borrow was to select farmed wetlands over bottom-land hardwood wetlands. Pursuant to both law and project objectives, borrow should be obtained from nonsensitive, nonwetland sites to the maximum extent practicable.

Response. The example given in the subject paragraph is only one example of the decision hierarchy. See response to Comment 1e above.

y. Comment. SEIS 1-14, Section 1.6.5. Details of the Carrollton feature should be provided. Analysis of alternatives evaluated also should be included as should an explanation of how the design satisfies the avoid-and-minimize design criteria. Without these details, no meaningful public comment can be provided either on this feature or on the New Orleans District's determination that construction of this feature is consistent with the State of Louisiana's Coastal Resource Program.

Response. Text reworded.

z. Comment. Section 2-2, Section 2.2. The last sentence of the first full paragraph states that under the no-action alternative, the Mississippi River Valley will remain vulnerable to future floods. The SEIS should state whether it is the Corps position that implementation of the selected alternative will protect the Lower Mississippi River Valley from all future Mississippi River flooding.

Response. Implementation of the selected alternative will protect the Lower Mississippi River Valley from the Project Design Flood (PDF), ". . . the greatest flood having a reasonable probability of occurrence." Under the no-action alternative, the valley is subject to catastrophic flooding from floods of much less magnitude than the PDF. The selected alternative will protect the valley from all floods, which reasonably can be expected to occur.

aa. Comment. SEIS 2-3, Section 2.4.1.1. This section describes an alternative that would obtain landside borrow from an area 2,000 to 3,000 feet from the landside toe of the levee. The Corps has advised Plaintiffs that the haul distance limit for landside borrow (a maximum of

3,000 feet from the landside levee toe) was provided only for the purpose of calculating costs. The Corps has stated that it selected this maximum distance because further haul distances would cost too much. The SEIS should answer at least the following questions concerning the haul distance: Is 3,000 feet from the landside toe of the levee the maximum distance that the Corps would look for landside borrow? Have the haul distance costs been compared to the losses associated with destruction of bottom-land hardwood wetlands on the riverside of the levee? Are there riverside borrow locations where the haul distance would be greater than 3,000 feet for all or a portion of the borrow material?

This section also concludes that "landside rights-of-way would be expensive." The SEIS should answer at least the following questions regarding the level of this expense: What are the estimated actual costs for obtaining the required landside rights-of-way? Has the Corps analyzed the average land costs in landside areas deemed suitable for borrow? If not, what is the basis for the Corps conclusion that landside rights-of-way would be expensive? What does the Corps mean by "expensive" and what did the Corps compare the costs to in making this determination? Are landside rights-of-way "expensive" as compared to riverside borrow, and if so, how much more expensive? Are landside rights-of-way "expensive" as compared to the habitat values provided by an equivalent area of natural forested wetland?

This section further states that the "extended borrow haul distance would also increase costs." The SEIS should answer at least the following questions concerning this statement: What is the support for this statement? What are the haul distances for existing proposed riverside borrow areas? Do any of those haul distances for all or a portion of a construction item exceed 2,000 to 3,000 feet (the full distance range in which the Corps would look for landside borrow)? This section also must analyze and discuss the relative cost of road building in determining the transportation costs. It is likely that fewer road building costs would be incurred for landside borrow since existing roads are more likely to be available. Both road building and transportation costs must be looked at together if there is to be a meaningful analysis of the relative costs of landside and riverside borrow.

Response. The distance of 3,000 feet from the landside levee toe is not the maximum distance the Corps will look for borrow. Approximately 3,000 feet was selected as a reasonable distance for this planning level of study detail. In the plans and specifications preparation phase for each item, detailed surveys and borings will be taken, and we may very well look at borrow greater than 3,000 feet from the landside or riverside levee toe. However, the average haul distances were taken into account when making the cost estimates as well as the mitigation costs associated with loss of bottom-land hardwood wetlands on the riverside of the levee.

Detail design includes surveys and borings that are used to quantify the exact amount of required borrow and the location of acceptable borrow.

Costs for landside and riverside rights-of-way were estimated utilizing existing sales in the area at the time of SEIS preparation. Rights-of-way are the responsibility of the levee boards and the cost could vary depending on existing sales at the time of purchase or whether the levee boards were purchasing the land in fee title or only a construction easement. The statement "The landside rights-of-way would be expensive" is true since current sales of land show that the cost per acre of landside lands exceed the cost of riverside lands by $800 to $1,000 per acre. Also levee boards often have riverside lands under easements whereby landside lands would have to be purchased. Also in Louisiana, constitutional law has designated those lands below ordinary high water marks to be utilized for levee construction.

Environmental impacts were estimated using habitat or function-based assessment methodologies which reflect the biological value of the resource. Assessing biological systems using monetary methodologies is not appropriate. The habitat values of impacted forested areas riverside of the levee would be fully offset through the proposed mitigation.

The Corps considered only a minimum haul distance on the landside because of the engineering requirement not to locate the borrow too close to the levee and incur a seepage area. Any further movement of the borrow areas away from the levee in the landside alternative would only add cost of the additional haul distance. Haul distances on the riverside varied depending on the borrow area location. Borrow areas on the riverside were selected based on the criteria used to avoid and minimize impacts to bottom-land hardwoods. Haul distance on riverside borrow areas in some instances did exceed the 2,000 to 3,000 feet used on the landside.

On a typical item, the cost to build roads to haul the borrow to the levee and berm is included in the cost per cubic yard of material in place on the levee. There is no separate cost for road building. Existing county roads and state highways would be used where possible, but often these roads were not constructed to adequate standards to haul the amount of material required to enlarge the levee and berms. Costs to repair these roads are not usually included in the cost per cubic yard of material. Only those roads that we designated on each item of work are included in the cost. Costs to build roads have been included in the cost per yard of material on both landside and riverside borrow areas.

bb. Comment. SEIS 2-5, Section 2.4.3. It is not possible to ascertain from this section what the applicable standard is for determining compliance with the avoid-and-minimize plan. This section can be read to require relocating borrow from bottom-land hardwood wetlands only when the Corps makes a determination that such relocation is "possible" or "feasible." Since neither standard is defined, the Corps discretion in making such a determination is essentially limitless.

The standard that will be applied under this alternative will determine whether the proposed estimates of impact reduction through the avoid-and-minimize plan will be achieved as the standard will dictate the efforts that are supposed to be undertaken to avoid impacts. Thus, the standard for avoiding impacts--and the steps to taken to comply with that standard--are critically important. Without a meaningful standard, the project designer retains unlimited discretion in determining whether an individual construction item meets the requirements of Plan 4.

The various standards set forth in the SEIS include at least the following:

1. The planning objectives state that adverse impacts to the environment should be avoided and minimized "to the maximum extent practicable."

2. The selected avoid-and-minimize alternative, however, only requires that avoid-and-minimize design be applied to the "fullest extent practicable."

3. Under the avoid-and-minimize alternative, however, the "fullest extent practicable" requires the implementation of only "reasonable environmental design measures to avoid and minimize environmental damages to bottom-land hardwoods."

4. Such "reasonable" measures, however, only include relocating riverside borrow from bottom-land hardwoods to riverside prior-converted farmlands or to landside prior converted farmlands "where possible."

5. In Section 2.6, SEIS 2-7, Plan 4, is said to require the relocation of borrow areas only "where feasible" to avoid and minimize impacts to bottom-land hardwood forests and bottom-land hardwood wetlands.

Each of the standards articulated under Plan 4 provide far less protection to the environment than the planning objective requirement that adverse impacts to the environment should be avoided and minimized "to the maximum extent practicable." Each of the Plan 4 standards also provide far less protection to the environment than the Section 404 sequencing requirements. In addition, application of each of the various standards identified in Plan 4 almost certainly would result in significantly greater impacts over the life of this project than estimated in the SEIS.

Response. However it is phrased, only one standard has been used or will be used in the project analysis and design. The standard that has been applied to this SEIS is that where in our best engineering judgment it is environmentally, economically, and engineeringly feasible, borrow area and construction activities will be relocated to avoid bottom-land hardwood wetlands and minimize the damage to them. What we have done in this SEIS is to minimize to the maximum extent practicable the damage to bottom-land hardwood wetlands based on the

general level of information available for this study. Our plan for each individual item of work in the plans and specifications preparation phase is to perform detailed surveys and obtain detailed subsurface information from boring, then conduct evaluations to look at cost-effective means to further reduce the effect on bottom-land hardwood wetlands. The surveys and borings are costly to obtain, but are necessary to determine the location and amount of borrow that is suitable for levee and berm construction.

cc. Comment. SEIS 2-6 to 2-7, Section 2.5.1. Environmental benefits of the landside borrow alternative--complete protection to bottom-land hardwood wetlands, other riverside wetlands, and riverside forested nonwetlands--are not adequately analyzed in the SEIS.

The Corps has advised Plaintiffs that through the use of up-to-date and innovative construction techniques, the estimated impacts from borrow (and presumably haul road construction) had been reduced to approximately 2,800 forested acres. The remaining approximately 2,000 acres of bottom-land hardwood impacts are located under the footprint of the enlarged levees and berms and are deemed by the Corps to be unavoidable. Thus, the Corps could completely avoid these "discretionary" impacts by obtaining landside borrow from nonsensitive, nonwetland sites. Plaintiffs are at a loss to understand how the Corps can conclude that it is not feasible to purchase landside rights-of-way.

Plan 2 was rejected for wholly invalid reasons. First, the SEIS says it would cost the "most." This is a misleading statement, however, as the allegedly additional borrow costs are not compared to the lost value of the bottom-land hardwood wetlands that landside borrow would protect. Nor are details provided regarding how much more those costs would be.

Second, the SEIS says this alternative is not acceptable to a majority of landowners or to the local sponsors. The Corps may not refuse to comply with this obligation because the local sponsors do not want to obtain landside borrow. Moreover, we assert that willing sellers could be found particularly since the Corps and local sponsors contend that enlarging the mainline levee system is critical to the safety of the region.

Third, the statement that environmental benefits from landside borrow would be relatively small compared to other structural plans is false. The environmental benefits would be enormous; all nonfootprint-related wetland and riverside forested losses could be avoided. This would save thousands of acres of bottom-land hardwood wetlands, bottom-land hardwood nonwetlands, and farmed wetlands on the riverside of the levee. The alleged lack of environmental advantages to habitat incidentally created by landside borrow pits as compared to that incidentally created by riverside borrow pits, which appears to be what this statement is referring to, is irrelevant to the obligation to avoid and minimize impacts to bottom-land hardwood and other wetlands and to the significant environmental benefits gained by avoiding those impacts altogether.

Given the cumulative losses of bottom-land hardwood wetlands to date, the allegedly unavoidable impacts to bottom-land hardwood and other wetlands that are under the footprint of the enlarged levees or berms, and the lack of historical mitigation success, the benefits to be derived from avoidance of damages to these riverside lands would be enormous. This is particularly true since each additional acre of bottom-land hardwood wetland loss must be considered significant.

The SEIS should identify the projects and acreage taken by the Federal Government that are referred to in this Section and relied upon as a rationale for not selecting this alternative.

This Section also uses as a justification for selecting riverside borrow the fact that landside borrow areas would not contribute nutrients to the river system. The Mississippi River System has too many nutrients already; this should be viewed as a positive benefit for water quality in the Mississippi River and not as a negative impact.

Response. The Corps of Engineers has utilized the steps to avoid the loss, then to minimize the loss, and then finally to compensate for the unavoidable losses. The Corps has done this with Alternative 4. As for Alternative 2, or the landside borrow alternative, the Corps evaluated it and Alternatives 3 and 4 on several typical reaches. The cost and environmental consequences of Alternative 2 resulted in this alternative being removed from further consideration, not that a majority of landowners were not in favor of it. The Corps as part of the preparation of the SEIS did not contact each landowner. Since construction of the 128 items will take place over a 22-year period, changes in land ownership, land prices, cropping patterns, agricultural policies, and laws will undoubtedly occur, making the identification of willing sellers inappropriate at this time. However, landowners as well as environmental groups did attend the scoping meetings, workshops, and public meetings and indicated that they were not in favor of removing additional lands on the landside of the levee since many levee boards already had easements on considerable amounts of riverside lands or that constitutional law allowed the levee boards the right to use those lands below the ordinary high water mark for levee construction.

Although the reviewer chooses to disagree, data show the environmental conditions in landside borrow areas to be relatively poor when compared to riverside borrow areas. Compensatory mitigation of those unavoidable losses results in the no net loss of wetland function and a net gain in terrestrial and waterfowl value. The aquatic design features also provide a net gain in aquatic value.

The Federal government owns many acres of land in the Mississippi Delta. In the Vicksburg District alone, tracts include the Delta National Forest (59,000 acres), which is operated by the U.S. Forest Service, and Mahannah (12,700 acres) and Twin Oaks (5,800 acres) Wildlife Management Areas which were purchased by the Corps and turned over to the State of Mississippi for management. The FWS manages the Yazoo (7,800 acres),

Panther Swamp (22,000 acres), Hillside (15,000 acres), and Dahomey (5,000 acres) National Wildlife Refuges. In addition, the Vicksburg District is in the process of purchasing in excess of 25,000 acres of mitigation land in this area. In Louisiana, the Tensas Basin National Wildlife Refuge was purchased by the Corps for mitigation for several projects and then was turned over to the FWS for management. Land is also being purchased in the Atchafalaya Basin and White River National Wildlife Refuge.

Also see response to Comment 1e above.

dd. Comment. SEIS 2-7 to 2-8, Section 2.6. It is not clear whether the SEIS located any borrow areas in nonsensitive, nonwetland areas on the landside of the levee (other than those instances where old levees are being used to obtain borrow, a practice that Plaintiffs support). Plaintiffs could uncover only the following proposed sources for borrow: riverside wetlands (both forested and nonforested); riverside forested nonwetlands; landside wetlands (both forested and nonforested); old levees; and the Mississippi River. The SEIS should identify all habitat types (and acreage of those types) that the Corps has assumed will be used for borrow material in reaching its impact estimates. Without this information, the public cannot ascertain to what degree the avoid-and-minimize plan has actually driven efforts to avoid impacts to wetlands and forested nonwetlands.

Response. A table showing habitat impacts from borrow area construction has been added.

ee. Comment. SEIS 2-7 to 2-8, Section 2.6. Plaintiffs believe that the Corps should put more effort into devising a prioritization scheme that will reduce environmental impacts of the project to the maximum extent practicable. Contrary to the suggestion in this Section, the prioritization scheme will do little to meet the goal. It is almost certain that riverside borrow be utilized unless the Corps undertakes significant efforts to locate willing sellers of landside borrow. This is because under the prioritization scheme, landside locations will not be selected for the location of borrow regardless of the impacts on wetlands (or the impacts on the Louisiana Black Bear) unless riverside locations simply are not available.

The current prioritization scheme should be revised to ensure that environmental impacts are reduced to the maximum extent practicable, and the SEIS should provide a detailed description of the steps that must be taken to locate willing sellers of landside borrow.

Response. See response to Comment 1e above.

ff. Comment. SEIS 2-9, Section 2.6.1.1. The first full paragraph states that unless the Drinkwater Pumping Station capacity is increased to accommodate the seepage flow, "approximately 5,400 acres of agricultural lands would be negatively impacted." The alleged negative impacts are not described anywhere in the SEIS.

Response. The impacts will consist of more frequent flooding and a longer duration of flooding than presently exists. Flood levels will also be increased above current conditions without additional capacity at the pumping station. The negative impacts will primarily be agricultural; however, vegetation (primarily wooded areas) within wetland areas would also be negatively impacted by increased frequency and duration of flooding at a higher level.

gg. Comment. SEIS 2-11, Table 2-1. The comparative impacts analysis compares the wrong alternatives. The SEIS should compare the impacts to species and wetlands of utilizing landside borrow versus utilizing riverside borrow. The appropriate alternatives to analyze would include: (1) avoid and minimize engineering designs utilizing landside borrow only and (2) avoid and minimize engineering designs utilizing landside borrow and/or site-specific nonstructural measures where necessary to avoid impacts to bottom-land hardwood wetlands, herbaceous wetlands, and forested nonwetlands.

Response. The purpose of Table 2-1 is to describe, in comparative form, the no-action and the impacts of the detailed plans on significant resources. The no-action alternative, Plan 3, and Plan 4 were carried forward from the preliminary screening; therefore, are appropriate included in Table 2-1.

hh. Comment. SEIS 3-3, Section 3.2. The last sentence in the first paragraph is incorrect. Waterfowl were utilizing bottom-land hardwoods long before the area was developed and converted to cropland. Utilizing bottom-land hardwoods is not an adaptation to these land use changes.

Response. The sentence has been revised.

ii. Comment. SEIS 3-8 to 3-10, Section 3.5. Plaintiffs' personal experiences with borrow pit habitats do not comport with the glowing picture presented in the SEIS of the value of riverside borrow areas as aquatic habitat, and Plaintiffs question the conclusion in this section that borrow areas provide "some of the best fisheries habitat in the continental United States."

In addition, this section on aquatic resources in the project area makes no mention of the aquatic habitat provided by the Mississippi River itself and fails to adequately analyze the aquatic habitat provided by oxbow lakes and permanent water bodies other than borrow areas. Thus, the SEIS fails to recognize the extensive existing aquatic resources in the project area, and as a result, places too much emphasis on the benefits of creating additional aquatic habitat.

The SEIS places a disproportionate value on habitat created incidentally by borrow pits. The focus of the SEIS should be on habitat values that will be lost or negatively impacted by the various proposed alternatives to the project. We are not aware of any existing borrow habitat that will be lost as a result of this project.

Most importantly, habitat incidentally gained by borrow areas does not, and cannot, compensate for wetland losses.

Response. The statements regarding the fisheries values associated with the riverside borrow areas are based on scientific data and reflect a reasoned and objective evaluation of the fisheries in the borrow areas. If any interested parties are aware of scientific data that indicate otherwise, the Corps would like the opportunity to fully consider that information. This section has been revised to include additional information on oxbow lakes and other permanent water bodies.

The SEIS does not place a disproportionate emphasis on the creation of aquatic habitat. Creating approximately 6,700 acres of high quality aquatic habitat is noteworthy. The SEIS should and does address the adverse and beneficial environmental consequences of the proposed alternatives. This ensures that the public and the decision makers are aware of all of the potential consequences of the proposed alternatives.

No where in the SEIS or its appendixes does it indicate that habitat created by borrow area construction would be used to compensate wetland losses. To the contrary, on page SEIS 4-5, second full paragraph, it indicates that although wetland functional benefits would be provided by the borrow areas, they were not quantified.

jj. Comment. Section 3-10, Section 3.6. The biological assessment for the Louisiana black bear must be included in the Endangered Species (Appendix 11). The necessary conservation measures required by each biological assessment needed to ensure "no effect" must be identified in the selected alternative.

Response. The Biological Assessment for the Louisiana black bear is included as Attachment 3 to the Endangered Species Biological Assessment in the final SEIS (Appendix 11). With the exception of the Louisiana black bear, measures to ensure that the project will not adversely impact any endangered species are found in the "Evaluation of Potential Impact" section for each species. Measures to ensure the project will not have an adverse impact on the Louisiana black bear are found in pages 23-34 of the Biological Assessment for the Louisiana black bear.

kk. Comment. SEIS 3-13 to 3-14, Section 3.8.1. This Section and the Water Quality Appendix (Appendix 17) are factually incorrect as at least some reaches of the Mississippi River do not meet applicable water quality standards and/or are not supporting their existing or designated beneficial uses. Accordingly, there is no basis for the conclusion that the "water quality within the Mississippi River is within acceptable ranges most of the time."

In addition, one area of the project is located on a reach of the Mississippi River that the U.S. Geological Survey (USGS) has reported contains the highest dissolved mercury concentrations within the entire river.

The Water Quality Appendix also does not provide sufficient information to determine toxicity levels of mercury in sampled fish, including lengths and weights of tested samples. The Water Quality Appendix also fails to adequately analyze the potential for redistribution of contaminated sediments.

Response. All seven states in the project area list the Mississippi River as either fully or partially supporting the designated uses. Small reaches of the river have been rated as not supporting some specific uses, but the overall assessments were either fully or partially supportive. In the April 1998 meeting with plaintiffs, it was stated that not all reports have been reviewed. All states have since either provided their Section 305(b) reports or the results have been reviewed. The information has been added to the Water Quality Appendix. The numbers that you are quoting are based on the "period of record" data from the STORET system. These data are subject to misinterpretation. The data presented in Table 17-6 lists the metals data collected in 1996 and are a better guide to water quality with regard to these trace metals. In addition, the following statement is in the USGS report: "Concentrations of toxic heavy metals dissolved in the water in the 2,900 km reach from Minneapolis, Minnesota, to Belle Chase, Louisiana, are well below USEPA guidelines for drinking water and water that supports aquatic life." The mean dissolved mercury concentration in the Mississippi River from the USGS study was less than 0.010 μg/l, and less than 10 percent of the samples exceeded the FWC criteria level of 0.012 μg/l. Using EPA guidelines, these waters are fully supportive of the aquatic life criteria for mercury. The data presented in Tables 2A-2D provide the mean of the samples with detectable quantities only. Many of the trace metals are routinely below detectable limits. Seventy-five percent of the historical data for mercury and silver are below detectable limits, and all of the samples collected in 1996 for these metals were below detectable limits. The criteria, for mercury and silver, are also below detectable limits. The interpretation of data when both the results and the criteria are below detectable limits is difficult at best. With regard to the historical data, cadmium was below detectable limits in 75 percent of the dissolved samples and more than 50 percent of the total samples. Only when the "less than" values are excluded can a statement like "cadmium exceeds benchmark levels 50 percent of the time" be made. The section discussing the historical data will be rewritten to improve its clarity. A table has been added to the Water Quality Appendix which provides the length and weight data that you have requested.

ll. Comment. SEIS 4-3, Section 4.2.2. This Section does not adequately analyze the potential impacts to bats. This Section makes no reference to the fact that the majority of bat species would be harmed by the loss of forested wetlands and forested nonwetlands and that reforestation would benefit these species only if and when the reforestation successfully recreates a mature forest ecosystem. Nor does it factor into its analysis the fact that, according to the Bat Appendix (Appendix 14), woodland bat species will not receive any benefits from reforestation until at least 2035.

The Bat Appendix should provide information as to the population levels of bats in the project areas and whether those populations are declining.

Table 4-4 is misleading as it does not take into account that fact that the majority of bats utilize woodlands.

Response. The statement states "the loss of forest lands directly reduces the potential number of trees that are hollow, those with loose bark, and those with dense foliage which provide roosting areas for most bat species in the project area." A sentence stating that the reforested woodlands would begin providing bat habitat by the year 2035 has been added to the statement. The population levels of bats will probably change over the life of the project (100 years). Hence, existing levels and trends are not as meaningful as describing impacts to bat habitats.

mm. Comment. SEIS 4-4, Section 4.2.3. This Section concludes that no significant adverse impacts to Neotropical migratory birds "would be expected to result from the proposed project following implementation of proposed environmental design measures and reforestation efforts." This statement ignores the impact to these species during the 30 years--at a minimum--that it will take to successfully recreate mature bottom-land hardwood forests and does not take into account the many uncertainties associated with such successful mitigation.

The Neotropical Migratory Bird Appendix (Appendix 12) states that there "still remains some skepticism that the reported population declines, especially of forest-dwelling migrants, represent actual threats to Neotropical migrant species." While some scientists always will remain skeptical, there is considerably more scientific consensus that these declines do represent a threat to the species. Appendix 12 does not evaluate the impacts of losses in forested habitat that may occur as a result of project construction in identified bird conservation areas. A forest gap created within a bird conservation area could result in significant impacts to Neotropical migratory birds, particularly where cowbird feeding areas are created in an otherwise contiguous forest tract. The SEIS should identify the location of the bird conservation areas and ensure that forested areas are not impacted by the project in any of those areas.

Response. Reforested lands will begin to provide benefits to some species within the first 10 years. As trees mature, certain species will be benefitted more than others. However, the period of analysis for the mitigation measures is 100 years. During this time, there will be more acres of bottom-land hardwoods in the study area than are under existing conditions. Mitigation measures will be monitored until the reforestation measures are successful.

No evaluation of specific conservation areas is warranted because all forested areas were considered significant resources and avoided to the maximum extent practicable.

nn. Comment. SEIS 4-5 to 4-8, Section 4.3. Plaintiffs understand that the methodology utilized by the Corps in determining functional capacity units is not yet adequately developed, and likely will not be adequately developed for at least 2 more years. Currently, this methodology rests on numerous assumptions that may undervalue the functional capacity of wetlands lost through the project. This also would impact mitigation requirements as mitigation is being based on providing only 100 percent mitigation for lost values. The SEIS should discuss the uncertainties associated with this methodology and underlying assumptions upon which it is based. The SEIS also should discuss alternative wetland valuation methods. This Section places much emphasis on the percentage of wetlands impact, as compared to the total percentage of project wetlands. This would appear to be an attempt to minimize the appearance of impacts based on the size of the project area. This analysis, however, does little to assist the decision makers in understanding the significance of the impacts of these losses. A meaningful cumulative impact analysis is necessary to understand this significance.

Response. The wetland assessment methodology was developed by the U.S. Army Engineer Waterways Experiment Station (CEWES). It is a complete and adequate methodology that has been used on previous projects. The hydrogeomorphic assessment methodology (HGM) is the methodology currently being developed. Even if developed, HGM is designed for site-specific regulatory actions and not planning level analyses. We are currently working with CEWES, EPA, and FWS to integrate HGM concepts into our planning level wetland assessments. A complete discussion of the methodology used in this analysis and its underlying assumptions is provided in Appendix 13 which is incorporated into the SEIS by reference. Adding discussion about alternative wetland assessment methods is unnecessary.

This section provides a balanced discussion of the relative and absolute wetlands impacts. No attempt was made to minimize the appearance of impacts based on the size of the project. Tables 4-5, 4-6, 4-7, and 4-8 very clearly indicate the absolute wetland acreage impacts, upon which the functional analysis and compensation were based.

oo. Comment. SEIS 4-12, Section 4.5. The specific environmental design and/or mitigation features necessary to ensure that the project will not adversely impact any threatened or endangered species should be identified in the SEIS and the mitigation plan.

Response. The specific environmental design and/or mitigation features necessary to ensure that the project will not adversely impact any threatened or endangered species are identified in the Endangered Species Biological Assessment (Appendix 11).

pp. Comment. SEIS 4-13, Section 4.5.4. If the Corps seeks the ability to shorten the "no-construction" period for the bald eagle, FWS should retain the authority to lengthen that no-construction period when necessary to prevent direct, indirect, or cumulative adverse impacts to the bald eagle. The SEIS should state that the Corps will consult with FWS on each construction item to ensure that no construction is being conducted within 0.5 mile of any eagle nests or within appropriate no-construction time requirements.

Response. The "no construction" period could be shortened for specific items of proposed construction only if it is determined, in consultation with FWS biologists, that such construction would not adversely impact the bald eagle. As a participant in the annual mid-winter bald eagle survey, the Corps will continue to keep abreast of eagle nesting activity to ensure that no construction occurs within 0.5 mile of any eagle nest during egg laying, incubation, and the first month after hatching.

qq. Comment. SEIS 4-13, Section 4.5.5. This Section, and the wood stork biological assessment in Appendix 14, state that the existing hydrology within the proposed project area will not be impacted by project construction. However, the existing hydrology of wetlands used for borrow will be impacted by project construction. Since the primary limiting factors contributing to the wood stork's decline have been the loss of wetland habitat and changes in hydrology, additional explanation is needed in the SEIS and in the biological assessment to explain how the no adverse impact determination was reached. This is particularly true since six wood storks were observed in June 1997 attending nests in the project area.

Response. As indicated in the Biological Assessment, currently United States breeding for the endangered wood stork is limited to Florida, Georgia, and South Carolina. The wood stork's breeding occurrence in the project area is best described as accidental or casual. The reported June 1997 attempted wood stork nesting in Warren County, Mississippi, represents the only record of wood stork breeding activity for the States of Louisiana, Arkansas, Missouri, Tennessee, and Mississippi. While it is true that some habitat; e.g., wooded swamps, suitable for wood storks may be impacted by proposed levee and berm construction, it is also true that borrow areas created as a result of project construction could provide excellent wood stork foraging habitat.

rr. Comment. SEIS 4-14, Section 4.7.1. This Section fails to analyze and discuss the impacts to water quality of construction carried out over at least the next 22 years and fails to properly analyze the true level of impacts to construction that will in some places be carried out over areas miles long (in many cases the levee deficiencies cover 10 to 16 miles). The SEIS and Mitigation Appendix should identify the necessary best management practices and require implementation of those best management practices as a condition for awarding contracts for individual construction items.

Response. In regard to identifying best management practices (BMP), the selection of the BMP's will be made during the final design phase of each work item. The designer will select the most efficient BMP's based on a complete evaluation of the work items's site-specific conditions, standards, and regulations existing at the time of the final design. The SWPPP will describe the BMP's and procedures the contractor shall implement to control stormwater runoff and reduce construction impacts on water quality. As part of the contract plans and specifications, the contractor will be required to implement and comply with the requirements of the SWPPP and any specific requirements of the appropriate state's stormwater discharge permit. The compliance of the contractor to the requirements of the SWPPP will be verified during construction by the Corps Contracting Officer's Representative.

ss. Comment. SEIS 4-14, Section 4.7.2. This Section recognizes that it will take at least a few years to obtain good water quality in borrow pits. The SEIS should consistently identify potential water quality problems. While landside borrow may have the potential to trap high levels of chlorinated pesticides that may threaten the health of fish populations in those borrow pits, there are no fish in those areas now so that potential has little meaning regarding negative benefits of landside borrow. We also note that potential consumers of fish from landside borrow areas easily can be protected by posting warnings of potential contamination. We also note that access to those landside borrow areas could be limited (further limiting potential health risks) since landside borrow areas likely would be located on private land.

Response. As has been mentioned before, the water quality in potential borrow areas is relevant. The posting of signs warning human consumers of the potential hazards associated with the consumption of fish may offer some protection to human consumers, but it will not protect animals. Many states that have issued health advisories for fish consumption and have posted signs have reported that the signs are damaged or ignored. DDE was banned because it biomagnifies in the food chain. Piscivorous mammals and birds will accumulate high levels of DDE. Ospreys, pelicans, and bald eagles all suffered mortality associated from egg shell thinning due to high levels of DDE. The Corps is obligated to elevate human health concerns above other environmental issues (Executive Order 11990).

tt. Comment. SEIS 4-15, Section 4.7.2. The second full paragraph and Mitigation Appendix should identify the necessary best management practices that must be undertaken to minimize nonpoint pollution from any aspect of project construction and require implementation of those best management practices as a condition for awarding contracts for individual construction items. The statement that "reasonable efforts to reduce nonpoint pollution would be performed" is meaningless for assuring actual implementation of such efforts, and almost certainly is not sufficient for properly obtaining a Section 401 State Water Quality Certification.

Response. See response to Comment 1rr above.

uu. Comment. SEIS 4-23, Section 4.12.2.2. Plaintiffs assert that borrow areas will in fact have direct and cumulative impacts on esthetics. That the borrow areas may be designed to "blend them into the surrounding area" is not the point. The proper analysis would compare the esthetics of borrow pits to the esthetics of a natural forested wetland.

Utilizing the enormous project area to conclude that the net effects to esthetics is insignificant is disingenuous and misleading. While the esthetic impacts will occur only at construction sites and borrow pits, those impacts likely will in fact be significant since enormous borrow pits will be created--many larger than 100 acres. Reforestation of borrow pits may mitigate the esthetic onslaught, but only for those large enough to be deemed worthy of reforestation, and only after a significant number of years, and only if the reforestation efforts actually are undertaken and prove to be successful. Smaller borrow areas will receive no amelioration of esthetic impacts from reforestation.

Response. One cannot compare the esthetics of a borrow area with the esthetics of a forested wetland; they are different habitat types. However, some of the aquatic borrow areas and forested wetlands are very attractive. The statement states "With Plan 4, an estimated 18,953 acres of land would have minor visual impacts." This is based on site visits to areas under construction. The esthetics of these areas are not changed very much by construction operations. The borrow areas will average about 100 acres in size and will average about 8 feet deep. They do not appear as large as one might think. Reforesting some of these areas will reduce adverse esthetic impacts in the project area. Other areas will revegetate naturally and appear similar to some areas on the batture. New areas will be designed to blend into the surroundings so they will not appear intrusive.

vv. Comment. SEIS 5-1 to 5-5, Section 5.0, and Mitigation Appendix (Appendix 1). Prior construction of this project has resulted in significant direct and secondary losses of bottom-land hardwood wetlands, other wetlands, and forested nonwetlands. The SEIS should analyze and discuss mitigation for those past losses. Failure to mitigate in the past also should be evaluated in determining mitigation needs for the remaining project construction.

The SEIS fails to analyze or discuss the uncertainties associated with successful mitigation and instead, assumes that mitigation will be 100 percent successful, both in the total number of acres reforested and in the restoration of lost functional values. There is no basis for making this assumption, however, and all evidence suggests that this assumption is incorrect.

The SEIS should explain how the proposed mitigation (as set forth in Appendix 1) will be successful in mitigating for 100 percent of lost values in light of at least the following:

1. Habitat impacts and losses may be far more than estimated in the SEIS, but the proposed mitigation acreage will not change. The SEIS should require the implementation of an accounting system to keep track of habitat losses and mitigation gains from the project and adjust mitigation requirements accordingly.

2. The SEIS contains no details relating to followup monitoring and reporting back to the public and thus, there may be no way to tell whether or not the mandated mitigation is being implemented or successful.

3. At least within the Vicksburg District, there currently is a significant backlog of mitigation that has not been implemented, in part, because of difficulties in locating willing sellers of large tracts of land. The Mitigation Appendix makes no mention of this nor does it set up a process for ensuring that this will not happen to this project.

4. The SEIS states that funds for management of mitigation lands and followup monitoring of those lands is subject to the appropriations process. Given the vagaries of that political process, there is no assurance that any of the necessary funds will be appropriated and thus, there is no assurance that mitigation lands will be managed or monitored.

5. The methodology utilized by the Corps to establish the wetland values to be replaced through mitigation Is not properly developed and well may have undervalued the lost values.

The Mitigation Appendix must contain significantly more detailed requirements for the proposed mitigation. For example, success rates should be established, detailed monitoring plans should be established, standards for assuring appropriate hydrology and appropriate substrates should be established, standards for ensuring appropriate habitat diversity should be established, and standards for ensuring proper maintenance should be established.

The Mitigation Appendix also should define "concurrent" mitigation in the context of this project as requiring that the mitigation lands be purchased and reforestation initiated prior to construction of any additional work items.

Response. The purpose of preparing the SEIS was to analyze avoid-and-minimize techniques, impacts and mitigation on the remaining work items based on additional environmental information, including, but not limited to, scientific, legislative, and policy information that has become available since the original EIS was filed.

Your concerns about the uncertainties associated with mitigation appear to be applicable to mitigation associated with smaller scale permit actions, where implementation and monitoring are more difficult. The Vicksburg, Memphis, and New Orleans Districts have been involved in the proposed form of mitigation since 1990, and to date, approximately 20,000 acres have been successfully restored. Survival is monitored closely, and monitoring is being conducted to ensure that habitat units are being replaced. These activities have been coordinated closely with the appropriate state and Federal agencies. Similar coordination and monitoring will be conducted on mitigation lands acquired for this project. In the Vicksburg District, a cooperative program to document and evaluate bottom-land hardwoods restoration techniques, wildlife utilization, and mitigation effectiveness on restored lands was coordinated and funded by CEWES and the Vicksburg District. Participating organizations included CEWES, the Vicksburg District, U.S. Forest Service, FWS, MDWFP, Mississippi State University (MSU), Tennessee Technological University, and Alcorn State University.

Estimated habitat losses in the EIS represent the upper limits of impacts. As indicated in the draft report, each item will be evaluated again during the design phase to determine whether the impacts can be further reduced. Mitigation features and monitoring will be clearly stated in the Record of Decision. Details of the monitoring will be developed as a coordinated effort between the appropriate Corps District and Federal and state resource agencies. There are some projects within the Vicksburg District where complete mitigation has not been achieved. The reasons for incomplete mitigation vary by project, but the Vicksburg District remains committed to achieving those mitigation goals. The lack of willing sellers has not been a limiting factor in the acquisition of mitigation lands. It is also important to note that excess

acreage of bottom-land hardwoods have been purchased for mitigation on projects that were never constructed. For example, of the 54,000 acres purchased to create the Tensas National Wildlife Refuge in Louisiana, only approximately 10,000 acres were credited toward mitigation for completed projects.

2. Letter, Environmental Protection Agency, 30 April 1998 (Exhibit 2).

a. Comment. A number of procedural/technical items remain to be resolved as planning for actual implementation of work items goes forward, including method(s) used to determine the extent of project impacts. Namely, the actual footprint of structural features and the functional changes to the environment which will be manifested as the upgrades subsequently occur. These include land cover/land use mapping specifics together with the techniques used to ascertain functional losses; i.e., hydrogeomorphic procedures versus other assessment techniques.

Response. The planning process requires selecting assessment methodologies for use at a specific point in time. The methodologies selected for this project adequately describe and analyze the impacts of the proposed action and future analysis based on future methodologies is not necessary.

b. Comment. Fundamental aspects of mitigation will need to be examined, including process associated with acquiring future mitigation properties (specific location and precise extent), how/if these areas will be permanently secured, who will be responsible for the maintenance/management of these tracts, what will be accomplished there to achieve no-net loss from the project, determining a means to assess whether these parcels are actually able to meet their anticipated compensation goals (geographically appropriate, big enough, etc.?), codified means to make changes to the plan when the inevitable future exigencies arise, and an exact delineation of how this mitigation meshes with, but is not confused with, mitigation already assigned to other projects.

Response. The Corps will establish an interagency team to review mitigation strategies and evaluate specific sites. Monitoring of mitigation tracts will reveal whether compensation goals are met. Acquisition of property will be according to the criteria established in the mitigation appendix. Appropriations for the Mississippi River Levees Project will be used to fund the purchase and operation of these mitigation tracts. The agency selected to operate and maintain each tract may combine management of these tracts with other lands under its jurisdiction for efficiency. Reference paragraph 67 of the mitigation appendix.

c. Comment. There are a number of important issues associated with development both within and upslope of the project area which are not under the statutory control of the Corps or other Federal principals. Nonetheless, they have the potential to dramatically affect the

project's flood control objectives. We suggest that as this project proceeds, routine communication be maintained with local entities having this land use authority. There needs to be an understanding that all land use decisions must need to take into account their impact on the flowline predictions made for this action.

Response. Concur.

d. Comment. Since we anticipate that this project will serve as the template for future, similar actions undertaken by the Vicksburg District, more information is needed for us to understand the actual procedures used to prepare the land cover/land use maps. We understand that only a 50 percent survey (page SEIS 3-28) was used to generate these depictions. While this percentage comprises a large geographic area, there is some concern on our part about underlying accuracy. For example, how does the 50 percent survey account for the varying range of land cover distributions in the northern versus southern project area? Was the extensive Geographic Information System (GIS) data which the District has for the batture lands a part of these formulations? The method(s) used to extrapolate land cover distributions in areas not actually surveyed together with ground-truthing techniques should be discussed in the final supplement. Reviewers need to understand the bases for the 50 percent survey and by extension be able to appreciate the degree of confidence which results for the various mapping categories. As the work items are examined in detail, more ecologically based discriminations (subclasses of current classifications) should be developed.

Response. Land use data for the socioeconomic impact analysis were generated to depict the general type of land use prevalent in the MRL economic base area. Readily available satellite surveys by the Corps GIS in 1997 were used to identify the existing land use. Based on their availability and the extensive efforts, time, and costs required to survey the entire 85-county economic base area, these data were deemed sufficient to reflect the physical characteristics of the area. Results of the analysis, presented in Table 3-15, include a survey of 16.9 million acres of land in the 31.6 million-acre economic base area, representing approximately one-half of the total area. Cleared lands (agricultural land and pastures) accounted for the majority of the land use distribution in the MRL economic base area (72 percent) in 1997. Other nonurban uses (forest lands, water bodies, wetlands, and other nonurban lands) represented 26 percent of the total land use while urban land comprised the remainder. Urban land consists of developed land such as residential, commercial, industrial, and other built-up urban-related areas. Specific land use acreages for the MRL project area were previously displayed in Table 3-1. These data, which include 100 percent of the 2.6 million-acre project area, consist of all lands between the levees and all lands and waters adjacent to and within 3,000 feet of the landside toe of the levees.

e. Comment. On an areal basis, it appears the mitigation for this project will fall somewhat less than a 1:1 replacement ratio. Currently, the 1:1 ratio is generally considered as the lower limit necessary to accomplish functional equivalency. Even allowing for the factor of time as each work item is completed, the acreage of wetlands impacted (7,328) exceeds the acreage of

wetlands to be replaced through compensatory mitigation (5,900). As we have discussed, mitigation should achieve no-net loss, include allowances for complexities and uncertainties of wetland restoration science, and acknowledge the temporal loss of wetland function during the natural successional process.

Response. The Memorandum of Agreement between the Department of the Army and EPA recommends a 1:1 acreage replacement ratio in the absence of a functional analysis. The analysis was done on a functional basis, and the compensation results in a no-net-loss in functional capacity. Of the 7,328 acres of wetlands impacted with the recommended plan, 3,637 acres were lower value farmed wetlands and 3,691 were forested wetlands (approximately 50 percent of the wetland acreage). However, 83 percent of the functional loss will occur on the forested wetlands. In contrast, 100 percent of the functional loss will be replaced with 5,900 acres of reforestation, and additional wetland function will be provided by reforesting 3,000 acres of borrow areas and creating 6,700 acres of aquatic borrow area. In total, the project will impact 4,843 acres of bottom-land hardwoods (wetland and nonwetland), but the compensation and environmental design features provide approximately 8,900 acres of bottom-land hardwoods. This proposed mitigation method achieves a no-net-loss of functional value, has been highly successful on recent large-scale projects, and does account for temporal aspects of wetland development.

f. Comment. For the foreseeable future, mitigation ratios will remain a matter of discussion among the involved principals. However, resolution of this matter lends itself to the manner of overall project construction. As the work items are staged through time, restoration success on mitigation lands will become more apparent. Techniques to foster same will be perfected and others discarded. The process will evolve and success rates improve. In turn, this should allow both the mitigation process and the underlying functional assessment procedure to be better understood by all parties. At that point, we hope the ratio question will become moot.

Response. Comment acknowledged.

g. Comment. We are confident that consensus can be reached regarding the extent/ location of mitigation lands ultimately necessary to address habitat losses resulting from construction activities. However, we are adamant that these parcels be acquired via fee simple title purchase, but wish to avoid potential and/or unnecessary controversy associated with this position. We understand that significant efforts and/or concessions will have to be made to acquire these lands from willing sellers. Given this restriction, we are prepared to wait a reasonable period while appropriate properties are acquired either in the vicinity of the project area or more remote from same. With this understanding, there should be no concern by project proponents that work items will be delayed for this reason.

Response. The Corps of Engineers prefers fee title acquisition and reforestation of frequently flooded agricultural lands for compensation of unavoidable environmental losses. Sufficient lands in the vicinity of the losses do exist from willing sellers to accomplish the mitigation; however, the Corps in conjunction with other state and Federal agencies will evaluate other mitigation options available on a case-by-case basis.

h. Comment. Our opposition to easements--permanent or otherwise--is a function of the scope and time line associated with this proposal. Anything other than actual purchase becomes too problematic in terms of long-term management and determining the fundamental issue of whether compensation is actually realized. While some parties have evidenced a preference for sequential easements (about 20-year duration), we have not seen similar interest in funding the manpower to manage them appropriately. It has been our experience that when mitigation lands remain in ownership of multiple private landowners versus a state or Federal entity problems are almost a certain outcome. Even with the best of initial intentions by all parties, determining exactly what rights are to be retained or given up, viz., from the very restrictive to open-ended land management options, become open to subsequent interpretation. This "interpretation" becomes significantly more troublesome when the properties are sold to parties that were not privy to the original negotiations.

Response. Concur.

i. Comment. When multiple small tracts are used as mitigation, their numbers become daunting. Just gaining ready access to parcels in order to assess the success of restoration measures can be unacceptably time-consuming. Through time, easements often become construed as merely being plots where normal silvicultural practices are carried out. In our opinion, cottonwood rotations do not provide the necessary and/or sufficient functional values to compensate for losses arising from conversion of bottom-land hardwood habitat (see Appendix 1, page 1-29). Moreover, associated silvicultural activities, viz., road construction and maintenance, often work at cross purposes to mitigation objectives. Reforestation with selected hardwood species is an acceptable practice, albeit one which takes an extended period to time to manifest appreciable habitat values. The Record of Decision on this project should not be completed until this matter is resolved.

Response. Although smaller tracts will be considered on a case-by-case basis, acquisition of larger tracts is preferred for cost and biological reasons. Any forestry practices allowed on mitigation lands would have to be compatible with the goals of mitigation. Management practices will be coordinated with the appropriate Federal and state agencies, but this issue is not significant enough to warrant a delay in signing the Record of Decision. Development of the tract is only necessary to fully gain the mitigation credits, but will be kept to a minimum.

j. Comment. In a related matter, there needs to be some clarification regarding "using existing Corps project lands" (Appendix 1, page 1-13) as mitigation. From our perspective use of these public lands is questionable. It would only become necessary if it can be definitely demonstrated that all other venues have been exhausted. Moreover, it must be determined that these same "public" parcels have not already been assigned as mitigation for other, previous Federal public/Civil Works projects. Since the Lower Mississippi Valley will inevitably come under increased development pressures, use of existing public lands lessens our future opportunities to secure the most functional replacement habitats. In this instance, size is deemed to be an important component of function. Some consideration could be given to the upgrading of existing easements to fee title lands; however, more clarification is needed and a case-by-case analysis should be conducted.

Response. Use of existing Corps lands is presented as one of several broad categories for the formulation of mitigation alternatives. Under certain conditions, it is a valid mitigation option, subject to the criteria used, to select any potential mitigation property. If a Corps-owned property was scheduled to be reforested as a part of a separate action, then it would not meet land selection criteria.

k. Comment. Clarification is also needed regarding the statement (Appendix 1, page 1-21) that "The states, through the levee boards, currently have easements on project area lands." If these properties are currently serving as mitigation credit(s) for losses occasioned by previous flood control projects, we have some pronounced reservations to "upgrading" them to a fee simple status.

Response. The use of existing Corps or states lands for mitigation would only be undertaken on a case-by-case basis and after consultation with Federal and state agencies. Mitigation credit will only be claimed on those projects on which mitigation credit has not been claimed or for those credit for specific areas (i.e., terrestrial, wetland, aquatic, or waterfowl), which were not used on other mitigation projects. Levee boards will not be allowed to utilize lands that have already been used for mitigation. Levee boards own easements on thousands of acres of both forested and nonforested lands. Levee boards could reforest those frequently flooded agricultural lands on which they have easements or could purchase the residual value in the land to reach fee title ownership and this would accomplish the mitigation. Assurances would have to be given by the levee boards that these lands would be managed for mitigation purposes for the life of the project.

l. Comment. It was noted (Appendix 1, page 1-26) that reforestation of frequently flooded agricultural lands will be done via 70 percent red oak seedlings. We acknowledge that production of hard mast is important to overwintering waterfowl. However, reforestation should be designed for the replacement of overall wetland functions based on reference wetlands, rather than reforestation for waterfowl benefits only. Functional replacement should include

restoration with a suite of plant species versus management for limited species having recreational interest. Restoration to achieve water quality benefits associated with wetlands should serve as the bench mark in this regard.

Response. Reforestation with a large percentage of red oaks is necessary to achieve replacement goals for waterfowl and terrestrial species. This mitigation is a balanced approach to achieving full compensation among a group of resources. The purpose in using red oaks is biological and not recreational. Whether 70 percent or 10 percent red oaks is used, water quality benefits will be provided.

m. Comment. Mitigation in summary:

Acquisition of large tracts of land preferably contiguous/adjacent to existing preserves, national forests, refuges, etc., at which management is already in place.

Existing management plans, specifically those dealing with enhancing migratory waterfowl, are an excellent means to focus initial acquitment activities, but are not necessarily a planning endpoint.

A comprehensive plan for how mitigation will proceed on the first group of work items should be an immediate planning objective.

A number of matters will need to be resolved on an individual basis during subsequent interagency coordination; e.g., mitigation for farmed wetland habitat. Currently, acreage which will be altered and/or actually become part of the levee footprint has been assigned a value less than 1.

We understand that the process of securing mitigation parcels will not be easy. Lags will sometimes occur between completing construction of separable work items and purchase of mitigation tracts. While not ideal, it will happen. Further, in order to obtain the most ecologically valuable mitigation tracts from willing sellers, it may be necessary for the District to acquire properties remote from particular work item(s). Once again, this would not be a planning goal, but may be necessary. Hence, since actual construction of individual work items will take varying periods of time, we are agreeable to waiting until the best environmental "deal" can be secured mitigation-wise. This should not create a problem for any of the parties as we understand that only after design of a particular work item is essentially finished will its exact impacts be known.

Subsequent environmental assessments prepared on the various work items will be able to provide the details currently unknown; e.g., location/disposition of hazardous materials.

Response. Comments noted. The Corps will work with EPA and other agencies during the process of acquiring and managing mitigation lands. Impacts to farmed wetlands have been addressed. Environmental Assessments (EA) will not be prepared for each work item. However, evaluations will be conducted as part of the design of each item to assure that potential HTRW sites are addressed.

3. Letter, Department of Interior, Office of the Secretary, Office of Environmental Policy and Compliance, 20 April 1998 (Exhibit 3).

a. Comment. We recommend that the Corps make a specific commitment to work with FWS and all the affected state fish and wildlife agencies to develop the mitigation recommended in a timely manner.

Response. Concur.

b. Comment. Project Report, Page 51, Paragraph 105. Several reasons are stated why landside borrow is unacceptable. However, landside areas are virtually all cropland and should be obtained whenever possible to avoid impacts to riverside bottom-land hardwoods.

Response. See response to Comment 1e.

c. Comment. Project Report, Page 53, Paragraph 112, Table 6. This table is confusing. For example, it is unclear what habitat types and acres the column "Bottom-land Hardwood Wetland and Nonwetland Acres Affected" represents. The headings for the columns in Table 6 should specifically state what habitat types (farmed wetlands, bottom-land hardwood wetlands, upland forests, etc.) would be affected by the two alternatives selected for detailed analysis.

Response. The intent of Table 6 was to illustrate the impacts to the two primary land use categories that the public has identified as significant; i.e., bottom-land hardwoods and wetlands. The column headings reflect these specific land use types. For example, "bottom-land hardwood wetland and nonwetland acres affected" represent all of bottom-land hardwoods impacted regardless of whether or not they are classified as wetlands. A summary table of impacted acres by land use category has been added to Section 4 of the SEIS.

d. Comment. SEIS, Page 3-3, Paragraph 3.2. The word "naturally" should be deleted from the last sentence of this paragraph; waterfowl use flooded cropland, regardless of the flood source. That sentence should also be revised to indicate that remaining bottom-land hardwoods constitute important habitat which migrating and resident waterfowl continue to use.

Response. We have changed the last sentence in paragraph 3.2.

e. Comment. SEIS, Page 3-10, Paragraph 3.6.1. Records of pallid sturgeon should be provided for all five states within the project area to adequately describe the distribution of that endangered species. That paragraph should also reflect that the harsh sampling environment and relatively low number of Mississippi River main channel fishery studies may have contributed to the low number of sturgeon records. (This comment also applies to Volume 3, Appendix 11, page 11-15, paragraphs 12-14.)

Response. Appendix 11 (Endangered Species) has been amended to reflect your concerns.

f. Comment. SEIS, Page 4-26. In the third paragraph, the loss of aquatic habitats and the reduced productivity of those remaining habitats due to isolation from Mississippi River overflow should also be mentioned.

Response. The SEIS has been revised to include mention of the loss of aquatic habitat.

g. Comment. Appendix 1, Mitigation, Page 1-15, Table 1-4. The species of duck used in the HEP (the wood duck) should be added to the duck column in the table.

Response. This table has been changed to reflect the wood duck as an evaluation species for the terrestrial analysis.

h. Comment. Appendix 1, Mitigation, Page 1-17, Paragraph 42. As recommended in the FWS Waterfowl Analysis (Appendix 9), reforestation of cleared agricultural lands should include the restoration of hydrology to obtain maximum waterfowl foraging gains.

Response. Only cleared lands that are naturally flooded during the winter months and that can provide the duck days necessary to compensate for the waterfowl losses will be used for mitigation.

i. Comment. Appendix 1, Page 1-21, Paragraph 48. This paragraph should acknowledge that FWS does not recommend reforestation of existing public lands as a mitigation measure when such lands are likely to be reforested within the next 10 to 15 years under the future without-mitigation scenario. The fourth sentence referencing the Atchafalaya Basin lands acquired for "compensation" should be revised to read as follows:

Potential restoration areas could include cleared lands acquired in excess of those required to fulfill the public access feature of the Atchafalaya Basin Multipurpose Plan, or cleared lands near the Old River Control Structure, depending on why those lands were acquired.

Response. Under certain conditions, use of existing Corps land is a mitigation option, subject to the criteria used to select any potential mitigation property. If a Corps-owned property was scheduled to be reforested as part of a separate action, then it would not meet land selection criteria. The fourth sentence was revised.

j. Comment. Appendix 1, Page 1-22, Paragraph 50. The fourth sentence of this paragraph should be revised to indicate that it may be very difficult to manage and monitor existing forested lands to achieve adequate mitigation. While FWS recognizes that fee title acquisition of mitigation lands is expensive and that holding down mitigation costs is important, we do not agree that those criteria should be the primary factors used to determine mitigation priorities; therefore, the fifth sentence should be revised accordingly. The last sentence of this paragraph should be revised to indicate that, although acquisition and management of privately owned bottom-land hardwoods to mitigate project losses is a low mitigation priority, this mitigation scenario should not be eliminated from consideration.

Response. Regardless of the cost, mitigating for project losses through purchase of privately owned bottom-land hardwoods is ineffective because actual habitat value increases through increased management are difficult to quantify. This makes it very difficult to determine if the mitigation objectives and requirements are being met.

k. Comment. Appendix 1, Mitigation, Page 1-26, Paragraph 62. Part of this paragraph is apparently missing since there is no mention of the Vicksburg District or why Alternative 2 is carried forward.

Response. Alternative 2 is carried forward since Alternative 1 results in 1,957 additional acres of mitigation for waterfowl losses in the Memphis District. Although the mitigation acreage is the same for Alternatives 1 and 2 in the Vicksburg and New Orleans Districts, Alternative 2 is recommended for all Corps Districts to maintain consistency throughout the project area. The paragraph has been changed to reflect this fact.

l. Comment. Appendix 1, Pages 1-29 - 1-31, Table 1-9. The total annual operation and maintenance cost for the mitigation areas reported in this table is less than $7 per acre. In 1994, the FWS Lafayette Field Office used information from the Louisiana Department of Wildlife and Fisheries and from other FWS offices to calculate an approximate mitigation operation and maintenance cost of $10 per acre. Therefore, recommend that the annual

operation and maintenance costs in Table 1-9 be reexamined. Any revisions to the mitigation cost estimates should also be reflected in Volume 2, Appendix 6, Attachment B, Cost Estimates (MCACES).

Response. The operation and maintenance costs shown in this table are estimates that generally track operating costs for existing mitigation lands within the Vicksburg District. Operating costs could be higher. When a resource agency is selected to manage mitigation lands, the actual operating costs will be negotiated.

m. Comment. Appendix 1, Mitigation, Page 1-33, Paragraph 67. In addition to acquiring large mitigation tracts for reforestation, FWS also recommends that compensation efforts focus on reforestation of areas within the Bird Conservation Zones identified by private, state, and Federal agencies as necessary for the perpetuation of forest bird populations, particularly migratory species. A map of these Bird Conservation Areas is provided in the FWS Planning Aid Report which will be included in the final levee enlargement SEIS.

Response. Consideration will be given to Bird Conservation Areas during the selection process through consultation with FWS and other agencies as appropriate.

n. Comment. Appendix 1, Mitigation, Page 1-34, Paragraph 68. For successful reforestation, we recommend an ultimate survival rate of 70 percent of the planted trees.

Response. The issue of survival percentage is only one of many issues to consider when determining the reforestation success. For example, the planting stock (bareroot versus containerized) and species type can influence the planting spacing, which results in a different number of seedlings planted per acre. Seedlings planted on a 12- by 12-foot spacing result in 302 seedlings per acre and a 14- by 14-foot spacing provides 222 seedlings per acre. At 70 percent survival, the 12- by 12-foot spacing results in 211 seedlings per acre and the 14- by 14-foot spacing provides 155 seedlings per acre. In this case, 155 seedlings per acre on a 14- by 14-foot spacing would be considered adequate. If 155 seedlings per acre survived on the 12- by 12-foot spacing (51 percent survival), it would be considered inadequate. Also, on a very poorly drained site where restoration is more difficult and only cypress and/or tupelo could be planted, 50 percent survival might be considered highly successful. Therefore, it is much more practical to coordinate the acquisition, reforestation (to include survival monitoring), and management of the mitigation lands with the appropriate Federal and state resource agencies when those actions occur. This approach has been used successfully on the existing 17,000 acres reforested in the Yazoo Basin.

o. Comment. Appendix 2, Fish and Wildlife Planning Aid Report. FWS will provide this report for inclusion in the final SEIS.

Response. Concur. See response to Comment 1q above.

p. Comment. Appendix 6, Engineering, Page 6-84, Paragraph 97. Since the closure of the New Madrid floodway levee is mentioned elsewhere in the SEIS, it is suggested that the final SEIS state that this closure is being addressed under a separate NEPA document for the St. Johns/New Madrid Project.

Response. Contrary to the above comment, the closure to the New Madrid floodway levee is not mentioned in the SEIS or appendixes. However, the closure is being addressed in the EIS for the St. Johns/New Madrid Project. The closure is directly related to the construction and operation of the St. Johns/New Madrid Project.

q. Comment. Appendix 7, Page 7-35, Paragraph 74. This paragraph should state that reduced flooding due to the Mississippi River and Tributaries Project was also a contributing factor in the conversion of bottom-land hardwood forest.

Response. This is addressed in Section 4 of the SEIS.

r. Comment. Appendix 9, Waterfowl, Page 23. Compensation for unavoidable losses of winter waterfowl foraging habitat includes restoration of the water regime on drained agricultural lands.

Response. See response to Comment 3h.

4. Letter, Department of Interior, National Park Service (NPS), 23 April 1998 (Exhibit 4).

a. Comment. Interagency Agreement No. 1443IA125097007 between NPS and the Corps was completed and signed in 1997. The agreement provides for cooperative efforts to protect the resources of the Trail of Tears National Historic Trail and provide for public use and interpretation of the trail. The Mississippi River between the mouth of the Ohio River and the mouth of the Arkansas River is part of the designated water route of the trail. Additionally, the land route of the trail crosses the river at Trail of Tears State Park just above Cape Girardeau, Missouri.

Response. Comment acknowledged.

b. Comment. In accordance with this agreement and in implementation of projects along the river, we would request that the Corps take positive steps to identify potential cultural resources related to the Trail of Tears and opportunities for the public to retrace the trail route and learn about the history of the trail. Such actions could include identification of landscapes along the route that have sufficient integrity to evoke feelings of what it would have been like in the 1830's of opportunities to follow the river by boat or walk along trails paralleling the river and of locations that can be accessed by land or water where interpretive exhibits or other

interpretive media could be placed and where the trail route can be marked with the official trail logo. Implementation of any public use projects could be undertaken through partnerships with our office, tribes, and trail groups/historical organizations in communities along the river.

Response. Wherever we have specific MRL construction plans at or near the Trail of Tears portion of the Mississippi River, we will search for (or task our contractors to search for) information on locations associated with this event. Such activities will be coordinated under the National Historic Preservation Act and with reference to the Interagency Agreement.

c. Comment. We would recommend consultation with a knowledgeable trail historian to identify any locations where those traveling the water route of the trail may have stopped along the river.

Response. Concur. Where applicable to the project area of potential effect, we will consult with a knowledgeable trail historian to locate where those traveling the water route of the trail may have stopped.

5. Letter, Department of Commerce, Office of the Under Secretary for Oceans and Atmosphere, 1 April 1998 (Exhibit 5).

a. Comment. The subject statement has been reviewed within the areas of the National Geodetic Survey's (NGS) responsibility and expertise and in terms of the impact of the proposed actions on NGS activities and projects.

All available geodetic control information about horizontal and vertical geodetic control monuments in the subject area is contained on the NGS Internet home page. The information should be reviewed for identifying the location and designation of any geodetic control monuments that may be affected by the proposed project.

If there are any planned activities which will disturb or destroy these monuments, NGS requires not less than a 90-day notification in advance of such activities in order to plan for their relocation. NGS recommends that funding for this project includes the cost of any relocation(s) required.

Response. Concur. Appropriate timely coordination will be conducted with NGS prior to any construction activities potentially affecting these monuments.

b. Comment. This major project involves the construction and maintenance of levees and floodwalls, floodways, and channel improvement in the Mississippi River and Tributaries. NOS charts the lower Mississippi and is considering chart coverage of the remainder of the river in digital format. Controlling depths in maintained channels is particularly important. Therefore, we will require as-built plans from the Corps concerning this work.

Response. The proposed work does not include any Mississippi River channel improvement features.

6. Letter, Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, 17 March 1998 (Exhibit 6).

Comment. Because the Federal trusteeship responsibilities of the National Marine Fisheries Service are largely restricted to living marine resources, we limited our review of the documents to those sections involving activities which would occur in the New Orleans District (NOD). The SEIS states that within the boundaries of NOD, 17 acres of forested wetlands would be adversely impacted by construction activities. Furthermore, the document indicates that these impacts would occur at and upstream from New Orleans and would be restricted to the area between the river and existing flood protection levees. All adverse impacts would be offset by implementation of project mitigation features.

Based on the nature and location of work proposed in NOD, we do not believe that construction activities would adversely impact marine fishery resources or their habitats. Accordingly, we have no specific comments to offer on the recommended plan. However, we request that the Corps continue to coordinate with this office as designs for levee improvements are developed and environmental assessments are prepared.

Response. Concur.

7. Letter, Department of Transportation, Federal Highway Administration, 11 March 1998 (Exhibit 7).

Comment. Our only comment is to continue coordination with state and local government units that have transportation facilities that will be affected by the proposed work on and around the Mississippi River levees. It is our understanding that the cost of adjusting affected transportation facilities is generally included/eligible as part of the cost of the flood control project.

Response. Comment acknowledged.

8. Letter, Louisiana Department of Environmental Quality, 30 April 1998 (Exhibit 8).

Comment. These comments relate to General Conformity requirements of LAC:33 III, Chapter 14, Subchapter A, that are applicable to the project.

The applicability determination that must be performed to determine de minimis thresholds in the General Conformity regulation requires that all emissions from the project, both direct and indirect, be calculated. It must be determined that there are no indirect emissions related to the project; or, if indirect emissions will result from the project, the Environmental Protection

Agency's AP-42 calculations must be applied to those emissions. Assumptions that any indirect emissions are negligible does not meet the General Conformity requirements.

The SEIS references open burning and subsequent mitigation action that is a part of the project design; however, there is no indication that emissions from such activity were included in the applicability determination. Emissions from open burning and from project mitigation activity that is "Federal activity" (in accordance with the General Conformity regulation) must be included in the applicability determination. This should be addressed and included in the SEIS.

Response. The indirect emissions and open burning have been incorporated into the New Orleans District's applicability determination. The applicability determination was reevaluated to include open burning. Indirect impacts were considered in the evaluation previously. Based on the new applicability determination including open burning, the air emissions will still be classified as de-minimus. Revisions have been made to the following paragraphs:

1. Paragraph 4.8.3, page SEIS 4-17, Volume 1.

2. Paragraph 244, page 6-122, Volume II.

9. Letter, Louisiana Department of Natural Resources, 7 April 1998 (Exhibit 9).

Comment. The referenced project has been reviewed for consistency with the approved Louisiana Coastal Resource Program as required by Section 307 of the Coastal Zone Management Act of 1972, as amended. The project, as proposed in the application, is consistent with the Louisiana Coastal Resource Program.

Response. Concur.

10. Letter, Arkansas Historic Preservation Program, 15 April 1998 (Exhibit 10).

a. Comment. We concur with your decision to conduct cultural resources surveys to identify and evaluate historic properties that are located within the project area. Those properties that are listed in the National Register of Historic Places or determined eligible for listing should be avoided and protected or mitigated by archeological data recovery.

Response. Concur.

11. Letter, Tennessee Historical Commission, 10 March 1998 (Exhibit 11).

a. Comment. We find that the project area contains no archeological resources eligible for listing in the National Register of Historic Places. Therefore, this office has no objection to the implementation of the undertaking. If your agency proposes any modifications in current project plans or discovers any archeological remains during the ground disturbance or construction phase, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act.

Response. The comment is acknowledged. Your agency will be contacted if our plans to construct the project change and/or if we discover any archeological remains inadvertently.

12. Letter, Board of Mississippi Levee Commissioners, 30 April 1998 (Exhibit 12).

a. Comment. Implementation of Avoid and Minimize design criteria not only has reduced environmental impacts, but also in many cases has made the project much more acceptable not only to the citizens of the Mississippi Delta but also to those landowners adjacent to the levee who have for years had to give of their lands to protect the Mississippi Delta.

Response. Comment acknowledged.

b. Comment. Throughout the report a table showing the priority of locating construction borrow areas has been incorporated. At no point in that table are the previously acquired rights-of-way of the local sponsor addressed. It is our position that these lands should be first priority in the design of any of the remaining work. It is also the position of the Board of Mississippi Levee Commissioners, if they are unable to use these lands purchased solely for the improvement of the Mainline Mississippi River levee, that action constitutes a taking by the Federal government. Prioritization for construction borrow should be amended to include previously acquired rights-of-way of the local sponsor as the highest priority for construction borrow.

Response. The SEIS did not consider who owned the land on which the levee or seepage control structure would be constructed or from which the borrow material would be secured. Throughout the design of each item, the Corps will be working with the levee boards to make maximum use of their rights-of-way. However, it must be recognized that in order to avoid and minimize environmental losses to the maximum extent practicable, the levee boards may have to acquire additional lands. In the design and construction of this project, the Corps must balance the competing interests of engineering, environment, and economics to build the best project for the citizens of the Nation.

c. Comment. In the table on page SEIS 2-12 it would appear that the comment under Plan 4 socioeconomics resources should read "same as Plan 3."

Response. The error in Table 2-1 has been corrected.

d. Comment. Table 6-19, page 6-117, indicates no pipeline relocations of Federal expense. A cursory review would indicate that the extension of berms into new rights-of-way would require some relocations at Federal expense.

Response. Table 6-19, page 6-117 has been corrected.

e. Comment. As we have expressed in earlier correspondence, the Levee Board would request that restrictions on reforested lands of the FY 98 and FY 99 projects be removed if credit is not given as part of the overall mitigation package.

Response. Mitigation for the FY 97 and 98 construction items which are being constructed under separate EA's in advance of the SEIS was a prerequisite to the signing of a Finding of No Significant Impact by the Corps. Although mitigation for these items is included in the SEIS, the Corps is unable to remove the restrictions since Federal funds were used or will be utilized in the development of the mitigation lands and this investment must be protected.

f. Comment. Our review of the report finds that the local sponsor's involvement in the decision-making process may not be documented to the fullest.

Response. Concur. Some local sponsors participated more than others in the process.

g. Comment. Riverside borrow within the flood plain of the Mississippi River can be constructed to enhance many environmental categories. The report documents that aquatic habitat is improved through riverside borrow and also that wetland functions can be benefited, although they were not quantified as part of the report.

Response. Although we recognized that there will be a wetland benefit with aquatic borrow areas, there is no existing accepted methodology to quantify these benefits.

13. Letter, Board of Levee Commissioners for the Yazoo-Mississippi Delta, 30 April 1998 (Exhibit 13).

a. Comment. Continuation of this project is critical to the welfare of every citizen, farm, municipality, and industry located within the project area of the Lower Mississippi Valley. This study by the Corps reflects the long-standing role the Corps has played, and should continue to play, in placing flood control and the protection of the nation from other natural disasters as its first and foremost priority and mission objective.

Response. Concur.

b. Comment. Many of the key points in the statement I made on behalf of my Levee Board at the public scoping meeting held in Memphis, Tennessee, on 22 May 1997, are applicable, and in some cases have not been addressed or given clear consideration in the report. Said public statement is attached, and is submitted as part of our formal comments.

Response. Comment acknowledged.

c. Comment. Volume I, Project Report. No mention of prioritization of the utilization of lands previously acquired by our Levee Board specifically for levee purposes is given in any of the formulation criteria. The report should give a detailed description of what consideration and prioritization was given to the use of previously acquired rights-of-way for levee purposes in the planning and formulation of the project alternatives.

Response. See response to Comment 12.b.

d. Comment. Volume 1, Project Report, page 39, Environmental Criteria, paragraph 80(b). Was any consideration given to the environmental damages prevented to the habitat on the protected side of the levee? Please explain what balancing habitat gains from the protection of wildlife areas such as Delta National Forest, Panther Swamp, etc., were applied against the habitat losses.

Response. The environmental impacts of preventing very large but infrequent floods due to levee failure cannot be quantified accurately. Their effects would be felt not only on the flood plain but on the adjacent uplands as well. Only a general qualitative evaluation could be made of the effects of such events.

e. Comment. Volume 1, Project Report, page 48, Plan 4 - Environmental Design (Avoid-and-Minimize), paragraph 100. Though this paragraph states that local sponsors were included in the layout of this plan, please let the record reflect that at no point did our Levee Board suggest the prioritization of borrow placement as detailed in this paragraph. Indeed, referring to the attached public statement, our Levee Board is clearly on record, and will now restate our

position that the first priority should be placed on utilization of existing Levee Board right-of-way, to the maximum, feasible extent from an engineering standpoint. Certainly, in utilizing previously acquired lands for levee purposes, every effort should be taken to avoid and minimize environmental damages occurring from said utilization. If first priority is not given to the utilization of existing Levee Board right-of-way, please give a detailed explanation justifying such decision.

Response. See response to Comment 12b. In addition, some local sponsors participated more than others in the process.

f. Comment. Volume 1, Project Report, page 49, Plan 4 - Environmental Design (Avoid-and-Minimize), paragraph 101. This paragraph states that all borrow areas would incorporate aquatic design features which are described in other parts of the report as borrow areas designed to permanently hold water. This is contradictory to other parts of the report which state that some borrow areas will be designed to drain and be reforested. Nonreforested borrow areas could, in some cases, increase the risk of scour, high velocity currents, wavewash, and other adverse conditions that are not conducive to the best interest of the safety of the levee. For our Levee District, all necessary borrow areas should be designed to drain and be reforested. These borrow areas must also be free of any mitigation encumbrances to allow our Levee Board to freely apply a timber management program consistent with the conditions that are necessary to best protect the levee. Aquatic design of borrow areas in our Levee District should be at the sole decision and request of our Levee District.

Response. In consultation with levee boards, borrow areas that can be drained will be reforested. Borrow areas which cannot be drained will be designed to include aquatic design features.

g. Comment. Volume 1, Project Report, page 56, paragraphs 122 and 123, et al. This comment will address these listed paragraphs as well as other applicable paragraphs pertaining to the use of cutoff walls and relief wells to control underseepage. The report includes only three items of work proposed for our Levee District. Each item is a remedial measure against adverse underseepage that has been identified in our levee system. Of the three items, the report proposes relief wells for two, and a seepage berm for the third, with the borrow for the berm shown to be taken from cleared, riverside agricultural land. Our Levee Board does not object to the consideration of cutoff walls and relief wells as a remedial solution to underseepage under the following guidelines.

Our Levee Board would like priority emphasis given to the consideration of cutoff walls for each of the three work items in our District. (Austin, MS, Item 675L, Trotters, MS, Item 670L, Hillhouse, MS, Item 628L). Preliminary indications are that the cutoff walls would exceed 90 feet in depth which, according to the report, significantly increases their cost. This point is

not disputed, however, as evidenced by the report's recommendation of Plan 4 which is 4.6 percent more expensive than Plan 3, there is an obvious priority being placed by the Corps on avoidance and minimization of environmental damage over cost. Our Levee Board contends that deep cutoff walls for the three items of work in our District would minimize impacts of the items on the environment while yielding the most effective and cost-efficient results. As stated in the report, the Levee Board can make available all necessary right-of-way for the cutoff walls.

Response. We concur with your comment that cutoffs walls would minimize environmental impacts in these areas. When detail designs are performed on these items, we will consider the issues that you addressed when performing our alternative analysis for each of these items.

h. Comment. Volume 1, Project Report. Relief wells are a viable alternative, however, we respectfully request that a detailed assessment of the following issues by made for each work item.

I. As stated in the report, relief wells will result in a significant increase in seepage that will have to be accommodated by provisions to pump the excess water back to the river, or by increasing the capacity of the local drainage to handle the extra volume of water. A detailed plan of the provision chosen should be prepared.

II. In considering an option to increase the capacity of the local drainage, two issues should be addressed. (1) the cost of acquisition and maintenance of the right-of-way required to increase the capacity of the local drainage system should be included in the cost of the overall relief well plan, (2) the impacts of the flow from the relief wells during minor high water events when customarily the normal seepage does not create adverse, localized, problems or additional burdens on the local drainage should be considered.

III. All costs of whatever provisions are chosen to deal with excess flows out of the relief wells should be at full, Federal cost. Such total cost as well as any environmental impacts of the drainage/pumping provisions should then be compared to the cost of a deep cutoff wall alternative.

IV. We concur with paragraph 123 that maintenance of any relief wells will be at full Federal cost; however, in addition, maintenance of all necessary pumping provisions or local drainage enlargements should also be at full Federal cost.

V. Our Levee Board is deeply concerned with the promise of Federal maintenance of a relief well system in a time that various Corps Districts are experiencing serious deficiencies in operation and maintenance funding for works that are in place. These deficiencies have already resulted in a reassessment by Vicksburg District of major maintenance it has traditionally performed. Please state any assurances that the burden of maintaining the relief wells will not fall unto the Levee Board.

Response. Landside drainage is analyzed on an item by item basis to ensure no additional flooding will occur from relief well flows. Where necessary, additional ditching on cleared lands near the levee toe or, in the case of Drinkwater Pumping Station, additional pump capacity will be provided at full Federal expense to safeguard the areas from additional seepage flows resulting from installation of the wells. Plans of the methods of controlling the excess seepage will be prepared as needed.

Impacts during minor events are analyzed and, where adverse, addressed in the item design.

Relief well maintenance will be a Federal cost. However, maintenance of necessary local drainage enlargements will be a local responsibility. Maintenance of additional pumping provisions would have to be addressed on a case-by-case basis.

Future Federal funding of maintenance is dependent on Administration priorities and can only be addressed at the time maintenance is required.

Acquisition of additional rights-of-way for increased capacity for necessary drainage enlargements or pumping provisions will be the responsibility of the local sponsor.

14. Letter, Board of Directors, St. Francis Levee District, 27 April 1998 (Exhibit 14).

a. Comment. PROJECT REPORT - STUDY AUTHORITY: This document supplements the 1976 Final EIS to cover construction of all remaining Mississippi River mainline levees and seepage control items. There is a very good likelihood that projects other than those proposed in this document will be needed to establish the required level of protection to handle the project flood; i.e., additional seepage berms or relief wells. How will these items of work be handled?

Response. The SEIS covers all work which is presently planned in order to protect the project area from the Project Design Flood. If subsequent events show the need for additional work items, that work will require appropriate documentation for compliance with the National Environmental Policy Act of 1969 which will be prepared at that time.

b. Comment. Throughout this document, certain bottom-land hardwoods are alluded to as nonwetland bottom-land hardwoods. In the list that prioritized potential borrow area locations, riverside forested nonwetlands is one of the most restricted areas. These areas in the past have played a very important role in the construction, operation, and maintenance of our flood control system. Unless these nonwetland bottom-land hardwoods are protected by law, these areas should be unrestricted in their use as potential borrow area. What laws, regulations, or policies govern losses to nonwetland bottom-land hardwood areas? What is the significance of policies as opposed to laws?

Response. Bottom-land hardwoods have been identified by Federal and state agencies and the public as a significant resource. One purpose of preparing the SEIS is to address impacts to significant resources. A critical component of the planning process is to evaluate methods to avoid and minimize environmental impacts where practicable. One method to avoid and minimize impacts on the riverside of the levee is to relocate borrow areas to less environmentally sensitive areas. Clearing of approximately 2,800 acres of riverside bottom-land hardwoods will still occur with the recommended plan. The recommended plan provides an appropriate balance among the many interests, issues, and concerns relevant to the project.

c. Comment. PROJECT REPORT - PLANNING CONSTRAINTS: Statement 72 indicates that work must be acceptable to local project sponsors (levee boards), local landowners, and the public (concerned citizens). The work must be accomplished in a cost-effective manner while being environmentally and engineeringly viable. As use of landside borrow areas from willing sellers or the use of riverside croplands as borrow areas is considered, the cost of right-of-way acquisition will rise considerably. As required by law, the local project sponsors have to provide these rights-of-way. These increased costs will pass directly to the residents of the protected areas. It is unfair to require the residents of the protected areas to pay more for borrow just to have these areas relocated to landside or riverside cropland as opposed to conventional borrow areas such as nonwetland riverside timber areas.

Response. Comment noted. See response to Comment 12b above.

d. Comment. PROJECT REPORT - ENVIRONMENTAL CRITERIA: It is understandable that every effort should be exercised to the extent practical to avoid and minimize impacts to fish and wildlife habitat and wetlands. However, as this project mitigates for losses to nonwetland bottom-land hardwoods and any adverse environmental or habitat effect, not necessarily wetlands, it will possibly set an unnecessary dangerous precedence for mitigation that all future projects may have to abide by. What established the requirement to mitigate for losses to nonwetland bottom-land hardwoods?

Response. We have been recommending measures to mitigate impacts to bottom-land hardwoods for a number of years. FWS has recommended mitigation for impacts to bottom-land hardwoods since 1958 when the Fish and Wildlife Coordination Act was passed. Their mitigation policies formulated in the 1970's called for compensating bottom-land hardwood losses in-kind. In addition, the Water Resources Development Act of 1986 states that impacts to bottom-land hardwoods should be mitigated in-kind, to the extent possible.

e. Comment. It is apparent that relief wells have been selected over seepage berms for a large majority of seepage control projects. Was sufficient geotechnical consideration given to these projects? What will happen when these projects get to detailed design and a seepage berm is considered a better option than relief wells? It is also apparent that the levee boards played no role in the project selection process. From this document it appears that minimizing environmental impacts played a major role in the process of selecting relief wells over seepage berms. Sound engineering judgment and a commonsense approach should play a major role in selecting the appropriate type of seepage control measure used.

Response. The comment that "it is apparent that relief wells have been selected over seepage berms for a large majority of seepage control projects" is not correct. For the total project there are approximately 118 items of work that require seepage control. Of the 118 items, 98 were selected for berms and 19 for relief wells. This breaks down further into 0 berms or relief wells in the New Orleans District, 80 berms and 12 relief well items in the Vicksburg District and 18 berm, 8 relief wells, and 2 cutoff trench items in the Memphis District. When detail design is performed, each item will be looked at in detail from a cost and engineering standpoint. The scope of this report does not allow detailed analysis at this point. The avoid-and-minimize analysis is described in paragraphs 80a, b, and c, page 6-68 of Appendix 6. The statement that minimizing environmental impacts played a major role in the process of selecting relief wells over seepage berms is correct along with sound engineering judgment and a commonsense approach to seepage control.

f. Comment. PROJECT REPORT - PRESENTATION AND EVALUATION OF FINAL ARRAY OF PLANS: Paragraph 113 states that Plan 3 affects 1.1 percent and Plan 4 affects less than one-half of 1 percent of the total bottom-land hardwoods in the project area. Both plans are environmentally sensitive. Maybe we should consider a plan somewhere between Plan 3 and Plan 4. The new and innovative designs for levee enlargement and seepage berm projects should fit right in with the project. Use of relief wells as opposed to seepage berms in some situations also have merit.

Response. The Corps has outlined in the SEIS the amount of bottom-land hardwood wetlands impacted by both Plans 3 and 4, Plan 3 being the traditional method of construction while Plan 4 utilized the avoid and minimize techniques to the maximum extent practicable. The Corps has no plan to look at a plan between Plan 3 and 4 since environmental losses would only increase. The Corps in the design and construction of each item will look at additional opportunities to avoid and minimize impacts to bottom-land hardwood wetlands while balancing the engineering, economic, and environmental factors.

g. Comment. SEIS - The recommended plan proposes riverside prior-converted croplands as number 3 on the list of prioritized borrow areas, behind landside cropland from willing sellers and landside cropland when riverside locations were unavailable. There are further requirements that borrow areas taken from riverside prior-converted croplands will have environmentally sensitive designs, such as varying depths, irregular shorelines, and islands.

These features will certainly increase the cost of the project. The local sponsor is required by law to provide these areas. Therefore, these costs will be passed on to the protected public not the organizations driving these requirements. The public may have had an opportunity to participate in the public meetings. However, they had no decision-making power in this process just as the local project sponsors did not in the issues that directly affect them.

Response. The Corps is responsible for designing this project in an environmentally sustainable and engineeringly feasible manner. The plan selected in the SEIS accomplishes both of these objectives. While cost, both to the project sponsor and to the Nation's taxpayers, is a valid and important concern, it is not the only concern. The Corps believes that an appropriate balance has been achieved among the many issues, interests, and concerns relevant to this project.

h. Comment. APPENDIX 1 - MANAGEMENT RESPONSIBILITIES: Annual operation and maintenance funds will be provided to the agency for management responsibilities, subject to the availability of Federal appropriations for this project. Will these O&M funds compete with scheduled MR&T flood projects for funding? Considering the budget constraints that we are faced with today, these funds should be at the very bottom of the funding priority list.

Response. The funding of the MR&T is performed under one appropriation. Therefore, construction and operation and maintenance will compete when the funds are divided. Prioritization of needs is performed after reviewing the level of funding against the budgeted needs in construction and operation and maintenance. Mitigation is a project purpose and will be funded in that light.

i. Comment. APPENDIX 6 - ENGINEERING - RELIEF WELL FLOWS: Serious consideration will have to be given to landside drainage associated with each relief well project. There will be strong public opposition to relief well projects that ignore landside drainage by assuming that increased flow due to relief well flows will go to wetlands.

Response. We do give serious consideration to all drainage from relief wells.

j. Comment. GENERAL COMMENT: General flavor of this document is to make more concessions to the environmental community than what is actually required. If this is so, it will set a dangerous precedence for all future flood control projects whether they are considered construction or operation and maintenance. It is hard to fully comprehend how the long-term effects of this SEIS will influence the daily operation of the local flood control sponsor. One thing is for certain, it will be negative. Considering the limited capabilities of a majority of the individual local sponsors, we should be considering ways to reduce project construction and operation and maintenance cost instead of generating ways to increase project costs.

Response. Comment acknowledged. The SEIS has been prepared utilizing the latest laws, policies, and procedures. Environmental protection is a mission of the Corps as is flood control and navigation.

15. Letter, Board of Levee Commissioners of the Pontchartrain Levee District, 15 April 1998 (Exhibit 15).

a. Comment. The Pontchartrain Levee District objects to compensatory mitigation as a requirement for future levee construction. Mitigation has never been a project requirement and there is no understandable justification to invoke mitigation when the overall project is well advanced toward completion. We have been advised that Federal dollars will pay all mitigation expenses and thus the local sponsor should be relieved. Not so! Mitigation dollars will be taken from construction appropriations which delays timely completion of future work, resulting in higher costs.

Response. Compensatory mitigation was not a requirement of the original project design in 1928. However, the project is subject to the requirements of subsequently enacted legislation and to Administration policy requirements. Compensatory mitigation is required by these changes. The increased project cost which results was taken into account by the Congress and the Administration when the requirement was promulgated.

The design and construction of the MRL items by the Corps will include not only levees and seepage control features but environmental and mitigation features. These costs will be funded out of the MR&T appropriation. No new funding appropriation is presently being considered.

b. Comment. Landside borrow pits are advocated in the SEIS. Louisiana should be exempt from such a requirements since the State Constitution provides riverside borrow pits at no cost to Levee Districts. Louisiana Levee Districts do not have funding sources to pay fair market values for flood control areas. It does not make any sense to spend local, state, or Federal dollars to protect an area from flooding and then destroy some of that same area for borrow pit purposes.

Response. As project sponsors, the Louisiana levee districts are responsible for providing all lands, easements, and rights-of-way required to construct the project. If the lands provided by the Louisiana Constitution cannot be utilized, then the sponsor will be required to obtain the required rights-of-way elsewhere. The SEIS describes the design effort for the remaining items of work. The interest of the Louisiana levee districts in minimizing their costs is one factor among many which will be considered in the final design of borrow areas.

c. Comment. The ability to drain borrow pits should be an option for Levee Districts to decide and implement. Borrow pits retaining water in most locations result in a wet levee base which when exposed to overbank river stages very quickly invokes active seepage flows. Borrow pits should be drained early in the water years to promote drying of the levee base to provide the greatest resistance to seepage under levees.

Response. At the present time, borrow pits exist at the riverside toe of most mainline Mississippi River levees. The enlargement and seepage control project that is described in this SEIS anticipates the riverside borrow coming from the riverside of the existing pits. As each item is designed in detail, the existing pits and the thickness of impervious material remaining in them are looked at to determine if the existing pits are sources of seepage entry. If they are, a pitfill is placed in the pit to move the source of seepage entry out to either the river or to the distance the remaining material in the existing borrow pits determines. Draining a borrow pit has little or no effect on the underseepage at the location of the borrow pit; it is the type and thickness of material (clay CH or CL, silt ML) left in the bottom of the borrow pit that affects underseepage.

16. Letter, Ms. Laura Busby, Marion, Arkansas, 22 April 1998 (Exhibit 16).

a. Comment. It is of utmost importance to the future of all residents in the areas protected by this project that it be completed without further delay. The threat to the 4.5 million people who reside there is also of utmost importance. More attention has been paid to those groups suing the Corps than to the many.

Response. Comment acknowledged.

17. Letter, Missouri Department of Conservation, 22 April 1998 (Exhibit 17).

a. Comment. Hubbard Lake Berm. On all sites, we support the idea of relief well construction instead of berm construction.

#82--Berm construction should be on agricultural land located on the landside of the levees and not on the batture (riverside). Constructing the berm on the batture would destroy bottom-land trees, and adversely affect an existing blue-hole providing valuable off-channel aquatic habitat. Furthermore, this area is part of our Department's Donaldson Point Conservation Area (CA) and we would prefer no project-related work on Department property.

#83-85--At this site, berm construction will be on Department-owned land (Donaldson Point CA) as we own both sides of the levee. We question the logic for constructing berms at this location. If the reason is water seepage only, then we recommend the berms not be

constructed as the current seepage is creating beneficial wetlands. If the berm is being constructed to protect the integrity of the levee, then it should be placed on the batture side of the levee as the landside has a greater diversity of bottom-land hardwoods.

#86--We again recommend the berm be placed in the batture area because the landside area contains higher diversity of bottom-land hardwoods. If bottom-land hardwoods or wetlands are destroyed because of berm construction, we request mitigation of losses. Land for mitigation, as prioritized 1 through 4 in Figure 2 (attached), should be purchased adjacent to Donaldson Point CA. Area 1 (40 acres) contains old-growth cypress trees; area 2 (80 acres) contains existing bottom-land hardwoods; while sites 3 (160 acres) and 4 (280 acres) are agricultural land that could be replanted to hardwoods. Addition of these in-holdings would help consolidate the Donaldson Point CA.

Response. The plans presented in the SEIS for the Hubbard Lake seepage control item are preliminary. We appreciate your comment regarding your property and will give it full consideration during the final design of this item.

As stated in Volume II, paragraph 84, page 6-77, the landside seepage berms control underseepage uplift pressures by adding weight to the landward top stratum. Therefore, these berms would serve no purpose if they were placed on the batture (riverside) side of the levee. It should be further noted that these berms are not stability berms used to stabilize the levee from a gravitational type of failure.

Terrestrial and wetland losses will be fully mitigated. However, the "no net loss of wetlands" policy precludes the Corps from mitigating wetland losses through the preservation of existing wetlands. The Corps prefers acquisition and reforestation of frequently flooded agricultural lands. Once the SEIS is processed, the Corps will meet with appropriate agencies to develop specific details for mitigating project losses within its boundaries. The Memphis District believes that agricultural lands adjacent to existing forests and in close proximity to existing public lands, such as those near Donaldson Point CA, should be given high priority status for acquisition purposes. However, it is important to note that the any land selected for mitigation must be from willing sellers.

b. Comment. Drinkwater Pump Station. A significant wetland complex, including Big Lake, exists above the pump station. To protect this resource, the area's existing hydrology should be maintained by not lowering water elevation below existing levels. To achieve this, it may be necessary to increase the start and stop elevations.

Response. The primary intent of the additional pumping capacity is to accommodate the increased flows due to the relief wells. Operational constraints are to be incorporated in the Water Control/Operations Manual for the Drinkwater Pumping Station to minimize changes to existing hydrology. These constraints may include changed start and stop elevations for the

additional pumps, but may not be limited to such. No change is proposed for the start/stop pump elevations of two 75-cubic-foot-per-second pumps (the existing pump station configuration). As a minimum, two 75-cubic-foot-per-second pumps will maintain the current start/stop pump elevations.

c. Comment. Commerce to Birds Point Grade Raise. According to plan specifications, the base of the levee will need to be widened in areas where the levee will be raised. We recommend that the addition to the levee be landside in areas that contain no roads or relief wells. Any new proposed relief wells could be placed outside the expanded levee. In the remaining areas, the levee additions will be added to the batture area, which will affect a considerable area of bottom-land hardwoods. As mitigation, the area of bottom-land hardwoods destroyed should be replaced by purchasing land adjacent to Donaldson Point CA as we consider one large tract (Donaldson Point CA) of bottom-land hardwoods more beneficial than several smaller tracts.

Response. The entire 10 miles of levee raise and base widening will be accomplished on the riverside due to the availability of existing rights-of-way and because this alternative is less expensive than a landside raise. Any impacts to bottom-land hardwoods on the riverside due to the base widening will be fully mitigated. Potential mitigation lands for this item will not be identified until more progress has been made toward actual construction. Consideration will be given to any lands offered by willing sellers for mitigation purposes. Selection of mitigation tracts will be based on their potential to offset losses and will be coordinated with project sponsors and appropriate state and Federal agencies before purchasing.

18. Letter, Kentucky State Nature Preserves Commission, 1 May 1998 (Exhibit 18).

a. Comment. Only one seepage control project is included for Kentucky: the Island 8, KY, Item 915L relief wells. This project appears to have potential to impact a wetland adjacent to the levee referred to as Fish Pond. Since original construction of the levee, this wetland likely has persisted in large part due to the seep water under the levee that feeds into it. We are concerned that diversion of the seep water will threaten the viability of this site as a permanently inundated cypress swamp. We also have a long-term goal of purchasing this site and protecting it in perpetuity within the Kentucky State Nature Preserve System. For these reasons, we request more detailed plans for this specific project, as well as an annual update on the status of this project upon our request.

Response. Final design considerations for this seepage control item have not been completed at this time. Your comment regarding the future viability of Fish Pond is appreciated and will be considered during the final engineering design. You may contact Mr. Billy Dycus, Project Manager in the Memphis District at telephone (901) 544-3455 at any time for an update of this seepage control item.

19. Letter, Illinois Department of Natural Resources, 28 April 1998 (Exhibit 19).

a. Comment. Our Office of Realty and Environmental Planning staff participated in the two Public Hearings that were held by your agency in Cape Girardeau, Missouri, on May 29, 1997 and March 16, 1998, respectively. In addition, we appreciated the opportunity to assist Corps biologists in the development of habitat evaluation parameters and weights that were employed in the biological assessment process. We are pleased that of the several alternatives evaluated for implementing the proposed levee and seepage control activities, Plan 4 - the Environmental Design which incorporates impact avoidance and minimization - was the selected alternative.

Activities proposed in the State of Illinois include six specific items totaling approximately 19 miles in length. These include the following:

Item 965R - This item is 3 miles long and consists of a cutoff wall to control seepage, located riverside of the Ohio River levee near Mound City.

Item 963R - This item is 1 mile long and involves stone paving along the Ohio River levee at Mound City to control erosion.

Item 961R - This item is 1 mile long and consists of a cutoff wall and relief wells located landside of the Ohio River levee below Mound City.

Item 957R - This item is 1 mile long and consists of two seepage berms landside of the Ohio River levee near Cairo. Borrow for construction is to be taken from cropland.

Item L5.1AC - This item calls for raising 10 miles of existing Mississippi River levee near Cairo 1 foot with commercial clay gravel.

Item L10AC - This item is 3 miles long and consists of four seepage berms landside and one pitfall riverside of the Mississippi River levee near Cairo. The required borrow material is to be taken from cropland.

These six items are expected to impact 70.9 acres of wetlands and 259.4 acres of nonwetlands within Illinois. We were not able to glean from the draft Project Report and Supplemental EIS where, exactly, the anticipated impacts will occur or where mitigation will take place (Page 1-34, paragraph 69 indicates that mitigation sites will be selected at a future date). Since it is our understanding that the various work items will be advertised via individual Public Notices when their actual construction is proposed, we anticipate providing project-specific comments at that time.

Response. Upon request, the Memphis District will provide impact information regarding specific work items to the Illinois Department of Natural Resources. Comments and recommendations on individual work items should be coordinated with the Memphis District. The Memphis District, in conjunction with appropriate agencies and levee boards, will develop explicit mitigation plans once SEIS processing is complete. The Corps is seeking state water quality certification concurrent with SEIS review and processing; therefore, we do not anticipate issuing public notices for individual work items.

b. Comment. The document indicates that 3,691 acres of forested wetland and 3,637 acres of farmed wetland (7,328 acres total) will be impacted by project-related construction system wide, but only 5,863 acres of mitigation wetland are to be created. For wetland losses occurring within Illinois, the Department typically recommends a minimum replacement ratio of 1.5:1 since some interim loss of functional values is inevitable while the new wetlands mature. Based on guideline, the proposed mitigation will slightly exceed the acreage needed to compensate for the projected loss of forested wetlands but does not cover the additional loss of farmed wetlands. However, we note that the overall project will result in a significant net gain in shallow open-water acreage, which will have considerable fish and wildlife benefits potentially offsetting the latter.

Response. Wetland mitigation requirements were determined based on the average annual loss of wetland functional value, not on a predetermined ratio. In addition to the 5,863 acres of mitigation, it is estimated that 3,000 acres of wetlands will be created in project borrow areas; approximately 675 acres of wetlands will be created in borrow areas within the Memphis District.

c. Comment. For reforestation activities, we strongly recommend the use of planting stock, rather than seedlings, to speed the recovery time of the forest stand and improve the survival rate of the material planted.

Response. The Corps typically achieves good survival rates with bare root seedlings. However, the Memphis District will coordinate with appropriate agencies to establish mitigation objectives and guidelines and to select potential mitigation sites. Planting materials and methodologies often vary according to site locations and conditions.

20. Letter, Kentucky Department of Fish and Wildlife Resources, 27 April 1998 (Exhibit 20).

No comment.

21. Letter, Missouri Department of Natural Resources, 29 April 1998 (Exhibit 21).

a. Comment. Replacing bottom-land hardwoods and other wetlands with enhanced borrow pits will be difficult and requires that many acres of wetlands habitat be created and that these wetland borrow habitats be directly connected hydraulically to the river by chutes and channels. We strongly recommend that wetlands be enhanced at a level of 3:1 on a per acres basis, and that these wetlands have an adequate supply of seasonal floodwaters.

Response. The wetland impacts were evaluated using a functional analysis, and accordingly, the mitigation was developed based on functional replacement. A per acre replacement ratio is not necessary. The SEIS recognizes the wetland functional value of the created borrow areas, but the recommended plan does not use these values to compensate wetland losses. The recommended plan includes the acquisition and reforestation of 5,900 acres of frequently flooded lands, which fully compensates the unavoidable wetland functional loss. The selection of these lands will be coordinated with appropriate Federal and state agencies. In addition to the unquantified wetland functional value of the created borrow areas and the mitigation plan, another 3,000 acres of borrow areas will be reforested.

b. Comment. The field survey for cultural resources should address the eligibility for inclusion in the National Register of Historic Places of the drainage districts and water control structures in and near the project area.

Response. Acknowledged. Note that at the present level of study, we are looking only at existing records. Later field surveys conducted specific to levee items and other work will take into account your concern for drainage districts and water control structures as to whether they should be considered for their significance as cultural resources.

c. Comment. Volume II of the three-volume document, pages 6-25, entitled "Geotechnical" has numerous errors. Please rewrite by people with knowledge of the geology and tectonics of the upper portion of the Lower Mississippi River Valley. Such people are on staff of the St. Louis District, Corps of Engineers. Errors include nomenclature, stratigraphy, and tectonics. For example, report notes that alluvial sediments overlie only Pleistocene and Tertiary age deposits, but alluvial sediments also overlie Cretaceous, and in some locations, Paleozoic age bedrock.

Response. Paragraph 57 of the report will be expanded by adding the following ending sentence: "In the extreme upper reaches of the Lower Mississippi Valley, between approximately Cape Girardeau, Missouri, and the confluence with the Ohio River, the Quaternary alluvium of the Mississippi River directly overlies Cretaceous, and in some locations, Paleozoic age bedrock." Cretaceous formations are represented by the Ripley Formation. This formation is composed of fine to coarse sands and sandy shales of the

McNairy Member overlying glauconitic, fossiliferous, sandy shales of the Owl Creek Member. Paleozoic formations are represented by the Powell Formation of Ordovician Period. The Powell Formation consists of cherty dolomites with thin interbedded sandstones. Nomenclature and stratigraphy used in this report are in keeping with the system utilized by the Waterways Experiment Station in a series of published technical reports on the geology of the Lower Mississippi Valley. For a discussion of tectonics, see the following comment.

d. Comment. Tectonics of the Bootheel of Missouri: Consult work of DNR/Divisions of Geology and Land Survey, U.S. Geological Survey and others for documentation of evidence of Tertiary and Recent faulting.

Response. It is a recognized fact that seismic events can damage or destroy earthen embankments such as levees. Furthermore, there are numerous published works that present evidence of Tertiary and Recent faulting. Because of the remote probability of an earthquake occurring during a high water event that would cause sufficient displacement of the levee to cause overtopping, the levees are not designed to be earthquake resistant. Therefore a detailed discussion of the tectonics of southeast Missouri is considered beyond the scope of this report.

e. Comment. Nomenclature like "top stratum geology" is unusual and not technically accurate. Correct nomenclature should be used.

Response. Concur. The words "top stratum" should read "topstratum."

f. Comment. Cumulative impacts should be considered from the entire Mississippi River system, not solely for the Lower Mississippi River. The Upper Mississippi and other rivers also have levees. It has been shown that inappropriately designed and located levees can increase the frequency, stage, and duration of flood events. The focus should always be to better design and locate, and in some areas, remove or not raise levee systems to better serve the users, including those who need the protection, the environmental management needs, and others in the public sector.

Response. The assessment of impacts has been limited to the lower Mississippi region. This assessment of regional impacts is considered broad enough for reviewers to determine the significance of the various impacts on the human environment. It would be an impractical task to attempt to determine the cumulative impacts of the entire Mississippi River system in this document. At a minimum, historical environmental settings would have to be developed, the same baseline data would have to be developed, and the same environmental evaluations would have to be performed using the same species for each area. This would be time and cost prohibitive and would require extensive manpower. All situations that can affect hydrologic conditions in the Lower Mississippi River have been analyzed and used in developing the project flood. The levees have been designed to reduce adverse environmental impacts and to prevent catastrophic flooding that could occur in the area.

g. Comment. Work done near waterways should disturb as little vegetation as possible. Riparian corridors of at least 300 feet should be left along both banks to keep banks in place and protect habitat.

Response. Disturbance of vegetation will be limited to only those areas required for construction.

h. Comment. Any land disturbance activities within Missouri may require a water pollution control permit.

Response. All appropriate permits will be coordinated and obtained from Missouri's Department of Natural Resources.

i. Comment. We do not see the environmental impacts of the relief wells and the impact of changed hydrology on the riverside of the levee and the potential for increased erosion and sediment deposition evaluated in the SEIS.

Response. Adverse environmental impacts that occur due to the presence of relief wells were included in the analysis. Significant environmental losses are avoided as the relief wells replace the need for large seepage berms which may have required use of bottom-land hardwoods or wetlands for borrow. There will be no adverse changes in the hydrology of riverside lands other than the direct impacts defined in the report concerning riverside borrow--the impacts of which are fully mitigated. Potential increased erosion or sediment deposition is not expected and will not present any significant environmental impacts.

j. Comment. Page 13-5, f., please revise the phrase, "This results in a generous estimate of wetland impacts." It is not generous.

Response. Sentence deleted.

k. Comment. Neotropical Migratory Birds: We disagree that there would be no significant adverse impact. Planting of tree seedlings does not replace a forest quickly. Those species that require tree cover, forest habitat, wet bottom-land hardwoods, and mast (tree nuts) cannot wait several bird lifetimes for mitigation to occur.

Response. The statement "Implementation of Plan 4 would result in no significant impact to Neotropical migratory birds . . ." is a result of the entire mitigation process. This process included all aspects of environmental design features and analyses utilized to avoid, minimize, and compensate impacts to significant resources. Specifically, compensation of impacts to Neotropical migratory birds will be realized during the compensation (reforestation)

recommended due to terrestrial and wetland impacts. The compensation analysis for both the terrestrial and wetland impacts include considerations to offset all predicted impacts within the project life. Although habitat losses tend to be greater early on, compensation benefits would far exceed losses near the end of the project life. Although the proposed construction would cause adverse impacts, the benefits derived by compensation would fully offset impacts over the project life.

22. Letter, Arkansas Department of Parks and Tourism, 6 May 1998 (Exhibit 22).

a. Comment. Enclosed is a copy of the Delta Heritage Trail Master Plan and database information regarding recreational facilities in Arkansas which are located in close proximity to the Mississippi River. Arkansas State Parks also has property located at Township 12 North, Range 11 East, Sections 20, 26, 27, 28, 29, and 30 in Mississippi County which is leased for farming purposes. The parks listed received Federal and/or state grant funds for development and are subject to the provisions of the Land and Water Conservation Funds guidelines.

Response. The Delta Heritage Trail Master Plan and recreational facilities information will be evaluated to ensure any impacts will be properly addressed and appropriate coordination with your agency occurs.

b. Comment. Agree that Plan 4 (Avoid and Minimize) is the preferred alternative and also agree with the proposed mitigation provisions. "Fee Title Acquisition of Cleared Agricultural Land with Reforestation" is the preferred alternative. Plan 4 provides the least amount of impact to wetlands and the mitigation for the loss of wetlands of at least a 1:1 ratio is appropriate.

Response. Comment acknowledged.

c. Comment. This study notes that each Corps District would be responsible for mitigation requirements. Recommend that the losses be mitigated within the state that incurred the loss rather than the Corps District.

Response. Mitigation was separated by District because each District will have the responsibility of implementing their portion of the mitigation plan. Details on where mitigation lands will be acquired will be developed by a cooperative effort of appropriate Federal and state agencies when the mitigation is implemented.

d. Comment. Suggest publishing a public notice in the local communities which are in close proximity prior to and during the work being done at the various project sites and to plan the proposed work schedule to ensure the least amount of negative impact on winter migratory fowl and recreational use.

Response. Levee boards will be the local point of contact and will be aware of construction schedules; therefore, formal public notices is unnecessary.

23. Letter, Mississippi Department of Wildlife, Fisheries and Parks, 4 May 1998 (Exhibit 23).

a. Comment. The MDWFP supports Plan 4 which has been selected by the Corps of Engineers as the best alternative. As the project progresses, we want to be an active partner in the development of mitigation projects and, to the extent practical, involved in discussions relative to the minimization measures that will have to be made "on the ground" during the life of the project.

Response. Concur.

24. Letter, Louisiana Department of Culture, Recreation and Tourism, 6 May 1998 (Exhibit 24).

a. Comment. It is our understanding that these documents summarize known cultural resources sites and properties in the area of potential effect based on an extensive literature and records review. Since this is a background study only, it is premature at this time for our office to comment on project effect on sites or properties listed on or eligible for listing on the National Register of Historic Places (NRHP). As stated in Colonel Wright's letter, coordination with our office will be necessary on each specific work item located in the State of Louisiana in order to determine project effect on significant cultural resources. We look forward to working with your agency in meeting its Section 106 compliance responsibilities in this regard on this large and complex project.

Response. Comment acknowledged.

b. Comment. You may wish to consider combining the two background CRM studies commented on below into one report so that the known cultural resources inventory in the project study area for the State of Louisiana will be in one volume, rather than two.

Response. Comment acknowledged.

c. Comment. Page 1: in the Introduction for Preliminary Draft Report for Cultural Resources Study Supporting Supplement I to the Final Environmental Preliminary Impact Statement, Mississippi River Mainline Levee, Vicksburg and Memphis Districts, R. Christopher Goodwin and Associates, Inc. (Appendix 15), there should be a discussion of plans to comply with Section 106 of the National Historic Preservation Act, as is done later in Appendix 15 in the Introduction of the cultural resources study report prepared for the New Orleans District.

Response. Comment acknowledged.

d. Comment. Pages 3-4, Table 1: 9 CRM reports are listed for the State of Louisiana, while on pages 2-23, a total of 37 CRM surveys are summarized for the State of Louisiana. Why the discrepancy? A map showing areas previously surveyed for cultural resources would enhance the report and aid in understanding the discussion.

Response. A total of nine cultural resource inventories were identified as having been conducted within portions of 15 proposed project items. No cultural resource inventories were identified as having been conducted in the remaining 22 proposed project items. Please note the number "37" refers not to the total number of previously conducted cultural resource surveys, but to the total of proposed project items.

e. Comment. Page 11, Table 3: There are no standing structures within the area of potential effect within any of the proposed SEIS project items in that portion of the State of Louisiana under the jurisdiction of the Vicksburg District?

Response. A review of the standing structure files located at the Louisiana Department of Culture, Recreation and Tourism, Office of Cultural Development, Division of Historic Preservation, failed to identify any previously recorded standing structures within any of the 37 proposed items.

f. Comment. Page 1: The Introduction of Preliminary Draft Report for Cultural Resources Study Supporting Supplement I to the Final Environmental Preliminary Impact Statement, Mississippi River Mainline Levee, New Orleans District, R. Christopher Goodwin and Associates, Inc. (Appendix 15) needs to be expanded to include pertinent project information as is done in the Introduction to the study done for the Vicksburg District. State the number of proposed project items, the fact that they all located within the State of Louisiana, and the parameters of the study area.

Response. Acknowledged. Clarification of wording will be incorporated in the cultural resources technical report to be produced from the data gathering for this SEIS and your office will be offered an opportunity to comment on a draft of that forthcoming report.

g. Comment. Page 1ff: A table listing cultural resources surveys previously done within the New Orleans District of the proposed SEIS items, as was done for the Vicksburg District report, should be included. Are the CRM reports discussed on page 1ff listed from north to south, or by date (oldest to most recent)? The parishes they were located in should be mentioned and a map showing their location would be useful in following the discussion in the text.

Response. Acknowledged. Clarification and response addressing these comments will be made in the cultural resources technical report to be produced from the data gathering for this SEIS. Your office will be offered an opportunity to comment on a draft of that forthcoming report. Should you require information such as tabular data prior to that time, please contact Mr. Erwin Roemer, Vicksburg District (telephone (601) 631-5441).

25. Letter, Illinois Environmental Protection Agency, 5 May 1998 (Exhibit 25).

a. Comment. All areas affected by construction must be mulched and seeded as soon after construction as possible. The Corps of Engineers should undertake necessary measures and procedures to reduce erosion during construction. Interim measures to prevent erosion during construction should be taken and may include the installation of silt fences, staked straw bales, sedimentation basins and temporary mulching. The Corps of Engineers must obtain an NPDES Storm Water Permit prior to initiating construction if the construction activity associated with the project will result in the disturbance of 5 (five) or more acres, total land area.

Response. Concur.

b. Comment. The Corps of Engineers must implement erosion control measures consistent with the "Standards and Specification" for Soil Erosion and Sediment Control" (IEPA/WPC/87-012) or the "Illinois Urban Manual (IEPA/USDA, NRCS; 1995).

Response. Concur.

c. Comment. Any temporary stockpiling areas along the river banks must be adequately protected to prevent erosion.

Response. Concur.

d. Comment. Material dredged from the Mississippi River may be placed along the berms, if the material is considered reasonably settleable, environmentally acceptable, and free from unnatural or significant levels of fines, clays, or other materials capable of causing violations of Title 35, Subtitle C, Part 302. The following criteria should be used to define nonpolluted materia:

I. Material free from toxic levels of contaminants;

II. Material which will not cause an effluent or condition resulting in offensive discharges; and

III. Materials which have settling velocities of components of sands or larger sized materials (larger than 0.062 millimeters, or a #230 U.S. sieve for at least 80 percent by weight).

All material not meeting the above criteria are considered not appropriate for filling operations.

Response. There are no plans to use material from the Mississippi River to perform any levee or berm work in the Memphis District.

e. Comment. An NPDES permit must be obtained from the Illinois EPA prior to initiating any discharge from the relief wells constructed for flood control along the Mississippi River.

Response. Concur.

26. Letter, Louisiana Wildlife Federation, 22 May 1998 (Exhibit 26).

a. Comment. The Louisiana Wildlife Federation supports and commends the effort to design this flood protection project in a manner that is sensitive to its impacts on wetlands and fish and wildlife habitat. If this approach would have been pursued 4 years ago, a lot of time and dollars could have been saved.

Response. Comment acknowledged.

b. Comment. Of the four alternative plans discussed (mentioned) in the SEIS, only two provided any detailed analysis of environmental impacts. We recognize that the possibility of using landside borrow is included in Plan 4, but we are concerned that the failure to thoroughly evaluate the wetlands benefits (through avoidance) of Plan 2 (landside borrow) indicates a prejudice against an objective evaluation of the alternative of landside borrow in Plan 4 when such is feasible and appropriate to avoid wetlands impacts. Although we appreciate that the use of landside borrow is not always feasible or even the best way to avoid overall environmental impacts or obtain the greatest benefit, we recommend that for each item of the project that proposes using riverside borrow, a thorough investigation of the availability and suitability of obtaining borrow from landside be made, and that the economic and environmental impacts of both alternatives be compared before proceeding with construction.

Response. The total landside borrow option was screened out during the preliminary design phase because of environmental and economic reasons.

During the detailed design phase, we will have more detailed information available to evaluate alternatives. It is our goal to avoid and further reduce environmental impacts that are shown in this report.

c. Comment. We note that the Fish and Wildlife Planning Aid Report was not included in the SEIS. This document is important to a proper evaluation of the SEIS. We urge that the FWPR be distributed when available, substantially prior to the release of the final SEIS, so that any additional comments provoked by the report can be submitted before the SEIS is finalized.

Response. The FWS Planning Aid Report is included in the final SEIS. Comments will be received on the final SEIS.

d. Comment. The SEIS enthusiastically (it seems) touts "environmentally designed" borrow pits as providing substantial aquatic benefits. Although this may be true, please keep in mind that open water is an abundant and increasing habitat type in the MRUV compared to wetlands, particularly bottom-land hardwoods which have declined steadily over the long term. If we understand correctly, the aquatic habitat benefits of these environmentally designed borrow pits are not being applied to reduce the wetlands and wildlife habitat losses that will have to be mitigated. However, the aquatic benefits associated with creating borrow pits should not in any way be a negative incentive to avoid the degradation of existing wetlands.

Response. Substantial aquatic benefits will be provided by the environmentally designed borrow areas, and are presented in the SEIS because these benefits represent a consequence of the proposed action. These benefits are not being used to reduce wetland or terrestrial impacts. The aquatic benefits are not being used as a negative incentive to avoid existing wetlands, but they are a consequence of the proposed action and as such are a factor in the decision-making process.

e. Comment. All the specific details of each of the 128 project items are not fully discussed in the SEIS; therefore, the SEIS should not substitute for Section 404 review of each project item. When all details of an item are available, including funding, and it is ready to be noticed, it should be subject to Section 404 review process like any other work that would alter jurisdictional wetlands.

Response. The engineering features and potential impacts that would alter wetlands for the proposed action are known. These potential impacts represent the upper limits of impacts, and as the detailed design for each item is developed, an additional effort will be made to further reduce wetland impacts.

f. Comment. We generally support the proposed mitigation in Plan 4; however, additional details providing assurance of the efficacy of the mitigation should be included; e.g., monitoring the success of reforestation plantings; provisions for replanting (if required) to achieve intended survival rate and stand composition, etc. We also would like to be more certain about the nature of the mitigation with respect to location and ownership of mitigation lands.

Response. Comment was addressed in paragraphs 66, 67, 68, and 69 of the mitigation appendix.

g. Comment. Given the information provided in the SEIS, we support the preferred alternative, Plan 4 - Environmental Design (avoid and minimize). However, we hope that it can be improved based on these and other comments you have received concerning this SEIS.

Response. Comment acknowledged.

h. Comment. On page 23 of the Project Report we recommend that you edit the first sentence under "46 History" to read: Mississippi River floods have always been a threat to agriculture and other human development in the River's flood plain. This converts a questionable if not erroneous assertion into a factual statement.

Response. Sentence has been revised.

i. Comment. On page 24, part b under "Terrestrial Resources," river otters are not mentioned as occurring in the project area. If present, this species should be mentioned.

Response. The river otter has been added to the list of occurring species.

j. Comment. On page 40, in the statements of environmental criteria, the word "will" should be substituted for the word "should" in a and b. Also, we recommend adding the word "maximum" preceding "extent practicable" in statement a.

Response. The word "maximum" has been added. The word "should" in a and b was not changed.

k. Comment. In Table 5 on page 53, the item with the greatest difference in cost between Plans 3 and 4 is Levees and Seepage Control. Although perhaps explained in detail in an appendix, it would be helpful to include here a general explanation of why the cost for this item varies so much between the two plans. To be consistent, an explanation for any other significant difference in costs between plans may also be provided.

Response. The difference between Plan 3 (Levees and Seepage Control (Feature 11)) and Plan 4 (Levees and Seepage Control) is primarily due to the different methods of construction. The borrow areas on Plan 3 are adjacent to the levee and berm enlargement. Thus, the method of construction of the levee and berm enlargement is using scrapers with a minimal haul distance. On the other hand, Plan 4 attempts to use other means of borrow to minimize the use of riverside borrow areas. This, in turn, lengthens the distance from the borrow areas to the levee and berm enlargement. Consequently, the method of construction in Plan 4 changes to off-road dump trucks with a significant haul distance which is more costly than Plan 3.

l. Comment. On page 1-33 of the Mitigation Appendix, paragraph 68 discusses where mitigation lands should be acquired. We emphasize that mitigation should occur in the vicinity of the loss and take into consideration the need to maintain or create wildlife corridors and fill in gaps. From a management perspective, acquiring land to reforest adjacent to an existing forest may be preferable, but it may not be as strategically important as a small tract that helps to fill in a gap created by a borrow pit in the batture. Our opinion on this is well represented in #4 under Reforestation on page 21 of the Draft Waterfowl Technical Appendix. Also, on page 23 of this appendix, the composition of species to be planted for reforestation on mitigation sites in discussed. A 70 percent red oak group planting is recommended as best for waterfowl. We recommend that consideration be given to planting species proportionately to what historically grew on these mitigation sites, even if this means growing a few less oaks. An effort should also be made to vary spacing when planting to replicate a naturally occurring forest.

Response. The prioritization and selection of mitigation lands will be done using an interagency team composed of the appropriate District and Federal and state resource agencies. Biological factors such as wildlife corridors and reducing forest gaps will be considered in the selection process. For example, FWS has asked the Corps to consider acquiring lands in designated Forest Bird Conservation Areas, and this will be incorporated as one of many selection criteria. Because the selection of species and spacing is too a large degree controlled by the site, these factors will be determined after mitigation lands are acquired. Our goal is to plant an average of 70 percent red oaks across these lands, not only to satisfy waterfowl requirements but also to satisfy terrestrial requirements. However, some areas will likely have lower percentage and some areas will have higher percentages.

27. Letter, Kentucky National Resources and Environmental Protection Cabinet, Department for Environmental Protection, 16 April 1998 (Exhibit 27).

a. Comment. If there are impacts to jurisdictional wetlands of one acre or more, then a 33 USC § 1341 ("401") water quality certification by the Division of Water for the U.S. Army Corps of Engineers and a 33 USC § 1344 ("404") dredge or fill permit must be obtained.

Response. Comment acknowledged.

b. Comment. The narrative states that project design flow and methodology, although computed in 1956, remain applicable. Given the expense and costs, decision making should not be based on anything less than a comprehensive computer hydraulic model of the Mississippi River and on an analysis of all the impacts of both the existing levees and the proposed project. Was not such a model was developed after the Upper Mississippi River floods of 1993?

Response. The PDF flows, developed during the 1956 study, were developed by hypothetically and critically applying a series of extreme historical observed storms over the Basin and computing the resulting flows at various points within the Basin. The storms utilized had occurred over a period of years and had not occurred simultaneously as assumed in the analysis. The resulting computed flows are still considered the highest which have a reasonable probability of occurrence. Once the flows were developed, water surface profiles or "flowlines" (also known as the 58A-EN PDF) were computed which utilized the then existing channel conditions. During the 1973 flood, observed water surface elevations indicated the channel conditions had changed and water surface elevations for specific flows were higher than expected. Consequently, a study was conducted in 1974 to determine the effects the channel deterioration had on the PDF elevations. In the study, the new channel and flood plain geometry were utilized in both hydraulic computer models and physical models to develop the new flood flowline. The resulting elevations are referred to as the "Refined 1973 MR&T Project Flood Flowline" and are related in Table 6-8 of Volume II of the SEIS. Continued monitoring of the geometry and channel capacity indicate no significant changes have occurred since 1974 in the lower Mississippi River. However, changes were identified in the upper Mississippi River (upstream of Cairo, Illinois) during the 1993 and 1995 floods. Consequently, a hydraulic study was conducted and the PDF flowline for that reach of the Mississippi River between Cairo and Cape Girardeau was revised in 1996. The results of that analysis are also shown in Table 6-8.

c. Comment. "Environmentally Sustainable" is presented as subject to a "reasonableness constraint." The Division of Water finds as subjective the examples given to define reasonable constraint. Constraints should be objective, that is, quantifiable. The alternatives presented in the FPR and FEIS Supp need to reflect quantifiable standards.

Response. Comment noted.

d. Comment. The discussion is limited in Nonstructural Alternative of measures that would reduce damages should an existing levee overtop or fail. The only measure that appears to have been considered was the purchase of flowage easements. In the FDR & FEIS Supp, other options such as small local protection levees, elevations of structures, relocation, and floodproofing need to be analyzed and presented.

In the case of flowage easement purchases, it is not clear why the Corps of Engineers would have to obtain these in areas that would flood naturally were levees not there. The FDR & FEIS Supp need to address, in increased detail, flowage purchases.

The DPR contains no justification to the statement that the cost of emergency disaster activities, traffic rerouting, and utility damage would be overwhelming. The FDR & FEIS Supp need to present an evaluation of the foregoing not only as an alternative to raising levees, but as a consideration of the potential risks of unforeseen levee breaks.

Response. See Comments 1h and 1r above.

e. Comment. The narrative states (paragraph 86, page 42) that the total number of structures at risk of flooding is 40,000 residences and 1,600 businesses. Appendix 6, Attachment A, Tab 1, indicates the least cost alternative project is $19,200,000,000. This breaks down to a cost of about $46,000 per structure. That amount has to be a big percentage of the value of the structures. Some local alternatives for flood protection have to be reasonably close to this price. The FDR & FEIS Supp need to address these alternatives.

Response. The 40,000 residences and 1,600 businesses discussed in the narrative were for only two isolated points at which levees could crevasse--Lake Providence, Louisiana, and Mayersville, Mississippi. There are considerable more structures located within the project area of the Mississippi River that could be affected if levees would fail. Total first cost for the remaining construction on the Mississippi River levee is $656 million.

f. Comment. Appendix 7 (page 7-23) addresses some of the information discussed in paragraph 86 and Appendix 6. Here, the narrative indicates that the total damages would be $10,000,000,000; this amount is less than the least cost alternative. The FDR & FEIS Supp need to address the implications of the cost being more than the damages.

Response. The total days discussed in Appendix 7 (page 7-23) are for the two levee crevasses at Mayersville and Lake Providence. Levee breaks are possible at many other locations along the river since 263 miles of levee are deficient.

g. Comment. Appendix 7 (page 7-23) also asserts that a levee failure would result in major traffic routes and railroads being closed for months. This does not appear to have been the case during the floods on the upper Mississippi River in 1993. The FDR & FEIS need to justify this, especially regarding railroads. The FDR & FEIS should list which roads would be closed and for now long if the Mississippi River floods and the levees do not fail.

Response. Comment acknowledged.

h. Comment. In the FDR & FEIS, this appendix should list when and where each public meeting was held and how many people attended. It would be desirable to have a list of attendees for each meeting.

Response. Comment noted.

28. Memorandum, Kentucky State Nature Preserves Commission, 20 April 1998 (Exhibit 28).

Comment. There is only one of the many projects included in this document that lie within the State of Kentucky. This is called the Island 8, KY, Item 915L project and involves the placement of relief wells along the levee. The Kentucky State Nature Preserves is concerned that implementation of this project will impact a wetland adjacent to the levee at this site referred to as Fish Pond. We will make a request directly to the U.S. Army Corps of Engineers, Memphis District, to coordinate with the Commission concerning the progress of this project.

Response. Comment acknowledge.

29. Letter, The Chickasaw Nation, 9 June 1998 (Exhibit 29).

Comment. There has been a lack of consultation and information provided in reference to Federal laws and regulations. A list of comments is offered.

Response. It is acknowledged this project includes potential for discovery of ancient Chickasaw remains. Treatment of any such discoveries will be carefully coordinated under applicable laws and regulations, and the Chickasaw Nation will be consulted. In accordance with Federal laws and regulations, the proposed undertaking, including the current NEPA coordination, has included and will continue to include consultation with the Chickasaw Nation. It is acknowledged the Chickasaw Nation is not represented, for purposes of consultation on the proposed undertaking, by any other Federally recognized tribe(s). No Memorandums of Agreement presently exist with any Native Americans in reference to the MR&T levees project. The Chickasaw Nation will be included in future planning, if any, for such agreements related to this project. Summaries and/or inventories required under the Native American Graves Protection and Repatriation Act (NAGPRA) will be provided to the Chickasaw Nation at the first opportunity. At this time, the Vicksburg District is in the process of finalizing such information regarding NAGPRA-pertinent materials existing in collections prior to 16 November 1990 (following NAGPRA's stipulations). Should proposed reburial site(s) or other actions on human remains and/or funerary objects become issues in the future of the proposed undertaking, the Chickasaw Nation will be consulted under provisions of Federal laws, regulations, and guidelines.

Sunrise, Mt. McKinley Ansel Adams

SIERRA CLUB LEGAL DEFENSE FUND, INC.
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(On August 1, 1997, we will officially become Earthjustice Legal Defense Fund!)

180 Montgomery Street, Suite 1400, San Francisco, CA 94104-4209

E-MAIL: scldfsf@igc.apc.org
(415) 627-6700 FAX (415) 627-6740

April 30, 1998

Via Facsimile and Federal Express

Commander
U.S. Army Engineer District, Vicksburg
ATTN: CEMVK-PD-F
4155 Clay Street
Vicksburg, Mississippi 39180-3435

Comments on Draft Supplement No. 1 to the Final Environmental Impact Statement
Mississippi River and Tributaries Project, Mississippi River Levees and Channel Improvement

Dear Commander:

On behalf of the Plaintiffs in Mississippi River Basin Alliance et al. v. Lancaster et al., Mississippi River Basin Alliance, American Rivers, National Wildlife Federation, Arkansas Wildlife Federation, Louisiana Wildlife Federation, Mississippi Wildlife Federation, and Sierra Club, through its Mississippi and Delta Chapters, I submit these comments on the Draft Supplement No. 1 to the Final Environmental Impact Statement for the Mississippi River Levees and Channel Improvement project (the "DSEIS" or "Draft SEIS"). These comments are in addition to those that may be submitted separately by any of these organizations.

I. The Draft SEIS Must Be Substantially Revised And Redistributed for Public Comment

As you well know, an Environmental Impact Statement is more than a mere disclosure document, it is intended to help public officials make decisions that are based on an understanding of environmental consequences, and take actions that protect, restore and enhance the environment. Indeed, the primary purpose of the National Environmental Policy Act is to ensure that high quality environmental information is available to public officials and citizens before decisions are made and actions are taken.

Exhibit 1

Unfortunately, the many flaws and omissions in the DSEIS prevent such informed decisionmaking in connection with this project. As a result, the U.S. Army Corps of Engineers (the "Corps") has selected an alternative without the mandated careful consideration of detailed information concerning the significant environmental impacts of this project. These flaws and omissions, which are discussed in detail below, include but are by no means limited to the following:

1. The DSEIS fails to adequately analyze and discuss the value of bottomland hardwood wetlands, which are recognized as being "among the Nation's most important wetlands."[1] The DSEIS also fails to analyze or discuss the fact that the "[t]he single most important factor affecting wetlands has been the construction of levees to reduce the frequency and duration of flooding throughout much of the lower Mississippi River Valley."[2] Absent a recognition of the true importance and value of these wetlands, and the role of projects such as this one in causing the losses of these wetlands, an informed decision cannot be made as to the true level of importance to be placed on avoiding future impacts.

2. The DSEIS fails to adequately analyze and discuss the cumulative losses of bottomland hardwood wetlands and other wetlands in the project area, and includes no discussion of the impacts of these cumulative losses on the fish and wildlife species utilizing the project area, or the impacts of these losses on such things as flood protection. The DSEIS also fails to analyze or discuss the U.S. Fish and Wildlife Service's determination that "any further loss of forested wetlands within the project area should be considered significant considering the cumulative losses."[3]

3. The DSEIS rejects without analysis the landside borrow alternative, and fails to analyze or discuss the environmental benefits that could be gained by utilizing non-wetland landside borrow areas.

4. The DSEIS fails to analyze or discuss the uncertainties associated with successful mitigation, and instead blithely and incorrectly assumes that the estimates of wetland impacts will prove to be 100 percent accurate, and that the proposed mitigation will be 100 percent successful,

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[1] Report to Congress by the Secretary of the Interior, *Impact of Federal Programs on Wetlands* ("Report to Congress"), Volume I, at 39 (1988). Indeed, bottomland hardwood wetlands are so important that they Congress has determined that in any Corps project proposed to Congress, losses of bottomland hardwoods must be mitigated in kind whenever possible. 33 U.S.C. § 2283(d)(2).

[2] Report to Congress, Volume II, at 145 (1994).

[3] November 30, 1995 letter from Allan J. Mueller to Colonel Gary W. Wright. A copy of this letter is found at Appendix 11 of the DSEIS.

both in the total number of acres reforested and in the restoration of lost functional values.

5. The DSEIS does not include the Fish and Wildlife Planning Report normally provided to the public at this stage. The public should have the benefit of this analysis by the U. S. Fish and Wildlife Service to allow for more meaningful comments on the entire DSEIS document.

Just as importantly, the DSEIS does not fully consider one of the alternatives required to be analyzed and discussed pursuant to the Consent Decree. Paragraph E.(1) of the Consent Decree requires the SEIS to analyze and discuss "the use of site specific techniques to achieve the Project purpose. Such techniques shall include, but not be limited to: use of conservation easements and other nonstructural alternatives; use of relief wells; use of innovative construction techniques; and obtaining construction material for the Project from non-sensitive, non-wetland areas on the land side of the levees, and from dredging the Mississippi River." The use of conservation easements and other nonstructural alternatives as a component of the site specific techniques is not analyzed at all. Obtaining construction material for the Project from non-sensitive, non-wetland areas on the land side of the levees as a component of the site specific techniques also is not adequately analyzed and discussed.

It also is especially troubling that the Corps is attempting to use the DSEIS to shield the design and construction of individual work items from further review. The DSEIS seeks to satisfy all Section 404 review for the entire 128 construction items (the vast majority of which have not yet been designed) through the SEIS process. The Corps also seeks to obtain only one Section 401 Water Quality Certification from each state for all work items to be constructed. This is extremely problematic since the selected alternative requires the Corps to utilize a variety of site specific avoid and minimize techniques, and because the DSEIS bases its impact analysis on the assumption that such techniques will be used to the maximum extent practicable. Absent Section 404 and Section 401 reviews for each construction item, there can be no assurance that meaningful avoid and minimize techniques will be employed, or that adequate mitigation will be implemented. Individual project review is particularly critical given the realities of this project, which: will not be completed for at least 22 years; will involve construction of approximately 128 individual work items; and will be carried out in 3 Corps Districts and 7 states.

Given the significant flaws in the Draft SEIS, a substantially revised Draft SEIS should be prepared and redistributed for public comment.

II. Specific Comments

A. Project Report

Page 1, Paragraph 3: Notably absent from this paragraph is a recognition that the decision to supplement the 1976 Final EIS was made to settle the lawsuit filed by Plaintiffs. While the reason

for supplementing the EIS is not as important as the fact that it is being supplemented, failure to provide this information is misleading to the public.

Page 23, Paragraph 46.a.: It is blatantly incorrect to state that the "Mississippi River has always been a threat to the security of the valley through which it flows." Quite to the contrary, it is well recognized that: "Large floodplain rivers are among the most highly productive ecosystems worldwide. Their high productivity is believed by many biologists to be closely related to periodic interactions between the aquatic river environment and the terrestrial floodplain environment. . . . It is no wonder that from the beginning of recorded human history civilizations prospered near large floodplain rivers."[4] In short, the Mississippi River created the valley and the still productive ecosystem through which it flows.

Pages 26-27, Paragraph 49: The analysis of the impacts of the project is based on a wetland delineation prepared by the Corps. This paragraph states that the assumptions of the wetland delineation were validated by an interagency team during the field review process. Since the wetland delineation forms the basis for determining project impacts, at least the following information should be included in the SEIS in order for the public to evaluate whether or not the assumptions upon which the delineation are based are accurate: (a) the total number of acres that were reviewed in the field; (b) the total number of acres in each state that were reviewed in the field; (c) the percentage of the entire project area that was reviewed in the field; (d) the percentage of the total project area in each state that was reviewed in the field; and (e) the percentage of field review necessary to ensure statistical predictability of the entire wetland delineation. This information is not included in the Project Report, the DSEIS, or the Wetland Appendix.

Page 27, Paragraph 52: This paragraph states that the creation of borrow areas is the major project feature affecting water quality. Construction of the levees, berms and haul roads also will have a major impact on water quality. The construction impacts on water quality are virtually ignored throughout the DSEIS, and are not fully analyzed even in those few instances where they are discussed.

This paragraph also states that borrow areas are "heavily utilized by sportsmen for fishing and hunting." Plaintiffs contend that this is incorrect, and the Corps could not provide any factual basis for this conclusion during our meeting to discuss the DSEIS on April 7, 1998. The Corps should provide the factual support, if any, for this assertion, and should provide the results of any use surveys of borrow areas that were conducted. The Corps also should include factual support,

[4] Yin, Y., and J.C. Nelson. 1995. Modifications of the Upper Mississippi River and their Effects on Floodplain Forests. National Biological Service, Environmental Management Technical Center, Onalaska, Wisconsin, February 1995. LTRMP 95-T003. 17 pp.

if any, that shows that the borrow areas are utilized more heavily than other areas on the river side of the levees. If this information does not exist, the statement should be deleted.

Page 28, Paragraph 53: As written, this paragraph contradicts later statements that water quality in landside borrow pits is not good. More importantly, however, this paragraph illustrates one of the pervasive problems with the DSEIS: the Corps places significant emphasis on the value or lack thereof of habitat incidentally created by borrow areas. The relative quality of landside versus riverside borrow areas, however, is irrelevant to the Corps' obligation to avoid, minimize and mitigate (in that order) wetland losses, and indeed appears to be little more than an excuse for not obtaining fill from landside areas.

Page 28, Paragraph 54: Wetlands provide many values for migratory waterfowl in addition to the caloric value of foraging habitat. These other values should be analyzed and discussed and should be accounted for in any necessary mitigation.

Page 36, Paragraph 72: This paragraph should clarify that the "reasonableness" constraint does not alter the Corps' legal obligation to first avoid impacts and then minimize and mitigate. This paragraph also should make clear that the Corps has the authority and obligation to locate borrow areas to meet these and other applicable legal obligations. The alternative selected should comport with these legal obligations.

Page 41, Paragraph 83: This paragraph should clarify that alternatives were identified through more than the scoping process. The Consent Decree identifies some of the alternatives discussed in the DSEIS. While who identified alternatives is not as important as the fact that alternatives were identified and a supplemental EIS is being prepared, failure to provide this information is misleading to the public.

Page 45, Paragraph 94: We do not agree that nonstructural alternatives cannot accomplish congressionally mandated project purposes that provide a prescribed level of flood protection. Even in implementing projects authorized decades ago, the Corps must utilize current knowledge and engineering practices, and abide by current laws and policies, including all requirements of the National Environmental Policy Act, other applicable federal laws, and the administration's directive to utilize nonstructural methods to provide flood protection where feasible.[5] Each federal agency is to ensure a "cost-effective approach to flood damage mitigation and floodplain management and the protection of important environmental and natural resource values that are

[5] See February 18, 1997 Memorandum from Franklin D. Raines, Director, Office of Management and Budget and Kathleen A. McGinty, Chair, Council on Environmental Quality to Federal Agencies re: Floodplain Management and Procedures for Evaluation and Review of Levee and Associated Restoration Projects. While the 1997 Guidance was issued to assist the floodplain and levee restoration projects necessitated by the floods of 1996 and 1997, because it embodies the lessons learned and policies established over the past four years, its mandates also must be applied to the selection and implementation of new, non-emergency, flood control measures.

inherent to the floodplain and adjacent lands."[6] The Corps Circular No. 1105-2-214 (Planning Project Modifications for Improvement of the Environment and Aquatic Ecosystem Restoration) also allows modifications of projects to enhance the quality of the environment.

Page 46, Paragraph 96.a.(3): Potential poor water quality in landside borrow is irrelevant to the mandate to avoid impacts to bottomland hardwood and other wetlands, and does not deter from the significant benefits gained by avoiding wetland impacts altogether -- an outcome that can most easily be attained by locating borrow in non-wetland areas on the landside of the levees. Much effort appears to have gone into "proving" that riverside borrow provides better aquatic habitat than landside borrow areas, and the DSEIS is replete with statements that landside borrow pits create low quality habitat. Indeed, the Corps apparently relies on this analysis to conclude that landside borrow "lacks" environmental advantages. This in turn was identified as a valid reason for rejecting the landside borrow alternative. Of course, this conclusion is completely unfounded. Locating borrow areas in non-wetland areas on the landside of the levees has enormous environmental benefits; it avoids wetland impacts altogether.

Page 48, Paragraph 100: Plaintiffs concerns with the borrow area location criteria are addressed below.

Page 51, Paragraph 106: See comments above on Paragraph 96.a.(3). In a similar effort to find reasons to reject the landside borrow alternative, and to attempt to avoid requiring meaningful efforts to locate borrow areas on the landside, this paragraph includes the pointless conclusion that landside borrow would exhibit far fewer fish and wildlife attributes than riverside borrow areas periodically flooded by the river. This conclusion wholly ignores the fact that cropland -- where the landside borrow would be taken from -- also exhibits far fewer fish and wildlife attributes than the bottomland hardwood wetlands or farmed wetlands where the borrow would be taken from riverside. Thus, the comparison is meaningless and is not a valid reason for eliminating landside borrow from consideration.

Page 51, Paragraph 107: Plaintiffs concerns with the improper and out of hand rejection of the landside borrow alternative is discussed below.

Page 57, Paragraph 127: The DSEIS does not include the Fish and Wildlife Planning Report normally provided to the public at this stage. The public should have the benefit of this analysis by the U. S. Fish and Wildlife Service to allow for more meaningful comments on the entire DSEIS document.

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[6] 1997 Guidance at 1.

B. Draft SEIS and Appendices

SEIS 1-9, Table 1-3: While there are at least 128 anticipated construction items, there are only 33 items identified in Table 1-3. The locations and deficiencies should be broken down into the currently anticipated work items.

SEIS 1-10, Section 1.5: Plaintiffs fully support "avoiding and minimizing adverse environmental impacts to the maximum extent practicable." Unfortunately, this goal almost certainly will not be attained as the DSEIS does not identify the steps that must be taken to ensure that this happens. To meet this goal, the Corps should select an alternative that mandates location of borrow in non-wetland areas on the landside of the levee, or that mandates location of borrow areas in non-wetlands on the landside of the levee in all instances where no other means exist to avoid locating riverside borrow areas in forested or other wetlands, or in forested non-wetlands.

The avoid and minimize alternative as described in the DSEIS does not apply this planning objective standard, and does not identify the steps that must be taken to ensure that impacts are avoided to the maximum extent practicable. This issue is discussed further below.

SEIS 1-11, Section 1.6.1: It is essential that Clean Water Act Section 404 Review (and opportunity for public comment) be conducted for each item of construction. Without this review, there is no opportunity for the public to review these designs and ensure that all possible avoid and minimize techniques are being utilized for each item, or that proper mitigation requirements are being assessed and implemented.

Should the Corps refuse to require Section 404 review for individual construction items, the SEIS must explain how a single Section 404(b)(1) analysis (as provided in Appendix 3) can suffice for a project that: (a) will not be completed until the year 2020 at the earliest; (b) will include approximately 128 separate construction items that have not yet been designed; (c) will involve construction across 3 separate Corps Districts and 7 states; (d) will impact at least 7,328 acres of wetlands; and (e) will require the disposal of at least 21,980,000 cubic yards of dredged and fill material. Just as importantly, the SEIS must explain how this single Section 404 analysis can ensure compliance with the Section 404 sequencing requirement to first avoid and then minimize and mitigate for all unavoidable losses.

Even if a single Section 404 analysis is sufficient (which it is not), the Section 404 analysis in Appendix 3 is factually flawed and thus, cannot be relied upon. For example, it states that water quality in the Mississippi River is of good quality. As is discussed below (and as was discussed with the Corps at the April 7 meeting), this statement is incorrect. This single Section 404 analysis further has no basis for concluding that the Section 404 sequencing requirements have been met for the entire project, since the vast majority of construction items have not yet been designed.

For similar reasons, a Section 401 Water Quality Certification should be required for each construction item. There is no way for a State to properly issue a Section 401 Water Quality Certification until the design for each item is complete, because until that time there is no basis for determining whether water quality standards will be maintained.

SEIS 1-13, Section 1.6.3, Second Paragraph: This paragraph suggests that in reality the Corps' only efforts for relocating borrow was to select farmed wetlands over bottomland hardwood wetlands. These limited options violate the avoid and *minimize* requirements and fly in the face of the alleged criteria for locating borrow pits. Pursuant to both the law and to the project objectives, borrow should be obtained from non-sensitive, non-wetland sites to the maximum extent practicable

SEIS 1-14, Section 1.6.5: Details of the Carrollton feature (which appear to have been finalized) should be provided. An analysis of alternatives evaluated also should be included as should an explanation of how the design satisfies the avoid and *minimize* design criteria. Without these details, no meaningful public comment can be provided either on this feature or on the New Orleans District's determination that that construction of this feature is consistent with the state of Louisiana's Coastal Resource Program.

SEIS 2-2, Section 2.2, First Full Paragraph: The last sentence in this paragraph states that under the no action alternative, the Mississippi River Valley will remain vulnerable to future floods. The DSEIS should state whether it is the Corps' position that implementation of the selected alternative will protect the Mississippi River Valley from all future flooding from the Mississippi River. If that is not the Corps' position, this statement is misleading and should be deleted.

SEIS 2-3, Section 2.4.1.1: The DSEIS should fully analyze and discuss the landside borrow alternative.

This section describes an alternative that would obtain landside borrow from an area 2,000 to 3,000 feet from the landside toe of the levee. The Corps has advised Plaintiffs that the haul distance limit for landside borrow (a maximum of 3,000 feet from the landside levee toe) was provided only for the purpose of calculating costs. The Corps has stated that it selected this maximum distance because further haul distances would cost too much. The SEIS should answer at least the following questions concerning the haul distance: Is 3,000 feet from the landside toe of the levee the maximum distance that the Corps would look for landside borrow? Have the haul distance costs been compared to the losses associated with destruction of bottomland hardwood wetlands on the riverside of the levee? Are there riverside borrow locations where the haul distance would be greater than 3,000 feet for all or a portion of the borrow material?

This section also concludes that "landside rights-of-way would be expensive." The SEIS should answer at least the following questions regarding the level of this expense: What are the estimated actual costs for obtaining the required landside rights-of way? Has the Corps analyzed

the average land costs in landside areas deemed suitable for borrow? If not what is the basis for the Corps' conclusion that landside rights-of-way would be expensive? What does the Corps mean by "expensive" and what did the Corps compare the costs to in making this determination? Are landside rights-of-way "expensive" as compared to riverside borrow, and if so how much more expensive? Are landside rights-of-way "expensive" as compared to the habitat values provided by an equivalent area of natural forested wetland?

This section further states that the "extended borrow haul distance would also increase costs." The SEIS should answer at least the following questions concerning this statement: What is the support for this statement? What are the haul distances for existing proposed riverside borrow areas? Do any of those haul distances for all or a portion of a construction item exceed 2,000 to 3,000 feet (the full distance range in which the Corps would look for landside borrow)? This section also must analyze and discuss the relative cost of road building in determining the transportation costs. It is likely that fewer road building costs would be incurred for landside borrow since existing roads are more likely to be available. Both road building and transportation costs must be looked at together if there is to be a meaningful analysis of the relative costs of landside and riverside borrow.

SEIS 2-5, Section 2.4.3: At best, it is not possible to ascertain from this section what the applicable standard is for determining compliance with the avoid and minimize plan. At worst, this section can be read to require relocating borrow from bottomland hardwood wetlands only when the Corps makes a determination that such relocation is "possible" or "feasible." Since neither standard is defined (and since the Corps seeks to shield individual construction items from Section 404 review), the Corps' discretion in making such a determination is essentially limitless.

The standard that will be applied under this alternative will determine whether the proposed estimates of impact reduction through the avoid and minimize plan will be achieved, as the standard will dictate the efforts that are supposed to be undertaken to avoid impacts. Thus, the standard for avoiding impacts -- and the steps to be taken to comply with that standard -- are critically important. Without a meaningful standard, the project designer retains unlimited discretion in determining whether an individual construction item meets the requirements of Plan 4.

The various standards set forth in the DSEIS include at least the following:

1. The planning objectives state that adverse impacts to the environment should be avoided and minimized "to the maximum extent practicable."

2. The selected avoid and minimize alternative, however, only requires that avoid and minimize design be applied to the "fullest extent practicable."

3. Under the avoid and minimize alternative, however, the "fullest extent practicable" requires the implementation of only "reasonable environmental design measures to avoid and minimize environmental damages to BLH hardwoods."

4. Such "reasonable" measures, however, only include relocating riverside borrow from BLH to riverside prior-converted farmlands or to landside prior-converted farmlands "where possible."

5. In Section 2.6 at SEIS 2-7, Plan 4 is said to require the relocation of borrow areas only "where feasible" to avoid and minimize impacts to bottomland hardwood forests and bottomland hardwood wetlands.

Each of the standards articulated under Plan 4 provide far less protection to the environment than the planning objective requirement that adverse impacts to the environment should be avoided and minimized "to the maximum extent practicable." Each of the Plan 4 standards also provide far less protection to the environment than the Section 404 sequencing requirements. In addition, application of each of the various standards identified in Plan 4 almost certainly would result in significantly greater impacts over the life of this project than estimated in the DSEIS.

SEIS 2-6 to 2-7, Section 2.5.1, Discussion of Plan 2 (Landside Borrow): The DSEIS should fully analyze and discuss the landside borrow alternative. The environmental benefits -- complete protection to bottomland hardwood wetlands, other riverside wetlands, and riverside forested non-wetlands -- are barely mentioned, and certainly are not adequately analyzed in the DSEIS. Without undertaking a full analysis of this alternative, the Corps cannot make an informed decision concerning the location of borrow areas.

The Corps has advised Plaintiffs that through the use of up to date and innovative construction techniques, the Corps has been able to significantly reduce the estimated acres of forested impacts from borrow (and presumably haul road construction). At our April 7 meeting, Plaintiffs were advised that these impacts had been reduced to approximately 2800 acres. The remaining approximately 2,000 acres of bottomland hardwood impacts are located under the footprint of the enlarged levees and berms and are deemed by the Corps to be unavoidable. Thus, the Corps could completely avoid these "discretionary" impacts by obtaining landside borrow from non-sensitive, non-wetland sites. Plaintiffs are at a loss to understand how the Corps can conclude that it is not feasible (and not necessary even to analyze) the purchase of landside rights-of-way for approximately 2800 acres over a period of at least 22 years, in 3 Corps Districts and 7 states.

Plan 2 was rejected out of hand for wholly invalid reasons. First, the DSEIS says it would cost the "most." This is a misleading statement, however, as the allegedly additional borrow costs

are not compared to the lost value of the bottomland hardwood wetlands that landside borrow would protect. Nor are details provided regarding how much more those costs would be.

Second, the DSEIS says this alternative is not acceptable to a majority of landowners or to the local sponsors. The Corps must avoid first, and only then minimize and mitigate bottomland hardwood and other wetland losses. The Corps may not refuse to comply with this obligation because the local sponsors do not want to obtain landside borrow. Moreover, the DSEIS provides no factual support for the statement that this alternative is not acceptable to a majority of landowners or for determining that a sufficient number of willing sellers could not be found. We assert that willing sellers could be found particularly since the Corps and local sponsors contend that enlarging the mainline levee system is critical to the safety of the region.

Third -- and most importantly -- the statement that environmental benefits from landside borrow would be relatively small compared to other structural plans is patently false. The environmental benefits would be enormous; all non-footprint related wetland and riverside forested losses could be avoided. This would save thousands of acres of bottomland hardwood wetlands, bottomland hardwood non-wetlands, and farmed wetlands on the riverside of the levee (wetlands with the highest potential for restoration in light of the ability to restore a relatively natural hydrologic scheme). The alleged lack of environmental advantages to habitat incidentally created by landside borrow pits as compared to that incidentally created by riverside borrow pits, which appears to be what this statement is referring to, is irrelevant to the obligation to avoid and minimize impacts to bottomland hardwood and other wetlands and is irrelevant to the significant environmental benefits gained by avoiding those impacts altogether.

Given the cumulative losses of bottomland hardwood wetlands to date, the allegedly unavoidable impacts to bottomland hardwood and other wetlands that are under the footprint of the enlarged levees or berms, and the lack of historical mitigation success (see discussion on mitigation), the benefits to be derived from avoidance of damages to these riverside lands would be enormous. This is particularly true since each additional acre of bottomland hardwood wetland loss must be considered significant.

The SEIS should identify the projects and acreage taken by the Federal government that are referred to in this Section and relied upon as a rationale for not selecting this alternative.

This section also uses as a justification for selecting riverside borrow the fact that landside borrow areas would not contribute nutrients to the river system. The Mississippi River System has too many nutrients already, this should be viewed as a positive benefit for water quality in the Mississippi River and not as a negative impact.

SEIS 2-7 to 2-8, Section 2.6: This section states that under Plan 4 (Avoid and Minimize) "borrow areas would be relocated where feasible to avoid and minimize impacts to BLH forests and wetlands." As discussed above, this is one of many conflicting standards apparently

applicable to Plan 4. This "where feasible" standard should be changed to the far more stringent "to the maximum extent practicable" or should be defined to mean "capable of meaning done."

It is clear that no localized non-structural measures were considered under this alternative. The failure to do this violates the terms of the Consent Decree (Paragraph E.(1)). The Consent Decree further requires that the analysis and discussion of this alternative include utilizing borrow from non-sensitive, non-wetland areas on the landside of the levee on a site specific basis. This analysis has not been made.

Moreover, despite the selection of the avoid and minimize alternative, it is not clear whether the DSEIS located any borrow areas in non-sensitve non-wetland areas on the landside of the levee (other than those instances where old levees are being used to obtain borrow, a practice that Plaintiffs support). Plaintiffs could uncover only the following proposed sources for borrow: riverside wetlands (both forested and non-forested); riverside forested non-wetlands; landside wetlands (both forested and non-forested), old levees, and the Mississippi River. The DSEIS should identify all habitat types (and acreage of those types) that the Corps has assumed will be used for borrow material in reaching its impact estimates. Without this information, the public cannot ascertain to what degree the avoid and minimize plan has actually driven efforts to avoid impacts to wetlands and forested non-wetlands.

The rationale for the prioritization scheme should be provided. At the April 7 meeting with Plaintiffs, the Corps advised us that this scheme had been established for one construction item that previously was under design consideration. Apparently, that prioritization was not revisited in preparing the DSEIS. Plaintiffs believe that the Corps should put more effort into devising a prioritization scheme so that it truly will reduce environmental impacts of the project to the maximum extent practicable. Contrary to the suggestion in this section, the prioritization scheme will do little to meet that goal.

Under the current prioritization scheme, it is almost certain that riverside borrow will be utilized unless the Corps undertakes significant efforts to locate willing sellers of landside borrow. This is because under the prioritization scheme, landside locations will not be selected for the location of borrow regardless of the impacts on wetlands (or the impacts on the Louisiana Black Bear) unless riverside locations simply are not available.

Efforts by the Corps to locate willing sellers for landside borrow in connection with Work Item 496-L have been abysmal. Moreover, the Corps recently advised Plaintiffs that such efforts were not necessary, particularly where the Corps had determined that riverside borrow was "environmentally preferable, as it provides opportunities to replace low quality bottomland hardwood wetlands with high quality bottomland hardwood wetlands and aquatic habitat."[7] This

[7] Letter to Melissa A. Samet from Major General Phillip R. Anderson, dated April 29, 1998.

outrageous statement -- a statement in direct contravention of established law and policy -- makes clear that the Corps is unlikely to make any meaningful efforts to locate willing sellers for the remaining 128 construction items.

This is particularly true since no description (let alone the necessary detailed description) of steps that must be taken to ensure that all efforts will be made to locate willing sellers is provided in the DSEIS. The current prioritization scheme should be revised to ensure that environmental impacts are reduced to the maximum extent practicable, and the SEIS should provide a detailed description of the steps that must be taken to taken to locate willing sellers of landside borrow.

SEIS 2-9, Section 2.6.1.1, First Full Paragraph: This paragraph states that unless the Drinking Water Pumping Station capacity is increased to accommodate the seepage flow, "approximately 5,400 acres of agricultural lands would be negatively impacted." The alleged negative impacts should be identified. For example, will these areas be flooded more often, will they be flooded for longer periods of time, will they be subjected to higher flood levels? The negative impacts are not described anywhere in either the DSEIS or in Appendix 6 (at paragraphs 48 to 50).

SEIS 2-10, Section 2.7: The landside borrow alternative should be fully analyzed and discussed in the SEIS. The environmental benefits -- complete protection to bottomland hardwood wetlands, other riverside wetlands, and riverside forested non-wetlands -- are barely mentioned, and certainly are not adequately analyzed in the DSEIS. Without undertaking a full analysis of this alternative, the Corps cannot make an informed decision concerning the location of borrow areas.

SEIS 2-11, Table 2-1: Plan 4 impacts on bats must be more specific, and must include the number and estimated populations of species utilizing woodlands and open habitats. The Plan 4 impacts on neotropical migrants correctly notes that "after year 30, reforested areas would replace some lost habitat." (Emphasis added). This acknowledgment of only partial habitat restoration through mitigation is ignored in the mitigation section, and in the Corps' selected alternative analysis

More importantly, the comparative impacts analysis compares the wrong alternatives. The SEIS should compare the impacts to species and wetlands of utilizing landside borrow versus utilizing riverside borrow. The appropriate alternatives to analyze would include: (1) avoid and minimize engineering designs utilizing landside borrow only; (2) avoid and minimize engineering designs utilizing landside borrow and/or site specific nonstructural measures where necessary to avoid impacts to bottomland hardwood wetlands, herbaceous wetlands and forested non-wetlands.

SEIS 3-3, Section 3.2: The last sentence in the first paragraph is incorrect. Waterfowl were utilizing bottomland hardwoods long before the area was developed and converted to cropland. Utilizing bottomland hardwoods is not an adaptation to these land use changes.

Wetlands provide many values for migratory waterfowl in addition to the caloric value of foraging habitat. These other values should be analyzed and discussed and should be accounted for in any necessary mitigation.

SEIS 3-4, Section 3.3.1: This section fails to give appropriate value to the bottomland hardwood resources in the project area. For example, the DSEIS does not recognize that bottomland hardwood wetlands are "among the Nation's most important wetlands,"[8] nor does it recognize that bottomland hardwood wetlands are so important that Congress has determined that in any Corps project proposed to Congress, losses of bottomland hardwoods must be mitigated in kind whenever possible.[9] Even a cursory review of the scientific literature should reveal a host of information concerning the importance of these rapidly disappearing wetlands. A partial listing of such literature is provided in the Complaint filed by Plaintiffs. Absent a recognition of the true importance and value of these wetlands, an informed decision cannot be made as to the true level of importance to be placed on avoiding impacts to those wetlands.

SEIS 3-7, Section 3.4, Second Paragraph: This paragraph states that because of the extensive project area, assumptions were made about vegetation, soils, and hydrology. These assumptions were then validated by an interagency team during the field review process. At least the following information should be included in the SEIS in order for the public to evaluate whether or not these assumptions (which form the basis of the wetland delineation) are accurate: (a) the total number of acres that were reviewed in the field; (b) the total number of acres in each state that were reviewed in the field; (c) the percentage of the entire project area that was reviewed in the field; (d) the percentage of the total project area in each state that was reviewed in the field; and (e) the percentage of field review necessary to ensure statistical predictability of the entire wetland delineation. This information is not included in the Project Report, the DSEIS, or the Wetland Appendix.

SEIS 3-8 to 3-10, Section 3.5: Plaintiffs' personal experiences with borrow pit habitats do not comport with the glowing picture presented in the DSEIS of the value of riverside borrow areas as aquatic habitat, and Plaintiffs question the conclusion in this section that borrow areas provide "some of the best fisheries habitat in the continental United States."

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[8] Report to Congress by the Secretary of the Interior, *Impact of Federal Programs on Wetlands* ("Report to Congress"), Volume I, at 39 (1988).

[9] 33 U.S.C. § 2283(d)(2).

In addition, this section on aquatic resources in the project area makes no mention of the aquatic habitat provided by the Mississippi River itself, and fails to adequately analyze the aquatic habitat provided by oxbow lakes and permanent waterbodies other than borrow areas. Thus, the DSEIS fails to recognize the extensive existing aquatic resources in the project area, and as a result places too much emphasis on the benefits of creating additional aquatic habitat.

The DSEIS places a disproportionate value on habitat created incidentally by borrow pits. The focus of the SEIS should be on habitat values that will be lost or negatively impacted by the various proposed alternatives to the project. We are not aware of any existing borrow habitat that will be lost as a result of this project.

Most importantly, habitat incidentally gained by borrow areas does not, and cannot, compensate for wetland losses.

SEIS 3-10, Section 3.6: The biological assessment for the Louisiana black bear must be included in the Endangered Species Appendix 11. The necessary conservation measures required by each biological assessment needed to ensure "no effect" must be identified in the selected alternative.

SEIS 3-13 to 3-14, Section 3.8.1: This Section, and the Water Quality Appendix (Appendix 17) are factually incorrect as at least some reaches of the Mississippi River do not meet applicable water quality standards and/or are not supporting their existing or designated beneficial uses. While we were told that the water quality analysis relies on each state's assessment of the water quality of the appropriate segment of the Mississippi River, we also were told at the April 7 meeting that the appropriate State Section 303(d) lists (which identify those waterbodies within each state not meeting standards) were not reviewed.

Accordingly, there is no basis for the conclusion that the "water quality within the Mississippi River is within acceptable ranges most of the time." Even the numbers included in the DSEIS and Water Quality Appendix do not support this conclusion. For example, the DSEIS concludes that in tested samples:

- Nitrate exceeds benchmark levels 75% of the time
- TKN exceeds benchmark levels 50% of the time
- Total Phosphorous exceeds benchmark levels 10-25% of the time
- Lead exceeds benchmark levels 10% of the time
- Cadmium exceeds benchmark levels 50% of the time
- Mercury and Silver exceed benchmark levels 100% of the time
- Dissolved metal concentrations for cadmium, copper, lead, mercury and silver exceed freshwater chronic criteria 100% of the time

In addition, one area of the project is located on a reach of the Mississippi River that the USGS has reported contains the highest dissolved mercury concentrations within the entire river (see SEIS 3-16).

The Water Quality Appendix also does not provide sufficient information to determine toxicity levels of mercury in sampled fish, including lengths and weights of tested samples. The missing information was described to the Corps in detail during our April 7 meeting, and that discussion is incorporated by reference in these comments. The Water Quality Appendix also fails to adequately analyze the potential for redistribution of contaminated sediments.

SEIS 3-14, Section 3.8.2: We once again note that the relative water quality in incidentally created borrow habitat has no bearing on the steps that should be taken to avoid and minimize forested and other wetland losses, and forested non-wetland losses.

SEIS 4-3, Section 4.2.2: This section does not adequately analyze the potential impacts to bats. This section makes no reference to the fact that the majority of bat species would be harmed by the loss of forested wetlands and forested non-wetlands and that reforestation would benefit these species only if and when the reforestation successfully recreates a mature forest ecosystem. Nor does it factor into its analysis the fact that, according to the Bat Appendix (Appendix 14), woodland bat species will not receive any benefits from reforestation until at least 2035.

The Bat Appendix (Appendix 14) should provide information as to the population levels of bats in the project areas, and whether those populations are declining.

Table 4-4 is misleading as it does not take into account that fact that the majority of bats utilize woodlands.

SEIS 4-4, Section 4.2.3: The impacts to neotropical migrants are not properly analyzed. The DSEIS concludes that no significant adverse impacts to neotropical migratory birds "would be expected to result from the proposed project following implementation of proposed environmental design measures and reforestation efforts." (Emphasis added). This statement completely ignores the impact to these species during the 30 years -- at a minimum -- that it will take to successfully recreate mature bottomland hardwood forests, and does not take into account the many uncertainties associated with such successful mitigation.

The Neotropical Migratory Bird Appendix (Appendix 12) states that there "still remains some skepticism that the reported population declines, especially of forest-dwelling migrants, represent actual threats to Neotropical migrant species." While some scientists always will remain skeptical, there is considerably more scientific consensus that these declines do represent a threat to the species. Appendix 12 does not evaluate the impacts of losses in forested habitat that may occur as a result of project construction in identified bird conservation areas. A forest gap created within a bird conservation area could result in significant impacts to neotropical migratory

birds, particularly where cowbird feeding areas are created in an otherwise contiguous forest tract. The SEIS should identify the location of the bird conservation areas and ensure that forested areas are not impacted by the project in any of those areas.

SEIS 4-5 to 4-8, Section 4.3: Plaintiffs understand that the methodology utilized by the Corps in determining functional capacity units is not yet adequately developed, and likely will not be adequately developed for at least 2 more years. Currently, this methodology rests on numerous assumptions that may undervalue the functional capacity of wetlands lost through the project. This also would impact mitigation requirements as mitigation is being based on providing only 100 percent mitigation for lost values. The SEIS should discuss the uncertainties associated with this methodology and underlying assumptions upon which it is based. The SEIS also should discuss alternative wetland valuation methods.

This Section places much emphasis on the percentage of wetlands impact, as compared to the total percentage of project wetlands. This would appear to be an attempt to minimize the appearance of impacts based on the size of the project area. This analysis, however, does little to assist the decisionmakers in understanding the significance of the impacts of these losses. A meaningful cumulative impact analysis is necessary to understand this significance (the cumulative impact analysis section of the DSEIS is discussed below).

SEIS 4-8 to 4-11, Section 4.4: Plaintiffs reiterate that the quality of habitat incidentally created by borrow pits is beside the point. As pointed out many times in these comments, the Corps places an inordinate emphasis on attempting to justify the value of riverside borrow pits as valuable aquatic habitat, while at the same time attempting to "prove" that habitat created by landside borrow provides less valuable habitat. This appears to have been done to justify the Corps' refusal to locate, or even meaningfully attempt to locate, borrow areas on the landside of the levee (in anything other than landside wetlands). The Corps also used this "justification" to reject the landside borrow alternative. Landside borrow was rejected in part because the DSEIS erroneously concludes that landside borrow has little environmental benefit. Nothing could be further from the truth. Obtaining borrow from non-sensitive, non-wetland areas on the landside of the levees has enormous environmental benefits; it avoids wetland impacts altogether.

SEIS 4-12, Section 4.5: The specific environmental design and/or mitigation features necessary to ensure that the project will not adversely impact any threatened or endangered species should be identified in the SEIS and the mitigation plan. The biological assessment for the Louisiana black bear must be included in the Endangered Species Appendix (Appendix 11).

SEIS 4-13, Section 4.5.4: If the Corps seeks the ability to shorten the "no-construction" period for the bald eagle, the U.S. Fish and Wildlife Service should retain the authority to lengthen that "no-construction" period when necessary to prevent direct, indirect, or cumulative adverse impacts to the bald eagle. The SEIS should state that the Corps will consult with the U. S. Fish

and Wildlife Service on each construction item to ensure that no construction is being conducted within 0.5 miles of any eagle nests or within appropriate no-construction time requirements.

SEIS 4-13, Section 4.5.5: This section, and the wood stork biological assessment in Appendix 14, state that the existing hydrology within the proposed project area will not be impacted by project construction. However, the existing hydrology of wetlands used for borrow will be impacted by project construction. Wetlands also clearly will be destroyed by this project (under the footprint of the levee and berm construction, for borrow, and for road construction). Since the primary limiting factors contributing to the wood stork's decline have been the loss of wetland habitat and changes in hydrology, additional explanation is needed in the SEIS and in the biological assessment to explain how the no adverse impact determination was reached. This is particularly true since six wood storks were observed in June 1997 attending nests in the project area.

SEIS 4-14, Section 4.7.1: This section fails to analyze and discuss the impacts to water quality of construction carried out over at least the next 22 years, and fails to properly analyze the true level of impacts to construction that will in some places be carried out over areas miles long (in many cases the levee deficiencies cover 10 to 16 miles). The SEIS and Mitigation Appendix should identify the necessary best management practices and require implementation of those best management practices as a condition for awarding contracts for individual construction items.

Just as importantly, and as discussed above, the underlying basis for the water quality section (that the water quality of the Mississippi River is generally good) is incorrect. As a result, the entire water quality analysis must be reexamined and revised.

SEIS 4-14, Section 4.7.2, First Paragraph: Again, the underlying basis for the water quality section (that the water quality of the Mississippi River is generally good) is incorrect. As a result the entire water quality analysis must be reexamined and revised. Also, as discussed numerous times above, the potential water quality in habitat incidentally created by borrow areas is irrelevant to the benefits gained by avoiding wetland impacts by locating borrow areas on the landside of the levees.

We also note that for the first and only time in this Section, the DSEIS recognizes that it will take at least a few years to obtain good water quality in borrow pits. The SEIS should consistently identify potential water quality problems. We also note that while landside borrow may have the potential to trap high levels of chlorinated pesticides that may threaten the health of fish populations in those borrow pits, there are no fish in those areas now so that potential has little meaning regarding negative benefits of landside borrow. We also note that potential consumers of fish from landside borrow areas easily can be protected by posting warnings of potential contamination. We also note that access to those landside borrow areas could be limited (further limiting potential health risks) since landside borrow areas likely would be located on private land.

SEIS 4-15, Section 4.7.2, Second Full Paragraph: The SEIS and Mitigation Appendix should identify the necessary best management practices that must be undertaken to minimize nonpoint pollution from any aspect of project construction, and require implementation of those best management practices as a condition for awarding contracts for individual construction items. The statement that "reasonable efforts to reduce nonpoint pollution would be performed" is meaningless for assuring actual implementation of such efforts, and almost certainly is not sufficient for properly obtaining a Section 401 State Water Quality Certification.

SEIS 4-23 to 4-23, Section 4.12.2.2: Plaintiffs assert that borrow areas will in fact have direct and cumulative impacts on esthetics. That the borrow areas may be designed to "blend them into the surrounding area" is not the point. The proper analysis would compare the esthetics of borrow pits to the esthetics of a natural forested wetland.

Utilizing the enormous project area to conclude that the net effects to esthetics (or any other type of impact) is insignificant is disingenuous and misleading. While the esthetic impacts will occur only at construction sites and borrow pits, those impacts likely will in fact be significant since enormous borrow pits will be created -- many larger than 100 acres. Reforestation of borrow pits may mitigate the esthetic onslaught but only for those large enough to be deemed worthy of reforestation, and only after a significant number of years, and only if the reforestation efforts actually are undertaken and prove to be successful. Smaller borrow areas will receive no amelioration of esthetic impacts from reforestation.

SEIS 4-24 to 4-28, Section 4.12.2.3: This section on cumulative impacts must be substantially rewritten if it is to have any hope of satisfying the mandates of the National Environmental Policy Act. Because this section is so inadequate, Plaintiffs are at a loss to provide all the necessary information that should be included. However, critically omitted information includes, but is by no means limited to:

1. Failure to analyze and discuss that fact that despite being one of our most important wetland resources, the bottomland hardwood wetlands in the lower Mississippi River basin also are "one of the most seriously depleted and threatened."[10]

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[10] Report to Congress, Volume I, at 39. Only about 20 percent of the original 24 million acres of bottomland hardwood wetlands in the lower Mississippi River basin remain. Over 6.5 million acres were lost between 1937 and 1988, and it is estimated that an additional 2 percent of the remaining bottomland forests are lost each year. Id. From the mid-1970's to the mid-1980's Arkansas, Mississippi, and Louisiana each lost over 100,000 acres of forested wetlands. Thomas E. Dahl & Craig E. Johnson, U.S. Department of the Interior, *Status and Trends of Wetlands in the Conterminous United States, Mid-1970's to Mid-1980's*, at 11 (1991). A 1982 study by the National Research Council predicted that this region will continue to suffer the most extensive loss of wetlands in the nation, with another 1.5 million acres being lost by 1995. Report to Congress, Volume I, at 39.

2. Failure to analyze and adequately discuss the fact that in addition to the incredible acreage lost, the remaining bottomland hardwood wetlands in the lower Mississippi River valley are seriously fragmented and have lost many of their original functions.

3. Failure to discuss at all the impacts of these cumulative losses on the fish and wildlife species utilizing the project area, or the impacts of these losses on such things as flood protection.[11]

4. Failure to analyze or discuss the U.S. Fish and Wildlife Service determination that "any further loss of forested wetlands within the project area should be considered significant considering the cumulative losses."[12]

SEIS 5-1 to 5-5, Section 5.0 and Mitigation Appendix (Appendix 1): Prior construction of this project has resulted in significant direct and secondary losses of bottomland hardwood wetlands, other wetlands, and forested non-wetlands. The SEIS should analyze and discuss mitigation for those past losses. Failure to mitigate in the past also should be evaluated in determining mitigation needs for the remaining project construction.

The DSEIS fails to analyze or discuss the uncertainties associated with successful mitigation, and instead blithely and incorrectly assumes that mitigation will be 100 percent successful, both in the total number of acres reforested and in the restoration of lost functional values. There is no basis for making this assumption, however, and all evidence suggests that this assumption is simply incorrect. For example, as both the Corps and the U.S. Environmental Protection Agency have recognized: "Many mitigation projects have, in fact, failed due to one or more of the following reasons: poor siting and project design; inadequate monitoring programs; lack of adequate maintenance or remedial activities; and in some cases, failure of permittees to comply with the conditions of their permits."[13]

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[11] For example, it is estimated that before European settlement, the bottomland hardwood forests along the Mississippi River were able to store floodwater at levels equivalent to about 60 days' river discharge. Leveeing of the River and draining the floodplain have reduced that storage capacity to about 12 days. Confinement of the River between levees and the loss of wetland storage capacity are recognized by some scientists as "major reasons" that flooding is increasing along the lower Mississippi River. William J. Mitsch & James G. Gosselink, *Wetlands*, 519-21 (2d ed. 1993).

[12] November 30, 1995 letter from Allan J. Mueller to Colonel Gary W. Wright. A copy of this letter is found at Appendix 11 of the DSEIS.

[13] Complete Joint Statement of Michael L. Davis, Deputy Assistant Secretary of the Army for Civil Works and Robert H. Wayland III, Director, office of Wetlands, Oceans and Watersheds Environmental Protection Agency, Before the Transportation and Infrastructure Committee, Subcommittee on Water Resources and Environment, United States House of Representatives, Wetlands Protection and Mitigation Banking, December 9, 1997.

Indeed, it is well recognized in the scientific literature that while "mitigation ideally provides a mechanism for accommodating both development and the protection of wetland functions and values, the low rate of success of mitigation projects is a subject of concern."[14] Even for those created wetlands that appear to be successful, few have been evaluated for functionality in comparison to natural wetlands, or more importantly, to the natural wetlands they replace.[15] Rather, what little monitoring has been undertaken demonstrates that "[m]itigation activities for forested and shrub wetlands typically result in out-of-kind creation because of the difficulty, expense, and uncertainty associated with creating such wetland systems."[16] It is Plaintiffs' understanding that at least within the project area, no project attempting to mitigate for forested wetland losses has been monitored over a sufficient period of time (or perhaps at all) to ensure full functional replacement of lost values.

Detailed information on the likelihood -- or lack thereof -- for successfully mitigating project impacts is necessary for the Corps to make an informed decision regarding the appropriate alternative. The DSEIS should explain how the proposed mitigation (as set forth in Appendix 1) will be successful in mitigating for 100 percent of lost values in light of at least the following:

1. Habitat impacts and losses may be far more than estimated in the DSEIS (see comments above), but the proposed mitigation acreage will not change. The SEIS should require the implementation of an accounting system to keep track of habitat losses and mitigation gains from the project and adjust mitigation requirements accordingly.

2. The DSEIS contains no details relating to follow-up monitoring and reporting back to the public, and thus there may be no way to tell whether or not the mandated mitigation is even being implemented let alone being successful.

3. At least within the Vicksburg District there currently is a significant backlog of mitigation that has not been implemented, in part because of difficulties in locating willing sellers of large tracts of land. The Mitigation Appendix makes no mention of this, nor does it set up a process for ensuring that this will not happen to this project.

4. The DSEIS states that funds for management of mitigation lands and follow-up monitoring of those lands is subject to the appropriations process. Given the vagaries of that political process, there is no assurance that any of the necessary funds will be appropriated and thus there is no assurance that the mitigation lands will be managed or monitored.

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[14] See the attached North Carolina State University Document on Sucessful Mitigation. The information provided in this document is incorporated by reference into these comments.

[15] Id.

[16] Id.

5. The methodology utilized by the Corps to establish the wetland values to be replaced through mitigation is not properly developed and well may have undervalued the lost values.

The Mitigation Recommendation and Mitigation Appendix must contain significantly more detailed requirements to have any hope of ensuring the success of the proposed mitigation. For example, success rates should be established, detailed monitoring plans should be established, standards for assuring appropriate hydrology and appropriate substrates should be established, standards for ensuring appropriate habitat diversity should be established, and standards for ensuring proper maintenance should be established.

The Mitigation Recommendation and Mitigation Appendix also should define "concurrent" mitigation in the context of this project as requiring that the mitigation lands be purchased, and reforestation initiated, prior to construction of any additional work items. Given the length of time needed to restore a mature bottomland hardwood forest (if it in fact can be done), mitigation should be initiated as soon as possible. A mitigation accounting system also should be established to ensure that impacts over and above those estimated by the DSEIS are compensated for, and that unsuccessful mitigation also is compensated for.

Very truly yours,

Melissa A. Samet
Attorney for Plaintiffs

Attachment

Successful Mitigation>

INTRODUCTION

REGULATORY ISSUES

- Permit Compliance Surveys Find Gaps
- Functional Replacement Issues
- Location-Dependent Functions
- Temporal Replacement of Functions

ECONOMIC ISSUES

TECHNOLOGICAL ISSUES

MEASURES OF SUCCESS

COMMON MITIGATION PITFALLS<>

IMPROVING THE LIKELIHOOD OF SUCCESS

INTRODUCTION

Under the federal, and various state and local, regulatory programs, land development activities which may adversely impact wetlands require consent through permit approval from the regulating agency. At the federal level, under the Clean Water Act Section 404(b)(1) Guidelines (codified at 40 CFR 230) and U.S. Army Corps of Engineers (Corps) regulations (codified at 33 CFR 320.4(r)), the Corps is obligated to require ≤**mitigation**≥ (i.e., compensation) for any unavoidable impacts on a wetland as a condition of permit approval. The developer can be required to enhance, restore, or create wetlands on or near the development site. ≤**Mitigation**≥ projects are meant to replace, on at least a one-to-one basis, the lost functions and values of natural wetlands affected by development activities.

Although ≤**mitigation**≥ ideally provides a mechanism for accommodating both development and the protection of wetland functions and values, the low rate of success of ≤**mitigation**≥ projects is a subject of concern (Wolf et al. 1986, Kusler and Kentula 1990, Dobberteen and Nickerson 1991, Salveson 1995). The following section examines issues related to the success of ≤**mitigation**≥ projects.

REGULATORY ISSUES

As discussed in the Wetland Protection section , wetland regulation remains a contentious exercise of government authority. As a result, agencies are under substantial pressure to keep permitting requirements to the minimum necessary to ensure compliance with rules (Salveson 1990, Gannon, pers. comm). For example, according to Erwin (1990b), few permitted wetland ≤**mitigation**≥ projects follow scientific designs. Instead, projects are often negotiated between the applicant and the regulatory agency with less site assessment, or ≤**mitigation**≥ design rigor than might be necessary to guarantee success.

Permit Compliance Surveys Find Gaps

Field surveys of permitted ≤**mitigation**≥ sites have identified a number of weaknesses in the ≤**mitigation**≥ process. First, permitting agencies sometimes allow the substitution of unlike types of wetlands in ≤**mitigation**≥ or require less-than-equal quantities of ≤**mitigation**≥. Second, permittees frequently do not construct wetlands, construct insufficient area of wetlands, or construct wetlands otherwise out-of-compliance with the design specified in their permit. Third, constructed wetlands frequently do not function as anticipated. Finally, regular agency-conducted compliance monitoring is often inconsistent or cursory.

Lack of adherence to permits and project design and lack of monitoring are pervasive across ≤**mitigation**≥ projects (Erwin 1991, King 1991, Kentula et al. 1992b). Fifty-eight permits issued in Oregon between January 1977 and January 1987 degraded 74 hectares of wetlands, yet only 42 hectares were created, resulting in a net acreage loss of 43% (Kentula et al. 1992b). The research team also found that in the state of Washington, between 1980 and 1986, 35 permits were issued allowing impact to 61 hectares, but requiring the creation or restoration of only 45 hectares. This represents a net loss of 26% of the original wetland area. The wetland types created in both states were generally not the same types as those affected by the permitted activities.

Authors of a study of 40 ≤**mitigation**≥ projects in south Florida reported the failure or incomplete creation of 24 projects (60%), causing a 50% loss of wetlands area (Erwin 1991). Failure was judged to be a result of inappropriate hydrology in all cases. Another study, conducted by the Florida Department of Environmental Regulation (DER), found that fewer than 50% of the permitted projects could be considered ecologically successful (Redmond 1992). Many ≤**mitigation**≥ projects had not been initiated, although the impacts requiring ≤**mitigation**≥ had occurred. Of the freshwater sites, only 12% were successfully restored.

Wetland creation following mining activity is economically attractive because federal law requiring mine site reclamation necessitates large-scale earthmoving that involves creation of open water bodies. Wetlands created in this process are often used in ≤**mitigation**≥ banks. The Federal Abandoned Mine lands program in Wyoming reclaimed and created 300 wetlands (McKinstry and Anderson 1994). Of 92 created wetlands investigated, 55 (60%) were smaller than indicated in engineering plans and substantially smaller in dry years, resulting in less than a 1:1 acreage replacement.

For those created wetlands that appear successful, few have been evaluated for functionality in comparison to natural wetlands, or more specifically, to the natural wetland they replace. Agencies take the position that regulatory "science" can only strive to be the lowest-cost facsimile of true science that still gives the greatest likelihood of success. In many regulatory programs, the same personnel are responsible for both permit application review and compliance monitoring. While, typically, there are explicit statutory time frames for the processing of permit applications, compliance evaluations have no statutorily mandated schedule. Under agency budget constraints, staff are often forced to simplify or neglect compliance evaluations and associated enforcement (Salveson 1990, Gannon, pers. comm.). Any compliance activities that are performed by regulatory staff are likely to be only cursory inventories for the presence of key components, such as grading, adequate hydrology, and vegetative establishment. Costly, detailed functional studies are not feasible, and must be left to other parties, within or outside the agencies, if they are conducted at all. This reliance on form vs. function is analogous to the use of technology-based vs. performance-based standards for water or air quality compliance. The first is a presumptive test, with the agency making the presumption that functions will follow appropriate form, while the latter measures the actual resource or functions. Detailed functional evaluations of a subset of all ≤**mitigation**≥ projects to test the validity of the presumption that functions follow form would provide important information regarding the probability of ≤**mitigation**≥ success and the appropriateness of regulatory assumptions.

Functional Replacement Issues

A significant problem noted in ≤**mitigation**≥ compliance surveys is that while complex wetlands may be affected, different, simpler wetland types are often created through ≤**mitigation**≥ programs (Kentula 1992b). Permitting agencies may attempt to address the functional differences between degraded and proposed systems by requiring greater acreage of the unequal habitat. This has historically been based on regulators' hesitance to impose overly burdensome requirements on applicants and on the "bigger is better" philosophy: if more habitat is created, even if it is significantly different and attracts different species, it is equivalent to the original, natural system. However, as the understanding of wetland types and functions has increased, this practice has been recognized as potentially detrimental within a watershed. By allowing out-of-kind creation or restoration, regulatory agencies cause overall

local gains of certain common, easily attained, earlier successional-stage wetland functions, while concurrent losses are of increasingly scarce, difficult to replace, more complex functions.

Out-of-kind creation can result from agency oversights or lax criteria during permitting, the first of which agencies are very reluctant to attempt redressing after the fact. In terms of lax criteria, goals of ≤**mitigation**≥ projects as submitted may be vague, unrealistic, or ecologically unsound. If the goal is defined by the applicant and accepted by the agency simply as creation of wildlife habitat, any marsh or aquatic habitat that attracts ducks may be considered successful wetland creation (IWR 1994, ELI 1992, Erwin 1990b). The presence of waterfowl may be used as the criterion for deeming a created wetland successful, although an ecosystem is made up of much more than a few duck species.

Gaps in technical understanding of ecological functions make it difficult for regulators to require applicants to quantify such functions in site assessments and ≤**mitigation**≥ designs, which can result in out-of-kind creation. Information on the roles of fish, reptiles, amphibians, nongame birds and mammals in wetlands is scarce and generally not required, or only nominally mentioned, in ≤**mitigation**≥ plans, even though such information is essential for effective ≤**mitigation**≥ (Weller 1990, IWR 1994). It could be argued that even if technical understanding of all the biotic functions of wetlands were in place, it would still be unreasonable to require exhaustive site assessments and design details on a routine basis.

It may be helpful for agencies to establish clear policy guidance to address the issue of out-of-kind creation. In some cases, such compensation can be appropriate. For example, when a wetland is significantly degraded, and the opportunity exists to create systems that are functionally similar to undisturbed wetlands in the area, out-of-kind compensation can be advantageous. However, when wetlands are not functionally impaired, out-of-kind replacement might, as a rule, be discouraged. For example, the state of Florida has a "type for type" policy for wetland ≤**mitigation**≥ that is meant to prevent such discrepancies (Erwin 1990a). To guide the process of achieving functional replacement, regulators may take the approach of requiring prioritization of functions in proposed impact wetlands. This can be a valuable tool for ordering the process, but safeguards must be maintained against losing sight of all but the highest-priority functions.

Part of the problem in obtaining type-for-type replacement can be caused by a lack of sufficient information about the impacts that will result from the permitted activity. More complex wetland ecosystems merit more involved site assessment, but applicants are concerned with minimizing costs, particularly in the uncertain realm of wetland regulation, and routinely provide less than full information. Agencies, meanwhile, are expected to avoid imposing unnecessary information requests on applicants. Such circumstances require agency staff to use professional judgment, based on field experience, experience with applicants, and time management demands, to determine when more involved site assessment and ≤**mitigation**≥ design are merited. However, regulatory programs are often understaffed, and personnel turnover can be high, yielding low experience levels. Some regulatory programs have criteria in place to guide the professional judgment process, and such criteria can provide support for harried staff people. Given all of these factors, adequate site information on which to base effective ≤**mitigation**≥ efforts is sometimes not obtained.

Location-Dependent Functions

Another question related to functional replacement involves spatial replacement of functions. Specifically, this refers to assuring that the ≤**mitigation**≥ wetland is located in a similar landscape position to or nearby the wetland affected by the permit to allow the replacement wetland to perform the functions that the original wetland did. Functions tied to landscape position include aspects of water storage and attenuation, species habitat, and nutrient cycling. In small- to medium-scale developments, position is less of an issue. However, in large developments and in ≤**mitigation**≥ banks, loss of location-driven functions can be a concern. Replication of wetland functions can be at odds with the creation of one or two large wetland systems to offset a number of small impacts. For example, small isolated wetlands in upland landscapes perform many habitat functions that would be lost in a large wetland hydrologically tied to a floodplain (Robinson 1995, Means 1990, Laney 1988, Moler 1987, Beissinger and Takekawa 1983, Kushlan 1981). The importance of this issue can be difficult to gauge in a given case, and may as a result be left behind by overburdened regulatory staff. Agencies may need to develop guidelines to facilitate evaluation of this issue.

Temporal Replacement of Functions

The standard practice of constructing ≤**mitigation**≥ areas concurrently with conducting permitted wetland impacts results in temporal loss of wetland functions while the newly created areas become established, a process that may take years, even under favorable conditions. Many regulatory programs do not attempt to offset this temporal loss of functions. One approach that can be used to do so is to require a greater ratio of ≤**mitigation**≥-to-impact wetland acreage than one-to-one. In this case, the process of setting ratios becomes an issue, since a greater quantity of an early successional habitat does not truly replace the lost system, and amounts to trading apples and oranges, or more accurately, trading green oranges and ripe oranges. It could be argued that, given the historic losses of wetlands in the U.S. and the less-than-certain nature of ≤**mitigation**≥ technology, wetland impacts should not be allowed prior to full functional establishment of ≤**mitigation**≥ areas, or at least prior to reasonable assurance of successful establishment as indicated through monitoring. However, the planning required for such prior ≤**mitigation**≥ would, by conventional development standards, be feasible only in large, phased developments planned years into the future. One drawback to this prior ≤**mitigation**≥ approach is that it defeats the practice, encouraged by regulatory agencies, of "saving", or physically transferring and incorporating, biotic components of the wetland to be eliminated into the prepared ≤**mitigation**≥ site to seed it with local genetic stock and to facilitate its development.

ECONOMIC ISSUES

The ≤**mitigation**≥ services marketplace can affect project quality. The ≤**mitigation**≥ component of a development proposal is often subcontracted by an engineering firm to a consulting firm specializing in wetland ≤**mitigation**≥. Subcontracting puts consulting firms in a competitive bidding process that leads to underbudgeting and an inaccurate impression of what is economically and ecologically possible (Erwin 1990b, Kentula et al. 1992a, King and Bohlen 1994). As a result, cost estimates for wetland ≤**mitigation**≥ projects listed by permit seekers are often unreasonably low, projects are underfunded, and failure rates are high (King and Bohlen 1994).

Assessments of ≤**mitigation**≥ projects in Florida, California, and mid-Atlantic states indicated that of sampled projects, over 50% failed (King and Bohlen 1994). Failures were linked not

only to improper technical decisions, but to "bad planning, poor execution, and lack of monitoring and maintenance after initial construction as a result of underfunding or cost-cutting because regulatory oversight is limited."

Other financial incentives in the development realm also reward low-cost projects rather than high-quality wetland ecosystems or successful wetlands (King 1991). Costs are higher for smaller projects and for detailed grading work typically needed to emulate a natural system (King 1991). Associated development projects often require fill material, creating an impetus for over-excavated designs with greater slope and depth than the natural systems being mitigated. Thus the bias is towards creating larger wetlands in the form of ponds rather than the more complex natural systems that are being eliminated for development (Kentula et al. 1992a, King and Bohlen 1994). Furthermore, wetland **≤mitigation≥** projects may double as stormwater detention basins. In such cases, emulation of wetland topography with gradually sloped emergent zones above ponding elevation necessitates expansion of the basins beyond the acreage needed for stormwater purposes alone to provide equivalent stormwater storage volume. To avoid this loss of development acreage, designers often disregard environmental design issues and propose steep-sided open water bodies at the expense of functional wetland replacement (Gannon, pers. comm.).

TECHNOLOGICAL ISSUES

Successful wetland creation and major restoration projects still involve a great deal of uncertainty, particularly those that attempt to create or restore difficult wetland types (Kusler and Kentula 1990). Many types of freshwater wetlands that are slated for development are difficult or perhaps impossible to reproduce (Dahl and Johnson 1991, Kentula et al. 1992b). Bogs or fens, for instance, require hundreds or even thousands of years to mature. Soil moisture regimes and organic material accumulation also make systems such as deepwater cypress, tupelo, white cedar, or bay swamp extremely difficult to create or restore (Clewell 1990). Even "simple" ecosystems, such as marshes, have feedback loops and complex, interdependent interactions that are not fully understood (Mitsch and Gosselink 1993, Kusler and Kentula 1990). In a given permitting scenario, a decisionmaker faced with proposed wetland impacts must decide whether a functional equivalent of the wetland that will be eliminated by the permitted activity can be successfully created. Given the uncertain technology of **≤mitigation≥**, regulators sometimes face difficult decisions on what is too questionable, often in the face of substantial pressure to permit the activity.

≤Mitigation≥ activities for forested and shrub wetlands typically result in out-of-kind creation because of the difficulty, expense, and uncertainty associated with creating such wetland systems (Kentula et al. 1992a, Bohlen and King 1994). Some forested wetlands represent advanced successional stages, and perhaps the most successful replacement efforts for these systems to-date have attempted to relocate system components intact, which has required large up-front financial expenditures (Gannon, pers. comm.). These efforts have been few in number. In a significant percentage of cases, the verdict is not yet in because of the decades-long time frames minimally required for the functional establishment of these mature systems. Efforts thus far have resulted in early successional ecosystems with the potential to develop toward the emulated wetlands over significant time spans. In some cases it may be possible to shorten successional time frames with intervention, such as planting of shade-dependent species once a canopy is developed. Certain forested wetlands are easier to construct than others; Massachusetts has been creating red maple (Acer rubrum) forested wetlands for some time

with apparent structural success (Dobberteen and Nickerson 1991). This success is probably due to the early successional nature of red maple-dominated wetlands.

≤**Mitigation**≥ or restoration of coastal habitats requires careful understanding of physical processes, ecology, and hydrology (Lewis 1994). Restoration of diked marshes requires re-establishment of tidal patterns. However, removing dikes or plugging ditches does not necessarily lead to the return of marsh vegetation (Buchsbaum 1994, Mitsch and Gosselink 1993). Diked areas may have subsided or eroded, and may become permanently flooded or remain unflooded. Establishing substrate and plantings at precisely suited elevations relative to tidal regime appears to be the most important and most challenging factor for coastal ≤**mitigation**≥ or restoration success (Broome 1990, Lewis 1990). Also very important but often technically challenging are buffering wave energy and providing adequate drainage through gradual sloping and sufficient tidal connections.

MEASURES OF SUCCESS

Scientists agree that successful ≤**mitigation**≥ is determined by the ability of a created or restored wetland to provide the biological, hydrological, and biogeochemical functions of the original wetland or a natural reference wetland (Erwin 1990a, Erwin 1990b, Kusler and Kentula 1990, Mitsch and Gosselink 1993, IWR 1994). The following characteristics can be used to judge success based on comparison to the emulated system:

- Landscape position and contour design emulating that of the affected wetland or a chosen reference system. Successful wetland creation or restoration is often determined by such basic structural considerations (Erwin 1990a).

- A self-perpetuating hydroperiod similar to that of the emulated wetland. The major determinant of success is the presence of a self-perpetuating oscillating hydrologic regime in the created or restored wetland (Niering 1990).Achieving a self-perpetuating hydroperiod in a created system requires an understanding of the geohydrology which causes the reduced conditions in which wetland species thrive (D'Avanzo 1990).An appropriate regime should generate conditions such as those described in the 1987 Corps Delineation Manual (USACOE 1987). Colonization by wetland plants and use of the system by wetland fauna are gross indicators of an appropriate hydroperiod.

- Successful colonization and dominance of wetland plant species similar to the emulated wetland.Vegetation characteristics that can be measured include below- and above-ground biomass, plant density, and number of reproductive stalks. Metrics of success can vary. The Corps requires that 80 percent of a created marsh area be covered with grasses after three years (Erwin 1990b). The state of Massachusetts requires that a created wetland have a 75% cover of indigenous hydrophytes within two growing seasons (Jarman et al. 1991). Outcompetition by upland species, decreasing diversity, invasion of exotic species, or lack of vegetative colonization may be indicators of the need to alter the design of the system or perform selective maintenance, or of system failure.

- Chemical and physical properties characteristic of wetlands soils and similar to the emulated wetland. The 1987 Corps Delineation Manual (USACOE 1987) can be used as a guideline to determine whether the soils in the constructed or restored area display

wetland characteristics. Nitrogen, phosphorus, and organic matter levels and primary productivity should increase with the age of the created site. Nitrogen and phosphorus should reach reference wetland concentrations in 15 - 30 years (D'Avanzo 1990, Craft et al. 1988).

- Diversity, density, and biomass of animal species similar to the emulated wetland. Monitoring for certain indicator species is a common method used to evaluate this characteristic (Weller 1990, Croonquist and Brooks 1991). Use of a wetland habitat value model, habitat assessment procedure, or diversity index is a method recommended by the Corps to determine similarities between the created or restored system and a natural wetland (IWR 1994). An assessment of how biotic communities develop and interact both within the created/restored wetland and between it and the surrounding landscape is more indicative of success than is an assessment of individual indicator species.

All of the above criteria for success are interdependent; a failure in one, particularly hydroperiod, can lead to a failure in others over time. It can be seen from the bullets above that the essential, requisite conditions used to identify a natural wetland (appropriate hydrology, hydrophytes, and hydric soils) can also be used to determine whether the created/restored area functions as a wetland.

External forces other than hydrologic factors can bear on the success of a ≤**mitigation**≥ project. If water quality upstream is poor or incoming runoff or ground water movement is polluted, particularly with toxic compounds, pre-treatment of these sources may be necessary for successful establishment of a ≤**mitigation**≥ wetland. Upland buffers (see Improving the Likelihood of Successful ≤**Mitigation**≥ below) and protective measures such as structural and management best management practices (BMPs) , in the contributing watershed protect the wetland and facilitate its establishment. Many wetland-dependent animal species require upland habitat adjacent to wetlands for part of their life cycle as well. Upland buffers can thus facilitate development of a more diverse wetland ecosystem.

COMMON ≤MITIGATION≥ PITFALLS

Some of the most common immediate reasons for ≤**mitigation**≥/restoration efforts to fall short of success or to be set back include:

- Inability to accurately estimate or lack of awareness of the following site features during planning
  - hydroperiod
  - water depth
  - water supply
  - substrate
  - nutrient levels
  - toxic compounds,
- Technical aspects of design are unsound,
- The project is not constructed as planned,
- Contingencies not adequately dealt with:
  - exotic species invasion
  - grazing of plantings

- catastrophic events (floods, storms, droughts)
- human impacts (mowing, ditching, off-road vehicles etc.)

- Insufficient follow-through:
  - inadequate monitoring,
  - t maintenance is ignored.

(Kusler and Kentula 1990, Mitsch and Gosselink 1993, McKinstry and Anderson 1993):

IMPROVING THE LIKELIHOOD OF SUCCESSFUL ≤MITIGATION≥

Permit-related failure of ≤**mitigation**≥ projects can be reduced by incorporating the following requirements into a regulatory program (Josselyn et al. 1990):

- Permit applicants should provide a sufficiently thorough habitat evaluation of the impact site prior to destruction to allow useful subsequent comparison of the ≤**mitigation**≥ wetland. Evaluation level of detail should be flexible and predicated on system complexity and difficulty of replacement as determined by initial site surveillance. Evaluations should address the following:
  - landscape position and landscape-related functions
  - topographic information
  - soils assessment
  - surficial geology
  - vegetation
  - fixed point panoramic photographs
  - rainfall and water level data
  - wildlife utilization
  - fish and macroinvertebrate data (Erwin 1990b).

The permit application must include design objectives, detailed design drawings, and targeted functions and values.

Use of appropriate substrate is critical in ensuring soil conditions and hydrology that emulate those of reference wetlands. Sand, for instance, is often inappropriately used as substrate. Too much sand will cause the wetland to be leakier than a natural system. Lower organic matter, and as a result, lower soil nitrogen and phosphorus levels, than in a natural system are common (D'Avanzo 1990). Applicants should be encouraged or required to transfer organic or other surface substrate from affected wetlands to ≤**mitigation**≥ sites. If organic material from a site other than the wetland affected by the permitted activity is to be used for substrate, the applicant should be required to identify the source of material and apparent floristic composition. Adequate soil rooting volume above hardpan important for successful restoration of forested wetlands (Clewell 1990).

Applicants should be required to provide a management program and long-term maintenance provisions for created wetlands, including a maintenance schedule for eradication of undesirable species; a schedule for and content of reporting; identification of a monitoring and maintenance contractor; identification of the responsible entity for ≤**mitigation**≥ areas; contingency plans should ≤**mitigation**≥ fail; demonstration of responsible entity's financial

capability; details on performance bonds or other financial instruments if appropriate; an instrument establishing homeowners associations' or other responsible entity's obligations; and necessary zoning protection steps. Permits should in turn formalize all such information.

The ≤**mitigation**≥ site should be constructed prior to or concurrently with the permitted project to reduce non-compliance and to facilitate use in the created wetland of materials from the wetland affected by the permitted development activity.

Maintenance activity, largely removal of undesirable vegetation, on a frequent basis following construction, and less often as desirable species become established, is essential for achieving the desired ecological communities within a reasonable time frame.

The developer should conduct post-creation monitoring assessments once construction is completed, on a more frequent basis initially, then at larger regular intervals (at least annually) for a number of years (typically 5 to 15), depending on the system type, to document progress or the need for remedial action.

≤**Mitigation**≥ sites frequently require buffering from adjacent human activities and sometimes from herbivores (Clewell 1990). ≤**Mitigation**≥ design should include buffering elements suited to adjacent land use activities. Such elements include a simple setback distance of vegetated area; a buffer of shrub/tree plantings on the perimeter of the wetland or setback area; informational signs at intervals around wetland perimeter; and fencing. Issued permits should include, as applicable, conditions to inform future lot owners of restrictions, such as requirements for deed restrictions on adjacent development lots or lots extending into ≤**mitigation**≥ areas; full notification to potential purchasers; and transfer of responsibilities to subsequent owners.

Successful establishment of a wetland takes time. Thus, compliance with permit conditions typically requires long-term monitoring. Natural wetlands have evolved over tens, hundreds, or thousands of years. While long-term trends in the structural establishment of herbaceous wetlands may become apparent within as little as two to three years, it may take 15 years for a carefully created forested wetland to begin to achieve canopy closure, and to begin to look and function like a natural forested system, and decades before it approximates the structure and function of the habitat that it was intended to duplicate (Craft et al. 1988, D'Avanzo 1990).

Return to Wetlands Menu Page

Water Resource Page	Home	GIS-AGNPS	References
	Glossary	Case Studies	NCSU Water Quality Group
	NPS Library		
Educational Component		Copyright	Comments

[Go Back To Results] [Previous Doc] [Next Doc]

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
100 ALABAMA STREET, S.W.
ATLANTA, GEORGIA 30303-3104

APR 3 0 1998

Colonel Gary W. Wright
District Engineer
ATTN: Mr. Moody Culpepper
U.S. Army Corps of Engineers
2101 North Frontage Road
Vicksburg, MS 39180-5191

SUBJECT Supplement 1 to the Final Environmental Impact Statement (EIS) Mississippi River and Tributaries (MRT) Mainline Levees Enlargement and Seepage Control, Cape Girardeau, Missouri, to Head of Passes, Louisiana

Dear Colonel Wright:

Pursuant to Section 309 of the Clean Air Act and Section 102 (2)(C) of the National Environmental Policy Act (NEPA), EPA, Region 4 has reviewed the subject document, a generic evaluation of the anticipated impacts of this comprehensive project Specifically, there will be 128 separate structural elements including enlarged levees, floodwalls, new berms, and various control structures (seepage wells) along a 1,600 mile reach encompassing parts of seven states. No new levees are currently proposed under this authorization; rather, the project's purpose is to raise and stabilize portions of the present levee system as a means of protecting against damages arising for the design flood. However, given the scope/duration of this endeavor, additional levee construction/work items (Tiptonville-Obion Levee) are likely to become part of the system during the construction period, ca. 25 years. As any new work items are incorporated into the project, specific NEPA documents will be prepared to evaluate their individual impacts together with how they relate to the whole project.

The actual structural footprint is relatively small, but the "affects area" encompasses all lands riverside of the landside toe of the Mississippi River levees (both sides), lands between adjacent bluffs where levees are absent, and an area 3,000 feet landside of the landside toe on both sides. This corridor comprises about 2.6 million acres and varies between 1 and 15 miles wide. The land use in the project area is primarily bottomland hardwood forests and agricultural lands interspersed with enlarging urban areas.

Three major structural plans were compared/contrasted to the no-action alternative. The preferred alternative, Number 4 (Avoid and Minimize) meets project objectives as well as reducing environmental costs through the use of some interesting design elements and construction techniques. This notwithstanding, the enlarged flood control structures, attendant borrow areas, and construction staging sites are physically going to displace some important

Exhibit 2

environmental resources. Namely, approximately 7,328 acres of various wetland/wildlife habitats (Table 3-2) will be impacted by the 22 million cubic yards of fill necessary for constructing these structural features. To compensate for these unavoidable losses, 5863 acres of frequently flooded agricultural lands are proposed to be reforested as mitigation. Additionally, an estimated 3,041 acres of borrow areas would be reforested in the Vicksburg and Memphis Districts. Approximately 6,727 acres of project borrow areas will incorporate aquatic design features to improve habitat values.

EPA, Region 4 is sensitive to the societal/economic losses which would occur in the event of a massive levee failure. Effects of seepage are less dramatic, but also pose significant problems to agriculture, real estate, and health/safety. The need to provide additional protection to the Basin was one of the stated planning tenets to which we agreed as a cooperating agency on this proposal. In fact, this cooperative status will continue beyond the initial NEPA process as we continue to work with the involved principals to avoid unnecessary procedural delays arising for environmental considerations. With this in mind Alternative 4 is an excellent initial effort to achieve the project's flood control objectives in an environmentally responsible manner. However, there are a number of important procedural/technical items which remain to be resolved as planning for actual implementation of work items goes forward. In summary, the major issues for this discussion are:

The method(s) used to determine the extent of project impacts. Namely, the actual footprint of structural features and the functional changes to the environment which will be manifested as the upgrades subsequently occur. These include land cover/land use mapping specifics together with the techniques used to ascertain functional losses, i.e., hydrogeomorphic procedures versus other assessment techniques.

The fundamental aspects of mitigation will need to be examined and resolution begun during the scheduled interagency meeting on this project in June. Discussion items will include: the process associated with acquiring future mitigation properties (specific location and precise extent), how/if these areas will be permanently secured, who will be responsible for the maintenance/management of these tracts, what will be accomplished there to achieve no-net-loss from the project, determining a means to assess whether these parcels are actually able to meet their anticipated compensation goals (geographically appropriate, big enough, etc.?), codified means to make changes to the plan when the inevitable future exigencies arise, an exact delineation of how this mitigation meshes with, but is not confused with mitigation already assigned to other projects in the LMV, etc..

There a number of important issues associated with development both within and upslope of the project area which are not under the statutory control of the Corps of Engineers or the other federal principals. Nonetheless, they have the potential to dramatically affect the project's flood control objectives. We suggest that as this project proceeds routine communication be maintained with local entities having this land use authority. There needs to be an understanding that all land use decisions must need to take into account their impact on the flow line predictions made for this action. This and additional issues associated with this proposal are examined in the enclosed specific comments.

On the basis of our review a rating of EC-2 was assigned. That is,. we have some environmental concerns regarding some of the assumptions/procedures use in determining overall project impacts/unavoidable losses. These matter can be resolved with additional information/exposition in the final document. If you wish to discuss any of the issues raised about these comments, Dr. Gerald Miller (404-562-9626) of my staff will serve as initial point of contact.

Sincerely yours,

Heinz Mueller

Heinz J. Mueller, Chief
Office of Environmental Assessment

Enclosure

SPECIFIC COMMENTS:

Since we anticipate that this project will serve as the template for future, similar actions undertaken by the Vicksburg District, more information is needed for us to understand the actual procedures used to prepare the land cover/land use maps. We understand that only a 50% survey (page SEIS 3-28) was used to generate these depictions. While this percentage comprises a large geographic area, there is some concern on our part about underlying accuracy. For example, how does the 50% survey account for the varying range of land cover distributions in the northern versus the southern project area? Was the extensive GIS data which the District has for the batture lands a part of these formulations? The method(s) used to extrapolate land cover distributions in areas not actually surveyed together with ground-truthing techniques should be discussed in the final supplement. Reviewers need to understand the bases for the 50% survey and by extension be able to appreciate the degree of confidence which results for the various mapping categories. This is not just an academic concern on our part, i.e., almost generic land cover classifications (legend categories) were used in the mapping depictions of Appendix 4. As the work items are examined in detail, more ecologically-based discriminations (sub-classes of current classifications) should be developed. This additional work would only be necessary until the worth of the present system was determined or vice versa.

On an areal basis it appears the mitigation for this project will fall somewhat less than a 1:1 replacement ratio. Currently, the 1:1 ratio is generally considered as the lower limit necessary to accomplish functional equivalency. Even allowing for the factor of time as each work item is completed, the acreage of wetlands impacted (7,328) exceeds the acreage of wetlands to be replaced through compensatory mitigation (5,900). As we have discussed, mitigation should achieve no-net-loss, include allowances for complexities and uncertainties of wetland restoration science, and acknowledge the temporal loss of wetland function during the natural successional process. It takes several human life times for a bottomland hardwood forest to develop and function as a mature forest. Unfortunately the seral end points are not always the same. Restored wetland systems are often less diverse, especially in their initial years, than a natural system. For these and other reasons some Corps of Engineers Districts require a larger mitigation ratio for unavoidable losses for these habitat types. This is in keeping with the Corps' "Guidance for Ecosystem Restoration" which seeks as its fundamental goal achievement of no-net-loss.

For the foreseeable future mitigation ratios will remain a matter of discussion among the involved principals. However, resolution of this matter lends itself to the manner of overall project construction. As the work items are staged through time, restoration success on mitigation lands will become more apparent. Techniques to foster same will be perfected and others discarded. The process will evolve and success rates improve. In turn, this should allow both the mitigation process and the underlying functional assessment procedure to be better understood by all parties. At that point we hope the ratio question will become moot.

We are confident that consensus can be reached regarding the extent/location of mitigation lands ultimately necessary to address habitat losses resulting from construction activities. However, we are adamant that these parcels be acquired via fee simple purchase, but wish to

avoid potential and/or unnecessary controversy associated with this position. We understand that significant efforts and/or concessions will have to be made to acquire these lands from willing sellers. Given this restriction, we are prepared to wait a reasonable period while appropriate properties are acquired either in the vicinity of the project area or more remote from same. With this understanding, there should be no concern by project proponents that work items will be delayed for this reason.

Our opposition to easements - permantent or otherwise, is a function of the scope and time line associated with this proposal. Anything other than actual purchase becomes too problematic in terms of long-term management and determining the fundamental issue of whether compensation is actually realized. While some parties have evidenced a preference for sequential easements (ca. 20 year duration), we have not seen similar interest in funding the man-power to manage them appropriately. It has been our experience that when mitigation lands remains in ownership of multiple private landowners versus a state or federal entity problems are almost a certain outcome. Even with the best of initial intentions by all parties, determining exactly what rights are to be retained or given up, viz., from the very restrictive to open-ended land management options, become open to subsequent interpretation. This "interpretation" becomes significantly more troublesome when the properties are sold to parties that were not privy to the original negotiations.

When multiple small tracts are used as mitigation, their numbers become daunting. Just gaining ready access to parcels in order to assess the success of restoration measures can be unacceptably time consuming. Through time, easements often become construed as merely being plots where normal silvicultural practices are carried out. In our opinion, cottonwood rotations do not provide the necessary and/or sufficient functional values to compensate for losses arising conversion of BLH habitat (See Appendix 1, page 1-29). Moreover, associated silvicultural activities, viz., road construction and maintenance, often work at cross purposes to mitigation objectives. Reforestion with selected hardwood species is an acceptable practice, albeit one which takes an extended period to time to manifest appreciable habitat values. We suggest that specifics on forestry practices associated on fee title mitigation lands would be one of the major agenda items for our forthcoming coordination meeting. The Record of Decision on this project should not be completed until this matter is resolved.

In a related matter there needs to be some clarification regarding "using existing Corps project lands" (Appendix 1, page 1-13) as mitigation. From our perspective use of these public lands is questionable. It would only become necessary, if it can be definitively demonstrated that all other venues have been exhausted. Moreover, it must be determined that these same "public" parcels have not already been assigned as mitigation for other, previous federal public/civil works projects. Since the LMV will inevitably come under increased development pressures, use of existing public lands lessens our future opportunities to secure the most functional replacement habitats. In this instance size is deemed to be an important component of function. Some consideration could be given to the up-grading of existing easements to fee title lands; however, more clarification is needed and a case-by-case analysis should be conducted.

Clarification is also needed regarding the statement (Appendix 1, page 1-21) that "The

states, through the levee boards, currently have easements on project area lands." If these properties are currently serving as mitigation credit(s) for losses occasioned by previous flood control projects, we have some pronounced reservations to "upgrading" them to a fee simple status. This matter will need to be discussed further.

It was noted (Appendix 1, page 1-26) that reforestation of frequently flooded agricultural lands will be done via 70 percent red oak seedlings. We acknowledge that production of hard mast is important to overwintering waterfowl. However, reforestation should be designed for the replacement of overall wetland functions based on reference wetlands, rather than reforestation for waterfowl benefits only. Functional replacement should include restoration with a suite of plant species, versus management for limited species having recreational interest. Restoration to achieve water quality benefits associated with wetlands should serve as the benchmark in this regard.

Improvident future residential, commercial, and infrastructure development within the project area together with similar activities upslope of the Mississippi River floodplain are likely to have a significant effect on the project's long-term effectiveness. The former effects are obvious, i.e., diminished floodplain capacity. The latter will exacerbate flood control via increased efficiencies of storm water moving from this development into the floodplain. From our perspective it will be necessary to monitor these activities routinely to determine their impact on the project's flow line estimates. If there are fundamental changes in the hydrograph, there will be both societal/economic ramifications together with environmental problems (deterioration of function values on mitigation properties). Because this matter is so important, it will need to be on the agenda for the forthcoming interagency meeting on this project.

Mitigation in Summary:

Acquisition of large tracts of land preferably contiguous/adjacent to existing preserves, national forests, refuges, etc. at which management in already in place.

Existing management plans, specifically those dealing with enhancing migratory waterfowl, are an excellent means to focus initial acquitment activities, but are not necessarily a planning endpoint.

A comprehensive plan for how mitigation will proceed on the first group of work items should be an immediate planning objective.

A number of matters will need to be resolved on an individual basis during subsequent interagency coordination, e.g., mitigation for farmed wetland habitat. Currently, acreage which will be altered and/or actually become part of the levee footprint has been assigned a value less than 1.

We understand that the process of securing mitigation parcels will not be easy. Lags will sometimes occur between completing construction of separable work items and purchase of mitigation tracts. While not ideal, it will happen. Further, in order to obtain the most

ecologically valuable mitigation tracts from willing sellers, it may be necessary for the District to acquire properties remote from particular work item(s). Once again, this would not be a planning goal, but may be necessary. Hence, since actual construction of individual work items will take varying periods of time, we are agreeable to waiting until the best environmental "deal" can be secured mitigation-wise. This should not create a problem for any of the parties as we understand that only after design of a particular work item is essentially finished will its exact impacts be known.

Subsequent environmental assessments prepared on the various work items will be able to provide the details currently unknown, e.g., location/disposition of hazardous materials.

United States Department of the Interior

OFFICE OF THE SECRETARY
OFFICE OF ENVIRONMENTAL POLICY AND COMPLIANCE
Richard B. Russell Federal Building
75 Spring Street, S.W.
Atlanta, Georgia 30303

April 20, 1998

ER-98/138

Commander,
U. S. Army Engineer District, Vicksburg
ATTN: CEMVK-PD-F
4155 Clay Street
Vicksburg, Mississippi 39180-3435

Dear Sir:

The Department of the Interior has reviewed the Draft Project Report and Draft Supplemental Environmental Impact Statement (DEIS) for the "Mississippi River and Tributaries Project, Mississippi River Mainline Levees Enlargement and Seepage Control, Cape Girardeau, Missouri, to Head of Passes, Louisiana", as requested.

General Comments

The draft supplemental statement adequately describes impacts to bottomland hardwood forests, other wetlands, upland forests, winter waterfowl foraging habitat, Federal threatened and endangered species, and other fish and wildlife resources. The Corps of Engineers has recommended implementation of the least environnentally damaging alternative (Plan 4), the "avoid and minimize" plan. Minimization measures include (a) relocation of borrow areas from bottomland hardwood forests, (b) utilization of existing berm material for levee enlargement and use of dredged river material for new berms, and (c) relief wells or slurry trenches to control seepage instead of new berms. Adequate compensation of unavoidable adverse impacts to wetlands, wildlife resources, and waterfowl habitat will be provided by the fee title purchase and reforestation of 5,863 acres of frequently flooded agricultural lands. Plan 4 will also provide aquatic benefits by creating 6,727 acres of borrow pits with environmental features including shallow and deep water areas, irregular shorelines, and constructed islands. Another environmental design feature of the selected plan, which the Corps is not including as mitigation, is the reforestation of 3,041 acres of newly constructed borrow areas for the enhancement of fish, wildlife, and wetland values. We recommend that the Corps make a specific commitment to work with the Fish and Wildlife Service (Service), and all the affected state fish and wildlife agencies to develop mitigation projects in a timely manner.

Specific Comments

Project Report-Page 51 Para. 105: Several reasons are stated why landside borrow is unacceptable. However, landside areas are virtually all cropland and should be obtained whenever possible to avoid impacts to riverside bottomland hardwoods.

Project Report-Page 53 Para. 112, Table 6: This table is confusing. For example, it is unclear what habitat types and acres the column "Bottom-land Hardwood Wetland and Non-wetland Acres Affected" represents. The headings for the columns in Table 6 should specifically state what habitat types (farmed wetlands, bottom-land hardwood wetlands, upland forests, etc.) would be affected by the two alternatives selected for detailed analysis.

SEIS, Page 3-3, Para. 3.2: - The word "naturally" should be deleted from the last sentence of this paragraph; waterfowl use flooded cropland, regardless of the flood source. That sentence should also be revised to indicate that remaining bottomland hardwoods constitute important habitat which migrating and resident waterfowl continue to use.

SEIS, Page 3 - 1 0, Para. 3.6. 1: - Records of pallid sturgeon should be provided for all five states within the project area to adequately describe the distribution of that endangered species. That paragraph should also reflect that the harsh sampling environment and relatively low number of Mississippi River main channel fishery studies may have contributed to the low number of sturgeon records. (This comment also applies to Volume 3, Appendix 1 1, page 11-5, paragraphs 12 through 14.)

EIS, Page 4-26, third Para.: - The SEIS documents the loss of bottomland hardwood habitat within the Mississippi Alluvial Valley. The loss of aquatic habitats and the reduced productivity of those remaining habitats due to isolation from Mississippi River overflow should also be mentioned.

Appendix 1, Mitigation-Page I- 1 5, Table 1-4: The species of duck used in the HEP, the wood duck, should be added to the duck column in the table.

Appendix 1, Mitigation-Page 1-17, Para. 42: As recommended in the Service's Waterfowl Analysis, Appendix 9, reforestation of cleared agricultural lands should include the restoration of hydrology to obtain maximum waterfowl foraging gains.

Appendix 1, Page 1-21 , Para. 48: - This paragraph should acknowledge that the Service does not recommend reforestation of

existing public lands as a mitigation measure when such lands are likely to be reforested within the next 10 to 15 years under the future without-mitigation scenario. The fourth sentence referencing the Atchafalaya Basin lands acquired for "compensation" should be revised to read as follows:

> Potential restoration areas could include cleared lands acquired in excess of those required to fulfill the public access feature of the Atchafalaya Basin Multi-Purpose Plan, or cleared lands near the Old River Control Structure, depending on why those lands were acquired.

Appendix 1, Page 1-22, Para. 50: The fourth sentence of this paragraph should be revised to indicate that it may be very difficult to manage and monitor existing forested lands to achieve adequate mitigation. While the Service recognizes that fee-title acquisition of mitigation lands is expensive and that holding down mitigation costs is important, we do not agree that those criteria should be the primary factors used to determine mitigation priorities; therefore, the fifth sentence should be revised accordingly. The last sentence of this paragraph should be revised to indicate that, although acquisition and management of privately owned bottomland hardwoods to mitigate project losses is a low mitigation priority, this mitigation scenario should not be eliminated from consideration.

Appendix 1, Mitigation-Page 1-26, Para. 62: Part of this paragraph is apparently missing, since there is no mention of the Vicksburg District or why Alternative 2 is carried forward.

Appendix 1, Pages 1-29 through 1-3 1 , Table 1-9. - The total annual operation and maintenance cost for the mitigation areas reported in this table is less than $7 per acre. In 1994, the Lafayette Field Office used information from the Louisiana Department of Wildlife and Fisheries and from other Service offices to calculate an approximate mitigation operation and maintenance cost of $1 0 per acre. The Service, therefore, recommends that the annual operation and maintenance costs in Table 1-9 be reexamined. Any revisions to the mitigation cost estimates should also be reflected in Volume 2, Appendix 6, Attachment B, Cost Estimates (MCACES).

Appendix 1, Mitigation-Page 1-33, Para. 67: In addition to acquiring large mitigation tracts for reforestation, the Service also recommends that compensation efforts focus on reforestation of areas within the Bird Conservation Zones identified by private, State, and Federal agencies as necessary for the perpetuation of forest bird populations, particularly migratory species. A map of

these Bird Conservation Areas is provided in the Service's planning aid report which will be included in the final levee enlargement SEIS.

Appendix I. Mitigation-Page 1-34, Para. 68: For successful reforestation, we recommend an ultimate survival rate of 70 percent of the planted trees.

Appendix 2. U.S. Fish and Wildlife Service Planning Aid Report: The Service's report will be provided for inclusion in the final SEIS.

Appendix 6. Engineering-Page 6-84, Para. 97: Since the closure of the New Madrid floodway levee is mentioned elsewhere in the SEIS, it is suggested that the final SEIS state that this closure is being addressed under a separate NEPA document for the St. Johns/New Madrid Project.

Appendix 7. Page 7-35, Para. 74: - This paragraph should state that reduced flooding due to the Mississippi River and Tributaries project was also a contributing factor in the conversion of bottomland hardwood forest.

Appendix 9. Waterfowl-Page 23: The Service reiterates its recommendation that compensation for unavoidable losses of winter waterfowl foraging habitat include the restoration of the water regime on drained agricultural lands.

Thank you for the opportunity to provide comments. Should there be comments related to fish and wildlife resources, please call Bruce Bell, Fish and Wildlife Service (FWS) at 404/679-7089.

Sincerely,

James H. Lee

James H. Lee
Regional Environmental Officer

United States Department of the Interior

NATIONAL PARK SERVICE
Long Distance Trails Group Office - Santa Fe
P.O. Box 728
Santa Fe, New Mexico 87504-0728

IN REPLY REFER TO:

L7619(TRTE)

April 23, 1998

Commander
U.S. Army Engineer District, Vicksburg
ATTN: CEMVK-PD-F
4155 Clay Street
Vicksburg, Mississippi 39180-3435

Dear Sir:

We appreciate the opportunity to review the Environmental Impact Statement for the Mississippi River Mainline Levees Enlargement and Seepage Control.

An Interagency Agreement (No. 1443IA125097007, copy enclosed) between the National Park Service and the U.S. Army Corps of Engineers, was completed and signed in 1997. The agreement provides for cooperative efforts to protect the resources of the Trail of Tears National Historic Trail and provide for public use and interpretation of the trail. The Mississippi River between the mouth of the Ohio River and the mouth of the Arkansas River is part of the designated water route of the trail.

In accordance with this agreement, and in implementation of projects along the river, we would request that the Corps take positive steps to identify potential cultural resources related to the Trail of Tears and opportunities for the public to retrace the trail route and learn about the history of the trail. Such actions could include identification of landscapes along the route that have sufficient integrity to evoke feelings of what it would have been like in the 1830s, of opportunities to follow the river by boat or walk along trails paralleling the river, and of locations that can be accessed by land or water where interpretive exhibits or other interpretive media could be placed and where the trail route can be marked with the official trail logo. Implementation of any public use projects could be undertaken through partnerships with our office, tribes, and trail groups/historical organizations in communities along the river.

We would recommend consultation with a knowledgeable trail historian to identify any locations where those traveling the water route of the trail may have stopped along the river.

Exhibit 4

Additionally, the land route of the trail crosses the river at Trail of Tears State Park just above Cape Girardeau, Missouri.

Thank you for consideration of these comments. If you have any questions, please write or call John Conoboy at 505-988-6888, or contact us by email at lodi_administration@nps.gov.

Sincerely,

David M. Gaines
Superintendent

Enclosure

INTERAGENCY AGREEMENT
BETWEEN THE
U.S. DEPARTMENT OF THE INTERIOR, NATIONAL PARK SERVICE
AND THE U.S. ARMY CORPS OF ENGINEERS
CONCERNING THE TRAIL OF TEARS NATIONAL HISTORIC TRAIL

This Interagency Agreement is entered into by and between the U.S. Department of the Interior, National Park Service ("Park Service"), and the U.S. Army Corps of Engineers ("Corps").

ARTICLE I. Authority

This Interagency Agreement is developed under the following authority:

> The National Trails System Act (16 USC 1241, et seq.), as amended by Public Law 100-192 (101 Stat. 1309, 16 USC 1244 (a) (16) (A).

ARTICLE II. Purpose

The purpose of this Interagency Agreement is to provide the basis for cooperation between the Park Service and the Corps to implement the Comprehensive Management and Use Plan for the Trail of Tears National Historic Trail on Corps lands and waters.

ARTICLE III. Background

Public Law 100-192 (101 Stat. 1309, 16 USC 1244 (a) (16) (A), amended the National Trails System Act ("the Act") to establish the Trail of Tears National Historic Trail ("the Trail"). The Act places responsibility for administering the Trail with the Secretary of the Interior ("Secretary"). Only Federal lands are to be administered as initial protection components of the Trail; but the Act authorizes the Secretary to encourage and assist State, local, or private entities in establishing, administering, and protecting those segments of the Trail which cross nonfederally owned lands. On Federal lands, the Secretary shall consult with the heads of the affected Federal agencies. Development and management of each Trail segment shall harmonize with and complement established multiple-use plans for specific areas to insure continued maximum benefits form the land. The location and width of the trail rights-of-ways (corridors) across Federal lands under the jurisdiction of another Federal agency shall be by agreement. Where the Trail crosses lands administered by Federal agencies, markers shall be erected at appropriate points and maintained by the Federal agency administering the Trail according to standards set by the Secretary. Pursuant to the Act, the Comprehensive Management and Use Plan for the Trail outlines objectives and practices to be observed in the management of the Trail and identifies significant potential Trail components, procedures for nonfederal certification, and the process to mark the Trail. The U. S. Army Corps of Engineers was consulted in the preparation and approval of the Comprehensive Management and

Use Plan.

ARTICLE IV. Responsibilities

The Corps and the Park Service mutually desire that the Trail of Tears National Historic Trail across Corps lands and waters be appropriately marked, administered, and managed so as to accomplish the purpose of the National Trails System Act. Accordingly, the Corps and the Park Service agree to carry out the following responsibilities for this purpose:

A. The National Park Service and the U.S. Army Corps of Engineers mutually agree to:

1. Establish individual points of contact within each agency for Trail administration activities.

2. Adopt the Trail of Tears National Historic Trail Comprehensive Management and Use Plan, dated June 11, 1992.

3. Keep each other informed and consult periodically on management problems pertaining to the Trail, including consultation with the Trail of Tears National Historic Trail Advisory Council.

4. Subject to the availability of funds and personnel, provide assistance at the request of either party for the planning and development of facilities on Corps lands, completion of environmental or other compliance requirements, and the administration of the portion of the Trail that crosses Corps lands and waters.

B. The Park Service agrees to:

1. Provide the Corps with a set of Trail markers in accordance with the marking program established in the Comprehensive Management and Use Plan and authorize specific use of the logo for appropriate purposes.

2. Help disseminate information about Trail sites and segments located on Corps lands and waters.

3. Upon request and as funds permit, provide technical assistance for planning access, protection, facilities, interpretation, and other aspects of management of the Trail.

4. Support efforts that promote the whole Trail as a single, integrated system.

C. The Corps agrees to:

1. Mark the Trail of Tears National Historic Trail with markers furnished or approved by the National Park Service according to the marking process identified in the Comprehensive Management and Use Plan for the Trail and in accordance with the standards established by the Park Service.

2. Maintain the Trail markers erected under item C.1.

3. Consult with the Park Service and seek its review of plans affecting the Trail of Tears National Historic Trail.

4. Manage, protect, and maintain Trails sites and segments on lands and waters the Corps administers as appropriate and feasible and in accordance with the purpose of the Trail and the Comprehensive Management and Use Plan.

5. Develop, operate, and maintain, public access, interpretive and recreational opportunities as the Corps determines appropriate and feasible in accordance with the Comprehensive Management and Use Plan and in consideration of relevant Federal laws and policies; and recommend, as appropriate and feasible, Corps facilities to house NPS interpretive media or to receive NPS technical assistance.

6. Assist the Park Service, within existing authorities, by helping to advance Trail objectives on non-Corps lands.

7. Promulgate such rules and regulations as may be necessary for proper administration and protection of Corps managed sites and segments.

8. Seek cooperative agreements with owners of those non-federal lands within the Trail corridor and within authorized Corps boundaries where necessary to ensure adequate protection or public access.

9. Consider acquiring necessary interests in those lands identified in item C.8. above where cooperative agreements with non-federal landowners cannot be consummated.

10. Curate, store, document, and conserve any Trail related artifacts occurring on Corps lands according to 36 CFR 79 entitled Curation of Federally-Owned and Administered Archeological Collections and 43 CFR Part 10 entitled Native American Graves Protection and Repatriation Act.

ARTICLE V. Limitation

Nothing in this Interagency Agreement will be construed as limiting or affecting in any way the

authority or legal responsibilities of the Service or Corps to perform beyond the respective authority of each or to require either party to expend funds or services in excess of those available or authorized for expenditure.

ARTICLE VI. Term of Agreement

This Interagency Agreement will exist for a period of no longer than five years, at which time all parties to the agreement will evaluate its benefits and determine if a new agreement should be negotiated. It may be terminated or revised upon 60 days advance written notice given by one of the parties to the other, or it may be terminated earlier by mutual consent of both parties.

Amendments to this agreement may be proposed by either party and shall become effective upon written approval by both parties.

ARTICLE VII. Execution

In witness whereof, the parties hereto have executed this Interagency Agreement as of the last date written below:

for Regional Director
Intermountain Region
National Park Service

9/1/97
Date

Assistant Secretary
of the Army (Civil Works)

25 JUN 97
Date

Agreement Officer
Southwest Support Office
National Park Service

9/10/97
Date

UNITED STATES DEPARTMENT OF COMMERCE
Office of the Under Secretary for
Oceans and Atmosphere
Washington, D.C. 20230

April 1, 1998

Commander
U.S. Army Engineer District, Vicksburg
Attention: CEMVK-PD-F
4155 Clay Street
Vicksburg, MI 39180-3435

To Whom IT May Concern:

Enclosed are additional comments on the Draft Environmental Impact Statement for Mississippi River and Tributaries Project, Mississippi River Mainline Levees, Louisiana. We hope our comments will assist you. Thank you for giving us an opportunity to review this document.

Sincerely,

Susan Fruchter

Susan B. Fruchter
Acting NEPA Coordinator

Enclosure

Exhibit 5

MEMORANDUM FOR: Susan B. Fruchter
Acting NEPA Coordinator

FROM: Charles W. Challstrom
Acting Director, National Geodetic Survey

SUBJECT: DEIS-9803-02-Mississippi River and Tributaries Project, Mississippi River Mainline Levees, Lousiana

The subject statement has been reviewed within the areas of the National Geodetic Survey's (NGS) responsibility and expertise and in terms of the impact of the proposed actions on NGS activities and projects.

All available geodetic control information about horizontal and vertical geodetic control monuments in the subject area is contained on the NGS home page at the following Internet World Wide Web address: http://www.ngs.noaa.gov. After entering the NGS home page, please access the topic "Products and Services" and then access the menu item "Data Sheet." This menu item will allow you to directly access geodetic control monument information from the NGS data base for the subject area project. This information should be reviewed for identifying the location and designation of any geodetic control monuments that may be affected by the proposed project.

If there are any planned activities which will disturb or destroy these monuments, NGS requires not less than 90 days' notification in advance of such activities in order to plan for their relocation. NGS recommends that funding for this project includes the cost of any relocation(s) required.

For further information about these monuments, please contact Rick Yorczyk; SSMC3 8613, NOAA, N/NGS; 1315 East West Highway; Silver Spring, Maryland 20910; telephone: 301-713-3230 x142; fax: 301-713-4175.

This major project involves the construction and maintenance of levees and flood walls, floodways and channel improvement in the Mississippi River and Tributaries. NOS charts the lower Mississippi and is considering chart coverage of the remainder of the river in digital format. Controlling depths in maintained channels is particularly important. Therefore we will require as built plans from the Corps of Engineers concerning this work.

For further information about these charting activities, please contact Howard Danley; NOAA, NOS, Office of Coast survey, N/CS28; SSMC3 7458; 1315 East West Highway; Silver Spring, Maryland 20910; telephone: (301)713-2732 x105.

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
9721 Executive Center Drive N.
St. Petersburg, Florida 33702

March 17, 1998

Colonel Gary W. Wright
Commander, Army Engineer District, Vicksburg
ATTN: CEMVK-PD-F
4155 Clay Street
Vicksburg, MS 39180-3435

Dear Colonel Wright:

The National Marine Fisheries Service (NMFS) has reviewed the Draft Project Report and Draft Supplemental Environmental Impact Statement (DSEIS) for the Mississippi River Mainline Levee Enlargement and Seepage Control. These documents were transmitted by your February 27, 1998, letter.

The design of the plan recommended in the DSEIS involves 263 miles of levee enlargement and 131.5 miles of berms, relief wells, and slurry trench cutoffs to provide protection from the Project Design Flood. Because the Federal trusteeship responsibilities of the NMFS are largely restricted to living marine resources, we limited our review of the documents to those sections involving activities which would occur in the New Orleans District (NOD). The DSEIS states that within the boundaries of the NOD, 17 acres of forested wetlands would be adversely impacted by construction activities. Furthermore, the document indicates that these impacts would occur at and upstream from New Orleans, and would be restricted to the area between the river and existing flood protection levees. All adverse impacts would be offset by implementation of project mitigation features.

Based on the nature and location of work proposed in the NOD, we do not believe that construction activities would adversely impact marine fishery resources or their habitats. Accordingly, we have no specific comments to offer on the recommended plan. However, we request that the Corps of Engineers continue to coordinate with the NMFS as designs for levee improvements are developed and environmental assessments are prepared. Future consultation, as required under the Fish and Wildlife Coordination Act, will allow us to identify impacts which are presently unforseen and offer appropriate mitigation measures for your consideration.

Thank you for the opportunity to review this DSEIS.

Sincerely,

Andreas Mager, Jr.
Assistant Regional Administrator
Habitat Conservation Division

Exhibit 6

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
P.O. BOX 3929
BATON ROUGE, LOUISIANA 70821-3929

REGION 6

March 11, 1998

IN REPLY REFER TO
Flood Control - DSEIS
(March 1998) for the
Mississippi River and
Tributaries

Commander
U.S. Army Engineer District, Vicksburg
ATTN: CEMVK-PD-F
4155 Clay Street
Vicksburg, Mississippi 39180-3435

Dear Colonel Gary W. Wright:

Thank your for sending a copy of the Draft Supplemental Environmental Impact Statement for the Mississippi River and Tributaries Project, Mississippi River Mainline Levees Enlargement and Seepage Control by letter dated February 27, 1998 for our review and comment.

Our only comment is to continue coordination with State and Local Government units that have transportation facilities that will be affected by the proposed work on and around the Mississippi River levees. It is our understanding that the cost of adjusting affected transportation facilities is generally included/eligible as part of the cost of the flood control project.

Sincerely yours.

William A. Sussmann
Division Administrator

Exhibit 7

State of Louisiana

Department of Environmental Quality

M.J. "MIKE" FOSTER, JR.
GOVERNOR

J. DALE GIVENS
SECRETARY

April 30, 1998

Commander
U.S. Army Engineer District, Vicksburg
ATTN: CEMVK-PD-F
4155 Clay Street
Vicksburg, MS 39180-3435

RE: DRAFT PROJECT REPORT AND DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR THE MISSISSIPPI RIVER AND TRIBUTARIES PROJECT, MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT AND SEEPAGE CONTROL

Dear Commander:

The Louisiana Department of Environmental Quality, Office of Air Quality and Radiation Protection has reviewed the above referenced document and offers comments on General Conformity requirements of LAC:33 III, Chapter 14, Subchapter A, that are applicable to the project.

The applicability determination that must be performed to determine de minimis thresholds in the General Conformity regulation requires that all emissions from the project, both direct and indirect, be calculated. It must be determined that there are no indirect emissions related to the project; or, if indirect emissions will result from the project, U. S. Environmental Protection Agency 's AP-42 calculations must be applied to those emissions. Assumptions that any indirect emissions are negligible does not meet the General Conformity requirements.

The environmental impact statement references open burning and subsequent mitigation action that is a part of the project design, however, there is no indication that emissions from such activity were included in the applicability determination. Emissions from open burning and from project mitigation activity that is "federal activity" (in accordance with the General Conformity regulation) must be included in the applicability determination. This should be addressed and included in the environmental impact statement.

Exhibit 8

If you require assistance or additional information, please contact Ms. Pat Salvaggio at (504) 765-0915.

Sincerely,

Ronald Wascom

for Gus Von Bodungen, P.E.
Assistant Secretary

GVB:PS

c: Bill Wilson, New Orleans Corps of Engineers

State of Louisiana

M.J. "MIKE" FOSTER, JR.
GOVERNOR

JACK C. CALDWELL
SECRETARY

DEPARTMENT OF NATURAL RESOURCES
April 7, 1998

Commander
U. S. Army Engineer District, Vicksburg
ATTN: CEMVK-PD-F
4155 Clay Street
Vicksburg, Mississippi 39180-3435

RE: **C980108**, Coastal Zone Consistency
U. S. Army, Corps of Engineers
Direct Federal Action
To excavate borrow from a 3.5 acre batture site on the right descending bank of the Mississippi River at River Mile 78.5 AHP to provide borrow for the Carrollton Levee Enlargement; mitigation to include reforestation of approx. 5 acres of open land in the Bonnet Carre Spillway, Mississippi River Mainline Levees Enlargement and Seepage Control Project, **Orleans and St. Charles Parishes, Louisiana**

Dear Colonel Wright:

The above referenced project has been reviewed for consistency with the approved Louisiana Coastal Resource Program (LCRP) as required by Section 307 of the Coastal Zone Management Act of 1972, as amended. The project, as proposed in the application, is consistent with the LCRP.

If you have any questions regarding this matter, please call Brian Marcks of the Consistency Section at (504) 342-7591 or 1-800-267-4019.

Sincerely,

Terry W. Howey

Terry W. Howey
Administrator

TWH/JH/bgm

cc: Michele E. Enright, Orleans Parish
Earl Matherne, St. Charles Parish
Tim Killeen, CMD, FC
Fred Dunham, LDWF

Exhibit 9

ARKANSAS
HISTORIC
PRESERVATION
PROGRAM

April 15, 1998

Colonel Gary W. Wright
District Engineer
U.S. Army Engineer District, Vicksburg
ATTN: CEMVK-PD-F
4155 Clay Street
Vicksburg, Mississippi 39180-3435

RE: Multi County - General
Section 106 Review - COE
Draft Report Entitled "Supplement No. 1 to the Final Environmental Impact Statement, Mississippi River and Tributaries Project, Mississippi River Levees and Channel Improvement"

Dear Colonel Wright:

My staff has reviewed the draft supplement to the final Environmental Impact Statement on the proposed referenced project. We concur with your decision to conduct cultural resources surveys to identify and evaluate historic properties that are located within the project area. Those properties that are listed in the National Register of Historic Places or determined eligible for listing should be avoided and protected or mitigated by archeological data recovery.

Thank you for your interest and concern for the cultural heritage of Arkansas. If you have any questions, please contact George McCluskey of my staff at (501) 324-9880.

Sincerely,

Cathy Buford Slater
State Historic Preservation Officer

CBS:GM

cc: U.S. Army Corps of Engineers, Memphis District
Arkansas Archeological Survey

1500 Tower Building • 323 Center • Little Rock, Arkansas 72201 • Phone (501) 324-9880
Fax (501) 324-9154
A Division of the Department of Arkansas Heritage

Exhibit 10

TENNESSEE HISTORICAL COMMISSION
DEPARTMENT OF ENVIRONMENT AND CONSERVATION
2941 LEBANON ROAD
NASHVILLE, TN 37243-0442
(615) 532-1550

March 10, 1998

Commander
U. S. Army Engineer District, Vicksburg
4155 Clay Street
Vicksburg, Mississippi 39180-3435

RE: COE-V, DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT, MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT AND SEEPAGE CONTROL, UNINCORPORATED, MULTI COUNTY

Dear: Sir

At your request, our office has reviewed the above-referenced document in accordance with regulations codified at 36 CFR 800 (51 FR 31115, September 2, 1986). Considering the information provided, we find that the project area contains no archaeological resources eligible for listing in the National Register of Historic Places. Therefore, this office has no objection to the implementation of the undertaking.

If your agency proposes any modifications in current project plans or discovers any archaeological remains during the ground disturbance or construction phase, please contact this office to determine what further action, if any, will be necessary to comply with Section 106 of the National Historic Preservation Act.

This office appreciates your cooperation.

Sincerely,

Herbert L. Harper
Executive Director and
Deputy State Historic
Preservation Officer

HLH/jyg

Exhibit 11

BOARD OF

MISSISSIPPI LEVEE COMMISSIONERS

FRED A. BALLARD, JR., PRESIDENT

P.O. BOX 637

GREENVILLE, MISSISSIPPI [illegible]

[illegible]

[illegible]

FAX [illegible]

E-MAIL [illegible]

COMMISSIONERS
[illegible], JR., BOLIVAR COUNTY
JAMES [illegible] HOUSE, JR., BOLIVAR COUNTY
[illegible] M. ALEXANDER, WASHINGTON COUNTY
FRED A. BALLARD, JR., WASHINGTON COUNTY
KENNETH RODGERS, HUMPHREYS COUNTY
ROY NICHOLS, ISSAQUENA COUNTY
RIVES C. CARTER, SHARKEY COUNTY

OFFICERS
JAMES E. WANAMAKER, CHIEF ENGINEER
[illegible] TINDALL, III, ATTORNEY
[illegible], TREASURER
[illegible] MORLINO, SECRETARY
PATRICK BOLLS, MAINTENANCE SUPERINTENDENT
RICK BOYD, ENGINEERING TECHNICIAN

April 30, 1998

FAXED 4/30/98 to 601-631-5151

Commander, U S Army Engineer
District Vicksburg
ATTN: CEMVK-PD-F
4155 Clay Street
Vicksburg, MS 39180

RE: Supplement #1 to the Final Environmental Impact Statement
Miss. River & Tributaries Project
Miss. River Levees & Channel Improvement

I appreciate the opportunity to review the above document and would point out that the Vicksburg District Corps of Engineers has done an outstanding job in putting together a comprehensive evaluation of the impacts of completing the improvements to the Mainline Mississippi River Levees. The implementation of Avoid and Minimize design criteria not only has reduced environmental impacts, but also in many cases has made the project much more acceptable not only to the citizens of the Mississippi Delta but also to those landowners adjacent to the levee who have for years had to give of their lands to protect the Mississippi Delta.

At this time, on behalf of the Board of Mississippi Levee Commissioners, I would like to provide the following comments for consideration in putting together the final report for this work.

Beginning on page 48 and through out the report a table showing the priority of locating construction borrow areas has been incorporated. At no point in that table are the previously acquired rights-of-way of the local sponsor even addressed. It is our position that these lands should be first priority in the design of any of the remaining work. It is also the position of the Board of Mississippi Levee Commissioners, if they are unable to use these lands purchased solely for the improvement of the Mainline Mississippi River levee, that action constitutes a taking by the Federal government. I would like to ask that the prioritization for construction borrow be amended to include the previously acquired rights-of-way of the local sponsor as the highest priority for construction borrow.

Exhibit 12

In the table on page SEIS 2-12 it would appear that the comment under plan 4 socio-economics resources should read "same as plan 3".

Utility relocations tabulated on Page 6-117 Table 6-19 indicates no pipeline relocations of Federal expense. A cursory review would indicate that the extension of berms into new right-of-way would require some relocations at Federal expense.

As we have expressed in earlier correspondence, the Levee Board would request that restrictions on reforested lands of the FY 98 and FY 99 projects be removed if credit is not given as part of the overall mitigation package.

Our review of the report finds that the local sponsor's involvement in the decision making process may not be documented to the fullest.

The Board of Mississippi Levee Commissioners would also continue to be on record that it is their opinion that riverside borrow within the flood plain of the Mississippi River can be constructed to enhance many environmental categories. The report documents that aquatic habitat is improved through riverside borrow and also that wetland functions can be benefited, although they were not quantified as part of the report. The Board of Mississippi Levee Commissioners would again like to commend the District on the outstanding effort put forth to complete this report in a very short time frame and look forward to working with the Vicksburg District in seeing that the levees within our District are improved at the earliest possible date.

BOARD OF MISSISSIPPI
LEVEE COMMISSIONERS

James E. Wanamaker, P.E.
Chief Engineer

JEW/gm
F:\WP60\FILES\MEM4-28

Board of Levee Commissioners
FOR THE
Yazoo-Mississippi Delta
CLARKSDALE, MISSISSIPPI
38614

KENNETH L. WEILAND, P.E.
CHIEF ENGINEER

Post Office Drawer 610
Phone: (601) 624-4397
Fax: (601) 624-2450

30 April, 1998

Reference: Formal comments regarding the draft: "Supplement No. 1 to the Final Environmental Impact Statement, Mississippi River and Tributaries Project (MR&T) Mississippi River Levees and Channel Improvement", Volumes 1-3 with appendices 1-17, dated March, 1998

Commander
U.S. Army Engineer District, Vicksburg
Attn: CEMVK-PD-F
4155 Clay Street
Vicksburg, Mississippi 39180-3435

Gentlemen:

The following comments are respectfully submitted as an addition to the oral comments made by me on behalf of the Board of Levee Commissioners for the Yazoo-Mississippi Delta at the public hearing held in Greenville, MS on March 18, 1998.

A. GENERAL COMMENTS

1. My Levee Board would like to reemphasize our gratitude and praise to the U.S. Army Corps of Engineers and the multitude of Corps personnel who contributed their effort and expertise to produce referenced report in such a timely and professional manner. The continuation of this project is critical to the welfare of every citizen, farm, municipality and industry located within the project area of the Lower Mississippi Valley. The MR&T can easily be shown as one of the most important contributors to the nation's economy, and economic viability. The work performed on this study by the Corps reflects the long standing role the Corps has played, and should continue to play in placing flood control and the protection of the nation from other natural disasters as its first and foremost priority and mission objective.

   After review of referenced project report, I have concluded that many of the key points in the statement I made on behalf of my Levee Board at the public scoping meeting held in Memphis, TN on 22 May, 1997 are applicable, and in some cases have not been addressed or given clear consideration in the report. Said public

statement is attached, and is respectfully submitted as part of our formal comments herein to be addressed by the Corps.

B. DETAILED PROJECT REPORT COMMENTS

1. Volume I, Draft Project Report

a. *Formulation of Preliminary Plans, Formulation and Evaluation Criteria*

i, General. No mention of prioritization of the utilization of lands previously acquired by our Levee Board specifically for levee purposes is given in any of the formulation criteria. (Please refer to the attached public statement made a part of these formal comments) The report should give a detailed description of what consideration and prioritization was given to the use of previously acquired right-of-way for levee purposes in the planning and formulation of the project alternatives.

ii, p. 39; Environmental Criteria, para. 80, (b). Again, referring to the attached public statement; was any consideration given to the environmental damages prevented to the habitat on the protected side of the levee? Please explain what balancing habitat gains from the protection of wildlife areas such as Delta National Forest, Panther Swamp, etc., were applied against the habitat losses.

b. *Preliminary Screening*

i, p. 45; Plan 1 – Nonstructural Alternative, para. 94. Concur.

c. *Structural Alternatives*

i, p. 48; Plan 4 – Environmental Design (Avoid-and-Minimize), para. 100. Though this paragraph states that local sponsors were included in the layout of this plan, please let the record reflect that at no point did our Levee Board suggest the prioritization of borrow placement as detailed in this paragraph. Indeed, referring to the attached public statement, our Levee Board is clearly on record, and will now restate our position that the first priority should be placed on utilization of existing Levee Board right-of-way, to the maximum, feasible extent from an engineering standpoint. Certainly, in utilizing previously acquired lands for levee purposes, every effort should be taken to avoid and minimize environmental damages occurring from said utilization. If first priority is not given to the utilization of existing Levee Board right-of-way, please give a detailed explanation justifying such decision.

ii, p. 49; Plan 4 – Environmental Design (Avoid-and-Minimize), para. 101. This paragraph states that all borrow areas would incorporate aquatic design features which are described in other parts of the report as borrow

areas designed to permanently hold water. This is contradictory to other parts of the report which state that some borrow areas will be designed to drain and be reforested. Non reforested borrow areas could, in some cases, increase the risk of scour, high velocity currents, wavewash, and other adverse conditions that are not conducive to the best interest of the safety of the levee. For our Levee District, all necessary borrow areas should be designed to drain and be reforested. These borrow areas must also be free of any mitigation encumbrances to allow our Levee Board to freely apply a timber management program consistent with the conditions that are necessary to best protect the levee. Aquatic design of borrow areas in our Levee District should be at the sole decision and request of our Levee District.

iii, Preliminary Screening, p. 51; para. 107. Concur.

d. *Operation and Maintenance Requirements*

i, p. 56; para. (s) 122 and 123 et. al. This comment will address these listed paragraphs as well as other applicable paragraphs pertaining to the use of cutoff walls and relief wells to control underseepage. My comments and statements have clearly indicated our position that our existing right-of-way can and should be utilized as it traditionally has been for the completion and continued maintenance of our levee system. The report includes only three items of work proposed for our Levee District. Each item is a remedial measure against adverse underseepage that has been identified in our levee system. Of the three items, the report proposes relief wells for two, and a seepage berm for the third, with the borrow for the berm shown to be taken from cleared, riverside agricultural land. Our Levee Board does not object to the consideration of cutoff walls and relief wells as a remedial solution to underseepage under the following guidelines.

Our Levee Board would like priority emphasis given to the consideration of cutoff walls for each of the three work items in our District. (Austin, MS, Item 675 L, Trotters, MS, Item 670 L, Hillhouse, MS, Item 628 L) Preliminary indications are that the cutoff walls would exceed 90 feet in depth which, according to the report, significantly increases their cost. This point is not disputed, however, as evidenced by the report's recommendation of Plan 4 which is 4.6% more expensive than Plan 3, there is an obvious priority being placed by the Corps on avoidance and minimization of environmental damage over cost. Our Levee Board contends that deep cutoff walls for the three items of work in our District

would minimize impacts of the items on the environment while yielding the most effective and cost efficient results. As stated in the report, the Levee Board can make available all necessary right-of way for the cutoff walls.

Relief wells are a viable alternative, however, we respectfully request that a detailed assessment of the following issues be made for each work item:

I. As stated in the report, relief wells will result in a significant increase in seepage that will have to be accommodated by provisions to pump the excess water back to the river, or by increasing the capacity of the local drainage to handle the extra volume of water. A detailed plan of the provision chosen should be prepared.

II. In considering an option to increase the capacity of the local drainage, two issues should be addressed. (1), The cost of acquisition and maintenance of the right-of-way required to increase the capacity of the local drainage system should be included in the cost of the overall relief well plan. (2), The impacts of the flow from the relief wells during minor high water events when customarily the normal seepage does not create adverse, localized, problems or additional burdens on the local drainage should be considered.

III. All costs of whatever provisions are chosen to deal with excess flows out of the relief wells should be at full, federal cost. Such total cost as well as any environmental impacts of the drainage/pumping provisions should then be compared to the cost of a deep cutoff wall alternative.

IV. We concur with para. 123 that maintenance of any relief wells will be at full federal cost, however, in addition, maintenance of all necessary pumping provisions or local drainage enlargements should also be at full federal cost.

V. Our Levee Board is deeply concerned with the promise of federal maintenance of a relief well system in a time that various Corps Districts are experiencing serious deficiencies in operation and maintenance funding for works that are in place. These deficiencies have already resulted in a reassessment by Vicksburg District of major maintenance it has traditionally performed. Please state any assurances that the burden of maintaining the relief wells will not fall unto the Levee Board.

The YMD Levee Board sincerely appreciates the opportunity to offer our comments on this important report. Should you have any questions or comments, please do not hesitate to call me.

Sincerely,

K. L. Weiland, P.E.

KENNETH L. WEILAND, P.E.
CEO, CHIEF ENGINEER

KLW:kbe

Attachment

WORD\LEVEE\MAINLINE\DRAFTSEIS.DOC

TESTIMONY BEFORE THE U. S. ARMY CORPS OF ENGINEERS
MISSISSIPPI RIVER & TRIBUTARIES PROJECT
SUPPLEMENTAL ENVIRONMENTAL IMPACT STUDY
SCOPING MEETING FOR MISSISSIPPI RIVER LEVEES
22 MAY, 1997
MEMPHIS, TENNESSEE

Colonel Wright, Colonel Bean, and other distinguished members of the Corps, my name is Ken Weiland. I'm the Chief Engineer of the Yazoo-Mississippi Delta Levee District. Our Levee District contains 100 miles of mainline Mississippi river levee that falls within the boundaries of Memphis District in northwest Mississippi. Our Levee District is comprised of over 200,000 citizens of ten (10) Delta and part Delta counties who are all subject to flooding. It is on behalf of our Levee District, elected by these citizens living within our District boundaries, that I make my statements to you tonight, and submit them to be added to the official record of this scoping process.

The purpose of this meeting, as I understand it, is for you to gather comments and suggestions from the general public and other concerned and involved parties regarding the continuation of the construction and completion of features of the mainline levees in the Lower Mississippi Valley, as well as the installation of countermeasures to protect the existing levee features from adverse underseepage.

When the nation first began expanding and settling in the Lower Mississippi Valley in the late 1700's and early 1800's, two things became immediately and abundantly clear. First, the soils of this great alluvial valley were the richest ever found in the nation and possibly in the world. Second, without protection from the Mississippi River and its tributaries, the Lower Mississippi Valley would be uninhabitable and unsustainable as far as human occupation was concerned. Through the 1800's man desperately, and for the most part, unsuccessfully, tried to gain control over and eliminate recurring damages from flooding by the river. Through flood after flood, lost crop after lost crop, through repeated loss of life and property, those brave and courageous settlers of the Mississippi Valley continued to carve out what soon became the center of production of food and fiber in the world. In addition to the growing contribution to the nation's agricultural production, waterborne commerce along the Mississippi River and its tributaries began having a dramatic impact on the nation's economy and the industrial development of the Mississippi Valley and surrounding regions. There can be no doubt that these two factors contributed to the rise of this nation's power and status among all other countries by virtue of its abundant supply of food and clothing to its citizens as well as the efficient means by which to move its products and military throughout a large section of the country's geographic

area. This point is underscored by the fact that given repeated, devastating floods, and once, devastation brought on by man during the Civil War, development of the Mississippi Valley continued.

Following the 1927 flood and its consequent devastation to life, property and infrastructure, the importance of the development of the Lower Mississippi Valley was written into law by the passage of the 1928 Flood Control Act. This legislation confirmed that development of the agricultural and urban regions in the Lower Mississippi Valley, continued development of transportation and railway systems in the Valley, continued development of industry supported by waterborne commerce, and most importantly, the complete and wholesale stabilization and control of the Mississippi River and its tributaries had become of such a critical, national priority that the federal government could easily justify and substantiate undertaking the cost of what has turned out to be the most successful flood control project in the world. In 1997, the Mississippi River and Tributaries Project continues to be one of this nation's top priorities, remaining critical to the well being of the nation's economy and our national security. With a cost to benefits ratio exceeding 20 to 1, the wisdom and validity of the legislation that created this project, stands as a hallmark of investment of federal funds today.

In recent years, another matter has risen into the realm of national priority, that is the protection of the nation's environment. It is the fine art of balancing these two national priorities that has made this scoping process necessary. Though every effort should be used to accomplish the goal of avoid and minimize with respect to the protection of the environment, it must not be done at the sacrifice, in any way, of the long standing, critical, national priority of the protection of the Lower Mississippi Valley by the completion of the MR&T project, and the continuation of countermeasures necessary to insure the proper operation of the project features (underseepage control).

The Levee Board has, on many occasions, heard comments that the nation's wetlands and bottomland hardwoods have been destroyed due to the construction of the levees. There are many in the environmental community that propose the abandonment of the current flood control policy and expenditures in the Lower Mississippi Valley in favor of flowage easements and government buyouts; to allow the river to meander freely through the valley, again spreading over the land and returning the region to the swampy state that existed prior to settlement. Such positions and proposals are flawed and irresponsible to the best interests of the nation, as has been proven flood after flood since 1927. Any proposal or notion that we should now, cede back to the river, the developed lands of the Lower Mississippi Valley, or in any way reduce the level of security against flood damages from the Mississippi River, should be immediately discarded, allowing your efforts to be more productively concentrated on how to continue the necessary

construction of features of the MR&T, using lands previously acquired by the Levee Boards specifically for that purpose, with the least amount of environmental damages. Many in the environmental community are quick to use quotes and recommendations found in a study conducted by Gerald Galloway and commonly referred to as the "Galloway Report". It is common to see debates over flood control policy for the Lower Mississippi Valley conducted with opponents to the current policy waving the "Galloway Report" as though it were the holy covenant of flood control policy for the nation. In reality, Mr. Galloway's commendable efforts resulted in the limited recommendation for flood control policy in the Midwestern states such as Iowa. This report was made as a post flood assessment of the 1993 flood on the Upper Mississippi River and Lower Missouri River. The recommendations of the report are based solely on the unique geographic, demographic, hydraulic, and economic boundary conditions of the rivers above Cairo, Illinois and, as stated by Mr. Galloway at hearings held here in Memphis, should not and cannot be applied to flood control policy and assessments in the Lower Mississippi Valley. We would respectfully request that this report not be used as any basis for the Corps' assessment of the environmental impact of the MR&T below Cairo, Illinois. If the report is used, the basis of applicability of such use should be clearly detailed for review.

Now that the historic, national priority of the continued development and protection of the Lower Mississippi Valley has been established, and that consideration of any level of abandonment of this protection is, as a matter of fact, not a consideration, there are many general concerns and conditions that should be applied in any environmental impact assessment of the MR&T project. I will briefly discuss some of the more important conditions.

First and foremost, any delay in the current or planned construction of any feature of this project is unacceptable to the people and property that depend on these features for protection against flood damages. Every season that a particular feature is delayed, obviously, creates another chance that the forces of nature might combine to create a situation that will overwhelm that deficient section of the project, causing unimaginable devastation. To allow this for any reason, whether it be for environmental studies, lack of funding, or whatever, would stand as the epitome of irresponsibility of this nation, squandering its investment in the Lower Mississippi Valley, the success of the MR&T for the past seventy years, and the investment and efforts of the citizens of our Levee District for the past 113 years.

As established earlier in my speech, the MR&T project should be continued giving first priority to the use of riverside right of way rather than the developed land protected by the levee as has been proposed by certain environmental interests. Again, the overriding national importance of the

protected lands behind the levees of the MR&T must be taken into consideration. In addition, the people of our Levee District have made a tremendous investment in our riverside right of way in full faith that the nation would fulfill its obligation to allow the continued use of this right of way for the never ending job of maintaining, strengthening and protecting the levees. The Levee Board certainly supports and applauds efforts by the Corps to use modern, advanced, technological methods to better avoid and minimize environmental losses in prosecuting this work. To feel otherwise would be irresponsible on the part of the Levee Board. However, at the same time, use of our riverside right of way should not be abandoned simply because environmental losses may be unavoidable. If mitigation of unavoidable environmental losses has become a national priority, then the existing Levee Board right of way should still be used for the construction of the project, and lands should be purchased by the federal government separately from the Levee Board right of way to mitigate for such losses. In order to eliminate encumbrances to our Levee Board's ability to respond and react to whatever circumstances arise in the maintenance and protection of the levee, any such mitigation lands and their concurrent restrictive covenants must be placed well clear of the levee structure and Levee Board right of way. It is vital to the interests of our Levee Board, and consequently to the nation, that no restrictions be placed on lands that we use in the operation of the levee, or on lands immediately adjacent to the levee that would eliminate alternatives available to us to take the necessary steps to protect the levee without encroaching on such mitigation lands.

The analysis and assessment of the environmental damages resulting from the use of riverside right of way should include as an environmental gain the protection of habitat by the levee, both on the protected side of the levee, by virtue of the fact that such habitat enjoys the same protection from flood devastation as human habitat, and on the riverside of the levee, by virtue of the fact that the combination of the river stabilization and levees reduce the tendency of the river to arbitrarily meander over and destroy established wetlands, hardwood stands, terrestrial habitat, and fisheries that exist outside of Levee Board right of way. In addition, regardless of the complex biological equations used for such impact analyses, those of us who have grown up and lived in the shadow of the levees, who have hunted and played in the borrow pits and riverside right of way, know that in a short amount of time, well managed, drained and reforested borrow pits benefit the environment. This fact should not be misconstrued and used against the further use of riverside borrow pits, conversely, it should be used to better assess the real, long term gains in using riverside borrow, against the short term losses that occur after construction within the pits is complete. This balance of environmental losses and gains should also include heavily weighted gains made to the interest of the nation, in the protection of the Lower Mississippi Valley. The Levee Board respectfully requests that an

assessment of these gains be clearly detailed in the supplemental environmental impact statement.

Finally, but certainly no less important, the Levee Board urges the Corps to use utmost caution when deviating from traditional and tested methods of levee construction and maintenance in the analysis and planning of methods that employ avoid and minimize techniques. The historic methods and traditions of levee operation and construction have been learned the hard way, and all make a resolute statement as to the importance of conservative estimates as to the forces of the river and to the unpredictability of how the river will behave at high stages. We should never forget that the river is arbitrary and capricious, and gladly allows engineers, biologist, and lawyers to forget hard learned, practical lessons, and fall into the trap of complex computer models and restrictive regulations of which it will make a complete mockery. Any environmental impact assessment which incorporates new and untested changes to methodologies of mainline levee construction and operation, should be approached with extreme caution, and only after thorough coordination and input from seasoned, experienced levee engineers and operators. We are, in fact, dealing with the same river about which Mark Twain spoke nearly a century ago when he wrote, "You cannot tame that lawless soul. You cannot save a bank that it has condemned nor obstruct its path with an obstacle that it will not tear down, dance over and laugh at." With all that we have at stake behind our great levees, we cannot afford any less respect than Mr. Twain was alluding to when it comes to the Mississippi River and our efforts to control its fury.

I look forward to your certain cooperation and coordination of your studies in conjunction to this supplemental environmental impact study.

Respectfully submitted,

KENNETH L. WEILAND, P.E.
CEO, CHIEF ENGINEER
Board of Levee Commissioners for the Yazoo-Mississippi Delta
P. O. Box 610
Clarksdale, MS 38614-0610
(601) 624-4397

BOARD OF DIRECTORS
ST. FRANCIS LEVEE DISTRICT
P.O. BOX 399 • PHONE 735-1062 • FAX 735-1075
WEST MEMPHIS, ARKANSAS 72303

April 27, 1998

Commander
U.S. Army Engineer District, Vicksburg
ATTN: CEMVK-PD-F
4155 Clay Street
Vicksburg, Mississippi 39180-3435

Dear Commander,

I have reviewed the Draft Supplement No. 1 to the Final Environmental Impact Statement, Mississippi River and Tributaries Project, Mississippi River Levees and Channel Improvements. I have just a few comments that I would like to submit for record. The comments are enclosed for your information.

Thank you for the opportunity to review this document. If I need to provide additional information on any of these comments, please contact me at (870)735-1062.

Sincerely,

Jake Rice III, P.E.
Assistant Engineer

Exhibit 14

FLOOD CONTROL, MISSISSIPPI RIVER & TRIBUTARIES
MISSISSIPPI RIVER MAINLINE LEVEES
ENLARGEMENT AND SEEPAGE CONTROL

CAPE GIRARDEAU, MISSOURI TO HEAD OF PASSES, LOUISIANA

DRAFT
SUPPLEMENT NO. 1 TO THE FINAL
ENVIRONMENTAL IMPACT STATEMENT
MISSISSIPPI RIVER AND TRIBUTARIES PROJECT
MISSISSIPPI RIVER LEVEES AND CHANNEL IMPROVEMENT

ST. FRANCIS LEVEE DISTRICT OF ARKANSAS
JAKE RICE, ASSISTANT ENGINEER

REVIEW COMMENTS

1.) PROJECT REPORT - STUDY AUTHORITY: This document supplements the 1976 Final EIS to cover construction of all remaining Mississippi River mainline levees and seepage control items. There is a very good likelihood that projects other than those proposed in this document will be needed to establish the required level of protection to handle the project flood, i.e., additional seepage berms or relief wells. How will these items of work be handled?

2.) Throughout this document certain bottom land hardwoods are alluded to as nonwetland bottom land hardwoods. In the list that prioritized potential borrow area locations, riverside forested nonwetlands is one of the most restricted areas. These areas in the past have played a very important role in the construction, operation, and maintenance of our flood control system. Unless these nonwetland bottom land hardwoods are protected by law, I feel that these areas should be unrestricted in their use as potential borrow area. What laws, regulations, or policies govern losses to nonwetland bottom land hardwood areas? What is the significance of policies as opposed to laws?

3.) PROJECT REPORT - PLANNING CONSTRAINTS: Statement 72 indicates that work must be acceptable to local project sponsors (levee boards), local landowners, and the public (concerned citizens). The work must be accomplished in a cost-effective manner while being environmentally and engineeringly viable. As use of landside borrow areas from willing sellers or the use of riverside croplands as borrow areas are considered, the cost of right of way acquisition will rise considerably. As required by law, the local project sponsors have to provide these Rights-of-Way. These increased cost will pass directly to the residents of the protected areas. I feel that it is unfair to require the residents of the protected areas to pay more for borrow just to have these areas relocated to landside or riverside cropland as opposed to conventional borrow areas

such as nonwetland riverside timber areas. I realize that we should proceed with an environmentally sensitive project. However, the general welfare of the public should be given due consideration as this project is developed.

4.) PROJECT REPORT - ENVIRONMENTAL CRITERIA: It is understandable that every effort should be exercised to the extent practical to avoid and minimize impacts to fish and wildlife habitat and wetlands. However, as this project mitigates for losses to nonwetland bottom land hardwoods and any adverse environmental or habitat effect, not necessarily wetlands, it will possibly set an unnecessary dangerous precedence for mitigation that all future projects may have to abide by. What established the requirement to mitigate for losses to nonwetland bottom land hardwoods?

5.) It is apparent that relief wells have been selected over seepage berms for a large majority of seepage control projects. Was sufficient Geotechnical consideration given to these projects? What will happen when these projects get to detailed design and a seepage berm is considered a better option than relief wells? It is also apparent that the levee boards played no role in the project selection process. From this document it appears that minimizing environmental impacts played a major role in the process of selecting relief wells over seepage berms. Sound engineering judgement and a common sense approach should play a major role in selecting the appropriate type of seepage control measure used.

6). PROJECT REPORT - PRESENTATION AND EVALUATION OF FINAL ARRAY OF PLANS: Paragraph 113 states that Plan 3 affects 1.1 percent and Plan 4 affects less that one-half of 1 percent of the total bottom land hardwoods in the project area. I feel that both plans are environmentally sensitive. Maybe we should consider a plan that in somewhere between Plan 3 and Plan 4. The new and innovative designs for levee enlargement and seepage berm projects should fit right in with the project. Use of relief wells as opposed to seepage berms in some situations also have merit. However, the Corps approach to avoid use of riverside nonwetland bottom land hardwoods will place an unjustified stress on the local project sponsors. I believe that nonwetland riverside bottom land hardwoods should be unrestricted in their use as potential borrow areas for this project or any other project.

7.) SEIS - The recommended plan proposes riverside prior converted croplands as number 3 on the list of prioritized borrow areas, behind landside cropland from willing sellers and landside cropland when riverside locations were unavailable. There are further requirements that borrow areas taken from riverside prior converted croplands will have environmentally sensitive designs, such as varying depths, irregular shorelines, and

islands. These features will certainly increase the cost of the project. The local sponsor is required by law to provide these areas. Therefore, these costs will be passed on to the protected public not the organizations driving these requirements. The public may have had an opportunity to participate in the public meetings. However, they had no decision making power in this process just as the local project sponsors did not in the issues that directly affect them.

8.) APPENDIX 1 - MANAGEMENT RESPONSIBILITIES: It is stated that to ensure success as much as possible on these mitigation tracts, annual operation and maintenance funds will be provided to the agency for management responsibilities, subject to the availability of Federal appropriations for this project. Will these O&M funds compete with scheduled MR&T Flood Projects for funding? Considering the budget constraints that we are faced with today, these funds should be at the very bottom of the funding priority list.

9.) APPENDIX 6 - ENGINEERING - RELIEF WELL FLOWS: This document indicates that relief well flows at other sites, do not increase overall flooding in the protected area. In such areas, the discharge will be allowed to flow into wetlands. Serious consideration will have to be given to landside drainage associated with each relief well project. I believe there will be strong public opposition to relief well projects that ignore landside drainage by assuming that increased flow due to relief well flows will go to wetlands.

10.) GENERAL COMMENT: I feel that the general flavor of this document is to make more concessions to the environmental community than what is actually required. If this is so, I believe it will set a dangerous precedence for all future flood control projects whether they are considered construction or operation and maintenance. It is hard to fully comprehend how the long term effects of this SEIS will influence the daily operation of the local flood control sponsor. One thing is for certain it will be negative. Considering the limited capabilities of a majority of the individual local sponsors, we should be considering ways to reduce project construction and operation and maintenance cost instead of generating ways to increase project costs.

April 15, 1998

Mr. Moody Culpepper
U.S. Army, Corps of Engineers
Vicksburg District
4155 Clay Street
Vicksburg, MS 30180-3435

Re: SEIS, MR&T Flood Control Project

Gentlemen:

Compliments from the Board of Commissioners, Pontchartrain Levee District, are extended to Colonel Conner and Corps of Engineers Staffs, New Orleans and Vicksburg Districts, for an interesting and efficient SEIS public meeting in Baton Rouge, Louisiana, on March 31, 1998. Please accept these comments as the response on the SEIS from this Levee District.

The Board of Commissioners and Staff join with me to express gratitude to both the Corps of Engineers and Sierra Club Legal Defense Fund for allowing levee improvements to be constructed while the SEIS is being prepared and considered. These improvements are indispensable, must be completed as rapidly as Congress provides funding. Delays could result in losses of life and complete devastation in the event of a levee failure or overtopping.

The Pontchartrain Levee District objects to compensatory mitigation as a requirement for future levee construction. The 1976 EIS did not determine mitigation to be a requirement for the MR&T Project. Nor was mitigation a requirement in the 1928 congressional authorization or any subsequent amendments. Mitigation has never been a project requirement and there is no understandable justification to suddenly invoke mitigation when the overall project is well advanced toward completion. We have been advised that federal dollars will pay all mitigation expenses and thus the local sponsor should be relieved. Not so! Mitigation dollars will be taken from construction appropriations which delays timely completion of future work. And that results in higher costs.

Exhibit 15

Landside borrow pits are advocated in the SEIS. Louisiana should be exempt from such a requirement since the State Constitution provides riverside borrow pits at no cost to Levee Districts. Louisiana Levee Districts do not have funding sources to pay fair market values for flood protected areas. It does not make any sense to spend local, state or federal dollars to protect an area from flooding and then destroy some of that same area for borrow pit purposes.

The ability to drain borrow pits should be an option for Levee Districts to decide and implement. Borrow pits retaining water in most locations result in a wet levee base which when exposed to overbank river stages very quickly invokes active seepage flows. Borrow pits should be drained early in the water years to promote drying of the levee base to provide the greatest resistance to seepage under levees.

Additional environmental requirements for the MR&T Project, each activity, has an added cost which when funded takes monies away from construction and project completion. This is certainly not in agreement with objectives of the Congress. It is urgently recommended that funding be provided for environmental items from sources other than MR&T construction appropriations.

The 1976 EIS was accepted, approved and implemented, made a part of the overall project, by the family of environmental agencies concerned with the MR&T Project. When one project is selected to suddenly impose new environmental restrictions, could this indicate that all other congressional projects will likewise be affected? Under such as imposition our great countries future does not look so bright.

We appreciate the opportunity to comment on this important report.

Respectfully submitted,

Aubrey J. LaPlace, President

cc: Senator Breaux
Senator Landrieu
Representative Cooksey
Representative Baker
Representative Tauzin
Representative Jefferson
Representative Livingston
George Grugett, LMVFCA
Colonel William Conner, COE
Major General Phillip Anderson, COE
Curtis Patterson, LA DOTD
Reynold Minsky, President, ALBL

Wednesday, 22 April, 1998

PLEASE ATTACH TO PUBLIC COMMENTS ON SEIS PROJECT

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
4115 CLAY STREET
VICKSBURG, MISSISSIPPI 39180-3435

RE: SEIS SUPPLEMENTAL ENVIRONMENTAL IMPACT STUDY
Mississippi Main River Levee Project

Gentlemen:

It is of the utmost importance to the future of all residents in the areas protected by this project that it be completed without further delay. The threat to the 4.5 million people who reside there is of utmost importance. As an American Citizen, I felt compelled to educate myself on the issues and am convinced that more attention has been paid to those groups suing the Corps,(Sierra Club--550,000 dues paying members--source Washington Post Newspaper 22 April,1998) have apparently been recognized as the important force driving the delays that threaten the many. The Audobon Society, also represented along with various State/Agency organizations who remarkably become the voice that deprives the many of their rights...in the name of ideals "Sustainabiiity" being one, that has limited scientific basis and is viewed by many as unproven and unworthy of such "Draconian" measures as we repeatedly are seeing within our country.

Lack of input from the local communities has largely been the fault of the various agencies involved in this isssue and therefore; the last months have been spent in alerting everyone to the possibilities that the impact on their lives would be great and possibly fatal to thousands, if not millions of people and the resulting loss of farms and industry could destroy this country.

It is my urgent request that you commence at once and complete this project, using all means, including Legal Recourse to ensure that nothing delays its finish.

Sincerely yours,

Laura Busby

Laura Busby, Researcher
Government Accountability Project
24 Birch Lake Cove
Marion, Arkansas 72364

Exhibit 16

MISSOURI DEPARTMENT OF CONSERVATION

Headquarters
2901 West Truman Boulevard, P.O. Box 180, Jefferson City, Missouri 65102-0180
Telephone: 573/751-4115 ◆ Missouri Relay Center: 1-800-735-2966 (TDD)

JERRY M. CONLEY, Director

April 22, 1998

Colonel Gary W. Wright
Commander
U.S. Army Engineer District, Vicksburg
ATTN: CEMVK-PD-F
4155 Clay Street
Vicksburg, Mississippi 39180-3435

Dear Colonel Wright:

Thank you for providing the opportunity for review and comment of the *Draft Mississippi River and Tributaries Project, Mississippi River Mainline Levees Enlargement and Seepage Control* report dated March, 1998. Missouri Department of Conservation staff have reviewed the document and offer comments pertaining to project sites located in Missouri:

Hubbard Lake Berm

Our comments pertain to the three areas listed in Figure 1 (attached). On all sites, we support the idea of relief well construction instead of berm construction.

#82--Berm construction should be on agricultural land located on the land-side of the levees and not on the batture (river-side). Constructing the berm on the batture would destroy bottomland trees, and adversely affect an existing blue-hole providing valuable off-channel aquatic habitat. Furthermore, this area is part of our Department's Donaldson Point Conservation Area (CA) and we would prefer no project related work on Department property.

#83-85--At this site, berm construction will be on Department owned land (Donaldson Point CA) as we own both sides of the levee. We question the logic for constructing berms at this location. If the reason is water seepage only, then we recommend the berms not be constructed as the current seepage is creating beneficial wetlands. If the berm is being constructed to protect the integrity of the levee, then it should be placed on the batture side of the levee as the land-side has a greater diversity of bottomland hardwoods.

#86--We again recommend the berm be placed in the batture area because the land-side area contains higher diversity of bottomland hardwoods.

Exhibit 17

If bottomland hardwoods or wetlands are destroyed because of berm construction, we request mitigation of losses. Land for mitigation, as prioritized 1 through 4 in Figure 2 (attached), should be purchased adjacent to Donaldson Point CA. Area 1 (40 acres) contains old-growth cypress trees; area 2 (80 aces) contains existing bottomland hardwoods; while sites 3 (160 acres) and 4 (280 acres) are agricultural land that could be replanted to hardwoods. Addition of these in-holdings would help consolidate the Donaldson Point CA.

Drinkwater Pump Station

A significant wetland complex, including Big Lake, exists above the pump station. To protect this resource, the area's existing hydrology should be maintained by not lowering water elevation below existing levels. To achieve this, it may be necessary to increase the start and stop elevations.

Commerce to Birds Point Grade Raise

According to plan specifications, the base of the levee will need to be widened in areas where the levee will be raised. We recommend that the addition to the levee be land-side in areas that contain no roads or relief wells. Any new proposed relief wells could be placed outside the expanded levee. In the remaining areas, the levee additions will be added to the batture area, which will affect a considerable area of bottomland hardwoods. As mitigation, the area of bottomland hardwoods destroyed should be replaced by purchasing land adjacent to Donaldson Point CA as we consider one large tract (Donaldson Point CA) of bottomland hardwoods more beneficial than several smaller tracts.

Again, thank you for providing the opportunity to comment, and if you have further questions please direct them to Gordon Farabee of my staff at the above address.

Sincerely,

DANIEL J. WITTER
POLICY COORDINATOR CHIEF

attachment

c: Gary Frazer, U. S. Fish and Wildlife Service

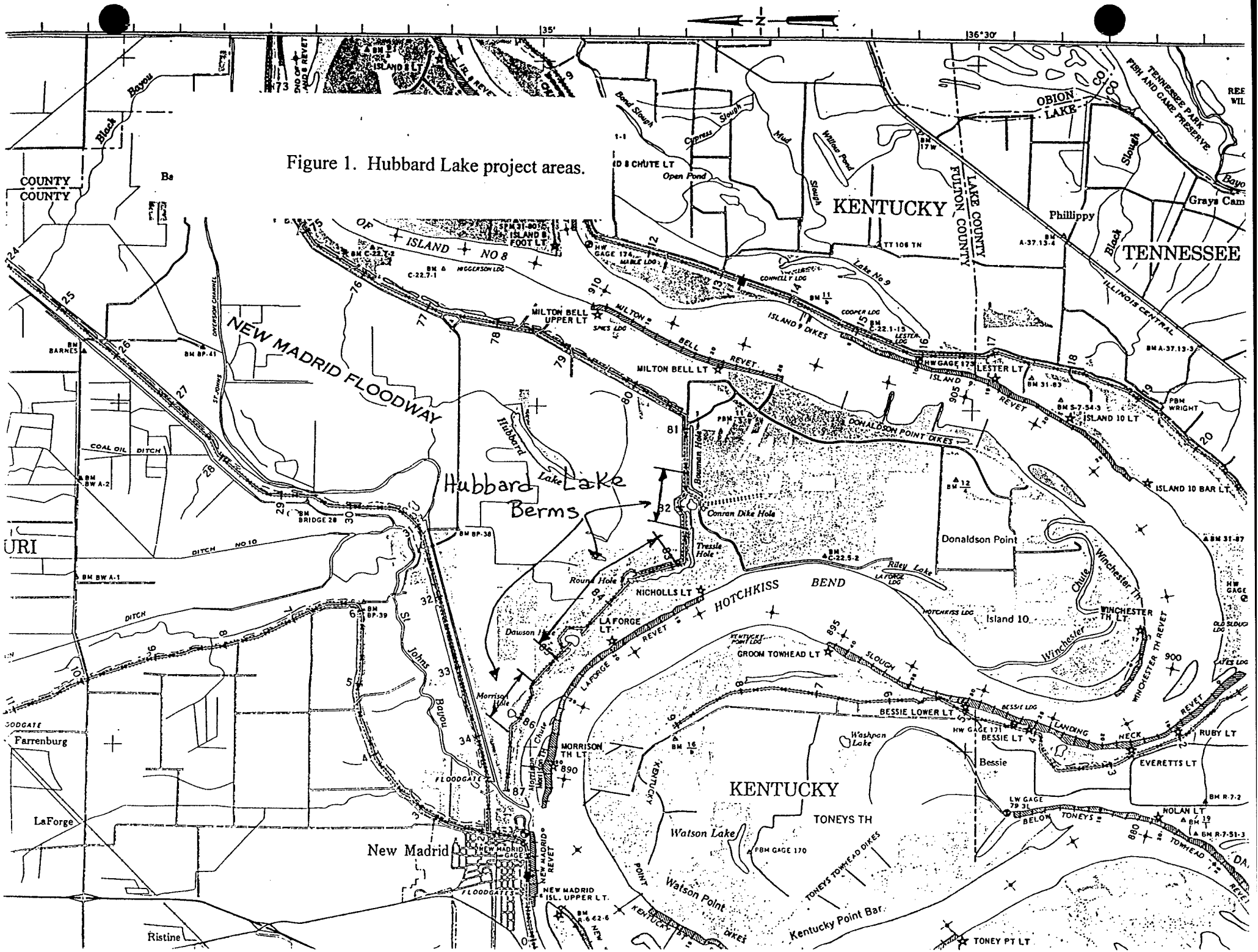
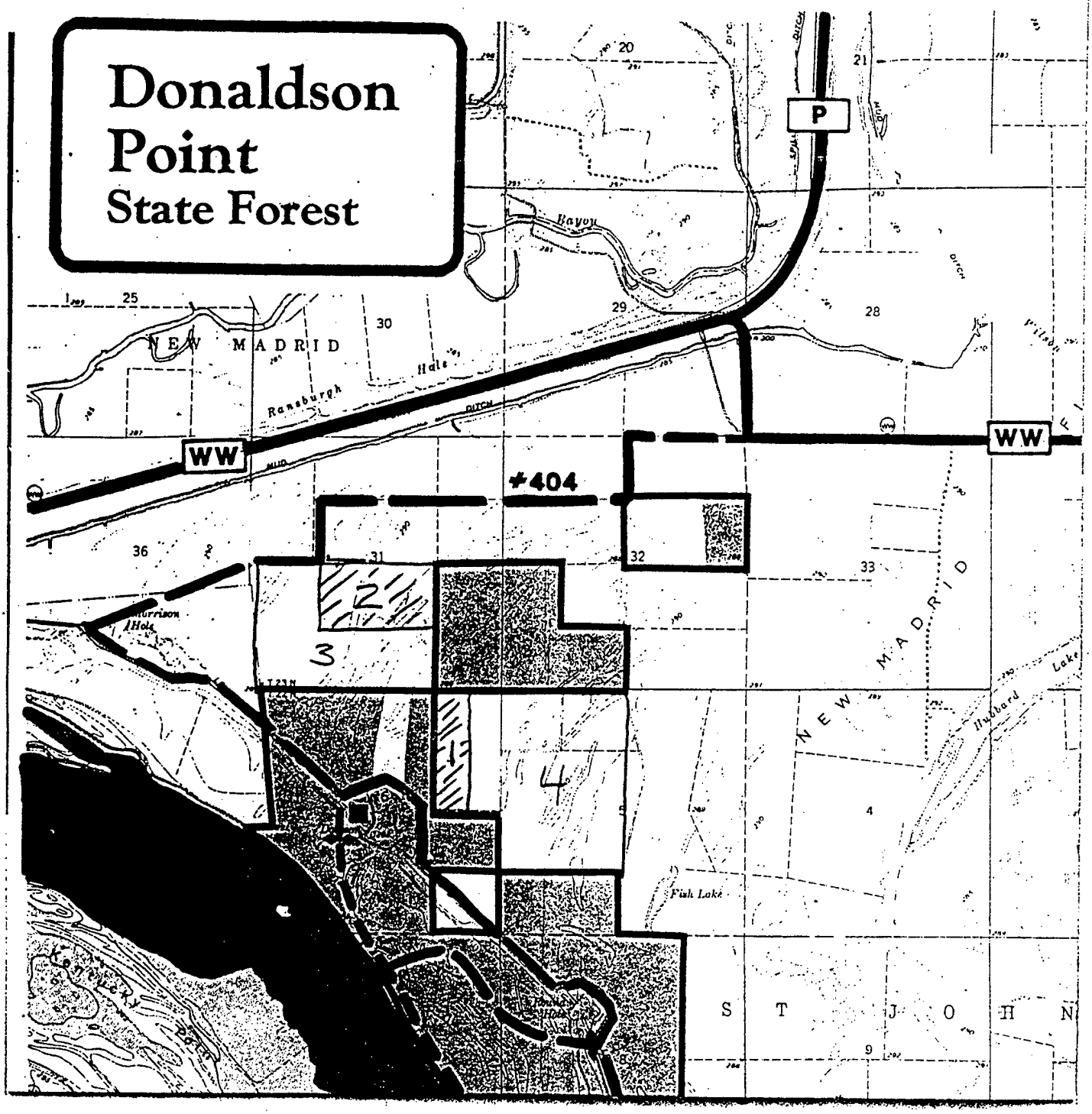


Figure 1. Hubbard Lake project areas.

Figure 2. Location of proposed mitigation land for purchase as addition to Donaldson Point CA, prioritized 1-4.



BARRY HOWARD
ACTING DIRECTOR

PAUL E. PATTON
GOVERNOR

COMMONWEALTH OF KENTUCKY
KENTUCKY STATE NATURE PRESERVES COMMISSION
801 SCHENKEL LANE
FRANKFORT, KENTUCKY 40601-1403
(502) 573-2886 VOICE
(502) 573-2355 FAX

May 1, 1998

Commander
U.S. Army Engineer District, Vicksburg
ATTN: CEMVK-PD-F
4155 Clay Street
Vicksburg, Mississippi 39180-3435

Dear Sir:

The Kentucky State Nature Preserves Commission recently reviewed through the Kentucky Intergovernmental Review Process, the Draft Project Report and Draft Supplemental Environmental Impact Statement for the Mississippi River and Tributaries Project, Mississippi River Mainline Levees Enlargement and Seepage Control. Only one seepage control project is included for Kentucky: the Island 8, KY, Item 915L relief wells. This project appears to have potential to impact a wetland adjacent to the levee referred to as Fish Pond. Since original construction of the levee, this wetland likely has persisted in large part due to the seep water under the levee that feeds into it. We are concerned that diversion of the seep water will threaten the viability of this site as a permanently inundated cypress swamp. We also have a long term goal of purchasing this site and protecting it in perpetuity within the Kentucky State Nature Preserve System. For these reasons, we request more detailed plans for this specific project, as well as an annual update on the status of this project upon our request. Please refer us to the appropriate person(s) with the U. S. Army Corps of Engineers with whom to make contact regarding its status. We are unclear as to whether this(these) individual(s) would be within the Vicksburg or Memphis District.

Thank you for the opportunity to review this project document. I look forward to receiving a reply concerning our inquiries.

Sincerely,

Barry Howard
Acting Director

BH/BPB

cc: Mr. Wayne Davis, Ky. Dept. of Fish and Wildlife Resources, Frankfort, KY
Mr. Billy Dycus, U.S. Army Engineer District, Memphis, TN

Exhibit 18

ILLINOIS
DEPARTMENT OF
NATURAL RESOURCES

524 South Second Street, Springfield 62701-1787

Jim Edgar, Governor ● Brent Manning, Director

April 28, 1998

Col. Gary W. Wright, Commander
U.S. Army Engineer District, Vicksburg
ATTN: CEMVK-PD-F
4155 Clay Street
Vicksburg, Mississippi 39180-3435

Dear Colonel Wright:

Reference is made to your agency's recent Draft Project Report and Draft Supplemental Environmental Impact Statement for the Mississippi River and Tributaries Project, Mississippi River Mainline Levees Enlargement and Seepage Control, dated March 1998.

IDNR Office of Realty and Environmental Planning staff participated in the two Public Hearings that were held by your agency in Cape Girardeau, Missouri, on May 29, 1997 and March 16, 1998, respectively. In addition, we appreciated the opportunity to assist Corps biologists in the development of habitat evaluation parameters and weights that were employed in the biological assessment process. We are pleased that of the several alternatives evaluated for implementing the proposed levee and seepage control activities, Plan 4 – the Environmental Design which incorporates impact avoidance and minimization – was the selected alternative.

Activities proposed in the State of Illinois include six specific items totaling approximately 19 miles in length. These include the following:

- Item 965R - This item is 3 miles long and consists of a cutoff wall to control seepage, located riverside of the Ohio River levee near Mound City.

- Item 963R - This item is one mile long and involves stone paving along the Ohio River levee at Mound City to control erosion.

- Item 961R - This item is one mile long and consists of a cutoff wall and relief wells located landside of the Ohio River levee below Mound City.

- Item 957R - This item is one mile long and consists of two seepage berms landside of the Ohio River levee near Cairo. Borrow for construction is to be taken from cropland.

- Item L5.1AC - This item calls for raising 10 miles of existing Mississippi River levee near Cairo one foot with commercial clay gravel.

- Item L10AC - This item is 3 miles long and consists of four seepage berms landside and one pitfall riverside of the Mississippi River levee near Cairo. The required borrow material is to be taken from cropland.

Exhibit 19

These six items are expected to impact 70.9 acres of wetlands and 259.4 acres of non-wetlands within Illinois. We were not able to glean from the draft Project Report and Supplemental EIS where, exactly, the anticipated impacts will occur or where mitigation will take place (Page 1-34, paragraph 69 indicates that mitigation sites will be selected at a future date). Since it is our understanding that the various work items will be advertised via individual Public Notices when their actual construction is proposed, we anticipate providing project-specific comments at that time.

The following general comments are directed at the draft Project Report and Supplemental EIS as a whole:

- The document indicates that 3691 acres of forested wetland and 3637 acres of farmed wetland (7328 acres total) will be impacted by project-related construction system-wide, but only 5863 acres of mitigation wetland are to be created. For wetland losses occurring within Illinois, the Department typically recommends a minimum replacement ratio of 1.5:1 since some interim loss of functional values is inevitable while the new wetlands mature. Based on this guideline, the proposed mitigation will slightly exceed the acreage needed to compensate for the projected loss of forested wetlands but does not cover the additional loss of farmed wetlands. However, we note that the overall project will result in a significant net gain in shallow open-water acreage, which will have considerable fish and wildlife benefits potentially offsetting the latter.

- For reforestation activities, we strongly recommend the use of planting stock, rather than seedlings, to speed the recovery time of the forest stand and improve the survival rate of the material planted.

We appreciate the opportunity to comment. Please contact Robert Schanzle of my staff at 217-785-5500 if we can be of any further assistance.

Sincerely,

Tom Flattery

Tom Flattery, Director
Office of Realty and Environmental Planning

TF:RWS:rs

cc: IDNR/OWR (Clark, Dalton), IDNR/ORC (Atwood, Woolard, Lindsay, Skuba), IEPA (Yurdin), USFWS (Collins)

COMMONWEALTH OF KENTUCKY
DEPARTMENT OF FISH AND WILDLIFE RESOURCES
C. THOMAS BENNETT, COMMISSIONER

April 27, 1998

Commander
U.S. Army Engineer District, Vicksburg
ATTN: CEMVK-PD-F
4155 Clay Street
Vicksburg, Mississippi 39180-3435

Dear Sir:

The Kentucky Department of Fish and Wildlife (KDFWR) has reviewed the Draft Project Report and Draft Supplemental Environmental Impact Statement for the Mississippi River and Tributaries Project, Mississippi River Mainline Levees Enlargement and Seepage Control.

The Department thanks the Corps of Engineers for the opportunity to review the above-referenced document. We have no comments regarding the project at this time.

Sincerely,

Marty Barbour
Senior Fisheries Biologist

xc: Environmental Section Files

Exhibit 20

STATE OF MISSOURI Mel Carnahan, Governor • Stephen M. Mahfood, Director

DEPARTMENT OF NATURAL RESOURCES

OFFICE OF THE DIRECTOR

P.O. Box 176 Jefferson City, MO 65102-0176

APR 29 1998

Colonel Gary W. Wright
District Engineer and Commander
U.S. Army Corps of Engineers
Vicksburg District
ATTN: CEMVK-PD-F
4155 Clay Street
Vicksburg, MS 39180-3435

RE: Draft Project Report and Draft Supplemental Environmental Impact Statement for Mississippi River and Tributaries Project, Mississippi River Mainline Levees Enlargement and Seepage Control

Dear Colonel Wright:

The Missouri Department of Natural Resources concurs with the selection of Alternative Plan 4 as the most environmentally sound plan offered for accomplishing the project goals as outlined in the draft report cited above.

I am particularly pleased that the Army has sought to increase waterfowl benefits by over 600 percent. Such natural resource enhancement ought to be extended to all bottomland hardwoods and other wetland areas.

Replacing bottomland hardwoods and other wetlands with enhanced borrow pits will be difficult and requires that many more acres of wetland habitat be created and that these wetland borrow habitats be directly connected hydraulically to the river by chutes and channels. We strongly recommend that wetlands be enhanced at a level of 3:1 on a per acre basis, and that these wetlands have an adequate supply of seasonal floodwaters.

This project provides the opportunity to enhance the Mississippi River wetlands that have taken a substantial blow from government improvements along the river. I am sure that you are aware that Missouri has actively supported Upper Mississippi and Missouri River environmental management programs and extend our support to your chance to improve the flood plain environment of the Lower Mississippi River, too.

Exhibit 21

We do attach to this letter several comments, including recommendations, which we hope will assist the Corps of Engineers in refining the project plans. We request your written response to them and our above concerns.

Thank you for the opportunity to review and comment on this document.

Sincerely,

DEPARTMENT OF NATURAL RESOURCES

Stephen Mahfood
Director

SM:tlj

Attachment

Attachment

ADDITIONAL COMMENTS OF MISSOURI DEPARTMENT OF NATURAL RESOURCES
APRIL 1998

DRAFT PROJECT REPORT AND DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT FOR THE MISSISSIPPI RIVER AND TRIBUTARIES PROJECT
MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT AND SEEPAGE CONTROL

1) The field survey for cultural resources should address the eligibility for inclusion in the National Register of Historic Places of the drainage districts and water control structures in and near the project area.

2) Volume II of the three-volume document, pages 6-25, entitled "Geotechnical" has numerous errors. Please rewrite by people with knowledge of the geology and tectonics of the upper portion of the Lower Mississippi River Valley. Such people are on the staff of the St. Louis District, Corps of Engineers. Errors include nomenclature, stratigraphy, and tectonics. For example, report notes that alluvial sediments overlie only Pleistocene and Tertiary age deposits, but alluvial sediments also overlie Cretaceous, and in some locations, Paleozoic age bedrock.

3) Tectonics of the Bootheel of Missouri: Consult work of DNR/Division of Geology and Land Survey, US Geological Survey and others for documentation of evidence of Tertiary and Recent faulting.

4) Nomenclature like "top stratum geology" is unusual and not technically accurate. Correct nomenclature should be used.

5) Cumulative impacts should be considered from the entire Mississippi River system, not solely for the Lower Mississippi River. The Upper Mississippi and other rivers also have levees. It has been shown that inappropriately designed and located levees can increase the frequency, stage, and duration of flood events. The focus should always be to better design and locate, and in some areas, remove or not raise levee systems to better serve the users, including those who need the protection, the environmental management needs, and others in the public sector.

6) Work done near waterways should disturb as little vegetation as possible. Riparian corridors of at least 300 feet should be left along both banks to keep banks in place and protect habitat.

7) Any land disturbance activities may require a water pollution control permit. In Missouri, please contact DNR at 573:751-6825.

8) We do not see the environmental impacts of the relief wells and the impact of changed hydrology on the river side of the levee and the potential for increased erosion and sediment deposition evaluated in the SEIS.

9) Page 13-5, f, please revise the phrase, "This results in a generous estimate of wetland impacts". It is not generous.

10) Neotropical Migratory Birds: We disagree that there would be no significant adverse impact. Planting of tree seedlings does not replace a forest quickly. Those species that require tree cover, forest habitat, wet bottomland hardwoods, and mast (tree nuts) cannot wait several bird lifetimes for mitigation to occur.

DEPARTMENT OF PARKS & TOURISM
One Capitol Mall
Little Rock, AR 72201
Phone:501-682-7777
FAX:501-682-1364
History Commission
501-682-6900(V/TT)
Personnel Section
501-682-7742(V/TT)
State Parks Division
501-682-1191(V/TT)
Tourism Division
501-682-7777(V/TT)
Internet
www.arkansas.com

Arkansas®
THE NATURAL STATE

May 6, 1998

Commander
U.S. Army Engineer District, Vicksburg
ATTN: CEMVK-PD-F
4155 Clay Street
Vicksburg, Mississippi 39180-3435

Dear Commander:

Thank you for the opportunity to comment regarding the Draft Project Report and Draft Supplemental Environmental Impact Statement for the Mississippi River and Tributaries Project, Mississippi River Mainline Levees Enlargement and Seepage Control. Mr. Moody Culpepper granted my request for additional time to review this proposal and authorized an extension of the deadline for comments to May 8th.

Enclosed is a copy of the Delta Heritage Trail Master Plan and database information regarding recreational facilities in Arkansas which are located in close proximity to the Mississippi River. Arkansas State Parks also has property located at Township 12 North, Range 11 East, Sections 20, 26, 27, 28, 29, 30 in Mississippi County which is leased for farming purposes. The parks listed received federal and/or state grant funds for development and are subject to the provisions of the Land and Water Conservation Funds guidelines.

I agree that Plan 4 (Avoid and Minimize) is the preferred alternative and I also agree with the proposed mitigation provisions. In my opinion, the "Fee Title Acquisition of Cleared Agricultural Land with Reforestation" is the preferred alternative. As noted in the draft document, Plan 4 provides the least amount of impact to wetlands and the mitigation for the loss of wetlands of at least a 1:1 ratio is appropriate.

Exhibit 22

This study notes that each COE District would be responsible for mitigation requirements. On page 1-33, under Implementation of Mitigation Measures, it states, "All attempts will be made to purchase lands in approximate vicinity of project impacts and within the state and/or levee district in which the losses occur. However, the feasibility of on site mitigation will have to be balanced with the goal of acquiring tracts of suitable size contiguous with large tracts of bottom-land hardwoods". I recommend that the losses be mitigated within the state that incurred the loss rather than the COE District.

I also suggest publishing a public notice in the local communities which are in close proximity prior to and during the work being done at the various project sites and to plan the proposed work schedule to ensure the least amount of negative impact on winter migratory fowl and recreational use. If you have any questions, please feel free to contact me at 501-682-6946.

Sincerely,

Carolyn Dover

Carolyn Dover
Environmental Planner

cc: Stan Graves, Planning & Development
Rex Friedman, Planning & Development

MISSISSIPPI
DEPARTMENT OF WILDLIFE, FISHERIES AND PARKS

SAM POLLES, Ph.D.
Executive Director

May 4, 1998

Commander
U.S. Army Corps of Engineer, Vicksburg District
ATTENTION: CEMV-K-PD-F
4115 Clay Street
Vicksburg, Mississippi 39180-3435

Dear Commander:

RE: Review of Draft Project Report and Draft Environmental Impact Statement for the Mississippi River and Tributaries Project, Mississippi River Mainline Levees Enlargement and Seepage Control, Cape Girardeau, Missouri to Head of Passes, Louisiana (ER 98\138)

The Mississippi Department of Wildlife, Fisheries, and Parks (MDWFP) has completed its review of the referenced draft project report and draft EIS for enlargement of the Mississippi River mainline levees.

The MDWFP supports Plan 4 which has been selected by the Corps of Engineers as the best alternative.

As the project progresses we want to be an active partner in the development of mitigation projects and, to the extent practical, involved in discussions relative to minimization measures that will have to be made "on the ground" during the life of the project.

Sincerely,

Sam Polles, Ph.D.
Executive Director

Exhibit 23

P. O. Box 451 ● Jackson, Mississippi 39205-0451 ● (601) 362-9212

KATHLEEN BABINEAUX BLANCO
LIEUTENANT GOVERNOR

State of Louisiana
OFFICE OF THE LIEUTENANT GOVERNOR
DEPARTMENT OF CULTURE, RECREATION & TOURISM
OFFICE OF CULTURAL DEVELOPMENT
DIVISION OF ARCHAEOLOGY

PHILLIP J. JONES
SECRETARY

GERRI HOBDY
ASSISTANT SECRETARY

May 6, 1998

Commander
U.S. Army Engineer District, Vicksburg
ATTN: CEMVK-PD-F
4155 Clay Street
Vicksburg, Mississippi 39180-3435

Re: *Draft Project Report and Draft Supplemental Environmental Impact Statement (SEIS) Mississippi River and Tributaries Project, Mississippi River Mainline Levees Enlargement and Seepage Control Feature*

Dear Sir:

Reference is made to Colonel's Gary W. Wright's letter dated April 10, 1998, transmitting copies of the above documents and inviting comments. We have completed our review of the transmitted information and have the following comments to offer.

It is our understanding that these documents summarize known cultural resources sites and properties in the area of potential project effect based on an extensive literature and records review. Since this is a background study only, it is premature at this time for our office to comment on project effect on sites or properties listed on or eligible for listing on the National Register of Historic Places (NRHP). As stated in Colonel Wright's letter, coordination with our office will be necessary on each specific work item located in the State of Louisiana in order to determine project effect on significant cultural resources. We look forward to working with your agency in meeting its Section 106 compliance responsibilities in this regard on this large and complex project.

Technical comments on the cultural resources section of the draft Project Report and SEIS (Appendix 15) are attached to this letter. Should you have any questions concerning our comments, please contact Mr. Duke Rivet in the Division of Archaeology at (504) 342-8170.

Exhibit 24

Sincerely,

Gerri Hobdy
State Historic Preservation Officer

GH:PR:s

Enclosure: as stated

c: Mr. William Athens
R. Christopher Goodwin & Associates, Inc.
5824 Plauche Street
New Orleans, LA 70123

TECHNICAL COMMENTS

Draft Project Report and Draft Supplemental Environmental Impact Statement (SEIS) Mississippi River and Tributaries Project, Mississippi River Mainline Levees Enlargement and Seepage Control Feature

APPENDIX 15 - CULTURAL RESOURCES

Preliminary Draft Report for Cultural Resources Study Supporting Supplement I to the Final Environmental PreliminaryImpact Statement, Mississippi River Mainline Levee, Vicksburg and Memphis Districts
R. Christopher Goodwin & Associates, Inc.

Page 1: in the Introduction, there should a discussion of plans to comply with Section 106 of the National Historic Preservation Act, as is done later in Appendix 15 in the Introduction of the cultural resources study report prepared for the New Orleans District.

Pages 3-4, Table 1: 9 CRM reports are listed for the State of Louisiana, while on pages 2-23, a total of 37 CRM surveys are summarized for the State of Louisiana. Why the discrepancy? A map showing areas previously surveyed for cultural resources would enhance the report and aid in understanding the discussion.

Page 11, Table 3: there are no standing structures within the area of potential effect within any of the proposed SEIS project items in that portion of the State of Louisiana under the jurisdiction of the Vicksburg District?

Preliminary Draft Report for Cultural Resources Study Supporting Supplement I to the Final Environmental Impact Statement, Mississippi River Mainline Levee, New Orleans District
R. Christopher Goodwin & Associates, Inc.

Page 1: the Introduction needs to be expanded to include pertinent project information as is done in the Introduction to the study done for the Vicksburg District. State the number of proposed project items, the fact that they all located within the State of Louisiana, and the parameters of the study area.

Page 1ff: a table listing cultural resources surveys previously done within the New Orleans District of the proposed SEIS items, as was done for the Vicksburg District report, should be included. Are the CRM reports discussed on page 1ff listed from north to south, or by date (oldest to most recent). The parishes they were located in should be mentioned and a map showing their location would be useful in following the discussion in the text.

General Comment: you may wish to consider combining the two background CRM studies into one report so that the known cultural resources inventory in the project study area for the State of Louisiana will be in one volume, rather than two.

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY

1021 North Grand Avenue East, P.O. Box 19276, Springfield, Illinois 62794-9276 Mary A. Gade, Director

217/782-0610

May 5, 1998

Commander
U. S. Army Engineer District, Vicksburg
Attn: CEMVK-PD-F
4155 Clay Street
Vicksburg, Mississippi 39180-3435

Re: U. S. Army Corps of Engineers (Alexander and Pulaski Counties)
Levee enlargement and seepage control - Mississippi River
Log # C-305-98

Gentlemen:

This Agency received and reviewed the Draft Project Report and Draft Supplemental Environmental Impact Statement dated February 27, 1998 for the project involving the enlargement of existing levees along the Mississippi River and the control of seepage through these levees. We offer the following comments.

1. All areas affected by construction must be mulched and seeded as soon after construction as possible. The Corps of Engineers should undertake necessary measures and procedures to reduce erosion during construction. Interim measures to prevent erosion during construction should be taken and may include the installation of silt fences, staked straw bales, sedimentation basins and temporary mulching. The Corps of Engineers must obtain an NPDES Storm Water Permit prior to initiating construction if the construction activity associated with the project will result in the disturbance of 5 (five) or more acres, total land area. An NPDES Storm Water Permit may be obtained by submitting a properly completed Notice of Intent (NOI) form by certified mail to the Agency's Division of Water Pollution Control, Permit Section.

2. The Corps of Engineers must implement erosion control measures consistent with the "Standards and Specifications for Soil Erosion and Sediment Control" (IEPA/WPC/87-012) or the "Illinois Urban Manual" (IEPA/USDA, NRCS; 1995).

3. Any temporary stockpiling areas along the river banks must be adequately protected to prevent erosion.

Exhibit 25

4. Material dredged from the Mississippi River may be placed along the berms, if the material is considered reasonably settleable, environmentally acceptable, and free from unnatural or significant levels of fines, clays or other materials capable of causing violations of Title 35, Subtitle C, Part 302. The following criteria should be used to define non-polluted material:

a. material free from toxic levels of contaminants;

b. material which will not cause an effluent or condition resulting in offensive discharges; and

c. materials which have settling velocities of components of sands or larger sized materials [larger than 0.062 millimeters, or a #230 U.S. sieve for at least 80% by weight].

All material not meeting the above criteria are considered not appropriate for filling operations.

5. An NPDES permit must be obtained from the Illinois EPA prior to initiating any discharge from the relief wells constructed for flood control along the Mississippi River.

Should you have any questions or comments regarding the content of this letter, please contact Varghese Kurien at the above telephone number and address.

Very truly yours,

Thomas G. McSwiggin, P. E.
Manager, Permit Section
Division of Water Pollution Control

TGM:BY:VMK:03050413.98l
cc: IEPA, Records Unit
CoE, Memphis District

LOUISIANA WILDLIFE FEDERATION

P.O. BOX 65239 AUDUBON STATION
BATON ROUGE, LA 70896-5239
(504) 344-6707 FAX/PHONE

May 22, 1998

District Engineer
U.S. Army Corps of Engineers
Vicksburg District
4155 Clay St.
Vicksburg, MS 39180-3455

RE: Comments on the Draft Supplemental Environmental Impact Statement; Mississippi River and Tributaries Project, Mississippi River Levees and Channel Improvement.

Dear Sir:

The following comments concerning the captioned Draft Supplemental Environmental Impact Statement (DSEIS) are submitted on behalf of the Louisiana Wildlife Federation. We recognize that the deadline to submit comments has passed. However, considering that a final draft is being prepared, we feel that the opinions and recommendations provided herein are timely and will contribute to the quality of the final SEIS.

General Comments

The Louisiana Wildlife Federation supports and commends the effort to design this flood protection project in a manner that is sensitive to its impacts on wetlands and fish and wildlife habitat. If this approach would have been pursued 4 years ago, a lot of time and dollars could have been saved.

Of the four alternative plans discussed (mentioned) in the DSEIS, only two provided any detailed analysis of environmental impacts. We recognize that the possibility of using landside borrow is included in Plan 4, but we are concerned that the failure to thoroughly evaluate the wetlands benefits (through avoidance) of Plan 2 (landside borrow) indicates a prejudice against an objective evaluation of the alternative of landside borrow in Plan 4 when such is feasible and appropriate to avoid wetland impacts. Although we appreciate that the use of landside borrow is not always feasible or even the best way to avoid overall environmental impacts or obtain the greatest benefit, we recommend that for each item of the project that proposes using riverside borrow, a thorough investigation of the availability and suitability of obtaining borrow from landside be made, and that the economic and environmental impacts of both alternatives be compared before proceeding with construction.

Exhibit 26

We note that the Fish and Wildlife Planning Report was not included with the DSEIS. This document is important to a proper evaluation of the DSEIS. We urge that the FWPR be distributed when available, substantially prior to the release of the final SEIS, so that any additional comments provoked by the report can be submitted before the SEIS is finalized.

The DSEIS enthusiastically (it seems) touts "environmentally designed" borrow pits as providing substantial aquatic benefits. Although this may be true, please keep in mind that open water is an abundant and increasing habitat type in the MRUV compared to wetlands, particularly BLHs which have declined steadily over the long term. If we understand correctly, the aquatic habitat benefits of these environmentally designed borrow pits are not being applied to reduce the wetlands and wildlife habitat losses that will have to be mitigated. However, the aquatic benefits associated with creating borrow pits should not in any way be a negative incentive to avoid the degradation of existing wetlands.

All the specific details of each of the 128 project items are not fully discussed in the DSEIS, therefore the DSEIS should not substitute for Section 404 review of each project item. When all details of an item are available, including funding, and it is ready to be noticed it should be subject to the Section 404 review process like any other work that would alter jurisdictional wetlands.

We generally support the proposed mitigation in Plan 4, however additional details providing assurance of the efficacy of the mitigation should be included, eg., monitoring the success of reforestation plantings; provisions for replanting (if required) to achieve intended survival rate and stand composition, etc. We also would like to be more certain about the nature of the mitigation with respect to location and ownership of mitigation lands.

Given the information provided in the DSEIS, we support the preferred alternative, Plan 4 - Environmental Design (avoid and minimize). However we hope that it can be improved based on these and other comments you have received concerning this DSEIS.

Specific Comments

On page 23 of the Project Report we recommend that you edit the first sentence under "46 History" to read: **Mississippi River floods have always been a threat to agriculture and other human development in the River's floodplain.** This converts a questionable if not erroneous assertion into a factual statement.

On page 24, part b. under "Terrestrial Resources", river otters are not mentioned as occurring in the project area. If present, this species should be mentioned.

On page 40, in the statements of environmental criteria, the word "will" should be substituted for the word "should" in a and b. Also, we recommend adding the word "maximum" preceding "extent practicable" in statement a.

In Table 5 on page 52, the item with the greatest difference in cost between plans 3 and 4 is Levees and Seepage Control. Although perhaps explained in detail in an appendix, it would be helpful to include here a general explanation of why the cost for this item varies so much between the two plans. To be consistent, an explanation for any other significant difference in costs between plans may also be provided.

On page 1-33 of the Mitigation Appendix, paragraph 68 discusses where mitigation lands should be acquired. We emphasize that mitigation should occur in the vicinity of the loss and take into consideration the need to maintain or create wildlife corridors and fill in gaps. From a management perspective, acquiring land to reforest adjacent to an existing forest may be preferable, but it may not be as strategically important as a small tract that helps to fill in a gap created by a borrow pit in the batture. our opinion on this is well represented in #4 under Reforestation on page 21 of the Draft Waterfowl Technical Appendix. Also, on page 23 of this appendix, the composition of species to be planted for reforestation on mitigation sites is discussed. A 70 percent red oak group planting is recommended as best for waterfowl. We recommend that consideration be given to planting species proportionately to what historically grew on these mitigation sites, even if this means growing a few less oaks. An effort should also be made to vary spacing and species when planting to replicate a naturally occurring forest.

That concludes our comments. Please feel welcome to contact us should you or your staff wish to discuss any of these ideas in further detail. Thank you for the opportunity to comment. We look forward to reviewing the next version of the SEIS.

Sincerely yours,

Randy P. Lanctot
Executive Director

RPL:lee

JAMES E. BICKFORD
SECRETARY

PAUL E. PATTON
GOVERNOR

COMMONWEALTH OF KENTUCKY
NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
DEPARTMENT FOR ENVIRONMENTAL PROTECTION
FRANKFORT OFFICE PARK
14 REILLY RD
FRANKFORT KY 40601

MEMORANDUM

TO: Alex Barber
State Environmental Review Officer
Department for Environmental Protection

FROM: Timothy Kuryla TK
EIS Coordinator
Division of Water

DATE: April 16, 1998

SUBJECT: DPR & DEIS Supp, Mississippi River Mainline Levee Enlargement & Seepage Control (Ballard, Carlisle, Fulton, & Hickman Counties), SERO 980327-07

Attached are the Division of Water comments for the Draft Project Report and Draft Environmental Impact Statement Supplement prepared by the US Army Corps of Engineers, Memphis, New Orleans, and Vicksburg Districts, regarding Mississippi River Mainline Levee Enlargement and Seepage Control (Ballard, Carlisle, Fulton, and Hickman Counties for the Kentucky portion).

cc: John Dovak, Water Quality Branch
Leon Smothers, Water Resources Branch

Exhibit 27

NATURAL RESOURCES AND ENVIRONMENTAL PROTECTION CABINET
ENVIRONMENTAL REVIEW

Division of Water Project Number: 980327-07

Project Title: DPR & DEIS Supp, Mississippi River Mainline Levee Enlargement & Seepage Control (Ballaard, Carlisle, Fulton, & Hickman Counties)

The Division of Water has reviewed the Draft Project Report and Draft Environmental Impact Statement Supplement prepared by the US Army Corps of Engineers, Memphis, New Orleans, and Vicksburg Districts, regarding Mississippi River Mainline Levee Enlargement and Seepage Control (Ballard, Carlisle, Fulton, and Hickman Counties for the Kentucky portion). The Division has the following concerns to be addressed in the Final PR and Final EIS Supp.

WATER QUALITY

3. AFFECTED ENVIRONMENT
3.4 Wetland Resources **Pages DEIS Supp 3-7 & 3-8**

If there are impacts to jurisdictional wetlands of one acre or more, then a 33 USC § 1341 ("401") water quality certification by the Division of Water for the U.S. Army Corps of Engineers and a 33 USC § 1344 ("404") dredge or fill permit must be obtained.

FLOODPLAIN CONSTRUCTION

STUDY PURPOSE & SCOPE
11. **DPR Page 8**

The narrative states that project design flow and methodology, although computed in 1956, remain applicable. Given the expense and costs, decision making should not be based on anything less than a comprehensive computer hydraulic model of the Mississippi River and on an analysis of all the impacts of both the existing levees and the proposed project. Was not such a model was developed after the Upper Mississippi River floods of 1993?

PLANNING CONSTRAINTS
72. **DPR Page 36**

"Environmentally Sustainable" is presented as subject to a "reasonableness constraint". The Division of Water finds as subjective the examples given to define reasonable constraint. Constraints should be objective, that is, quantifiable. The alternatives presented in the FPR and FEIS Supp need to reflect quantifiable standards.

FORMULATION OF PRELIMINARY CRITERIA
Preliminary Screening
86. **DPR Page 42**
Plan 1—Nonstructural Alternative **DPR Pages 44 & 45**
APPENDIX 6, ENGINEERING
Attachment A **(Following Page 6-128)**
APPENDIX 7, SOCIOECONOMIC ANALYSIS
Impacts from Mississippi River Flooding
51. **Pages 7-23 & 7-24**

The discussion is limited in Nonstructural Alternative of measures that would reduce damages should an existing levee overtop or fail. The only measure that appears to have been considered was the purchase of flowage easements. In the FDR & FEIS Supp, other options such as small local protection levees, elevations of structures, relocation, and floodproofing need to be analyzed and presented.

In the case of flowage easement purchases, it is not clear why the Corps of Engineers would have to obtain these in areas that would flood naturally were levees not there. The FDR & FEIS Supp need to address, in increased detail, flowage purchases.

The DPR contains no justification to the statement that the cost of emergency disaster activities, traffic rerouting, and utility damage would be overwhelming. The FDR & FEIS Supp need to present an evaluation of the foregoing not only as an alternative to raising levees but as a consideration of the potential risks of unforeseen levee breaks.

The narrative states (paragraph 86, page 42) that the total number of structures at risk of flooding is 40,000 residences and 1,600 businesses. Appendix 6 Attachment A Tab 1 indicates the least cost alternative project is $19,200,000,000. This breaks down to a cost of about $46,000 per structure. That amount has to be a big percentage of the value of the structures. Some local alternatives for flood protection have to be reasonably close to this price. The FDR & FEIS Supp need to address these alternatives.

Appendix 7 (page 7-23) addresses some of the information discussed in paragraph 86 and Appendix 6. Here, the narrative indicates that the total damages would be $10,000,000,000; this amount is less than the least cost alternative. The FDR & FEIS Supp need to address the implications of the cost being more than the damages.

Appendix 7 (page 7-23) also asserts that a levee failure would result in major traffic routes and railroads being closed for months. This does not appear to have been the case during the floods on the Upper Mississippi River in 1993. The FDR & FEIS need to justify this, especially regarding railroads. The FDR & FEIS should list which roads would be closed and for how long if the Mississippi River floods and the levees do not fail.

APPENDIX 5, PUBLIC INVOLVEMENT **Pages 5-1 to 5-14**

In the FDR & FEIS, this appendix should list when and where each public meeting was held and how many people attended. It would be desirable to have a list of attendees for each meeting.

Timothy Kuryla

Timothy Kuryla **EIS Coordinator** **April 16, 1998**
Division of Water

Barber, Alex (NREPC, DEP)

From: Palmer-Ball, Brainard (KSNPC)
Sent: Monday, April 27, 1998 2:33 PM
To: Barber, Alex (NREPC, DEP)
Subject: KSNPC response to KIRP

TO: Alex Barber, NREPC-DEP, Intergovernmental Review

FROM: Brainard Palmer-Ball, Jr., Ky State Nature Preserves Commission

RE: KSNPC responses

DATE: April 20, 1998

RE: Public Notice SER098-07 (Draft Project Report and Draft Supplemental EIS for the Mississippi River and Tributaries Project, Mississippi River Mainline Levees Enlargement and Seepage Control).

There is only one of the many projects included in this document that lie within the state of Kentucky. This is called the Island 8, KY, Item 915L project and involves the placement of relief wells along the levee. The Kentucky State Nature Preserves is concerned that implementation of this project will impact a wetland adjacent to the levee at this site referred to as Fish Pond. We will make a request directly to the U.S. Army Corps of Engineers, Memphis District, to coordinate with the Commission concerning the progress of this project.

Exhibit 28

the Chickasaw Nation HEADQUARTERS
Arlington at Mississippi / Box 1548 / Ada, OK 74820 / (405) 436-2603

Bill Anoatubby
Governor

David Brown
Lieutenant
Governor

June 9, 1998

Mr. William B. Hobgood, Chief, Planning Division
Vicksburg District, Corps of Engineers
ATTN: CEMVK-PDPQ
4155 Clay Street
Vicksburg, Mississippi 39180-3435

Dear Mr. Hobgood:

The Chickasaw Nation has reviewed the documents provided by your office regarding the draft Supplemental Environmental Impact Statement, Mississippi river and Tributaries Project, Mississippi River Mainline Levees Enlargement and Seepage Control Feature. While we do support the efforts of the Corps of Engineers in making the entire Mississippi River basin safer for residents, we are concerned about the lack of consultation and the lack of information provided to us in accordance with federal laws and regulations.

We have compiled a list of concerns and requests regarding this project, and the consultation process in general. A copy of the list is attached for your use. I am confident that the consultation process will improve through better communications.

Your prompt attention to this matter will be appreciated. Please provide the above information to Mr. Jefferson Keel at the above address. If you have questions, Mr. Keel may be contacted at (580) 436-2603, ext 707 or by facsimile at (580) 436-7209.

Sincerely,

David E. Brown, Lt. Governor
The Chickasaw Nation

Exhibit 29

the Chickasaw Nation HEADQUARTERS
Arlington at Mississippi / Box 1548 / Ada, OK 74820 / (405) 436-2603

Bill Anoatubby
Governor

David Brown
Lieutenant
Governor

COMMENTS & CONCERNS

The Chickasaw Nation:

- Recognizes the need for increased protection for citizens and property through the Mississippi River and Tributaries Project, Mississippi River Mainline Levees Enlargement and Seepage Control Feature and supports the Corps of Engineers efforts in this process.

- Reminds the Corps of Engineers that there exists a potential and probability to discover ancient Chickasaw remains and/or artifacts in all construction projects involving the Mississippi River and its tributaries.

- Has not been notified or consulted with in accordance with federal regualtions and laws prior to construction projects that involve the potential for uncovering ancient burial sites.

- *Does not* have any arrangement with any federally recognized tribe to represent us in any construction projects along the Mississippi River.

- Requests a copy of all memorandums of agreement that the Corps of Engineers may have with any Native American tribe or group claiming to be Native American who may have an interest in the remains, funerary objects or artifacts.

- Has not received or been notified of any inventory of remains, funerary objects or artifacts discovered during any of the above construction projects.

- Requests a copy of all inventories and the status of the remains, funerary objects, and artifacts removed or uncovered, and not reburied, during construction. And, the name and address of the responsible agency in whose custody the remains and artifacts are being stored.

- Expects direct consultation regarding: the location of any proposed reburial site(s), and the current and proposed reburial sites in which remains and artifacts have been or will be reburied; and lists of all remains and objects that have been reburied to date.

United States Department of Agriculture

Natural Resources Conservation Service

Eminence Soil Survey Office
HCR 1, Box 185
Eminence, Missouri 65466

(573) 226-5527

Subject:

Date: February 24, 1998

Dwayne Templet
GEO-MARINE,INC.
6654 FLORIDA BLVD SUITE 215
BATON ROUGE, La. 70806

Enclosed is the Farmland Conversion Impact Rating that you requested in your letter of 19 December 1997..

The following information is provided as the attachment form.

County	Farmable Land		Farmland		Percent Converted
Scott	268,119	99%	235,334	87%	0.25
New Madrid	425,830	98%	424,060	98%	0.079
Pemiscot	305,770	98%	305,770	98%	0.40
Mississippi	260,977	94%	259,627	93%	0.20

J. Daniel Childress
Soil Scientist

cc:
Ron Darden, Area Conservationist, Cape Girardeau, Mo.

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request
Name Of Project: Mississippi River Mainline Levee Enlargement	Federal Agency Involved: USACE, New Orleans, Vicksburg, & Memphis Distric
Proposed Land Use: Levee, Borrow Areas, and Relief Wells	County And State: Various-Missouri
PART II *(To be completed by SCS)*	Date Request Received By SCS

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply — do not complete additional parts of this form).*	Yes ☑	No ☐	Acres Irrigated	Average Farm Size

Major Crop(s)	Farmable Land In Govt. Jurisdiction	Amount Of Farmland As Defined in FPPA
CORN	Acres: Attachment %	Acres: Attachment %

Name Of Land Evaluation System Used	Name Of Local Site Assessment System	Date Land Evaluation Returned By SCS
LESA	—	2-24-98

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Part 3	Part 4		
A. Total Acres To Be Converted Directly	4,263	2,712		
B. Total Acres To Be Converted Indirectly	0	0		
C. Total Acres In Site				
PART IV *(To be completed by SCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	0	1990		
B. Total Acres Statewide And Local Important Farmland	0	722		
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	--			
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	--	31.9		
PART V *(To be completed by SCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	0	84		

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average					
8. Creation Of Nonfarmable Farmland					
9. Availability Of Farm Support Services					
10. On-Farm Investments					
11. Effects Of Conversion On Farm Support Services					
12. Compatibility With Existing Agricultural Use					
TOTAL SITE ASSESSMENT POINTS	160				
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100				
Total Site Assessment *(From Part VI above or a local site assessment)*	160				
TOTAL POINTS *(Total of above 2 lines)*	260				

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

United States Department of Agriculture
Natural Resources Conservation Service
1902 Fox Drive
Champaign, IL
61820

January 23, 1998

James Hartwig
Attn: Teresa Savko
IDOA, Bureau of Land and Water Resources
State Fairgrounds, P.O. Box 19281
Springfield, IL 62794-9281

Re: Mississippi River Mainline Levee Enlargement
Alexander County, Illinois

Dear Jim:

Enclosed is the AD-1006 for the above project. If you have any questions, please call me.

Sincerely,

James B Johnson-for

Robert L. McLeese
State Soil Scientist

cc: Dwayne Templet, Geo-Marine, Inc. Baton Rouge, La.

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request
Name Of Project: Mississippi River Mainline Levee Enlarg.	Federal Agency Involved: U.S. Army CORPS - Vicksburg + Memphis.
Proposed Land Use: Levee, Borrow Areas, + Relief Wells	County And State: Alexander, Illinois
PART II *(To be completed by SCS)*	Date Request Received By SCS: 1-20-98

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply – do not complete additional parts of this form).*	Yes	No	Acres Irrigated	Average Farm Size
	☒	☐	—	321

Major Crop(s)	Farmable Land In Govt. Jurisdiction	Amount Of Farmland As Defined in FPPA
Corn, Soybeans, Wheat, Hay	Acres: 29,633,500 % 97	Acres: 27,695,900 % 91
Name Of Land Evaluation System Used	**Name Of Local Site Assessment System**	**Date Land Evaluation Returned By SCS**
Illinois	State wide	1-23-98

PART III *(To be completed by Federal Agency)*	Alternative Site Rating: Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly	723	325		
B. Total Acres To Be Converted Indirectly	0	0		
C. Total Acres In Site	723	325		
PART IV *(To be completed by SCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	576	260		
B. Total Acres Statewide And Local Important Farmland	64	28		
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0.003	0.001		
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	25.95	25.95		
PART V *(To be completed by SCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	73	73		

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average					
8. Creation Of Nonfarmable Farmland					
9. Availability Of Farm Support Services					
10. On-Farm Investments					
11. Effects Of Conversion On Farm Support Services					
12. Compatibility With Existing Agricultural Use					
TOTAL SITE ASSESSMENT POINTS	160				
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100				
Total Site Assessment *(From Part VI above or a local site assessment)*	160				
TOTAL POINTS *(Total of above 2 lines)*	260				

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

(See Instructions on reverse side)

Form AD-1006 (10-83)

U.S. DEPARTMENT OF AGRICULTURE

REFERENCE SLIP

DATE JAN. 29, 1998

TO Dwayne Templet

☐ ACTION ☐ NOTE AND RETURN

☐ APPROVAL ☐ PER PHONE CALL

☑ AS REQUESTED ☐ RECOMMENDATION

☐ FOR COMMENT ☐ REPLY FOR SIGNATURE OF

☐ FOR INFORMATION ☐ RETURNED

☐ INITIALS ☐ SEE ME

☐ NOTE AND FILE ☐ YOUR SIGNATURE

REMARKS Farmland Conversion Impact Rating For Miss. River Main-Line Levee Project - (E. Carroll, Madi., Tensas & Concordia Parishes)

FROM Thurman Allen
Resource Soil Scientist

U.S.G.P.O. 1985-525-216 FORM AD-514 (8-64)

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request 12-19-97
Name Of Project: Mississippi River Mainline Levee Enlargement	Federal Agency Involved: USACE, New Orleans, Vicksburg, & Memphis, Distri
Proposed Land Use: Levee, Borrow Areas, and Relief Wells	County And State: Various-Louisiana
PART II *(To be completed by SCS)*	Date Request Received By SCS: 12-22-97

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply – do not complete additional parts of this form).*	Yes ■	No ☐	Acres Irrigated: —	Average Farm Size: —

Major Crop(s): Cotton, Soybeans, Corn	Farmable Land In Govt. Jurisdiction: Acres: 1,251,288 % —	Amount Of Farmland As Defined in FPPA: Acres: 1,251,288 % —
Name Of Land Evaluation System Used: —	Name Of Local Site Assessment System: —	Date Land Evaluation Returned By SCS: JAN. 29, 1998 (TA)

PART III *(To be completed by Federal Agency)*	Alternative Site Rating: Plan 3	Plan 4		
A. Total Acres To Be Converted Directly	7,185	6,720		
B. Total Acres To Be Converted Indirectly	0	0		
C. Total Acres In Site				
PART IV *(To be completed by SCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	0	6,720		
B. Total Acres Statewide And Local Important Farmland	Est. 1,000	0		
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	0.1%	0.5%		
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	81	37		
PART V *(To be completed by SCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	10	90		

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average					
8. Creation Of Nonfarmable Farmland					
9. Availability Of Farm Support Services					
10. On-Farm Investments					
11. Effects Of Conversion On Farm Support Services					
12. Compatibility With Existing Agricultural Use					
TOTAL SITE ASSESSMENT POINTS	160				
ART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100				
Total Site Assessment *(From Part VI above or a local site assessment)*	160				
TOTAL POINTS *(Total of above 2 lines)*	260				

te Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

eason For Selection:

Recd 12/22

GEO-MARINE, INC.
ENGINEERING AND ENVIRONMENTAL SERVICES

19 December 1997

Bruce Lehto
Assistant State Conservationist/Water Resources
Natural Resources Conservation Service
3737 Government Street
Alexandria LA 71302

Dear Mr. Lehto:

The U.S. Army Corps of Engineers, Memphis, Vicksburg, and New Orleans Districts, are currently preparing technical reports to support a Supplemental Environmental Impact Statement (SEIS) for the Mississippi River and Tributaries Project, Mississippi River Mainline Levees Enlargement. Geo-Marine, Inc. has been tasked by the Vicksburg District to prepare the SEIS.

The levee enlargement project includes proposed work on portions of the Mississippi River mainline levees from Cape Girardeau, Missouri, to Head of Passes, Louisiana. A project location map is enclosed (Enclosure 1). Five alternatives were addressed: (1) no action; (2) Plan 1-Nonstructural; (3) Plan 2-Landside Borrow. (4) Plan-Traditional; and (5) Plan 4-environmental design. Of these five alternatives, only Plans 3 and 4 were carried forward into detailed design. Descriptions of Plans 3 and 4 (Enclosure 2) and tables summarizing the land use by state for each plan are also enclosed (Enclosure 3). Maps of the project area are also enclosed which display the location of proposed levee enlargement areas within your respective state (Enclosure 4). Plan 3 would utilize the "original borrow locations" only (black dashed lines) while Plan 4 would utilize the "borrow areas after environmental design" (red dashed lines), "borrow areas required for dredged items" (brown dashed lines), and "dredge locations" (blue dashed lines).

A partially completed *Farmland Conversion Impact Rating* form which notes the total direct land use impacts by state is enclosed. Please complete the farmland impact rating form and return by January 25, 1998, if possible. If you have any questions, please do not hesitate to contact me at 504-926-2181 or Mr. Gary Young with the Vicksburg District (601-631-5960).

Respectfully,

Dwayne Templet

Dwayne Templet

Enclosures
cc: Gary Young
ref: 1118-011

6554 FLORIDA BLVD., SUITE 215 • BATON ROUGE, LOUISIANA 70806 • (504) 926-2181 • FAX (504) 926-1040 • EMAIL: gmi-br@ix.netcom.com

CORPORATE OFFICE
550 EAST FIFTEENTH STREET • PLANO, TEXAS 75074 • (972) 423-5480 • FAX (972) 422-2736 • EMAIL: gmi-pl@ix.netcom.com

United States Department of Agriculture

Natural Resources Conservation Service

675 U. S. Courthouse
801 Broadway
Nashville, Tennessee 37203

February 9, 1998

Dwayne Templet
Geo-Marine, Inc.
Engineering and Environmental Services
6554 Florida Blvd., Suite 215
Baton Rouge, Louisiana 70806

Dear Mr. Templet:

Attached is the completed Farmland Conversion Impact Rating (AD-1006) for the Mainline Levee Enlargement in Tennessee.

If you have any additional questions please contact me.

JAMES W. FORD
State Conservationist

Attachment

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request
Name Of Project: Mississippi River Mainline Levee Enlargement	Federal Agency Involved: USACE, New Orleans, Vicksburg, & Memphis Distri
Proposed Land Use: Levee, Borrow Areas, and Relief Wells	County And State: Various-Tennessee
PART II *(To be completed by SCS)*	Date Request Received By SCS

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply – do not complete additional parts of this form).*	Yes ☑	No ☐	Acres Irrigated: N/A	Average Farm Size: 1082

Major Crop(s): Corn	Farmable Land In Govt. Jurisdiction: Acres: 87770 % 71	Amount Of Farmland As Defined in FPPA: Acres: 81745 % 66
Name Of Land Evaluation System Used: Lake Co	Name Of Local Site Assessment System: FPPA	Date Land Evaluation Returned By SCS:

PART III *(To be completed by Federal Agency)*	Alternative Site Rating: Part 3	Part 4		
A. Total Acres To Be Converted Directly	82	75		
B. Total Acres To Be Converted Indirectly	0	0		
C. Total Acres In Site	82	75		
PART IV *(To be completed by SCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland	35.3	32.3		
B. Total Acres Statewide And Local Important Farmland	N/A	N/A		
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted	.001	.001		
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value	25	25		
PART V *(To be completed by SCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	88	88		

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points				
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average					
8. Creation Of Nonfarmable Farmland					
9. Availability Of Farm Support Services					
10. On-Farm Investments					
11. Effects Of Conversion On Farm Support Services					
12. Compatibility With Existing Agricultural Use					
TOTAL SITE ASSESSMENT POINTS	160				
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100				
Total Site Assessment *(From Part VI above or a local site assessment)*	160				
TOTAL POINTS *(Total of above 2 lines)*	260				

Site Selected:	Date Of Selection	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

ATTACHMENT C

TRANSCRIPTS OF PUBLIC MEETINGS

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI 39180

Public Meeting
on
Mississippi River and Tributaries Project,
Mississippi River Mainline Levees
Enlargement and Seepage Control

Show Me Center
Cape Girardeau, Missouri
16 March 1998

PRESENT:

CORPS OF ENGINEERS:

Memphis District:

Colonel Gregory Bean, District Engineer
Major Joe Hallatschek, Deputy District Engineer
Mr. Billy Dycus, Programs and Project Management Division
Mr. Ed Lambert, Planning Division
Ms. Daphlyn Koester, Engineering Division
Ms. Patty Gray, Programs and Project Management Division
Ms. Bobbie Mitchell, Programs and Project Management Division
Mr. Dave Reece, Planning Division
Mr. Jim Pogue, Public Affairs Office

Vicksburg District:

Mr. Bill Hobgood, Planning Division
Mr. Dan Johnson, Planning Division
Mr. Moody Culpepper, Planning Division
Mr. Gary Young, Planning Division
Mr. Wendell King, Planning Division
Mr. Stoney Burke, Planning Division
Mr. Kent Parrish, Programs and Project Management Division
Mr. Eddie Brooks, Engineering Division
Mr. Danny Harrison, Engineering Division
Ms. Myra Dean, Planning Division
Ms. Jeannine Beatty, Planning Division

ALSO PRESENT:

Ms. Liz Anderson, Enterprise-Courier, P.O. Box 69, Charleston, Missouri 63834
Mr. Dan Belcher, Belcher Farms, Wolf Lake, Illinois 62998
Mr. Waymon Belcher, 145 Belcher Road, Wolf Lake, Illinois 62998
Mr. Mark Boone, Missouri Department of Conservation, 2302 County Park Drive, Cape Girardeau, Missouri 63701
Mr. Russell Elliott, Grand Tower Township, 421 Elliott Road, Grand Tower, Illinois 62942

John and Betty Gibbar, Route 1, Box 1324, Scott City, Missouri 63780
Mr. Riley James, 201 Kramer, Sikeston, Missouri 63801
Mr. Scott Knaus, GEL, 9357 Interline Avenue, Baton Rouge, Louisiana 70810
Mr. James D. Knupp, Grand Tower Levee Commission, Route 1, 3rd Avenue, Grand Tower, Illinois 62942
Ms. Janeen Laatsch, 1524 Bloomfield, Cape Girardeau, Missouri 63703

Mr. Dudley Lehew, Gulf South Research Corporation, 9357 Interline Avenue, Baton Rouge, Louisiana 70809
Mr. Barry McCoy, GEC, Inc., 9357 Interline Avenue, Baton Rouge, Louisiana 70810
Mr. Kenneth W. Mezo, Grand Tower Road District, P.O. Box 52, Grand Tower, Illinois 62942
Mr. John Moreton, 1330 Ashland Hills, Cape Girardeau, Missouri 63701
Ms. Faye Moxley, Levee District III, 1140 E. 208th Road, Charleston, Missouri 63834

Mr. John Moxley, Levee District III, 1140 E. 208th Road, Charleston, Missouri 63834
Mr. Jim O'Neal, Morley, Missouri 63767
Mr. Robert W. Schanzle, Illinois Department of Natural Resources, 524 South Second Street, Springfield, Illinois 62701-1787
Mr. Tom Schulte, U.S. Senators Bond and Ashcroft, 339 Broadway, Room 140, Cape Girardeau, Missouri 63701
Mr. Charles Schwartz

Mr. Lloyd Smith, Representative Jo Ann Emerson's office, 339 Broadway, Room 246, Cape Girardeau, Missouri 63701
Mr. Marion Stricker, Route 2, Box 270, Charleston, Missouri 63834
Mr. James Taflinger, Len Small Levee District, Route 1, Box 25A, Miller City, Illinois 62962

COL GREG BEAN: If you could all take a seat. This is not church; you don't have to sit in the back of the room. There are other seats up front for anybody that wants to make sure that they can hear and see everything. If I were sitting in the back, I would have to put my glasses on. Don't feel like you have to stand back there or sit back there. We are a pretty friendly organization, and we are looking forward to hearing from everybody.

For those that don't know me, I am COL Greg Bean. I am the Commander of the Memphis District. I have been there since July of 1995. Unfortunately, I will be leaving this summer, but I had a great experience working with the great citizens of the boot hills of Missouri, working with you to do the things that we do together to protect you from the ravages of Mother Nature. For those of you that know, we have had five floods in the last 5 years in the Memphis District, and we are hoping that 1998 is one of those normal years and that El Nino leaves all the rain on the west coast and east coast and lets us have a normal year.

Our purpose here tonight, this is the first of a series of public meetings that the U.S. Army Corps of Engineers is conducting regarding the Mississippi Rivers Levee Enlargement and Seepage Control Project. Tonight, we are continuing the public coordination process for the draft Project Report, the draft Supplemental Environmental Impact Statement (SEIS), and supporting technical appendixes for the project.

Last month, we distributed the draft documents for public review, and at tonight's meeting we will summarize our study findings and then give you the opportunity to make some statements and later ask some questions that you may have for our panel of technical experts.

If you wish to make a statement, you can indicate on the card that you filled out when you came in. If you have not had that opportunity and want to do it, just raise your hand and let one of the folks that are working for me around the room know so you can fill out a card if you would like to make a statement.

We have some special guests tonight, good folks and friends of ours that I have had the opportunity to work with over the past 3 years--Mr. R. D. James who is a Commissioner on the Mississippi River Commission. R. D., would you please stand and be acknowledged? We have Mr. Lloyd Smith who is representing Congresswoman Jo Ann Emerson. We have Mr. Tom Schulte who represents both Senators Bond and Ashcroft from Missouri. We welcome you all here.

For those of you that remember, it was about May, almost a year ago that we all met up here. I don't remember this much rain. But we met up here and had a scoping session where we brought you all in and others that were interested and gave you the

opportunity to give us your concerns about the Mississippi River Levees project and environmental issues surrounding it.

What we are going to talk to you about tonight is the results of our analysis and your questions and concerns. I will let you know what we have done with it and then give you the opportunity to ask further questions.

Let me introduce those at the front table. I have somebody new on my far left that I do not recognize. I don't have my glasses on.

MR. KENT PARRISH: Gary Young.

COL BEAN: Gary Young, okay. Gary is from the Vicksburg District. We have Mr. Ed Lambert who is from my Environmental Branch. We have Ms. Daphlyn Koester who is from my Engineering Division. We have Mr. Kent Parrish who is the Project Manager from Vicksburg who has the overall lead on the SEIS. And we have Mr. Billy Dycus who is my Project Manager for the levees project. With that, let me turn it over to Billy who will give you our analysis to this point.

MR. BILLY DYCUS: Hopefully, everyone in the back can see. If I talk too low, let me know and I will speak a little louder.

SLIDE 1 - INTRODUCTION

TONIGHT WE ARE HERE TO DISCUSS THE FINDINGS OF STUDIES CONDUCTED FOR THE DRAFT MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT AND SEEPAGE CONTROL PROJECT REPORT AND DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT. THIS IS A JOINT EFFORT OF THE U.S. ARMY CORPS OF ENGINEERS, MEMPHIS, VICKSBURG, AND NEW ORLEANS DISTRICTS, CONDUCTED WITH THE OVERSIGHT OF THE MISSISSIPPI RIVER COMMISSION. VICKSBURG WAS DESIGNATED AS THE LEAD DISTRICT IN THE CONDUCT OF THE STUDIES. WE SOLICIT YOUR COMMENTS ON THE PLAN OF IMPROVEMENT THAT IS BEING PROPOSED.

SLIDE 2 - PROJECT AREA

THE MR&T PROJECT IN THE ALLUVIAL VALLEY BETWEEN CAPE GIRARDEAU, MISSOURI, AND HEAD OF PASSES, LOUISIANA, PROVIDES PROTECTION FROM FLOODS BY MEANS OF VARIOUS STRUCTURAL MEASURES. THE MISSISSIPPI

RIVER MAINLINE LEVEES FEATURE--THE SUBJECT OF THESE INVESTIGATIONS--HAS BEEN UNDER CONSTRUCTION SINCE 1928.

THE MISSISSIPPI RIVER LEVEES AND CHANNEL IMPROVEMENT EIS WAS FILED WITH THE COUNCIL ON ENVIRONMENTAL QUALITY IN APRIL 1976. THIS EIS IS BEING SUPPLEMENTED TO COVER CONSTRUCTION OF ALL REMAINING MISSISSIPPI RIVER MAINLINE LEVEES AND SEEPAGE CONTROL.

THE PROJECT AREA EXTENDS 600 MILES FROM CAPE GIRARDEAU TO HEAD OF PASSES AT THE GULF OF MEXICO. THE PROJECT AREA WIDTH INCLUDES THE LEVEES, ALL LANDS RIVERSIDE OF THE LEVEES, AND A STRIP 3,000 FEET LANDSIDE OF THE LEVEES. THE PROJECT AREA IS COMPRISED OF PARTS OF SEVEN STATES--MISSOURI, ILLINOIS, TENNESSEE, KENTUCKY, ARKANSAS, MISSISSIPPI, AND LOUISIANA.

WE HAVE THE CAPABILITY TO COMPLETE THIS PROJECT IN THE YEAR 2020. UPON COMPLETION, APPROXIMATELY 35,000 SQUARE MILES OF THE ALLUVIAL VALLEY WILL BE PROTECTED FROM THE PROJECT DESIGN FLOOD--OR "P D F"--A HYPOTHETICAL FLOOD EVENT DEFINED AS THE GREATEST FLOOD HAVING A REASONABLE PROBABILITY OF OCCURRENCE. OUT OF 1,610 MILES OF MISSISSIPPI RIVER MAINLINE LEVEES, THERE REMAINS APPROXIMATELY 262 MILES THAT ARE 2 TO 8 FEET BELOW THE HEIGHT REQUIRED TO SAFELY PASS THE PDF.

SLIDE 3 - PROJECT SIGNIFICANCE

THE MISSISSIPPI RIVER FUNNELS 41 PERCENT OF THE CONTINENTAL UNITED STATES DRAINAGE. . . RUNOFF FROM ALL OR PARTS OF 31 STATES AND 2 CANADIAN PROVINCES TO THE GULF OF MEXICO. THE MISSISSIPPI RIVER LEVEES PROTECT MILLIONS OF RESIDENTS AND A MULTIBILLION DOLLAR, HIGHLY DEVELOPED AGRICULTURAL AREA.

SLIDE 4 - SIGNIFICANT ENVIRONMENTAL RESOURCES

THE PROJECT AREA CONTAINS SIGNIFICANT ENVIRONMENTAL RESOURCES. AS PART OF PREPARATION OF THE SEIS, EVALUATIONS OF WETLANDS, TERRESTRIAL RESOURCES, ENDANGERED SPECIES, NEOTROPICAL BIRDS, BATS, WATER QUALITY, AQUATIC RESOURCES, WATERFOWL, AND ARCHEOLOGICAL RESOURCES WERE CONDUCTED.

SLIDE 5 - HABITAT EVALUATION PROCEDURES

A TEAM COMPOSED OF BIOLOGISTS FROM THE U.S. ARMY CORPS OF ENGINEERS; THE U.S. FISH AND WILDLIFE SERVICE; THE ARKANSAS GAME AND FISH COMMISSION; LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES; THE MISSISSIPPI DEPARTMENT OF WILDLIFE, FISHERIES AND PARKS; AND KENTUCKY DEPARTMENT OF FISH AND WILDLIFE RESOURCES CONDUCTED THE TERRESTRIAL HABITAT EVALUATIONS. THE U.S. ARMY ENGINEER WATERWAYS EXPERIMENT STATION DETERMINED PROJECT IMPACTS ON AQUATIC RESOURCES. THE MIGRATORY WATERFOWL ANALYSIS WAS CONDUCTED BY THE U.S. FISH AND WILDLIFE SERVICE.

SLIDE 6 - PLANNING OBJECTIVES

OUR PLANNING OBJECTIVES WERE TO PROVIDE PROTECTION FROM THE PROJECT DESIGN FLOOD THROUGH AN ENVIRONMENTALLY SUSTAINABLE PROJECT WHICH AVOIDS AND MINIMIZES AS MANY ENVIRONMENTAL IMPACTS AS POSSIBLE AND COMPENSATES FOR UNAVOIDABLE LOSSES.

SLIDE 7 - ARRAY OF PLANS

A TEAM INCLUDING ENGINEERS, ECONOMISTS, BIOLOGISTS, AND OTHER DISCIPLINES DEVELOPED AND EVALUATED THIS ARRAY OF PROJECT PLANS COMPRISED OF NO ACTION, ONE NONSTRUCTURAL, AND THREE STRUCTURAL ALTERNATIVES.

SLIDE 8 - NO-ACTION ALTERNATIVE

NO LEVEE CONSTRUCTION OF ANY TYPE WOULD OCCUR--ONLY NORMAL MAINTENANCE AND REPAIR OF THE EXISTING LEVEES.

THEREFORE, THE INCREASED THREAT OF CATASTROPHIC FLOODING WOULD CONTINUE AND THE CITIZENS WOULD BE LIVING IN APPREHENSION OF FUTURE LEVEE FAILURES.

SLIDE 9 - FLOOD DAMAGE AREA (MAP)

LIMITED DAMAGE ANALYSES OF POTENTIAL LEVEE CREVASSES NEAR THE TOWNS OF MAYERSVILLE, MISSISSIPPI, AND LAKE PROVIDENCE, LOUISIANA, INDICATE ESTIMATED FLOOD DAMAGES APPROACHING $5.0 BILLION--ALMOST $2.0 BILLION IN THE AREAS ALONG THE EAST BANK OF THE MISSISSIPPI RIVER AND $3.0 BILLION ON THE WEST BANK. ASSOCIATED IMPACTS COULD INCREASE THE TOTAL EFFECT ON THE LOCAL ECONOMY TO ALMOST $10 BILLION.

MISSISSIPPI RIVER LEVEE FAILURES AT OTHER LOCATIONS WOULD CAUSE EVEN GREATER DAMAGES AND IMPACTS REGION-WIDE. BASED ON THE CASE STUDY, DAMAGES COULD BE EXPECTED TO APPROACH $300 BILLION.

SINCE THE NO-ACTION ALTERNATIVE WOULD NOT PROVIDE LONG-TERM FLOOD PROTECTION AND IS UNACCEPTABLE TO CONGRESS AND THE GENERAL PUBLIC AND THUS UNIMPLEMENTABLE, THE NO-ACTION OPTION WAS NOT GIVEN FURTHER CONSIDERATION.

SLIDE 10 - PLAN 1 - NONSTRUCTURAL ALTERNATIVES

PLAN 1 REPRESENTS A NONSTRUCTURAL OPTION TO STRUCTURAL FLOOD DAMAGE REDUCTION. THE NONSTRUCTURAL MEASURE ADDRESSED WAS PURCHASING EASEMENTS IN LIEU OF PROVIDING FLOOD PROTECTION. EXISTING LEVEE PROTECTION WOULD BE MAINTAINED AS IN THE NO-ACTION ALTERNATIVE. HOWEVER, SHOULD THE LEVEE BE OVERTOPPED AND

CATASTROPHIC FAILURES OCCUR, THE LEVEES WOULD NOT BE RECONSTRUCTED.

CONSIDERING ONLY THE ABOVE-MENTIONED MISSISSIPPI RIVER LEVEE BREAKS AT LAKE PROVIDENCE AND MAYERSVILLE, PURCHASE OF FLOWAGE EASEMENTS COULD BE REQUIRED ON APPROXIMATELY 16 MILLION ACRES. THIS WOULD YIELD A COST IN THE MULTIBILLION DOLLAR RANGE. EMERGENCY DISASTER ACTIVITIES, TRAFFIC REROUTING, AND ROAD AND BRIDGE STRUCTURE AND PUBLIC UTILITIES DAMAGES WOULD ALSO INCREASE COST SIGNIFICANTLY.

SUCH AN ALTERNATIVE WOULD NOT ACCOMPLISH THE CONGRESSIONALLY MANDATED PROJECT PURPOSE TO PROVIDE A PRESCRIBED LEVEL OF FLOOD PROTECTION. IN VIEW OF THIS AND CONSIDERING THE PROHIBITIVE COST AND CERTAIN PUBLIC UNACCEPTABILITY, A NONSTRUCTURAL PLAN WOULD NOT BE IMPLEMENTABLE AND WAS ELIMINATED.

SLIDE 11 - STRUCTURAL ALTERNATIVES

THREE STRUCTURAL ALTERNATIVES WERE ADDRESSED IN THE PRELIMINARY SCREENING--PLAN 2, LANDSIDE BORROW; PLAN 3, TRADITIONAL METHOD (RIVERSIDE BORROW); AND PLAN 4, ENVIRONMENTAL DESIGN (AVOID-AND-MINIMIZE) TO CONSTRUCT LEVEE ENLARGEMENT AND SEEPAGE CONTROL.

SLIDE 12 - TYPICAL WORK ITEM

A TYPICAL SEGMENT OF LEVEE CONSISTING OF SEVERAL PROPOSED WORK ITEMS WAS SELECTED TO PREPARE PRELIMINARY DESIGN AND COST ESTIMATES OF THE STRUCTURAL PLANS. THE AVERAGE LEVEE RAISE WAS 2.5 TO 3 FEET AND INCLUDED EITHER SEEPAGE BERM ENLARGEMENT OR NEW SEEPAGE BERM CONSTRUCTION.

SLIDE 13 - PLAN 2 - LANDSIDE BORROW

FOR THIS ALTERNATIVE, ALL BORROW MATERIAL WOULD BE OBTAINED FROM LANDSIDE OF THE LEVEES. THREE LANDSIDE BORROW SCHEMES WERE INVESTIGATED AS SHOWN HERE.

SLIDE 14 - PLAN 2A - TRADITIONAL LANDSIDE BORROW

PLAN 2A CONSISTS OF TRADITIONAL RECTANGULAR BORROW AREAS 8 TO 10 FEET DEEP IN A BAND 2,000 TO 3,000 FEET FROM THE LEVEE. 2,000 FEET IS TO LESSEN UNDERSEEPAGE PROBLEMS AND 3,000 FEET IS TO LIMIT HAUL DISTANCE. SUITABLE MATERIAL WOULD BE EXCAVATED AND USED TO ENLARGE THE LEVEE AS SHOWN OR TO CONSTRUCT BERMS. THE LANDSIDE RIGHTS-OF-WAY AND EXTENDED HAUL DISTANCES WOULD INCREASE COST.

WATER QUALITY PROBLEMS WOULD BE CREATED BY CONSTRUCTION OF LANDSIDE BORROW AREAS AS DRAINAGE FROM ADJACENT FIELDS WOULD CONTRIBUTE SUSPENDED SEDIMENTS, NUTRIENTS, AND PESTICIDES. TESTING OF EXISTING LANDSIDE BORROW AREAS HAS INDICATED HIGH LEVELS OF PESTICIDES IN FISH WHICH APPROACH FOOD AND DRUG ADMINISTRATION ACTION LEVELS FOR CONSUMPTION BY HUMANS.

SLIDE 15 - PLAN 2B - TRADITIONAL LANDSIDE BORROW WITH FORESTED BUFFER

THIS ALTERNATIVE CONSISTS OF BORROW AREAS 8 FEET DEEP AND PROTECTED BY A FORESTED BUFFER ZONE WITH A PROTECTIVE BERM AROUND THE OUTSIDE OF THE BUFFER. AS IN PLAN 2A, THE LOCATION FOR THE BORROW AREA IS 2,000 TO 3,000 FEET FROM THE LEVEE.

THIS IS THE EXCAVATED BORROW AREA SHOWING THE FORESTED BUFFER AREA AND PROTECTIVE DIKE. THIS DESIGN IMPROVES WATER QUALITY BY ISOLATING THE BORROW FROM THE AGRICULTURAL DRAINAGE.

SLIDE 16 - PLAN 2C - LANDSIDE SHALLOW BORROW

LANDSIDE SHALLOW BORROW ALLOWS FOR DRAINING THE BORROW AREAS SO THEY CAN BE FORESTED. BORROW EXCAVATION IS LIMITED TO 3 FEET DEEP AND SHAPED TO DRAIN AND CONNECT TO LOCAL DRAINAGE.

THIS SLIDE SHOWS A TYPICAL LAYOUT OF SHALLOW BORROW AREA LOCATION, EXCAVATION AND LEVEE ENLARGEMENT, AND FORESTED BORROW AREA. THIS SHALLOW BORROW GREATLY INCREASES THE REQUIRED ACREAGE FOR BORROW, THUS INCREASING COST.

SLIDE 17 - PLAN 3 - TRADITIONAL METHOD

PLAN 3 IS THE TRADITIONAL METHOD TO CONSTRUCT LEVEE ENLARGEMENTS AND BERMS. HERE, OUR CONSTRUCTION IS NORMALLY BASED ON THE MOST ECONOMICAL DESIGN. I WILL DISCUSS DESIGN DETAILS LATER.

SLIDE 18 - PLAN 4 - ENVIRONMENTAL DESIGN (AVOID AND MINIMIZE)

PLAN 4 IS AN ENVIRONMENTAL DESIGN WHICH INCORPORATES MEASURES TO AVOID AND MINIMIZE ENVIRONMENTAL DAMAGES TO BOTTOM-LAND HARDWOODS AND WETLANDS. DESIGN DETAILS OF THIS PLAN WILL ALSO BE DISCUSSED LATER.

SLIDE 19 - COST COMPARISON

HERE ARE THE COST ESTIMATES OF ALL STRUCTURAL PLANS FOR THE TYPICAL LEVEE SEGMENT. AS YOU CAN SEE, COSTS FOR PLANS 2A, 2B, AND 2C--THE LANDSIDE BORROW ALTERNATIVES--EXCEED COSTS FOR PLANS 3 AND 4.

SLIDE 20 - MAJOR REASONS FOR LANDSIDE BORROW ELIMINATION

THEREFORE, PLAN 2 WAS NO LONGER EVALUATED FOR THESE REASONS.

SLIDE 21 - FINAL ARRAY OF PLANS

ONLY PLANS 3 AND 4 WERE CARRIED INTO DETAILED DESIGN BECAUSE THEY ARE THE MOST VIABLE AND IMPLEMENTABLE.

SLIDE 22 - TRADITIONAL PLAN 3 (GIS MAP RIVERSIDE BORROW)

ANALYSIS OF THIS PLAN CONSISTED FIRST OF PRINTING MAPS LIKE THIS THAT CONTAIN SEVERAL DATA LAYERS INCLUDING BASE TOPOGRAPHIC FEATURES, LAND COVER MAPPING, WETLAND MAPPING, AND WORK ITEMS.

AN ENGINEERING DESIGN TEAM LOCATED THE BORROW AREAS AS SHOWN HERE OUTLINED IN BLACK. THESE BORROW AREAS ARE NORMALLY LOCATED RIVERSIDE AS CLOSE TO THE CONSTRUCTION SITE AND EXCAVATED AS DEEP AS POSSIBLE. THIS PLAN REQUIRES NO SPECIAL CONFIGURATION OR LOCATION OF THE BORROW AREAS. NO PROVISIONS ARE MADE FOR DRAINAGE OR ENVIRONMENTAL ENHANCEMENT OF THE BORROW AREAS.

SLIDE 23 - ENVIRONMENTAL DESIGN PLAN 4 (AVOID AND MINIMIZE)

TO DEVELOP THE LAYOUT FOR PLAN 4, AN INTERDISCIPLINARY TEAM OF REPRESENTATIVES FROM STATE AND FEDERAL AGENCIES, LOCAL SPONSORS, AND CORPS STAFF WAS FORMED. THE AVOID-AND-MINIMIZE DESIGN APPLIED TO THIS WORK ITEM RELOCATED THE RIVERSIDE BORROW AREA FROM THE BOTTOM-LAND HARDWOOD WETLANDS TO RIVERSIDE CLEARED FARMLANDS (SHOWN HERE OUTLINED IN RED).

SLIDE 24 - AVOID AND MINIMIZE RELOCATION OF BORROW AREAS

WHERE FARMLANDS WERE NOT AVAILABLE RIVERSIDE, THE BORROW WAS MOVED INTO LESS ENVIRONMENTALLY DAMAGING RIVERSIDE TREE PLANTATIONS, NONWETLAND RIVERSIDE BOTTOM-LAND HARDWOODS, OR LANDSIDE FARMLANDS.

SLIDE 25 - ENVIRONMENTAL BORROW AREA DESIGN

MOST RELOCATED BORROW AREAS WOULD INCLUDE ENVIRONMENTAL FEATURES SUCH AS VARYING DEPTHS, IRREGULAR SHORELINE, ISLANDS, AND FORESTED BUFFER.

SLIDE 26 - INNOVATIVE AVOID-AND-MINIMIZE DESIGN

OTHER INNOVATIVE DESIGN APPROACHES FOR REDUCING BOTTOM-LAND HARDWOODS AND WETLANDS EFFECTS WERE ALSO CONSIDERED. DETAILS ARE IN THE FOLLOWING SLIDES.

SLIDE 27 - BERM SCHEMATIC 1

THIS SHOWS THE EXCAVATION OF AN EXISTING BERM BEING USED TO ENLARGE THE LEVEE, CONSTRUCT RETAINING DIKES FOR DREDGED MATERIAL, AND STORE MATERIAL IN A STOCKPILE OR IN THE RETAINING DIKES TO COVER FUTURE DREDGED MATERIAL.

SLIDE 28 - BERM SCHEMATIC 2

THIS SHOWS REPLACING THE EXCAVATED MATERIAL WITH MATERIAL DREDGED FROM THE RIVER. A TEMPORARY ENVIRONMENTAL IMPACT WOULD BE RELATED TO THE NARROW PATH OF THE DREDGE PIPE FROM THE RIVER TO THE BERM SITE.

SLIDE 29 - BERM SCHEMATIC 3

NOW YOU SEE THE FINAL STEP. THE STOCKPILED SOIL IS NOW USED TO COVER THE DREDGED MATERIAL FOR GROWTH OF GRASSES.

SLIDE 30 - DREDGE SITE LOCATIONS FOR BORROW

THIS SHOWS THE DREDGE SITE LOCATIONS IN THE MISSISSIPPI RIVER TO BE USED FOR BORROW TO CONSTRUCT SEVERAL WORK ITEMS AS SHOWN ON THE EAST BANK.

SLIDE 31 - RELIEF WELLS SEEPAGE CONTROL

THE USE OF RELIEF WELLS TO CONTROL SEEPAGE INSTEAD OF BERMS COULD BE USED IN SUITABLE LOCATIONS. PLEASE NOTE THAT CLEAR WATER FLOWING FROM THIS WELL INDICATES THAT NO SOIL IS BEING WASHED OUT FROM UNDER THE LEVEE.

SLIDE 32 - CUTOFF TRENCH SEEPAGE CONTROL

THE USE OF CUTOFF TRENCHES TO CONTROL SEEPAGE INSTEAD OF BERMS COULD BE USED IN SUITABLE LOCATIONS.

SLIDE 33 - COST TABLE

TOTAL COSTS FOR CONSTRUCTION AND MITIGATION FOR UNAVOIDABLE FISH AND WILDLIFE IMPACTS ARE SHOWN HERE FOR PLANS 3 AND 4. AS YOU CAN SEE, PLAN 3 COST IS APPROXIMATELY $623 MILLION AND PLAN 4 COST IS ABOUT $652 MILLION. THERE IS ABOUT A $29 MILLION COST DIFFERENCE BETWEEN THESE TWO PLANS.

SLIDE 34 - BOTTOM-LAND HARDWOODS IMPACTS

BOTH PLANS 3 AND 4 WERE ANALYZED FOR THEIR EFFECTS ON BOTTOM-LAND HARDWOODS AS SHOWN HERE.

PLAN 3 IMPACTS ROUGHLY 11,600 ACRES OF BOTTOM-LAND HARDWOODS. PLAN 4 REDUCES BOTTOM-LAND HARDWOOD LOSSES BY NEARLY 60 PERCENT OR BY SOME 6,700 ACRES. YOU MAY RECALL IN THE 1976 EIS, AN

ESTIMATED 11,400 ACRES OF BOTTOM-LAND HARDWOODS WERE TO BE AFFECTED. BY USING ENVIRONMENTAL DESIGN TECHNIQUES, WE HAVE REDUCED THIS AMOUNT TO 4,800 ACRES. THE 4,800 ACRES IMPACTED IN PLAN 4 AFFECTS LESS THAN ONE-HALF OF 1 PERCENT OF THE TOTAL 1,022,000 ACRES OF BOTTOM-LAND HARDWOODS IN THE PROJECT AREA.

SLIDE 35 - PLAN SELECTION

ALTHOUGH PLAN 4 COSTS SLIGHTLY MORE THAN PLAN 3, PLAN 4 CONSTRUCTION TECHNIQUES DRAMATICALLY REDUCE ENVIRONMENTAL IMPACTS. THEREFORE, PLAN 4 IS THE RECOMMENDED PLAN.

SLIDE 36 - DESCRIPTION OF RECOMMENDED PLAN

THE PROPOSED ACTION INCLUDES 128 WORK ITEMS, COMPRISING THE LEVEE RAISING AND SEEPAGE CONTROL SHOWN HERE. THERE ARE 262.8 MILES OF LEVEES TO BE RAISED AND 131.8 MILES OF SEEPAGE CONTROL. NOTE THAT MOST OF THE LEVEE RAISING IS IN THE VICKSBURG DISTRICT WHILE THE MAJORITY OF THE SEEPAGE CONTROL IS WITHIN THE MEMPHIS DISTRICT.

SLIDE 37 - MITIGATION ANALYSIS

RESULTS OF THE MITIGATION ANALYSIS FOR PLAN 4 WERE THAT FISH AND WILDLIFE LOSSES COULD BE OFFSET BY REFORESTING APPROXIMATELY 5,900 ACRES OF FREQUENTLY FLOODED AGRICULTURAL LANDS AT A COST OF $8.8 MILLION. THIS WOULD FULLY COMPENSATE UNAVOIDABLE LOSSES TO SIGNIFICANT ENVIRONMENTAL RESOURCES. APPROXIMATELY 89 PERCENT OF THESE ACRES ARE LOCATED IN THE VICKSBURG DISTRICT, APPROXIMATELY 11 PERCENT IN THE MEMPHIS DISTRICT AND LESS THAN 1 PERCENT IN THE NEW ORLEANS DISTRICT.

SLIDE 38 - ADDITIONAL MITIGATION FEATURES

IN ADDITION TO THE MITIGATION FEATURE, THE RECOMMENDED PLAN ALSO INCLUDES THESE ENVIRONMENTAL ATTRIBUTES.

SLIDE 39 - OPERATION AND MAINTENANCE REQUIREMENTS

LOCAL LEVEE BOARDS WILL CONTINUE TO PERFORM ALL MINOR OPERATION AND MAINTENANCE AT THEIR COST, AND THE CORPS WILL BE RESPONSIBLE FOR MAJOR MAINTENANCE.

SLIDE 40 - PLAN ACCOMPLISHMENTS

PLAN ACCOMPLISHMENTS INCLUDE:

- PROVIDING PROTECTION FROM THE PROJECT DESIGN FLOOD,
- AN ENVIRONMENTALLY SUSTAINABLE PROJECT,
- COMPENSATION FOR UNAVOIDABLE ENVIRONMENTAL LOSSES AT FULL FEDERAL EXPENSE.

SLIDE 41 - DIVISION OF PLAN RESPONSIBILITY

THESE ARE THE FEDERAL AND NON-FEDERAL IMPLEMENTATION RESPONSIBILITIES. NOTE THAT THE FEDERAL GOVERNMENT WILL CONSTRUCT THE PROJECT AND PAY FOR THE MITIGATION WHILE THE LOCAL SPONSORS WILL PAY FOR LANDS, EASEMENTS, RIGHTS-OF-WAY, RELOCATIONS, AND BORROW AREAS.

SLIDE 42 - CLEAN WATER ACT

A SECTION 404(B)(1) EVALUATION OF THE RECOMMENDED PLAN HAS BEEN PREPARED AND INCLUDED IN THE DRAFT REPORT FOR PUBLIC REVIEW. THE SECTION 404(B)(1) EVALUATION WILL BE USED TO APPLY FOR SECTION 401 CERTIFICATION FROM RESPECTIVE STATES.

SLIDE 43 - KEY MILESTONES

THE DRAFT REPORT IS CURRENTLY BEING REVIEWED BY FEDERAL, STATE, AND LOCAL AGENCIES AND THE CONCERNED PUBLIC. SIX PUBLIC MEETINGS ARE BEING HELD THIS MONTH. COMMENTS ARE BEING SOLICITED UNTIL APRIL 30, 1998, AND WILL BE ADDRESSED IN THE FINAL REPORT. COPIES OF THE LATEST NEWSLETTER WITH A LIST OF LIBRARIES WHERE THE DRAFT REPORT CAN BE READ ARE AT THE BACK OF THE ROOM.

THE FINAL SEIS WILL BE DISTRIBUTED IN JULY 1998 AND THE RECORD OF DECISION IS SCHEDULED FOR SIGNING IN OCTOBER 1998.

SLIDE 44 - CLOSING

WE WANT TO THANK ALL OF THOSE WHO ASSISTED IN THIS EFFORT. THE RECOMMENDED PLAN WILL PROVIDE THE REQUIRED LEVEL OF FLOOD PROTECTION TO THE RESIDENTS OF THE LOWER MISSISSIPPI VALLEY PERMITTING ECONOMIC DEVELOPMENT OF THE REGION WHILE CONCURRENTLY SUSTAINING ITS ENVIRONMENTAL RESOURCES.

THIS CONCLUDES THE PRESENTATION OF STUDY RESULTS.

I WILL NOW TURN THE MEETING BACK OVER TO COL BEAN.

COL BEAN: Could I get someone to turn the lights back up? Okay, we have one person who has volunteered to speak up and make a statement. That is Mr. James Taflinger. Sir, if you would like to stand up and make your statement. I hope I did not butcher

your name too badly. Microphones are in the center there, and please speak up so that we can all hear you.

MR. JAMES TAFLINGER: I did not realize that only one person was going to speak.

COL BEAN: I had to put you on the spot there, sir.

MR. TAFLINGER: I am concerned that if you reforest your borrow pits, then you cannot use them again, is that correct? If you have to come back and do a slide or something, would you have to go make another pit somewhere? It seems like that each time a levee district acquires land for pits, they are automatically off limits to use again because of the environmental problems.

MR. KENT PARRISH: Sir, all the borrow areas are not being reforested. There are some that will still be in aquatic that could possibly still be used if they are not too deep where they get to that underseepage to that sand strata. In some cases, you are limited by the underlying soil as to whether you can go any deeper or you will be introducing seepage there. So that could play into it, but not all of them are being reforested and the reforestation of the 5,900 acres is offsite somewhere. It is not in the borrow areas. So, yes, some of them could still be used for borrow.

MR. TAFLINGER: Well, I think it is important that we maintain our levees and keep this construction process on line. That is my only statement.

COL BEAN: Thank you very much for your statement. We are scheduled to take a 15-minute break. We will just drive on forward since we did not get the thousands of comments that we were expecting to get.

We have our technical panel up here. If anyone has a question you would like to ask them, please feel free to do so.

Yes, sir. Please go to one of the microphones and identify yourself.

MR. MARION STRICKER: I am Marion Stricker, and I am from Charleston, Missouri. The question I have in mind is, when considering putting in the relief wells, how much of the drainage will be improved to handle the increased amount of water that will be coming out of those wells? An how much to improving the crossings and everything to get it all out?

MR. DYCUS: In the Memphis District, that is looked at on a case-by-case basis. We would look at the interceptor and collector ditches that would drain the water and determine if they are adequate size to carry the flow. If they are not, then we would do some improvement to those ditches.

MR. STRICKER: Would that include the crossings and culverts and everything that are existing previously?

MR. DYCUS: They may or may not. It would be on a case-by-case basis. Probably they would.

MR. STRICKER: Okay, thank you.

COL BEAN: Our intent is to make sure if we put the relief wells in there that we can drain the water and get it to the place where we can get it pumped out of the way.

MR. STRICKER: Thank you.

COL BEAN: Any other questions? Yes, sir.

MR. KENNETH MEZO: I am probably not even supposed to be here tonight. I live about 30 miles north of here.

COL BEAN: We are glad you came.

MR. MEZO: We did not know for sure what the meeting was all about. We heard it on Channel 12 this morning. We are in the process of trying to raise our levees and repair our levees from Grand Tower north to Cora city. We are trying to do the same thing you are doing, but the Corps of Engineers from St. Louis says we cannot do it because we would put water on them over in Missouri. I would like to know how you can do this here, yet we cannot do it.

COL BEAN: How about if you just talk to us after the meeting so we can get a few more details and we will try to work with you and the St. Louis District.

MR. MEZO: Okay. I did not know for sure what this is all about.

COL BEAN: We are glad you came. Our concept is, if you have an issue with the Corps of Engineers and you see one of us wearing the Castles or one of these other folks that have the red tags, come to us and we will get the question to the right person. Just come see me afterwards and we will get the issue and get it working.

MR. MEZO: Okay, thank you.

COL BEAN: Thank you. Somebody else has got to have a question. Lloyd, were you raising your hand? I see you are stretching. I know you have plenty of them.

MR. LLOYD SMITH: Would you mind addressing the mitigation plan for reforestation where you are talking about the Corps buying

prime agricultural land? Address the question of willing seller or nonwilling seller in that regard.

MR. PARRISH: The mitigation plan is from willing sellers only. It is frequently flooded agricultural land that we would be looking for, and it is strictly on a willing seller basis. The 5,900 acres, as Billy showed you, the vast majority of it is in the Vicksburg District. There is probably about 5,000 acres that is down our way. The rest of it is up here in the Memphis District, with New Orleans having about 24 acres. So the vast majority of it is down in Louisiana and Mississippi.

MR. SMITH: A followup question to that. If you cannot find willing sellers with acres in the actual area where you are redoing berms or relief wells, can you buy that land farther away from that site or does it have to be in very close proximity to that site?

MR. PARRISH: The land can be purchased anywhere in the lower valley, basically. But the Corps would look for a manageable type unit, say to add on to an existing wildlife management area or U.S. Fish and Wildlife Refuge or something like that so you would already have a base there and you would just add to it so you would not have to be paying for a lot of extra management on that land. That would save taxpayer dollars. That would be where we would primarily look first. If it was not available, we would just go to an offsite location.

MR. ED LAMBERT: In fact, at the public information meeting we had in Memphis, we did have a gentleman approach us that is a willing seller. He had quite a substantial amount of land, and some of it may fit the bill or be close to an large contiguous tract of timber or something. That is something that we will be working out with the resource agencies, but I think we will be able to find some willing sellers out there.

COL BEAN: Does anybody else have a question? If you do not want to make it in public forum, I will stick around here for a while so you will have some one-on-one questions if you would like.

COL BEAN: You have until April 30 to mail us any comments. If there are no more questions, I would like to thank you for coming.

Yes, sir, Mr. James.

MR. RILEY JAMES: These comments and written comments mailed to you will become part of the permanent SEIS, won't they?

COL BEAN: Yes, sir.

MR. JAMES: Which will be debated as the summary goes on and then a recommended plan does follow?

COL BEAN: Yes, sir. You comments are welcome; please get them in. Any comments you make will be considered as we go through the final portion of the EIS process.

Thank you again for coming out. We appreciate your coming through the rain and showing your interest in this project which is very essential to not only this part of the region but the entire valley.

Thank you. Have a great evening and a safe drive home.

Meeting adjourned at 7:35 p.m.

LIST OF EXHIBITS

No. 1 - Notice of Public Meetings

No. 2 - Copy of Newsletter, February 1998

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
4155 CLAY STREET
VICKSBURG, MISSISSIPPI 39180-3435

REPLY TO
ATTENTION OF: —

NOTICE OF PUBLIC MEETINGS MISSISSIPPI RIVER AND TRIBUTARIES PROJECT, MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT MARCH 16-19 AND 30-31, 1998

The U.S. Army Corps of Engineers, Vicksburg, Memphis, and New Orleans Districts, have prepared a Draft Project Report and Draft Supplemental Environmental Impact Statement for the Mississippi River Mainline Levees Enlargement and Berm Construction feature of the Mississippi River and Tributaries Project. All planned work is located between Cape Girardeau, Missouri, and Head of Passes, Louisiana. The proposed improvements would provide the congressionally authorized level of protection from Mississippi River flooding by raising deficient levee sections and controlling underseepage.

This report will be reviewed by various Federal, state, and local agencies and other interested organizations. Copies of the Draft Project Report and Draft Supplemental Environmental Impact Statement will be on deposit March 3, 1998, in the following libraries:

Arkansas

Mississippi County Library System
200 North 5th
Blytheville, Arkansas 72315

Illinois

Cairo Public Library
1609 Washington Avenue
Cairo, Illinois 62914

Kentucky

Paducah Public Library
555 Washington Street
Paducah, Kentucky 42003-1735

Louisiana

Ascension Parish Public Library
500 Mississippi Street
Donaldsville, LA 70346-2535

East Baton Rouge Parish Library
7711 Goodwood Boulevard
Baton Rouge, LA 70806-7625

Ferriday/Concordia Parish Library
1609 Third Street
Ferriday, LA 71334-2298

Madison Parish Library
403 North Mulberry
Tallulah, LA 71282-3599

Exhibit 1

New Orleans Parish Library
219 Loyola
New Orleans, LA 70140-1016

State Library of Louisiana
Louisiana Section
760 North 3rd Street
Baton Rouge, LA 70802

Mississippi

Homochitto Valley Library Service
220 South Commerce
Natchez, Mississippi 39120

Warren County/Vicksburg Library
700 Veto Street
Vicksburg, MS 39180-3595

Carnegie Public Library
114 Delta Avenue
Clarksdale, Mississippi 38614

Washington County Library
341 Main Street
Greenville, Mississippi
38701-4097

Missouri

Cape Girardeau Public Library
711 North Clark
Cape Girardeau, MO 63701

Tennessee

McIvers Grant Public Library
204 North Mill Street
Dyersberg, TN 38024-4631

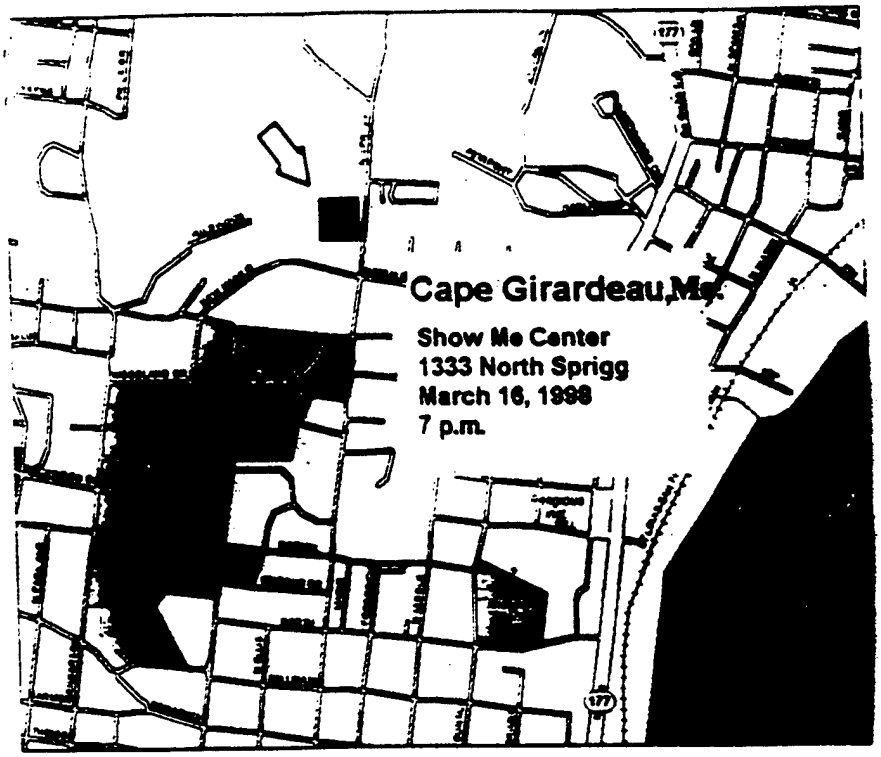
Memphis/Shelby County Public Library
1850 Peabody Avenue
Memphis, Tennessee 38104-4021

Newbern City Library
220 East Main
Nerbern, Tennessee 38059-1528

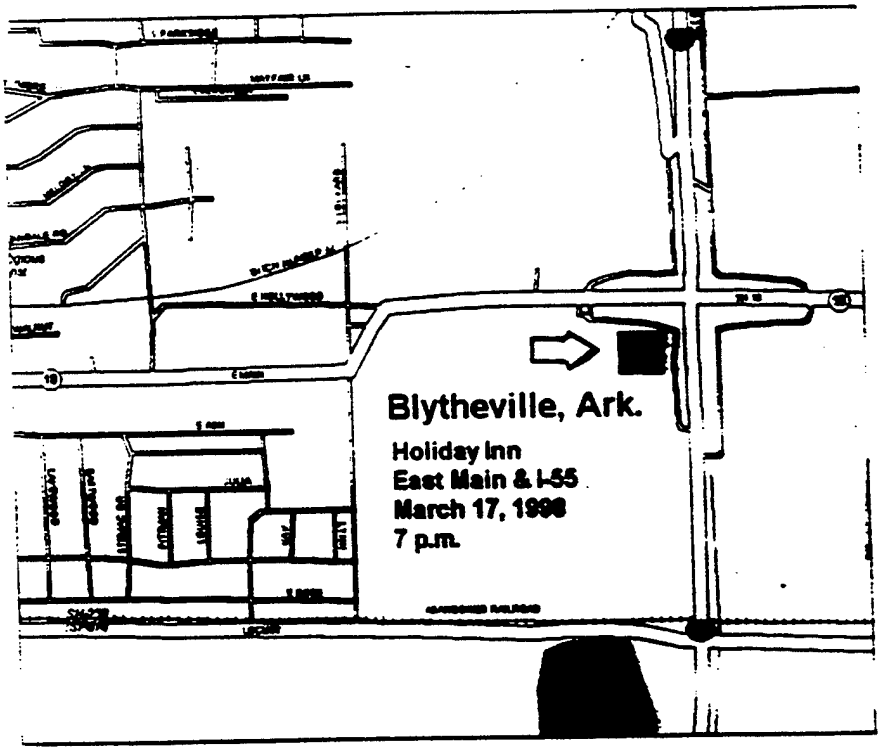
Tiptonville Public Library
126 Tipton Street
Tiptonville, TN 38079

To allow all interested individuals an opportunity to ask questions or express views, public meetings will be held in the locations shown below at 7 p.m. on the indicated dates:

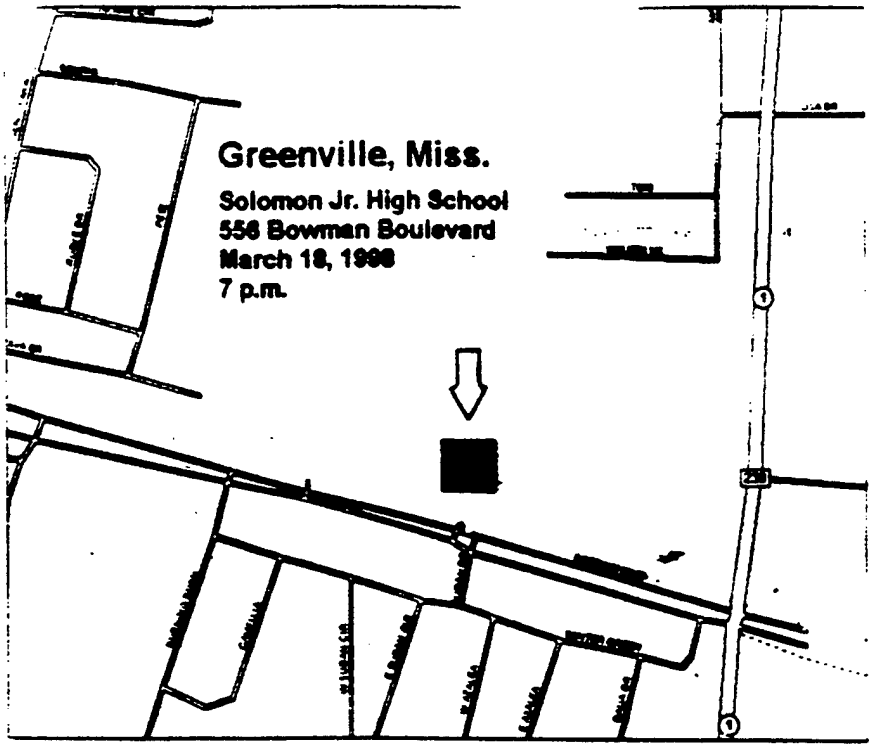
Monday, March 16, 1998
Show Me Center
1333 North Sprigg Street
Cape Girardeau, Missouri



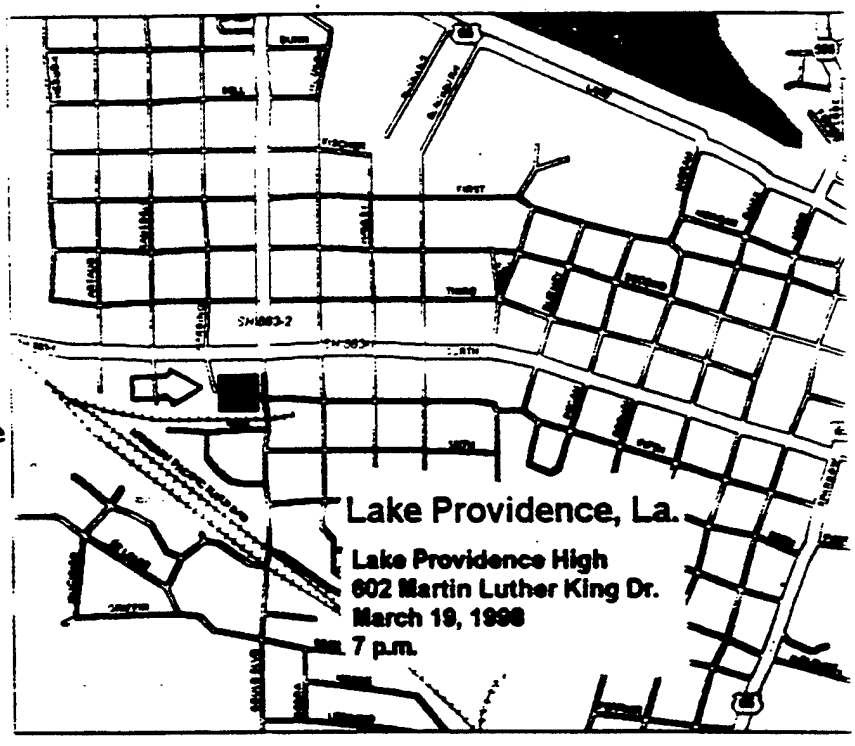
Tuesday, March 17, 1998
Holiday Inn
East Main & I-55
Blytheville, Arkansas



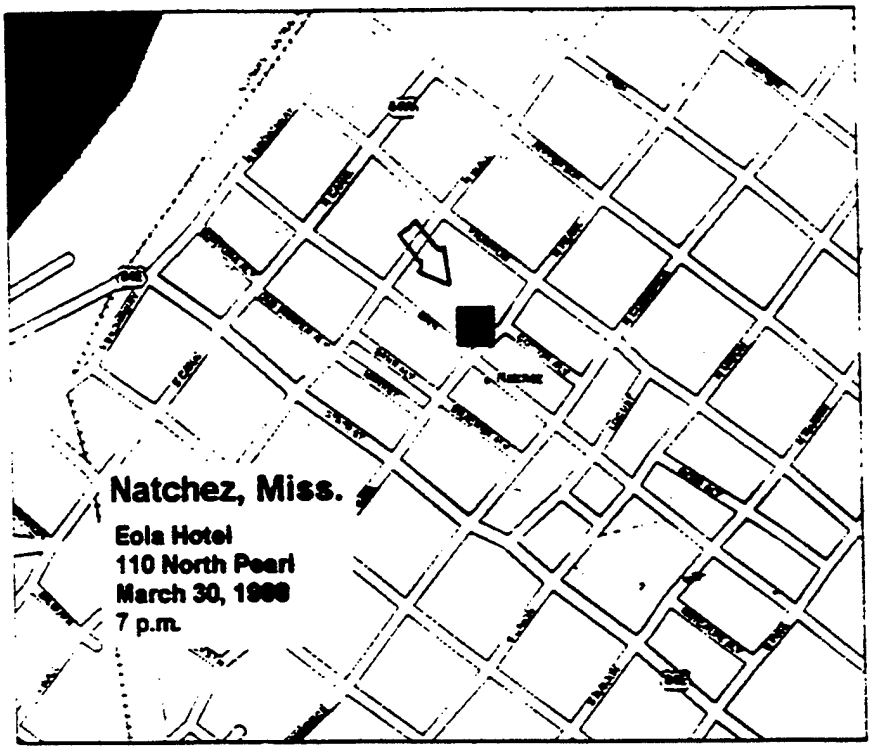
Wednesday, March 18, 1998
Solomon Jr. High School
556 Bowman Boulevard
Greenville, Mississippi



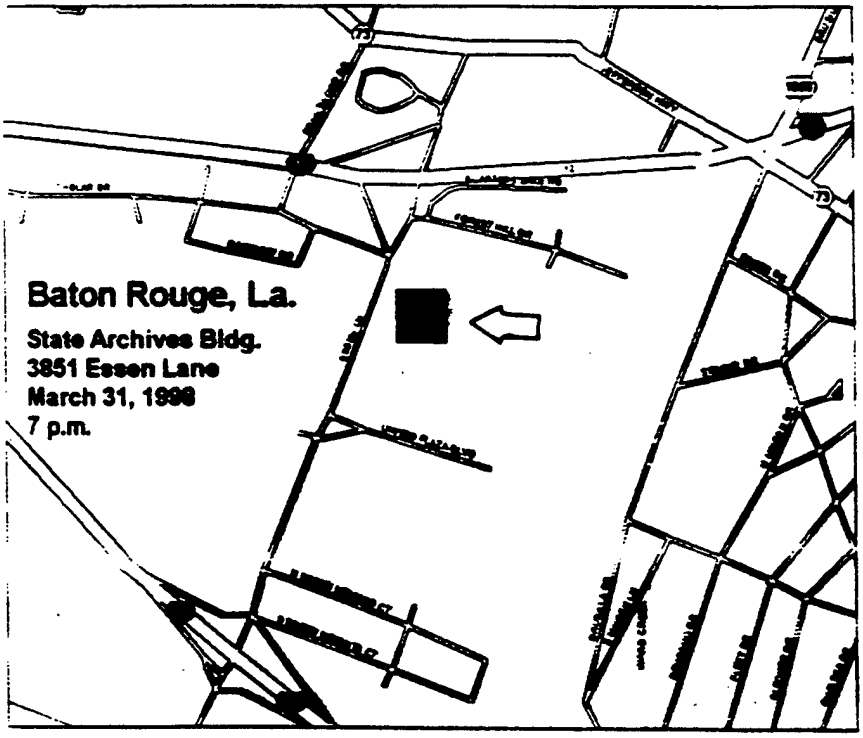
Thursday, March 19, 1998
Lake Providence High School
602 Martin Luther King Drive
Lake Providence, Louisiana



Monday, March 30, 1998
Eola Hotel
110 North Pearl
Natchez, Mississippi



Tuesday, March 31, 1998
State Archives Building
3851 Essen Lane
Baton Rouge, Louisiana



Information regarding evaluations conducted and project plan recommended will be presented. At the end of the formal presentation, oral statements may be made by the public, followed by a question-and-answer session. Written statements may be submitted at the meetings or mailed to the above address, ATTN: CEMVK-PD-F.

Proceedings of these meetings will be recorded, and summaries will be prepared and incorporated into the Project Report. Mailed statements must be received by April 30, 1998, to be included in the official record.

Gary W. Wright
Colonel, Corps of Engineers
District Engineer

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
4155 CLAY STREET
VICKSBURG, MISSISSIPPI 39180-3435

OFFICIAL BUSINESS
CEMVK-PD-F

NOTICE OF PUBLIC MEETINGS

US Army Corps
of Engineers

MISSISSIPPI RIVER & TRIBUTARIES PROJECT
MISSISSIPPI RIVER MAINLINE LEVEES
DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

US Army Corps
of Engineers
February 1998

Mississippi River & Tributaries Project
Mississippi River Mainline Levee
Enlargement & Berm Construction Project
Supplemental Environmental Impact Statement

NEWSLETTER

Maj. Gen. Anderson:

"A Strong Environmental Ethic Is Part Of How We Conduct Our Business"

"Our commitment is to have an environmentally sustainable project," Maj. Gen. Phillip R. Anderson, commander of the Mississippi Valley Division, U.S. Army Corps of Engineers, said in a special Newsletter interview. "Simply put, we must balance environmental and economic development concerns and we fully intend to do this."

Comments On Levee Enlargement Program

The general, who also is president of the Mississippi River Commission, made his comment regarding an update study being conducted in relation to an ongoing enlargement program for Mississippi River mainline levees.

The Memphis, Vicksburg and New Orleans Districts of the Corps of Engineers are currently preparing a supplement to the 1976 Environmental Impact Statement that includes the mainline Mississippi River levee project. The Supplemental Environmental Impact Statement (SEIS) will describe the effects of enlarging sections of the mainline levees on environmental resources and fish and wildlife habitat of the Mississippi River floodplain. The SEIS is based on an extensive reevaluation of remaining levee work to ensure that all environmental requirements are met and that negative impacts are avoided, minimized or compensated.

The reevaluation of the environmental impact of mainline levees, berms and seepage construction will ensure that current and remaining projects meet environmental requirements.

"Environmental aspects have equal standing with economics and engineering," Anderson said. "A strong environmental ethic is part of how we conduct our business. Sustaining our environment is a necessary part of building and securing our nation."

Maj. Gen. Phillip R. Anderson

Long-Term Project Triggered by 1927 Flood

A disastrous flood caused by levee failure in 1927 led Congress to create the Mississippi Rivers & Tributaries Act. The act set in motion a long-term project where 1,600 miles of levees from Cape Girardeau, Mo., to the Gulf of Mexico, would be brought to proper height and grade to handle a "Project Flood."

The Project Flood is a model of the worst flood that could be predicted, based on past flooding and waterflow levels. Based on current funding levels, all of the MR&T levees are scheduled to be upgraded and made capable of handling the Project Flood by the year 2031.

There are about 280 miles of mainline levees which are still below height

and grade and are scheduled for improvements. Since improvements primarily involve using soil near project sites or "borrow" material, the major focus is on protecting bottomland hardwoods in borrow areas.

MR&T Project Returns $18 For Each $1 Spent

"The nation has invested almost $10 billion to date to plan, design, construct, operate and maintain the MR&T project, and savings through flood damage prevention have totaled more than $182 billion, a return of $18 for each $1 spent," Anderson said.

He added, "The Mississippi River's levees protect over 4.5 million people, or about 1.5 million households whose residences are valued at $114 billion.

"Further, an estimated 33,000 farms and farm buildings valued at $13 billion also are protected by the levees, and the earning power of people living and working in the 49,000 square miles impacted by the levees totals $64 billion annually."

General Anderson also noted that the Mississippi and its tributaries drain 41 percent of the contiguous United States, touching 31 states and Canada and encompassing more than 1.2 million square miles.

The river also forms the Mississippi Flyway, the nation's most important route for millions of annually migrating waterfowl.

Endangered Species, Fish, Waterfowl & Wildlife Habitat Included In Study

"While the focus of the SEIS is on bottomland hardwood wetlands, it also includes impacts on all areas of the environment, such as endangered species, terrestrial, aquatic and waterfowl resources.

"The SEIS will ensure that environmental impacts of the project are avoided, minimized or compensated and also ensure that the Corps is in compliance with the National Environmental Policy Act (NEPA)," Anderson said.

SITES & DATES SET FOR PUBLIC MEETINGS

Six sites in four states have been chosen for public meetings in March 1998 to receive comments on the draft Supplemental Environmental Impact Statement (SEIS).

The sites and dates:

Meetings Begin In Missouri On March 16

Monday, March 16, 1998 at the Show Me Center, 1333 North Sprigg Street, **Cape Girardeau, Mo**; March 17, 1998 at the Holiday Inn, East Main & I-55, **Blytheville, Ark.**; Wednesday, March 18, 1998, at the Solomon Junior High School, 556 Bowman Boulevard, **Greenvile, Miss.**; Thursday, March 19, 1998, at the Lake Providence High School, 602 Martin Luther King Drive, **Lake Providence, La.**; Monday, March 30, 1998, at the Eola Hotel, 110 North Pearl, **Natchez, Miss.**, and Tuesday, March 31, 1998, at the State Archives Building, 3851 Essen Lane, **Baton Rouge, La.**

The meetings are open to the public and will begin at 7 p.m.

The Corps of Engineers will make an audio-visual presentation of the report's contents. Biologists, engineers, and other specialists also will explain the development and implementation of evaluation methods that led to the draft report and its findings.

After the public meetings, there will be a 30-day period for written public responses, which will be included in a final report that is due to be completed in October.

Accompanying maps show the location of the meeting sites for persons wishing to attend.

Commonly Used Corps Terms That Could Use Some Explaining ...

Everybody does it, not just the Corps of Engineers. And that's the practice of using words in everyday conversation that is unique to a profession or trade. It's sort of like when you were in school, the teacher asked you to define a word, and you tried hard not to use the word itself in your explanation, even though that was the best word that could be used to answer the question!

Use Same Language For Better Understanding

So, if you are having a conversation about rivers and levees and the Supplemental Environmental Impact Statement with someone from the Corps,

here's some help to understand words they use every day but you probably don't:

GIS – Geographic Information Systems. An information-gathering process where a database of related information is developed and analyzed for a specific site. For example, economic, environmental, population, agricultural, industrial, etc., data for a three-mile stretch of land alongside a river.

Delineation – A process which identifies and classifies specific areas. For example, field scientists will make a delineation that determines the boundaries of a wetland in an agricultural area.

Ground Truthing – The act of personal, on-site examination of an area to determine the accuracy of previous delineations by some other means, such as aerial photography.

Sand Boil – That's where high water has seeped under a levee and is coming to the surface on the land side carrying sands and silts from beneath the levee. Sandbags are placed around the emerging water to form control rings which allows the water to keep flowing while sediments remain in place.

Water Seeping Under Levee Is Expected

Underseepage – A naturally occurring process where river water seeps under a levee to its land side. The seepage is not a danger to the levee if controlled properly.

Slurry Cutoff – An earth excavation method used to provide a positive underseepage cutoff at the riverside toe of the levee.

Berm – A blanket of earth built where the levee meets normal terrain on its land side. The berm provides added weight and safely forces the exit of underseepage further away from the levee. There are two types: seepage and stability. Stability berms are built to reinforce areas along the levee.

Plantation – No, it's not an old Southern cotton farm. Biologists generally use this term when referring to a large cluster of same species trees purposely planted in a specific area, such as "a plantation of cottonwood."

"Borrow Pits" Or "Bar Pits?"

Borrow Area – Sometimes called "borrow pits," or "bar pits." It's where earthen material was excavated and then used for levee construction. Older borrow areas have naturally developed into prime hunting and fishing areas.

Project Flood – A theoretical flood projected from data of past floods. It is the largest flood that has a reasonable probability of occurrence and it is the standard for which levee heights are determined.

Avoid and Minimize – The Corps environmental policy: Avoid any environmental loss. If unavoidable, minimize the loss. And compensate any loss so that there will be no net loss.

Relief Well – Pretty much like it says. A well device next to a levee to provide relief by collecting seepage and routing it away from the area and into a natural drainage system. These are often used in lieu of berms.

Commonly Used Term Has French Origin

Batture – A French term applied to land between a levee and the river. Commonly used along the Mississippi from Louisiana northward.

Cultural Resources – Generally used to define meaningful archaeological finds, such as Indian mounds, historical artifacts, early settlement sites, sunken paddlewheelers, etc.

Crevasse - An area where a levee fails from prolonged pressure and the river rushes through into an area it's not supposed to go. As the river rushes through the levee's gap, it erodes soil away and the crevasse quickly widens until the pressure is equalized.

Interagency – Any interaction of two or more government agencies. On environmental issues, for example, the Corps of Engineers working with the U.S. Fish and Wildlife Service and the Environmental Protection Agency on a single project.

Terrestrials – Generally refers to forested habitat and animals that depend on this habitat.

Area Valuable For Birds Visiting Temporarily

Neotropical Migrants – Birds that are not permanent residents but spend part of their time in Southern areas as part of their annual migration.

Aquatics – Generally refers to fish and their habitat that are found in borrow area.

Arkansan Feels Pinched By Programs

(Editors Note: The following is written by Ms. Laura Busby of Marion, Ark., whose family farms land near the Mississippi River.

Make Repairs And Completion A National Priority

The Mississippi River has a mind of its own and without the discipline of a well-planned levee system would, without a doubt, take many thousands of lives and destroy the largest and most efficient agricultural economy in the world.

The immediate resumption of repairs and the completion of levee-raising projects under the Mississippi Rivers & Tributaries project should be a national priority. The projects need to be completed as soon as possible because they protect the safety of all people who live near the river. Most importantly, the river is the artery that feeds the heart of the United States.

It is not, as some say, better to let the river run free and return to a wilderness state as it appeared when Columbus discovered America.

I am an American farmer and I want my government to take a second look at the motive and interests of organized environmental groups whose legal actions have impacted levee-raising projects. I believe that, as a nation, those of us who farm lands alongside the river must be the first to be considered.

EPA And Other Agency Regulations Govern Land Use

As a farmer in east Arkansas, laws and regulations regulating levees are not the only government programs affecting us. For example, we now must deal with a new agenda called "Sustainable America" created by presidential order and turned over to Vice President Gore to administer. We have a number of reasons to be concerned as we see implementation of programs that have been developed mainly by appointees of this administration and a very select group of environmentalists. In addition to local and federal laws and regulations governing my family's land bordering the river and new regulations developing from Sustainable America, we also are impacted by regulations issued by other government agencies, such as the Environmental Protection Agency.

All these groups trying to tell us how to take care of our land makes me wish that everybody would simply take a few minutes and ask themselves who most benefits from the land and, therefore, who knows better how to take care of it? It's simple, the farmer. And what I see is pretty clear: if the levee enlargement program is not completed, America's citizens, their property, agriculture-producing capability, wildlife and domestic animal life could suffer tragic and perhaps permanent damage.

Levees Constantly Evolving Like the River

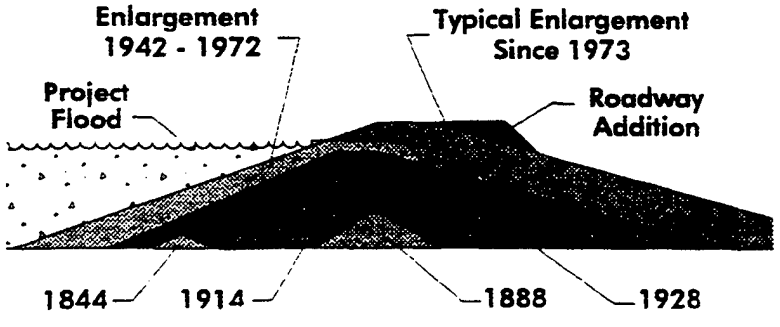
1,610 Miles of Levees Protect People, Cities, Animals & Property

The levees that keep the Mississippi River in check today are quite different from the first one built in the late 1700s to protect New Orleans.

That first levee was three feet high, 5,400 in length and 18 feet wide at its top. Today, there are 1,610 miles of levees from Cape Girardeau, Mo., to the Gulf of Mexico protecting people, cities, towns, farms, domestic animals, and property. And a typical levee today might be 20 to 25 feet high, 10 feet wide without a roadway and 25 feet wide with a roadway at the top.

The illustration below shows how levees have evolved.

EVOLUTION OF MISSISSIPPI RIVER LEVEES



SEIS Study Information Now At 18 Libraries

Mississippi, Louisiana And Tennessee Libraries Added

Three new public libraries have been added as sites for display of public documents related to the Supplemental Environmental Impact Statement (SEIS) being prepared for the Army Corps of Engineers' mainline levee-raising and enlargement project.

They are: **Carnegie Public Library**, 114 Delta Avenue, Clarksdale, MS 38614, 601-624-4461; **State Library of Louisiana**, Louisiana Section, 760 North Third Street, Baton Rouge, LA 70802, 601-342-4914, and **Tiptonville Public Library**, 126 Tipton Street, Tiptonville, TN 38079, 901-253-7391.

Fifteen other libraries already are serving as public document repositories. They are:

ARKANSAS:

Mississippi County Library System
200 North 5th
Blytheville, AR 72315
501-762-2431

KENTUCKY:

Paducah Public Library
555 Washington Street
Paducah, KY 42003-1735
502-442-2510

MISSISSIPPI:

Homochitto Valley Library Service
220 South Commerce
Natchez, MS 39120
601-445-8862

Warren County/Vicksburg Library
700 Veto Street
Vicksburg, MS 39180-3595
601-636-6411

Washington County Library
341 Main Street
Greenville, MS 38701-4097
601-335-2331

TENNESSEE:

McIvers Grant Public Library
204 North Mill Street
Dyersberg, TN 38024-4631
901-285-5032

Memphis/Shelby County Public Library
1850 Peabody Avenue
Memphis, TN 38104-4021
901-725-8853

Newbern City Library
220 East Main
Newbern, TN 38059-1528
901-627-3153

ILLINOIS:

Cairo Public Library
1609 Washington Avenue
Cairo, IL 62914
618-734-1840

LOUISIANA:

Ascension Parish Public Library
500 Mississippi Street
Donaldsonville, LA 70346-2535
504-473-8052

E. Baton Rouge Parish Library
7711 Goodwood Boulevard
Baton Rouge, LA 70806-7625
504-231-3700

Ferriday/Concordia Library
1609 Third Street
Ferriday, LA 71334-2298
318-757-3550

Madison Parish Library
403 North Mulberry
Tallulah, LA 71282-3599
318-574-4308

New Orleans Public Library
219 Loyola
New Orleans, LA 70140-1016
504-596-2602

MISSOURI:

Cape Girardeau Public Library
711 North Clark
Cape Girardeau, MO 63701
314-334-5279

District-At-A-Glance:

MEMPHIS TERRITORY TOUCHES SIX STATES

25,000 Square Miles Under District Domain

The Memphis District of the U.S. Corps of Engineers includes almost 25,000 square miles of the Lower Mississippi Valley and encompasses parts of Mississippi, Tennessee, Arkansas, Missouri, Illinois and Kentucky.

The District's major missions include inland navigation, flood control,

environmental protection and restoration, and emergency response.

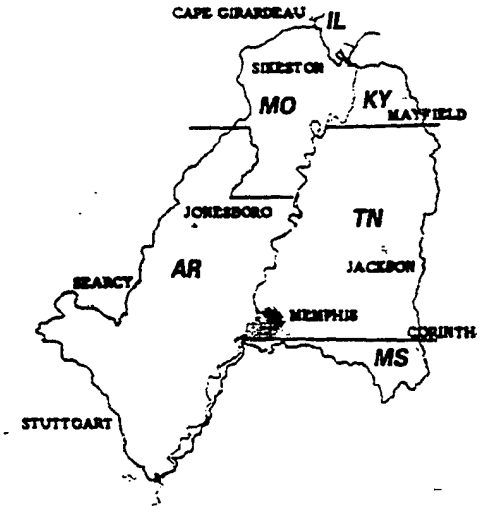
Memphis is responsible for maintaining and improving 255 miles of the Mississippi River's main channel from Cairo, Ill., to the mouth of the White River in Arkansas.

Maintains 640 Miles Of Levees, 8 Inland Harbors, 254 Miles Of Navigation

A total of 640 miles of mainline levees along the Mississippi River and its tributaries, eight inland harbors and 254 miles of navigation on the White River also is maintained by Memphis.

The District, the people of the Mid-South and many non-Federal partners have enjoyed a mutually beneficial relationship for over a century. Each year, the District circulates about $117 million in the community, including $40 million in construction projects and $50 million to vendors for operations and maintenance items.

From 1993 to 1996, flood control efforts by the Memphis District have saved American taxpayers over $4 billion. And during the same period, the Memphis Corps protected hundreds of communities, thousands of homes and businesses and millions of acres of farmland from flood damage.



District Territory

Public Affairs Office Offers Assistance

For more information, the Memphis District Public Affairs Office is located at 167 North Main Street, Room B-202, Memphis, TN 38103-1894, Telephone 901-544-3348, and FAX 901-544-3786. Or check out the district website on the internet: www.lmm.usace.army.mil

(Next: the Vicksburg District)

Internet Carries Newsletter, Other Information

The Newsletter is not the only way you can stay informed about the Supplemental Environmental Impact Statement, Mississippi River Mainline Levee project and other Corps of Engineers projects. You also can check the World Wide Web.

Internet users can get the latest information on the Supplemental Environmental Impact Statement study, and other information about the Corps of Engineers by checking the internet web site of its Vicksburg District:

www.mvk.usace.army.mil

The site will contain the Newsletter and other SEIS information that will be periodically updated until the study's final results are released in the Fall of 1998.

You also can check out happenings in the Memphis District at **www.mvm.usace.army.mil** and do the same for the New Orleans District at www.mvn.usace.army.mil.

FOR FURTHER INFORMATION ...

Here are telephone numbers of U.S. Army Corps of Engineers' project/technical managers for the Mississippi River Mainline Levees' project who can provide assistance to the public or answer specific questions from concerned parties:

Persons To Contact At New Orleans, Vicksburg, Memphis

Kent Parrish, Vicksburg District, 601-631-5006
Moody Culpepper, Vicksburg District, 601-631-5962
Billy Dycus, Memphis District, 901-544-3455
Robert Campos, New Orleans District, 504-862-2998

COMMENTS?

Editors Note: If you have a statement you would like to make regarding the Supplemental Environmental Impact Statement project, or a comment you would like to be presented in the Newsletter, please include the following information and mail your statement to: Moody Culpepper, U.S. Army Corps of Engineers, 4155 Clay Street, Vicksburg, MS 30180-3435.

Name_____Tel. No. ( )_____
Address_____

City/State_____ZIP_____

Comments (Or, if more space is needed, include on a separate sheet):

Privacy Act Statement:

In accordance with the Privacy Act of 1974 (Authority 8: Chapter 5, ER 1105-2-100), routine uses of the information obtained from this form include compiling official mailing lists for future informational publications and recording additional views and public participation in studies.

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI 39180

Public Meeting
on
Mississippi River and Tributaries Project,
Mississippi River Mainline Levees
Enlargement and Seepage Control

Holiday Inn
Blytheville, Arkansas
17 March 1998

PRESENT:

CORPS OF ENGINEERS:

Memphis District:

Major Joe Hallatschek, Deputy District Engineer
Mr. Billy Dycus, Programs and Project Management Division
Mr. Ed Lambert, Planning Division
Ms. Daphlyn Koester, Engineering Division
Ms. Patty Gray, Programs and Project Management Division
Ms. Bobbie Mitchell, Programs and Project Management Division
Mr. Dave Reece, Planning Division
Mr. Jim Pogue, Public Affairs Office

Vicksburg District:

Mr. Bill Hobgood, Planning Division
Mr. Dan Johnson, Planning Division
Mr. Moody Culpepper, Planning Division
Mr. Gary Young, Planning Division
Mr. Wendell King, Planning Division
Mr. Stoney Burke, Planning Division
Mr. Kent Parrish, Programs and Project Management Division
Mr. Eddie Brooks, Engineering Division
Mr. Danny Harrison, Engineering Division
Ms. Myra Dean, Planning Division
Ms. Jeannine Beatty, Planning Division

ALSO PRESENT:

Mr. Hugh Ashmore, 5302 ECR 328, Blytheville, Arkansas 72315
Mr. Joe E. Baker, Citizens Against Abusive Government, 600 Stanford, West Memphis, Arkansas 72301
Ms. Shirley Beck, Citizens Against Abusive Government, West Memphis, Arkansas 72303
Mr. Randy O. Bowling, American Society of Safety Engineers, 10823 Beverly Hills Drive, Little Rock, Arkansas 72211-2808

Ms. Laura Busby, 24 Birch Lake Cove, Marion, Arkansas 72364

Mr. Terry J. Carr, Carr Farms, Route 1, Box 25R, Wilson, Arkansas 72395
Mrs. Huten Chitword, Jr., Chitwood Farms, 1205 W. Ford, Osceola, Arkansas 72370
Mr. Roland Cobb, P.O. Box 101, Lake City, Arkansas 72437
Mr. Billy Jack Davis, St. Francis Levee District of Missouri, Caruthersville, Missouri 63830
Mr. Charles Davis, St. Francis Levee District of Missouri, P.O. Box 77, Caruthersville, Missouri 63830

Mr. Mike Ellison, 2667 CR 823, Blytheville, Arkansas 72315
Mr. Bill Felty, St. Francis Levee District, P.O. Box 399, West Memphis, Arkansas 72303
Mr. Rex Friedman, Arkansas State Parks, #1 Capitol Mall, Little Rock, Arkansas 72201
Mr. D. Gammid, 41829 E. Highway 118, Tyronza, Arkansas 72386
Mr. John Griffee, 221 Delta Drive, Marion, Arkansas 72364

Mr. Dusty Grooms, Pemiscot County Port Authority, 610 Ward, Caruthersville, Missouri 63830
Mr. Doyle Hopper, Hopper and Hopper Farm, P.O. Box 93, Armorel, Arkansas 72310
Mr. William B. Keiser, Jr., Lake County Levee Board, Courthouse, Tiptonville, Tennessee 38079
Mr. Bryan Kellar, Arkansas Department of Parks and Tourism, #1 Capitol Mall, Little Rock, Arkansas 72201
Mr. John D. Langston, Langston Enterprises, Inc., 5267 East State Highway 150, Blytheville, Arkansas 72315

Mr. Dudley Lehew, Gulf South Research Corporation, 9357 Interline Avenue, Baton Rouge, Louisiana 70809
Ms. Virginia B. Lowrance, Lowrance Brothers and Company, Inc., P.O. Box 1, Driver, Arkansas 72329
Mr. Charles B. Moore, Charles Moore Farms, 4005 E. State Highway 120, Luxora, Arkansas 72358
Mr. J. E. Reginald, Armorel Planting Company, Armorel, Arkansas 72310
Mr. Jake Rice, St. Francis Levee District, P.O. Box 399, West Memphis, Arkansas 72303

Mr. Jerome D. Shumate, Reelfoot Levee, 1000 Robertson Street, Tiptonville, Tennessee 38079
Mr. Jerry L. Smith, S&S Farms, 4369 S. County Road 535, Blytheville, Arkansas 72315
Mr. Darrell Tillman, 3608 N. State Highway 239, Blytheville, Arkansas 72315
Mr. Bill Weaver, St. Francis Levee District, P.O. Box A, Edmondson, Arkansas 72332
Mr. Jason Willett, Congressman Marion Berry's office, 615 S. Main,
Suite 211, Blytheville, Arkansas 72315

Mr. Cecil Williams, Jr., Agricultural Council of Arkansas,
P.O. Box 1837, West Memphis, Arkansas 72303
Ms. Betty A. Wolfe, P.O. Box 135, Crawfordsville, Arkansas 72327

MAJ JOE HALLATSCHEK: Welcome tonight to the second meeting for the Supplement Environmental Impact Statement (SEIS) hearings. My name is MAJ Joe Hallatschek, and I am COL Bean's Deputy from the Memphis Corps of Engineers District.

I would like to welcome you here tonight to the second in a series of public meetings the U.S. Army Corps of Engineers is conducting this month regarding the Mississippi River Levees Enlargement and Seepage Control Project.

Tonight we are continuing the public coordination process for the draft SEIS and supporting technical appendixes for this project. Last month we distributed the draft documents for public review. Tonight's meeting will summarize our study findings and then give you the opportunity to make statements and later ask any questions you may have for a panel of our technical specialists.

If you wish to make a statement--which as I understand it, no one has--please indicate on the card that is available out at the front desk. The cards look like these white cards. If you did not fill out a card, just raise your hand and we will bring you one. We will place your name on our mailing list and send you the next issue of our newsletter.

Tonight I would like to introduce some of our special attendees. First, I am going to start with those at the front table. We have Mr. Ed Lambert from the Memphis Corps of Engineers office. We have Mr. Kent Parrish from the Vicksburg District office. We have Mr. Billy Dycus from the Memphis Corps of Engineer District. To my left, you have Ms. Daphlyn Koester, also from Memphis. And we have Mr. Gary Young from the Vicksburg District.

In our audience, we have Mr. Billy Jack Davis from the St. Francis Levee District of Missouri. We have Mr. Jerome Shumate from the Reelfoot Levee District; Mr. Bill Felty from the St. Francis Levee District, Arkansas; and his trusty assistant Mr. Jake Rice. We have Mr. Dusty Grooms from the Pemiscot County Port Authority. If I have missed anyone, I apologize, but I do not have your name in front of me.

I would like to now introduce those that in our audience that are also part of our team here. In the first row here, we have Mr. Bill Hobgood and Mr. Moody Culpepper to his right. Behind him, we have Mr. Wendell King who is also from the Vicksburg District office.

Now our project manager will make a slide presentation summarizing the findings of the studies we have been engaged in so far this past year.

MR. BILLY DYCUS:

SLIDE 1 - INTRODUCTION

TONIGHT WE ARE HERE TO DISCUSS THE FINDINGS OF STUDIES CONDUCTED FOR THE DRAFT MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT AND SEEPAGE CONTROL PROJECT REPORT AND DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT. THIS IS A JOINT EFFORT OF THE U.S. ARMY CORPS OF ENGINEERS, MEMPHIS, VICKSBURG, AND NEW ORLEANS DISTRICTS, CONDUCTED WITH THE OVERSIGHT OF THE MISSISSIPPI RIVER COMMISSION. VICKSBURG WAS DESIGNATED AS THE LEAD DISTRICT IN THE CONDUCT OF THE STUDIES. WE SOLICIT YOUR COMMENTS ON THE PLAN OF IMPROVEMENT THAT IS BEING PROPOSED.

SLIDE 2 - PROJECT AREA

THE MR&T PROJECT IN THE ALLUVIAL VALLEY BETWEEN CAPE GIRARDEAU, MISSOURI, AND HEAD OF PASSES, LOUISIANA, PROVIDES PROTECTION FROM FLOODS BY MEANS OF VARIOUS STRUCTURAL MEASURES. THE MISSISSIPPI RIVER MAINLINE LEVEES FEATURE--THE SUBJECT OF THESE INVESTIGATIONS--HAS BEEN UNDER CONSTRUCTION SINCE 1928.

THE MISSISSIPPI RIVER LEVEES AND CHANNEL IMPROVEMENT EIS WAS FILED WITH THE COUNCIL ON ENVIRONMENTAL QUALITY IN APRIL 1976. THIS EIS IS BEING SUPPLEMENTED TO COVER CONSTRUCTION OF ALL REMAINING MISSISSIPPI RIVER MAINLINE LEVEES AND SEEPAGE CONTROL.

THE PROJECT AREA EXTENDS 600 MILES FROM CAPE GIRARDEAU TO HEAD OF PASSES AT THE GULF OF MEXICO. THE PROJECT AREA WIDTH INCLUDES THE LEVEES, ALL LANDS RIVERSIDE OF THE LEVEES, AND A STRIP 3,000 FEET LANDSIDE OF THE LEVEES. THE PROJECT AREA IS COMPRISED OF PARTS OF SEVEN STATES--MISSOURI, ILLINOIS, TENNESSEE, KENTUCKY, ARKANSAS, MISSISSIPPI, AND LOUISIANA.

WE HAVE THE CAPABILITY TO COMPLETE THIS PROJECT IN THE YEAR 2020. UPON COMPLETION, APPROXIMATELY 35,000 SQUARE MILES OF THE ALLUVIAL VALLEY WILL BE PROTECTED FROM THE PROJECT DESIGN FLOOD--OR "P D F"--A HYPOTHETICAL FLOOD EVENT DEFINED AS THE GREATEST FLOOD HAVING A REASONABLE PROBABILITY OF OCCURRENCE. OUT OF 1,610 MILES OF MISSISSIPPI RIVER MAINLINE LEVEES, THERE REMAINS APPROXIMATELY 262 MILES THAT ARE 2 TO 8 FEET BELOW THE HEIGHT REQUIRED TO SAFELY PASS THE PDF.

SLIDE 3 - PROJECT SIGNIFICANCE

THE MISSISSIPPI RIVER FUNNELS 41 PERCENT OF THE CONTINENTAL UNITED STATES DRAINAGE. . . RUNOFF FROM ALL OR PARTS OF 31 STATES AND 2 CANADIAN PROVINCES TO THE GULF OF MEXICO. THE MISSISSIPPI RIVER LEVEES PROTECT MILLIONS OF RESIDENTS AND A MULTIBILLION DOLLAR, HIGHLY DEVELOPED AGRICULTURAL AREA.

SLIDE 4 - SIGNIFICANT ENVIRONMENTAL RESOURCES

THE PROJECT AREA CONTAINS SIGNIFICANT ENVIRONMENTAL RESOURCES. AS PART OF PREPARATION OF THE SEIS, EVALUATIONS OF WETLANDS, TERRESTRIAL RESOURCES, ENDANGERED SPECIES, NEOTROPICAL BIRDS, BATS, WATER QUALITY, AQUATIC RESOURCES, WATERFOWL, AND ARCHEOLOGICAL RESOURCES WERE CONDUCTED.

SLIDE 5 - HABITAT EVALUATION PROCEDURES

A TEAM COMPOSED OF BIOLOGISTS FROM THE U.S. ARMY CORPS OF ENGINEERS; THE U.S. FISH AND WILDLIFE SERVICE; THE ARKANSAS GAME AND FISH COMMISSION; LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES; THE MISSISSIPPI DEPARTMENT OF WILDLIFE, FISHERIES AND PARKS; AND KENTUCKY DEPARTMENT OF FISH AND WILDLIFE RESOURCES CONDUCTED THE TERRESTRIAL HABITAT EVALUATIONS. THE U.S. ARMY ENGINEER WATERWAYS EXPERIMENT STATION DETERMINED PROJECT IMPACTS

ON AQUATIC RESOURCES. THE MIGRATORY WATERFOWL ANALYSIS WAS CONDUCTED BY THE U.S. FISH AND WILDLIFE SERVICE.

SLIDE 6 - PLANNING OBJECTIVES

OUR PLANNING OBJECTIVES WERE TO PROVIDE PROTECTION FROM THE PROJECT DESIGN FLOOD THROUGH AN ENVIRONMENTALLY SUSTAINABLE PROJECT WHICH AVOIDS AND MINIMIZES AS MANY ENVIRONMENTAL IMPACTS AS POSSIBLE AND COMPENSATES FOR UNAVOIDABLE LOSSES.

SLIDE 7 - ARRAY OF PLANS

A TEAM INCLUDING ENGINEERS, ECONOMISTS, BIOLOGISTS, AND OTHER DISCIPLINES DEVELOPED AND EVALUATED THIS ARRAY OF PROJECT PLANS COMPRISED OF NO ACTION, ONE NONSTRUCTURAL, AND THREE STRUCTURAL ALTERNATIVES.

SLIDE 8 - NO-ACTION ALTERNATIVE

NO LEVEE CONSTRUCTION OF ANY TYPE WOULD OCCUR--ONLY NORMAL MAINTENANCE AND REPAIR OF THE EXISTING LEVEES.

THEREFORE, THE INCREASED THREAT OF CATASTROPHIC FLOODING WOULD CONTINUE AND THE CITIZENS WOULD BE LIVING IN APPREHENSION OF FUTURE LEVEE FAILURES.

SLIDE 9 - FLOOD DAMAGE AREA (MAP)

LIMITED DAMAGE ANALYSES OF POTENTIAL LEVEE CREVASSES NEAR THE TOWNS OF MAYERSVILLE, MISSISSIPPI, AND LAKE PROVIDENCE, LOUISIANA, INDICATE ESTIMATED FLOOD DAMAGES APPROACHING $5.0 BILLION--ALMOST $2.0 BILLION IN THE AREAS ALONG THE EAST BANK OF THE MISSISSIPPI RIVER AND $3.0 BILLION ON THE WEST BANK. ASSOCIATED IMPACTS COULD INCREASE THE TOTAL EFFECT ON THE LOCAL ECONOMY TO ALMOST $10 BILLION.

MISSISSIPPI RIVER LEVEE FAILURES AT OTHER LOCATIONS WOULD CAUSE EVEN GREATER DAMAGES AND IMPACTS REGION-WIDE. BASED ON THE CASE STUDY, DAMAGES COULD BE EXPECTED TO APPROACH $300 BILLION.

SINCE THE NO-ACTION ALTERNATIVE WOULD NOT PROVIDE LONG-TERM FLOOD PROTECTION AND IS UNACCEPTABLE TO CONGRESS AND THE GENERAL PUBLIC AND THUS UNIMPLEMENTABLE, THE NO-ACTION OPTION WAS NOT GIVEN FURTHER CONSIDERATION.

SLIDE 10 - PLAN 1 - NONSTRUCTURAL ALTERNATIVES

PLAN 1 REPRESENTS A NONSTRUCTURAL OPTION TO STRUCTURAL FLOOD DAMAGE REDUCTION. THE NONSTRUCTURAL MEASURE ADDRESSED WAS PURCHASING EASEMENTS IN LIEU OF PROVIDING FLOOD PROTECTION. EXISTING LEVEE PROTECTION WOULD BE MAINTAINED AS IN THE NO-ACTION ALTERNATIVE. HOWEVER, SHOULD THE LEVEE BE OVERTOPPED AND CATASTROPHIC FAILURES OCCUR, THE LEVEES WOULD NOT BE RECONSTRUCTED.

CONSIDERING ONLY THE ABOVE-MENTIONED MISSISSIPPI RIVER LEVEE BREAKS AT LAKE PROVIDENCE AND MAYERSVILLE, PURCHASE OF FLOWAGE EASEMENTS COULD BE REQUIRED ON APPROXIMATELY 16 MILLION ACRES. THIS WOULD YIELD A COST IN THE MULTIBILLION DOLLAR RANGE. EMERGENCY DISASTER ACTIVITIES, TRAFFIC REROUTING, AND ROAD AND BRIDGE STRUCTURE AND PUBLIC UTILITIES DAMAGES WOULD ALSO INCREASE COST SIGNIFICANTLY.

SUCH AN ALTERNATIVE WOULD NOT ACCOMPLISH THE CONGRESSIONALLY MANDATED PROJECT PURPOSE TO PROVIDE A PRESCRIBED LEVEL OF FLOOD PROTECTION. IN VIEW OF THIS AND CONSIDERING THE PROHIBITIVE COST AND CERTAIN PUBLIC UNACCEPTABILITY, A NONSTRUCTURAL PLAN WOULD NOT BE IMPLEMENTABLE AND WAS ELIMINATED.

SLIDE 11 - STRUCTURAL ALTERNATIVES

THREE STRUCTURAL ALTERNATIVES WERE ADDRESSED IN THE PRELIMINARY SCREENING--PLAN 2, LANDSIDE BORROW; PLAN 3, TRADITIONAL METHOD (RIVERSIDE BORROW); AND PLAN 4, ENVIRONMENTAL DESIGN (AVOID-AND-MINIMIZE) TO CONSTRUCT LEVEE ENLARGEMENT AND SEEPAGE CONTROL.

SLIDE 12 - TYPICAL WORK ITEM

A TYPICAL SEGMENT OF LEVEE CONSISTING OF SEVERAL PROPOSED WORK ITEMS WAS SELECTED TO PREPARE PRELIMINARY DESIGN AND COST ESTIMATES OF THE STRUCTURAL PLANS. THE AVERAGE LEVEE RAISE WAS 2.5 TO 3 FEET AND INCLUDED EITHER SEEPAGE BERM ENLARGEMENT OR NEW SEEPAGE BERM CONSTRUCTION.

SLIDE 13 - PLAN 2 - LANDSIDE BORROW

FOR THIS ALTERNATIVE, ALL BORROW MATERIAL WOULD BE OBTAINED FROM LANDSIDE OF THE LEVEES. THREE LANDSIDE BORROW SCHEMES WERE INVESTIGATED AS SHOWN HERE.

SLIDE 14 - PLAN 2A - TRADITIONAL LANDSIDE BORROW

PLAN 2A CONSISTS OF TRADITIONAL RECTANGULAR BORROW AREAS 8 TO 10 FEET DEEP IN A BAND 2,000 TO 3,000 FEET FROM THE LEVEE. 2,000 FEET IS TO LESSEN UNDERSEEPAGE PROBLEMS AND 3,000 FEET IS TO LIMIT HAUL DISTANCE. SUITABLE MATERIAL WOULD BE EXCAVATED AND USED TO ENLARGE THE LEVEE AS SHOWN OR TO CONSTRUCT BERMS. THE LANDSIDE RIGHTS-OF-WAY AND EXTENDED HAUL DISTANCES WOULD INCREASE COST.

WATER QUALITY PROBLEMS WOULD BE CREATED BY CONSTRUCTION OF LANDSIDE BORROW AREAS AS DRAINAGE FROM ADJACENT FIELDS WOULD CONTRIBUTE SUSPENDED SEDIMENTS, NUTRIENTS, AND PESTICIDES. TESTING OF EXISTING LANDSIDE BORROW AREAS HAS INDICATED HIGH

LEVELS OF PESTICIDES IN FISH WHICH APPROACH FOOD AND DRUG ADMINISTRATION ACTION LEVELS FOR CONSUMPTION BY HUMANS.

SLIDE 15 - PLAN 2B - TRADITIONAL LANDSIDE BORROW WITH FORESTED BUFFER

THIS ALTERNATIVE CONSISTS OF BORROW AREAS 8 FEET DEEP AND PROTECTED BY A FORESTED BUFFER ZONE WITH A PROTECTIVE BERM AROUND THE OUTSIDE OF THE BUFFER. AS IN PLAN 2A, THE LOCATION FOR THE BORROW AREA IS 2,000 TO 3,000 FEET FROM THE LEVEE.

THIS IS THE EXCAVATED BORROW AREA SHOWING THE FORESTED BUFFER AREA AND PROTECTIVE DIKE. THIS DESIGN IMPROVES WATER QUALITY BY ISOLATING THE BORROW FROM THE AGRICULTURAL DRAINAGE.

SLIDE 16 - PLAN 2C - LANDSIDE SHALLOW BORROW

LANDSIDE SHALLOW BORROW ALLOWS FOR DRAINING THE BORROW AREAS SO THEY CAN BE FORESTED. BORROW EXCAVATION IS LIMITED TO 3 FEET DEEP AND SHAPED TO DRAIN AND CONNECT TO LOCAL DRAINAGE.

THIS SLIDE SHOWS A TYPICAL LAYOUT OF SHALLOW BORROW AREA LOCATION, EXCAVATION AND LEVEE ENLARGEMENT, AND FORESTED BORROW AREA. THIS SHALLOW BORROW GREATLY INCREASES THE REQUIRED ACREAGE FOR BORROW, THUS INCREASING COST.

SLIDE 17 - PLAN 3 - TRADITIONAL METHOD

PLAN 3 IS THE TRADITIONAL METHOD TO CONSTRUCT LEVEE ENLARGEMENTS AND BERMS. HERE, OUR CONSTRUCTION IS NORMALLY BASED ON THE MOST ECONOMICAL DESIGN. I WILL DISCUSS DESIGN DETAILS LATER.

SLIDE 18 - PLAN 4 - ENVIRONMENTAL DESIGN (AVOID AND MINIMIZE)

PLAN 4 IS AN ENVIRONMENTAL DESIGN WHICH INCORPORATES MEASURES TO AVOID AND MINIMIZE ENVIRONMENTAL DAMAGES TO BOTTOM-LAND HARDWOODS AND WETLANDS. DESIGN DETAILS OF THIS PLAN WILL ALSO BE DISCUSSED LATER.

SLIDE 19 - COST COMPARISON

HERE ARE THE COST ESTIMATES OF ALL STRUCTURAL PLANS FOR THE TYPICAL LEVEE SEGMENT. AS YOU CAN SEE, COSTS FOR PLANS 2A, 2B, AND 2C--THE LANDSIDE BORROW ALTERNATIVES--EXCEED COSTS FOR PLANS 3 AND 4.

SLIDE 20 - MAJOR REASONS FOR LANDSIDE BORROW ELIMINATION

THEREFORE, PLAN 2 WAS NO LONGER EVALUATED FOR THESE REASONS.

SLIDE 21 - FINAL ARRAY OF PLANS

ONLY PLANS 3 AND 4 WERE CARRIED INTO DETAILED DESIGN BECAUSE THEY ARE THE MOST VIABLE AND IMPLEMENTABLE.

SLIDE 22 - TRADITIONAL PLAN 3 (GIS MAP RIVERSIDE BORROW)

ANALYSIS OF THIS PLAN CONSISTED FIRST OF PRINTING MAPS LIKE THIS THAT CONTAIN SEVERAL DATA LAYERS INCLUDING BASE TOPOGRAPHIC FEATURES, LAND COVER MAPPING, WETLAND MAPPING, AND WORK ITEMS.

AN ENGINEERING DESIGN TEAM LOCATED THE BORROW AREAS AS SHOWN HERE OUTLINED IN BLACK. THESE BORROW AREAS ARE NORMALLY LOCATED RIVERSIDE AS CLOSE TO THE CONSTRUCTION SITE AND EXCAVATED AS DEEP AS POSSIBLE. THIS PLAN REQUIRES NO SPECIAL CONFIGURATION OR

LOCATION OF THE BORROW AREAS. NO PROVISIONS ARE MADE FOR DRAINAGE OR ENVIRONMENTAL ENHANCEMENT OF THE BORROW AREAS.

SLIDE 23 - ENVIRONMENTAL DESIGN PLAN 4 (AVOID AND MINIMIZE)

TO DEVELOP THE LAYOUT FOR PLAN 4, AN INTERDISCIPLINARY TEAM OF REPRESENTATIVES FROM STATE AND FEDERAL AGENCIES, LOCAL SPONSORS, AND CORPS STAFF WAS FORMED. THE AVOID-AND-MINIMIZE DESIGN APPLIED TO THIS WORK ITEM RELOCATED THE RIVERSIDE BORROW AREA FROM THE BOTTOM-LAND HARDWOOD WETLANDS TO RIVERSIDE CLEARED FARMLANDS (SHOWN HERE OUTLINED IN RED).

SLIDE 24 - AVOID AND MINIMIZE RELOCATION OF BORROW AREAS

WHERE FARMLANDS WERE NOT AVAILABLE RIVERSIDE, THE BORROW WAS MOVED INTO LESS ENVIRONMENTALLY DAMAGING RIVERSIDE TREE PLANTATIONS, NONWETLAND RIVERSIDE BOTTOM-LAND HARDWOODS, OR LANDSIDE FARMLANDS.

SLIDE 25 - ENVIRONMENTAL BORROW AREA DESIGN

MOST RELOCATED BORROW AREAS WOULD INCLUDE ENVIRONMENTAL FEATURES SUCH AS VARYING DEPTHS, IRREGULAR SHORELINE, ISLANDS, AND FORESTED BUFFER.

SLIDE 26 - INNOVATIVE AVOID-AND-MINIMIZE DESIGN

OTHER INNOVATIVE DESIGN APPROACHES FOR REDUCING BOTTOM-LAND HARDWOODS AND WETLANDS EFFECTS WERE ALSO CONSIDERED. DETAILS ARE IN THE FOLLOWING SLIDES.

SLIDE 27 - BERM SCHEMATIC 1

THIS SHOWS THE EXCAVATION OF AN EXISTING BERM BEING USED TO ENLARGE THE LEVEE, CONSTRUCT RETAINING DIKES FOR DREDGED

MATERIAL, AND STORE MATERIAL IN A STOCKPILE OR IN THE RETAINING DIKES TO COVER FUTURE DREDGED MATERIAL.

SLIDE 28 - BERM SCHEMATIC 2

THIS SHOWS REPLACING THE EXCAVATED MATERIAL WITH MATERIAL DREDGED FROM THE RIVER. A TEMPORARY ENVIRONMENTAL IMPACT WOULD BE RELATED TO THE NARROW PATH OF THE DREDGE PIPE FROM THE RIVER TO THE BERM SITE.

SLIDE 29 - BERM SCHEMATIC 3

NOW YOU SEE THE FINAL STEP. THE STOCKPILED SOIL IS NOW USED TO COVER THE DREDGED MATERIAL FOR GROWTH OF GRASSES.

SLIDE 30 - DREDGE SITE LOCATIONS FOR BORROW

THIS SHOWS THE DREDGE SITE LOCATIONS IN THE MISSISSIPPI RIVER TO BE USED FOR BORROW TO CONSTRUCT SEVERAL WORK ITEMS AS SHOWN ON THE EAST BANK.

SLIDE 31 - RELIEF WELLS SEEPAGE CONTROL

THE USE OF RELIEF WELLS TO CONTROL SEEPAGE INSTEAD OF BERMS COULD BE USED IN SUITABLE LOCATIONS. PLEASE NOTE THAT CLEAR WATER FLOWING FROM THIS WELL INDICATES THAT NO SOIL IS BEING WASHED OUT FROM UNDER THE LEVEE.

SLIDE 32 - CUTOFF TRENCH SEEPAGE CONTROL

THE USE OF CUTOFF TRENCHES TO CONTROL SEEPAGE INSTEAD OF BERMS COULD BE USED IN SUITABLE LOCATIONS.

SLIDE 33 - COST TABLE

TOTAL COSTS FOR CONSTRUCTION AND MITIGATION FOR UNAVOIDABLE FISH AND WILDLIFE IMPACTS ARE SHOWN HERE FOR PLANS 3 AND 4. AS YOU CAN SEE, PLAN 3 COST IS APPROXIMATELY $623 MILLION AND PLAN 4 COST IS ABOUT $652 MILLION. THERE IS ABOUT A $29 MILLION COST DIFFERENCE BETWEEN THESE TWO PLANS.

SLIDE 34 - BOTTOM-LAND HARDWOODS IMPACTS

BOTH PLANS 3 AND 4 WERE ANALYZED FOR THEIR EFFECTS ON BOTTOM-LAND HARDWOODS AS SHOWN HERE.

PLAN 3 IMPACTS ROUGHLY 11,600 ACRES OF BOTTOM-LAND HARDWOODS. PLAN 4 REDUCES BOTTOM-LAND HARDWOOD LOSSES BY NEARLY 60 PERCENT OR BY SOME 6,700 ACRES. YOU MAY RECALL IN THE 1976 EIS, AN ESTIMATED 11,400 ACRES OF BOTTOM-LAND HARDWOODS WERE TO BE AFFECTED. BY USING ENVIRONMENTAL DESIGN TECHNIQUES, WE HAVE REDUCED THIS AMOUNT TO 4,800 ACRES. THE 4,800 ACRES IMPACTED IN PLAN 4 AFFECTS LESS THAN ONE-HALF OF 1 PERCENT OF THE TOTAL 1,022,000 ACRES OF BOTTOM-LAND HARDWOODS IN THE PROJECT AREA.

SLIDE 35 - PLAN SELECTION

ALTHOUGH PLAN 4 COSTS SLIGHTLY MORE THAN PLAN 3, PLAN 4 CONSTRUCTION TECHNIQUES DRAMATICALLY REDUCE ENVIRONMENTAL IMPACTS. THEREFORE, PLAN 4 IS THE RECOMMENDED PLAN.

SLIDE 36 - DESCRIPTION OF RECOMMENDED PLAN

THE PROPOSED ACTION INCLUDES 128 WORK ITEMS, COMPRISING THE LEVEE RAISING AND SEEPAGE CONTROL SHOWN HERE. THERE ARE 262.8 MILES OF LEVEES TO BE RAISED AND 131.8 MILES OF SEEPAGE CONTROL. NOTE THAT MOST OF THE LEVEE RAISING IS IN THE VICKSBURG

DISTRICT WHILE THE MAJORITY OF THE SEEPAGE CONTROL IS WITHIN THE MEMPHIS DISTRICT.

SLIDE 37 - MITIGATION ANALYSIS

RESULTS OF THE MITIGATION ANALYSIS FOR PLAN 4 WERE THAT FISH AND WILDLIFE LOSSES COULD BE OFFSET BY REFORESTING APPROXIMATELY 5,900 ACRES OF FREQUENTLY FLOODED AGRICULTURAL LANDS AT A COST OF $8.8 MILLION. THIS WOULD FULLY COMPENSATE UNAVOIDABLE LOSSES TO SIGNIFICANT ENVIRONMENTAL RESOURCES. APPROXIMATELY 89 PERCENT OF THESE ACRES ARE LOCATED IN THE VICKSBURG DISTRICT, APPROXIMATELY 11 PERCENT IN THE MEMPHIS DISTRICT AND LESS THAN 1 PERCENT IN THE NEW ORLEANS DISTRICT.

SLIDE 38 - ADDITIONAL MITIGATION FEATURES

IN ADDITION TO THE MITIGATION FEATURE, THE RECOMMENDED PLAN ALSO INCLUDES THESE ENVIRONMENTAL ATTRIBUTES.

SLIDE 39 - OPERATION AND MAINTENANCE REQUIREMENTS

LOCAL LEVEE BOARDS WILL CONTINUE TO PERFORM ALL MINOR OPERATION AND MAINTENANCE AT THEIR COST, AND THE CORPS WILL BE RESPONSIBLE FOR MAJOR MAINTENANCE.

SLIDE 40 - PLAN ACCOMPLISHMENTS

PLAN ACCOMPLISHMENTS INCLUDE:

- PROVIDING PROTECTION FROM THE PROJECT DESIGN FLOOD,
- AN ENVIRONMENTALLY SUSTAINABLE PROJECT,

- COMPENSATION FOR UNAVOIDABLE ENVIRONMENTAL LOSSES AT FULL FEDERAL EXPENSE.

SLIDE 41 - DIVISION OF PLAN RESPONSIBILITY

THESE ARE THE FEDERAL AND NON-FEDERAL IMPLEMENTATION RESPONSIBILITIES. NOTE THAT THE FEDERAL GOVERNMENT WILL CONSTRUCT THE PROJECT AND PAY FOR THE MITIGATION WHILE THE LOCAL SPONSORS WILL PAY FOR LANDS, EASEMENTS, RIGHTS-OF-WAY, RELOCATIONS, AND BORROW AREAS.

SLIDE 42 - CLEAN WATER ACT

A SECTION 404(B)(1) EVALUATION OF THE RECOMMENDED PLAN HAS BEEN PREPARED AND INCLUDED IN THE DRAFT REPORT FOR PUBLIC REVIEW. THE SECTION 404(B)(1) EVALUATION WILL BE USED TO APPLY FOR SECTION 401 CERTIFICATION FROM RESPECTIVE STATES.

SLIDE 43 - KEY MILESTONES

THE DRAFT REPORT IS CURRENTLY BEING REVIEWED BY FEDERAL, STATE, AND LOCAL AGENCIES AND THE CONCERNED PUBLIC. SIX PUBLIC MEETINGS ARE BEING HELD THIS MONTH. COMMENTS ARE BEING SOLICITED UNTIL APRIL 30, 1998, AND WILL BE ADDRESSED IN THE FINAL REPORT. COPIES OF THE LATEST NEWSLETTER WITH A LIST OF LIBRARIES WHERE THE DRAFT REPORT CAN BE READ ARE AT THE BACK OF THE ROOM.

THE FINAL SEIS WILL BE DISTRIBUTED IN JULY 1998 AND THE RECORD OF DECISION IS SCHEDULED FOR SIGNING IN OCTOBER 1998.

SLIDE 44 - CLOSING

WE WANT TO THANK ALL OF THOSE WHO ASSISTED IN THIS EFFORT. THE RECOMMENDED PLAN WILL PROVIDE THE REQUIRED LEVEL OF FLOOD PROTECTION TO THE RESIDENTS OF THE LOWER MISSISSIPPI VALLEY

PERMITTING ECONOMIC DEVELOPMENT OF THE REGION WHILE CONCURRENTLY SUSTAINING ITS ENVIRONMENTAL RESOURCES.

THIS CONCLUDES THE PRESENTATION OF STUDY RESULTS.

I WILL NOW TURN THE MEETING BACK OVER TO MAJ HALLATSCHEK.

MAJ HALLATSCHEK: The way we will continue for the rest of the program at this point is, we will accept statements, not questions but statements, from those of you that filled out a card indicating that you wish to make a statement. These cards right here. Then, depending on how long we are running, we may or may not take a 15-minute break at about 8 p.m. and then reconvene and then take questions and answers to close out tonight's public meeting.

Before we do, I would like to introduce one more person that stepped in after we began--Mr. Jason Willett, representing Congressman Marion Berry who was not able to be here tonight. Jason, thanks a lot for being here.

Okay, the first I have whose card is here is Ms. Laura Busby who would like to make a public statement, ma'am. Ma'am, if you would like, I could go to someone else.

MS. LAURA BUSBY: I really have a statement to make, but not now.

MAJ HALLATSCHEK: Okay. Next on the list is Ms. Betty Wolfe.

MS. BETTY WOLFE: I don't want to speak right now.

MAJ HALLATSCHEK: Okay. Next card is Mr. John Griffee.

MR. JOHN GRIFFEE: Pass.

MAJ HALLATSCHEK: Next is Mr. Joe Baker.

MR. JOE BAKER: I prefer to come up during the question-and-answer period, please.

MAJ HALLATSCHEK: Okay, that is fine. Okay, at this time we have no public statements so we will go into the questions and answers. There are no cards filled out for that so, would any one care to ask a question that our panel here may answer.

MS. BUSBY: Yes.

MAJ HALLATSCHEK: Yes, ma'am.

MS. BUSBY: Have you seen this document.

MAJ HALLATSCHEK: Ma'am, could you stand by the microphone? And for a matter of public record, could you state your name?

MS. BUSBY: My name is Laura Busby. I am from Marion, Arkansas. What I have in my hand is the new Clean Water Act which I believe will radically change the number of wetlands required for this project.

It appears, according to this which I received yesterday--it was the result of Vice President Gore's directive in October on the birthday of the Clean Water Act to everyone. I would like to read the letter that the Department sent back. Is that appropriate?

MAJ HALLATSCHEK: Yes, ma'am.

MS. BUSBY: (Read the following.) The Honorable Albert Gore, Jr., Vice President of the United States, White House, Washington, DC. Dear Mr. President, on October 18, 1997, the 25th anniversary of 1972 Clean Water Act, you directed us to work with other Federal agencies and the public to develop a Clean Water Action Plan that charts a course for filling the original goal of the Clean Water Act, fishable and swimable waters for all Americans. We are pleased to submit the enclosed Clean Water Action Plan on behalf of the Department of Agriculture, Environmental Protection Agency, and other Federal agencies that assisted us in its development.

Over the past 25 years, America has made outstanding progress in reducing water pollution and restoring our rivers, lakes, and coastal waters. In communities across the country, restoration of water quality has had dramatic environmental, recreation, and economical benefits. Despite this progress, serious water pollution problems persist. States report that about 40 percent of the waters they assess do not meet water quality goals. About half of the Nation's over 2,000 major watersheds have serious or minor water quality problems.

This Clean Water Action Plan provides a blueprint for restoring and protecting the Nation's precious water resources. The Action Plan builds on the Clinton Administration's accomplishments over the past 5 years and proposes aggressive new action to strengthen the program.

A key element in the Action Plan is a new cooperative approach to watershed protection in which state, tribal, Federal, and local governments and the public first identify the watersheds with the most critical water quality problems and then work together to focus resources and implement effective strategies to solve these problems.

The Action Plan also includes new initiatives to reduce public health threats, improve the stewardship of natural resources, strengthen polluted runoff controls, and make water quality information more accessible to the public.

We look forward to working with you to ensure that the Nation continues to make steady progress in restoring and protecting the health of water resources in ways that make sense for the communities that depend upon them.

Signed, Carroll Browner, Administer, U.S. Environmental Protection Agency, and Dan Glitman, Secretary, U.S. Department of Agriculture.

It appears to me--I am almost through with your three reports that I requested when I got this. It came as a surprise yesterday. It appears that there are a lot of changes ahead, gentlemen. A lot more wetlands, a lot more everything. You are particularly involved with the EPA to fulfill this, and I would just like everybody to know that this is all well and good, but I don't know.

Thank you very much.

MAJ HALLATSCHEK: Yes, ma'am. Would anyone else care to ask a question of the panel? Yes, sir.

MR. JOE BAKER: My name is Joe Baker. I am from West Memphis, Arkansas. First of all, Major, I would like to commend the work that you and the people from the St. Francis Levee District do in protecting us from floods. Without your work, West Memphis and a lot of places like us would not exist.

However, I would like to point out that I do not think it is in the public interest to bend over unreasonably to environmental pressures, particularly in the wetlands area. For example, one problem that has always been with us in the Memphis/West Memphis area--you know, it gave us a great plague in the 1870's--has been the problem of mosquitoes. The increase in pressure to put more wetlands into every project that exists, I think does us a disservice. I would encourage the Corps to look, through your legal staff, at the positive work that you are doing in flood control and this sort of thing and to realize that, if due to pressure from environmental groups we construct too many wetlands, we are going to make it well nigh impossible for people in communities like West Memphis to live with the mosquito problem that is going to result.

Thank you very much.

MAJ HALLATSCHEK: Yes, sir. Would anyone else like to ask a question of the panel? Yes, ma'am.

MS. BETTY WOLFE: Thank you. My name is Betty Wolfe, and I am from Crawfordsville, Arkansas.

I would like to ask all of you if you know about the environmental education in the schools? Do you know that you are a part of that because your name (Corps) is on the books? What I have here is teacher's manuals. I also have the children's manuals. I would like to say something about each one of these.

In the Project Learning Tree, the overview says that every culture in the world has stories that are part of its history and tradition, which I agree with. These stories reveal the beliefs of the people who tell them. For example, many stories teach lessons in proper attitudes and behavior. In this activity, your students can analyze a story told by the Muskogee (Creek) Indians of present-day Oklahoma. Later, students can read and discuss stories told in other cultures from around the world.

The thing about this is that it talks about attitudes and beliefs. What you are doing here is changing the attitudes and beliefs of American children because a culture and religion are the same thing of countries. Also, you have children who imagine this overview: Many people never take the time to explore the underlying assumptions they have concerning the environment. They often form an opinion without understanding all the sides of an issue. This activity is designed to get students thinking about their feelings and expressing their views. You may also wish to use these activities on a regular basis to give students a chance to evaluate their opinions as they learn more about the environmental issues.

The thing about this is that a lot of this is role-playing. It talks about children imagining themselves as an animal. It is all in the book. I will give you a copy of it. And then drawing their animal whether it is a real animal or an imaginary animal that they imagine in their minds. That is not good either.

Right here it says, when people with different values end up on different sides of an issue, conflicts can arise. How can people on different sides of an issue reach a settlement? This is called a dialog which if you know about literature class, they go into a conflict because some children do not agree with what the group says. They do discuss these issues in a group.

In the wildlife manual--it is called Project Wild--the method is that the students go outside to imagine themselves as animals and then write poems.

I will do this one more and then I will quit because this is so full of evolutionism and imaginary. This is a picture. In the book, it is a very horrifying looking picture. It talks about how the children can be scared of these pictures. This is sort of a gargoyle-type thing. They can be scared of them. This is

for children from kindergarten, too. It can be for children in kindergarten. They get very scared of seeing these awful scary pictures.

Do you really agree with this kind of literature being taught to kindergarten children?

MAJ HALLATSCHEK: I am not sure exactly how it pertains to the subject here tonight. I am not sure.

MS. WOLFE: Well, the forestry puts this book out, and all the members and all the organizations and associates are listed in this book. The Project Learning Tree--no, I am sorry. This one is by the Game and Fish. Project Learning Tree is by the forestry. Each one of them have the associations, the members of the associations, and the commissions and the peoples' names are all in this book. You can get them from your forestry, and you can also go to your fish and game and get the book.

I suggest you do that.

MAJ HALLATSCHEK: Ma'am, I will have my environmental technician at the panel look into that. Thank you.

Are there any other questions. If there are no more questions, I would like to remind you that the comment period will remain open through April 30, 1998. If you wish to mail us any comments, mail them to 167 North Main, Memphis, Tennessee 38103-1894 (we have the address at the front table).

If no further questions, thank you for your time.

Meeting adjourned at 7:45 p.m.

LIST OF EXHIBITS

No. 1 - Notice of Public Meetings

No. 2 - Copy of Newsletter, February 1998

No. 3 - Letter from Ms. Virginia B. Lowrance, Lowrance Brothers and Company, Inc., March 17, 1998

No. 4 - Ms. Betty Wolfe submitted copies of the following information on educational material: America's Choice, March 16, 1998; Executive Summary "From Classroom to Community and Beyond"; Project Learning Tree; and Project Wild

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
4155 CLAY STREET
VICKSBURG, MISSISSIPPI 39180-3435

REPLY TO
ATTENTION OF:

NOTICE OF PUBLIC MEETINGS MISSISSIPPI RIVER AND TRIBUTARIES PROJECT, MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT MARCH 16-19 AND 30-31, 1998

The U.S. Army Corps of Engineers, Vicksburg, Memphis, and New Orleans Districts, have prepared a Draft Project Report and Draft Supplemental Environmental Impact Statement for the Mississippi River Mainline Levees Enlargement and Berm Construction feature of the Mississippi River and Tributaries Project. All planned work is located between Cape Girardeau, Missouri, and Head of Passes, Louisiana. The proposed improvements would provide the congressionally authorized level of protection from Mississippi River flooding by raising deficient levee sections and controlling underseepage.

This report will be reviewed by various Federal, state, and local agencies and other interested organizations. Copies of the Draft Project Report and Draft Supplemental Environmental Impact Statement will be on deposit March 3, 1998, in the following libraries:

Arkansas

Mississippi County Library System
200 North 5th
Blytheville, Arkansas 72315

Illinois

Cairo Public Library
1609 Washington Avenue
Cairo, Illinois 62914

Kentucky

Paducah Public Library
555 Washington Street
Paducah, Kentucky 42003-1735

Louisiana

Ascension Parish Public Library
500 Mississippi Street
Donaldsville, LA 70346-2535

East Baton Rouge Parish Library
7711 Goodwood Boulevard
Baton Rouge, LA 70806-7625

Ferriday/Concordia Parish Library
1609 Third Street
Ferriday, LA 71334-2298

Madison Parish Library
403 North Mulberry
Tallulah, LA 71282-3599

Exhibit 1

New Orleans Parish Library
219 Loyola
New Orleans, LA 70140-1016

State Library of Louisiana
Louisiana Section
760 North 3rd Street
Baton Rouge, LA 70802

Mississippi

Homochitto Valley Library Service
220 South Commerce
Natchez, Mississippi 39120

Warren County/Vicksburg Library
700 Veto Street
Vicksburg, MS 39180-3595

Carnegie Public Library
114 Delta Avenue
Clarksdale, Mississippi 38614

Washington County Library
341 Main Street
Greenville, Mississippi
38701-4097

Missouri

Cape Girardeau Public Library
711 North Clark
Cape Girardeau, MO 63701

Tennessee

McIvers Grant Public Library
204 North Mill Street
Dyersberg, TN 38024-4631

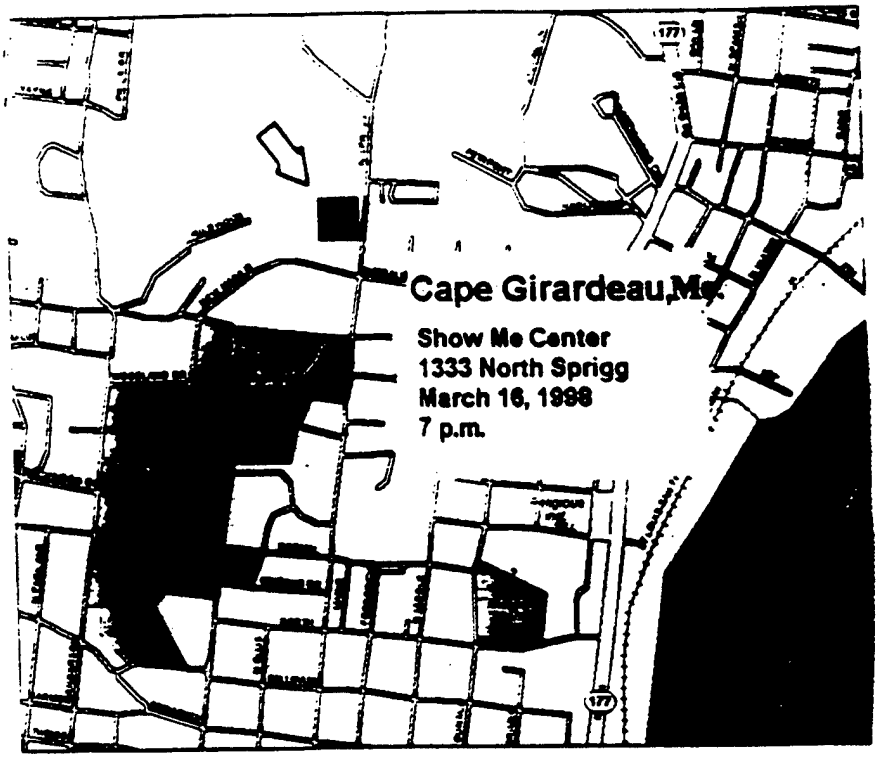
Memphis/Shelby County Public Library
1850 Peabody Avenue
Memphis, Tennessee 38104-4021

Newbern City Library
220 East Main
Nerbern, Tennessee 38059-1528

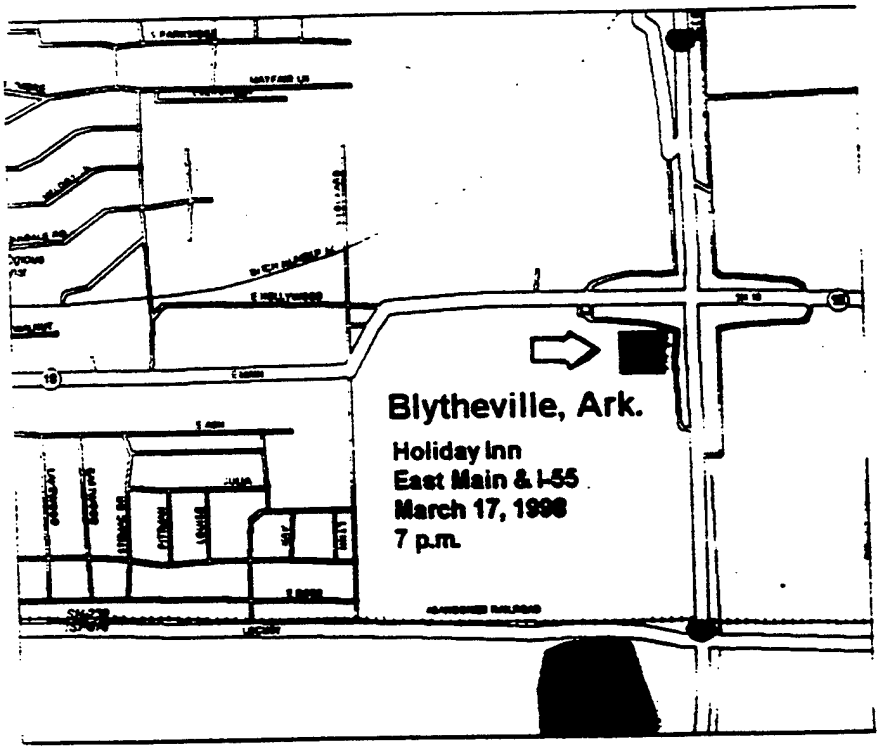
Tiptonville Public Library
126 Tipton Street
Tiptonville, TN 38079

To allow all interested individuals an opportunity to ask questions or express views, public meetings will be held in the locations shown below at 7 p.m. on the indicated dates:

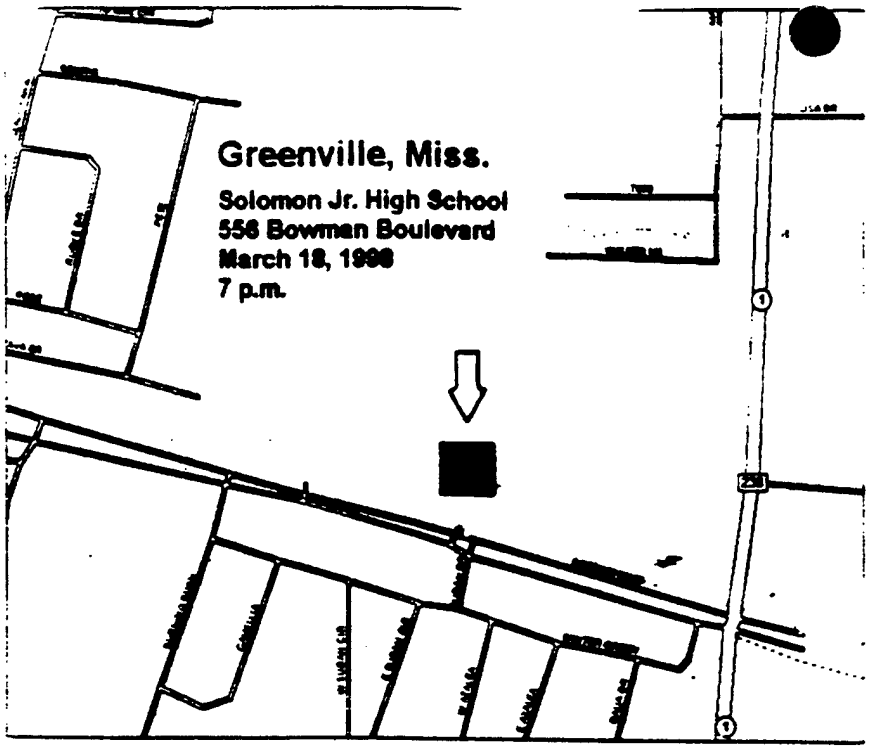
Monday, March 16, 1998
Show Me Center
1333 North Sprigg Street
Cape Girardeau, Missouri



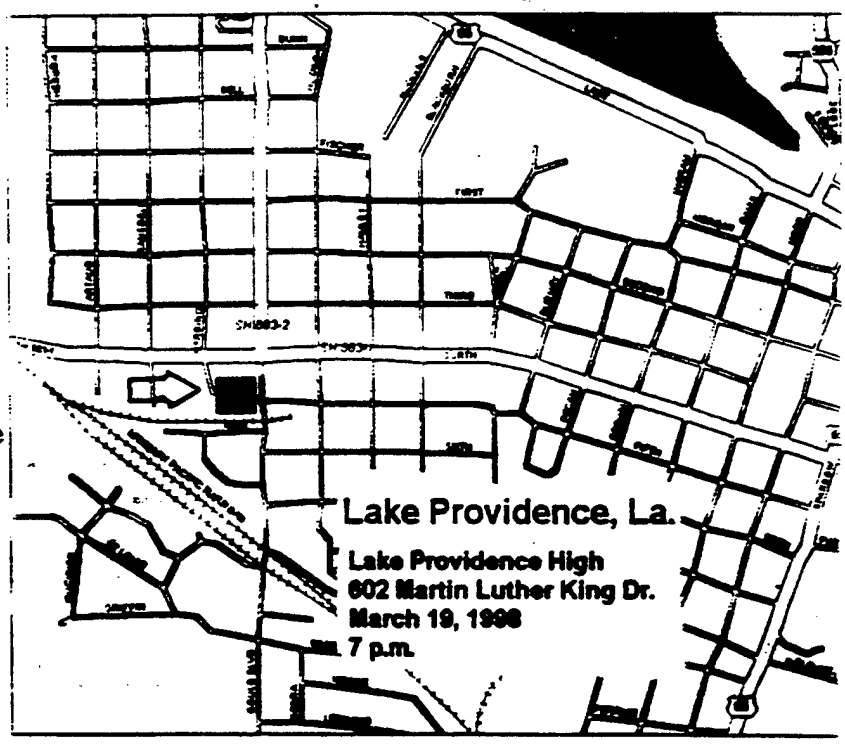
Tuesday, March 17, 1998
Holiday Inn
East Main & I-55
Blytheville, Arkansas



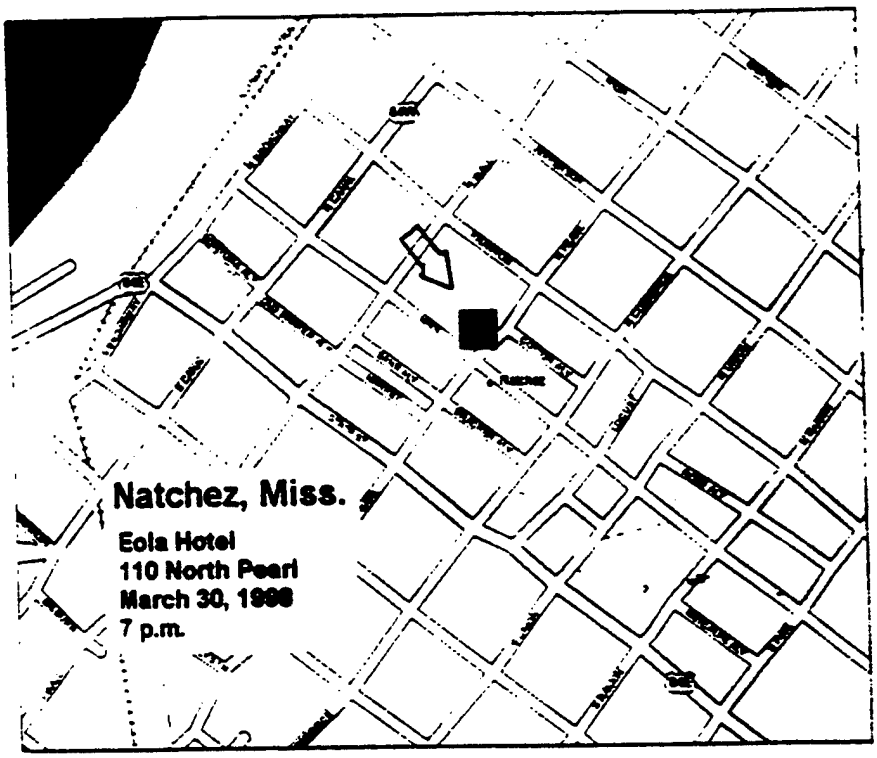
Wednesday, March 18, 1998
Solomon Jr. High School
556 Bowman Boulevard
Greenville, Mississippi



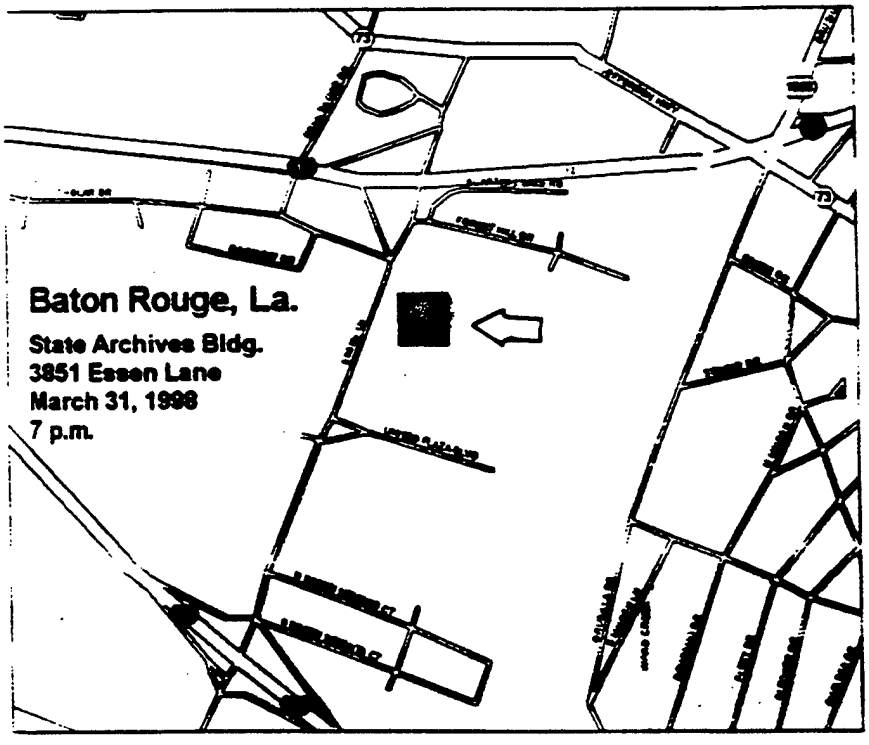
Thursday, March 19, 1998
Lake Providence High School
602 Martin Luther King Drive
Lake Providence, Louisiana



Monday, March 30, 1998
Eola Hotel
110 North Pearl
Natchez, Mississippi



Tuesday, March 31, 1998
State Archives Building
3851 Essen Lane
Baton Rouge, Louisiana



Information regarding evaluations conducted and project plan recommended will be presented. At the end of the formal presentation, oral statements may be made by the public, followed by a question-and-answer session. Written statements may be submitted at the meetings or mailed to the above address, ATTN: CEMVK-PD-F.

Proceedings of these meetings will be recorded, and summaries will be prepared and incorporated into the Project Report. Mailed statements must be received by April 30, 1998, to be included in the official record.

Gary W. Wright
Colonel, Corps of Engineers
District Engineer

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
4155 CLAY STREET
VICKSBURG, MISSISSIPPI 39180-3435

OFFICIAL BUSINESS
CEMVK-PD-F

NOTICE OF PUBLIC MEETINGS

US Army Corps
of Engineers

MISSISSIPPI RIVER & TRIBUTARIES PROJECT
MISSISSIPPI RIVER MAINLINE LEVEES
DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

US Army Corps
of Engineers
February 1998

Mississippi River & Tributaries Project
Mississippi River Mainline Levee
Enlargement & Berm Construction Project
Supplemental Environmental Impact Statement

NEWSLETTER

Maj. Gen. Anderson:

"A Strong Environmental Ethic Is Part Of How We Conduct Our Business"

"Our commitment is to have an environmentally sustainable project," Maj. Gen. Phillip R. Anderson, commander of the Mississippi Valley Division, U.S. Army Corps of Engineers, said in a special Newsletter interview. "Simply put, we must balance environmental and economic development concerns and we fully intend to do this."

Comments On Levee Enlargement Program

The general, who also is president of the Mississippi River Commission, made his comment regarding an update study being conducted in relation to an ongoing enlargement program for Mississippi River mainline levees.

The Memphis, Vicksburg and New Orleans Districts of the Corps of Engineers are currently preparing a supplement to the 1976 Environmental Impact Statement that includes the mainline Mississippi River levee project. The Supplemental Environmental Impact Statement (SEIS) will describe the effects of enlarging sections of the mainline levees on environmental resources and fish and wildlife habitat of the Mississippi River floodplain. The SEIS is based on an extensive reevaluation of remaining levee work to ensure that all environmental requirements are met and that negative impacts are avoided, minimized or compensated.

The reevaluation of the environmental impact of mainline levees, berms and seepage construction will ensure that current and remaining projects meet environmental requirements.

"Environmental aspects have equal standing with economics and engineering," Anderson said. "A strong environmental ethic is part of how we conduct our business. Sustaining our environment is a necessary part of building and securing our nation."

Maj. Gen. Phillip R. Anderson

Long-Term Project Triggered by 1927 Flood

A disastrous flood caused by levee failure in 1927 led Congress to create the Mississippi Rivers & Tributaries Act. The act set in motion a long-term project where 1,600 miles of levees from Cape Girardeau, Mo., to the Gulf of Mexico, would be brought to proper height and grade to handle a "Project Flood."

The Project Flood is a model of the worst flood that could be predicted, based on past flooding and waterflow levels. Based on current funding levels, all of the MR&T levees are scheduled to be upgraded and made capable of handling the Project Flood by the year 2031.

There are about 280 miles of mainline levees which are still below height

and grade and are scheduled for improvements. Since improvements primarily involve using soil near project sites or "borrow" material, the major focus is on protecting bottomland hardwoods in borrow areas.

MR&T Project Returns $18 For Each $1 Spent

"The nation has invested almost $10 billion to date to plan, design, construct, operate and maintain the MR&T project, and savings through flood damage prevention have totaled more than $182 billion, a return of $18 for each $1 spent," Anderson said.

He added, "The Mississippi River's levees protect over 4.5 million people, or about 1.5 million households whose residences are valued at $114 billion.

"Further, an estimated 33,000 farms and farm buildings valued at $13 billion also are protected by the levees, and the earning power of people living and working in the 49,000 square miles impacted by the levees totals $64 billion annually."

General Anderson also noted that the Mississippi and its tributaries drain 41 percent of the contiguous United States, touching 31 states and Canada and encompassing more than 1.2 million square miles.

The river also forms the Mississippi Flyway, the nation's most important route for millions of annually migrating waterfowl.

Endangered Species, Fish, Waterfowl & Wildlife Habitat Included In Study

"While the focus of the SEIS is on bottomland hardwood wetlands, it also includes impacts on all areas of the environment, such as endangered species, terrestrial, aquatic and waterfowl resources.

"The SEIS will ensure that environmental impacts of the project are avoided, minimized or compensated and also ensure that the Corps is in compliance with the National Environmental Policy Act (NEPA)," Anderson said.

SITES & DATES SET FOR PUBLIC MEETINGS

Six sites in four states have been chosen for public meetings in March 1998 to receive comments on the draft Supplemental Environmental Impact Statement (SEIS).

The sites and dates:

Meetings Begin In Missouri On March 16

Monday, March 16, 1998 at the Show Me Center, 1333 North Sprigg Street, **Cape Girardeau, Mo**; March 17, 1998 at the Holiday Inn, East Main & I-55, **Blytheville, Ark.**; Wednesday, March 18, 1998, at the Solomon Junior High School, 556 Bowman Boulevard, **Greenvile, Miss.**; Thursday, March 19, 1998, at the Lake Providence High School, 602 Martin Luther King Drive, **Lake Providence, La.**; Monday, March 30, 1998, at the Eola Hotel, 110 North Pearl, **Natchez, Miss.**, and Tuesday, March 31, 1998, at the State Archives Building, 3851 Essen Lane, **Baton Rouge, La.**

The meetings are open to the public and will begin at 7 p.m.

The Corps of Engineers will make an audio-visual presentation of the report's contents. Biologists, engineers, and other specialists also will explain the development and implementation of evaluation methods that led to the draft report and its findings.

After the public meetings, there will be a 30-day period for written public responses, which will be included in a final report that is due to be completed in October.

Accompanying maps show the location of the meeting sites for persons wishing to attend.

Commonly Used Corps Terms That Could Use Some Explaining ...

Everybody does it, not just the Corps of Engineers. And that's the practice of using words in everyday conversation that is unique to a profession or trade. It's sort of like when you were in school, the teacher asked you to define a word, and you tried hard not to use the word itself in your explanation, even though that was the best word that could be used to answer the question!

Use Same Language For Better Understanding

So, if you are having a conversation about rivers and levees and the Supplemental Environmental Impact Statement with someone from the Corps,

here's some help to understand words they use every day but you probably don't:

GIS – Geographic Information Systems. An information-gathering process where a database of related information is developed and analyzed for a specific site. For example, economic, environmental, population, agricultural, industrial, etc., data for a three-mile stretch of land alongside a river.

Delineation – A process which identifies and classifies specific areas. For example, field scientists will make a delineation that determines the boundaries of a wetland in an agricultural area.

Ground Truthing – The act of personal, on-site examination of an area to determine the accuracy of previous delineations by some other means, such as aerial photography.

Sand Boil – That's where high water has seeped under a levee and is coming to the surface on the land side carrying sands and silts from beneath the levee. Sandbags are placed around the emerging water to form control rings which allows the water to keep flowing while sediments remain in place.

Water Seeping Under Levee Is Expected

Underseepage – A naturally occurring process where river water seeps under a levee to its land side. The seepage is not a danger to the levee if controlled properly.

Slurry Cutoff – An earth excavation method used to provide a positive underseepage cutoff at the riverside toe of the levee.

Berm – A blanket of earth built where the levee meets normal terrain on its land side. The berm provides added weight and safely forces the exit of underseepage further away from the levee. There are two types: seepage and stability. Stability berms are built to reinforce areas along the levee.

Plantation – No, it's not an old Southern cotton farm. Biologists generally use this term when referring to a large cluster of same species trees purposely planted in a specific area, such as "a plantation of cottonwood."

"Borrow Pits" Or "Bar Pits?"

Borrow Area – Sometimes called "borrow pits," or "bar pits." It's where earthen material was excavated and then used for levee construction. Older borrow areas have naturally developed into prime hunting and fishing areas.

Project Flood – A theoretical flood projected from data of past floods. It is the largest flood that has a reasonable probability of occurrence and it is the standard for which levee heights are determined.

Avoid and Minimize – The Corps environmental policy: Avoid any environmental loss. If unavoidable, minimize the loss. And compensate any loss so that there will be no net loss.

Relief Well – Pretty much like it says. A well device next to a levee to provide relief by collecting seepage and routing it away from the area and into a natural drainage system. These are often used in lieu of berms.

Commonly Used Term Has French Origin

Batture – A French term applied to land between a levee and the river. Commonly used along the Mississippi from Louisiana northward.

Cultural Resources – Generally used to define meaningful archaeological finds, such as Indian mounds, historical artifacts, early settlement sites, sunken paddlewheelers, etc.

Crevasse - An area where a levee fails from prolonged pressure and the river rushes through into an area it's not supposed to go. As the river rushes through the levee's gap, it erodes soil away and the crevasse quickly widens until the pressure is equalized

Interagency – Any interaction of two or more government agencies. On environmental issues, for example, the Corps of Engineers working with the U.S. Fish and Wildlife Service and the Environmental Protection Agency on a single project.

Terrestrials – Generally refers to forested habitat and animals that depend on this habitat

Area Valuable For Birds Visiting Temporarily

Neotropical Migrants – Birds that are not permanent residents but spend part of their time in Southern areas as part of their annual migration.

Aquatics – Generally refers to fish and their habitat that are found in borrow area.

Arkansan Feels Pinched By Programs

(Editors Note: The following is written by Ms. Laura Busby of Marion, Ark., whose family farms land near the Mississippi River.

Make Repairs And Completion A National Priority

The Mississippi River has a mind of its own and without the discipline of a well-planned levee system would, without a doubt, take many thousands of lives and destroy the largest and most efficient agricultural economy in the world.

The immediate resumption of repairs and the completion of levee-raising projects under the Mississippi Rivers & Tributaries project should be a national priority. The projects need to be completed as soon as possible because they protect the safety of all people who live near the river. Most importantly, the river is the artery that feeds the heart of the United States.

It is not, as some say, better to let the river run free and return to a wilderness state as it appeared when Columbus discovered America.

I am an American farmer and I want my government to take a second look at the motive and interests of organized environmental groups whose legal actions have impacted levee-raising projects. I believe that, as a nation, those of us who farm lands alongside the river must be the first to be considered.

EPA And Other Agency Regulations Govern Land Use

As a farmer in east Arkansas, laws and regulations regulating levees are not the only government programs affecting us. For example, we now must deal with a new agenda called "Sustainable America" created by presidential order and turned over to Vice President Gore to administer. We have a number of reasons to be concerned as we see implementation of programs that have been developed mainly by appointees of this administration and a very select group of environmentalists. In addition to local and federal laws and regulations governing my family's land bordering the river and new regulations developing from Sustainable America, we also are impacted by regulations issued by other government agencies, such as the Environmental Protection Agency.

All these groups trying to tell us how to take care of our land makes me wish that everybody would simply take a few minutes and ask themselves who most benefits from the land and, therefore, who knows better how to take care of it? It's simple, the farmer. And what I see is pretty clear: if the levee enlargement program is not completed, America's citizens, their property, agriculture-producing capability, wildlife and domestic animal life could suffer tragic and perhaps permanent damage.

Levees Constantly Evolving Like the River

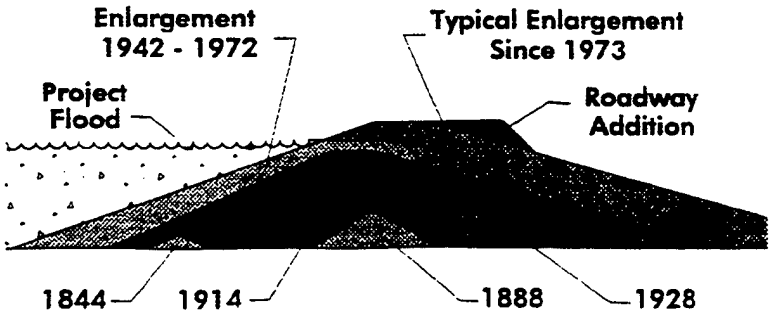
1,610 Miles of Levees Protect People, Cities, Animals & Property

The levees that keep the Mississippi River in check today are quite different from the first one built in the late 1700s to protect New Orleans.

That first levee was three feet high, 5,400 in length and 18 feet wide at its top. Today, there are 1,610 miles of levees from Cape Girardeau, Mo., to the Gulf of Mexico protecting people, cities, towns, farms, domestic animals, and property. And a typical levee today might be 20 to 25 feet high, 10 feet wide without a roadway and 25 feet wide with a roadway at the top.

The illustration below shows how levees have evolved.

EVOLUTION OF MISSISSIPPI RIVER LEVEES



SEIS Study Information Now At 18 Libraries

Mississippi, Louisiana And Tennessee Libraries Added

Three new public libraries have been added as sites for display of public documents related to the Supplemental Environmental Impact Statement (SEIS) being prepared for the Army Corps of Engineers' mainline levee-raising and enlargement project.

They are: **Carnegie Public Library**, 114 Delta Avenue, Clarksdale, MS 38614, 601-624-4461; **State Library of Louisiana**, Louisiana Section, 760 North Third Street, Baton Rouge, LA 70802, 601-342-4914, and **Tiptonville Public Library**, 126 Tipton Street, Tiptonville, TN 38079, 901-253-7391.

Fifteen other libraries already are serving as public document repositories. They are:

ARKANSAS:
Mississippi County Library System
200 North 5th
Blytheville, AR 72315
501-762-2431

KENTUCKY:
Paducah Public Library
555 Washington Street
Paducah, KY 42003-1735
502-442-2510

MISSISSIPPI:
Homochitto Valley Library Service
220 South Commerce
Natchez, MS 39120
601-445-8862

Warren County/Vicksburg Library
700 Veto Street
Vicksburg, MS 39180-3595
601-636-6411

Washington County Library
341 Main Street
Greenville, MS 38701-4097
601-335-2331

TENNESSEE:
McIvers Grant Public Library
204 North Mill Street
Dyersberg, TN 38024-4631
901-285-5032

Memphis/Shelby County Public Library
1850 Peabody Avenue
Memphis, TN 38104-4021
901-725-8853

Newbern City Library
220 East Main
Newbern, TN 38059-1528
901-627-3153

ILLINOIS:
Cairo Public Library
1609 Washington Avenue
Cairo, IL 62914
618-734-1840

LOUISIANA:
Ascension Parish Public Library
500 Mississippi Street
Donaldsonville, LA 70346-2535
504-473-8052

E. Baton Rouge Parish Library
7711 Goodwood Boulevard
Baton Rouge, LA 70806-7625
504-231-3700

Ferriday/Concordia Library
1609 Third Street
Ferriday, LA 71334-2298
318-757-3550

Madison Parish Library
403 North Mulberry
Tallulah, LA 71282-3599
318-574-4308

New Orleans Public Library
219 Loyola
New Orleans, LA 70140-1016
504-596-2602

MISSOURI:
Cape Girardeau Public Library
711 North Clark
Cape Girardeau, MO 63701
314-334-5279

District-At-A-Glance:

MEMPHIS TERRITORY TOUCHES SIX STATES

25,000 Square Miles Under District Domain

The Memphis District of the U.S. Corps of Engineers includes almost 25,000 square miles of the Lower Mississippi Valley and encompasses parts of Mississippi, Tennessee, Arkansas, Missouri, Illinois and Kentucky.

The District's major missions include inland navigation, flood control,

environmental protection and restoration, and emergency response.

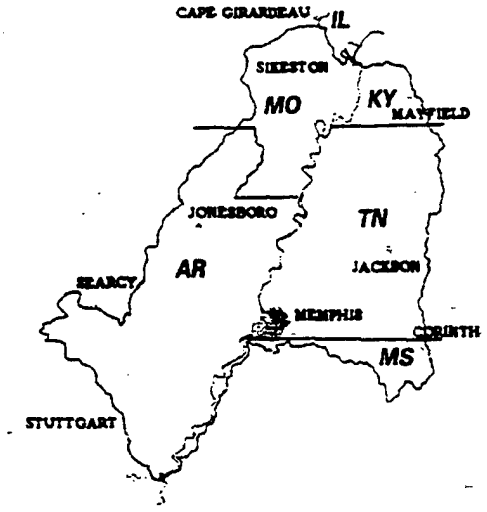
Memphis is responsible for maintaining and improving 255 miles of the Mississippi River's main channel from Cairo, Ill., to the mouth of the White River in Arkansas.

Maintains 640 Miles Of Levees, 8 Inland Harbors, 254 Miles Of Navigation

A total of 640 miles of mainline levees along the Mississippi River and its tributaries, eight inland harbors and 254 miles of navigation on the White River also is maintained by Memphis.

The District, the people of the Mid-South and many non-Federal partners have enjoyed a mutually beneficial relationship for over a century. Each year, the District circulates about $117 million in the community, including $40 million in construction projects and $50 million to vendors for operations and maintenance items.

From 1993 to 1996, flood control efforts by the Memphis District have saved American taxpayers over $4 billion. And during the same period, the Memphis Corps protected hundreds of communities, thousands of homes and businesses and millions of acres of farmland from flood damage.



District Territory

Public Affairs Office Offers Assistance

For more information, the Memphis District Public Affairs Office is located at 167 North Main Street, Room B-202, Memphis, TN 38103-1894, Telephone 901-544-3348, and FAX 901-544-3786. Or check out the district website on the internet: www.lmm.usace.army.mil

(Next: the Vicksburg District)

Internet Carries Newsletter, Other Information

The Newsletter is not the only way you can stay informed about the Supplemental Environmental Impact Statement, Mississippi River Mainline Levee project and other Corps of Engineers projects. You also can check the World Wide Web.

Internet users can get the latest information on the Supplemental Environmental Impact Statement study, and other information about the Corps of Engineers by checking the internet web site of its Vicksburg District:

www.mvk.usace.army.mil

The site will contain the Newsletter and other SEIS information that will be periodically updated until the study's final results are released in the Fall of 1998.

You also can check out happenings in the Memphis District at **www.mvm.usace.army.mil** and do the same for the New Orleans District at www.mvn.usace.army.mil.

FOR FURTHER INFORMATION ...

Here are telephone numbers of U.S. Army Corps of Engineers' project/technical managers for the Mississippi River Mainline Levees' project who can provide assistance to the public or answer specific questions from concerned parties:

Persons To Contact At New Orleans, Vicksburg, Memphis

Kent Parrish, Vicksburg District, 601-631-5006
Moody Culpepper, Vicksburg District, 601-631-5962
Billy Dycus, Memphis District, 901-544-3455
Robert Campos, New Orleans District, 504-862-2998

COMMENTS?

Editors Note: If you have a statement you would like to make regarding the Supplemental Environmental Impact Statement project, or a comment you would like to be presented in the Newsletter, please include the following information and mail your statement to: Moody Culpepper, U.S. Army Corps of Engineers, 4155 Clay Street, Vicksburg, MS 30180-3435.

Name_____Tel. No. ( )_____
Address_____

City/State_____ZIP_____

Comments (Or, if more space is needed, include on a separate sheet):

Privacy Act Statement:

In accordance with the Privacy Act of 1974 (Authority 8: Chapter 5, ER 1105-2-100), routine uses of the information obtained from this form include compiling official mailing lists for future informational publications and recording additional views and public participation in studies.

LOWRANCE BROTHERS & COMPANY
INCORPORATED

P. O. BOX NO. 1
DRIVER, ARKANSAS 72329
(501) 655-8263

March 17, 1998

U S Army Corps of Engineers
Subject: Supplemental Environmental Impact Statement
Public Comment

Gentlemen:

As a resident of Mississippi County with a long family history of farming I have serious concerns about the future of flood prevention along the Mississippi River.

The original purpose of the U S Army Corps of Engineers in the creation of our levee systems, was the protection of the health and safety of human life. The idea of delaying the repair and maintenance of our levees in favor of protecting the habitat of endangered species is very disturbing. Prolonged controversy over funding for mitigation and lengthy environmental impact studies could seriously jeopardize the strength, stability and effectiveness of our levee systems. Flooding would result in great environmental damage to wildlife and habitat, not to mention the threat to human life. We delay and neglect levee maintenance and repair at our peril.

I urge you to take whatever action, legal or otherwise, that is necessary to clear the way for the U S Army Corps of Engineers to facilitate flood prevention without delay and to fulfill its responsibilities to the people and property it is charged with protecting.

Sincerely,

Virginia B Lowrance

Virginia B. Lowrance

Exhibit 3

AMERICA'S CHOICE

Immediate Action Needed

March 16, 1998

(S.1186) "Careers" Act, The Workforce Investment Partnership Act is a powerful Bill to complete the restructuring of our Educational System and government, (School-To-Work, Goals 2000 and CAREERS)
The government will tell your child what workforce he/she will be placed in By way of the Educational system, starting in Kindergarten.

The Bill will consolidate huge data banks of information on your children and your family (through your children at school) from the Dept. Of Health And Human Services, Dept. Of Education, and Dept. Of Labor. These Dept's Will know to name a few:

What your family watch on TV.
What your family eats
What your family does for recreation
What your family thinks about the environment (air, water, forest, and Animals)
What is your family's religion
And the list goes on !

The Department Heads and others that promote School-To-Work say it is to get people off of welfare, if this is so Why does all workforce bills say **"ALL"** children. Goals 2000- Educate America and Educational Bills passed in (Arkansas ,Act 803 of 1997 is the Workforce Education Act). Act 1108 of 1997 states " **every** school in America will ensure that **all** students learn to *use their minds well*, so they may be *prepared for responsible* citizenship, further learning, and **productive employment in our modern economy**. Check it out for yourself.

Contact you Senator
Senate Office Building
Washington, DC. 20510
(202-224-3121)
Http://www.senate.gov/senator/membermail.html

Exhibit 4

AMERICA'S CHOICE

Immediate Action Needed

March 16,1998

Call/Fax or E-mail you U.S. senator in opposition to NATO expansion. The proposed expansion would add Hungary, Poland, and the Czech Republic to the 16 nations the United States must protect incase of attack. It is important to express your opinion-on principle-to express your opposition. A senate vote is expected to take place before the end of March.

Consider:

- Article 5 of the North Atlantic treaty undermines Congress' Constitutional responsibility to declare war by obligating each NATO member to "agree that an armed attack against one or more of them in Europe or North America shall be considered an attack against them all.."

- Expanding NATO to include the countries of Hungary, Poland, and the Czech Republic expands the potential risks to American Servicemen and has been estimated to cost U.S. taxpayers from $75 billion to $125 billion over the next ten years.

- Adding Hungary, Poland, and the Czech Republic to NATO would not add to the territorial security of the United States.
- In addition, recent Pentagon reports and congressional studies show the readiness of the United States military is already suffering under the strain of deployments overseas. Expanding NATO would stretch an already thin U.S. military across a greater part of the globe.

- NATO is currently presided over by Spanish Marxist Javier Solana. Nothing precludes a "former" Communist from Hungary, Poland, or he Czech Republic from "Communist" from Hungary, Poland, or the Czech Republic from becoming head of NATO.

Through NATO the United States supplies money to Germany and other countries to buy computers for their schools. " The New Transatlantic Agenda" signed Nov.24,1997 and the "U.S.- European Union Science and Technology Agreement" signed at the U.S.-European Summit, Washington, Dc. December 5, 1997.

(Tax payers paying for the world's tech

Contact: Senator Tim Hutchinson
Phone: 202-224-2353
WWW.senate.gov/senator/membermail.html

EXECUTIVE SUMMARY "FROM CLASSROOM TO COMMUNITY AND BEYOND"

This report reflects the observations, findings, and recommendations made by the Public Linkage, Dialogue, and Education Task Force (PLTF) of the President's Council on Sustainable Development (PCSD). The mission of the PLTF was twofold:

- to foster a two-way dialogue between the public and the Council, ensuring that interested stakeholders were kept informed about the PCSD process and encouraging public comment on that process, and
- to formulate policies on how to integrate sustainable development into the nation's formal and non-formal education systems.

Comprised of experts representing diverse public- and private-sector organizations, the PLTF engaged in a two-year process to accomplish its mission. Internal deliberations as well as public dialogues were conducted. Included in the dialogues were grassroots leaders; business, community, and government representatives; educators and school administrators; education consumers, and others involved with formal and nonformal education and training — at all levels — ranging from pre-school to the university level, and beyond.

From those dialogues, the Task Force concluded that our citizens do want a sustainable future, and that many already have the fundamental, conceptual underpinnings and motivation to drive needed change. In some communities, there has already been significant progress made to effect change for sustainable development. However, when viewed from a state, regional, or national perspective, movement toward such change is still very nascent. Stephen Joel Trachtenberg, President of The George Washington University, put it this way: "Most of us do not lack a philosophical commitment for sustainability, we lack the knowledge necessary to make decisions for sustainable actions." Therein lie some of the challenges for our academic and research institutions and our education systems.

The PLTF report focuses on the important role that formal and nonformal education plays in equipping citizens with the knowledge, skills, and abilities necessary to move our nation — indeed the world — towards a sustainable future. Education for sustainability must be a life-long endeavor that goes beyond classroom walls, enabling students, teachers, and entire communities to turn learnings into commonplace, everyday sustainable choices and actions.

To effectively drive and frame nationally needed change for sustainability education, new policies and actions were determined to be needed at all levels. From its dialogues, the PLTF developed three policy recommendations and a total of thirteen suggested action items. The full text of each recommended policy and suggested action items appears in a section of the report, beginning on page twenty, and they are individually discussed at length in the chapters indicated below. These recommendations and suggestions were included in the

● Technology in Education

[redacted] NETWORK

What is Teleconferencing?

BTV- Business Television: Adaptions for Education

Multimedia

What is Distance Education?

Distance Learning Professional Development Model

Blooms Taxonomy

Learning Styles

Needs Analysis for Electronically Mediated Learning

Strategic Planning for Distance Education

Steps of Change

Research in

The DLRN Technology Resource Guide is also available as a print resource.

Bloom's Taxonomy

DLRN Technology Resource Guide, Chapter 4

In 1956, Benjamin Bloom headed a group of educational psychologists who developed a classification of levels of intellectual behavior important in learning. This became a taxonomy including three overlapping domains; the cognitive, psychomotor, and affective. Each of the domains can be utilized through the interaction of media.

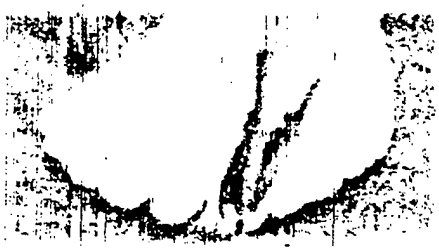
Cognitive learning is demonstrated by knowledge recall and the intellectual skills: comprehending information, organizing ideas, analyzing and synthesizing data, applying knowledge, choosing among alternatives in problem-solving, and evaluating ideas or actions. This domain on the acquisition and use of knowledge is predominant in the majority of courses. Bloom identified six levels within the cognitive domain, from the simple recall or recognition of facts, as the lowest level, through increasingly more complex and abstract mental levels, to the highest order which is classified as evaluation. Verb examples that represent intellectual activity on each level are listed here.

1. ***Knowledge***: arrange, define, duplicate, label, list, memorize, name, order, recognize, relate, recall, repeat, reproduce state.
2. ***Comprehension***: classify, describe, discuss, explain, express, identify, indicate, locate, recognize, report, restate, review, select, translate,
3. ***Application***: apply, choose, demonstrate, dramatize, employ, illustrate, interpret, operate, practice, schedule, sketch, solve, use, write.
4. ***Analysis***: analyze, appraise, calculate, categorize, compare, contrast, criticize, differentiate, discriminate, distinguish, examine, experiment, question, test.
5. ***Synthesis***: arrange, assemble, collect, compose, construct, create,

NATIONAL WILDLIFE FEDERATION

Animal Tracks

- Classroom Materials
- Teacher Training
- Workshops
- On-Line Resources



Just Follow the Tracks... To learn more about the environment and what you can do to make a difference.

Animal Tracks Teacher Training Workshops

Animal Tracks Teacher Training Workshops are a one day in-depth training for middle and elementary school educators centered around one Animal Tracks Action Pack issue.

The focus of each workshop is one conservation topic with interdisciplinary activities, discussion, and follow-up ideas for community action projects.

For more information on Teacher Training Workshops, or if you have a possible host site and would like Animal Tracks to come to you with an Animal Tracks Teacher Training Workshop, call Animal Tracks at **1-703-790-4043**, e-mail us at **bradley@nwf.org**, or call NWF's Fax-on-demand service at **1-202-797-6644** for the latest schedule information.

The current schedule of Animal Tracks Training Workshops can be found on NWF's World Wide Web Site at:

http://www.nwf.org/

Animal Tracks ON-LINE

Check out Animal Tracks in the *Education Resources* and *For Kids!* pages of the National Wildlife Federation's World Wide Web Site at:

http://www.nwf.org/

for interactive activities for students and curriculum for teachers!

Download Free curriculum materials for the classroom.

Educators can subscribe to our *Animal Tracks Current Events Hotline* and receive background information, activities, and teacher tips on an environmental issue in the news.

Access other NWF education programs: National Wildlife Week®, NatureQuest®, *Ranger Rick*®, Schoolyard Habitats™, and more...

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EDUCATIONAL RESEARCH CONSULTANTS

Betty Wolfe
Director

870
Phone/Fax (501) 823-5753

P.O. Box 135 • Crawfordsville, AR 72327

LEVELS

SUBJECTS

CONCEPTS

SKILLS

OBJECTIVES

MATERIALS

TIME CONSIDERATIONS

Background

The traditions of a group of people include its stories, sayings, dances, songs, and customs. Many traditions are passed down orally from generation to generation. The stories of a people serve many purposes—they tell the history of the people, convey their religious beliefs, teach moral lessons, and entertain. The story in this activity reflects the traditional beliefs of the Muskogee people about how the world was formed—and it should be treated with the same respect as the creation beliefs of other cultures. Regardless of a person's faith, this story offers a valuable perspective on the relationships between plants, animals, people, and the sun.

Doing the Activity

1. Discuss with students their perceptions of what stories are. Explain the generally accepted definition that appears in the Background. Ask the students for a few examples of stories that reflect various cultures.

2. Tell the students you are going to read them a story told by the Muskogee (Creek) Indians of present-day Oklahoma about how the sun got into the sky. They must listen carefully to the story. Later they'll answer questions about it and the people who the story.

3. Read aloud the story on page 5

4. Discuss the story on two levels. the first level, ask the students ho the story, as a traditional creation story, explains why certain anima look the way they do. On the sec level, ask them how the story can teach people a lesson in how to w and live together.

5. Have the students read ar he that relates to wildlife or th i ment. (See the list of childr st in the Bibliography on pa .) What happens in the story ha does the story reveal about the p who told the tale? Does the story flict with scientific explanations nature? For example, according t scientists, can the wolf in "Little Riding Hood" really talk? What l for living can people learn from tale?

Enrichment

Students can write their own sh folktale incorporating informati about plants and/or animals alo with lessons that they think are important. Have the students ill their stories.

HOW GRANDMOTHER SPIDER STOLE THE SUN

A tale from the Muskogee (Creek) Indians

When the Earth was first made, there was no light. It was very hard for the animals and the people in the darkness. Finally, the animals decided to do something about it.

"I have heard there is something called the Sun," said the Bear. "It is kept on the other side of the world, but the people there will not share it. Perhaps we can steal a piece of it." All the animals agreed that it was a good idea, but who would be the one to steal the Sun?

The Fox was the first to try. He sneaked to the place where the Sun was kept. He waited until no one was looking. Then he grabbed a piece of it in his mouth and ran. But the Sun was so hot it burned his mouth and he dropped it. To this day all foxes have black mouths because the first fox burned his carrying the Sun.

The Possum tried next. In those days Possum had a very bushy tail. She crept up to the place where the Sun was kept, broke off a piece, and hid it in her tail. Then she began to run, bringing the Sun back to the animals and the people. But the Sun was so hot it burned off all the hair on her tail and she lost hold of it. To this day all possums have bare tails because the Sun burned away the hair on that first possum.

Then Grandmother Spider tried. Instead of trying to hold the Sun herself, she wove a bag out of her webbing. She put the piece of the Sun into her bag and carried it back with her. Now the question was where to put the Sun.

Grandmother Spider told them, "The Sun should be up high in the sky. Then everyone will be able to see it and benefit from its light."

All the animals agreed, but none of them could reach up high enough. Even if they carried it to the top of the tallest tree, that would not be high enough for everyone on the Earth to see the Sun. Then they decided to have one of the birds carry the Sun up to the top of the sky. Everyone knew the Buzzard could fly the highest, so he was chosen.

Buzzard placed the Sun on top of his head, where his feathers were the thickest, for the Sun was still very hot, even inside Grandmother Spider's bag. He began to fly, up and up toward the top of the sky. As he flew, the Sun grew hotter. Up and up he went, higher and higher, and the Sun grew hotter and hotter still. Now the Sun was burning through Grandmother Spider's bag, but the Buzzard still kept flying up toward the top of the sky. Up and up he went and the Sun grew hotter. Now it was burning away the feathers on top of his head, but he continued on. Now all of his feathers were gone, but he flew higher. Now it was turning the bare skin of his head all red, but he continued to fly. He flew until he reached the top of the sky, and there he placed the Sun where it would give light to everyone.

Because he carried the Sun to the top of the sky, Buzzard was honored by all the birds and animals. Though his head is naked and ugly because he was burned carrying the Sun, he is still the highest flyer of all, and he can be seen circling the Sun to this day. And because Grandmother Spider brought the Sun in her bag of webbing, at times the Sun makes rays across the sky which are shaped like the rays in Grandmother Spider's web, and it reminds everyone of what Grandmother Spider did for all the animals and the people.

This story is reprinted from Keepers of the Earth *by Michael J. Caduto and Joseph Bruchac (Golden, Colorado: Fulcrum Publishing, 1989) with permission of the publisher.*

END NOTES...

This is Values Clarification

19 [redacted]

LEVELS

SUBJECTS

CONCEPT

SKILLS

OBJECTIVES

MATERIALS

TIME CONSIDERATIONS

Background

Students should learn to respect the processes of searching for truth. These processes involve identifying and assessing facts; distinguishing substantial from insubstantial evidence; separating the search for truth from the acceptance of propaganda; and examining in a constructive and unbiased manner controversial subjects such as politics, ethics, and religion.

To make decisions, students need to resolve ambiguities, balance the advantages and drawbacks of alternative solutions, and project the likely consequences of a particular choice. By combining such a decision-making procedure with pertinent scientific and technological information, students move toward achieving scientific literacy.

Getting Ready

Make a copy of page 60 for each student.

Doing the Activity

1. Pass out copies of "Value Statements" on page 60, and ask students to rank how much they agree or disagree with each statement. For each statement, they should circle a number, with "10" signifying strongest agreement and "1" for strongest disagreement.

2. Find an open space and have the students stand in line. Tell them that the line represents the scale of 1 to 10 that they used to rank the value statements (one end of the line being "strongly agree" and the other end "strongly disagree.")

3. Read aloud one of the value statements and have students reposition themselves in line according to how they ranked that statement. They will need to communicate with each other to make sure everyone is in the right place. Once they are settled, point out how the line reflects the range of opinions in the class. diverse group of students

4. Next, break the line at its midpoint, and have half the students stay in place while the other half moves down so that each student has a partner. (See diagram on page 59.)

5. Give each person in each pair one minute to explain to his or her partner the ranking he or she chose. Then give the other partner half a minute to paraphrase what the partner said. Have the partners switch roles, giving the other person a minute to explain his or her ranking and the partner half a minute to paraphrase.

6. Repeat Steps 3 through 5 for as many of the value statements as you like.

7. Discuss each value statement with the students, using the following questions as a guide:

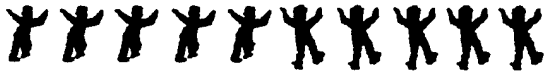
- What reasons did they have for the rankings they chose?
- What reasons did their partner give for the rankings they chose?
- Did any of them support their rankings using examples or specific information from real-life situations?
- Did anyone feel like changing their ranking on a particular statement after pairing with someone else and hearing their opinion?
- Did students feel they needed additional information to judge an issue? If so, what did they need?
- Where do people's values come from? What kinds of experiences change or strengthen people's values?

VARIATION

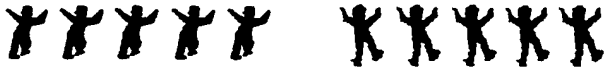
Using chalk, string, or tape, create a scale of 1 to 10 on the floor or ground. Make the scale 10 yards or meters long with the numbers one yard or meter apart. For a particular value statement, have the students place themselves as close as possible to the ranking they chose. When everyone is settled, make a diagram on the chalkboard or easel paper of how students are distributed on the scale. Have them do the exercises in Steps 3 to 5, and allow them to change their ranking based on what they learn. Have students (once again) position themselves on the scale. Draw another diagram showing their revised positions. Compare the diagrams and discuss the changes with the entire group.

END NOTES...

Original line:



Break the line here...



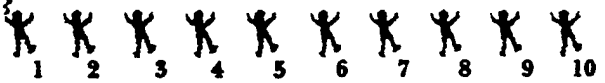
Have half the students move over...

...and pair with someone else.

STUDENT PAGE

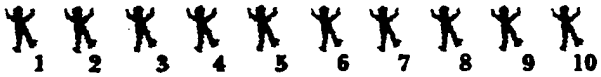
VALUE STATEMENTS

1 Natural resources should not be left untapped if using them could improve living conditions for a group of people.

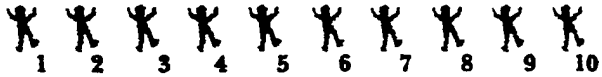


2 It is important for people to preserve wilderness areas even if a vast majority of people will never visit them.

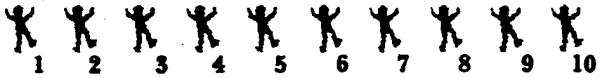
3 The world's natural resources exist for people to use. Preserving these resources as wilderness is a luxury we often cannot afford.



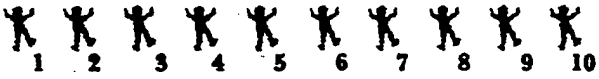
4 Environmental degradation is the biggest problem facing humanity today.



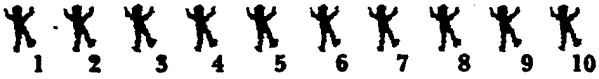
5 People will eventually develop new technologies to cope with environmental problems.



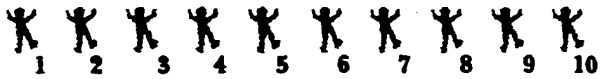
6 People have a responsibility to protect all life forms on Earth.



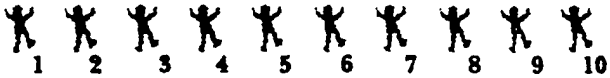
7 Protecting a country's natural resources and natural heritage is primarily the government's responsibility.



8 The government is doing a good job of protecting your country's environment.



9 Recycling is the most important thing people can do to help improve the environment.



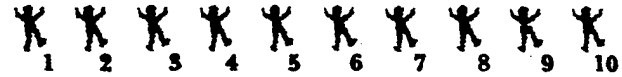
10 People should be able to use their own land (i.e., farming, housing, logging, wildlife habitat) in whatever way they see fit.

11 All people have a legal right to clean air and water.

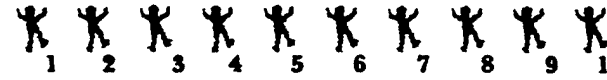
12 When a dilemma arises between protecting wildlife and protecting jobs for people, we should consider the needs of people first.

13 The fate of the human race is tied to the fate of other living things; if people are to survive, we must protect all species and their habitats.

14 Human overpopulation is the single greatest factor contributing to Earth's environmental problems.



15 The laws the federal government has passed to control pollution are sufficient to ensure safe air and water for future generations.



children do the research for Environmental groups

[redacted]

LEVELS

SUBJECTS

CONCEPTS

SKILLS

OBJECTIVES

MATERIALS

TIME CONSIDERATIONS

Getting Ready

Before doing this activity, you'll need to find another group to exchange boxes with—and we can help! Just fill out the form on page 62 and send it to us. We'll match you with another educator. Be sure to allow at least four weeks for a match.

Doing the Activity

1. Once you get the name and address of your "exchange partner," tell the students that they are going to exchange "environments" with students in another region. Explain that the students you're exchanging with will not know much about your local environment. It's the responsibility of your group to prepare items for the box that will teach your exchange partners about your region.

2. Brainstorm with the students a list of items to include in the box. Then have the students divide up the responsibilities of researching, collecting, and preparing materials for the box. The students might want to consider some of the following items for their box:

- Brief descriptions of your region written by the students
- A collage of pictures of local ecosystem types (beaches, marshes, deserts, urban environment, and so on)
- A book with drawings of some interesting local plants and animals or of many different plants and animals found in the region
- Photographs of your group and your school or meeting area
- A video of local ecosystems which also records the sounds of animals in those areas
- Stories written by the students about their favorite things to do or favorite places to go
- Samples of special regional foods such as maple syrup from Vermont, prickly pear jelly from Arizona, dates from California, or peaches from Georgia (see safety note on page 62)
- Descriptions and pictures of regional cultural events and celebrations
- Representative natural objects from your area such as tree leaves, nuts, and cones; pressed flowers; rocks; and shells (see safety note on page 62)
- Recordings of sounds of your area or oral reports on various topics prepared by the students
- A field guide, prepared by the students, to all the trees in the neighborhood (or to other natural things in your area)
- A description of local environmental issues and news articles on all sides of the issues

3. While you're waiting for the box from the other group to arrive, ask the students what they know or have heard about the region they're exchanging with. Can they name major cities, geographical landmarks, or other features of the region? What is the climate like there? Record the students' ideas on a chalkboard.

4. When the box arrives from your exchange group, open it with the students and examine its contents. Then have the students compare that region to their own. For example, how do the climates compare? What kinds of animals and plants (if any) live in both places? Are there differences in the ways people live?

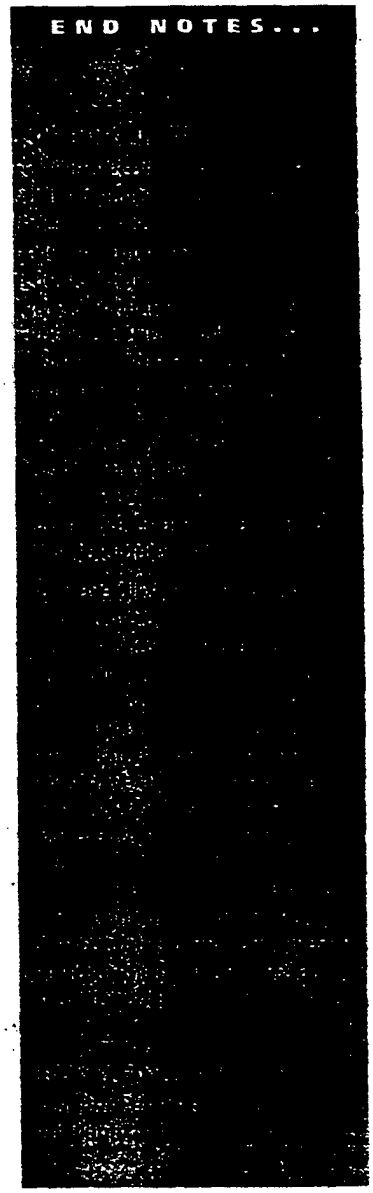
5. As a wrap-up, have the students use the exchange box to create a representation of what they liked most about the other area or what they imagine it would be like to live there. For example, students could draw pictures that depict their favorite item from the box or that show a scene in the other region. Or they could write down their impressions of items from the box in creative ways. For example, they could write stories about their imaginary adventures in their partner's region.

Enrichment

1. The concept of conservation can be discussed using the exchange box your class made. What actions could be taken to conserve the resources used to make the products that they put in their exchange box?

2. Contact your local newspaper for coverage of the opening of your exchange box. Students could write a press release (see "Publicize It!" on page 209).

SAFETY NOTE—Many states have laws regulating the types of plant and animal materials that can cross their borders. Be sure to check with the state or county department of agriculture or a local office of the agricultural extension service to find out about restrictions in your exchange partner's state before you send any plant or animal materials.



VARIATION

Environmental Exchange Box on the Internet

Try using our "on-line" environmental exchange box as an alternative to sharing information with another school through the mail. Three times a year, the PLT web site will highlight a different school and their environmental exchange box. This on-line exchange box will feature the type of environment, wildlife, climate, and culture of a school's region. You and your class can use this information to compare with that of your own region and environment. This site will also allow you to share information about your environment and ask questions to the on-line exchange class through an on-line forum. Visit our web site at www.plt.org to learn more about how you can participate in PLT's on-line environmental exchange box activity.

Exchange Box Form

Name _____

School _____

School Address _____

City/State/Zip _____

Telephone Number (work and home) _____

Grade Level/Age of Students _____

Preferred U.S. state, territory, or region with which you would like to exchange: _____

Return this form by mail or fax to:
Project Learning Tree
American Forest Foundation
1111 19th Street, NW, Suite 780
Washington, DC 20036
FAX 202-463-2461

American Forest Foundation
1111 19th Street, NW, Suite 780
Washington, DC 20036
202-463-2462

http://www.plt.org

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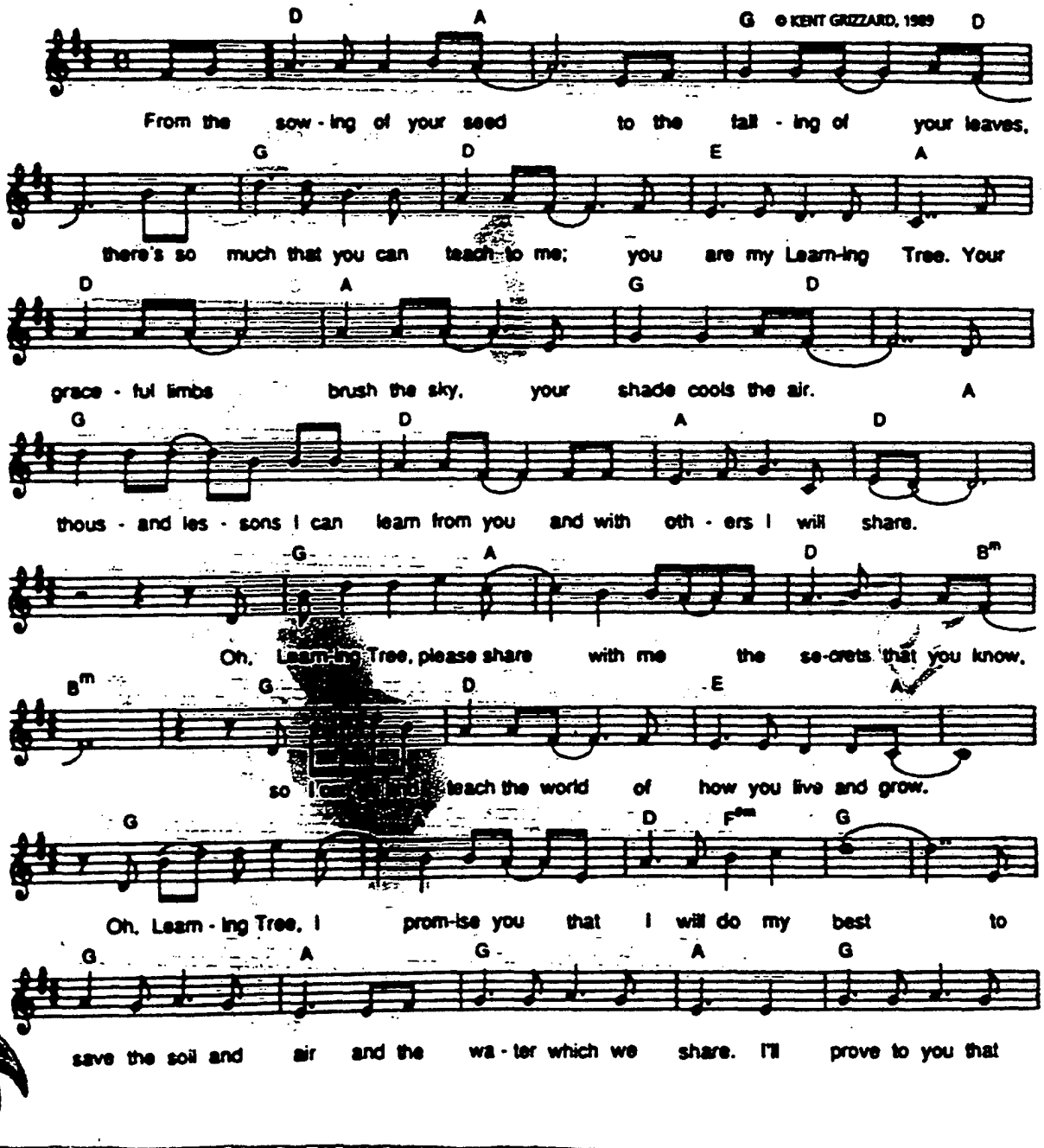
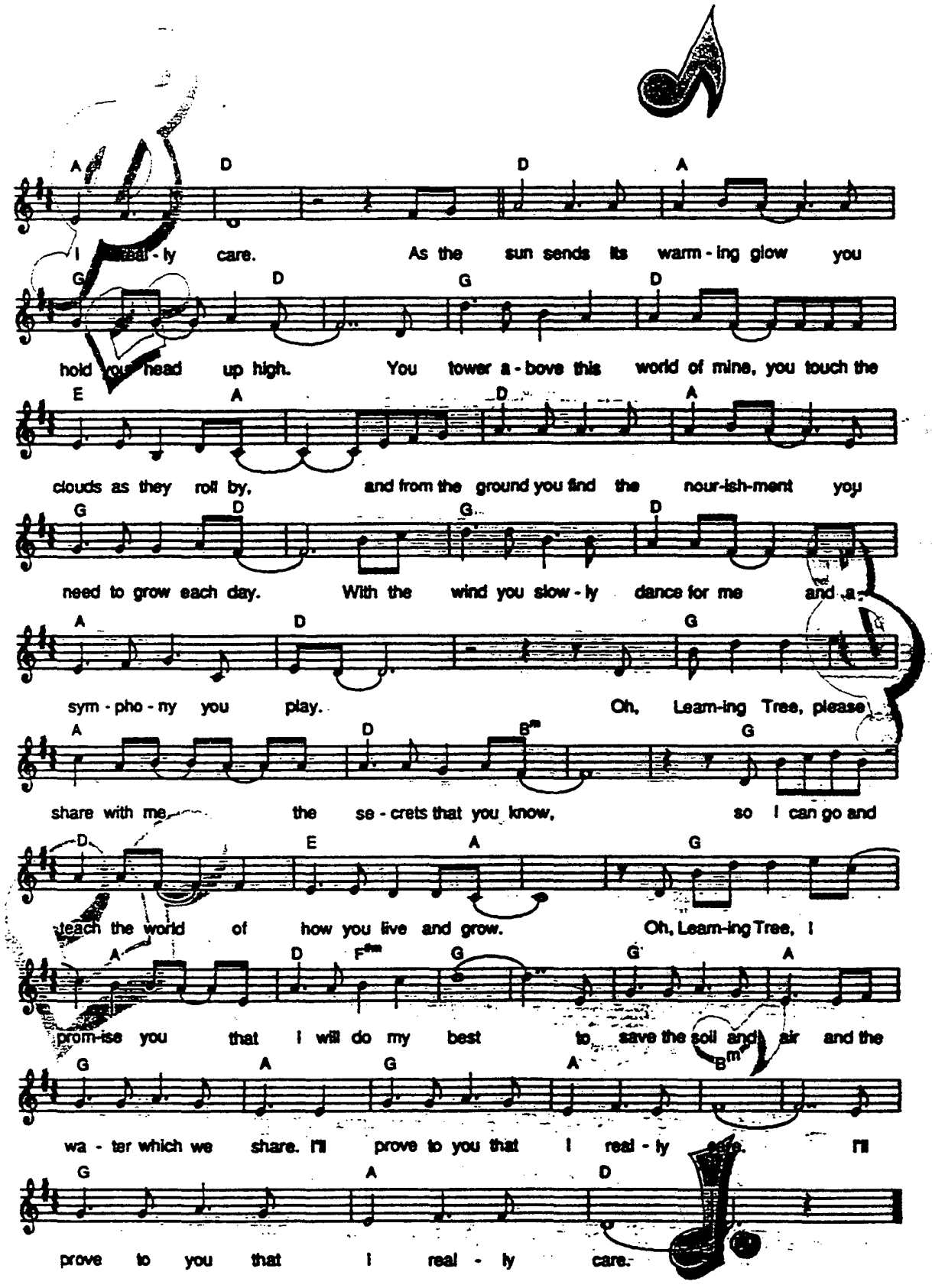
Words and Music by Kent Grizzard



"OH, LEARNING TREE"



OZARK ENVIRONMENTAL AWARENESS FUND
118 Spicewood Drive • Hollister, MO 65672 • (417) 334-8452 • FAX (417) 334-2408

OUR MISSION:

"To educate elementary age children on environmental issues without them even knowing their being educated through entertainment"

THE OZARK ENVIRONMENTAL AWARENESS FUND is a not-for-profit organization that was formed in 1994 in the Branson, MO area. It's main purpose is to bring out awareness to the growing needs in the Ozark region by education and entertainment.

Take a look around our site:

- "A Get Well Play for Mother Earth. . ." and other environmental information.
- Check out merchandise you can purchase to benefit the OEAF.
- Find out just what the OAEF is.

Return to the Branson Connection!

http://www.bransonConnection.com

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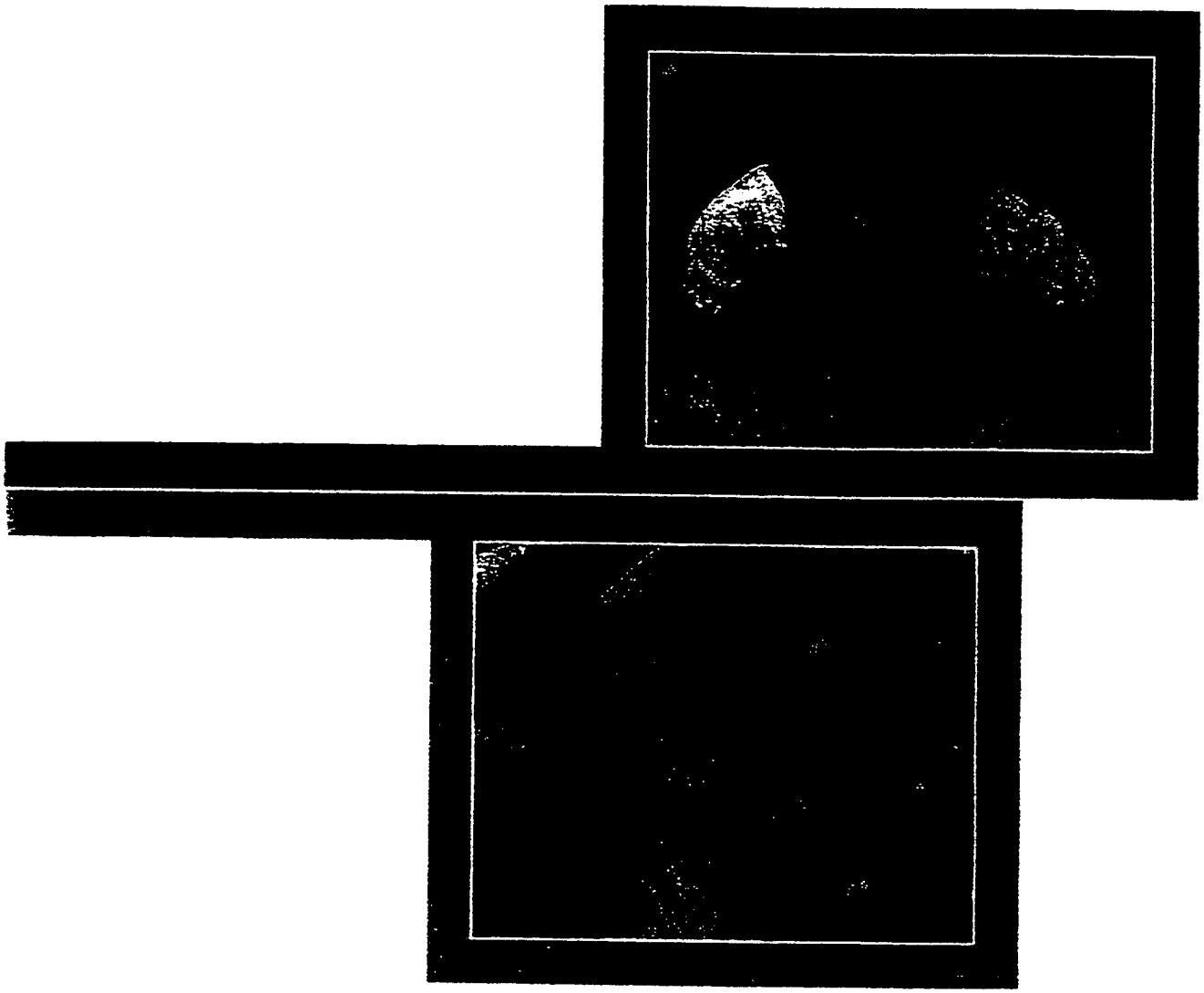
Front book

Project WILD



Project WILD is a joint project of the Western Association of Fish and Wildlife Agencies and the Western Regional Environmental Education Council.

on back of book

ANIMAL POETRY

OBJECTIVE

Each student or group of students will be able to recognize and experience the inspirational value of wildlife.

METHOD

Students go outside to imagine themselves as animals and then write poems.

BACKGROUND

NOTE: This is an excellent companion to "Wild Words: A Journal-Making Activity."

Poetry is an art form that is accessible to every student in some way. A poem is an organized way of expressing insight through language. Meter and rhyme combine as one kind of poetry. Song and free verse are other forms of poetry.

The major purpose of this activity is for students to experience wildlife as the inspiration for a poem—and to successfully write the poem!

MATERIALS

writing materials

PROCEDURE

1. Everyone can be a poet, at least to some extent—and yet many people think any kind of poetic expression is beyond their capacities. This activity is designed for every student—or group of students—to create a poem.
2. Go outside. Find a pleasant setting on the school grounds, in a park, wooded area, or other natural environment. Ask everyone to pick an animal to think about. Any animal is okay, although some should be wild animals. Ask everyone to close their eyes for a few minutes and imagine they are the animal, living in its natural environment. With their eyes closed, you can guide their imagining process with a few words—or simply leave this process to the students on their own.
3. Give everyone five minutes to go find a spot to "become" that animal. Imagine how long it lives, where it travels, how other plants and animals look from its perspective. When the students return, ask everyone to write a short poem about their animal. Poems can be free verse or rhyming. Cinquain and haiku are interesting forms. Or, do a group poem. Everyone thinks of one animal. Each person contributes one word. One or more students or the instructor can put all the words together to form the poem while the others discuss their experiences in "becoming" an animal.

NOTE: Students can imagine they "are" their animal without giving the animal characteristics of humans which are not applicable.

4. OPTIONAL: Here are a few examples of poetic forms which can be used. These have been excerpted and adapted with permission from Project Learning Tree (Washington, D.C.; American Forest Institute, 1977).

Haiku Haiku, originated by the Japanese, consists of three lines of five, seven and five syllables each. The emphasis is syllabic, not rhyming. For example:

The hawk soared over
Spirit bird in my living
Guide to harmony.

Cinquain Cinquain is derived from the French and Spanish words for five. This form of poetry is also based on syllables—or may be based on number of words—but there are five lines. Each line has a mandatory purpose and number of syllables or words. These are: 1) the title in two syllables (or words); 2) a description of the title in four syllables (or words); 3) a description of action in six syllables (or words); 4) a description of a feeling in eight syllables (or words); and 5) another word for the title in two syllables (or words). Here are two examples, the first using syllables and the second using words:

Panther

Vital, quiet
Moving swiftly to live
Endangered by human patterns
Near lost

2. After approximately 20 minutes of observation time, bring the teams of students to a central location outside. Ask the students to report their findings. Close the discussion with a sharing of descriptions of ant behavior.

3. Now it's time to demonstrate ant behavior. The students need to get into two lines of equal length facing each other in a narrow area—like on top of a fallen log, between two lines drawn with chalk on a sidewalk, or on a low wall about one foot wide. The two lines of ants must pass each other without falling off! The students should simulate ant behavior based on their earlier observations. Their arms and hands can serve as antennae; for example, touching as they pass each other. NOTE: Physical dramatization of concepts—in this case, ant behavior—is an excellent way to facilitate retention of concept understanding.

4. The log or wall can now serve as a seating space. Having investigated the ways that ants meet their basic needs for **food, water, shelter** and **space,** in a suitable **arrangement,** ask the students to describe similarities and differences between basic needs of ants and humans. Assist the students in generalizing that humans, ants and other animals—both wild and tame—have similar basic needs. Summarize the discussion by noting that, although humans and ants are obviously different, both species share the same basic needs shared by all animal species—the fundamental needs for food, water, shelter, space and the appropriate arrangement of these.

EXTENSIONS

1. Find resources for ant information. Do the student observations match the printed references? Verify accuracy of observations and check any discrepancies.
2. Commercial ant farms are available. One can be established in the classroom for additional observation.
3. Various humane experiments, stressing scientific observation, can be undertaken by the students. For example:
   - Map the space used by an ant colony—from the ants' shelter, through their travels, and back to their shelter again.
   - Observe how ants find and use water. (Ants get most of their water from their food.) Put water out in various forms for a colony of ants; e.g., in a dish, in chunks of bread soaked in water, in smaller chunks. Observe and record what happens.
   - Find ants moving in a line. Drop a small piece of food near the line. Record whether the ants will move off the line to get the food. Repeat this process several times, varying the distance from the ant line and the food that is dropped.

AQUATIC EXTENSIONS

1. Humans and aquatic wildlife have similar basic needs. That is, each needs food, water, shelter and space in a suitable arrangement. Pick an aquatic insect, spider, bird, reptile, fish, amphibian and mammal. List the common name for each; its typical habitat; and the food, kind of water, shelter and space each needs in order to survive.
2. Many aquatic insects have fascinating means of locomotion. Find one, observe it and demonstrate its movement to someone else!

EVALUATION

1. Describe three ant behaviors you have observed.
2. For one of these behaviors, describe why the ants behaved that way. How does the behavior help the ant to survive?
3. What five basic needs do humans and ants share?

Age: Grades 3-9
Subjects: Science (Modified: English, Drama)
Skills: analysis, classification, comparing similarities and differences, description, discussion, generalization, kinesthetic concept development, observation, small group work, writing
Duration: two 30-minute class periods; one 50 to 60-minute class period
Group Size: teams of three to six; approximately 30 students total
Setting: outdoors
Conceptual Framework Reference: I.A., I.A.4., I.C.1., I.C.2.
Key Vocabulary: basic or survival needs, observation, evidence
Appendices: Animals in the Classroom, Field Ethics, Simulations, Observation and Inferences

FIRST IMPRESSIONS

OBJECTIVES

Students will be able to: 1) distinguish between reactions to an animal based on myth or stereotype and those based on accurate information; and 2) recognize the value of animals' contributions to ecosystems—even those that people sometimes respond to with fear.

METHOD

Students react to a variety of photos as a beginning to study of contributions of a range of animals.

BACKGROUND

Many people don't like spiders. Their first reaction may be to recoil if they see a spider; their second may be to kill the animal as quickly as possible. And yet most spiders are harmless to people. In fact, spiders are important contributors to healthy ecosystems.

Spiders are not the only wildlife that frequently raises a response of fright in people. Wolves, snakes and bats elicit fear among many people in a number of cultures. Bats, however, are viewed as signs of good luck among some people in China. Reactions may vary from species to species in different cultures.

This activity is designed for students to examine their spontaneous reactions to different animals—separating reactions based on information and experience from those based on misinformation and myth.

The major purpose of this activity is for students to recognize that all animals are important contributors to ecosystems.

MATERIALS

large photos or drawings of a variety of animals, including some the students might think are "cute" and some they might think are "scary."

PROCEDURE

1. Prepare a series of large photos or drawings of a variety of different kinds of animals. As you show a photo to the entire group of students, ask them to take turns saying the first word that comes to their minds as they look at the picture.
2. With younger students, take the time yourself to write the name of the animal and the words the students suggest on the chalkboard. With older students, have at least two students serve as recorders, writing the words on the chalkboard for the whole group. Let the recorders share the words they think of too, if they like.
3. Ask the students to identify the animals on the list that seemed to generate a response of dislike or fear and those that seemed to generate a popular and generally favorable response.

For Older Students

4. Divide the students into teams with each team asked to find out more about one of the animals. In their research, they should find out whether the reactions of the students to the animals were based on accurate information and experiences or were based on misinformation and inadequate information. Each team should prepare a report to present, including a description of the importance of the animal's contribution to the ecosystem.
5. Ask the students to present their reports. Talk about the values and contributions animals make—from ecological to aesthetic. Identify animals, if any, where the students change their feelings based on having additional and more accurate information. Identify animals, if any, where the students don't change their views. Talk about "first impressions," contrasted with the importance of basing perceptions of animals, plants, people, ideas, etc., on the best information available.

Sea Otter

Mammal of living waters
Swimming, sleeping, eating, diving, basking, playing,
Sensitive indicator of the quality of continuing life
Still here

Diamante Diamante is a poem shaped in the form of a diamond. It can be used to show that words are related through shades of meaning from one extreme to an opposite extreme, following a pattern of parts of speech like this:

noun
adjective adjective
participle participle participle
noun noun noun noun
participle participle participle
adjective adjective
noun

For example:

egg
light bright
living stretching growing
bird beak wing flight
soaring seeing seeking
feathered fluid
raven

5. The completed poems can be typed or printed neatly—and then displayed with a photograph or black and white pen and ink drawing of the animal. For example:

The Goat, "Mazama"

Rhime ice coats my nostrils
The gale rages from peak to crag
Warm, white wool shaggily hugging my body...
Cautiously I move on rock
Barely noticing the fear
Of the valley below.
The eagle—the feel of snow—
This is my home.

Hal Neace, Teacher
Seldovia, Alaska

AQUATIC EXTENSIONS

1. See the Aquatic WILD activity, "Aqua Words."
2. Create a poem in the shape of any aquatic animal you find interesting. Simply put words in order in the shape of the outline of the animal you have in mind. The words do not need to rhyme. You can use any words that come to mind that help to describe the characteristics of this aquatic animal—for example, where it lives, what it eats, how it moves and what you find interesting about it.

EVALUATION

1. Why do you think some people say that they would not want to live in a world without wildlife? Are you one of those people? Why or why not? Would you prefer to choose the types of wildlife you would like to live with? If so, which types would you want to live with and why?
2. Find a photograph or painting that features wildlife in an inspiring fashion. How does the artist portray wildlife in a way that you find inspiring?

Age: Grades 4-7 (and older)
Subjects: Language Arts, Science
Skills: description, invention, synthesis, visualization, writing
Duration: one class period
Group Size: any
Setting: outdoors
Conceptual Framework Reference: II.A., II.A.1., II.A.2., II.A.3., II.A.4., II.B.3., II.F.
Key Vocabulary: poetry, imagine
Appendices: Outdoors, Field Ethics

For Younger Students

4. Ask everyone to help choose an animal that seems especially scary. Tell the students that this animal makes a contribution to the environment in which it lives—and you'll find out what! On your own, or with the help of a local resource person, find out more about the contributions this animal makes—and report back to the students! If possible, and safe, bring in the animal for the students to get to know. See Extensions below. Talk about "first impressions" contrasted with reactions based on knowing more about the animal.

EXTENSIONS

1. Bring in one or more live animals—harmless, but ones that students might not want to get close to. For example, such animals might include a large non-poisonous snake, large non-poisonous spider, toad, or caterpillars. (Make sure the students do not hurt the animal and that the animal cannot hurt the students. Care should be taken in advance of removing any animal from the wild to make sure that it can legally be moved. If the animal was taken from the wild for this activity, see that it is returned safely—exactly to the place where it was originally found if at all possible—at the conclusion of the activity. See the National Science Teachers Association's *Guidelines for Responsible Use of Animals in the Classroom* in the Appendices for additional guidance concerning care of the animal.)
2. Draw a picture of a "favorite" animal and one of a "scary" animal. Write a short story about each—including the value of each.
3. Classify animal groups; e.g., mammals, spiders, insects. Which groups seem to be most "loved," "feared," etc.
4. Work in small groups to select an animal that has a negative image for some people. Write an advertisement or produce a simulated television commercial for that animal and include the positive things the animal does for the community. Share the results!

AQUATIC EXTENSIONS

Prepare a series of large photos or drawings of a variety of different kinds of aquatic animals. Select a range so that there are likely to be some that you or others may have a fearful or negative "first impression" of. Do the activity as described above. Here's one list of a variety of aquatic animals, just as an example: mosquito, pelican, trout, frog, dragonfly, shark, dolphin, sea otter, seal, sea gull, manatee, catfish. There are many different aquatic animals and they are diverse. Each animal has an important role to play in aquatic ecosystems.

EVALUATION

1. What might someone say about a snake, a spider, a wolf, and a deer if they liked the animal? What might someone say about each of these animals if they did not like the animal?
2. Invent a story. You can tell it or write it. Describe someone's first impression to one of these animals: brown bat, bullfrog, spider, garter snake, or northern harrier. Then tell how that person's impression changes as he or she learns more about the animal.

Age: Grades K-6
Subjects: Science, Language Arts
Skills: analysis, comparing similarities and differences, generalization, listing; additional skills for older students: description, research, reporting, small group work, writing
Duration: two 20-minute periods; older students: three 30-minute periods
Group Size: any
Setting: indoors
Conceptual Framework Reference: II.A.1., II.A.2., II.B., III.B.1., V.A., V.A.5., V.A.6., V.B.1.
Key Vocabulary: fear, environment, feelings, information
Appendices: Field Ethics, Animals in the Classroom

The experience gained over ten years of working with Project Learning Tree proved to be of great value in developing Project WILD. The same general procedure was followed in developing the materials. A content outline or framework was developed cooperatively with input from a great number of people—educators, preservationists, conservationists, wildlife managers, business and industry representatives and others. The basic materials to teach the concepts in the outline were developed by teachers in five writing workshops held in western states, and were extensively field-tested and edited before being assembled in final form. As with Project Learning Tree, the materials are available to those who attend instructional workshops offered by certified leaders. In the sponsoring states, the wildlife agencies typically are responsible for the statewide implementation program, working with the state education agency, citizen groups, local school personnel and others. Follow-up activities, evaluation, revision of the materials and other services are offered through the Project WILD Management Committee and sponsors of Project WILD for the foreseeable future.

As with all good teaching materials, Project WILD is concerned with providing information and helping students evaluate choices and thereby make reasonable decisions. In short, our mission is to help youngsters learn how to think, not what to think.

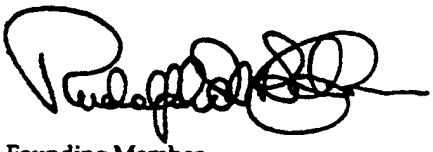
We are proud of the fact that our strict efforts at balance and objectivity, as well as the technical validity and educational value of the materials, have gained sponsors for the project from a number of organizations representing a wide range of views on wildlife and its management.

As noted, Project WILD is a people program. Its overall purpose is to motivate youngsters to take intelligent and constructive action to conserve wildlife and natural resources. Much has been accomplished so far: framework and materials produced, field testing and evaluation completed; implementation plans developed and initiated; updates completed; new program materials developed; services expanded. However, the process will not be complete until the learning activities reach a significant number of youngsters—in classrooms, through youth groups and as individuals.

That is why we consider you—the person now reading this volume—to be so important. You are a key part of the people process, and it is you who must take WILD on the next step in its journey to the youngsters. We will help you all we can, but the final success of the program depends upon your skill in using these materials and resources. And, in so doing, you become part of us—and we become part of you: people who care about children, about our land and its resources, about the present and the future, and who are willing to do something about it.

Welcome to Project WILD!

Rudolph J.H. Schafer



Founding Member
Western Regional Environmental
Education Council, Inc.

EDITOR'S NOTE: In the decade since Project WILD began, more than 380,000 educators in the U.S. have participated in Project WILD workshops. These educators in turn have provided instruction using Project WILD to more than 25 million youth.

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI 39180

Public Meeting
on
Mississippi River and Tributaries Project,
Mississippi River Mainline Levees
Enlargement and Seepage Control

Solomon Jr. High School
Greenville, Mississippi
18 March 1998

PRESENT:

CORPS OF ENGINEERS:

Vicksburg District:

LTC John Jones, Deputy District Engineer
Mr. Bill Hobgood, Planning Division
Mr. Dan Johnson, Planning Division
Mr. Moody Culpepper, Planning Division
Mr. Gary Young, Planning Division
Mr. Wendell King, Planning Division
Mr. Stoney Burke, Planning Division
Mr. Kent Parrish, Programs and Project Management Division
Ms. Myra Dean, Planning Division
Ms. Jeannine Beatty, Planning Division
Mr. Jim Merritt, Office of Counsel
Mr. Larry Harper, Operations Division
Mr. Eddie Brooks, Engineering Division
Mr. Jim Hines, Engineering Division
Mr. Larry Banks, Engineering Division
Mr. Bobby Fleming, Engineering Division
Mr. Rick Robertson, Engineering Division
Mr. Robert Simrall, Programs and Project Management Division
Ms. Patty K. Elliott, Public Affairs Office
Mr. Charles J. Gordon, Operations Division, Greenville Project Office

New Orleans District

Mr. Bill Wilson, Planning Division
Mr. Richard Bergez, Programs and Project Management Division

ALSO PRESENT:

Mr. Murry M. Alexander, Mississippi Levee Board, 1200 Kirk Circle, Greenville, Mississippi 38701
Honorable Paul Artman, Mayor of Greenville, P.O. Box 897, Greenville, Mississippi 38702
Mr. Fred Ballard, Mississippi Levee Board, Route 1, Box 19, Leland, Mississippi 38756
Mr. George L. Berry, President, YMD Joint Water Management District, 106 Peninsula Drive, Leland, Mississippi 38756
Ms. Carole Brent, P.O. Box 1556, Greenville, Mississippi 38702

Mr. Howard Brent, P.O. Box 896, Greenville, Mississippi 38702
Mr. Willie Bunton, President, Issaquena County Board of Supervisors, P.O. Box 161, Mayersville, Mississippi 39113
Mr. Harold Burdine, Greenville Port Commission, P.O. Box 446, Greenville, Mississippi 38702
Mr. Laurance Carter, Delta Council, P.O. Box 458, Rolling Fork, Mississippi 39159
Mr. Nick Chandler, Levee Boards, Swiftown, Mississippi 38959

Mr. Buddy Cochran, CoCo Planting Company, P.O. Box 143, Avon, Mississippi 38723
Mr. David T. Cochran, Jr., CoCo Planting Company, P.O. Box 137, Avon, Mississippi 38723
Mr. Marvin J. Cochran, CoCo Planting Company, P.O. Box 115, Avon, Mississippi 38723
Mr. Gene Fulton, Supervisor, Route 2, Box 446, Rolling Fork, Mississippi 39159
Mr. Milton Goza, Issaquena County Board of Supervisors, P.O. Box 97, Grace, Mississippi 38745

Mr. Lewis Hatcher, Issaquena County Board of Supervisors, Rolling Fork, Mississippi 39159
Mr. Curtis James, U.S. Fish and Wildlife Service, 2524 S. Frontage Road, Vicksburg, Mississippi 39180
Mr. Jim Johnson, Bunge Corporation, P.O. Box 400, Greenville, Mississippi 38702
Mr. Dudley Lehew, Gulf South Research Corporation, 9357 Interline Avenue, Baton Rouge, Louisiana 70809
Rev. Elijah Lewis, Issaquena County Supervisor, P.O. Box 85, Glen Allen, Mississippi 38744

Mr. David Lush, The Bolivar Commercial
Mr. Douglas Moore, Sharkey County Supervisor, 101 Elm Street, Rolling Fork, Mississippi 39159
Mr. Roy Nichols, Mississippi Levee Board of Commissioners, P.O. Box 334, Glen Allen, Mississippi 38744
Mr. Scott Rappold, DDT, 988 N. Broadway, Greenville, Mississippi 38702
Mr. Anson Shelton, Jr., P.O. Box 90, Avon, Mississippi 38723

Mr. B. Sykes Sturdivant, Yazoo-Mississippi Delta Levee Board, P.O. Box 209, Glendora, Mississippi 38928
Mr. Charlie Tindall III, Board of Mississippi Levee Commissioners, P.O. Box 918, Greenville, Mississippi 38702
Mr. Jim Wanamaker, Mississippi Levee Board, P.O. Box 637, Greenville, Mississippi 38701
Mr. Ken Weiland, Yazoo-Mississippi Delta Levee Board, P.O. Box 610, Clarksdale, Mississippi 38614
Mr. Nott Wheeler, Jr., Mississippi Levee Board, Greenville, Mississippi 38702

Mr. Harry Williams, Arkansas Farm Bureau, P.O. Box 31, Little Rock, Arkansas 72203
Mr. David Work, Rosedale-Bolivar County Port Commission, P.O. Box 460, Rosedale, Mississippi 38769

LTC JOHN JONES: Good evening. I am LTC John Jones, Deputy Commander, Vicksburg District, U.S. Army Corps of Engineers. I welcome you to the third of a series of six public meetings that the U.S. Army Corps of Engineers is hosting this month regarding the Mississippi River Levees Enlargement and Seepage Control Project.

Tonight we are continuing the public coordination process for the draft Project Report, draft Supplemental Environmental Impact Statement (SEIS), and supporting technical appendixes for this project. Last month, we distributed the draft comments and documents for public review.

In tonight's meeting, we will summarize our study findings, then give you the opportunity to provide statements, and then we will entertain any questions that you may have by our panel here seated to the left of me. If we cannot answer those questions tonight, we will quickly get an answer when we have had time to research that.

If you wish to make a statement, please so indicate on the white card. We have white cards out front that you can sign up on. If you did not fill out a card, just raise your hand and we will bring one to you. We can do that; we have folks set up to do that. We will place your name on our mailing list and send you the next issue of our quarterly newsletter. We try to keep folks posted via a quarterly newsletter. This is the last one that we sent out. We have some extra copies here to the left on the table there. You are welcome to pick up one. If you want the next one sent to you, just let us know and we will make that happen.

I would like to just take a moment and introduce some special guests tonight. I would like to introduce Paul Artman, Mayor, City of Greenville.

MAYOR ARTMAN: Thank you and welcome.

LTC JONES: I would like to also introduce Willie Bunton, President, Issaquena County Board of Supervisors. Thank you for coming. Also, George Berry, President, YMD Joint Water Management District. Thank you.

What I would like to do now is introduce these technical experts. Immediately to my left is Moody Culpepper, Vicksburg District, Corps of Engineers, Study Manager. Next to him is Kent Parrish, Vicksburg District, Project Manager; Gary Young, Vicksburg District, Biologist; Jim Wanamaker, one of our sponsors, Mississippi Levee Board; Larry Banks, Chief, Hydraulics and Hydrology and Water Control; and Bobby Fleming, Chief of Design from the Vicksburg District.

Now our study manager, Moody Culpepper, will make a slide presentation summarizing the findings of our study.

MR. MOODY CULPEPPER: Thank you, LTC Jones.

SLIDE 1 - INTRODUCTION

TONIGHT WE ARE HERE TO DISCUSS THE FINDINGS OF STUDIES CONDUCTED FOR THE DRAFT MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT AND SEEPAGE CONTROL PROJECT REPORT AND DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT. THIS IS A JOINT EFFORT OF THE U.S. ARMY CORPS OF ENGINEERS, MEMPHIS, VICKSBURG, AND NEW ORLEANS DISTRICTS, CONDUCTED WITH THE OVERSIGHT OF THE MISSISSIPPI RIVER COMMISSION. VICKSBURG WAS DESIGNATED AS THE LEAD DISTRICT IN THE CONDUCT OF THE STUDIES. WE SOLICIT YOUR COMMENTS ON THE PLAN OF IMPROVEMENT THAT IS BEING PROPOSED.

SLIDE 2 - PROJECT AREA

THE MR&T PROJECT IN THE ALLUVIAL VALLEY BETWEEN CAPE GIRARDEAU, MISSOURI, AND HEAD OF PASSES, LOUISIANA, PROVIDES PROTECTION FROM FLOODS BY MEANS OF VARIOUS STRUCTURAL MEASURES. THE MISSISSIPPI RIVER MAINLINE LEVEES FEATURE--THE SUBJECT OF THESE INVESTIGATIONS--HAS BEEN UNDER CONSTRUCTION SINCE 1928.

THE MISSISSIPPI RIVER LEVEES AND CHANNEL IMPROVEMENT EIS WAS FILED WITH THE COUNCIL ON ENVIRONMENTAL QUALITY IN APRIL 1976. THIS EIS IS BEING SUPPLEMENTED TO COVER CONSTRUCTION OF ALL REMAINING MISSISSIPPI RIVER MAINLINE LEVEES AND SEEPAGE CONTROL.

THE PROJECT AREA EXTENDS 600 MILES FROM CAPE GIRARDEAU TO HEAD OF PASSES AT THE GULF OF MEXICO. THE PROJECT AREA WIDTH INCLUDES THE LEVEES, ALL LANDS RIVERSIDE OF THE LEVEES, AND A STRIP 3,000 FEET LANDSIDE OF THE LEVEES. THE PROJECT AREA IS COMPRISED OF PARTS OF SEVEN STATES--MISSOURI, ILLINOIS, TENNESSEE, KENTUCKY, ARKANSAS, MISSISSIPPI, AND LOUISIANA.

WE HAVE THE CAPABILITY TO COMPLETE THIS PROJECT IN THE YEAR 2020. UPON COMPLETION, APPROXIMATELY 35,000 SQUARE MILES OF THE ALLUVIAL VALLEY WILL BE PROTECTED FROM THE PROJECT DESIGN FLOOD--OR "P D F"--A HYPOTHETICAL FLOOD EVENT DEFINED AS THE GREATEST FLOOD HAVING A REASONABLE PROBABILITY OF OCCURRENCE. OUT OF 1,610 MILES OF MISSISSIPPI RIVER MAINLINE LEVEES, THERE REMAINS APPROXIMATELY 262 MILES THAT ARE 2 TO 8 FEET BELOW THE HEIGHT REQUIRED TO SAFELY PASS THE PDF.

SLIDE 3 - PROJECT SIGNIFICANCE

THE MISSISSIPPI RIVER FUNNELS 41 PERCENT OF THE CONTINENTAL UNITED STATES DRAINAGE. . . RUNOFF FROM ALL OR PARTS OF 31 STATES AND 2 CANADIAN PROVINCES TO THE GULF OF MEXICO. THE MISSISSIPPI RIVER LEVEES PROTECT MILLIONS OF RESIDENTS AND A MULTIBILLION DOLLAR, HIGHLY DEVELOPED AGRICULTURAL AREA.

SLIDE 4 - SIGNIFICANT ENVIRONMENTAL RESOURCES

THE PROJECT AREA CONTAINS SIGNIFICANT ENVIRONMENTAL RESOURCES. AS PART OF PREPARATION OF THE SEIS, EVALUATIONS OF WETLANDS, TERRESTRIAL RESOURCES, ENDANGERED SPECIES, NEOTROPICAL BIRDS, BATS, WATER QUALITY, AQUATIC RESOURCES, WATERFOWL, AND ARCHEOLOGICAL RESOURCES WERE CONDUCTED.

SLIDE 5 - HABITAT EVALUATION PROCEDURES

A TEAM COMPOSED OF BIOLOGISTS FROM THE U.S. ARMY CORPS OF ENGINEERS; THE U.S. FISH AND WILDLIFE SERVICE; THE ARKANSAS GAME AND FISH COMMISSION; LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES; THE MISSISSIPPI DEPARTMENT OF WILDLIFE, FISHERIES AND PARKS; AND KENTUCKY DEPARTMENT OF FISH AND WILDLIFE RESOURCES CONDUCTED THE TERRESTRIAL HABITAT EVALUATIONS. THE U.S. ARMY ENGINEER WATERWAYS EXPERIMENT STATION DETERMINED PROJECT IMPACTS

ON AQUATIC RESOURCES. THE MIGRATORY WATERFOWL ANALYSIS WAS CONDUCTED BY THE U.S. FISH AND WILDLIFE SERVICE.

SLIDE 6 - PLANNING OBJECTIVES

OUR PLANNING OBJECTIVES WERE TO PROVIDE PROTECTION FROM THE PROJECT DESIGN FLOOD THROUGH AN ENVIRONMENTALLY SUSTAINABLE PROJECT WHICH AVOIDS AND MINIMIZES AS MANY ENVIRONMENTAL IMPACTS AS POSSIBLE AND COMPENSATES FOR UNAVOIDABLE LOSSES.

SLIDE 7 - ARRAY OF PLANS

A TEAM INCLUDING ENGINEERS, ECONOMISTS, BIOLOGISTS, AND OTHER DISCIPLINES DEVELOPED AND EVALUATED THIS ARRAY OF PROJECT PLANS COMPRISED OF NO ACTION, ONE NONSTRUCTURAL, AND THREE STRUCTURAL ALTERNATIVES.

SLIDE 8 - NO-ACTION ALTERNATIVE

NO LEVEE CONSTRUCTION OF ANY TYPE WOULD OCCUR--ONLY NORMAL MAINTENANCE AND REPAIR OF THE EXISTING LEVEES.

THEREFORE, THE INCREASED THREAT OF CATASTROPHIC FLOODING WOULD CONTINUE AND THE CITIZENS WOULD BE LIVING IN APPREHENSION OF FUTURE LEVEE FAILURES.

SLIDE 9 - FLOOD DAMAGE AREA (MAP)

LIMITED DAMAGE ANALYSES OF POTENTIAL LEVEE CREVASSES NEAR THE TOWNS OF MAYERSVILLE, MISSISSIPPI, AND LAKE PROVIDENCE, LOUISIANA, INDICATE ESTIMATED FLOOD DAMAGES APPROACHING $5.0 BILLION--ALMOST $2.0 BILLION IN THE AREAS ALONG THE EAST BANK OF THE MISSISSIPPI RIVER AND $3.0 BILLION ON THE WEST BANK. ASSOCIATED IMPACTS COULD INCREASE THE TOTAL EFFECT ON THE LOCAL ECONOMY TO ALMOST $10 BILLION.

MISSISSIPPI RIVER LEVEE FAILURES AT OTHER LOCATIONS WOULD CAUSE EVEN GREATER DAMAGES AND IMPACTS REGION-WIDE. BASED ON THE CASE STUDY, DAMAGES COULD BE EXPECTED TO APPROACH $300 BILLION.

SINCE THE NO-ACTION ALTERNATIVE WOULD NOT PROVIDE LONG-TERM FLOOD PROTECTION AND IS UNACCEPTABLE TO CONGRESS AND THE GENERAL PUBLIC AND THUS UNIMPLEMENTABLE, THE NO-ACTION OPTION WAS NOT GIVEN FURTHER CONSIDERATION.

SLIDE 10 - PLAN 1 - NONSTRUCTURAL ALTERNATIVES

PLAN 1 REPRESENTS A NONSTRUCTURAL OPTION TO STRUCTURAL FLOOD DAMAGE REDUCTION. THE NONSTRUCTURAL MEASURE ADDRESSED WAS PURCHASING EASEMENTS IN LIEU OF PROVIDING FLOOD PROTECTION. EXISTING LEVEE PROTECTION WOULD BE MAINTAINED AS IN THE NO-ACTION ALTERNATIVE. HOWEVER, SHOULD THE LEVEE BE OVERTOPPED AND CATASTROPHIC FAILURES OCCUR, THE LEVEES WOULD NOT BE RECONSTRUCTED.

CONSIDERING ONLY THE ABOVE-MENTIONED MISSISSIPPI RIVER LEVEE BREAKS AT LAKE PROVIDENCE AND MAYERSVILLE, PURCHASE OF FLOWAGE EASEMENTS COULD BE REQUIRED ON APPROXIMATELY 16 MILLION ACRES. THIS WOULD YIELD A COST IN THE MULTIBILLION DOLLAR RANGE. EMERGENCY DISASTER ACTIVITIES, TRAFFIC REROUTING, AND ROAD AND BRIDGE STRUCTURE AND PUBLIC UTILITIES DAMAGES WOULD ALSO INCREASE COST SIGNIFICANTLY.

SUCH AN ALTERNATIVE WOULD NOT ACCOMPLISH THE CONGRESSIONALLY MANDATED PROJECT PURPOSE TO PROVIDE A PRESCRIBED LEVEL OF FLOOD PROTECTION. IN VIEW OF THIS AND CONSIDERING THE PROHIBITIVE COST AND CERTAIN PUBLIC UNACCEPTABILITY, A NONSTRUCTURAL PLAN WOULD NOT BE IMPLEMENTABLE AND WAS ELIMINATED.

SLIDE 11 - STRUCTURAL ALTERNATIVES

THREE STRUCTURAL ALTERNATIVES WERE ADDRESSED IN THE PRELIMINARY SCREENING--PLAN 2, LANDSIDE BORROW; PLAN 3, TRADITIONAL METHOD (RIVERSIDE BORROW); AND PLAN 4, ENVIRONMENTAL DESIGN (AVOID-AND-MINIMIZE) TO CONSTRUCT LEVEE ENLARGEMENT AND SEEPAGE CONTROL.

SLIDE 12 - TYPICAL WORK ITEM

A TYPICAL SEGMENT OF LEVEE CONSISTING OF SEVERAL PROPOSED WORK ITEMS WAS SELECTED TO PREPARE PRELIMINARY DESIGN AND COST ESTIMATES OF THE STRUCTURAL PLANS. THE AVERAGE LEVEE RAISE WAS 2.5 TO 3 FEET AND INCLUDED EITHER SEEPAGE BERM ENLARGEMENT OR NEW SEEPAGE BERM CONSTRUCTION.

SLIDE 13 - PLAN 2 - LANDSIDE BORROW

FOR THIS ALTERNATIVE, ALL BORROW MATERIAL WOULD BE OBTAINED FROM LANDSIDE OF THE LEVEES. THREE LANDSIDE BORROW SCHEMES WERE INVESTIGATED AS SHOWN HERE.

SLIDE 14 - PLAN 2A - TRADITIONAL LANDSIDE BORROW

PLAN 2A CONSISTS OF TRADITIONAL RECTANGULAR BORROW AREAS 8 TO 10 FEET DEEP IN A BAND 2,000 TO 3,000 FEET FROM THE LEVEE. 2,000 FEET IS TO LESSEN UNDERSEEPAGE PROBLEMS AND 3,000 FEET IS TO LIMIT HAUL DISTANCE. SUITABLE MATERIAL WOULD BE EXCAVATED AND USED TO ENLARGE THE LEVEE AS SHOWN OR TO CONSTRUCT BERMS. THE LANDSIDE RIGHTS-OF-WAY AND EXTENDED HAUL DISTANCES WOULD INCREASE COST.

WATER QUALITY PROBLEMS WOULD BE CREATED BY CONSTRUCTION OF LANDSIDE BORROW AREAS AS DRAINAGE FROM ADJACENT FIELDS WOULD CONTRIBUTE SUSPENDED SEDIMENTS, NUTRIENTS, AND PESTICIDES. TESTING OF EXISTING LANDSIDE BORROW AREAS HAS INDICATED HIGH

LEVELS OF PESTICIDES IN FISH WHICH APPROACH FOOD AND DRUG ADMINISTRATION ACTION LEVELS FOR CONSUMPTION BY HUMANS.

SLIDE 15 - PLAN 2B - TRADITIONAL LANDSIDE BORROW WITH FORESTED BUFFER

THIS ALTERNATIVE CONSISTS OF BORROW AREAS 8 FEET DEEP AND PROTECTED BY A FORESTED BUFFER ZONE WITH A PROTECTIVE BERM AROUND THE OUTSIDE OF THE BUFFER. AS IN PLAN 2A, THE LOCATION FOR THE BORROW AREA IS 2,000 TO 3,000 FEET FROM THE LEVEE.

THIS IS THE EXCAVATED BORROW AREA SHOWING THE FORESTED BUFFER AREA AND PROTECTIVE DIKE. THIS DESIGN IMPROVES WATER QUALITY BY ISOLATING THE BORROW FROM THE AGRICULTURAL DRAINAGE.

SLIDE 16 - PLAN 2C - LANDSIDE SHALLOW BORROW

LANDSIDE SHALLOW BORROW ALLOWS FOR DRAINING THE BORROW AREAS SO THEY CAN BE FORESTED. BORROW EXCAVATION IS LIMITED TO 3 FEET DEEP AND SHAPED TO DRAIN AND CONNECT TO LOCAL DRAINAGE.

THIS SLIDE SHOWS A TYPICAL LAYOUT OF SHALLOW BORROW AREA LOCATION, EXCAVATION AND LEVEE ENLARGEMENT, AND FORESTED BORROW AREA. THIS SHALLOW BORROW GREATLY INCREASES THE REQUIRED ACREAGE FOR BORROW, THUS INCREASING COST.

SLIDE 17 - PLAN 3 - TRADITIONAL METHOD

PLAN 3 IS THE TRADITIONAL METHOD TO CONSTRUCT LEVEE ENLARGEMENTS AND BERMS. HERE, OUR CONSTRUCTION IS NORMALLY BASED ON THE MOST ECONOMICAL DESIGN. I WILL DISCUSS DESIGN DETAILS LATER.

SLIDE 18 - PLAN 4 - ENVIRONMENTAL DESIGN (AVOID AND MINIMIZE)

PLAN 4 IS AN ENVIRONMENTAL DESIGN WHICH INCORPORATES MEASURES TO AVOID AND MINIMIZE ENVIRONMENTAL DAMAGES TO BOTTOM-LAND HARDWOODS

AND WETLANDS. DESIGN DETAILS OF THIS PLAN WILL ALSO BE DISCUSSED LATER.

SLIDE 19 - COST COMPARISON

HERE ARE THE COST ESTIMATES OF ALL STRUCTURAL PLANS FOR THE TYPICAL LEVEE SEGMENT. AS YOU CAN SEE, COSTS FOR PLANS 2A, 2B, AND 2C--THE LANDSIDE BORROW ALTERNATIVES--EXCEED COSTS FOR PLANS 3 AND 4.

SLIDE 20 - MAJOR REASONS FOR LANDSIDE BORROW ELIMINATION

THEREFORE, PLAN 2 WAS NO LONGER EVALUATED FOR THESE REASONS.

SLIDE 21 - FINAL ARRAY OF PLANS

ONLY PLANS 3 AND 4 WERE CARRIED INTO DETAILED DESIGN BECAUSE THEY ARE THE MOST VIABLE AND IMPLEMENTABLE.

SLIDE 22 - TRADITIONAL PLAN 3 (GIS MAP RIVERSIDE BORROW)

ANALYSIS OF THIS PLAN CONSISTED FIRST OF PRINTING MAPS LIKE THIS THAT CONTAIN SEVERAL DATA LAYERS INCLUDING BASE TOPOGRAPHIC FEATURES, LAND COVER MAPPING, WETLAND MAPPING, AND WORK ITEMS.

AN ENGINEERING DESIGN TEAM LOCATED THE BORROW AREAS AS SHOWN HERE OUTLINED IN BLACK. THESE BORROW AREAS ARE NORMALLY LOCATED RIVERSIDE AS CLOSE TO THE CONSTRUCTION SITE AND EXCAVATED AS DEEP AS POSSIBLE. THIS PLAN REQUIRES NO SPECIAL CONFIGURATION OR LOCATION OF THE BORROW AREAS. NO PROVISIONS ARE MADE FOR DRAINAGE OR ENVIRONMENTAL ENHANCEMENT OF THE BORROW AREAS.

SLIDE 23 - ENVIRONMENTAL DESIGN PLAN 4 (AVOID AND MINIMIZE)

TO DEVELOP THE LAYOUT FOR PLAN 4, AN INTERDISCIPLINARY TEAM OF REPRESENTATIVES FROM STATE AND FEDERAL AGENCIES, LOCAL SPONSORS, AND CORPS STAFF WAS FORMED. THE AVOID-AND-MINIMIZE DESIGN APPLIED TO THIS WORK ITEM RELOCATED THE RIVERSIDE BORROW AREA FROM THE BOTTOM-LAND HARDWOOD WETLANDS TO RIVERSIDE CLEARED FARMLANDS (SHOWN HERE OUTLINED IN RED).

SLIDE 24 - AVOID AND MINIMIZE RELOCATION OF BORROW AREAS

WHERE FARMLANDS WERE NOT AVAILABLE RIVERSIDE, THE BORROW WAS MOVED INTO LESS ENVIRONMENTALLY DAMAGING RIVERSIDE TREE PLANTATIONS, NONWETLAND RIVERSIDE BOTTOM-LAND HARDWOODS, OR LANDSIDE FARMLANDS.

SLIDE 25 - ENVIRONMENTAL BORROW AREA DESIGN

MOST RELOCATED BORROW AREAS WOULD INCLUDE ENVIRONMENTAL FEATURES SUCH AS VARYING DEPTHS, IRREGULAR SHORELINE, ISLANDS, AND FORESTED BUFFER.

SLIDE 26 - INNOVATIVE AVOID-AND-MINIMIZE DESIGN

OTHER INNOVATIVE DESIGN APPROACHES FOR REDUCING BOTTOM-LAND HARDWOODS AND WETLANDS EFFECTS WERE ALSO CONSIDERED. DETAILS ARE IN THE FOLLOWING SLIDES.

SLIDE 27 - BERM SCHEMATIC 1

THIS SHOWS THE EXCAVATION OF AN EXISTING BERM BEING USED TO ENLARGE THE LEVEE, CONSTRUCT RETAINING DIKES FOR DREDGED MATERIAL, AND STORE MATERIAL IN A STOCKPILE OR IN THE RETAINING DIKES TO COVER FUTURE DREDGED MATERIAL.

SLIDE 28 - BERM SCHEMATIC 2

THIS SHOWS REPLACING THE EXCAVATED MATERIAL WITH MATERIAL DREDGED FROM THE RIVER. A TEMPORARY ENVIRONMENTAL IMPACT WOULD BE RELATED TO THE NARROW PATH OF THE DREDGE PIPE FROM THE RIVER TO THE BERM SITE.

SLIDE 29 - BERM SCHEMATIC 3

NOW YOU SEE THE FINAL STEP. THE STOCKPILED SOIL IS NOW USED TO COVER THE DREDGED MATERIAL FOR GROWTH OF GRASSES.

SLIDE 30 - DREDGE SITE LOCATIONS FOR BORROW

THIS SHOWS THE DREDGE SITE LOCATIONS IN THE MISSISSIPPI RIVER TO BE USED FOR BORROW TO CONSTRUCT SEVERAL WORK ITEMS AS SHOWN ON THE EAST BANK.

SLIDE 31 - RELIEF WELLS SEEPAGE CONTROL

THE USE OF RELIEF WELLS TO CONTROL SEEPAGE INSTEAD OF BERMS COULD BE USED IN SUITABLE LOCATIONS. PLEASE NOTE THAT CLEAR WATER FLOWING FROM THIS WELL INDICATES THAT NO SOIL IS BEING WASHED OUT FROM UNDER THE LEVEE.

SLIDE 32 - CUTOFF TRENCH SEEPAGE CONTROL

THE USE OF CUTOFF TRENCHES TO CONTROL SEEPAGE INSTEAD OF BERMS COULD BE USED IN SUITABLE LOCATIONS.

SLIDE 33 - COST TABLE

TOTAL COSTS FOR CONSTRUCTION AND MITIGATION FOR UNAVOIDABLE FISH AND WILDLIFE IMPACTS ARE SHOWN HERE FOR PLANS 3 AND 4. AS YOU CAN SEE, PLAN 3 COST IS APPROXIMATELY $623 MILLION AND PLAN 4 COST IS ABOUT $652 MILLION. THERE IS ABOUT A $29 MILLION COST DIFFERENCE BETWEEN THESE TWO PLANS.

SLIDE 34 - BOTTOM-LAND HARDWOODS IMPACTS

BOTH PLANS 3 AND 4 WERE ANALYZED FOR THEIR EFFECTS ON BOTTOM-LAND HARDWOODS AS SHOWN HERE.

PLAN 3 IMPACTS ROUGHLY 11,600 ACRES OF BOTTOM-LAND HARDWOODS. PLAN 4 REDUCES BOTTOM-LAND HARDWOOD LOSSES BY NEARLY 60 PERCENT OR BY SOME 6,700 ACRES. YOU MAY RECALL IN THE 1976 EIS, AN ESTIMATED 11,400 ACRES OF BOTTOM-LAND HARDWOODS WERE TO BE AFFECTED. BY USING ENVIRONMENTAL DESIGN TECHNIQUES, WE HAVE REDUCED THIS AMOUNT TO 4,800 ACRES. THE 4,800 ACRES IMPACTED IN PLAN 4 AFFECTS LESS THAN ONE-HALF OF 1 PERCENT OF THE TOTAL 1,022,000 ACRES OF BOTTOM-LAND HARDWOODS IN THE PROJECT AREA.

SLIDE 35 - PLAN SELECTION

ALTHOUGH PLAN 4 COSTS SLIGHTLY MORE THAN PLAN 3, PLAN 4 CONSTRUCTION TECHNIQUES DRAMATICALLY REDUCE ENVIRONMENTAL IMPACTS. THEREFORE, PLAN 4 IS THE RECOMMENDED PLAN.

SLIDE 36 - DESCRIPTION OF RECOMMENDED PLAN

THE PROPOSED ACTION INCLUDES 128 WORK ITEMS, COMPRISING THE LEVEE RAISING AND SEEPAGE CONTROL SHOWN HERE. THERE ARE 262.8 MILES OF LEVEES TO BE RAISED AND 131.8 MILES OF SEEPAGE CONTROL. NOTE THAT MOST OF THE LEVEE RAISING IS IN THE VICKSBURG

DISTRICT WHILE THE MAJORITY OF THE SEEPAGE CONTROL IS WITHIN THE MEMPHIS DISTRICT.

SLIDE 37 - MITIGATION ANALYSIS

RESULTS OF THE MITIGATION ANALYSIS FOR PLAN 4 WERE THAT FISH AND WILDLIFE LOSSES COULD BE OFFSET BY REFORESTING APPROXIMATELY 5,900 ACRES OF FREQUENTLY FLOODED AGRICULTURAL LANDS AT A COST OF $8.8 MILLION. THIS WOULD FULLY COMPENSATE UNAVOIDABLE LOSSES TO SIGNIFICANT ENVIRONMENTAL RESOURCES. APPROXIMATELY 89 PERCENT OF THESE ACRES ARE LOCATED IN THE VICKSBURG DISTRICT, APPROXIMATELY 11 PERCENT IN THE MEMPHIS DISTRICT AND LESS THAN 1 PERCENT IN THE NEW ORLEANS DISTRICT.

SLIDE 38 - ADDITIONAL MITIGATION FEATURES

IN ADDITION TO THE MITIGATION FEATURE, THE RECOMMENDED PLAN ALSO INCLUDES THESE ENVIRONMENTAL ATTRIBUTES.

SLIDE 39 - OPERATION AND MAINTENANCE REQUIREMENTS

LOCAL LEVEE BOARDS WILL CONTINUE TO PERFORM ALL MINOR OPERATION AND MAINTENANCE AT THEIR COST, AND THE CORPS WILL BE RESPONSIBLE FOR MAJOR MAINTENANCE.

SLIDE 40 - PLAN ACCOMPLISHMENTS

PLAN ACCOMPLISHMENTS INCLUDE:

- PROVIDING PROTECTION FROM THE PROJECT DESIGN FLOOD,
- AN ENVIRONMENTALLY SUSTAINABLE PROJECT,

- COMPENSATION FOR UNAVOIDABLE ENVIRONMENTAL LOSSES AT FULL FEDERAL EXPENSE.

SLIDE 41 - DIVISION OF PLAN RESPONSIBILITY

THESE ARE THE FEDERAL AND NON-FEDERAL IMPLEMENTATION RESPONSIBILITIES. NOTE THAT THE FEDERAL GOVERNMENT WILL CONSTRUCT THE PROJECT AND PAY FOR THE MITIGATION WHILE THE LOCAL SPONSORS WILL PAY FOR LANDS, EASEMENTS, RIGHTS-OF-WAY, RELOCATIONS, AND BORROW AREAS.

SLIDE 42 - CLEAN WATER ACT

A SECTION 404(B)(1) EVALUATION OF THE RECOMMENDED PLAN HAS BEEN PREPARED AND INCLUDED IN THE DRAFT REPORT FOR PUBLIC REVIEW. THE SECTION 404(B)(1) EVALUATION WILL BE USED TO APPLY FOR SECTION 401 CERTIFICATION FROM RESPECTIVE STATES.

SLIDE 43 - KEY MILESTONES

THE DRAFT REPORT IS CURRENTLY BEING REVIEWED BY FEDERAL, STATE, AND LOCAL AGENCIES AND THE CONCERNED PUBLIC. SIX PUBLIC MEETINGS ARE BEING HELD THIS MONTH. COMMENTS ARE BEING SOLICITED UNTIL APRIL 30, 1998, AND WILL BE ADDRESSED IN THE FINAL REPORT. COPIES OF THE LATEST NEWSLETTER WITH A LIST OF LIBRARIES WHERE THE DRAFT REPORT CAN BE READ ARE AT THE BACK OF THE ROOM.

THE FINAL SEIS WILL BE DISTRIBUTED IN JULY 1998 AND THE RECORD OF DECISION IS SCHEDULED FOR SIGNING IN OCTOBER 1998.

SLIDE 44 - CLOSING

WE WANT TO THANK ALL OF THOSE WHO ASSISTED IN THIS EFFORT. THE RECOMMENDED PLAN WILL PROVIDE THE REQUIRED LEVEL OF FLOOD PROTECTION TO THE RESIDENTS OF THE LOWER MISSISSIPPI VALLEY

PERMITTING ECONOMIC DEVELOPMENT OF THE REGION WHILE CONCURRENTLY SUSTAINING ITS ENVIRONMENTAL RESOURCES.

THIS CONCLUDES THE PRESENTATION OF STUDY RESULTS.

I WILL NOW TURN THE MEETING BACK OVER TO LTC JONES.

LTC JONES: We will now begin the making statements portion of our public meeting. I would like to make two administrative comments. One, all the proceedings here tonight are being taped, and second, if you are making a statement, if you could make your way to a microphone, we would appreciate that. We have one here in the middle of the room. What I will do is call off the cards here of those desiring to make a statement. Of course, you are always welcome to make a statement even if you do not have a card here. At the end of it, we will ask if anyone else would like to make a statement.

First, I will invite Paul Artman, Mayor of the city of Greenville, to come and make a statement.

MAYOR PAUL ARTMAN: Thank you, Colonel. First of all, we welcome you and your staff and all visitors to Greenville. We are glad to have you here any time.

I guess preliminarily we would say that from 1927 to this point--and we have not really heard--I think some of us in the room through the years have heard from the Levee Board about some of the possible areas where the levees are deficient in this area and how devastating that would continue to be to this location.

It was interesting that the Project Manager talked about Mayersville. I hope people realize that if there is a breach at Mayersville, we are all going to be under water at this location. He said that in some round-about fashion. But I think that needs to be honed home to everybody in this room and for the report, too, that wherever this breach might be or wherever it tops the levee or whatever the problem may be, the entire Delta area is going to suffer from a major flood. I think that is important. That is why mitigation is so important because at some point, mitigation from possible disaster--we see and we live everyday where the Federal Government has to come in and deal with these natural disasters. I would trust that they would still deal with us in that fashion here in the Delta area.

My question is, realizing the important of this, have we priced ourselves and the money out of the project here? Is there a possibility that you would say at some point we cannot afford to do something like this? I think we need to move forward with it and move forward with it in a hurry.

LTC JONES: Do we want to answer those questions now or wait until the question-and-answer period? You want to wait? Would you mind waiting until the question-and-answer period?

MAYOR ARTMAN: Yes, that is great.

LTC JONES: Great, okay, we will make sure we answer that. Thank you, sir. Second, Jim Wanamaker from the Mississippi Levee Board.

MR. JIM WANAMAKER: Thank you, Colonel. The members of our Levee Board represent the Counties of Bolivar, Washington, Issaquena, Sharkey, and Humphreys. I have some of my Commissioners here tonight. I have Nott Wheeler from Bolivar County, Fred Ballard and Murry Alexander from Washington County, and Roy Nichols from Issaquena County who made it in the room. We also have Nick Chandler here who is a consultant employed by the two levee boards. I saw him earlier; I don't see him right now.

The Mississippi Levee Board was organized in November 1865, and since that time, it has fulfilled its duty of providing a levee along the Mississippi River to prohibit flooding in the Mississippi Delta. Since passage of the Flood Control Act in 1928, the Levee Board and the Corps of Engineers have built a partnership to provide this protection to the Mississippi Delta.

My comments tonight will be brief, and following the former review of the SEIS, I will be providing written comments for the record with the Vicksburg District.

As of this time, 69.2 miles of our levees are deficient in grade and section. This is primarily most of the levee south of Highway 82 down to Warren County. This is the result of the Mississippi River flowline being raised following the 1973 high water.

As you heard earlier, the area of greatest deficiency is near Mayersville. We currently have plans to award a contract to raise this section of the levee this summer. A failure of the levee at Mayersville would affect 20,000 homes, displace 56,000 people, and flood 1.417 million acres of the Mississippi Delta. The water will come into Greenville. It would cross Highway 82 between here and Greenwood.

As the Corps implements their avoid-and-minimize criteria for future contracts, the Board of Mississippi Levee Commissioners advocates environmentally designed borrow areas where needed on the riverside of the levee within the levee flood plain. They also have requested that the Board's previously acquired rights-of-way be utilized to the maximum extent possible for this construction.

The Mississippi Levee Board has also requested that the use of some selected previously acquired rights-of-way be considered for reforestation as part of the mitigation for the remaining work. This would reduce the impact on the local tax base since much of the lands are removed from the roles as a result of being previously acquired rights-of-way in our District.

Impacts to the landowners adjacent to the levee must also be considered. Levee setbacks since 1915 have placed over 43,000 acres of protected land on the riverside of the levee. Impacts to these individuals cannot be avoided in most cases, and we will make every effort to reduce the impact when possible.

The time for completing this work must be considered in evaluating environmental impacts or change to the environment on a given date. You heard Moody express the fact that the Corps had the capability to complete this work by the year 2020. We have already been informed that out-year funding by Congress could prolong the completion of this project to the year 2031. The extended construction time must be considered as having the possibility of reducing mitigation requirements.

The Mississippi Levee Board will continue to work closely with our partners, the Corps of Engineers, to ensure that the residents of the Mississippi Delta are provided protection that has been authorized and promised by the Congress of the United States.

I would also like to profess my appreciation to the individuals in the audience who have come out tonight to provide support for this project and to the flood control of the Mississippi Delta.

Thank you.

LTC JONES: Ken Weiland, Yazoo-Mississippi Delta Levee Board.

MR. KEN WEILAND: Thank you, Colonel. LTC Jones and other distinguished members of the Corps, my name is Ken Weiland. I am the Chief Engineer of the Yazoo-Mississippi Delta Levee District. I would also like to introduce another member of my Levee Board who is here with us tonight representing the Tallahatchie County and also President of my Board, Mr. Sykes Sturdivant, who is in the back. Also, Nick Chandler, of course, who works for both Boards.

Our Levee District contains 100 miles of mainline Mississippi River levees that fall within the boundaries of Memphis District in northwest Mississippi. Our Levee District is comprised of over 200,000 citizens of ten Delta and part Delta counties who are all subject to flooding by the Mississippi River. It is on behalf of our Levee District, elected by these citizens, that I make my statement to you tonight.

The purpose of this meeting, as I understand it, is for you to gather comments and suggestions from the general public, affected agencies, and other concerned and involved parties regarding the recently released draft Supplement Environmental Impact Statement (SEIS) for the Mississippi River mainline levees. Completion of this document has been deemed necessary for continuation of the construction of features of the mainline levees in the Lower Mississippi Valley, as well as the installation of countermeasures to protect the existing levee features from adverse underseepage. My Levee District would like to acknowledge the enormity of the task in preparing this draft report and take this opportunity to express our sincere appreciation to the multitude of individuals within the Corps who stood up to the task and completed this study with the utmost professionalism, integrity, and expedience. There is no doubt that the U.S. Army Corps of Engineers is unequaled in the world in your technical capability as has been historically proven, and is again evident in the completion of this most critical and complicated study that we are addressing tonight.

In accordance with the cover letter under which our copy of the draft SEIS was received, I will offer only a brief, general statement concerning the report tonight, and submit more detailed comments prior to the closing date of April 30. The report recommends a significant change in construction methodology for the remainder of the Mississippi River and Tributaries (MR&T) project. These recommended changes could result in substantial impacts on the local sponsors, including our District, that demand additional, careful consideration. I will express my concern that the recommended plan could result in adverse impacts to the local sponsors due to the differences in the individual needs and requirements of each sponsor. The continuation of the success of the MR&T project along with its benefits to our citizens and to the Nation will require the continuation of a wide range of flexibility in the design of each work item based on the specific needs of that particular local sponsor and the technical parameters associated with each construction site.

I will take this opportunity to reemphasize our Board's position on several issues that I addressed in my formal statement to you at the scoping meeting held in Memphis on May 22, 1997.

Our Board emphatically reconfirms our position that all scheduled and proposed work on the MR&T project proceed without delay for any reason. There is no higher priority than the protection of the Mississippi Delta and the Lower Mississippi Valley from the devastation that would result from a catastrophic failure of the mainline levee system such as occurred in 1927. Given this position, the Yazoo-Mississippi Delta Levee District concurs with the elimination of Plan 1 in the draft SEIS report.

First priority should be given to the use of riverside right-of-way rather than the developed land protected by the levee for the

construction of the project components. The overriding national importance of the protected lands behind the levees of the MR&T must be taken into consideration. In addition, the people of our Levee District have made a tremendous investment in our riverside right-of-way in full faith that the Nation would fulfill its obligation to allow the continued use of this right-of-way for the never-ending job of maintaining, strengthening, and protecting the levees. The Levee Board certainly supports and applauds the measures taken in the report to avoid and minimize environmental losses in prosecuting this work. However, at the same time, use of our riverside right-of-way should not be abandoned simply because environmental losses may be unavoidable. Our Board concurs with the provisions of the report that will allow for full mitigation of unavoidable environmental losses from the use of our riverside right-of-way at full Federal cost.

In closing, I will reiterate our continued review of this important report and offer further commendation to the Corps in the thorough manner in which you have presented the report. The report contains an abundance of information and technical data that will not only allow us to assess its impact on our Levee District, but hopefully, if given careful, fair review, will allow all agencies and organizations to come to a mutually acceptable conclusion that will allow this vitally important work to be completed.

Thank you very much.

(Submitted written statement, Exhibit No. 3.)

LTC JONES: Thank you, sir. Willie Bunton, President, Issaquena County Board of Supervisors.

MR. WILLIE BUNTON: Thank you, Colonel. To this great panel, gentlemen, and I believe we have a few ladies in the house, the first thing I want to do is introduce my Board of Supervisors from Issaquena County. We are here in support--Milton Goza, Vice President of the Board, District 5; Lewis Hatcher, District 1; Gene Fulton, District 2; and I am Willie Bunton, District 3.

Sharkey County, I speak for them; Doug Moore, District 3.

We thank you for this opportunity just to make a statement showing our concern. That is why we are here tonight. We have good representatives on our Levee Boards, Chief Engineer, Mr. Wanamaker. We have Mr. Roy Nichols from Issaquena County and Mr. Carter from Sharkey County. First, we would like to give honor to those over there. My other supervisor is back, Elijah Lewis, District 4.

We are here tonight showing our support for the Corps of Engineers and the Levee Boards for every effort that has been made up until this present moment. We are not here supporting

the environmental people. We are supporting the Corps of Engineers and the Levee Boards. We ask the environmentalists to stand back and give us a break. Work with the Corps of Engineers in what effort is being made to protect these citizens and their croplands.

You heard the gentleman, Mr. Culpepper, make that statement a while ago about a little town, Mayersville. I happen to live in that town. What damage that it would do--and we are at the weakest point of that levee at Mayersville. It is my understanding there are several weak points in that levee close around in Issaquena County. We are here tonight showing our strength, and we appreciate so much what has been done for our county and all the effort that has been made.

About 85 percent of the project that we are talking about right now is in Issaquena County. It has been prolonged. It has been delayed too long. At those weak points, we would like to see the Corps of Engineers, Levee Boards, and environmental people step it up. We know where the hindrance is. It is not the engineers, it is not the Levee Boards. The hindrance is the environmental people. We ask you tonight to give us a break, cooperate, work with us, and get the job done. Construction should be underway right now. We would appreciate it if it was.

We saw something on the slides there about taking the levee berm and building the opposite side of the levee, the riverside, and then pump sand back to build the berm. Gentlemen, I am not a mathematician, I am not an educated man, but common sense will tell you that is a waste of money. Maybe you are concerned about trees and habitat, I am, too. We all are. But we would appreciate it tonight if our citizens and our croplands would be considered and respected more than habitat and trees.

Thank you.

LTC JONES: Thank you, sir. George Berry, President, Yazoo-Mississippi Delta Joint Water Management District.

MR. GEORGE BERRY: I'll bet that is the longest title you ever presented anybody with, isn't it? I am delighted to be here as Chairman of the YMD District, and we, too, have two members of our Board here. Sykes Sturdivant is back here and Laurence Carter over here are both members of the YMD Board. We appreciate the opportunity to make a brief statement in support of the work that you are doing.

We feel like this is a vital protection work for the area which we are concerned with which includes counties that are part of our Joint Water Management District. Not only are we concerned with just the cropland, but there are people living here, there are industries that are in place that are providing jobs, providing a tax base for the counties, and we are vitally

concerned about the work that you are doing and would encourage you to proceed with as much speed as possible to get the levees raised in this 62-mile stretch in Issaquena County.

Thank you very much.

LTC JONES: Thank you, sir. Harold Burdine, Greenville Port Commission.

MR. HAROLD BURDINE: I just have a few brief words, all in support of the Corps of Engineers and the monumental effort that they undertaken under the gun in this. The Greenville Port Commission is very appreciative of the work that the Corps has done, and we can understand the restraints that you are working under.

My wife and I live on the unprotected side of the levee in Greenville. Now, some people call that the wrong side of the levee; I call it the right side of the levee. We live there by choice. The last 4 years, we have moved out of the house that we are renting, and last year we had 1.5 feet of water in it. I am planning to build a house on that side of the levee. As I said, we live there by choice.

The people on the protected side of the levee have built up such an infrastructure and have so much of an investment in that property that to all of us in this area, it would be unthinkable to unnecessarily delay this project.

I sympathize with the ladies and gentlemen from California who are going through the floods that they have out there, and I would not begrudge my share of Federal dollars to help protect them nor would I begrudge my share of any wildlife or woodland that needs to be destroyed to help protect them. I only hope that when this study is completed and the record is finalized, that the environmental groups do not suddenly discover a goggle-eyed woodpecker, the last mating pair, just outside the levee is Mayersville, Mississippi, and we have to go through another 20 years of this.

Again, we appreciate everything that the Corps has done. As the supervisor down there is Mayersville said, y'all give us a break, please.

LTC JONES: Thank you, sir. Curtis James, U.S. Fish and Wildlife Service.

MR. CURTIS JAMES: As far as I know, I think we have endangered and threatened species pretty well covered. There is a whole section in the EIS. I don't anticipate finding any woodpeckers or fish or something like that.

Thank you.

(Read and submitted written statement, Exhibit No. 4.)

LTC JONES: Thank you, sir. David Cochran from CoCo Planting Company.

MR. DAVID COCHRAN: I assume that would be me. I speak on behalf--first of all, let me say that I did arrive here late. So I am really not up to date to exactly what went on in the slide presentation. I am not exactly clear on Plans 3 or 4. I do speak as a farmer and landowner or property renter in the Washington County area of Mississippi.

I am concerned, first of all, that anything that the Corps can do as far as flood control should be our utmost goal. Anybody in this room is concerned mainly with flood control. The last thing we need to have in this community today or the Mississippi Delta is a disaster like we had in 1927. I don't know, given the economy today, that we could bounce back from such a disaster that we had in 1927. Fortunately, I was not here in 1927. But I am not sure that we could do it.

My major concern is the borrow areas that will be on the landside or the protected side of the mainline levee. Like I said, I am a property owner, and I am a farmer. I am not sure what 5,900 acres that are frequently flooded agricultural properties. I would assume that if they are frequently flooded, they would be on the riverside. The 3,000 acres of borrow, I would assume would be on the protected side of the river. What areas do they cover?

As far as pumping sand from the river back to the berm side of the levee. The way I understood it from the slide show, we are going to take and borrow some top soil from the protected side of the river and cover this sand up so that we will have fertile ground that will grow grasses or some sort of cover crop. Has anybody given any consideration to other avenues beside taking top soil from productive cropland that is in production today that is an asset to this economy? Let's possibly use some waste material that is highly productive in weed or grass seeds that are basically going to be used just as a cover crop to eliminate some erosion. Possibly what I could think of in that area would be some cotton gin trash that is a waste byproduct of the ginning industry that we have today.

When we talk about taking things away from the environment, the endangered species and so forth that we are going to lose, the way I understand it, the riverside, the unprotected side of the river, what about the danger to the economy when you take property from the protected side of the river? Apparently, to me, this is a very sensitive economy, the Mississippi Delta, because if it were not, why would the Federal Government enact an empowerment zone that covers as many Delta counties as it does to pump money and funds into this area of the United States, but yet the environmentalists are so concerned that we are going to lose a little environment.

I am the biggest environmentalist possibly in this group. And farmers, in general, I think, are. So, yes, we all need to be concerned about the environment, and I would hate to lose any species of wildlife that we have. But our most concerned environment should be our own. If it were not for us, there would be no environment.

Several other things. I am not a very eloquent speaker. What expense is there going to be by the Federal Government to take these lands and take them out of production today and build this berm up? The other question is, what values are going to be placed on this land that is going to be taken from the protected side of the levee? Are they going to be values that was on the land from conception of this project or are they going to be values that are placed on the land at today's land prices? Because those will be two very different prices.

Like I said, I am not a very eloquent speaker, but I will be glad to speak my mind or ask any questions or try to answer any that I can.

Thank you.

LTC JONES: Thank you, sir. Carole Brent from Greenville, Mississippi.

UNIDENTIFIED: I think she just stepped out.

LTC JONES: Okay, we will give her a minute. That is the last of the cards. If Carole comes back in and wants to make a statement.

UNIDENTIFIED: Here she comes.

MS. CAROLE BRENT: I was going to make some comments, but the comments I was going to make have already been made.

LTC JONES: Great.

MS. BRENT: Thank you.

LTC JONES: Thank you very much. That is the end of the cards. Is there anyone else in the audience that would like to make a statement? You can do so.

Okay, what I would like to do is move right into the question-and-answer period. I would like to start with the answer to Mr. Artman's question regarding cost. I would like to start with that.

MR. KENT PARRISH: Mr. Artman, I think your question was, do we have the money to construct this project and when? As Moody said in the presentation, the Corps of Engineers and Levee Boards have the capability of constructing this project by the year 2020. Right now, there is a move in Congress to balance the budget along with the President. As has been previously said, the money that it looks like we are going to get would not allow us to complete this project before the year 2031, under the current budget that it looks like we are going to get for the foreseeable future.

Now, your Levee Boards in this area have gone to Congress and have told their Representatives and Senators of the need down here. You know, in the past we have gotten Congressional adds to accelerate construction. We got some $5 million last year above what the President recommended for the MR&T project, the Mississippi River Levees. So we have expressed a capability on what we need to complete this project by the year 2020, and just leave to the hands of Congress to give us the money. Mr. Wanamaker can probably give your more details on that or Mr. Weiland in the back of the room.

LTC JONES: Any other questions?

MR. ARTMAN: Colonel, would you allow for the record for me to speak to that?

LTC JONES: Absolutely.

MR. ARTMAN: If this has been national policy, recognized as national policy since 1928 as a result of the 1927 flood, projects along the river naturally for natural significance have changed the need for the levees and for altering the levees to make them more significant and more protective for this region. Because we are taking the water out of 41 percent, is that the proper figure? I think that it fits in very well with national policy that this should have been done a long time ago. It should continue. We probably should not be waiting to the year 2020.

But my comment would be that if we are putting our fate in the hands of Congress, it is often too delicate, too cumbersome, and too dangerous to do in many cases because the national economy changes, the policy changes, all too often. That is a very

dangerous position to put us in. For the record, I think that needs to be reflected.

We really do not need to wait until 2020, much less 2031. I don't know how many of us are going to be around to bet on it or live to see the bet, but it is not going to happen by 2031. I hate to be a pessimist about it, but that is the reality of flood and flood control in this area. I think the Corps realizes that just as much as any of us in the room.

Thank you.

LTC JONES: Thank you. Your comments will be a part of the record. Any other redirect or questions? Yes, sir.

REV. ELIJAH LEWIS: When would this project start in my. . .

LTC JONES: Sir, could you come to the microphone and give us your name and where you are from so that we can get on the record and not overlook your comments. Thank you; I appreciate that.

REV. LEWIS: I am Rev. Lewis from Issaquena County. My question was, when will this project start in Issaquena County at Mayersville?

MR. PARRISH: The project right there at Mayersville, we are working to try to get it awarded this year. We are having to do another environmental document on that. It has been completed. We are awaiting the word to send it out for public review. Hopefully, we can go through the process and award a contract by mid-July.

REV. LEWIS: Okay, so if it starts this year and you get funding and everything, it would take to the year 2020 or 2031 to finish this?

MR. PARRISH: No, that item right there at Mayersville is 10 miles long and should take 3 years at the most to complete that in that area. But then we still would like areas south of Mayersville to get it up to the right grade.

REV. LEWIS: Okay. Now, Mr. Wanamaker, when are you going to complete that project down there where I am? I have been hearing a lot of rumors.

MR. WANAMAKER: Okay, the job was started last year and the contractor had a little problem because it was bid during the high water. The contract has been terminated, but the Corps plans to reaward that contract and should have a contractor back on the job before the construction season starts this year.

I would like to add on the Mayersville job. Some of the Corps people may not can express a few things that I can. As far as the Mayersville job, we are going to require approximately 90 acres of conventional riverside borrow. The Earthjustice for the Sierra Club Legal Defense Fund is objecting to that. We are trying to address those problems, but that has delayed the Environmental Assessment going out, their concerns over this. So this is something that Vicksburg is working very diligently trying to resolve these problems.

The right-of-way issues or the furnishing of right-of-way is a local function. We have tried to reiterate that to the Sierra Club Legal Defense Fund and their constituents. But they continue to try to push the Levee Board out of the argument. We are working to provide that right-of-way. The conventional borrow reduces the total number of acres of clearing that has to be done. We have existing right-of-way down there, but the biggest part of the material has already been used. We require probably four or five times as many acres to utilize what dirt we had down there over the acquisition of another 90-acre site down there. But we are fighting to maintain the riverside borrow issue, and we will continue to do that.

REV. LEWIS: That would be on riverside where you get this dirt that you are talking about or on the Mayersville side?

MR. WANAMAKER: On the riverside.

REV. LEWIS: The river close to Mayersville?

MR. WANAMAKER: Okay, what they are going to do is--Mr. Cochran addressed this a little bit, and I had a note down here. The material that is going to be excavated as part of that job is the existing berm. In other words, where there is an existing berm on the levee, that berm will be excavated and used to raise the levee. You cannot raise the levee with sand. The material is not suitable for that. Then the berm will be replaced with sand and covered with enough material to grow grass to provide pasture. So the biggest part of the material for the Mayersville job is going to come out of the existing levee berm and the old Homochitto setback levee down there, with only about 90 acres--I don't know the exact acreage--of conventional borrow on the riverside of the levee.

REV. LEWIS: That is what you are talking about that you are going to go over the top with?

MR. WANAMAKER: That's right.

REV. LEWIS: Okay. Now, I appreciate that about Mayersville. Let me ask another question because you did not answer the question about up there where I am in the 4th District, that

added job up there that the Hill Brothers had. Are you going to rebid that job along with Mayersville? Are you going to have two contracts up there at the same time?

MR. PARRISH: We are going to have two contracts up there at the same time. The Hill Brothers job will be readvertised and awarded in July.

REV. LEWIS: Okay, July, then the job in Mayersville will be contracted, also?

MR. PARRISH: Hopefully, by the first of August or right after, we will have 17.8 miles of work going on in your area.

REV. LEWIS: I was concerned because our area up there in the 4th District, from my understanding, is probably worse than Mayersville. You know around there by Clarence Hall's where that thing bends over there on that Mississippi River?

MR. WANAMAKER: The area with the greatest deficiency is at Mayersville. The raise, the average raise, on the job there that you are talking about is around 4 to 5 feet. In Mayersville, we have an area that is 8 feet deficient. The levee will actually be raised 8 feet in the Mayersville area.

REV. LEWIS: But they are putting a berm on the other side of that levee, weren't they?

MR. WANAMAKER: Where is that?

REV. LEWIS: In Issaquena County, down in the 4th District. You know, the Hill Brothers job.

MR. WANAMAKER: Okay, Hill Brothers was not putting the berm. The berm was already constructed. All that Hill Brothers was doing was raising the levee.

REV. LEWIS: They were not coming down with like another levee on the other side? They are not strapping on the back across?

MR. WANAMAKER: All right, if you look right at Ms. Huff's you can see what it is going to look like.

REV. LEWIS: That is what I am talking about. I saw it.

MR. WANAMAKER: Okay, that is what the whole job is. It is going to be built up just like that from there all the way up to the Issaquena-Washington County line, right up to Clarence Hall's.

REV. LEWIS: Is it true that they ran out of dirt?

MR. WANAMAKER: No.

REV. LEWIS: It is not?

MR. WANAMAKER: No. The dirt was not where the contractor thought it was because it was underwater when he bid the job. That is what happened. He was going to have to haul it farther than he anticipated.

REV. LEWIS: Okay. I just wanted to know. Thank you.

LTC JONES: Thank you. Any other questions? Yes, sir.

MR. HARRY WILLIAMS: My name is Harry Williams with Arkansas Farm Bureau. How many miles of Arkansas River levee will be raised in Arkansas?

MR. PARRISH: 20.6 miles.

MR. WILLIAMS: Where are the weakest points?

MR. PARRISH: Arkansas is just mainly a freeboard-type raise. It is some 2 to 3 feet. They are in pretty good shape. They raised some deficient areas back in the late 1970's that were really deficient. But we still lack, like I said, 20.6 miles. It is mostly 2 to 3 feet high.

MR. WILLIAMS: There is only 20.6 miles of levee that is going to be raised?

MR. PARRISH: Right.

MR. WILLIAMS: How much tillable land that you are talking about on the inside of the levee will be affected by the 20 miles? How many acres of tillable land?

MR. PARRISH: I don't have that figure right off. We can get it though.

LTC JONES: Sir, if you make sure we have your phone number or address, we can get that to you.

MR. WILLIAMS: Okay.

LTC JONES: Any other questions? Okay, I would like to remind everyone. . .

MR. PARRISH: Colonel, let me try to answer some of Mr. Cochran's questions that he brought up in his statement.

LTC JONES: Sure.

MR. PARRISH: We are not out looking for--we had a specific list of how we prioritized looking for borrow areas. Landside borrow areas from willing sellers was the number one priority, and we

stepped on down through condemnation and then went to riverside and tree plantations and prior converted wetlands and that sort of thing. But in this table, we stepped down through a progressive order or how we selected borrow areas.

Mitigation of the 5,900 acres that you are talking about of frequently flooded agricultural land could be located anywhere in the Mississippi Alluvial Valley. It is from willing sellers only. We would prefer to have the land adjacent to state wildlife management areas or fish and wildlife refuges to sort of build on that area. But it is strictly from willing sellers. Of the 5,900 acres, 5,200 are in the Vicksburg District, as Moody said, some 89 percent. There is about 2,000 in Mississippi, about 2,000 in Louisiana, and the rest in Arkansas. The Memphis District had 639 acres of mitigation required, and New Orleans District had 24 acres of mitigation required. It is all from willing sellers.

We, as Mr. James from U.S. Fish and Wildlife said, will probably instead of each item where we have 40 acres here and 40 acres there, maybe wait and get a contiguous block of a couple of hundred acres to add to a state wildlife area or fish and wildlife refuge or something like that.

As far as the land value, as Jim Wanamaker said, that is their responsibility, but it is based on the value of the currently. It is the current appraisal, what the land is selling for, the current appraised value.

I think we addressed the pumping of the sand from the Mississippi River. We have done a detailed study of that which shows that alternative is cost effective to remove the good dirt in that berm, raise the levee; and where the river is close enough, we will pump the sand back in there. Like down at Mayersville, that is one area we continue that. But at other locations, the river is too far away. The pumping cost would exceed the savings that we can get from it so we have taken that alternative out at those locations.

As far as the 3,000 acres that we are going to reforest on the riverside. The aquatic design is on the riverside so it can be replenished by the river, the waters of the Mississippi every year. We would be working with the Levee Board who are in turn working with you the landowners on what type design would be needed in that location to try to get your wishes incorporated, if we could. It is all going to be site-specific as we go through the design and get more details on that location.

These are just preliminary indications of how we want to design. After we get detailed surveys, meet with the Levee Boards, and meet with the landowners, then we would go to a final design. Does that help answer your questions?

MR. DAVID COCHRAN: Just for the record, not to be misunderstood, I want you, the Corps of Engineers, the Levee Boards, and everyone else to know that we wholeheartedly support what you are doing. It should have been done a long time ago. I did not mean to step on anybody toes or ruffle any water by any means. Those are concerns of ours that I know of. In our particular situation, we are going to run fairly close to the river, and we are going to run fairly close to Highway 1 where I would think logically where some borrow areas would come from if they were going to come from the protected side of the river. We have done quite an extensive amount of land preparation in that area. That is our concern. No, whatever it takes that we all as the Mississippi Delta as a whole has flood control that we all desperately need, that is what we want to do. Not to ruffle any water or stir any current or anything in any way. All we want to do is work as closely as we can with you, but we are still all concerned about our personal concerns, if you understand where we are coming from.

MR. PARRISH: No problem there. We are here to answer your questions tonight and take your concerns back as part of this document.

MR. COCHRAN: Another question that I would have though, if anyone would care to answer it. We have talked with the Corps on the No. 9 Main Canal and so on and so forth and on other Corps projects and have tried to work as closely as we could with the Corps or the Levee Boards through those projects. But all we have ever heard were concerns from the Sierra Club, the "environmentalists." They are the ones that have seemed to put a halt to you guys or the Corps of Engineers. Like I said before, I think every farmer is one of the biggest environmentalists there are. If we weren't, why do we farm? That is where our living is coming from.

My questions would be to the crowd here, who is here tonight representing the environmental concerns? Would anybody care to raise their hand?

MR. JAMES: I am with the U.S. Fish and Wildlife Service, a Federal agency.

MR. COCHRAN: I am asking is there anyone here from the Sierra Club, Wildlife Unlimited, any of these other "environmental concerns" that seem to be the burr in the U.S. Army Corps of Engineers side. Is there anyone here? Apparently not. I would like to make sure that is on the record.

Thank you.

LTC JONES: Yes, sir, you have a question?

MR. ANSON SHELTON: At what point would be where you would begin to determine where your landside borrow areas might be projected and where are you? Jim can probably answer this. Where are you in determining at what grade level and how much work you expect along our particular local areas other than looking at the project as a whole?

MR. WANAMAKER: Okay, just for the record, that is Anson Shelton. They want to know who you are so they can record it.

MR. SHELTON: All right.

MR. WANAMAKER: Anson, we are in the process of--you have three green books up here that are the draft SEIS for this project. To be honest with you, I am about half through one. In there they do identify the potential borrow areas. I do not know right at this point in time if there are any landside borrow considered in Mississippi. I know it was evaluated, but I will tell you that the policy of the Levee Board is that we will not support landside borrow for this project.

MR. SHELTON: I was curious to see where they are with the land.

MR. WANAMAKER: The borrow areas have been tentatively identified on that GIS map like they showed on the slides. But at the same time, they have to be acquired. One of the positions that we have taken is that if we come out there to visit a landowner for some riverside or some borrow and he says can you move it down here 500 feet, well, we are for you, if it is engineeringly sound. We are looking for an engineeringly sound job. Sometimes because of the engineering requirements we cannot make that choice, then we are not going to put the borrow on Henry just because John don't want it. But for a particular landowner, we have done it on other jobs, we have moved them a little bit and tried to accommodate the landowner on where they are located--make it a little deeper this way and narrower or wider and thinner. We use different low production areas versus high production and that type thing. So we will be working in every case with the various landowners to try to come up with a mutually agreeable plan.

LTC JONES: Yes, sir.

MR. BUDDY COCHRAN: Yes, I am Buddy Cochran from Avon. I might have missed it, but I have a concern about the borrows on the landside. How far north will the starting of the raising of the levee come back? Will it come all the way back into Washington County? How far north?

MR. WANAMAKER: Buddy, for the most part, all of our levees south of Highway 82 have some deficiencies. Now, some of it is only a foot or two. As you start getting in the south part of Washington County, that is where you get into the--it is almost like a bowl down there. It starts getting more deficient as you approach the Washington-Issaquena county line. It bottoms out at Mayersville, and then it gradually comes back up again. By the time you get down into Warren County, you are back up to where you do not have that maximum deficiency. So what we are trying to do is work out the worse spots.

We will be working--we have asked the Corps to work alternately upstream and downstream from Mayersville so that we always address the section of the levee that we have that has the greatest deficiency.

MR. BUDDY COCHRAN: But this project will pretty well bring it always back to 82?

MR. WANAMAKER: That's right. We will have some work through your place.

MR. BUDDY COCHRAN: At one point or another?

MR. WANAMAKER: That's right. Some time between now and 2031.

MR. BUDDY COCHRAN: Well, I certainly want to say that the Corps has done a whole lot to help the Mississippi Delta. We would be in sad shape in the Mississippi Delta if it were not for the Corps and the levee and drainage system that you put together.

I want to say this for the record. To the environmental groups, who is more important, people or wildlife? If you stand in 6 feet of water, I don't believe you give a whole lot of concern to a duck or a mussel or any of that, especially if there are 3 feet of water in your house. I have seen that happen in the Mississippi Delta in the last few years. I think they just need to try to put themselves in the position of some of the people that are less fortunate than some of the others. Lewis knows what we are talking about. He's had water standing in his house. I don't think they will really find any ducks or mussel shells or spotted owls or what have you too much at that point.

LTC JONES: Thank you, sir. Just a reminder so everyone does get a chance to hear comments, if you could, please come to the microphone so we do not overlook anything that you have said.

Yes, sir.

MR. DAVID COCHRAN: I hate to ask again, but if we were to take the berm as we know it today--this was a question or something I mentioned earlier. It is something that ran across my mind. If we took the berm as we know it today and built the mainline levee

up with this better soil and pump sand out of the river to build the berm back up, was I now correct in the fact that we were going to borrow some dirt some where to cover this sand berm back up so that it will support some sort of vegetative life? Was that the reasoning for doing that, to cover the sand?

MR. PARRISH: Right. Moody is going to put the slide back up. We are going to save enough soil out of the berm, say, these grass strippings that are out there now. We are going to save all that to make that soil cover stockpile out there. We are not going to borrow any dirt from anywhere else.

MR. CULPEPPER: We will take it from the berm and stockpile it.

MR. COCHRAN: Okay, that's fine. My question was, has there been any though or has anyone thought along the lines of this gin trash that I am talking about which is a very fertile material--all it basically is is weed seed and extract from the cotton plant itself--to use it as some sort of cover crop? Has anyone thought along those lines to use that? Personally, we are in the ginning business so, yes, maybe I have a little bit to gain by mentioning this to you, okay? But it is a problem for all the ginning industry which is up and down the Mississippi River that we need to find some place to get rid of this material. If that is the place that it would work, has anybody thought about using that as a medium to cover this sand?

MR. CULPEPPER: Excuse me, one thing to remember is that we are most likely going to be pumping pure sand. So you are at a disadvantage to start with with pure sand and mixing gin trash with it.

MR. DAVID COCHRAN: I disagree with you wholeheartedly because we mix it with pure sand at the farm and it works real well. There should be possibly some studies done along that line.

MR. PARRISH: As part of the contract when we deal with the contractor, we call for a percent cover of Bermuda grass there when we get through. Before we accept the job, he is going to have to have grass and not weeds in there.

MR. DAVID COCHRAN: Okay.

MR. PARRISH: That is what we are going to require of the contractor.

MR. DAVID COCHRAN: Okay, well, I was basically looking at it for erosion control, and I was looking for a way for us to. . .

MR. PARRISH: It would certainly add some humus, but we are going to have grass. If there are weeds out there, we will not accept the job from the contractor.

MR. DAVID COCHRAN: All right.

LTC JONES: Thank you. Any other questions? Yes, sir.

MR. MARVIN COCHRAN: I am Marvin Cochran. I have just one question I would like to ask you. Today I was speaking to a friend of mine from Newton, Georgia, and other friend of mine from Americas, Georgia. I don't believe I know anyone from Elba, Alabama. Would you please contact those people and listen to the desperation in their hearts and their thoughts and their tears? Ms. Sim Ports told me today, she said, Marvin, our prayers were answered when the clouds held the rain. Maybe instead of three-fourths of the county just half of the county will lose their homes.

We, as humans, tend to forget what happened to use 6 months ago, 3 days ago, or 2 weeks ago. Had the Arkansas River been flowing at normal capacity last year, and many residents in the Mississippi Delta do not realize how in dire straits that the levee--it was not a question of was it going to topple. It would have toppled had the Arkansas and the Missouri been flowing at the normal rates. Most people don't know that. This room would have been full of angry, screaming citizens of Greenville. Ask those people. Go out there. Ask about Elba and how they are going to move the town, how they are going to take that town and take all their dreams and all their folklore and all their history of their town and their culture. They are going to build it somewhere else. Ask those people about that. We can't move an entire Delta, but we cannot lose an entire Delta either. Then ask yourselves this, if that levee does break in Mayersville--we have these people in Mayersville and Issaquena County get up. Will the environmental impact be greater from a levee break than just say a 6-month temporary time for enlarging. I think that wherever you are and whatever you do, the land reseeds itself. It will grow and it will create a habitat full of wildlife.

Let's just say, for instance, the levee did break, Paul, and the water backed up into Greenville. The first thing that comes to my mind is Casio warehouse which supplies almost all the agricultural chemicals in the Mississippi Delta, Delta Pine Seeds which treats seeds in Hollandale, and Delta Battery down the road. Let's start thinking about all those things that we have the EPA protections against and all the rules and regulations. Do any of those regulations say that if the river breaks and we have 6 feet of water anywhere? Think about all those batteries flooding up and down. Think of the consequences if that levee does break and what happens to our environment if it does break. Weight the consequences is the only thing that I ask.

Thank you.

LTC JONES: Thank you. Any other questions?

The public review comment period will remain open until April 30. So if you think of a comment that you have not shared with and would like to share it with us, we will take it until the 30th of April.

We will have another public meeting tomorrow night, starting at 7 p.m. at Lake Providence. We will do one in Natchez on the 30th and Baton Rouge on the 31st of this month.

I appreciate your taking your time out of your busy schedule and giving us your time, your attention, and your comments. Thank you.

Meeting adjourned at 8:40 p.m.

LIST OF EXHIBITS

No. 1 - Notice of Public Meetings

No. 2 - Copy of Newsletter, February 1998

No. 3 - Statement from Ken Weiland, P.E., CEO, Chief Engineer, Board of Levee Commissioners for the Yazoo-Mississippi Delta, 18 March 1998

No. 4 - Statement from Mr. Curtis James, U.S. Fish and Wildlife Service, 18 March 1998

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
4155 CLAY STREET
VICKSBURG, MISSISSIPPI 39180-3435

REPLY TO
ATTENTION OF:

NOTICE OF PUBLIC MEETINGS
MISSISSIPPI RIVER AND TRIBUTARIES PROJECT,
MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT
MARCH 16-19 AND 30-31, 1998

The U.S. Army Corps of Engineers, Vicksburg, Memphis, and New Orleans Districts, have prepared a Draft Project Report and Draft Supplemental Environmental Impact Statement for the Mississippi River Mainline Levees Enlargement and Berm Construction feature of the Mississippi River and Tributaries Project. All planned work is located between Cape Girardeau, Missouri, and Head of Passes, Louisiana. The proposed improvements would provide the congressionally authorized level of protection from Mississippi River flooding by raising deficient levee sections and controlling underseepage.

This report will be reviewed by various Federal, state, and local agencies and other interested organizations. Copies of the Draft Project Report and Draft Supplemental Environmental Impact Statement will be on deposit March 3, 1998, in the following libraries:

Arkansas

Mississippi County Library System
200 North 5th
Blytheville, Arkansas 72315

Illinois

Cairo Public Library
1609 Washington Avenue
Cairo, Illinois 62914

Kentucky

Paducah Public Library
555 Washington Street
Paducah, Kentucky 42003-1735

Louisiana

Ascension Parish Public Library
500 Mississippi Street
Donaldsville, LA 70346-2535

East Baton Rouge Parish Library
7711 Goodwood Boulevard
Baton Rouge, LA 70806-7625

Ferriday/Concordia Parish Library
1609 Third Street
Ferriday, LA 71334-2298

Madison Parish Library
403 North Mulberry
Tallulah, LA 71282-3599

Exhibit 1

New Orleans Parish Library
219 Loyola
New Orleans, LA 70140-1016

State Library of Louisiana
Louisiana Section
760 North 3rd Street
Baton Rouge, LA 70802

Mississippi

Homochitto Valley Library Service
220 South Commerce
Natchez, Mississippi 39120

Warren County/Vicksburg Library
700 Veto Street
Vicksburg, MS 39180-3595

Carnegie Public Library
114 Delta Avenue
Clarksdale, Mississippi 38614

Washington County Library
341 Main Street
Greenville, Mississippi
38701-4097

Missouri

Cape Girardeau Public Library
711 North Clark
Cape Girardeau, MO 63701

Tennessee

McIvers Grant Public Library
204 North Mill Street
Dyersberg, TN 38024-4631

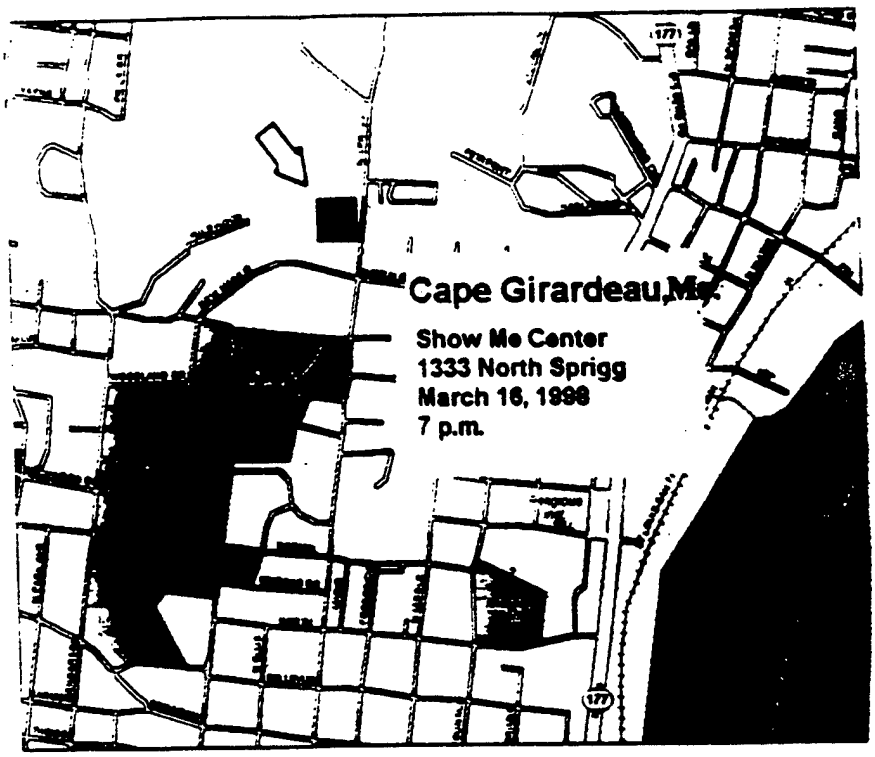
Memphis/Shelby County Public Library
1850 Peabody Avenue
Memphis, Tennessee 38104-4021

Newbern City Library
220 East Main
Nerbern, Tennessee 38059-1528

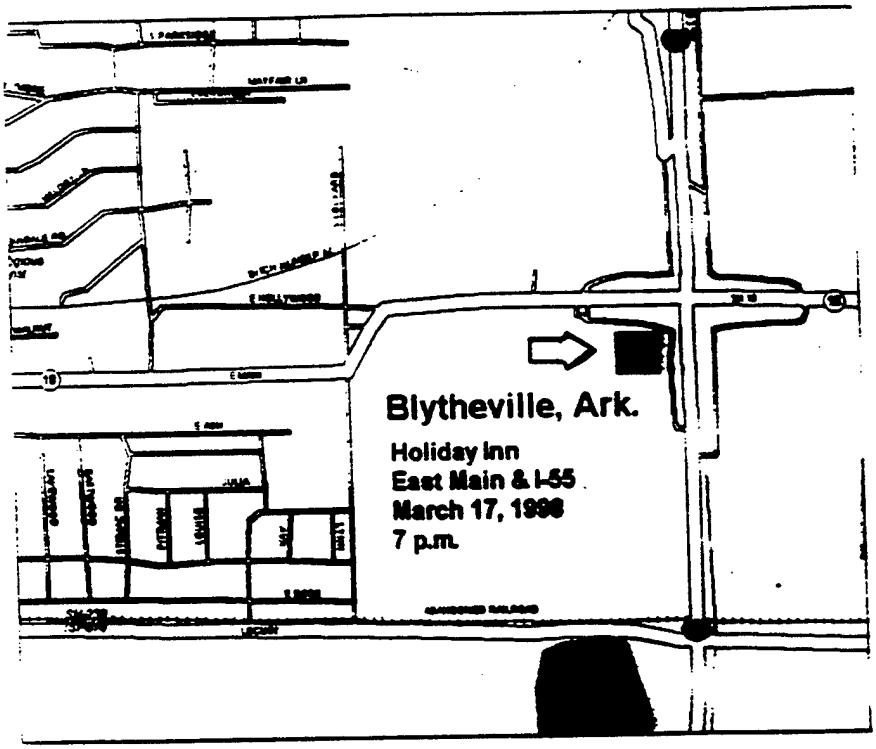
Tiptonville Public Library
126 Tipton Street
Tiptonville, TN 38079

To allow all interested individuals an opportunity to ask questions or express views, public meetings will be held in the locations shown below at 7 p.m. on the indicated dates:

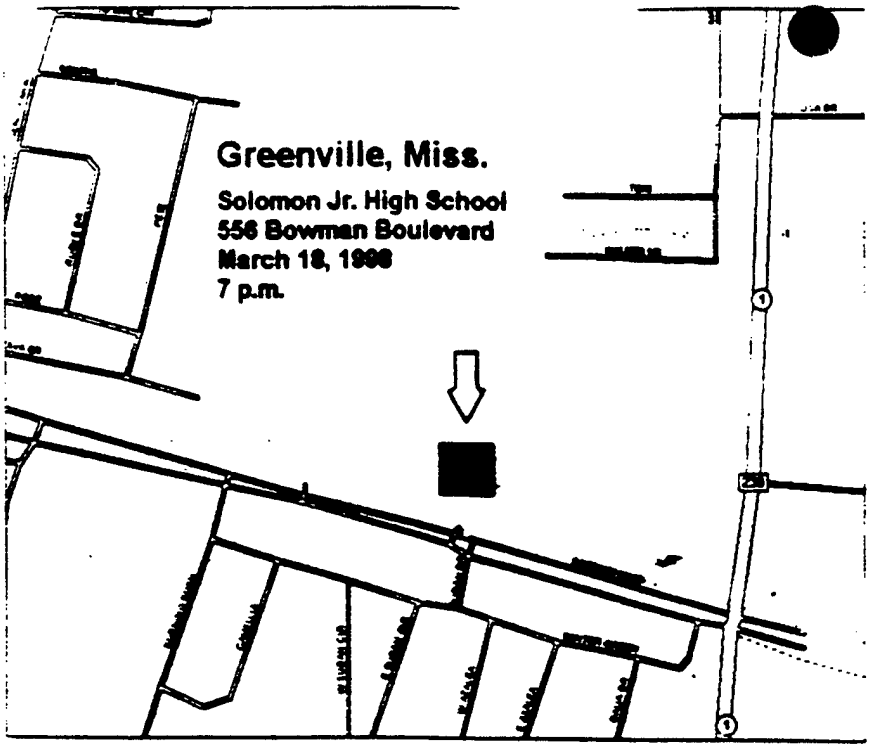
Monday, March 16, 1998
Show Me Center
1333 North Sprigg Street
Cape Girardeau, Missouri



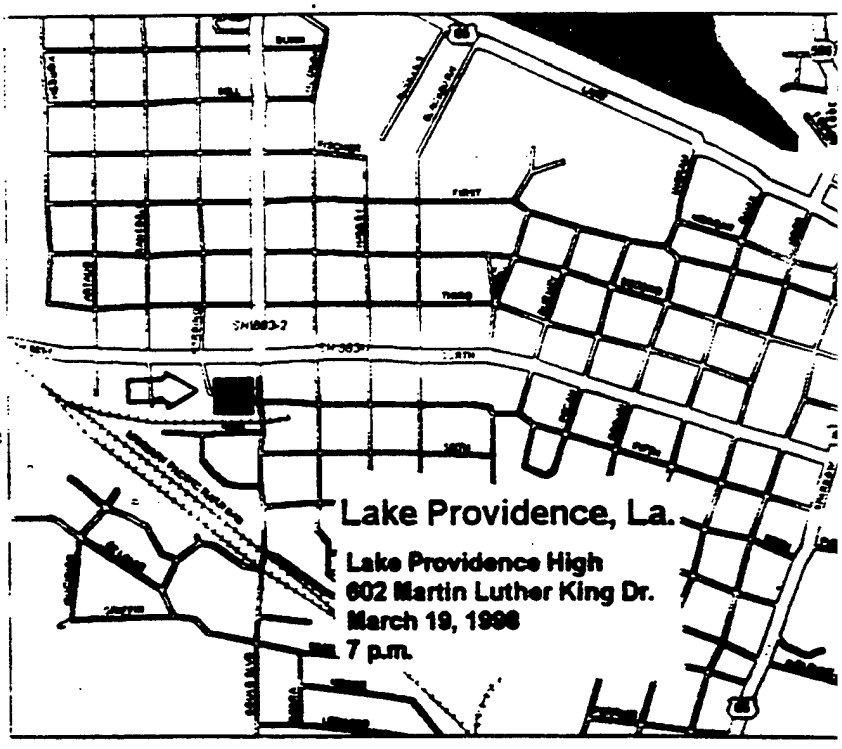
Tuesday, March 17, 1998
Holiday Inn
East Main & I-55
Blytheville, Arkansas



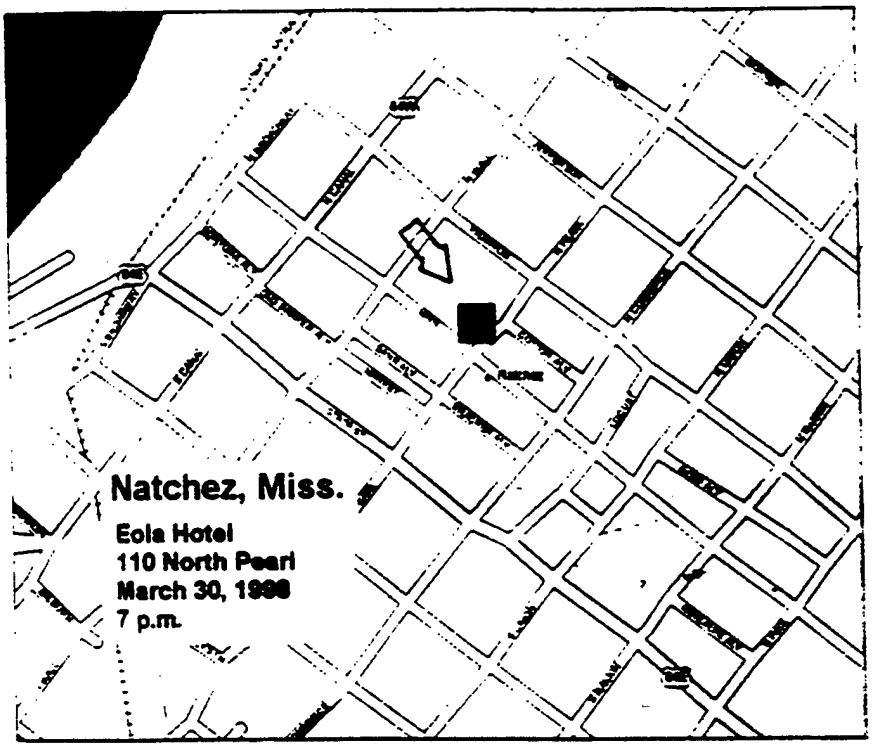
Wednesday, March 18, 1998
Solomon Jr. High School
556 Bowman Boulevard
Greenville, Mississippi



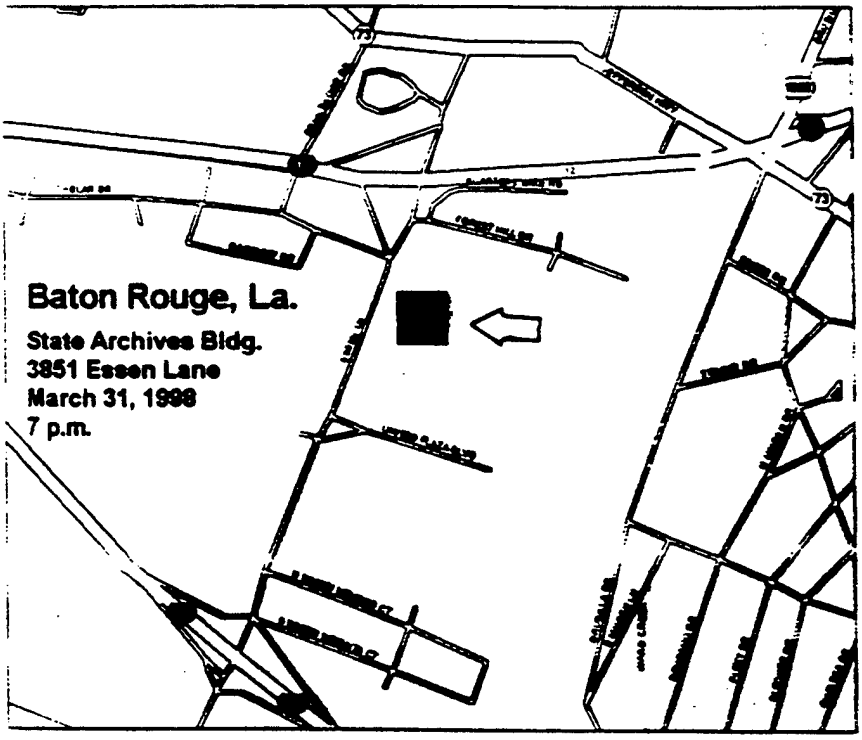
Thursday, March 19, 1998
Lake Providence High School
602 Martin Luther King Drive
Lake Providence, Louisiana



Monday, March 30, 1998
Eola Hotel
110 North Pearl
Natchez, Mississippi



Tuesday, March 31, 1998
State Archives Building
3851 Essen Lane
Baton Rouge, Louisiana



Information regarding evaluations conducted and project plan recommended will be presented. At the end of the formal presentation, oral statements may be made by the public, followed by a question-and-answer session. Written statements may be submitted at the meetings or mailed to the above address, ATTN: CEMVK-PD-F.

Proceedings of these meetings will be recorded, and summaries will be prepared and incorporated into the Project Report. Mailed statements must be received by April 30, 1998, to be included in the official record.

Gary W. Wright
Colonel, Corps of Engineers
District Engineer

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
4155 CLAY STREET
VICKSBURG, MISSISSIPPI 39180-3435

OFFICIAL BUSINESS
CEMVK-PD-F

NOTICE OF PUBLIC MEETINGS

US Army Corps
of Engineers

MISSISSIPPI RIVER & TRIBUTARIES PROJECT
MISSISSIPPI RIVER MAINLINE LEVEES
DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

US Army Corps
of Engineers
February 1998

Mississippi River & Tributaries Project
Mississippi River Mainline Levee
Enlargement & Berm Construction Project
Supplemental Environmental Impact Statement

NEWSLETTER

Comments On Levee Enlargement Program

Maj. Gen. Anderson:

"A Strong Environmental Ethic Is Part Of How We Conduct Our Business"

"Our commitment is to have an environmentally sustainable project," Maj. Gen. Phillip R. Anderson, commander of the Mississippi Valley Division, U.S. Army Corps of Engineers, said in a special Newsletter interview. "Simply put, we must balance environmental and economic development concerns and we fully intend to do this."

The general, who also is president of the Mississippi River Commission, made his comment regarding an update study being conducted in relation to an ongoing enlargement program for Mississippi River mainline levees.

The Memphis, Vicksburg and New Orleans Districts of the Corps of Engineers are currently preparing a supplement to the 1976 Environmental Impact Statement that includes the mainline Mississippi River levee project. The Supplemental Environmental Impact Statement (SEIS) will describe the effects of enlarging sections of the mainline levees on environmental resources and fish and wildlife habitat of the Mississippi River floodplain. The SEIS is based on an extensive reevaluation of remaining levee work to ensure that all environmental requirements are met and that negative impacts are avoided, minimized or compensated.

The reevaluation of the environmental impact of mainline levees, berms and seepage construction will ensure that current and remaining projects meet environmental requirements.

"Environmental aspects have equal standing with economics and engineering," Anderson said. "A strong environmental ethic is part of how we conduct our business. Sustaining our environment is a necessary part of building and securing our nation."

Maj. Gen. Phillip R. Anderson

Long-Term Project Triggered by 1927 Flood

A disastrous flood caused by levee failure in 1927 led Congress to create the Mississippi Rivers & Tributaries Act. The act set in motion a long-term project where 1,600 miles of levees from Cape Girardeau, Mo., to the Gulf of Mexico, would be brought to proper height and grade to handle a "Project Flood."

The Project Flood is a model of the worst flood that could be predicted, based on past flooding and waterflow levels. Based on current funding levels, all of the MR&T levees are scheduled to be upgraded and made capable of handling the Project Flood by the year 2031.

There are about 280 miles of mainline levees which are still below height

and grade and are scheduled for improvements. Since improvements primarily involve using soil near project sites or "borrow" material, the major focus is on protecting bottomland hardwoods in borrow areas.

MR&T Project Returns $18 For Each $1 Spent

"The nation has invested almost $10 billion to date to plan, design, construct, operate and maintain the MR&T project, and savings through flood damage prevention have totaled more than $182 billion, a return of $18 for each $1 spent," Anderson said.

He added, "The Mississippi River's levees protect over 4.5 million people, or about 1.5 million households whose residences are valued at $114 billion.

"Further, an estimated 33,000 farms and farm buildings valued at $13 billion also are protected by the levees, and the earning power of people living and working in the 49,000 square miles impacted by the levees totals $64 billion annually."

General Anderson also noted that the Mississippi and its tributaries drain 41 percent of the contiguous United States, touching 31 states and Canada and encompassing more than 1.2 million square miles.

The river also forms the Mississippi Flyway, the nation's most important route for millions of annually migrating waterfowl.

Endangered Species, Fish, Waterfowl & Wildlife Habitat Included In Study

"While the focus of the SEIS is on bottomland hardwood wetlands, it also includes impacts on all areas of the environment, such as endangered species, terrestrial, aquatic and waterfowl resources.

"The SEIS will ensure that environmental impacts of the project are avoided, minimized or compensated and also ensure that the Corps is in compliance with the National Environmental Policy Act (NEPA)," Anderson said.

SITES & DATES SET FOR PUBLIC MEETINGS

Six sites in four states have been chosen for public meetings in March 1998 to receive comments on the draft Supplemental Environmental Impact Statement (SEIS).

The sites and dates:

Meetings Begin In Missouri On March 16

Monday, March 16, 1998 at the Show Me Center, 1333 North Sprigg Street, **Cape Girardeau, Mo**; March 17, 1998 at the Holiday Inn, East Main & I-55, **Blytheville, Ark.**; Wednesday, March 18, 1998, at the Solomon Junior High School, 556 Bowman Boulevard, **Greenvile, Miss.**; Thursday, March 19, 1998, at the Lake Providence High School, 602 Martin Luther King Drive, **Lake Providence, La.**; Monday, March 30, 1998, at the Eola Hotel, 110 North Pearl, **Natchez, Miss.**, and Tuesday, March 31, 1998, at the State Archives Building, 3851 Essen Lane, **Baton Rouge, La.**

The meetings are open to the public and will begin at 7 p.m.

The Corps of Engineers will make an audio-visual presentation of the report's contents. Biologists, engineers, and other specialists also will explain the development and implementation of evaluation methods that led to the draft report and its findings.

After the public meetings, there will be a 30-day period for written public responses, which will be included in a final report that is due to be completed in October.

Accompanying maps show the location of the meeting sites for persons wishing to attend.

Commonly Used Corps Terms That Could Use Some Explaining ...

Everybody does it, not just the Corps of Engineers. And that's the practice of using words in everyday conversation that is unique to a profession or trade. It's sort of like when you were in school, the teacher asked you to define a word, and you tried hard not to use the word itself in your explanation, even though that was the best word that could be used to answer the question!

Use Same Language For Better Understanding

So, if you are having a conversation about rivers and levees and the Supplemental Environmental Impact Statement with someone from the Corps,

here's some help to understand words they use every day but you probably don't:

GIS – Geographic Information Systems. An information-gathering process where a database of related information is developed and analyzed for a specific site. For example, economic, environmental, population, agricultural, industrial, etc., data for a three-mile stretch of land alongside a river.

Delineation – A process which identifies and classifies specific areas. For example, field scientists will make a delineation that determines the boundaries of a wetland in an agricultural area.

Ground Truthing – The act of personal, on-site examination of an area to determine the accuracy of previous delineations by some other means, such as aerial photography.

Sand Boil – That's where high water has seeped under a levee and is coming to the surface on the land side carrying sands and silts from beneath the levee. Sandbags are placed around the emerging water to form control rings which allows the water to keep flowing while sediments remain in place.

Water Seeping Under Levee Is Expected

Underseepage – A naturally occurring process where river water seeps under a levee to its land side. The seepage is not a danger to the levee if controlled properly.

Slurry Cutoff – An earth excavation method used to provide a positive underseepage cutoff at the riverside toe of the levee.

Berm – A blanket of earth built where the levee meets normal terrain on its land side. The berm provides added weight and safely forces the exit of underseepage further away from the levee. There are two types: seepage and stability. Stability berms are built to reinforce areas along the levee.

Plantation – No, it's not an old Southern cotton farm. Biologists generally use this term when referring to a large cluster of same species trees purposely planted in a specific area, such as "a plantation of cottonwood."

"Borrow Pits" Or "Bar Pits?"

Borrow Area – Sometimes called "borrow pits," or "bar pits." It's where earthen material was excavated and then used for levee construction. Older borrow areas have naturally developed into prime hunting and fishing areas.

Project Flood – A theoretical flood projected from data of past floods. It is the largest flood that has a reasonable probability of occurrence and it is the standard for which levee heights are determined.

Avoid and Minimize – The Corps environmental policy: Avoid any environmental loss. If unavoidable, minimize the loss. And compensate any loss so that there will be no net loss.

Relief Well – Pretty much like it says. A well device next to a levee to provide relief by collecting seepage and routing it away from the area and into a natural drainage system. These are often used in lieu of berms.

Commonly Used Term Has French Origin

Batture – A French term applied to land between a levee and the river. Commonly used along the Mississippi from Louisiana northward.

Cultural Resources – Generally used to define meaningful archaeological finds, such as Indian mounds, historical artifacts, early settlement sites, sunken paddlewheelers, etc.

Crevasse - An area where a levee fails from prolonged pressure and the river rushes through into an area it's not supposed to go. As the river rushes through the levee's gap, it erodes soil away and the crevasse quickly widens until the pressure is equalized

Interagency – Any interaction of two or more government agencies. On environmental issues, for example, the Corps of Engineers working with the U.S. Fish and Wildlife Service and the Environmental Protection Agency on a single project.

Terrestrials – Generally refers to forested habitat and animals that depend on this habitat

Area Valuable For Birds Visiting Temporarily

Neotropical Migrants – Birds that are not permanent residents but spend part of their time in Southern areas as part of their annual migration.

Aquatics – Generally refers to fish and their habitat that are found in borrow area.

Arkansan Feels Pinched By Programs

(Editors Note: The following is written by Ms. Laura Busby of Marion, Ark., whose family farms land near the Mississippi River.

Make Repairs And Completion A National Priority

The Mississippi River has a mind of its own and without the discipline of a well-planned levee system would, without a doubt, take many thousands of lives and destroy the largest and most efficient agricultural economy in the world.

The immediate resumption of repairs and the completion of levee-raising projects under the Mississippi Rivers & Tributaries project should be a national priority. The projects need to be completed as soon as possible because they protect the safety of all people who live near the river. Most importantly, the river is the artery that feeds the heart of the United States.

It is not, as some say, better to let the river run free and return to a wilderness state as it appeared when Columbus discovered America.

I am an American farmer and I want my government to take a second look at the motive and interests of organized environmental groups whose legal actions have impacted levee-raising projects. I believe that, as a nation, those of us who farm lands alongside the river must be the first to be considered.

EPA And Other Agency Regulations Govern Land Use

As a farmer in east Arkansas, laws and regulations regulating levees are not the only government programs affecting us. For example, we now must deal with a new agenda called "Sustainable America" created by presidential order and turned over to Vice President Gore to administer. We have a number of reasons to be concerned as we see implementation of programs that have been developed mainly by appointees of this administration and a very select group of environmentalists. In addition to local and federal laws and regulations governing my family's land bordering the river and new regulations developing from Sustainable America, we also are impacted by regulations issued by other government agencies, such as the Environmental Protection Agency.

All these groups trying to tell us how to take care of our land makes me wish that everybody would simply take a few minutes and ask themselves who most benefits from the land and, therefore, who knows better how to take care of it? It's simple, the farmer. And what I see is pretty clear: if the levee enlargement program is not completed, America's citizens, their property, agriculture-producing capability, wildlife and domestic animal life could suffer tragic and perhaps permanent damage.

Levees Constantly Evolving Like the River

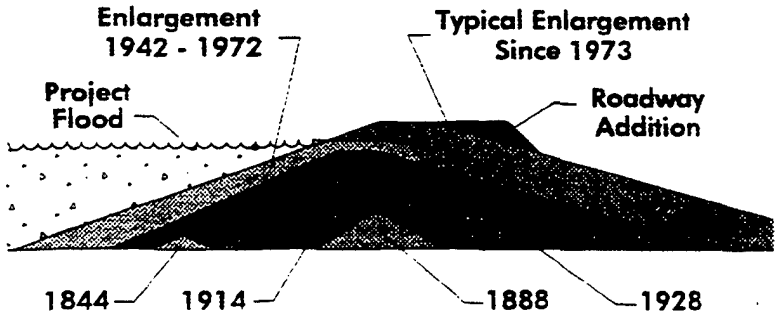
1,610 Miles of Levees Protect People, Cities, Animals & Property

The levees that keep the Mississippi River in check today are quite different from the first one built in the late 1700s to protect New Orleans.

That first levee was three feet high, 5,400 in length and 18 feet wide at its top. Today, there are 1,610 miles of levees from Cape Girardeau, Mo., to the Gulf of Mexico protecting people, cities, towns, farms, domestic animals, and property. And a typical levee today might be 20 to 25 feet high, 10 feet wide without a roadway and 25 feet wide with a roadway at the top.

The illustration below shows how levees have evolved.

EVOLUTION OF MISSISSIPPI RIVER LEVEES



SEIS Study Information Now At 18 Libraries

Mississippi, Louisiana And Tennessee Libraries Added

Three new public libraries have been added as sites for display of public documents related to the Supplemental Environmental Impact Statement (SEIS) being prepared for the Army Corps of Engineers' mainline levee-raising and enlargement project.

They are: **Carnegie Public Library**, 114 Delta Avenue, Clarksdale, MS 38614, 601-624-4461; **State Library of Louisiana**, Louisiana Section, 760 North Third Street, Baton Rouge, LA 70802, 601-342-4914, and **Tiptonville Public Library**, 126 Tipton Street, Tiptonville, TN 38079, 901-253-7391.

Fifteen other libraries already are serving as public document repositories. They are:

ARKANSAS:
Mississippi County Library System
200 North 5th
Blytheville, AR 72315
501-762-2431

KENTUCKY:
Paducah Public Library
555 Washington Street
Paducah, KY 42003-1735
502-442-2510

MISSISSIPPI:
Homochitto Valley Library Service
220 South Commerce
Natchez, MS 39120
601-445-8862

Warren County/Vicksburg Library
700 Veto Street
Vicksburg, MS 39180-3595
601-636-6411

Washington County Library
341 Main Street
Greenville, MS 38701-4097
601-335-2331

TENNESSEE:
McIvers Grant Public Library
204 North Mill Street
Dyersberg, TN 38024-4631
901-285-5032

Memphis/Shelby County Public Library
1850 Peabody Avenue
Memphis, TN 38104-4021
901-725-8853

Newbern City Library
220 East Main
Newbern, TN 38059-1528
901-627-3153

ILLINOIS:
Cairo Public Library
1609 Washington Avenue
Cairo, IL 62914
618-734-1840

LOUISIANA:
Ascension Parish Public Library
500 Mississippi Street
Donaldsonville, LA 70346-2535
504-473-8052

E. Baton Rouge Parish Library
7711 Goodwood Boulevard
Baton Rouge, LA 70806-7625
504-231-3700

Ferriday/Concordia Library
1609 Third Street
Ferriday, LA 71334-2298
318-757-3550

Madison Parish Library
403 North Mulberry
Tallulah, LA 71282-3599
318-574-4308

New Orleans Public Library
219 Loyola
New Orleans, LA 70140-1016
504-596-2602

MISSOURI:
Cape Girardeau Public Library
711 North Clark
Cape Girardeau, MO 63701
314-334-5279

District-At-A-Glance:

MEMPHIS TERRITORY TOUCHES SIX STATES

25,000 Square Miles Under District Domain

The Memphis District of the U.S. Corps of Engineers includes almost 25,000 square miles of the Lower Mississippi Valley and encompasses parts of Mississippi, Tennessee, Arkansas, Missouri, Illinois and Kentucky.

The District's major missions include inland navigation, flood control,

environmental protection and restoration, and emergency response.

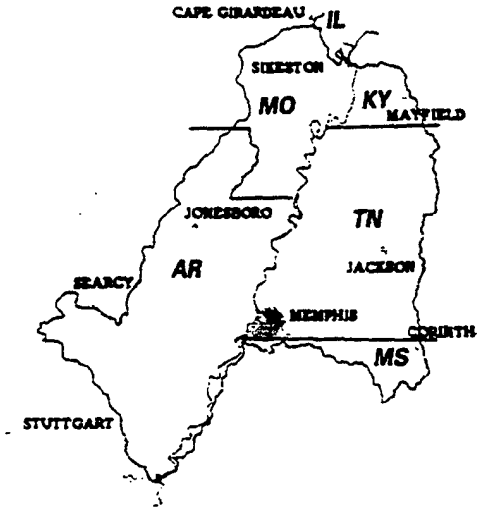
Memphis is responsible for maintaining and improving 255 miles of the Mississippi River's main channel from Cairo, Ill., to the mouth of the White River in Arkansas.

Maintains 640 Miles Of Levees, 8 Inland Harbors, 254 Miles Of Navigation

A total of 640 miles of mainline levees along the Mississippi River and its tributaries, eight inland harbors and 254 miles of navigation on the White River also is maintained by Memphis.

The District, the people of the Mid-South and many non-Federal partners have enjoyed a mutually beneficial relationship for over a century. Each year, the District circulates about $117 million in the community, including $40 million in construction projects and $50 million to vendors for operations and maintenance items.

From 1993 to 1996, flood control efforts by the Memphis District have saved American taxpayers over $4 billion. And during the same period, the Memphis Corps protected hundreds of communities, thousands of homes and businesses and millions of acres of farmland from flood damage.



District Territory

Public Affairs Office Offers Assistance

For more information, the Memphis District Public Affairs Office is located at 167 North Main Street, Room B-202, Memphis, TN 38103-1894, Telephone 901-544-3348, and FAX 901-544-3786. Or check out the district website on the internet: www.lmm.usace.army.mil

(Next: the Vicksburg District)

Internet Carries Newsletter, Other Information

The Newsletter is not the only way you can stay informed about the Supplemental Environmental Impact Statement, Mississippi River Mainline Levee project and other Corps of Engineers projects. You also can check the World Wide Web.

Internet users can get the latest information on the Supplemental Environmental Impact Statement study, and other information about the Corps of Engineers by checking the internet web site of its Vicksburg District:

www.mvk.usace.army.mil

The site will contain the Newsletter and other SEIS information that will be periodically updated until the study's final results are released in the Fall of 1998.

You also can check out happenings in the Memphis District at **www.mvm.usace.army.mil** and do the same for the New Orleans District at www.mvn.usace.army.mil.

FOR FURTHER INFORMATION ...

Here are telephone numbers of U.S. Army Corps of Engineers' project/technical managers for the Mississippi River Mainline Levees' project who can provide assistance to the public or answer specific questions from concerned parties:

Persons To Contact At New Orleans, Vicksburg, Memphis

Kent Parrish, Vicksburg District, 601-631-5006
Moody Culpepper, Vicksburg District, 601-631-5962
Billy Dycus, Memphis District, 901-544-3455
Robert Campos, New Orleans District, 504-862-2998

COMMENTS?

Editors Note: If you have a statement you would like to make regarding the Supplemental Environmental Impact Statement project, or a comment you would like to be presented in the Newsletter, please include the following information and mail your statement to: Moody Culpepper, U.S. Army Corps of Engineers, 4155 Clay Street, Vicksburg, MS 30180-3435.

Name_____Tel. No. ( )_____
Address_____

City/State_____ZIP_____

Comments (Or, if more space is needed, include on a separate sheet):

Privacy Act Statement:

In accordance with the Privacy Act of 1974 (Authority 8: Chapter 5, ER 1105-2-100), routine uses of the information obtained from this form include compiling official mailing lists for future informational publications and recording additional views and public participation in studies.

TESTIMONY BEFORE THE U. S. ARMY CORPS OF ENGINEERS
MISSISSIPPI RIVER & TRIBUTARIES PROJECT
PUBLIC MEETING FOR MISSISSIPPI RIVER LEVEES
DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STUDY
18 MARCH, 1998
GREENVILLE, MISSISSIPPI

_____ _____, and other distinguished members of the Corps, my name is Ken Weiland. I'm the Chief Engineer of the Yazoo-Mississippi Delta Levee District. I would also like to introduce other members of my Levee District present tonight:_____ Our Levee District contains 100 miles of mainline Mississippi river levee that falls within the boundaries of Memphis District in northwest Mississippi. Our Levee District is comprised of over 200,000 citizens of ten (10) Delta and part Delta counties who are all subject to flooding by the Mississippi River. It is on behalf of our Levee District, elected by these citizens, that I make my statement to you tonight.

The purpose of this meeting, as I understand it, is for you to gather comments and suggestions from the general public, affected agencies, and other concerned and involved parties regarding the recently released draft supplemental environmental impact statement (SEIS) for the Mississippi River mainline levees. Completion of this document has been deemed necessary for continuation of the construction of features of the mainline levees in the Lower Mississippi Valley, as well as the installation of countermeasures to protect the existing levee features from adverse underseepage. My Levee District would like to acknowledge the enormity of the task in preparing this draft report and take this opportunity to express our sincere appreciation to the multitude of individuals within the Corps who stood up to the task and completed this study with the utmost professionalism, integrity, and expedience. There is no doubt that the United States Army Corps of Engineers is unequaled in the world in your technical capability as has been historically proven, and is again evident in the completion of this most critical and complicated study that we are addressing tonight.

In accordance with the cover letter under which our copy of the draft SEIS was received, I will offer only a brief, general statement concerning the report tonight, and submit more detailed comments prior to the closing date of April 30. The report recommends a significant change in construction methodology for the remainder of the MR&T project. These recommended changes could result in substantial impacts on the local sponsors including our District that demand additional, careful consideration. I will express my concern that the recommended plan could result in adverse impacts to the local sponsors due to the differences in individual needs and requirements of each sponsor. The continuation of the success of the MR&T project along with its benefits to our citizens and to the nation will require the

Exhibit 3

continuation of a wide range of flexibility in the design of each work item based on the specific needs of that particular local sponsor. ADD

I will take this opportunity to reemphasize our Board's position on several issues that I addressed in my formal statement to you at the scoping meeting held in Memphis on May 22 of 1997.

Our Board emphatically reconfirms our position that all scheduled and proposed work on the MR&T project proceed without delay for any reason. There is no higher priority than the protection of the Mississippi Delta and the Lower Mississippi Valley from the devastation that would result from a catastrophic failure of the mainline levee system such as occurred in 1927. Given this position, the YMD Levee District concurs with the elimination of Plan 1 in the draft SEIS report.

First priority should be given to the use of riverside right-of-way rather than the developed land protected by the levee for the construction of the project components. The overriding national importance of the protected lands behind the levees of the MR&T must be taken into consideration. In addition, the people of our Levee District have made a tremendous investment in our riverside right-of-way in full faith that the nation would fulfill its obligation to allow the continued use of this right-of-way for the never ending job of maintaining, strengthening and protecting the levees. The Levee Board certainly supports and applauds the measures taken in the report to avoid and minimize environmental losses in prosecuting this work. However, at the same time, use of our riverside right-of-way should not be abandoned simply because environmental losses may be unavoidable. Our Board concurs with the provisions of the report that will allow for full mitigation of unavoidable environmental losses from the use of our riverside right-of-way at full federal cost.

In closing, I will reiterate our continued review of this important report and offer further commendation to the Corps in the thorough manner in which you have presented the report. The report contains an abundance of information and technical data that will not only allow us to assess its impact on our Levee District, but hopefully, if given careful, fair review, will allow all agencies and organizations to come to a mutually acceptable conclusion that will allow this vitally important work to be completed.

Respectfully submitted,

KENNETH L. WEILAND, P.E.
CEO, CHIEF ENGINEER
Board of Levee Commissioners for the Yazoo-Mississippi Delta
P. O. Box 610
Clarksdale, MS 38614-0610
(601) 624-4397

PUBLIC MEETING STATEMENT OF THE U.S. FISH AND WILDLIFE SERVICE ON THE MISSISSIPPI RIVER AND TRIBUTARIES PROJECT - MAINLINE LEVEES ENLARGEMENT

/8 March 1998

My name is Curtis James and I am a Senior Field Biologist with the U.S. Fish and Wildlife Service's Vicksburg Field Office. The Service appreciates the opportunity to participate in the public meetings for the draft supplemental environmental impact statement (EIS). Our involvement and comments on the proposed project are mandated by the Fish and Wildlife Coordination Act. Our objective under the Act is to protect and enhance fish and wildlife resources through the planning, construction, and operation of federal water resource projects.

The Service recognizes that this proposed work is necessary and we support the concept of maintaining the integrity of the mainline levees. We believe that this goal can and will be accomplished in an environmentally sound manner. We have worked closely with the Vicksburg District, the local sponsor, and other interests to avoid damages to bottomland hardwood

Exhibit 4

forests and other fish and wildlife habitats and to develop compensation for unavoidable damages to forested wetlands, as well as nonwetland forests.

In response to our concerns, and the concerns of others, the Vicksburg District has modified the original plans through avoidance measures to reduce adverse impacts to hardwood forests from 11,400 acres to approximately 4,800 acres. The District is to be commended for these important efforts including relocation of borrow areas, use of existing berm material, relief wells, and other measures (described earlier tonight) to avoid adverse impacts. The Corps has also developed compensation measures for the unavoidable impacts to bottomland hardwood forests, other wetlands, and waterfowl foraging habitat. The Corps will purchase and reforest approximately 5,900 acres of agricultural lands. The Service has recommended the establishment of large, contiguous blocks of forest instead of scattered, small patches of woods, which are of less value from an ecosystem perspective. We have also recommended that, where possible, mitigation areas be located in the Bird Conservation Zones of the Mississippi Alluvial Valley as developed by the Service in cooperation with other federal, state, and private organizations. These zones have been established

to provide the habitat needs of migratory forest breeding birds. All of these designated Bird Conservation Zones contain cleared areas that need to be reforested to establish contiguous forest habitat for migratory breeding birds.

The Service also commends the Corps for the environmental design features they have developed for inclusion in the levee enlargement project. Those features include 6,700 acres of borrow areas specifically designed with shallow and deep areas, irregular shorelines, and constructed islands to provide high quality aquatic habitat. Another environmental feature is the reforestation of approximately 3,000 acres of shallow borrow pits with oak species for good quality fish and wildlife habitat. Since the reforestation is experimental, this feature is not considered a mitigation measure of the levee enlargement project.

In summary, the Service commends the Corps for selecting Plan 4, the avoid and minimize plan, which will reduce bottomland hardwood losses from the original anticipated 11,400 acres to 4,800 acres of hardwood forests. We applaud the Corps' compensation proposal for unavoidable adverse impacts consisting of the reforestation of 5,900 acres of cleared lands, and the

environmental features for borrow areas and reforestation of 3,000 acres of shallow borrow pits. Thank you for the opportunity to present this statement.

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI 39180

Public Meeting
on
Mississippi River and Tributaries Project,
Mississippi River Mainline Levees
Enlargement and Seepage Control

Lake Providence High School
Lake Providence, Louisiana
19 March 1998

PRESENT:

CORPS OF ENGINEERS:

Vicksburg District:

COL Gary Wright, District Engineer
Mr. Bill Hobgood, Planning Division
Mr. Dan Johnson, Planning Division
Mr. Moody Culpepper, Planning Division
Mr. Gary Young, Planning Division
Mr. Wendell King, Planning Division
Mr. Stoney Burke, Planning Division
Mr. Kent Parrish, Programs and Project Management Division
Ms. Myra Dean, Planning Division
Ms. Jeannine Beatty, Planning Division
Mr. Jim Merritt, Office of Counsel
Mr. Larry Harper, Operations Division
Mr. Danny Harrison, Engineering Division
Mr. Larry Banks, Engineering Division
Mr. Robert Simrall, Programs and Project Management Division
Mr. Michael Logue, Public Affairs Office

ALSO PRESENT:

Mrs. Carl Bonner, Banner Democrat, Route 2, Box 447A, Lake Providence, Louisiana 71254
Mr. Michael Brown, Route 2, Box 154, Lake Providence, Louisiana 71254
Mr. Philip Brown, Fifth Louisiana Levee Board, Route 2, Box 450, Lake Providence, Louisiana 71254
Mr. Lloyd Chapman, Town of Lake Providence, P.O. Box 672, Lake Providence, Louisiana 71254
Mr. Herbert T. Howard, Lake Providence Sr. High School, 602 3rd Street, Lake Providence, Louisiana 71254

Mr. George Jackson, 505 Pecan Street, Lake Providence, Louisiana 71254
Mr. James E. Kelly, Jr., P.O. Box 403, Newellton, Louisiana 71357
Mr. James E. Kelly, Sr., Fifth Louisiana Levee District, P.O. Box 403, Newellton, Louisiana 71357
Jimmy and Mary Jane Knight, State Farm Agent/E. C. Council on Aging - Education Division, P.O. Box 747, Lake Providence, Louisiana 71254
Mr. Dudley Lehew, Gulf South Research Corporation, 9357 Interline Avenue, Baton Rouge, Louisiana 70809

Mr. Francis Lensing, P.O. Box 192, Lake Providence, Louisiana 71254
Mr. Shane Maxwell, Bunge Corporation, Route 1, Box 38, Lake Providence, Louisiana 71254
Mr. Alvin Meyer, Southeast Arkansas Levee District, 316 Meyer Road, Eudora, Arkansas 71640
Mr. Reynold S. Minsky, Fifth Louisiana Levee District Board, 222 N. Cedar, Tallulah, Louisiana 71282
Mr. Benny Street, Walker Lands, Route 2, Box 153B, Lake Providence, Louisiana 71254

Mr. Bubba Street, Route 2, Box 153B, Lake Providence, Louisiana 71254
Mr. Travis L. Sullivan, Transylvania, Louisiana 71286
Mr. Granville Tate, Brunini Law Firm, P.O. Box 119, Jackson, Mississippi 39205
Mr. Dwayne Templet, Geo-Marine, Inc., 6554 Florida Boulevard, Baton Rouge, Louisiana 70806
Mr. Bill Williams, Bunge Corporation, Route 1, Box 38, Lake Providence, Louisiana 71254

COL GARY WRIGHT: Good evening. My name is COL Gary Wright from the Vicksburg District. I would like to welcome everyone this evening. This is the fourth in a series of six meetings we are doing along the Mississippi valley. We started earlier this week in Cape Girardeau, Missouri, following in Blytheville, Arkansas, Greenville last night, and tonight here in Lake Providence. Then we are going to skip a week. Then we will be in Natchez on the 30th and Baton Rouge on the 31st.

Tonight we are continuing the public coordination process, specifically for the draft report on the Supplemental Environmental Impact Statement (SEIS). The supporting technical appendixes for this project and the entire draft report were released and distributed last month. Many of you, hopefully, have copies of that. They are out for public review.

At tonight's meeting, we are going to summarize our study findings. Then we will give you an opportunity to make statements, and later we will open it up for questions and answer with our panel up here, because I surely cannot answer the majority of the questions most of the time. If you have not filled out a card--I am going to show you one. I am going to tell you that I only have one card. You may be timid, but if you don't have a card and you would like one, we will get one to you so you can make a few comments.

Let me introduce some special guests tonight. Reynold Minsky, President of the Fifth Louisiana Levee Board. Most of you know him. He lives right in town. I have had the privilege of knowing him for the last almost 3 years now. I will ask in a few minutes to come up. I know he is going to say a few words a little later.

Let me introduce those at the head table. If I missed somebody, hopefully, somebody will grab me and point me in the right direction. The project Study Manager, I mentioned, is Moody Culpepper is immediately to my left here. You are going to hear from him in a few moments. Kent Parrish is the Project Manager for the Mainline Levees throughout the Vicksburg District. Gary Young in our Planning Division is a biologist and very detailed in the planning efforts and environmental features. Mr. Larry Banks over there from our Hydraulics folks in our Engineering Division. He is the expert on this river and what level we are and which way we are going to go.

We have a few other members here tonight. If you can on the break, I would like for you to meet with them and talk with them and share with them whatever questions you might have that we might not be able to answer up here.

We are going to do a slide presentation. I am going to turn it over to Marty to summarize the findings of the study that I just mentioned.

I did it again, didn't I? They set me up on the way up here. There are three names that I call this guy, Moody, Marty, and Manny. They choked me. Dan in the back said, "you are going to do it tonight," and I said, "no, no, I have it down pat."

Before I turn it over to him, this has been a year-long process. We started this in March 1997. Hopefully, the draft report was received well with the inputs. We have analyzed all that. As he will mention later on, we will show you that we are going to try to go to a final report late this summer in this supplement. With that, I am going to shut up before I call him some other name. Mr. Moody Culpepper.

MR. MOODY CULPEPPER: Thank you, COL Wright. It is not bad to be called Marty. He is a pretty nice guy.

SLIDE 1 - INTRODUCTION

TONIGHT WE ARE HERE TO DISCUSS THE FINDINGS OF STUDIES CONDUCTED FOR THE DRAFT MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT AND SEEPAGE CONTROL PROJECT REPORT AND DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT. THIS IS A JOINT EFFORT OF THE U.S. ARMY CORPS OF ENGINEERS, MEMPHIS, VICKSBURG, AND NEW ORLEANS DISTRICTS, CONDUCTED WITH THE OVERSIGHT OF THE MISSISSIPPI RIVER COMMISSION. VICKSBURG WAS DESIGNATED AS THE LEAD DISTRICT IN THE CONDUCT OF THE STUDIES. WE SOLICIT YOUR COMMENTS ON THE PLAN OF IMPROVEMENT THAT IS BEING PROPOSED.

SLIDE 2 - PROJECT AREA

THE MR&T PROJECT IN THE ALLUVIAL VALLEY BETWEEN CAPE GIRARDEAU, MISSOURI, AND HEAD OF PASSES, LOUISIANA, PROVIDES PROTECTION FROM FLOODS BY MEANS OF VARIOUS STRUCTURAL MEASURES. THE MISSISSIPPI RIVER MAINLINE LEVEES FEATURE--THE SUBJECT OF THESE INVESTIGATIONS--HAS BEEN UNDER CONSTRUCTION SINCE 1928.

THE MISSISSIPPI RIVER LEVEES AND CHANNEL IMPROVEMENT EIS WAS FILED WITH THE COUNCIL ON ENVIRONMENTAL QUALITY IN APRIL 1976. THIS EIS IS BEING SUPPLEMENTED TO COVER CONSTRUCTION OF ALL REMAINING MISSISSIPPI RIVER MAINLINE LEVEES AND SEEPAGE CONTROL.

THE PROJECT AREA EXTENDS 600 MILES FROM CAPE GIRARDEAU TO HEAD OF PASSES AT THE GULF OF MEXICO. THE PROJECT AREA WIDTH INCLUDES THE LEVEES, ALL LANDS RIVERSIDE OF THE LEVEES, AND A STRIP 3,000 FEET LANDSIDE OF THE LEVEES. THE PROJECT AREA IS COMPRISED OF PARTS OF SEVEN STATES--MISSOURI, ILLINOIS, TENNESSEE, KENTUCKY, ARKANSAS, MISSISSIPPI, AND LOUISIANA.

WE HAVE THE CAPABILITY TO COMPLETE THIS PROJECT IN THE YEAR 2020. UPON COMPLETION, APPROXIMATELY 35,000 SQUARE MILES OF THE ALLUVIAL VALLEY WILL BE PROTECTED FROM THE PROJECT DESIGN FLOOD--OR "P D F"--A HYPOTHETICAL FLOOD EVENT DEFINED AS THE GREATEST FLOOD HAVING A REASONABLE PROBABILITY OF OCCURRENCE. OUT OF 1,610 MILES OF MISSISSIPPI RIVER MAINLINE LEVEES, THERE REMAINS APPROXIMATELY 262 MILES THAT ARE 2 TO 8 FEET BELOW THE HEIGHT REQUIRED TO SAFELY PASS THE PDF.

SLIDE 3 - PROJECT SIGNIFICANCE

THE MISSISSIPPI RIVER FUNNELS 41 PERCENT OF THE CONTINENTAL UNITED STATES DRAINAGE. . . RUNOFF FROM ALL OR PARTS OF 31 STATES AND 2 CANADIAN PROVINCES TO THE GULF OF MEXICO. THE MISSISSIPPI RIVER LEVEES PROTECT MILLIONS OF RESIDENTS AND A MULTIBILLION DOLLAR, HIGHLY DEVELOPED AGRICULTURAL AREA.

SLIDE 4 - SIGNIFICANT ENVIRONMENTAL RESOURCES

THE PROJECT AREA CONTAINS SIGNIFICANT ENVIRONMENTAL RESOURCES. AS PART OF PREPARATION OF THE SEIS, EVALUATIONS OF WETLANDS, TERRESTRIAL RESOURCES, ENDANGERED SPECIES, NEOTROPICAL BIRDS, BATS, WATER QUALITY, AQUATIC RESOURCES, WATERFOWL, AND ARCHEOLOGICAL RESOURCES WERE CONDUCTED.

SLIDE 5 - HABITAT EVALUATION PROCEDURES

A TEAM COMPOSED OF BIOLOGISTS FROM THE U.S. ARMY CORPS OF ENGINEERS; THE U.S. FISH AND WILDLIFE SERVICE; THE ARKANSAS GAME AND FISH COMMISSION; LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES; THE MISSISSIPPI DEPARTMENT OF WILDLIFE, FISHERIES AND PARKS; AND KENTUCKY DEPARTMENT OF FISH AND WILDLIFE RESOURCES CONDUCTED THE TERRESTRIAL HABITAT EVALUATIONS. THE U.S. ARMY ENGINEER WATERWAYS EXPERIMENT STATION DETERMINED PROJECT IMPACTS ON AQUATIC RESOURCES. THE MIGRATORY WATERFOWL ANALYSIS WAS CONDUCTED BY THE U.S. FISH AND WILDLIFE SERVICE.

SLIDE 6 - PLANNING OBJECTIVES

OUR PLANNING OBJECTIVES WERE TO PROVIDE PROTECTION FROM THE PROJECT DESIGN FLOOD THROUGH AN ENVIRONMENTALLY SUSTAINABLE PROJECT WHICH AVOIDS AND MINIMIZES AS MANY ENVIRONMENTAL IMPACTS AS POSSIBLE AND COMPENSATES FOR UNAVOIDABLE LOSSES.

SLIDE 7 - ARRAY OF PLANS

A TEAM INCLUDING ENGINEERS, ECONOMISTS, BIOLOGISTS, AND OTHER DISCIPLINES DEVELOPED AND EVALUATED THIS ARRAY OF PROJECT PLANS COMPRISED OF NO ACTION, ONE NONSTRUCTURAL, AND THREE STRUCTURAL ALTERNATIVES.

SLIDE 8 - NO-ACTION ALTERNATIVE

NO LEVEE CONSTRUCTION OF ANY TYPE WOULD OCCUR--ONLY NORMAL MAINTENANCE AND REPAIR OF THE EXISTING LEVEES.

THEREFORE, THE INCREASED THREAT OF CATASTROPHIC FLOODING WOULD CONTINUE AND THE CITIZENS WOULD BE LIVING IN APPREHENSION OF FUTURE LEVEE FAILURES.

SLIDE 9 - FLOOD DAMAGE AREA (MAP)

LIMITED DAMAGE ANALYSES OF POTENTIAL LEVEE CREVASSES NEAR THE TOWNS OF MAYERSVILLE, MISSISSIPPI, AND LAKE PROVIDENCE, LOUISIANA, INDICATE ESTIMATED FLOOD DAMAGES APPROACHING $5.0 BILLION--ALMOST $2.0 BILLION IN THE AREAS ALONG THE EAST BANK OF THE MISSISSIPPI RIVER AND $3.0 BILLION ON THE WEST BANK. ASSOCIATED IMPACTS COULD INCREASE THE TOTAL EFFECT ON THE LOCAL ECONOMY TO ALMOST $10 BILLION.

MISSISSIPPI RIVER LEVEE FAILURES AT OTHER LOCATIONS WOULD CAUSE EVEN GREATER DAMAGES AND IMPACTS REGION-WIDE. BASED ON THE CASE STUDY, DAMAGES COULD BE EXPECTED TO APPROACH $300 BILLION.

SINCE THE NO-ACTION ALTERNATIVE WOULD NOT PROVIDE LONG-TERM FLOOD PROTECTION AND IS UNACCEPTABLE TO CONGRESS AND THE GENERAL PUBLIC AND THUS UNIMPLEMENTABLE, THE NO-ACTION OPTION WAS NOT GIVEN FURTHER CONSIDERATION.

SLIDE 10 - PLAN 1 - NONSTRUCTURAL ALTERNATIVES

PLAN 1 REPRESENTS A NONSTRUCTURAL OPTION TO STRUCTURAL FLOOD DAMAGE REDUCTION. THE NONSTRUCTURAL MEASURE ADDRESSED WAS PURCHASING EASEMENTS IN LIEU OF PROVIDING FLOOD PROTECTION. EXISTING LEVEE PROTECTION WOULD BE MAINTAINED AS IN THE NO-ACTION ALTERNATIVE. HOWEVER, SHOULD THE LEVEE BE OVERTOPPED AND CATASTROPHIC FAILURES OCCUR, THE LEVEES WOULD NOT BE RECONSTRUCTED.

CONSIDERING ONLY THE ABOVE-MENTIONED MISSISSIPPI RIVER LEVEE BREAKS AT LAKE PROVIDENCE AND MAYERSVILLE, PURCHASE OF FLOWAGE EASEMENTS COULD BE REQUIRED ON APPROXIMATELY 16 MILLION ACRES. THIS WOULD YIELD A COST IN THE MULTIBILLION DOLLAR RANGE. EMERGENCY DISASTER ACTIVITIES, TRAFFIC REROUTING, AND ROAD AND

BRIDGE STRUCTURE AND PUBLIC UTILITIES DAMAGES WOULD ALSO INCREASE COST SIGNIFICANTLY.

SUCH AN ALTERNATIVE WOULD NOT ACCOMPLISH THE CONGRESSIONALLY MANDATED PROJECT PURPOSE TO PROVIDE A PRESCRIBED LEVEL OF FLOOD PROTECTION. IN VIEW OF THIS AND CONSIDERING THE PROHIBITIVE COST AND CERTAIN PUBLIC UNACCEPTABILITY, A NONSTRUCTURAL PLAN WOULD NOT BE IMPLEMENTABLE AND WAS ELIMINATED.

SLIDE 11 - STRUCTURAL ALTERNATIVES

THREE STRUCTURAL ALTERNATIVES WERE ADDRESSED IN THE PRELIMINARY SCREENING--PLAN 2, LANDSIDE BORROW; PLAN 3, TRADITIONAL METHOD (RIVERSIDE BORROW); AND PLAN 4, ENVIRONMENTAL DESIGN (AVOID-AND-MINIMIZE) TO CONSTRUCT LEVEE ENLARGEMENT AND SEEPAGE CONTROL.

SLIDE 12 - TYPICAL WORK ITEM

A TYPICAL SEGMENT OF LEVEE CONSISTING OF SEVERAL PROPOSED WORK ITEMS WAS SELECTED TO PREPARE PRELIMINARY DESIGN AND COST ESTIMATES OF THE STRUCTURAL PLANS. THE AVERAGE LEVEE RAISE WAS 2.5 TO 3 FEET AND INCLUDED EITHER SEEPAGE BERM ENLARGEMENT OR NEW SEEPAGE BERM CONSTRUCTION.

SLIDE 13 - PLAN 2 - LANDSIDE BORROW

FOR THIS ALTERNATIVE, ALL BORROW MATERIAL WOULD BE OBTAINED FROM LANDSIDE OF THE LEVEES. THREE LANDSIDE BORROW SCHEMES WERE INVESTIGATED AS SHOWN HERE.

SLIDE 14 - PLAN 2A - TRADITIONAL LANDSIDE BORROW

PLAN 2A CONSISTS OF TRADITIONAL RECTANGULAR BORROW AREAS 8 TO 10 FEET DEEP IN A BAND 2,000 TO 3,000 FEET FROM THE LEVEE. 2,000 FEET IS TO LESSEN UNDERSEEPAGE PROBLEMS AND 3,000 FEET IS

TO LIMIT HAUL DISTANCE. SUITABLE MATERIAL WOULD BE EXCAVATED AND USED TO ENLARGE THE LEVEE AS SHOWN OR TO CONSTRUCT BERMS. THE LANDSIDE RIGHTS-OF-WAY AND EXTENDED HAUL DISTANCES WOULD INCREASE COST.

WATER QUALITY PROBLEMS WOULD BE CREATED BY CONSTRUCTION OF LANDSIDE BORROW AREAS AS DRAINAGE FROM ADJACENT FIELDS WOULD CONTRIBUTE SUSPENDED SEDIMENTS, NUTRIENTS, AND PESTICIDES. TESTING OF EXISTING LANDSIDE BORROW AREAS HAS INDICATED HIGH LEVELS OF PESTICIDES IN FISH WHICH APPROACH FOOD AND DRUG ADMINISTRATION ACTION LEVELS FOR CONSUMPTION BY HUMANS.

SLIDE 15 - PLAN 2B - TRADITIONAL LANDSIDE BORROW WITH FORESTED BUFFER

THIS ALTERNATIVE CONSISTS OF BORROW AREAS 8 FEET DEEP AND PROTECTED BY A FORESTED BUFFER ZONE WITH A PROTECTIVE BERM AROUND THE OUTSIDE OF THE BUFFER. AS IN PLAN 2A, THE LOCATION FOR THE BORROW AREA IS 2,000 TO 3,000 FEET FROM THE LEVEE.

THIS IS THE EXCAVATED BORROW AREA SHOWING THE FORESTED BUFFER AREA AND PROTECTIVE DIKE. THIS DESIGN IMPROVES WATER QUALITY BY ISOLATING THE BORROW FROM THE AGRICULTURAL DRAINAGE.

SLIDE 16 - PLAN 2C - LANDSIDE SHALLOW BORROW

LANDSIDE SHALLOW BORROW ALLOWS FOR DRAINING THE BORROW AREAS SO THEY CAN BE FORESTED. BORROW EXCAVATION IS LIMITED TO 3 FEET DEEP AND SHAPED TO DRAIN AND CONNECT TO LOCAL DRAINAGE.

THIS SLIDE SHOWS A TYPICAL LAYOUT OF SHALLOW BORROW AREA LOCATION, EXCAVATION AND LEVEE ENLARGEMENT, AND FORESTED BORROW AREA. THIS SHALLOW BORROW GREATLY INCREASES THE REQUIRED ACREAGE FOR BORROW, THUS INCREASING COST.

SLIDE 17 - PLAN 3 - TRADITIONAL METHOD

PLAN 3 IS THE TRADITIONAL METHOD TO CONSTRUCT LEVEE ENLARGEMENTS AND BERMS. HERE, OUR CONSTRUCTION IS NORMALLY BASED ON THE MOST ECONOMICAL DESIGN. I WILL DISCUSS DESIGN DETAILS LATER.

SLIDE 18 - PLAN 4 - ENVIRONMENTAL DESIGN (AVOID AND MINIMIZE)

PLAN 4 IS AN ENVIRONMENTAL DESIGN WHICH INCORPORATES MEASURES TO AVOID AND MINIMIZE ENVIRONMENTAL DAMAGES TO BOTTOM-LAND HARDWOODS AND WETLANDS. DESIGN DETAILS OF THIS PLAN WILL ALSO BE DISCUSSED LATER.

SLIDE 19 - COST COMPARISON

HERE ARE THE COST ESTIMATES OF ALL STRUCTURAL PLANS FOR THE TYPICAL LEVEE SEGMENT. AS YOU CAN SEE, COSTS FOR PLANS 2A, 2B, AND 2C--THE LANDSIDE BORROW ALTERNATIVES--EXCEED COSTS FOR PLANS 3 AND 4.

SLIDE 20 - MAJOR REASONS FOR LANDSIDE BORROW ELIMINATION

THEREFORE, PLAN 2 WAS NO LONGER EVALUATED FOR THESE REASONS.

SLIDE 21 - FINAL ARRAY OF PLANS

ONLY PLANS 3 AND 4 WERE CARRIED INTO DETAILED DESIGN BECAUSE THEY ARE THE MOST VIABLE AND IMPLEMENTABLE.

SLIDE 22 - TRADITIONAL PLAN 3 (GIS MAP RIVERSIDE BORROW)

ANALYSIS OF THIS PLAN CONSISTED FIRST OF PRINTING MAPS LIKE THIS THAT CONTAIN SEVERAL DATA LAYERS INCLUDING BASE TOPOGRAPHIC FEATURES, LAND COVER MAPPING, WETLAND MAPPING, AND WORK ITEMS.

AN ENGINEERING DESIGN TEAM LOCATED THE BORROW AREAS AS SHOWN HERE OUTLINED IN BLACK. THESE BORROW AREAS ARE NORMALLY LOCATED RIVERSIDE AS CLOSE TO THE CONSTRUCTION SITE AND EXCAVATED AS DEEP AS POSSIBLE. THIS PLAN REQUIRES NO SPECIAL CONFIGURATION OR LOCATION OF THE BORROW AREAS. NO PROVISIONS ARE MADE FOR DRAINAGE OR ENVIRONMENTAL ENHANCEMENT OF THE BORROW AREAS.

SLIDE 23 - ENVIRONMENTAL DESIGN PLAN 4 (AVOID AND MINIMIZE)

TO DEVELOP THE LAYOUT FOR PLAN 4, AN INTERDISCIPLINARY TEAM OF REPRESENTATIVES FROM STATE AND FEDERAL AGENCIES, LOCAL SPONSORS, AND CORPS STAFF WAS FORMED. THE AVOID-AND-MINIMIZE DESIGN APPLIED TO THIS WORK ITEM RELOCATED THE RIVERSIDE BORROW AREA FROM THE BOTTOM-LAND HARDWOOD WETLANDS TO RIVERSIDE CLEARED FARMLANDS (SHOWN HERE OUTLINED IN RED).

SLIDE 24 - AVOID AND MINIMIZE RELOCATION OF BORROW AREAS

WHERE FARMLANDS WERE NOT AVAILABLE RIVERSIDE, THE BORROW WAS MOVED INTO LESS ENVIRONMENTALLY DAMAGING RIVERSIDE TREE PLANTATIONS, NONWETLAND RIVERSIDE BOTTOM-LAND HARDWOODS, OR LANDSIDE FARMLANDS.

SLIDE 25 - ENVIRONMENTAL BORROW AREA DESIGN

MOST RELOCATED BORROW AREAS WOULD INCLUDE ENVIRONMENTAL FEATURES SUCH AS VARYING DEPTHS, IRREGULAR SHORELINE, ISLANDS, AND FORESTED BUFFER.

SLIDE 26 - INNOVATIVE AVOID-AND-MINIMIZE DESIGN

OTHER INNOVATIVE DESIGN APPROACHES FOR REDUCING BOTTOM-LAND HARDWOODS AND WETLANDS EFFECTS WERE ALSO CONSIDERED. DETAILS ARE IN THE FOLLOWING SLIDES.

SLIDE 27 - BERM SCHEMATIC 1

THIS SHOWS THE EXCAVATION OF AN EXISTING BERM BEING USED TO ENLARGE THE LEVEE, CONSTRUCT RETAINING DIKES FOR DREDGED MATERIAL, AND STORE MATERIAL IN A STOCKPILE OR IN THE RETAINING DIKES TO COVER FUTURE DREDGED MATERIAL.

SLIDE 28 - BERM SCHEMATIC 2

THIS SHOWS REPLACING THE EXCAVATED MATERIAL WITH MATERIAL DREDGED FROM THE RIVER. A TEMPORARY ENVIRONMENTAL IMPACT WOULD BE RELATED TO THE NARROW PATH OF THE DREDGE PIPE FROM THE RIVER TO THE BERM SITE.

SLIDE 29 - BERM SCHEMATIC 3

NOW YOU SEE THE FINAL STEP. THE STOCKPILED SOIL IS NOW USED TO COVER THE DREDGED MATERIAL FOR GROWTH OF GRASSES.

SLIDE 30 - DREDGE SITE LOCATIONS FOR BORROW

THIS SHOWS THE DREDGE SITE LOCATIONS IN THE MISSISSIPPI RIVER TO BE USED FOR BORROW TO CONSTRUCT SEVERAL WORK ITEMS AS SHOWN ON THE EAST BANK.

SLIDE 31 - RELIEF WELLS SEEPAGE CONTROL

THE USE OF RELIEF WELLS TO CONTROL SEEPAGE INSTEAD OF BERMS COULD BE USED IN SUITABLE LOCATIONS. PLEASE NOTE THAT CLEAR WATER FLOWING FROM THIS WELL INDICATES THAT NO SOIL IS BEING WASHED OUT FROM UNDER THE LEVEE.

SLIDE 32 - CUTOFF TRENCH SEEPAGE CONTROL

THE USE OF CUTOFF TRENCHES TO CONTROL SEEPAGE INSTEAD OF BERMS COULD BE USED IN SUITABLE LOCATIONS.

SLIDE 33 - COST TABLE

TOTAL COSTS FOR CONSTRUCTION AND MITIGATION FOR UNAVOIDABLE FISH AND WILDLIFE IMPACTS ARE SHOWN HERE FOR PLANS 3 AND 4. AS YOU CAN SEE, PLAN 3 COST IS APPROXIMATELY $623 MILLION AND PLAN 4 COST IS ABOUT $652 MILLION. THERE IS ABOUT A $29 MILLION COST DIFFERENCE BETWEEN THESE TWO PLANS.

SLIDE 34 - BOTTOM-LAND HARDWOODS IMPACTS

BOTH PLANS 3 AND 4 WERE ANALYZED FOR THEIR EFFECTS ON BOTTOM-LAND HARDWOODS AS SHOWN HERE.

PLAN 3 IMPACTS ROUGHLY 11,600 ACRES OF BOTTOM-LAND HARDWOODS. PLAN 4 REDUCES BOTTOM-LAND HARDWOOD LOSSES BY NEARLY 60 PERCENT OR BY SOME 6,700 ACRES. YOU MAY RECALL IN THE 1976 EIS, AN ESTIMATED 11,400 ACRES OF BOTTOM-LAND HARDWOODS WERE TO BE AFFECTED. BY USING ENVIRONMENTAL DESIGN TECHNIQUES, WE HAVE REDUCED THIS AMOUNT TO 4,800 ACRES. THE 4,800 ACRES IMPACTED IN PLAN 4 AFFECTS LESS THAN ONE-HALF OF 1 PERCENT OF THE TOTAL 1,022,000 ACRES OF BOTTOM-LAND HARDWOODS IN THE PROJECT AREA.

SLIDE 35 - PLAN SELECTION

ALTHOUGH PLAN 4 COSTS SLIGHTLY MORE THAN PLAN 3, PLAN 4 CONSTRUCTION TECHNIQUES DRAMATICALLY REDUCE ENVIRONMENTAL IMPACTS. THEREFORE, PLAN 4 IS THE RECOMMENDED PLAN.

SLIDE 36 - DESCRIPTION OF RECOMMENDED PLAN

THE PROPOSED ACTION INCLUDES 128 WORK ITEMS, COMPRISING THE LEVEE RAISING AND SEEPAGE CONTROL SHOWN HERE. THERE ARE

262.8 MILES OF LEVEES TO BE RAISED AND 131.8 MILES OF SEEPAGE CONTROL. NOTE THAT MOST OF THE LEVEE RAISING IS IN THE VICKSBURG DISTRICT WHILE THE MAJORITY OF THE SEEPAGE CONTROL IS WITHIN THE MEMPHIS DISTRICT.

SLIDE 37 - MITIGATION ANALYSIS

RESULTS OF THE MITIGATION ANALYSIS FOR PLAN 4 WERE THAT FISH AND WILDLIFE LOSSES COULD BE OFFSET BY REFORESTING APPROXIMATELY 5,900 ACRES OF FREQUENTLY FLOODED AGRICULTURAL LANDS AT A COST OF $8.8 MILLION. THIS WOULD FULLY COMPENSATE UNAVOIDABLE LOSSES TO SIGNIFICANT ENVIRONMENTAL RESOURCES. APPROXIMATELY 89 PERCENT OF THESE ACRES ARE LOCATED IN THE VICKSBURG DISTRICT, APPROXIMATELY 11 PERCENT IN THE MEMPHIS DISTRICT AND LESS THAN 1 PERCENT IN THE NEW ORLEANS DISTRICT.

SLIDE 38 - ADDITIONAL MITIGATION FEATURES

IN ADDITION TO THE MITIGATION FEATURE, THE RECOMMENDED PLAN ALSO INCLUDES THESE ENVIRONMENTAL ATTRIBUTES.

SLIDE 39 - OPERATION AND MAINTENANCE REQUIREMENTS

LOCAL LEVEE BOARDS WILL CONTINUE TO PERFORM ALL MINOR OPERATION AND MAINTENANCE AT THEIR COST, AND THE CORPS WILL BE RESPONSIBLE FOR MAJOR MAINTENANCE.

SLIDE 40 - PLAN ACCOMPLISHMENTS

PLAN ACCOMPLISHMENTS INCLUDE:

- PROVIDING PROTECTION FROM THE PROJECT DESIGN FLOOD,
- AN ENVIRONMENTALLY SUSTAINABLE PROJECT,

- COMPENSATION FOR UNAVOIDABLE ENVIRONMENTAL LOSSES AT FULL FEDERAL EXPENSE.

SLIDE 41 - DIVISION OF PLAN RESPONSIBILITY

THESE ARE THE FEDERAL AND NON-FEDERAL IMPLEMENTATION RESPONSIBILITIES. NOTE THAT THE FEDERAL GOVERNMENT WILL CONSTRUCT THE PROJECT AND PAY FOR THE MITIGATION WHILE THE LOCAL SPONSORS WILL PAY FOR LANDS, EASEMENTS, RIGHTS-OF-WAY, RELOCATIONS, AND BORROW AREAS.

SLIDE 42 - CLEAN WATER ACT

A SECTION 404(B)(1) EVALUATION OF THE RECOMMENDED PLAN HAS BEEN PREPARED AND INCLUDED IN THE DRAFT REPORT FOR PUBLIC REVIEW. THE SECTION 404(B)(1) EVALUATION WILL BE USED TO APPLY FOR SECTION 401 CERTIFICATION FROM RESPECTIVE STATES.

SLIDE 43 - KEY MILESTONES

THE DRAFT REPORT IS CURRENTLY BEING REVIEWED BY FEDERAL, STATE, AND LOCAL AGENCIES AND THE CONCERNED PUBLIC. SIX PUBLIC MEETINGS ARE BEING HELD THIS MONTH. COMMENTS ARE BEING SOLICITED UNTIL APRIL 30, 1998, AND WILL BE ADDRESSED IN THE FINAL REPORT. COPIES OF THE LATEST NEWSLETTER WITH A LIST OF LIBRARIES WHERE THE DRAFT REPORT CAN BE READ ARE AT THE BACK OF THE ROOM.

THE FINAL SEIS WILL BE DISTRIBUTED IN JULY 1998 AND THE RECORD OF DECISION IS SCHEDULED FOR SIGNING IN OCTOBER 1998.

SLIDE 44 - CLOSING

WE WANT TO THANK ALL OF THOSE WHO ASSISTED IN THIS EFFORT. THE RECOMMENDED PLAN WILL PROVIDE THE REQUIRED LEVEL OF FLOOD PROTECTION TO THE RESIDENTS OF THE LOWER MISSISSIPPI VALLEY

PERMITTING ECONOMIC DEVELOPMENT OF THE REGION WHILE CONCURRENTLY SUSTAINING ITS ENVIRONMENTAL RESOURCES.

THIS CONCLUDES THE PRESENTATION OF STUDY RESULTS.

I WILL NOW TURN THE MEETING BACK OVER TO COL WRIGHT.

COL WRIGHT: Thank you, Marty. I did that on purpose. Moody has done a tremendous job. He does not just do the presentation, he is the Study Manager for this thing. Good presentation.

I am looking at Dan Johnson in the back of the room. I am going to say that I have one card. Dan, is that all I have is one card? Some of you may have changed your mind and would like to make a statement or comment. I would ask you if you would fill out a card before I call Reynold up who has the one card here. If you would like to make a statement or comment, you are welcome to do that without filling out a card.

With that, I am going to step aside and ask you to either go to that microphone or you can come up here and use this one.

MR. REYNOLD MINSKY: I am Reynold Minsky, President of the Fifth Louisiana Levee District.

(Read and submitted written statement, Exhibit No. 3.)

Thank you, COL Wright.

COL WRIGHT: Thank you very much, Reynold. Dan has not handed me any more cards, but I don't need a card. At this time, I would ask if anyone would like to make a statement. I will ask you to use either microphone. I don't see anyone moving toward a microphone.

I know I promised you that we would have a break and come back for the panel discussion. I propose, at this point in time, that we should go right into the question-and-answer period. There has to be some questions out there. Alvin.

MR. ALVIN MEYER: COL Wright. I would ask--let me move to the microphone.

COL WRIGHT: If I can ask you to. I know who you are.

MR. MEYER: I am Alvin Meyer from Eudora, Arkansas, representing the Southeast Arkansas Levee District. I noticed on your display, you talked about a seepage cutoff that would go 3 feet wide and as deep as it needs to go. Is that projected to be part

of this to alleviate some of the seepage berms or is that just an alternative or do you plan to do that?

MR. CULPEPPER: Danny, do you want to answer that question?

COL WRIGHT: We have Danny Harrison from our Design Branch of Engineering Division.

MR. DANNY HARRISON: Basically, what you are going into is how deep the sands are under the levee. Most of the time what we run into is our sands are deep enough that if you don't get a 90 or 95 percent cutoff line, you are not accomplishing anything under the levee. The other part of that story is, what are you doing to your subsurface water?

MR. MEYER: That was my next question.

MR. HARRISON: So that is why we have to work with you as a landowners and land users as to where we do that and where we do not do that. That is basically where we come from. We want to be careful not to impact waters that the farmers are using, as well as try to protect the levee.

MR. MEYER: To recharge the ground water.

MR. HARRISON: Exactly.

MR. MEYER: So that would only be used in certain cases?

MR. HARRISON: That is correct. I think that you are aware that we--well, you may not be aware, but we used this down at Vidalia front levee because the sands were relatively shallow and it was a good alternative to cut that off there. However, at Waterproof, I don't know if you know that or not, but we used the relief wells in that area. That was one of the reasons why.

MR. MEYER: I have one other question. Danny, maybe you can answer this. So are you saying that your seepage berms from now on will be constructed like you showed where you save the top soil, pump in the sand, and replace it? Or is that just one method that will be used? Or will that be the standard?

MR. HARRISON: Colonel?

COL WRIGHT: Go ahead. It is one method, but I will let Danny explain it.

MR. HARRISON: There are several alternatives that we try to look at in the process of getting our seepage under control, and you know most of them. The idea of using the river sands is based on how far we can pump and how large the item is. Dredges are expensive to mobilize so that is what we get into. We have to weigh the cost of that item versus the cost of the normal or

seminormal--many things are not normal anymore, but that is what it comes down to is the cost item.

COL WRIGHT: Hopefully, later this year on the Mayersville side, you will see a relatively large, nearly 10 miles, of that same procedure that Danny just mentioned. As it turned out, it actually cost us less money than doing it the conventional method. It is very interesting the way it turned out, because we will use whatever is best for not only just for the river, the levee, the landowners, but also from an economic standpoint. That particular case, it is very close to the river, and we can pump relatively close. We do deviate from what we used to classify as our convention methods. As Moody mentioned, not every borrow pit looked like the one he depicted. There are some beautiful ones over here on this side of the river. We have designed those features into. So we are changing and using different techniques and saving money in a lot of cases.

Good questions. Who else? Yes, sir. Again, I ask you to state your name.

MR. FRANCIS LENSING: I am Francis Lensing from Lake Providence. My question is, have permanent plans to do this project been finalized? Because there is so much deficiency right here in our area. If they have been finalized, when is your projected completion date for the whole levee.

COL WRIGHT: I am going to let Kent Parrish respond to that because it is complex and there are various items as the Project Manager he controls--not only those items on the Louisiana side, but Mississippi and throughout the Vicksburg reach. Go ahead Kent.

MR. PARRISH: There are some 20 miles that are deficient right here in the Lake Providence area starting at the state line coming down below the Holly Brook Gin back in that loop. We are working on three of the reaches right now. One is right at the state line, Item 506. It is about 3.5 miles long. The next item down is Item 503. We would like to get that one underway in FY 99 provided funds are available to do that.

MR. LENSING: Where is that land at? Is it just below. . . immediately south of the other one?

MR. PARRISH: Immediately south of that one. Then you come down to the Item 501 that is under construction, been under construction for several years. We should finish that this summer. The item right below that between that item or right where you cross over into the Wilson Point loop levee, from there down to the sewage lagoon, we would like to let that item this fiscal year, this summer.

The two items here in Lake Providence have been surveyed. We have the borings on them, and we are designing them this year. That takes us down to the Holly Brook Gin. We are doing that item. We let that item last year. That leaves one item over behind Holly Brook into that Willow Point loop, I think that is what it is called. That is about a 3- or 4-mile loop around there that we have completed the surveys on, and we are starting the design on it. Depending on the funding, we don't know when we will actually let Item 485.

MR. LENSING: Is that down in the Sondheimer area. You said Willow Point down. . .

MR. HARRISON: No, it is above Transylvania.

MR. PARRISH: The deficiency is above Transylvania. Items 487, 485, and 480, we are in the process of designing those, but to give you a date on when we would award those and start construction just depends on the money that becomes available.

MR. LENSING: With the devastation that would occur if we did have a crevasse, I just. . . I guess all the stops are being pulled to do this as quickly as possible. I guess that is my concern.

MR. PARRISH: We are working every way we can to get it ready to be built. We have notified the Congressional interest. Mr. Minsky knows our plight. He has taken it to the State House in Louisiana. He has taken it to Washington to let your senators and congressmen know the situation, also. It just depends on the funding. As you well know, our funding for the MR&T project which funds this has decreased from $350 million a year to about $266 million a year. In FY 98, we have taken about a 40 percent cut in the construction funds. So it is quite serious about how many dollars we get to raise the levee.

COL WRIGHT: It goes without saying, but I will say it anyway, flood control is very important. The mainline levee raising in both the States of Louisiana and Mississippi, as well as Arkansas, is the number one project in this District. It always has been and will be until we finish this thing. But completion date--we have talked about the 20 miles right here, which is the most deficient. But as we get on out into 2- and 3-foot levee raises, and a bit of that is in Arkansas. Fortunately, their levees are a bit higher than they are down here. We are talking 2031 right now with the current funding restraints.

Granted, we have worked the most deficient reaches first. That is why we are working here as well as over at Mayersville on the

other side of the river. We will continue to work those most deficient reaches as we work, like I said, to the 2- and 3-foot level.

Reynold.

MR. MINSKY: I would like to say one thing, Francis. My going to Washington is one thing, but when you people, the grassroots, contact your congressmen and senators, it means a whole lot more than just me going to Washington. That is going to be necessary to get these projects funded and get the money back into the Corps budget this year, next year, and the following years to continue construction. We have the money to provide the rights-of-way. Now, all we need is for the Corps to continue construction. It is going to require going to Washington to get that done.

MR. LENSING: That is what my concern is, is there anything that we can be doing on a local level, more than what we are doing right now to make these funds available on a faster pace than it is getting done?

MR. MINSKY: Absolutely. Any contact you can make to your senators and congressmen.

COL WRIGHT: Okay, thank you. Good comment; good questions. I have to hear something from this half of the aisle over here. This is like church now. But I am going to continue. I won't preach. Any other questions? Yes, ma'am.

MS. CARL BONNER: I am almost afraid to ask this.

COL WRIGHT: Could I ask you. . .

MS. BONNER: Are the environmentalists going to be satisfied now with what the Corps is attempting to do? I mean the organizations that have been fighting all of this for so long?

COL WRIGHT: Those are stories or chapters yet to be written. They have received the documentation, and it is very detailed. It is nearly this thick, for those of you that haven't seen it. They are doing their analysis right now, between now and the 30th of April when the comment period closes.

We are certain we will receive inputs, suggestions, remarks. Not only from them, but other environmentalists and other Federal agencies. There are a lot of cooperating agencies that have gone into this study. The Corps doesn't do this individually, independently. It is a very cooperative effort. I certainly hope they do. If there are changes, I hope they are minor.

We have avoided and minimized as mentioned in the briefing. Moody said the 1976 EIS called for 11,400 acres of bottom-land

hardwoods. That has been reduced for 4,800 acres impacted, and that is throughout the basin. I will tell you that the report tells you that we are going to mitigate for that at 100 percent Federal expense. That was not in the 1976 report.

The mitigation for the 4,800 acres, as I recall in the report, is about 5,900 acres. Five thousand two hundred acres is right here in this District. So in reality, we are compensating for those losses. In the 1976 report, we were not doing that. I'll be very honest with you. That is why, I think, we were challenged on that. Hopefully, by agreeing to do that and working with them and not just putting it wherever we want to, but kind of packaging that mitigation to where, from an environmental standpoint as well as a landowners standpoint and folks that use not only the river but like to hunt and fish, whether we do a wetland habitat or whether we are trying to tie certain reaches of forested lands into the Tensas Basin on this side or whatever, we could design those features into. Ten years ago, we were not doing that. Is that enough? I certainly hope it is because we are going to spend a bit more money, as Moody indicated, doing this. What we do not want to do is stop this project. They have not stopped it. They have challenged it. They have allowed us to continue in the FY 97 and FY 98 construction. It depends on the outcome of the supplement that we are talking about this evening as to whether we will be allowed to continue work in FY 99 and on into the out-years. We will know more toward the end of April, yes, ma'am.

Yes, sir.

MR. MICHAEL BROWN: I am Michael Brown from Lake Providence. Could you explain in a little more detail about those relief wells? I understand there may be some in this area. The water that comes out, where it is going to, and go through a landowner. . .

COL WRIGHT: All right, Mr. Brown, you are right. I think there are 88 coming into this section over here. I will let Kent respond to that.

MR. BROWN: And where will they be located?

COL WRIGHT: All right, sir.

MR. PARRISH: Item 489 that is scheduled to be awarded this summer is right there as you cross north of the sewage lagoon. We have 88 relief wells scheduled. We will come in here, the contractor will, with a crane. He will take a solid steel pipe about 90 feet long. He will drive it in the ground and take all the soil out of that circle. He will put probably an 8-inch stainless steel pipe that has slots in it that the water can come through down into that pipe. He will fill the void around it with filter sand. Then he will pull the steel pipe, the big pipe

that he drove in. It is 18 inches in diameter. The little stainless steel pipe is just 8 inches. He will pull the big pipe out, and as the river rises, the water that comes under the levee that used to form as a sand boil will have a controlled outlet to the surface. We will increase the ditch size that carries the water away from the levee through your farms or local drainage there so we will not impact that.

It is really just a controlled outlet. It will just flow during high stages. We put in 185 of these down at Waterproof, Louisiana, the fall before last. I think the Fifth Louisiana Levee District had been spending on the average of $100,000 a year flood-fighting the sand boils. This past year, they spent practically nothing down there. So it is a great solution. Instead of taking 300 to 400 feet of your land along the toe of the levee to build that berm, it just takes about 60 feet. So they are right along the toe. You do have to have some collector ditches and improve the drainage away from the levee to carry that seep water off.

Relief wells, when you have seepage or sand boils, you have a certain amount of water any way. Relief wells do increase by one-third the amount of water that is coming under the levee at those controlled outlets. You do have a little more water, but we are taking that into consideration and measuring that into the design of the collector ditches.

MR. BROWN: Will they be located out in the field or on the berm or where will they be located?

MR. PARRISH: They will be located right on the toe of a berm or the levee. Just within about, I would say, about 20 or 25 feet of that toe, isn't that about right, Danny?

MR. HARRISON: Yes.

MR. BROWN: Up on the berm?

MR. PARRISH: No, sir, down in the field.

MR. BROWN: In the field?

MR. PARRISH: Right. It has to be down low enough so they will flow like the sand boil would have.

What you must remember is that we are protecting from what we call the Project Design Flood. No one here has ever seen a Project Design Flood. Just because you have not had seepage there before when you have had high stages, the subsurface

borings that we have done might indicate that we could have a problem there. In some cases, these wells could be as close as 50 feet apart. In other places, they may be as much as 250 feet apart, depending on the soil strata underneath the levee in that area. We will be doing extensive soil borings if we put in those wells to determine that spacing and how deep they would go.

COL WRIGHT: When most of us think of wells, we look in our back yards. These are not electric wells. These are pressure relief induced. They are very effective, the ones that we have used thus far. They cannot be used just anywhere and everywhere. It depends on the soil conditions, as Danny mentioned earlier. We have had very good luck with these. They don't flow year-round. It is only during the higher stages when you would normally get your sand boils is when you will actually see water flowing through these things. It is not a year-round event; therefore, the maintenance on those things is really spread out because they don't flow that often except during higher stages.

Good question, Mr. Brown.

I've only gotten one comment on this side of the aisle over here. If I have no further comments, many of us from the District are here this evening. We will be around for a while longer if you would like to come up and ask us something specifically individually. We will be glad to provide you the answer. If we cannot, we will get back to you.

I want to reemphasize the comment period is open until the 30th of April. If you wanted to say something tonight or if you want to submit something in writing, I will be glad to pass it on to the District who will include it as a part of the study and the analysis. We do get quite a bit through the mail. I encourage you to do that, if you choose. The closeout period is 30 April. If any of you want to drive to Natchez on the 30th or Baton Rouge on the 31st, you are welcome to do that, also. Again, I thank you for turning out tonight. I look forward to seeing you here in the next few months.

Hopefully, this year will be a better year than last year, and we won't be out riding the levees night and day and filling sandbags with 400 prisoners and Reynold's 13 able-bodied maintenance folks on this side of the river. It is coming up, it is going to pass as it does every year. The question is, just how much is it going to be this year. So far, it is too early to tell, right, Larry?

We are lower, certainly, this year than we were last year. But year before last, we are probably about where we were then, I don't know. Is that right?

MR. LARRY BANKS: We are just a few feet above average stage right now. We were at 38.4 this morning in Vicksburg. The river

is going to rise a few more feet, maybe a couple of feet with the bump that is coming down. We did get some pretty good rains up in the valley today with this system passing, but it shouldn't be anything to cause any significant problems.

The only concern that I have seen thus far is that this is an El Nino year, as most of you that farm and maybe have been trying to plant some crops are well aware. I see all the wet fields. If you plot up where we have been looking this year and the trend that we saw back in 1983, they look very similar. That was the last El Nino year we had. I am not trying to scare anybody, but making you aware of the facts.

COL WRIGHT: Larry would also like to plant a lot of corn this year south, I believe, of Interstate 20.

MR. BANKS: Cotton.

COL WRIGHT: So he would prefer it not be as wet as it was that particular year.

Again, I thank you for coming out tonight. Stick around if you would like and we will answer your questions.

Good night.

Meeting adjourned at 8 p.m.

LIST OF EXHIBITS

No. 1 - Notice of Public Meetings

No. 2 - Copy of Newsletter, February 1998

No. 3 - Statement from Mr. Reynold S. Minsky, President, Board of Commissioners, Fifth Louisiana Levee District, 19 March 1998

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
4155 CLAY STREET
VICKSBURG, MISSISSIPPI 39180-3435

REPLY TO
ATTENTION OF:

NOTICE OF PUBLIC MEETINGS
MISSISSIPPI RIVER AND TRIBUTARIES PROJECT,
MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT
MARCH 16-19 AND 30-31, 1998

The U.S. Army Corps of Engineers, Vicksburg, Memphis, and New Orleans Districts, have prepared a Draft Project Report and Draft Supplemental Environmental Impact Statement for the Mississippi River Mainline Levees Enlargement and Berm Construction feature of the Mississippi River and Tributaries Project. All planned work is located between Cape Girardeau, Missouri, and Head of Passes, Louisiana. The proposed improvements would provide the congressionally authorized level of protection from Mississippi River flooding by raising deficient levee sections and controlling underseepage.

This report will be reviewed by various Federal, state, and local agencies and other interested organizations. Copies of the Draft Project Report and Draft Supplemental Environmental Impact Statement will be on deposit March 3, 1998, in the following libraries:

Arkansas

Mississippi County Library System
200 North 5th
Blytheville, Arkansas 72315

Illinois

Cairo Public Library
1609 Washington Avenue
Cairo, Illinois 62914

Kentucky

Paducah Public Library
555 Washington Street
Paducah, Kentucky 42003-1735

Louisiana

Ascension Parish Public Library
500 Mississippi Street
Donaldsville, LA 70346-2535

East Baton Rouge Parish Library
7711 Goodwood Boulevard
Baton Rouge, LA 70806-7625

Ferriday/Concordia Parish Library
1609 Third Street
Ferriday, LA 71334-2298

Madison Parish Library
403 North Mulberry
Tallulah, LA 71282-3599

Exhibit 1

New Orleans Parish Library
219 Loyola
New Orleans, LA 70140-1016

State Library of Louisiana
Louisiana Section
760 North 3rd Street
Baton Rouge, LA 70802

Mississippi

Homochitto Valley Library Service
220 South Commerce
Natchez, Mississippi 39120

Warren County/Vicksburg Library
700 Veto Street
Vicksburg, MS 39180-3595

Carnegie Public Library
114 Delta Avenue
Clarksdale, Mississippi 38614

Washington County Library
341 Main Street
Greenville, Mississippi
38701-4097

Missouri

Cape Girardeau Public Library
711 North Clark
Cape Girardeau, MO 63701

Tennessee

McIvers Grant Public Library
204 North Mill Street
Dyersberg, TN 38024-4631

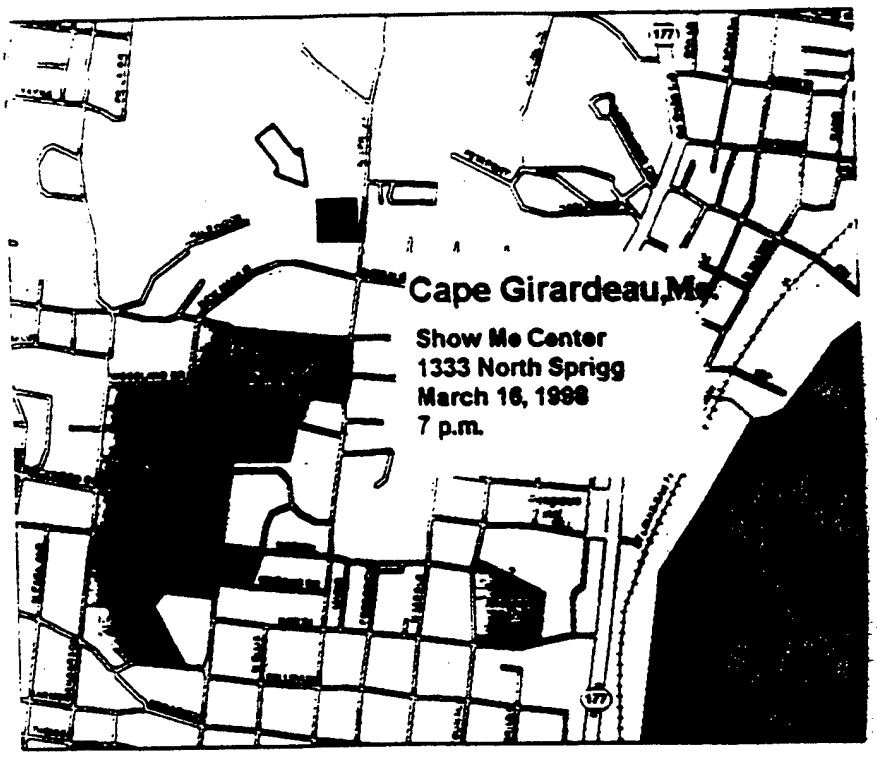
Memphis/Shelby County Public Library
1850 Peabody Avenue
Memphis, Tennessee 38104-4021

Newbern City Library
220 East Main
Nerbern, Tennessee 38059-1528

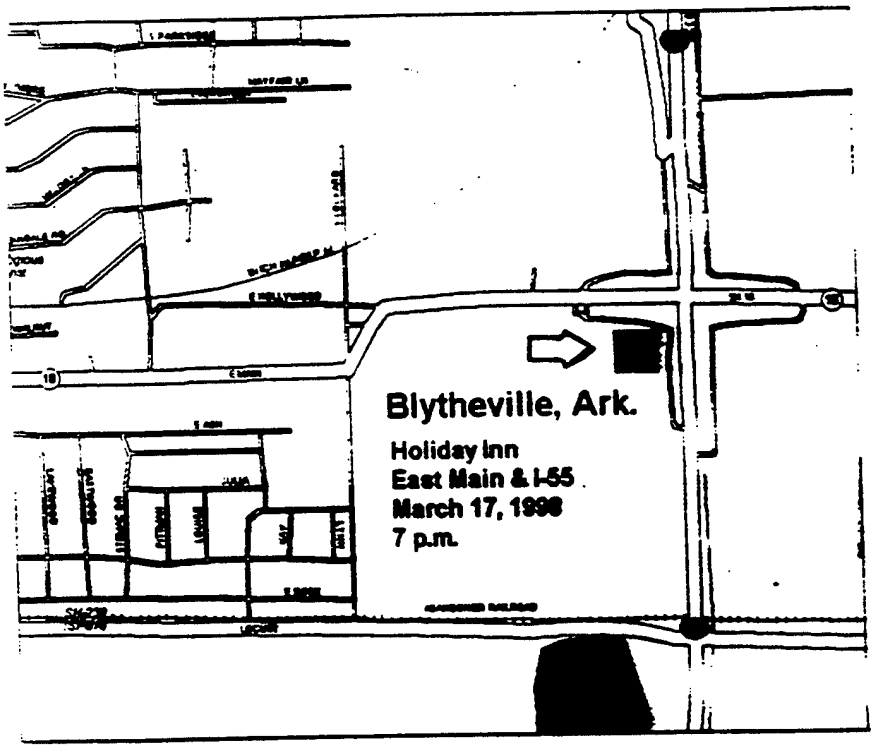
Tiptonville Public Library
126 Tipton Street
Tiptonville, TN 38079

To allow all interested individuals an opportunity to ask questions or express views, public meetings will be held in the locations shown below at 7 p.m. on the indicated dates:

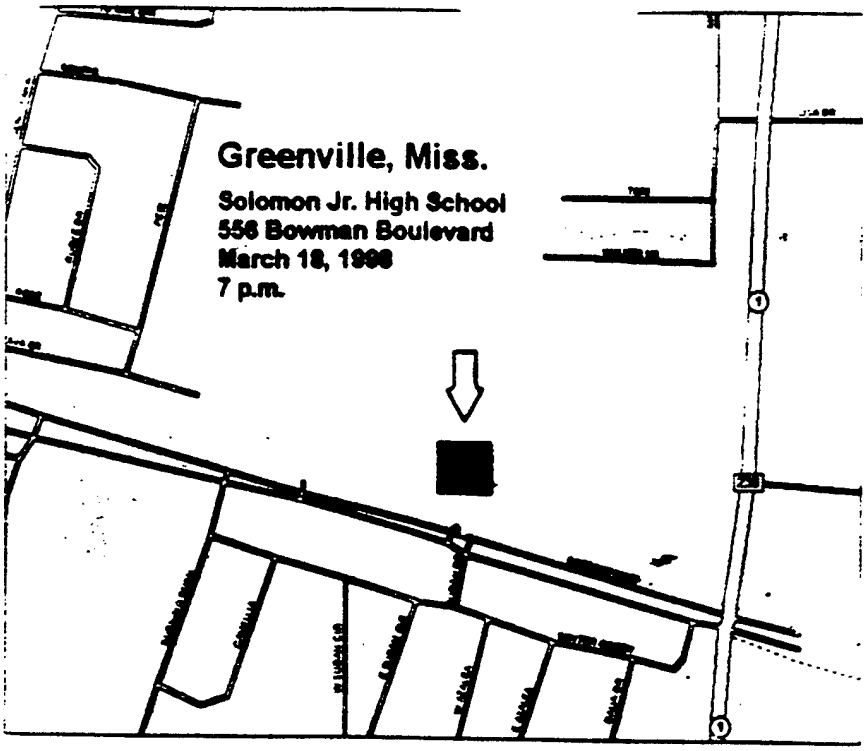
Monday, March 16, 1998
Show Me Center
1333 North Sprigg Street
Cape Girardeau, Missouri



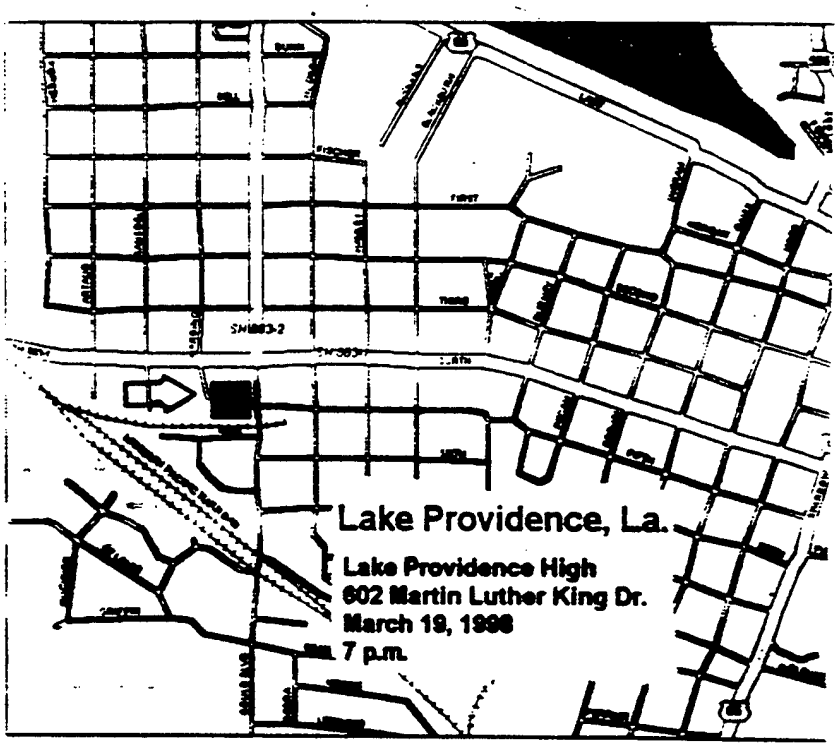
Tuesday, March 17, 1998
Holiday Inn
East Main & I-55
Blytheville, Arkansas



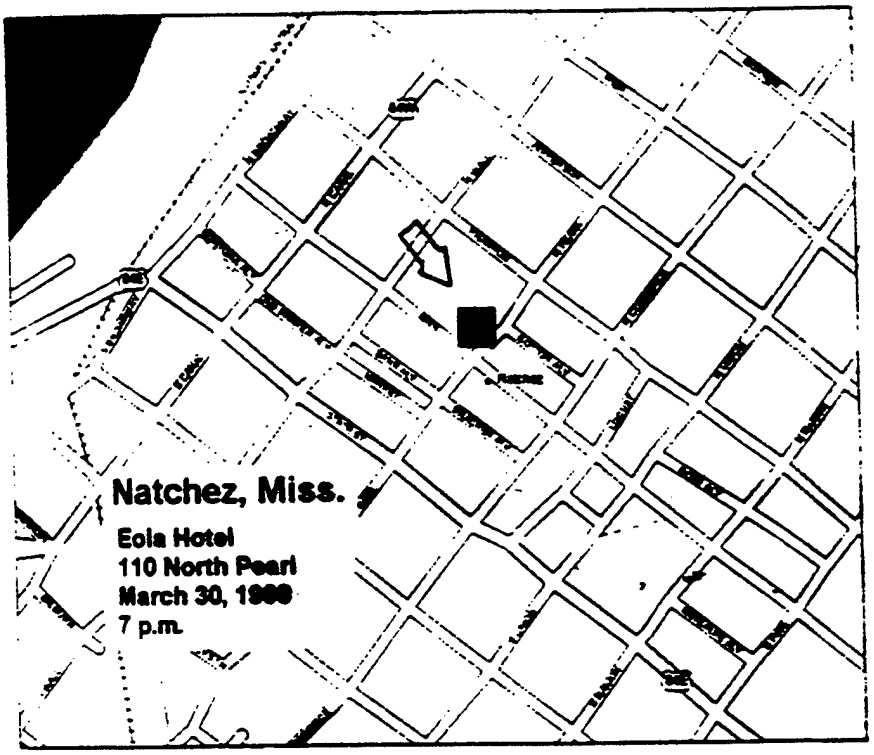
Wednesday, March 18, 1998
Solomon Jr. High School
556 Bowman Boulevard
Greenville, Mississippi



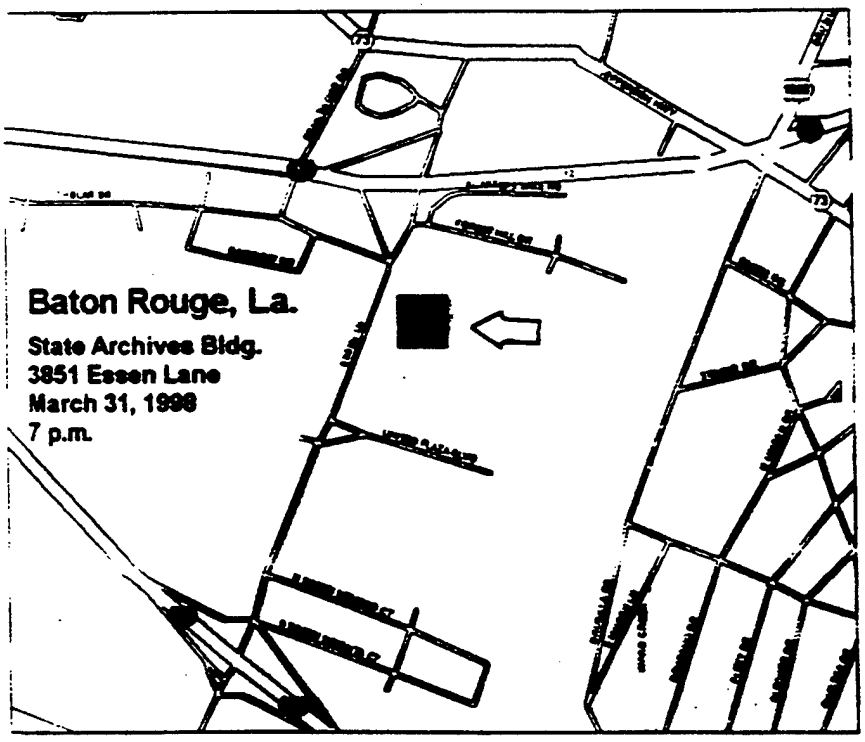
Thursday, March 19, 1998
Lake Providence High School
602 Martin Luther King Drive
Lake Providence, Louisiana



Monday, March 30, 1998
Eola Hotel
110 North Pearl
Natchez, Mississippi



Tuesday, March 31, 1998
State Archives Building
3851 Essen Lane
Baton Rouge, Louisiana



Information regarding evaluations conducted and project plan recommended will be presented. At the end of the formal presentation, oral statements may be made by the public, followed by a question-and-answer session. Written statements may be submitted at the meetings or mailed to the above address, ATTN: CEMVK-PD-F.

Proceedings of these meetings will be recorded, and summaries will be prepared and incorporated into the Project Report. Mailed statements must be received by April 30, 1998, to be included in the official record.

Gary W. Wright
Colonel, Corps of Engineers
District Engineer

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
4155 CLAY STREET
VICKSBURG, MISSISSIPPI 39180-3435

OFFICIAL BUSINESS
CEMVK-PD-F

NOTICE OF PUBLIC MEETINGS

US Army Corps
of Engineers

MISSISSIPPI RIVER & TRIBUTARIES PROJECT
MISSISSIPPI RIVER MAINLINE LEVEES
DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

US Army Corps
of Engineers
February 1998

Mississippi River & Tributaries Project
Mississippi River Mainline Levee
Enlargement & Berm Construction Project
Supplemental Environmental Impact Statement

NEWSLETTER

Comments On Levee Enlargement Program

Maj. Gen. Anderson:

"A Strong Environmental Ethic Is Part Of How We Conduct Our Business"

"Our commitment is to have an environmentally sustainable project," Maj. Gen. Phillip R. Anderson, commander of the Mississippi Valley Division, U.S. Army Corps of Engineers, said in a special Newsletter interview. "Simply put, we must balance environmental and economic development concerns and we fully intend to do this."

The general, who also is president of the Mississippi River Commission, made his comment regarding an update study being conducted in relation to an ongoing enlargement program for Mississippi River mainline levees.

The Memphis, Vicksburg and New Orleans Districts of the Corps of Engineers are currently preparing a supplement to the 1976 Environmental Impact Statement that includes the mainline Mississippi River levee project. The Supplemental Environmental Impact Statement (SEIS) will describe the effects of enlarging sections of the mainline levees on environmental resources and fish and wildlife habitat of the Mississippi River floodplain. The SEIS is based on an extensive reevaluation of remaining levee work to ensure that all environmental requirements are met and that negative impacts are avoided, minimized or compensated.

The reevaluation of the environmental impact of mainline levees, berms and seepage construction will ensure that current and remaining projects meet environmental requirements.

"Environmental aspects have equal standing with economics and engineering," Anderson said. "A strong environmental ethic is part of how we conduct our business. Sustaining our environment is a necessary part of building and securing our nation."

Maj. Gen. Phillip R. Anderson

Long-Term Project Triggered by 1927 Flood

A disastrous flood caused by levee failure in 1927 led Congress to create the Mississippi Rivers & Tributaries Act. The act set in motion a long-term project where 1,600 miles of levees from Cape Girardeau, Mo., to the Gulf of Mexico, would be brought to proper height and grade to handle a "Project Flood."

The Project Flood is a model of the worst flood that could be predicted, based on past flooding and waterflow levels. Based on current funding levels, all of the MR&T levees are scheduled to be upgraded and made capable of handling the Project Flood by the year 2031.

There are about 280 miles of mainline levees which are still below height

and grade and are scheduled for improvements. Since improvements primarily involve using soil near project sites or "borrow" material, the major focus is on protecting bottomland hardwoods in borrow areas.

MR&T Project Returns $18 For Each $1 Spent

"The nation has invested almost $10 billion to date to plan, design, construct, operate and maintain the MR&T project, and savings through flood damage prevention have totaled more than $182 billion, a return of $18 for each $1 spent," Anderson said.

He added, "The Mississippi River's levees protect over 4.5 million people, or about 1.5 million households whose residences are valued at $114 billion.

"Further, an estimated 33,000 farms and farm buildings valued at $13 billion also are protected by the levees, and the earning power of people living and working in the 49,000 square miles impacted by the levees totals $64 billion annually."

General Anderson also noted that the Mississippi and its tributaries drain 41 percent of the contiguous United States, touching 31 states and Canada and encompassing more than 1.2 million square miles.

The river also forms the Mississippi Flyway, the nation's most important route for millions of annually migrating waterfowl.

Endangered Species, Fish, Waterfowl & Wildlife Habitat Included In Study

"While the focus of the SEIS is on bottomland hardwood wetlands, it also includes impacts on all areas of the environment, such as endangered species, terrestrial, aquatic and waterfowl resources.

"The SEIS will ensure that environmental impacts of the project are avoided, minimized or compensated and also ensure that the Corps is in compliance with the National Environmental Policy Act (NEPA)," Anderson said.

SITES & DATES SET FOR PUBLIC MEETINGS

Six sites in four states have been chosen for public meetings in March 1998 to receive comments on the draft Supplemental Environmental Impact Statement (SEIS).

The sites and dates:

Meetings Begin In Missouri On March 16

Monday, March 16, 1998 at the Show Me Center, 1333 North Sprigg Street, **Cape Girardeau, Mo**; March 17, 1998 at the Holiday Inn, East Main & I-55, **Blytheville, Ark.**; Wednesday, March 18, 1998, at the Solomon Junior High School, 556 Bowman Boulevard, **Greenvile, Miss.**; Thursday, March 19, 1998, at the Lake Providence High School, 602 Martin Luther King Drive, **Lake Providence, La.**; Monday, March 30, 1998, at the Eola Hotel, 110 North Pearl, **Natchez, Miss.**, and Tuesday, March 31, 1998, at the State Archives Building, 3851 Essen Lane, **Baton Rouge, La.**

The meetings are open to the public and will begin at 7 p.m.

The Corps of Engineers will make an audio-visual presentation of the report's contents. Biologists, engineers, and other specialists also will explain the development and implementation of evaluation methods that led to the draft report and its findings.

After the public meetings, there will be a 30-day period for written public responses, which will be included in a final report that is due to be completed in October.

Accompanying maps show the location of the meeting sites for persons wishing to attend.

Commonly Used Corps Terms That Could Use Some Explaining ...

Everybody does it, not just the Corps of Engineers. And that's the practice of using words in everyday conversation that is unique to a profession or trade. It's sort of like when you were in school, the teacher asked you to define a word, and you tried hard not to use the word itself in your explanation, even though that was the best word that could be used to answer the question!

Use Same Language For Better Understanding

So, if you are having a conversation about rivers and levees and the Supplemental Environmental Impact Statement with someone from the Corps,

here's some help to understand words they use every day but you probably don't:

GIS – Geographic Information Systems. An information-gathering process where a database of related information is developed and analyzed for a specific site. For example, economic, environmental, population, agricultural, industrial, etc., data for a three-mile stretch of land alongside a river.

Delineation – A process which identifies and classifies specific areas. For example, field scientists will make a delineation that determines the boundaries of a wetland in an agricultural area.

Ground Truthing – The act of personal, on-site examination of an area to determine the accuracy of previous delineations by some other means, such as aerial photography.

Sand Boil – That's where high water has seeped under a levee and is coming to the surface on the land side carrying sands and silts from beneath the levee. Sandbags are placed around the emerging water to form control rings which allows the water to keep flowing while sediments remain in place.

Water Seeping Under Levee Is Expected

Underseepage – A naturally occurring process where river water seeps under a levee to its land side. The seepage is not a danger to the levee if controlled properly.

Slurry Cutoff – An earth excavation method used to provide a positive underseepage cutoff at the riverside toe of the levee.

Berm – A blanket of earth built where the levee meets normal terrain on its land side. The berm provides added weight and safely forces the exit of underseepage further away from the levee. There are two types: seepage and stability. Stability berms are built to reinforce areas along the levee.

Plantation – No, it's not an old Southern cotton farm. Biologists generally use this term when referring to a large cluster of same species trees purposely planted in a specific area, such as "a plantation of cottonwood."

"Borrow Pits" Or "Bar Pits?"

Borrow Area – Sometimes called "borrow pits," or "bar pits." It's where earthen material was excavated and then used for levee construction. Older borrow areas have naturally developed into prime hunting and fishing areas.

Project Flood – A theoretical flood projected from data of past floods. It is the largest flood that has a reasonable probability of occurrence and it is the standard for which levee heights are determined.

Avoid and Minimize – The Corps environmental policy: Avoid any environmental loss. If unavoidable, minimize the loss. And compensate any loss so that there will be no net loss.

Relief Well – Pretty much like it says. A well device next to a levee to provide relief by collecting seepage and routing it away from the area and into a natural drainage system. These are often used in lieu of berms.

Commonly Used Term Has French Origin

Batture – A French term applied to land between a levee and the river. Commonly used along the Mississippi from Louisiana northward.

Cultural Resources – Generally used to define meaningful archaeological finds, such as Indian mounds, historical artifacts, early settlement sites, sunken paddlewheelers, etc.

Crevasse - An area where a levee fails from prolonged pressure and the river rushes through into an area it's not supposed to go. As the river rushes through the levee's gap, it erodes soil away and the crevasse quickly widens until the pressure is equalized.

Interagency – Any interaction of two or more government agencies. On environmental issues, for example, the Corps of Engineers working with the U.S. Fish and Wildlife Service and the Environmental Protection Agency on a single project.

Terrestrials – Generally refers to forested habitat and animals that depend on this habitat.

Area Valuable For Birds Visiting Temporarily

Neotropical Migrants – Birds that are not permanent residents but spend part of their time in Southern areas as part of their annual migration.

Aquatics – Generally refers to fish and their habitat that are found in borrow area.

Arkansan Feels Pinched By Programs

(Editors Note: The following is written by Ms. Laura Busby of Marion, Ark., whose family farms land near the Mississippi River.

Make Repairs And Completion A National Priority

The Mississippi River has a mind of its own and without the discipline of a well-planned levee system would, without a doubt, take many thousands of lives and destroy the largest and most efficient agricultural economy in the world.

The immediate resumption of repairs and the completion of levee-raising projects under the Mississippi Rivers & Tributaries project should be a national priority. The projects need to be completed as soon as possible because they protect the safety of all people who live near the river. Most importantly, the river is the artery that feeds the heart of the United States.

It is not, as some say, better to let the river run free and return to a wilderness state as it appeared when Columbus discovered America.

I am an American farmer and I want my government to take a second look at the motive and interests of organized environmental groups whose legal actions have impacted levee-raising projects. I believe that, as a nation, those of us who farm lands alongside the river must be the first to be considered.

EPA And Other Agency Regulations Govern Land Use

As a farmer in east Arkansas, laws and regulations regulating levees are not the only government programs affecting us. For example, we now must deal with a new agenda called "Sustainable America" created by presidential order and turned over to Vice President Gore to administer. We have a number of reasons to be concerned as we see implementation of programs that have been developed mainly by appointees of this administration and a very select group of environmentalists. In addition to local and federal laws and regulations governing my family's land bordering the river and new regulations developing from Sustainable America, we also are impacted by regulations issued by other government agencies, such as the Environmental Protection Agency.

All these groups trying to tell us how to take care of our land makes me wish that everybody would simply take a few minutes and ask themselves who most benefits from the land and, therefore, who knows better how to take care of it? It's simple, the farmer. And what I see is pretty clear: if the levee enlargement program is not completed, America's citizens, their property, agriculture-producing capability, wildlife and domestic animal life could suffer tragic and perhaps permanent damage.

Levees Constantly Evolving Like the River

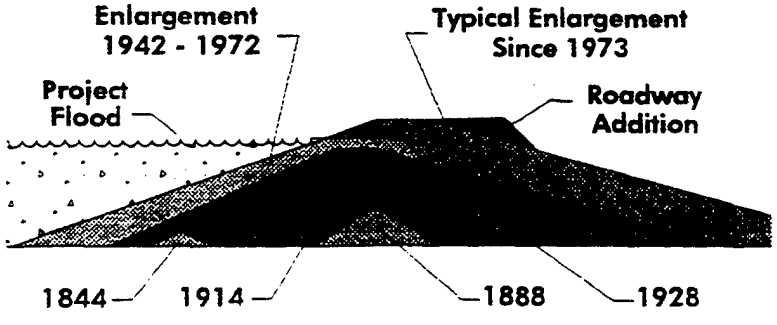
1,610 Miles of Levees Protect People, Cities, Animals & Property

The levees that keep the Mississippi River in check today are quite different from the first one built in the late 1700s to protect New Orleans.

That first levee was three feet high, 5,400 in length and 18 feet wide at its top. Today, there are 1,610 miles of levees from Cape Girardeau, Mo., to the Gulf of Mexico protecting people, cities, towns, farms, domestic animals, and property. And a typical levee today might be 20 to 25 feet high, 10 feet wide without a roadway and 25 feet wide with a roadway at the top.

The illustration below shows how levees have evolved.

EVOLUTION OF MISSISSIPPI RIVER LEVEES



SEIS Study Information Now At 18 Libraries

Mississippi, Louisiana And Tennessee Libraries Added

Three new public libraries have been added as sites for display of public documents related to the Supplemental Environmental Impact Statement (SEIS) being prepared for the Army Corps of Engineers' mainline levee-raising and enlargement project.

They are: **Carnegie Public Library,** 114 Delta Avenue, Clarksdale, MS 38614, 601-624-4461; **State Library of Louisiana,** Louisiana Section, 760 North Third Street, Baton Rouge, LA 70802, 601-342-4914, and **Tiptonville Public Library,** 126 Tipton Street, Tiptonville, TN 38079, 901-253-7391.

Fifteen other libraries already are serving as public document repositories. They are:

ARKANSAS:
Mississippi County Library System
200 North 5th
Blytheville, AR 72315
501-762-2431

KENTUCKY:
Paducah Public Library
555 Washington Street
Paducah, KY 42003-1735
502-442-2510

MISSISSIPPI:
Homochitto Valley Library Service
220 South Commerce
Natchez, MS 39120
601-445-8862

Warren County/Vicksburg Library
700 Veto Street
Vicksburg, MS 39180-3595
601-636-6411

Washington County Library
341 Main Street
Greenville, MS 38701-4097
601-335-2331

TENNESSEE:
McIvers Grant Public Library
204 North Mill Street
Dyersberg, TN 38024-4631
901-285-5032

Memphis/Shelby County Public Library
1850 Peabody Avenue
Memphis, TN 38104-4021
901-725-8853

Newbern City Library
220 East Main
Newbern, TN 38059-1528
901-627-3153

ILLINOIS:
Cairo Public Library
1609 Washington Avenue
Cairo, IL 62914
618-734-1840

LOUISIANA:
Ascension Parish Public Library
500 Mississippi Street
Donaldsonville, LA 70346-2535
504-473-8052

E. Baton Rouge Parish Library
7711 Goodwood Boulevard
Baton Rouge, LA 70806-7625
504-231-3700

Ferriday/Concordia Library
1609 Third Street
Ferriday, LA 71334-2298
318-757-3550

Madison Parish Library
403 North Mulberry
Tallulah, LA 71282-3599
318-574-4308

New Orleans Public Library
219 Loyola
New Orleans, LA 70140-1016
504-596-2602

MISSOURI:
Cape Girardeau Public Library
711 North Clark
Cape Girardeau, MO 63701
314-334-5279

District-At-A-Glance:

MEMPHIS TERRITORY TOUCHES SIX STATES

25,000 Square Miles Under District Domain

The Memphis District of the U.S. Corps of Engineers includes almost 25,000 square miles of the Lower Mississippi Valley and encompasses parts of Mississippi, Tennessee, Arkansas, Missouri, Illinois and Kentucky.

The District's major missions include inland navigation, flood control,

environmental protection and restoration, and emergency response.

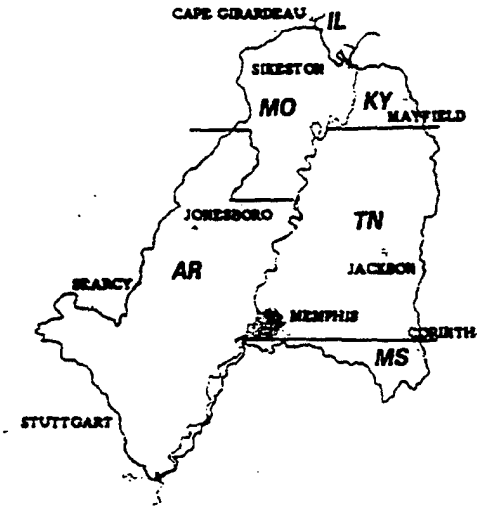
Memphis is responsible for maintaining and improving 255 miles of the Mississippi River's main channel from Cairo, Ill., to the mouth of the White River in Arkansas.

Maintains 640 Miles Of Levees, 8 Inland Harbors, 254 Miles Of Navigation

A total of 640 miles of mainline levees along the Mississippi River and its tributaries, eight inland harbors and 254 miles of navigation on the White River also is maintained by Memphis.

The District, the people of the Mid-South and many non-Federal partners have enjoyed a mutually beneficial relationship for over a century. Each year, the District circulates about $117 million in the community, including $40 million in construction projects and $50 million to vendors for operations and maintenance items.

From 1993 to 1996, flood control efforts by the Memphis District have saved American taxpayers over $4 billion. And during the same period, the Memphis Corps protected hundreds of communities, thousands of homes and businesses and millions of acres of farmland from flood damage.



District Territory

Public Affairs Office Offers Assistance

For more information, the Memphis District Public Affairs Office is located at 167 North Main Street, Room B-202, Memphis, TN 38103-1894, Telephone 901-544-3348, and FAX 901-544-3786. Or check out the district website on the internet: www.lmm.usace.army.mil

(Next: the Vicksburg District)

Internet Carries Newsletter, Other Information

The Newsletter is not the only way you can stay informed about the Supplemental Environmental Impact Statement, Mississippi River Mainline Levee project and other Corps of Engineers projects. You also can check the World Wide Web.

Internet users can get the latest information on the Supplemental Environmental Impact Statement study, and other information about the Corps of Engineers by checking the internet web site of its Vicksburg District:

www.mvk.usace.army.mil

The site will contain the Newsletter and other SEIS information that will be periodically updated until the study's final results are released in the Fall of 1998.

You also can check out happenings in the Memphis District at **www.mvm.usace.army.mil** and do the same for the New Orleans District at www.mvn.usace.army.mil.

FOR FURTHER INFORMATION ...

Here are telephone numbers of U.S. Army Corps of Engineers' project/technical managers for the Mississippi River Mainline Levees' project who can provide assistance to the public or answer specific questions from concerned parties:

Persons To Contact At New Orleans, Vicksburg, Memphis

Kent Parrish, Vicksburg District, 601-631-5006
Moody Culpepper, Vicksburg District, 601-631-5962
Billy Dycus, Memphis District, 901-544-3455
Robert Campos, New Orleans District, 504-862-2998

COMMENTS?

Editors Note: If you have a statement you would like to make regarding the Supplemental Environmental Impact Statement project, or a comment you would like to be presented in the Newsletter, please include the following information and mail your statement to: Moody Culpepper, U.S. Army Corps of Engineers, 4155 Clay Street, Vicksburg, MS 30180-3435.

Name_____ Tel. No. ( )_____
Address_____

City/State_____ ZIP_____

Comments (Or, if more space is needed, include on a separate sheet):

Privacy Act Statement:

In accordance with the Privacy Act of 1974 (Authority 8: Chapter 5, ER 1105-2-100), routine uses of the information obtained from this form include compiling official mailing lists for future informational publications and recording additional views and public participation in studies.

STATEMENT BY: REYNOLD S. MINSKY, PRESIDENT
BOARD OF COMMISSIONERS
FIFTH LOUISIANA LEVEE DISTRICT
222 NORTH CEDAR STREET
TALLULAH, LA 71282

AT: PUBLIC MEETING FOR DRAFTING
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT
MISSISSIPPI RIVER MAINLINE LEVEE ENLARGEMENT
MARCH 19, 1998
LAKE PROVIDENCE, LA

At 43 feet on the Vicksburg River gauge, the Mississippi River is full and begins to overflow its banks. In 1927, the Vicksburg River gauge recorded a peak river stage of 56.2 feet. That was with the mainline Mississippi River Levee overtopped and broken in several places.

In the nine years that followed the great flood of 1927, the River exceeded flood stage a total of six years, twice in excess of 51 feet. In 1937 the Mississippi River crested at 53.2 feet.

Then Old Man River rested for the next 36 years, staying below 36 feet, and exceeding 45 feet only once during that span of time.

That rest ended in 1973 with a crest at 51.6 feet which held for three days. River stages remained above bankfull for 83 days. Emergency procedures, which included six-foot walls of sandbags in lower reaches of the levee, contained a raging force that would have brought devastation to Louisiana. The Fifth Louisiana Levee District fought rising waters along the 214 miles of mainline Levee, constructing temporary raises along 96 miles in order to protect Louisiana citizens from a catastrophic event.

Since 1973 the Mississippi River has exceeded flood stage on the Vicksburg gauge a total of 11 times. Six of these in the last seven years. Every year since 1991, with the exception of 1992, the Mississippi River has overflowed its banks in Louisiana.

History hasn't recorded much about March and April of 1997 regarding the Mississippi River, although the Mississippi reached record heights on the Vicksburg gauge. That's because the Levee System in the Fifth Louisiana Levee District prevented the results that would have made history.

On March 23, 1997 the Mississippi River crested at 49.1 feet at Vicksburg, where it held for several days. Ultimately, record stages were recorded at gauges in the lower end of the Fifth Levee District. At its peak in 1997, the Mississippi River consumed 1,340,000 acres in Louisiana, and a total of 3,490,000 acres in Louisiana, Mississippi, and Arkansas combined.

Employees of the Fifth Louisiana Levee District and Tensas Basin Levee District, personnel from the Vicksburg District, Corp of Engineers, guardsmen working under the direction of the State Office of Emergency Preparedness, agents from Louisiana Department of Wildlife and Fisheries, along with Sheriffs and deputies from within the Fifth Levee District patrolled 255 miles of mainline Mississippi River Levee and 93 miles of backwater levee in Concordia parish 24 hours a day, identifying sandboils and seepage areas. With the assistance of approximately 400 prisoners, Levee District and Corp personnel bagged and placed approximately 200,000 bags of sand essential to containing boils that sought to undermine the mainline Levee.

Without the combined effort of all agencies involved in this flood fight, spring of 1997 would probably be indelibly recorded in our minds and history books.

Expenses incurred by the Fifth Louisiana Levee District alone, just to keep the River from coming under the Levee, totaled well over $100,000.00. The bottom line cost to all agencies is unknown, but those numbers are not the ones that are important. The important numbers are those in lives and property saved. Saved because they were never threatened, thanks to a levee system that held back waters of the largest River in North America, waters collected from 29 states and portions of Canada.

But what about this spring? Or next year? Or the one after that? With each rise and fall of the mighty Mississippi, we edge our way closer to the inevitable, the "flood of the century." Closer to the rise our levees are not prepared to contain.

That is why we must continue, and ultimately complete, all Mainline Levee Enlargement projects as designed under the Mississippi River and Tributaries Project.

We must support and continue these projects because levee enlargement projects are about flood control, and flood control is about people. People, their homes, and their business, must come first.

If the Mississippi River were to overtop the mainline levee today, in all probability it would be at a location immediately north of Lake Providence, Louisiana. There the weakest link in the Fifth District's levee chain, the section with the greatest deficiency in height, stretches north to the Arkansas line.

Should that happen, within six (6) hours, the town of Lake Providence will be virtually washed away. Eastward and south to the Tensas-Concordia parish line, approximately 1,824,000 acres and 25,000 homes would be flooded. There would be 75,000 people displaced and 1,105 miles of major public road impassable. Dollar estimates are placed at $1.3 billion. Damages in Concordia and Catahoula parishes and southward could easily double these figures. Damage from flooding will occur all the way to the Gulf of Mexico.

Life as we know it in the Louisiana Delta would be changed forever. Lives and livelihoods cannot be restored with emergency measures or dollars.

We urge the Vicksburg District, Corp of Engineers, and any and all officials with authority to make these decisions, to proceed immediately with proposed plans to heighten and enlarge the levees in the Fifth Levee District. In doing so, Corps officials must remember that the Fifth Levee District must furnish rights-of-way for proposed enlargement projects. To use lands from the protected side of the levee, more expensive lands, will ultimately cost the taxpayers of Louisiana. We support conservation measures but we do not support unreasonable cost increases just to avoid clearing any bottomland hardwoods. We support the use of riverside borrow areas and any area already under the control of the Levee Board.

The Levee Board will do whatever it can within its limited resources to give the best protection to the greatest numbers. We have no alternative but make cost of rights-of-way a determining factor in when rights-of-way can be provided.

The Board of Commissioners for the Fifth Louisiana Levee District is in full agreement with the concept of protecting and preserving the environment, but we must consider the question of protection for lives and property to be the number one priority. To do that, flood control efforts in the form of levee enlargement projects must remain a top priority.

For the Fifth Louisiana Levee District, our top priority is flood control, as soon as possible, at reasonable costs.

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI 39180

Public Meeting
on
Mississippi River and Tributaries Project,
Mississippi River Mainline Levees
Enlargement and Seepage Control

Eola Hotel
Natchez, Mississippi
30 March 1998

PRESENT:

CORPS OF ENGINEERS:

Vicksburg District:

LTC John Jones, Deputy District Engineer
Mr. Bill Hobgood, Planning Division
Mr. Dan Johnson, Planning Division
Mr. Moody Culpepper, Planning Division
Mr. Gary Young, Planning Division
Mr. Wendell King, Planning Division
Mr. Stoney Burke, Planning Division
Mr. Kent Parrish, Programs and Project Management Division
Ms. Cheryl Hines, Programs and Project Management Division
Ms. Myra Dean, Planning Division
Ms. Jeannine Beatty, Planning Division
Mr. Jim Merritt, Office of Counsel
Mr. Larry Banks, Engineering Division
Mr. Robert Simrall, Programs and Project Management Division
Mr. Bobby Fleming, Engineering Division
Mr. Michael Logue, Public Affairs Office
Mr. Larry Harper, Operations Division
Mr. Jerry McDonald, Operations Division, Vidalia Area Office

Mississippi Valley Division:

Ms. Susan Hampton, CEMVD-ET-CR

ALSO PRESENT:

Mr. Robert Ewing, WMIS Radio, 20 E. Franklin Street, Natchez, Mississippi 39120
Mr. Chris Ingram, Geo-Marine, Inc., 7602 GSRI Avenue, Baton Rouge, Louisiana 70820
Mr. Curtis James, U.S. Fish and Wildlife Service, 2524 South Frontage Road, Vicksburg, Mississippi 39180
Mr. Aubrey Logan, 707 Main Street, Natchez, Mississippi 39120
Mr. Barry L. Maxwell, Fifth Louisiana Levee District, 222 N. Cedar Street, Tallulah, Louisiana 71282

Mr. Gerald Miller, Environmental Protection Agency, 61 Forsyth Street, Atlanta, Georgia 30303
Mr. Lane Morse, Bunge Corporation, P.O. Box 549, Vidalia, Louisiana 71373
Mr. Patrick R. Murphy, Natchez Adams County Port, P.O. Box 925, Natchez, Mississippi 39121
Mr. H. I. Stahlman III, Stahlman Company, 199 U.S. 61 South, Natchez, Mississippi 39120
Mr. Arthur E. Swanson, Jr., 607 Ferriday Drive, Ridgecrest, Louisiana 71334

Mr. Dwayne Templet, Geo-Marine, Inc., 7602 GSRI Avenue, Baton Rouge, Louisiana 70820
Mr. Randy Ward, 1487 Highway 568, Ferriday, Louisiana 71334
Ms. Emily Whitten, Natchez Democrat, 503 N. Canal Street, Natchez, Mississippi 39120

LTC JOHN JONES: Good evening. I am LTC John Jones, Deputy Commander of the Vicksburg District, U.S. Army Corps of Engineers. I welcome you to the fifth in a series of six public meetings that the U.S. Army Corps of Engineers in hosting this month regarding the Mississippi River Levees Enlargement and Seepage Control Project.

Tonight, we are continuing the public coordination process for the draft Project Report, draft Supplemental Environmental Impact Statement (SEIS), and supporting technical appendixes. Last month, we distributed the draft documents for public review.

At tonight's meeting, we will summarize our study findings, then give you the opportunity to make any statements you may have. Then we will entertain any questions that you may have. If we cannot answer those questions tonight, we will ensure that you get an answer.

If you wish to make a statement, please so indicate on the white card. The white cards are back there on the table. If you did not fill out a card, just raise your hand and we will make sure you get one. Also, if you would like to get on our mailing list, you can fill out one of these cards and we will make sure that any information that gets sent out gets sent to you.

For example, we do have a quarterly newsletter. This is the last one that we sent to you. We have some extra copies if you would like to take one tonight. If you want to get future newsletters, let us know.

I would like to just take a moment to introduce some of our technical specialists that we brought here tonight. They are seated here to my right at the head table. First, Mr. Moody Culpepper, he is our Study Manager, Vicksburg District. To his right is Kent Parrish, who is the Project Manager for this project. He is also out of Vicksburg. In fact, they are all out of the Vicksburg District. To his right is Gary Young, our Biologist; Larry Banks, Chief of Hydraulics; and Bobby Fleming, Chief of Design.

I would like to ask Moody Culpepper, who is our Study Manager, to now come up and make a slide presentation summarizing the findings of our study.

MR. MOODY CULPEPPER: Thank you, LTC Jones.

SLIDE 1 - INTRODUCTION

TONIGHT WE ARE HERE TO DISCUSS THE FINDINGS OF STUDIES CONDUCTED FOR THE DRAFT MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT AND SEEPAGE CONTROL PROJECT REPORT AND DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT. THIS IS A JOINT EFFORT OF THE U.S. ARMY CORPS OF ENGINEERS, MEMPHIS, VICKSBURG, AND NEW ORLEANS DISTRICTS, CONDUCTED WITH THE OVERSIGHT OF THE MISSISSIPPI RIVER COMMISSION. VICKSBURG WAS DESIGNATED AS THE LEAD DISTRICT IN THE CONDUCT OF THE STUDIES. WE SOLICIT YOUR COMMENTS ON THE PLAN OF IMPROVEMENT THAT IS BEING PROPOSED.

SLIDE 2 - PROJECT AREA

THE MR&T PROJECT IN THE ALLUVIAL VALLEY BETWEEN CAPE GIRARDEAU, MISSOURI, AND HEAD OF PASSES, LOUISIANA, PROVIDES PROTECTION FROM FLOODS BY MEANS OF VARIOUS STRUCTURAL MEASURES. THE MISSISSIPPI RIVER MAINLINE LEVEES FEATURE--THE SUBJECT OF THESE INVESTIGATIONS--HAS BEEN UNDER CONSTRUCTION SINCE 1928.

THE MISSISSIPPI RIVER LEVEES AND CHANNEL IMPROVEMENT EIS WAS FILED WITH THE COUNCIL ON ENVIRONMENTAL QUALITY IN APRIL 1976. THIS EIS IS BEING SUPPLEMENTED TO COVER CONSTRUCTION OF ALL REMAINING MISSISSIPPI RIVER MAINLINE LEVEES AND SEEPAGE CONTROL.

THE PROJECT AREA EXTENDS 600 MILES FROM CAPE GIRARDEAU TO HEAD OF PASSES AT THE GULF OF MEXICO. THE PROJECT AREA WIDTH INCLUDES THE LEVEES, ALL LANDS RIVERSIDE OF THE LEVEES, AND A STRIP 3,000 FEET LANDSIDE OF THE LEVEES. THE PROJECT AREA IS COMPRISED OF PARTS OF SEVEN STATES--MISSOURI, ILLINOIS, TENNESSEE, KENTUCKY, ARKANSAS, MISSISSIPPI, AND LOUISIANA.

WE HAVE THE CAPABILITY TO COMPLETE THIS PROJECT IN THE YEAR 2020. UPON COMPLETION, APPROXIMATELY 35,000 SQUARE MILES OF THE

ALLUVIAL VALLEY WILL BE PROTECTED FROM THE PROJECT DESIGN FLOOD--OR "P D F"--A HYPOTHETICAL FLOOD EVENT DEFINED AS THE GREATEST FLOOD HAVING A REASONABLE PROBABILITY OF OCCURRENCE. OUT OF 1,610 MILES OF MISSISSIPPI RIVER MAINLINE LEVEES, THERE REMAINS APPROXIMATELY 262 MILES THAT ARE 2 TO 8 FEET BELOW THE HEIGHT REQUIRED TO SAFELY PASS THE PDF.

SLIDE 3 - PROJECT SIGNIFICANCE

THE MISSISSIPPI RIVER FUNNELS 41 PERCENT OF THE CONTINENTAL UNITED STATES DRAINAGE. . . RUNOFF FROM ALL OR PARTS OF 31 STATES AND 2 CANADIAN PROVINCES TO THE GULF OF MEXICO. THE MISSISSIPPI RIVER LEVEES PROTECT MILLIONS OF RESIDENTS AND A MULTIBILLION DOLLAR, HIGHLY DEVELOPED AGRICULTURAL AREA.

SLIDE 4 - SIGNIFICANT ENVIRONMENTAL RESOURCES

THE PROJECT AREA CONTAINS SIGNIFICANT ENVIRONMENTAL RESOURCES. AS PART OF PREPARATION OF THE SEIS, EVALUATIONS OF WETLANDS, TERRESTRIAL RESOURCES, ENDANGERED SPECIES, NEOTROPICAL BIRDS, BATS, WATER QUALITY, AQUATIC RESOURCES, WATERFOWL, AND ARCHEOLOGICAL RESOURCES WERE CONDUCTED.

SLIDE 5 - HABITAT EVALUATION PROCEDURES

A TEAM COMPOSED OF BIOLOGISTS FROM THE U.S. ARMY CORPS OF ENGINEERS; THE U.S. FISH AND WILDLIFE SERVICE; THE ARKANSAS GAME AND FISH COMMISSION; LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES; THE MISSISSIPPI DEPARTMENT OF WILDLIFE, FISHERIES AND PARKS; AND KENTUCKY DEPARTMENT OF FISH AND WILDLIFE RESOURCES CONDUCTED THE TERRESTRIAL HABITAT EVALUATIONS. THE U.S. ARMY ENGINEER WATERWAYS EXPERIMENT STATION DETERMINED PROJECT IMPACTS ON AQUATIC RESOURCES. THE MIGRATORY WATERFOWL ANALYSIS WAS CONDUCTED BY THE U.S. FISH AND WILDLIFE SERVICE.

SLIDE 6 - PLANNING OBJECTIVES

OUR PLANNING OBJECTIVES WERE TO PROVIDE PROTECTION FROM THE PROJECT DESIGN FLOOD THROUGH AN ENVIRONMENTALLY SUSTAINABLE PROJECT WHICH AVOIDS AND MINIMIZES AS MANY ENVIRONMENTAL IMPACTS AS POSSIBLE AND COMPENSATES FOR UNAVOIDABLE LOSSES.

SLIDE 7 - ARRAY OF PLANS

A TEAM INCLUDING ENGINEERS, ECONOMISTS, BIOLOGISTS, AND OTHER DISCIPLINES DEVELOPED AND EVALUATED THIS ARRAY OF PROJECT PLANS COMPRISED OF NO ACTION, ONE NONSTRUCTURAL, AND THREE STRUCTURAL ALTERNATIVES.

SLIDE 8 - NO-ACTION ALTERNATIVE

NO LEVEE CONSTRUCTION OF ANY TYPE WOULD OCCUR--ONLY NORMAL MAINTENANCE AND REPAIR OF THE EXISTING LEVEES.

THEREFORE, THE INCREASED THREAT OF CATASTROPHIC FLOODING WOULD CONTINUE AND THE CITIZENS WOULD BE LIVING IN APPREHENSION OF FUTURE LEVEE FAILURES.

SLIDE 9 - FLOOD DAMAGE AREA (MAP)

LIMITED DAMAGE ANALYSES OF POTENTIAL LEVEE CREVASSES NEAR THE TOWNS OF MAYERSVILLE, MISSISSIPPI, AND LAKE PROVIDENCE, LOUISIANA, INDICATE ESTIMATED FLOOD DAMAGES APPROACHING $5.0 BILLION--ALMOST $2.0 BILLION IN THE AREAS ALONG THE EAST BANK OF THE MISSISSIPPI RIVER AND $3.0 BILLION ON THE WEST BANK. ASSOCIATED IMPACTS COULD INCREASE THE TOTAL EFFECT ON THE LOCAL ECONOMY TO ALMOST $10 BILLION.

MISSISSIPPI RIVER LEVEE FAILURES AT OTHER LOCATIONS WOULD CAUSE EVEN GREATER DAMAGES AND IMPACTS REGION-WIDE. BASED ON THE CASE STUDY, DAMAGES COULD BE EXPECTED TO APPROACH $300 BILLION.

SINCE THE NO-ACTION ALTERNATIVE WOULD NOT PROVIDE LONG-TERM FLOOD PROTECTION AND IS UNACCEPTABLE TO CONGRESS AND THE GENERAL PUBLIC AND THUS UNIMPLEMENTABLE, THE NO-ACTION OPTION WAS NOT GIVEN FURTHER CONSIDERATION.

SLIDE 10 - PLAN 1 - NONSTRUCTURAL ALTERNATIVES

PLAN 1 REPRESENTS A NONSTRUCTURAL OPTION TO STRUCTURAL FLOOD DAMAGE REDUCTION. THE NONSTRUCTURAL MEASURE ADDRESSED WAS PURCHASING EASEMENTS IN LIEU OF PROVIDING FLOOD PROTECTION. EXISTING LEVEE PROTECTION WOULD BE MAINTAINED AS IN THE NO-ACTION ALTERNATIVE. HOWEVER, SHOULD THE LEVEE BE OVERTOPPED AND CATASTROPHIC FAILURES OCCUR, THE LEVEES WOULD NOT BE RECONSTRUCTED.

CONSIDERING ONLY THE ABOVE-MENTIONED MISSISSIPPI RIVER LEVEE BREAKS AT LAKE PROVIDENCE AND MAYERSVILLE, PURCHASE OF FLOWAGE EASEMENTS COULD BE REQUIRED ON APPROXIMATELY 16 MILLION ACRES. THIS WOULD YIELD A COST IN THE MULTIBILLION DOLLAR RANGE. EMERGENCY DISASTER ACTIVITIES, TRAFFIC REROUTING, AND ROAD AND BRIDGE STRUCTURE AND PUBLIC UTILITIES DAMAGES WOULD ALSO INCREASE COST SIGNIFICANTLY.

SUCH AN ALTERNATIVE WOULD NOT ACCOMPLISH THE CONGRESSIONALLY MANDATED PROJECT PURPOSE TO PROVIDE A PRESCRIBED LEVEL OF FLOOD PROTECTION. IN VIEW OF THIS AND CONSIDERING THE PROHIBITIVE COST AND CERTAIN PUBLIC UNACCEPTABILITY, A NONSTRUCTURAL PLAN WOULD NOT BE IMPLEMENTABLE AND WAS ELIMINATED.

SLIDE 11 - STRUCTURAL ALTERNATIVES

THREE STRUCTURAL ALTERNATIVES WERE ADDRESSED IN THE PRELIMINARY SCREENING--PLAN 2, LANDSIDE BORROW; PLAN 3, TRADITIONAL METHOD (RIVERSIDE BORROW); AND PLAN 4, ENVIRONMENTAL DESIGN (AVOID-AND-MINIMIZE) TO CONSTRUCT LEVEE ENLARGEMENT AND SEEPAGE CONTROL.

SLIDE 12 - TYPICAL WORK ITEM

A TYPICAL SEGMENT OF LEVEE CONSISTING OF SEVERAL PROPOSED WORK ITEMS WAS SELECTED TO PREPARE PRELIMINARY DESIGN AND COST ESTIMATES OF THE STRUCTURAL PLANS. THE AVERAGE LEVEE RAISE WAS 2.5 TO 3 FEET AND INCLUDED EITHER SEEPAGE BERM ENLARGEMENT OR NEW SEEPAGE BERM CONSTRUCTION.

SLIDE 13 - PLAN 2 - LANDSIDE BORROW

FOR THIS ALTERNATIVE, ALL BORROW MATERIAL WOULD BE OBTAINED FROM LANDSIDE OF THE LEVEES. THREE LANDSIDE BORROW SCHEMES WERE INVESTIGATED AS SHOWN HERE.

SLIDE 14 - PLAN 2A - TRADITIONAL LANDSIDE BORROW

PLAN 2A CONSISTS OF TRADITIONAL RECTANGULAR BORROW AREAS 8 TO 10 FEET DEEP IN A BAND 2,000 TO 3,000 FEET FROM THE LEVEE. 2,000 FEET IS TO LESSEN UNDERSEEPAGE PROBLEMS AND 3,000 FEET IS TO LIMIT HAUL DISTANCE. SUITABLE MATERIAL WOULD BE EXCAVATED AND USED TO ENLARGE THE LEVEE AS SHOWN OR TO CONSTRUCT BERMS. THE LANDSIDE RIGHTS-OF-WAY AND EXTENDED HAUL DISTANCES WOULD INCREASE COST.

WATER QUALITY PROBLEMS WOULD BE CREATED BY CONSTRUCTION OF LANDSIDE BORROW AREAS AS DRAINAGE FROM ADJACENT FIELDS WOULD CONTRIBUTE SUSPENDED SEDIMENTS, NUTRIENTS, AND PESTICIDES.

TESTING OF EXISTING LANDSIDE BORROW AREAS HAS INDICATED HIGH LEVELS OF PESTICIDES IN FISH WHICH APPROACH FOOD AND DRUG ADMINISTRATION ACTION LEVELS FOR CONSUMPTION BY HUMANS.

SLIDE 15 - PLAN 2B - TRADITIONAL LANDSIDE BORROW WITH FORESTED BUFFER

THIS ALTERNATIVE CONSISTS OF BORROW AREAS 8 FEET DEEP AND PROTECTED BY A FORESTED BUFFER ZONE WITH A PROTECTIVE BERM AROUND THE OUTSIDE OF THE BUFFER. AS IN PLAN 2A, THE LOCATION FOR THE BORROW AREA IS 2,000 TO 3,000 FEET FROM THE LEVEE.

THIS IS THE EXCAVATED BORROW AREA SHOWING THE FORESTED BUFFER AREA AND PROTECTIVE DIKE. THIS DESIGN IMPROVES WATER QUALITY BY ISOLATING THE BORROW FROM THE AGRICULTURAL DRAINAGE.

SLIDE 16 - PLAN 2C - LANDSIDE SHALLOW BORROW

LANDSIDE SHALLOW BORROW ALLOWS FOR DRAINING THE BORROW AREAS SO THEY CAN BE FORESTED. BORROW EXCAVATION IS LIMITED TO 3 FEET DEEP AND SHAPED TO DRAIN AND CONNECT TO LOCAL DRAINAGE.

THIS SLIDE SHOWS A TYPICAL LAYOUT OF SHALLOW BORROW AREA LOCATION, EXCAVATION AND LEVEE ENLARGEMENT, AND FORESTED BORROW AREA. THIS SHALLOW BORROW GREATLY INCREASES THE REQUIRED ACREAGE FOR BORROW, THUS INCREASING COST.

SLIDE 17 - PLAN 3 - TRADITIONAL METHOD

PLAN 3 IS THE TRADITIONAL METHOD TO CONSTRUCT LEVEE ENLARGEMENTS AND BERMS. HERE, OUR CONSTRUCTION IS NORMALLY BASED ON THE MOST ECONOMICAL DESIGN. I WILL DISCUSS DESIGN DETAILS LATER.

SLIDE 18 - PLAN 4 - ENVIRONMENTAL DESIGN (AVOID AND MINIMIZE)

PLAN 4 IS AN ENVIRONMENTAL DESIGN WHICH INCORPORATES MEASURES TO AVOID AND MINIMIZE ENVIRONMENTAL DAMAGES TO BOTTOM-LAND HARDWOODS AND WETLANDS. DESIGN DETAILS OF THIS PLAN WILL ALSO BE DISCUSSED LATER.

SLIDE 19 - COST COMPARISON

HERE ARE THE COST ESTIMATES OF ALL STRUCTURAL PLANS FOR THE TYPICAL LEVEE SEGMENT. AS YOU CAN SEE, COSTS FOR PLANS 2A, 2B, AND 2C--THE LANDSIDE BORROW ALTERNATIVES--EXCEED COSTS FOR PLANS 3 AND 4.

SLIDE 20 - MAJOR REASONS FOR LANDSIDE BORROW ELIMINATION

THEREFORE, PLAN 2 WAS NO LONGER EVALUATED FOR THESE REASONS.

SLIDE 21 - FINAL ARRAY OF PLANS

ONLY PLANS 3 AND 4 WERE CARRIED INTO DETAILED DESIGN BECAUSE THEY ARE THE MOST VIABLE AND IMPLEMENTABLE.

SLIDE 22 - TRADITIONAL PLAN 3 (GIS MAP RIVERSIDE BORROW)

ANALYSIS OF THIS PLAN CONSISTED FIRST OF PRINTING MAPS LIKE THIS THAT CONTAIN SEVERAL DATA LAYERS INCLUDING BASE TOPOGRAPHIC FEATURES, LAND COVER MAPPING, WETLAND MAPPING, AND WORK ITEMS.

AN ENGINEERING DESIGN TEAM LOCATED THE BORROW AREAS AS SHOWN HERE OUTLINED IN BLACK. THESE BORROW AREAS ARE NORMALLY LOCATED RIVERSIDE AS CLOSE TO THE CONSTRUCTION SITE AND EXCAVATED AS DEEP AS POSSIBLE. THIS PLAN REQUIRES NO SPECIAL CONFIGURATION OR

LOCATION OF THE BORROW AREAS. NO PROVISIONS ARE MADE FOR DRAINAGE OR ENVIRONMENTAL ENHANCEMENT OF THE BORROW AREAS.

SLIDE 23 - ENVIRONMENTAL DESIGN PLAN 4 (AVOID AND MINIMIZE)

TO DEVELOP THE LAYOUT FOR PLAN 4, AN INTERDISCIPLINARY TEAM OF REPRESENTATIVES FROM STATE AND FEDERAL AGENCIES, LOCAL SPONSORS, AND CORPS STAFF WAS FORMED. THE AVOID-AND-MINIMIZE DESIGN APPLIED TO THIS WORK ITEM RELOCATED THE RIVERSIDE BORROW AREA FROM THE BOTTOM-LAND HARDWOOD WETLANDS TO RIVERSIDE CLEARED FARMLANDS (SHOWN HERE OUTLINED IN RED).

SLIDE 24 - AVOID AND MINIMIZE RELOCATION OF BORROW AREAS

WHERE FARMLANDS WERE NOT AVAILABLE RIVERSIDE, THE BORROW WAS MOVED INTO LESS ENVIRONMENTALLY DAMAGING RIVERSIDE TREE PLANTATIONS, NONWETLAND RIVERSIDE BOTTOM-LAND HARDWOODS, OR LANDSIDE FARMLANDS.

SLIDE 25 - ENVIRONMENTAL BORROW AREA DESIGN

MOST RELOCATED BORROW AREAS WOULD INCLUDE ENVIRONMENTAL FEATURES SUCH AS VARYING DEPTHS, IRREGULAR SHORELINE, ISLANDS, AND FORESTED BUFFER.

SLIDE 26 - INNOVATIVE AVOID-AND-MINIMIZE DESIGN

OTHER INNOVATIVE DESIGN APPROACHES FOR REDUCING BOTTOM-LAND HARDWOODS AND WETLANDS EFFECTS WERE ALSO CONSIDERED. DETAILS ARE IN THE FOLLOWING SLIDES.

SLIDE 27 - BERM SCHEMATIC 1

THIS SHOWS THE EXCAVATION OF AN EXISTING BERM BEING USED TO ENLARGE THE LEVEE, CONSTRUCT RETAINING DIKES FOR DREDGED

MATERIAL, AND STORE MATERIAL IN A STOCKPILE OR IN THE RETAINING DIKES TO COVER FUTURE DREDGED MATERIAL.

SLIDE 28 - BERM SCHEMATIC 2

THIS SHOWS REPLACING THE EXCAVATED MATERIAL WITH MATERIAL DREDGED FROM THE RIVER. A TEMPORARY ENVIRONMENTAL IMPACT WOULD BE RELATED TO THE NARROW PATH OF THE DREDGE PIPE FROM THE RIVER TO THE BERM SITE.

SLIDE 29 - BERM SCHEMATIC 3

NOW YOU SEE THE FINAL STEP. THE STOCKPILED SOIL IS NOW USED TO COVER THE DREDGED MATERIAL FOR GROWTH OF GRASSES.

SLIDE 30 - DREDGE SITE LOCATIONS FOR BORROW

THIS SHOWS THE DREDGE SITE LOCATIONS IN THE MISSISSIPPI RIVER TO BE USED FOR BORROW TO CONSTRUCT SEVERAL WORK ITEMS AS SHOWN ON THE EAST BANK.

SLIDE 31 - RELIEF WELLS SEEPAGE CONTROL

THE USE OF RELIEF WELLS TO CONTROL SEEPAGE INSTEAD OF BERMS COULD BE USED IN SUITABLE LOCATIONS. PLEASE NOTE THAT CLEAR WATER FLOWING FROM THIS WELL INDICATES THAT NO SOIL IS BEING WASHED OUT FROM UNDER THE LEVEE.

SLIDE 32 - CUTOFF TRENCH SEEPAGE CONTROL

THE USE OF CUTOFF TRENCHES TO CONTROL SEEPAGE INSTEAD OF BERMS COULD BE USED IN SUITABLE LOCATIONS.

SLIDE 33 - COST TABLE

TOTAL COSTS FOR CONSTRUCTION AND MITIGATION FOR UNAVOIDABLE FISH AND WILDLIFE IMPACTS ARE SHOWN HERE FOR PLANS 3 AND 4. AS YOU CAN SEE, PLAN 3 COST IS APPROXIMATELY $623 MILLION AND PLAN 4 COST IS ABOUT $652 MILLION. THERE IS ABOUT A $29 MILLION COST DIFFERENCE BETWEEN THESE TWO PLANS.

SLIDE 34 - BOTTOM-LAND HARDWOODS IMPACTS

BOTH PLANS 3 AND 4 WERE ANALYZED FOR THEIR EFFECTS ON BOTTOM-LAND HARDWOODS AS SHOWN HERE.

PLAN 3 IMPACTS ROUGHLY 11,600 ACRES OF BOTTOM-LAND HARDWOODS. PLAN 4 REDUCES BOTTOM-LAND HARDWOOD LOSSES BY NEARLY 60 PERCENT OR BY SOME 6,700 ACRES. YOU MAY RECALL IN THE 1976 EIS, AN ESTIMATED 11,400 ACRES OF BOTTOM-LAND HARDWOODS WERE TO BE AFFECTED. BY USING ENVIRONMENTAL DESIGN TECHNIQUES, WE HAVE REDUCED THIS AMOUNT TO 4,800 ACRES. THE 4,800 ACRES IMPACTED IN PLAN 4 AFFECTS LESS THAN ONE-HALF OF 1 PERCENT OF THE TOTAL 1,022,000 ACRES OF BOTTOM-LAND HARDWOODS IN THE PROJECT AREA.

SLIDE 35 - PLAN SELECTION

ALTHOUGH PLAN 4 COSTS SLIGHTLY MORE THAN PLAN 3, PLAN 4 CONSTRUCTION TECHNIQUES DRAMATICALLY REDUCE ENVIRONMENTAL IMPACTS. THEREFORE, PLAN 4 IS THE RECOMMENDED PLAN.

SLIDE 36 - DESCRIPTION OF RECOMMENDED PLAN

THE PROPOSED ACTION INCLUDES 128 WORK ITEMS, COMPRISING THE LEVEE RAISING AND SEEPAGE CONTROL SHOWN HERE. THERE ARE 262.8 MILES OF LEVEES TO BE RAISED AND 131.8 MILES OF SEEPAGE CONTROL. NOTE THAT MOST OF THE LEVEE RAISING IS IN THE VICKSBURG

DISTRICT WHILE THE MAJORITY OF THE SEEPAGE CONTROL IS WITHIN THE MEMPHIS DISTRICT.

SLIDE 37 - MITIGATION ANALYSIS

RESULTS OF THE MITIGATION ANALYSIS FOR PLAN 4 WERE THAT FISH AND WILDLIFE LOSSES COULD BE OFFSET BY REFORESTING APPROXIMATELY 5,900 ACRES OF FREQUENTLY FLOODED AGRICULTURAL LANDS AT A COST OF $8.8 MILLION. THIS WOULD FULLY COMPENSATE UNAVOIDABLE LOSSES TO SIGNIFICANT ENVIRONMENTAL RESOURCES. APPROXIMATELY 89 PERCENT OF THESE ACRES ARE LOCATED IN THE VICKSBURG DISTRICT, APPROXIMATELY 11 PERCENT IN THE MEMPHIS DISTRICT AND LESS THAN 1 PERCENT IN THE NEW ORLEANS DISTRICT.

SLIDE 38 - ADDITIONAL MITIGATION FEATURES

IN ADDITION TO THE MITIGATION FEATURE, THE RECOMMENDED PLAN ALSO INCLUDES THESE ENVIRONMENTAL ATTRIBUTES.

SLIDE 39 - OPERATION AND MAINTENANCE REQUIREMENTS

LOCAL LEVEE BOARDS WILL CONTINUE TO PERFORM ALL MINOR OPERATION AND MAINTENANCE AT THEIR COST, AND THE CORPS WILL BE RESPONSIBLE FOR MAJOR MAINTENANCE.

SLIDE 40 - PLAN ACCOMPLISHMENTS

PLAN ACCOMPLISHMENTS INCLUDE:

- PROVIDING PROTECTION FROM THE PROJECT DESIGN FLOOD,
- AN ENVIRONMENTALLY SUSTAINABLE PROJECT,

- COMPENSATION FOR UNAVOIDABLE ENVIRONMENTAL LOSSES AT FULL FEDERAL EXPENSE.

SLIDE 41 - DIVISION OF PLAN RESPONSIBILITY

THESE ARE THE FEDERAL AND NON-FEDERAL IMPLEMENTATION RESPONSIBILITIES. NOTE THAT THE FEDERAL GOVERNMENT WILL CONSTRUCT THE PROJECT AND PAY FOR THE MITIGATION WHILE THE LOCAL SPONSORS WILL PAY FOR LANDS, EASEMENTS, RIGHTS-OF-WAY, RELOCATIONS, AND BORROW AREAS.

SLIDE 42 - CLEAN WATER ACT

A SECTION 404(B)(1) EVALUATION OF THE RECOMMENDED PLAN HAS BEEN PREPARED AND INCLUDED IN THE DRAFT REPORT FOR PUBLIC REVIEW. THE SECTION 404(B)(1) EVALUATION WILL BE USED TO APPLY FOR SECTION 401 CERTIFICATION FROM RESPECTIVE STATES.

SLIDE 43 - KEY MILESTONES

THE DRAFT REPORT IS CURRENTLY BEING REVIEWED BY FEDERAL, STATE, AND LOCAL AGENCIES AND THE CONCERNED PUBLIC. SIX PUBLIC MEETINGS ARE BEING HELD THIS MONTH. COMMENTS ARE BEING SOLICITED UNTIL APRIL 30, 1998, AND WILL BE ADDRESSED IN THE FINAL REPORT. COPIES OF THE LATEST NEWSLETTER WITH A LIST OF LIBRARIES WHERE THE DRAFT REPORT CAN BE READ ARE AT THE BACK OF THE ROOM.

THE FINAL SEIS WILL BE DISTRIBUTED IN JULY 1998 AND THE RECORD OF DECISION IS SCHEDULED FOR SIGNING IN OCTOBER 1998.

SLIDE 44 - CLOSING

WE WANT TO THANK ALL OF THOSE WHO ASSISTED IN THIS EFFORT. THE RECOMMENDED PLAN WILL PROVIDE THE REQUIRED LEVEL OF FLOOD PROTECTION TO THE RESIDENTS OF THE LOWER MISSISSIPPI VALLEY

PERMITTING ECONOMIC DEVELOPMENT OF THE REGION WHILE CONCURRENTLY SUSTAINING ITS ENVIRONMENTAL RESOURCES.

THIS CONCLUDES THE PRESENTATION OF STUDY RESULTS.

I WILL NOW TURN THE MEETING BACK OVER TO LTC JONES.

LTC JONES: Thank you, Moody. We will now enter the statement portion of our public meeting tonight. I have three cards here from folks that would like to make statements. I have two administrative notes. If you could find your way to one of the microphones to make your statement and identify yourself prior to making that statement, that would help us ensure that your statements are an official part of the record.

MR. CULPEPPER: Excuse me, Colonel. If you don't mind, the small microphone there is a radio microphone. If they could use this microphone up here, they can be broadcast on the radio. I am sorry.

LTC JONES: Great. So just find your way up to this microphone up here. Barry Maxwell from the Fifth Louisiana Levee District.

MR. BARRY MAXWELL: Thank you, Colonel. My name is Barry Maxwell. I am Vice President of the Fifth Louisiana Levee District which is headquartered in Tallulah, Louisiana.

I won't read my complete statement that we have. Basically, the Fifth District Levee Board urges the Vicksburg District, the U.S. Corps of Engineers, and any and all officials with authority to make the proper decisions to proceed immediately with proposed plans to heighten and enlarge levees in the Fifth Levee District.

In doing so, Corps officials must remember that the Fifth Levee District must furnish rights-of-way for proposed enlargement projects. To use lands from the protected side of the levee, more expensive lands will ultimately cost the taxpayers of Louisiana.

We support conservation measures, but we do not support unreasonable cost increases just to avoid clearing any bottom-land hardwoods. We support the use of riverside borrow areas and any area already under the control of the Levee Board.

The Levee Board will do whatever it can within its limited resources to give the best protection to the greatest number. We have no alternative but make cost of rights-of-way a determining factor when rights-of-way can be provided. The Board of Commissioners for the Fifth Louisiana Levee District is in full agreement with the concept of protecting and preserving the

environment, but we must consider the question of protection for lives and property to be the number one priority. To do that, flood control efforts in the form of levee enlargement projects must remain a top priority. For the Fifth Louisiana Levee District, our top priority is flood control as soon as possible at reasonable cost.

Thank you, sir.

(Submitted written statement, Exhibit 3.)

LTC JONES: Thank you, Mr. Maxwell. The second is Gerald Miller from U.S. EPA.

MR. GERALD MILLER: My name is Gerald Miller. I am here representing the EPA office out of Atlanta. More specifically, the Office of Environmental Assessment.

Moody's excellent overview of this project speaks to why EPA has such a pronounced interest in this. The agency has not finished its review yet so I do not have any definitive things to say, but I would like to make a couple of points.

Number one, this is a landscape project. It will be addressed by three offices--Chicago, Dallas, and Atlanta. The letter will come out of the Atlanta office. Our Regional Administrator, John Hankinson, has indicated to me that this is our number one priority for Department of Defense over the next month. We will be on time in providing our comments to the Corps.

On a personal level, I have dealt with this project for a long time. I anticipate being around to see it completed. We plan to work with the Corps, we are a cooperating agency on this project, and we will work toward reaching some mutually agreeable resolution on this project within the statement timelines.

Thank you.

LTC JONES: Thank you, Mr. Miller. Mr. Curtis James from U.S. Fish and Wildlife Service.

MR. CURTIS JAMES: My name is Curtis James with the U.S. Fish and Wildlife Service in Vicksburg, Mississippi. I have already pretty much read this statement in Greenville, but I will just go over some of the bigger points real quick.

The Service recognizes this work is necessary, and we support the concept of maintaining the integrity of the levee system. We believe this goal can and will be accomplished in an environmentally sound manner.

We have worked closely with the Vicksburg District, local sponsors, and others for fish and wildlife habitat and to develop

compensation for unavoidable damages to forested wetlands as well as nonwetland forests.

In response to our concern and the concern of others, the District has modified the original plans. Moody went over all this already. The original plan would have impacted 11,400 acres. We have reduced that to 4,800 acres.

The District is to be commended for these efforts, including relocation of borrow areas, use of existing berm materials, relief wells, and the other things Moody described earlier.

The Corps has developed compensation measures for unavoidable impacts. They will purchase 5,900 acres and reforest this agricultural land.

We do recommend that the purchase concentrate on larger blocks of cleared areas which can be reforested to make larger, contiguous blocks.

We have developed bird conservation zones in the Mississippi Valley in cooperation with others. Most of these are large public areas like Tensas National Refuge, St. Catherine Creek, and Delta National Forest. They all have cleared areas that need to be reforested to make a larger, contiguous block, particularly for forest breeding birds.

We also commend the Corps for the environmental design features that Moody went over. The 6,700 acres of borrow pits with the irregular shoreline, deeper water, constructed islands for high quality aquatic habitat.

Three is another environmental feature that Moody just kind of touched on, but the Corps is also going to experimentally reforest approximately 3,000 acres of shallow borrow pits that will have drainage. This will not be considered part of the compensation plan because this is experimental.

In summary, the Service commends the Corps for selecting the avoid-and-minimize plan which reduces losses from 11,400 acres to 4,800 acres of hardwood forests. We applaud the Corps compensation proposal for the reforestation of the 5,900 acres of frequently flooded agricultural land, the environmental features, the borrow areas, and the reforestation of the shallow borrow pits.

Thank you.

LTC JONES: Thank you, Mr. James. That is all the cards which indicated "yes" concerning making a statement. Does anyone else desire to make a statement at this time? Okay, we will move into the question-and-answer portion of tonight's session. We have

our panel here that is prepared to answer any questions you may have.

Yes, sir.

MR. GERALD MILLER: Do you have a problem with vandalism on those relief wells?

MR. KENT PARRISH: We have not had any problem with vandalism on them. We have put a steel cap around them, the case is mounted in some grout, and we have a lock on the top so it is pretty well safe right now. We have not had any problem. We have some wells down at Waterproof which is just north of here. They have been in place for 2 years, and we have not had any vandalism, I don't think, have we Jerry?

MR. JERRY MCDONALD: We have had a couple of locks knocked off is all.

MR. PARRISH: We are going to be out there during the high water when they are flowing, Gerald. We have crews up and down the levee, and the Levee Board has, too, everyday. We would be on the lookout for that kind of thing.

LTC JONES: Yes, sir.

MR. PAT MURPHY: Colonel, I am Pat Murphy, the Port Director in Natchez. I see the Corps and commend you for the work that you are doing. We definitely need to protect both sides of the river.

In 1961, the Corps built a levee in the Natchez-Adams County Port Industrial Park to elevation 84. With raising the Louisiana side, what impact will it have on our industrial park that is almost fully developed?

MR. LARRY BANKS: I don't believe that we have anything in the plans right now to raise that Port levee. It was constructed under a different authority. It is probably something that we need to go back and take a look at.

As far as the impact, 84 is, if I remember my figures right, project flood elevation at the port site. What it means is that you just don't have any freeboard if it comes a flood. As far as the actual impact, the levee would be about 3 feet higher on the other side of the river from there with this proposed raise.

So that is one we will take a look at. I will try to get you a little more definitive answer on that question.

MR. MURPHY: Mr. Banks, I appreciate it. Thank you.

MR. BANKS: You're welcome.

LTC JONES: Any other questions? Well, if there are not more questions, I would like to remind you that the comment period will remain open through April 30, 1998. If you wish to mail us any comments, that would be great.

Our last public meeting for this draft report and SEIS is in Baton Rouge at the State Archives Building tomorrow night beginning at 7 p.m. That is the last one for the draft report and SEIS.

I appreciate all of you taking time out of your busy schedules. A lot of you have traveled many miles here tonight. I appreciate that. We appreciate the interest. Thank you and have a good evening.

Meeting adjourned at 7:40 p.m.

LIST OF EXHIBITS

No. 1 - Notice of Public Meetings

No. 2 - Copy of Newsletter, February 1998

No. 3 - Statement from Mr. Barry L. Maxwell, Vice President, Board of Commissioners, Fifth Louisiana Levee District, March 30, 1998

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
4155 CLAY STREET
VICKSBURG, MISSISSIPPI 39180-3435

REPLY TO
ATTENTION OF:

NOTICE OF PUBLIC MEETINGS MISSISSIPPI RIVER AND TRIBUTARIES PROJECT, MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT MARCH 16-19 AND 30-31, 1998

The U.S. Army Corps of Engineers, Vicksburg, Memphis, and New Orleans Districts, have prepared a Draft Project Report and Draft Supplemental Environmental Impact Statement for the Mississippi River Mainline Levees Enlargement and Berm Construction feature of the Mississippi River and Tributaries Project. All planned work is located between Cape Girardeau, Missouri, and Head of Passes, Louisiana. The proposed improvements would provide the congressionally authorized level of protection from Mississippi River flooding by raising deficient levee sections and controlling underseepage.

This report will be reviewed by various Federal, state, and local agencies and other interested organizations. Copies of the Draft Project Report and Draft Supplemental Environmental Impact Statement will be on deposit March 3, 1998, in the following libraries:

Arkansas

Mississippi County Library System
200 North 5th
Blytheville, Arkansas 72315

Illinois

Cairo Public Library
1609 Washington Avenue
Cairo, Illinois 62914

Kentucky

Paducah Public Library
555 Washington Street
Paducah, Kentucky 42003-1735

Louisiana

Ascension Parish Public Library
500 Mississippi Street
Donaldsville, LA 70346-2535

East Baton Rouge Parish Library
7711 Goodwood Boulevard
Baton Rouge, LA 70806-7625

Ferriday/Concordia Parish Library
1609 Third Street
Ferriday, LA 71334-2298

Madison Parish Library
403 North Mulberry
Tallulah, LA 71282-3599

Exhibit 1

New Orleans Parish Library
219 Loyola
New Orleans, LA 70140-1016

State Library of Louisiana
Louisiana Section
760 North 3rd Street
Baton Rouge, LA 70802

Mississippi

Homochitto Valley Library Service
220 South Commerce
Natchez, Mississippi 39120

Warren County/Vicksburg Library
700 Veto Street
Vicksburg, MS 39180-3595

Carnegie Public Library
114 Delta Avenue
Clarksdale, Mississippi 38614

Washington County Library
341 Main Street
Greenville, Mississippi
38701-4097

Missouri

Cape Girardeau Public Library
711 North Clark
Cape Girardeau, MO 63701

Tennessee

McIvers Grant Public Library
204 North Mill Street
Dyersberg, TN 38024-4631

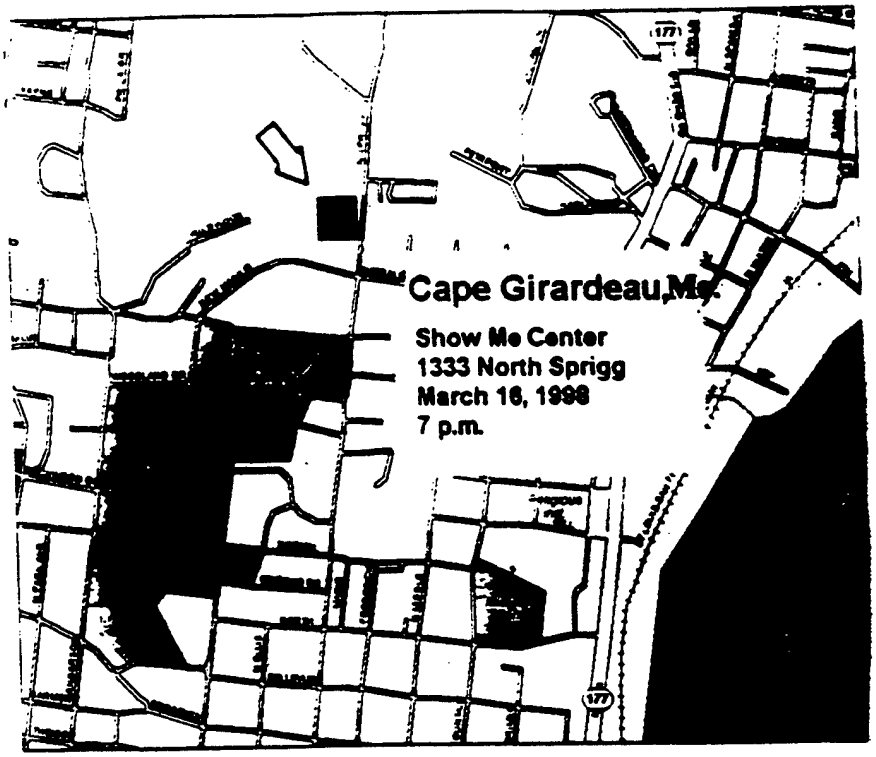
Memphis/Shelby County Public Library
1850 Peabody Avenue
Memphis, Tennessee 38104-4021

Newbern City Library
220 East Main
Nerbern, Tennessee 38059-1528

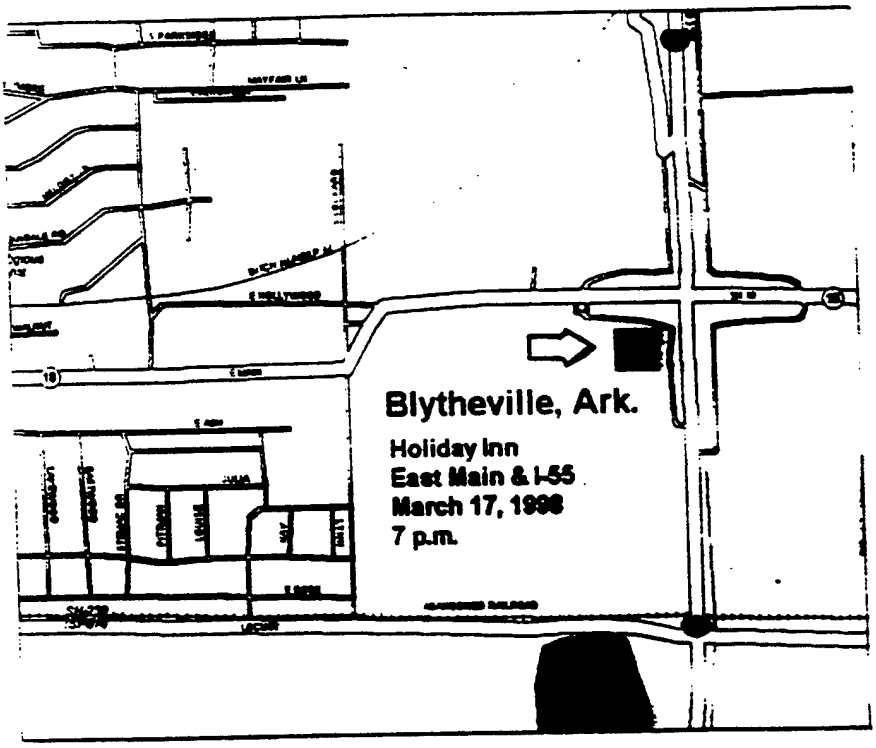
Tiptonville Public Library
126 Tipton Street
Tiptonville, TN 38079

To allow all interested individuals an opportunity to ask questions or express views, public meetings will be held in the locations shown below at 7 p.m. on the indicated dates:

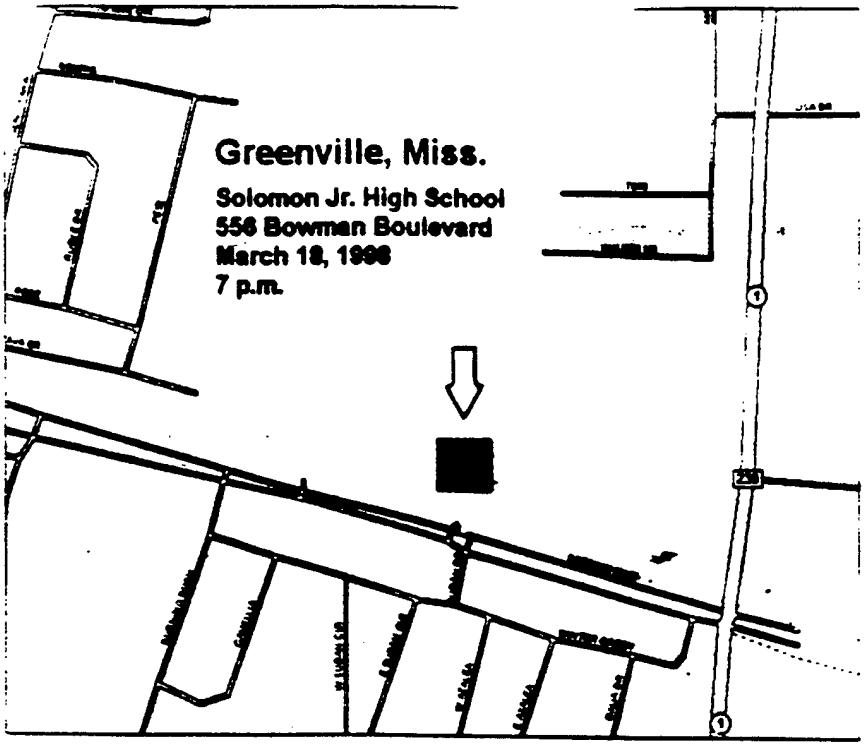
Monday, March 16, 1998
Show Me Center
1333 North Sprigg Street
Cape Girardeau, Missouri



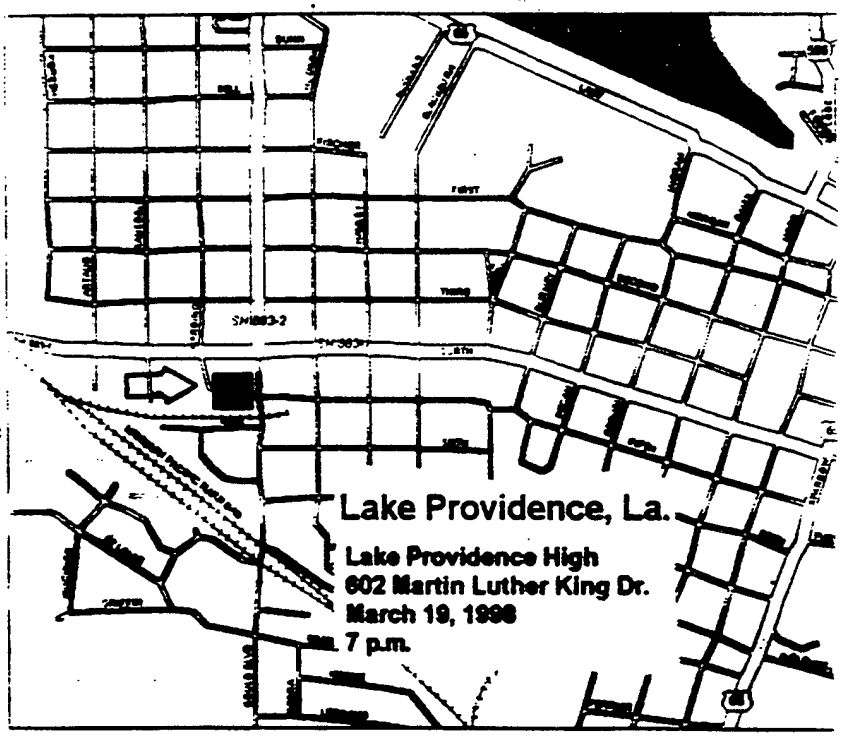
Tuesday, March 17, 1998
Holiday Inn
East Main & I-55
Blytheville, Arkansas



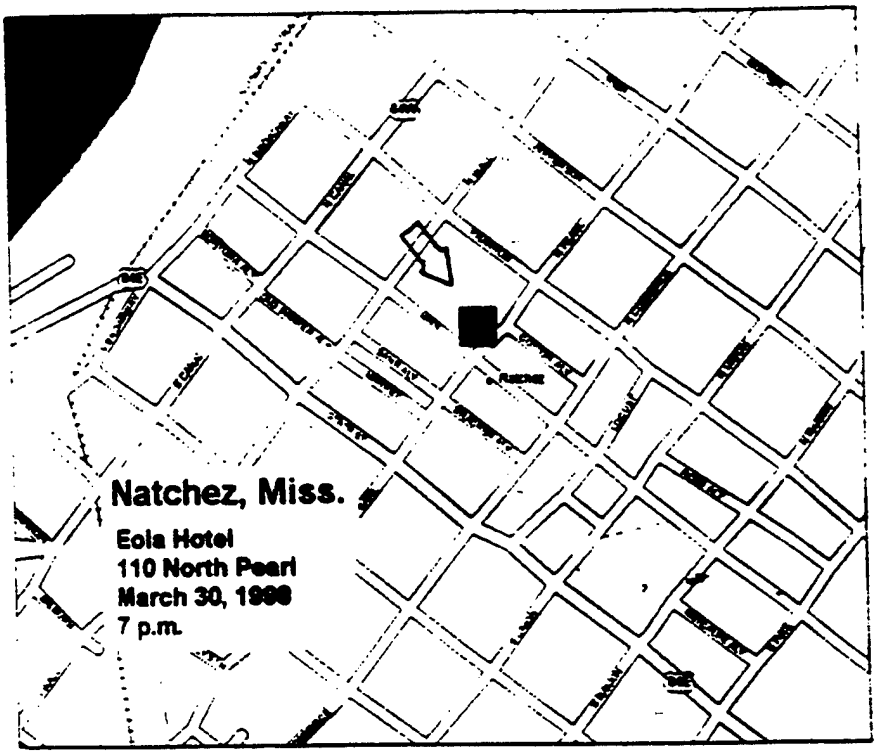
Wednesday, March 18, 1998
Solomon Jr. High School
556 Bowman Boulevard
Greenville, Mississippi



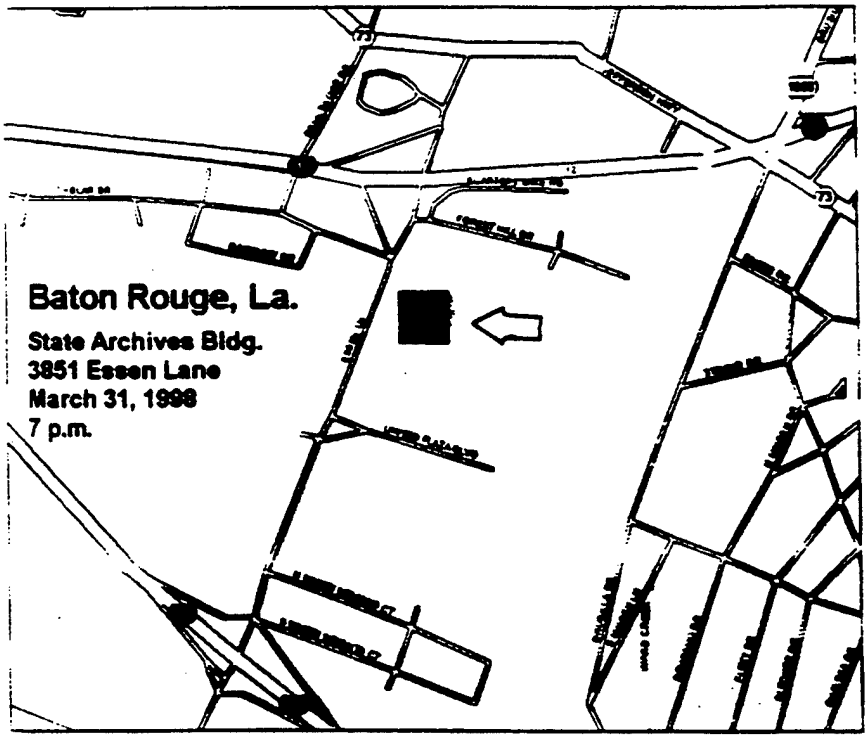
Thursday, March 19, 1998
Lake Providence High School
602 Martin Luther King Drive
Lake Providence, Louisiana



Monday, March 30, 1998
Eola Hotel
110 North Pearl
Natchez, Mississippi



Tuesday, March 31, 1998
State Archives Building
3851 Essen Lane
Baton Rouge, Louisiana



Information regarding evaluations conducted and project plan recommended will be presented. At the end of the formal presentation, oral statements may be made by the public, followed by a question-and-answer session. Written statements may be submitted at the meetings or mailed to the above address, ATTN: CEMVK-PD-F.

Proceedings of these meetings will be recorded, and summaries will be prepared and incorporated into the Project Report. Mailed statements must be received by April 30, 1998, to be included in the official record.

Gary W. Wright
Colonel, Corps of Engineers
District Engineer

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
4155 CLAY STREET
VICKSBURG, MISSISSIPPI 39180-3435

OFFICIAL BUSINESS
CEMVK-PD-F

NOTICE OF PUBLIC MEETINGS

US Army Corps
of Engineers

MISSISSIPPI RIVER & TRIBUTARIES PROJECT
MISSISSIPPI RIVER MAINLINE LEVEES
DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

US Army Corps
of Engineers
February 1998

Mississippi River & Tributaries Project
Mississippi River Mainline Levee
Enlargement & Berm Construction Project
Supplemental Environmental Impact Statement

NEWSLETTER

Comments On Levee Enlargement Program

Maj. Gen. Anderson:

"A Strong Environmental Ethic Is Part Of How We Conduct Our Business"

"Our commitment is to have an environmentally sustainable project," Maj. Gen. Phillip R. Anderson, commander of the Mississippi Valley Division, U.S. Army Corps of Engineers, said in a special Newsletter interview. "Simply put, we must balance environmental and economic development concerns and we fully intend to do this."

The general, who also is president of the Mississippi River Commission, made his comment regarding an update study being conducted in relation to an ongoing enlargement program for Mississippi River mainline levees.

The Memphis, Vicksburg and New Orleans Districts of the Corps of Engineers are currently preparing a supplement to the 1976 Environmental Impact Statement that includes the mainline Mississippi River levee project. The Supplemental Environmental Impact Statement (SEIS) will describe the effects of enlarging sections of the mainline levees on environmental resources and fish and wildlife habitat of the Mississippi River floodplain. The SEIS is based on an extensive reevaluation of remaining levee work to ensure that all environmental requirements are met and that negative impacts are avoided, minimized or compensated.

The reevaluation of the environmental impact of mainline levees, berms and seepage construction will ensure that current and remaining projects meet environmental requirements.

"Environmental aspects have equal standing with economics and engineering," Anderson said. "A strong environmental ethic is part of how we conduct our business. Sustaining our environment is a necessary part of building and securing our nation."

Maj. Gen. Phillip R. Anderson

Long-Term Project Triggered by 1927 Flood

A disastrous flood caused by levee failure in 1927 led Congress to create the Mississippi Rivers & Tributaries Act. The act set in motion a long-term project where 1,600 miles of levees from Cape Girardeau, Mo., to the Gulf of Mexico, would be brought to proper height and grade to handle a "Project Flood."

The Project Flood is a model of the worst flood that could be predicted, based on past flooding and waterflow levels. Based on current funding levels, all of the MR&T levees are scheduled to be upgraded and made capable of handling the Project Flood by the year 2031.

There are about 280 miles of mainline levees which are still below height

and grade and are scheduled for improvements. Since improvements primarily involve using soil near project sites or "borrow" material, the major focus is on protecting bottomland hardwoods in borrow areas.

MR&T Project Returns $18 For Each $1 Spent

"The nation has invested almost $10 billion to date to plan, design, construct, operate and maintain the MR&T project, and savings through flood damage prevention have totaled more than $182 billion, a return of $18 for each $1 spent," Anderson said.

He added, "The Mississippi River's levees protect over 4.5 million people, or about 1.5 million households whose residences are valued at $114 billion.

"Further, an estimated 33,000 farms and farm buildings valued at $13 billion also are protected by the levees, and the earning power of people living and working in the 49,000 square miles impacted by the levees totals $64 billion annually."

General Anderson also noted that the Mississippi and its tributaries drain 41 percent of the contiguous United States, touching 31 states and Canada and encompassing more than 1.2 million square miles.

The river also forms the Mississippi Flyway, the nation's most important route for millions of annually migrating waterfowl.

Endangered Species, Fish, Waterfowl & Wildlife Habitat Included In Study

"While the focus of the SEIS is on bottomland hardwood wetlands, it also includes impacts on all areas of the environment, such as endangered species, terrestrial, aquatic and waterfowl resources.

"The SEIS will ensure that environmental impacts of the project are avoided, minimized or compensated and also ensure that the Corps is in compliance with the National Environmental Policy Act (NEPA)," Anderson said.

SITES & DATES SET FOR PUBLIC MEETINGS

Six sites in four states have been chosen for public meetings in March 1998 to receive comments on the draft Supplemental Environmental Impact Statement (SEIS).

The sites and dates:

Meetings Begin In Missouri On March 16

Monday, March 16, 1998 at the Show Me Center, 1333 North Sprigg Street, **Cape Girardeau, Mo**; March 17, 1998 at the Holiday Inn, East Main & I-55, **Blytheville, Ark.**; Wednesday, March 18, 1998, at the Solomon Junior High School, 556 Bowman Boulevard, **Greenvile, Miss.**; Thursday, March 19, 1998, at the Lake Providence High School, 602 Martin Luther King Drive, **Lake Providence, La.**; Monday, March 30, 1998, at the Eola Hotel, 110 North Pearl, **Natchez, Miss.**, and Tuesday, March 31, 1998, at the State Archives Building, 3851 Essen Lane, **Baton Rouge, La.**

The meetings are open to the public and will begin at 7 p.m.

The Corps of Engineers will make an audio-visual presentation of the report's contents. Biologists, engineers, and other specialists also will explain the development and implementation of evaluation methods that led to the draft report and its findings.

After the public meetings, there will be a 30-day period for written public responses, which will be included in a final report that is due to be completed in October.

Accompanying maps show the location of the meeting sites for persons wishing to attend.

Commonly Used Corps Terms That Could Use Some Explaining ...

Everybody does it, not just the Corps of Engineers. And that's the practice of using words in everyday conversation that is unique to a profession or trade. It's sort of like when you were in school, the teacher asked you to define a word, and you tried hard not to use the word itself in your explanation, even though that was the best word that could be used to answer the question!

Use Same Language For Better Understanding

So, if you are having a conversation about rivers and levees and the Supplemental Environmental Impact Statement with someone from the Corps,

here's some help to understand words they use every day but you probably don't:

GIS – Geographic Information Systems. An information-gathering process where a database of related information is developed and analyzed for a specific site. For example, economic, environmental, population, agricultural, industrial, etc., data for a three-mile stretch of land alongside a river.

Delineation – A process which identifies and classifies specific areas. For example, field scientists will make a delineation that determines the boundaries of a wetland in an agricultural area.

Ground Truthing – The act of personal, on-site examination of an area to determine the accuracy of previous delineations by some other means, such as aerial photography.

Sand Boil – That's where high water has seeped under a levee and is coming to the surface on the land side carrying sands and silts from beneath the levee. Sandbags are placed around the emerging water to form control rings which allows the water to keep flowing while sediments remain in place.

Water Seeping Under Levee Is Expected

Underseepage – A naturally occurring process where river water seeps under a levee to its land side. The seepage is not a danger to the levee if controlled properly.

Slurry Cutoff – An earth excavation method used to provide a positive underseepage cutoff at the riverside toe of the levee.

Berm – A blanket of earth built where the levee meets normal terrain on its land side. The berm provides added weight and safely forces the exit of underseepage further away from the levee. There are two types: seepage and stability. Stability berms are built to reinforce areas along the levee.

Plantation – No, it's not an old Southern cotton farm. Biologists generally use this term when referring to a large cluster of same species trees purposely planted in a specific area, such as "a plantation of cottonwood."

"Borrow Pits" Or "Bar Pits?"

Borrow Area – Sometimes called "borrow pits," or "bar pits." It's where earthen material was excavated and then used for levee construction. Older borrow areas have naturally developed into prime hunting and fishing areas.

Project Flood – A theoretical flood projected from data of past floods. It is the largest flood that has a reasonable probability of occurrence and it is the standard for which levee heights are determined.

Avoid and Minimize – The Corps environmental policy: Avoid any environmental loss. If unavoidable, minimize the loss. And compensate any loss so that there will be no net loss.

Relief Well – Pretty much like it says. A well device next to a levee to provide relief by collecting seepage and routing it away from the area and into a natural drainage system. These are often used in lieu of berms.

Commonly Used Term Has French Origin

Batture – A French term applied to land between a levee and the river. Commonly used along the Mississippi from Louisiana northward.

Cultural Resources – Generally used to define meaningful archaeological finds, such as Indian mounds, historical artifacts, early settlement sites, sunken paddlewheelers, etc.

Crevasse - An area where a levee fails from prolonged pressure and the river rushes through into an area it's not supposed to go. As the river rushes through the levee's gap, it erodes soil away and the crevasse quickly widens until the pressure is equalized

Interagency – Any interaction of two or more government agencies. On environmental issues, for example, the Corps of Engineers working with the U.S. Fish and Wildlife Service and the Environmental Protection Agency on a single project.

Terrestrials – Generally refers to forested habitat and animals that depend on this habitat

Area Valuable For Birds Visiting Temporarily

Neotropical Migrants – Birds that are not permanent residents but spend part of their time in Southern areas as part of their annual migration.

Aquatics – Generally refers to fish and their habitat that are found in borrow area.

Arkansan Feels Pinched By Programs

(Editors Note: The following is written by Ms. Laura Busby of Marion, Ark., whose family farms land near the Mississippi River.

Make Repairs And Completion A National Priority

The Mississippi River has a mind of its own and without the discipline of a well-planned levee system would, without a doubt, take many thousands of lives and destroy the largest and most efficient agricultural economy in the world.

The immediate resumption of repairs and the completion of levee-raising projects under the Mississippi Rivers & Tributaries project should be a national priority. The projects need to be completed as soon as possible because they protect the safety of all people who live near the river. Most importantly, the river is the artery that feeds the heart of the United States.

It is not, as some say, better to let the river run free and return to a wilderness state as it appeared when Columbus discovered America.

I am an American farmer and I want my government to take a second look at the motive and interests of organized environmental groups whose legal actions have impacted levee-raising projects. I believe that, as a nation, those of us who farm lands alongside the river must be the first to be considered.

EPA And Other Agency Regulations Govern Land Use

As a farmer in east Arkansas, laws and regulations regulating levees are not the only government programs affecting us. For example, we now must deal with a new agenda called "Sustainable America" created by presidential order and turned over to Vice President Gore to administer. We have a number of reasons to be concerned as we see implementation of programs that have been developed mainly by appointees of this administration and a very select group of environmentalists. In addition to local and federal laws and regulations governing my family's land bordering the river and new regulations developing from Sustainable America, we also are impacted by regulations issued by other government agencies, such as the Environmental Protection Agency.

All these groups trying to tell us how to take care of our land makes me wish that everybody would simply take a few minutes and ask themselves who most benefits from the land and, therefore, who knows better how to take care of it? It's simple, the farmer. And what I see is pretty clear: if the levee enlargement program is not completed, America's citizens, their property, agriculture-producing capability, wildlife and domestic animal life could suffer tragic and perhaps permanent damage.

Levees Constantly Evolving Like the River

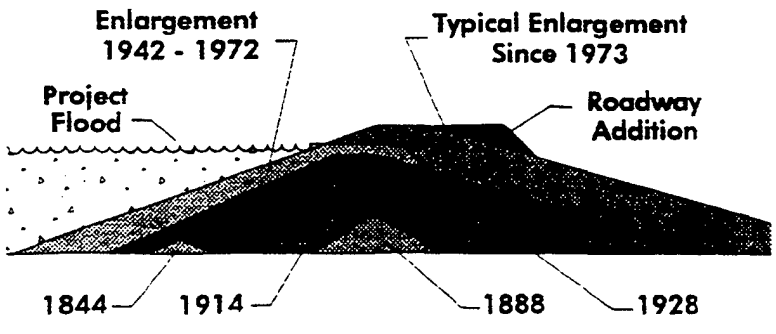
1,610 Miles of Levees Protect People, Cities, Animals & Property

The levees that keep the Mississippi River in check today are quite different from the first one built in the late 1700s to protect New Orleans.

That first levee was three feet high, 5,400 in length and 18 feet wide at its top. Today, there are 1,610 miles of levees from Cape Girardeau, Mo., to the Gulf of Mexico protecting people, cities, towns, farms, domestic animals, and property. And a typical levee today might be 20 to 25 feet high, 10 feet wide without a roadway and 25 feet wide with a roadway at the top.

The illustration below shows how levees have evolved.

EVOLUTION OF MISSISSIPPI RIVER LEVEES



SEIS Study Information Now At 18 Libraries

Mississippi, Louisiana And Tennessee Libraries Added

Three new public libraries have been added as sites for display of public documents related to the Supplemental Environmental Impact Statement (SEIS) being prepared for the Army Corps of Engineers' mainline levee-raising and enlargement project.

They are: **Carnegie Public Library**, 114 Delta Avenue, Clarksdale, MS 38614, 601-624-4461; **State Library of Louisiana**, Louisiana Section, 760 North Third Street, Baton Rouge, LA 70802, 601-342-4914, and **Tiptonville Public Library**, 126 Tipton Street, Tiptonville, TN 38079, 901-253-7391.

Fifteen other libraries already are serving as public document repositories. They are:

ARKANSAS:
Mississippi County Library System
200 North 5th
Blytheville, AR 72315
501-762-2431

KENTUCKY:
Paducah Public Library
555 Washington Street
Paducah, KY 42003-1735
502-442-2510

MISSISSIPPI:
Homochitto Valley Library Service
220 South Commerce
Natchez, MS 39120
601-445-8862

Warren County/Vicksburg Library
700 Veto Street
Vicksburg, MS 39180-3595
601-636-6411

Washington County Library
341 Main Street
Greenville, MS 38701-4097
601-335-2331

TENNESSEE:
McIvers Grant Public Library
204 North Mill Street
Dyersberg, TN 38024-4631
901-285-5032

Memphis/Shelby County Public Library
1850 Peabody Avenue
Memphis, TN 38104-4021
901-725-8853

Newbern City Library
220 East Main
Newbern, TN 38059-1528
901-627-3153

ILLINOIS:
Cairo Public Library
1609 Washington Avenue
Cairo, IL 62914
618-734-1840

LOUISIANA:
Ascension Parish Public Library
500 Mississippi Street
Donaldsonville, LA 70346-2535
504-473-8052

E. Baton Rouge Parish Library
7711 Goodwood Boulevard
Baton Rouge, LA 70806-7625
504-231-3700

Ferriday/Concordia Library
1609 Third Street
Ferriday, LA 71334-2298
318-757-3550

Madison Parish Library
403 North Mulberry
Tallulah, LA 71282-3599
318-574-4308

New Orleans Public Library
219 Loyola
New Orleans, LA 70140-1016
504-596-2602

MISSOURI:
Cape Girardeau Public Library
711 North Clark
Cape Girardeau, MO 63701
314-334-5279

District-At-A-Glance:

MEMPHIS TERRITORY TOUCHES SIX STATES

25,000 Square Miles Under District Domain

The Memphis District of the U.S. Corps of Engineers includes almost 25,000 square miles of the Lower Mississippi Valley and encompasses parts of Mississippi, Tennessee, Arkansas, Missouri, Illinois and Kentucky.

The District's major missions include inland navigation, flood control,

environmental protection and restoration, and emergency response.

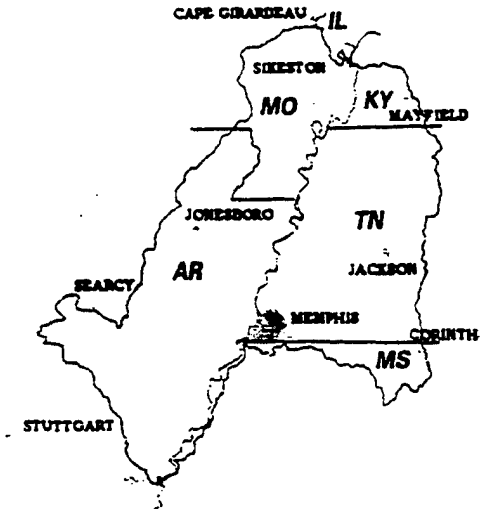
Memphis is responsible for maintaining and improving 255 miles of the Mississippi River's main channel from Cairo, Ill., to the mouth of the White River in Arkansas.

Maintains 640 Miles Of Levees, 8 Inland Harbors, 254 Miles Of Navigation

A total of 640 miles of mainline levees along the Mississippi River and its tributaries, eight inland harbors and 254 miles of navigation on the White River also is maintained by Memphis.

The District, the people of the Mid-South and many non-Federal partners have enjoyed a mutually beneficial relationship for over a century. Each year, the District circulates about $117 million in the community, including $40 million in construction projects and $50 million to vendors for operations and maintenance items.

From 1993 to 1996, flood control efforts by the Memphis District have saved American taxpayers over $4 billion. And during the same period, the Memphis Corps protected hundreds of communities, thousands of homes and businesses and millions of acres of farmland from flood damage.



District Territory

Public Affairs Office Offers Assistance

For more information, the Memphis District Public Affairs Office is located at 167 North Main Street, Room B-202, Memphis, TN 38103-1894, Telephone 901-544-3348, and FAX 901-544-3786. Or check out the district website on the internet: www.lmm.usace.army.mil

(Next: the Vicksburg District)

Internet Carries Newsletter, Other Information

The Newsletter is not the only way you can stay informed about the Supplemental Environmental Impact Statement, Mississippi River Mainline Levee project and other Corps of Engineers projects. You also can check the World Wide Web.

Internet users can get the latest information on the Supplemental Environmental Impact Statement study, and other information about the Corps of Engineers by checking the internet web site of its Vicksburg District:

www.mvk.usace.army.mil

The site will contain the Newsletter and other SEIS information that will be periodically updated until the study's final results are released in the Fall of 1998.

You also can check out happenings in the Memphis District at **www.mvm.usace.army.mil** and do the same for the New Orleans District at www.mvn.usace.army.mil.

FOR FURTHER INFORMATION ...

Here are telephone numbers of U.S. Army Corps of Engineers' project/technical managers for the Mississippi River Mainline Levees' project who can provide assistance to the public or answer specific questions from concerned parties:

Persons To Contact At New Orleans, Vicksburg, Memphis

Kent Parrish, Vicksburg District, 601-631-5006
Moody Culpepper, Vicksburg District, 601-631-5962
Billy Dycus, Memphis District, 901-544-3455
Robert Campos, New Orleans District, 504-862-2998

COMMENTS?

Editors Note: If you have a statement you would like to make regarding the Supplemental Environmental Impact Statement project, or a comment you would like to be presented in the Newsletter, please include the following information and mail your statement to: Moody Culpepper, U.S. Army Corps of Engineers, 4155 Clay Street, Vicksburg, MS 30180-3435.

Name_____Tel. No. ( )_____
Address_____

City/State_____ZIP_____

Comments (Or, if more space is needed, include on a separate sheet):

Privacy Act Statement:

In accordance with the Privacy Act of 1974 (Authority 8: Chapter 5, ER 1105-2-100), routine uses of the information obtained from this form include compiling official mailing lists for future informational publications and recording additional views and public participation in studies.

STATEMENT BY: BARRY L. MAXWELL, VICE PRESIDENT
BOARD OF COMMISSIONERS
FIFTH LOUISIANA LEVEE DISTRICT
222 NORTH CEDAR STREET
TALLULAH, LA 71282

AT: PUBLIC MEETING FOR DRAFTING
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT
MISSISSIPPI RIVER MAINLINE LEVEE ENLARGEMENT
MARCH 30, 1998
NATCHEZ, MS 39120

At 48 feet on the Natchez River gauge, the Mississippi River is full and begins to overflow its banks. In 1927, the Natchez River gauge recorded a peak river stage of 56.65 feet. That was with the mainline Mississippi River Levee overtopped and broken in several places.

In the nine years that followed the great flood of 1927, the River exceeded flood stage a total of three years, twice in excess of 50 feet. In 1937 the Mississippi River crested at 58.04 feet.

Then Old Man River rested for the next 36 years, staying below 48 feet, and exceeding 45 feet only six times during that span of time.

That rest ended in 1973 with a crest at 56.7 feet which held for three days. River stages remained above bankfull for 83 days. Emergency procedures, which included six-foot walls of sandbags in lower reaches of the levee, contained a raging force that would have brought devastation to Louisiana. The Fifth Louisiana Levee District fought rising waters along the 214 miles of mainline Levee, constructing temporary raises along 96 miles in order to protect Louisiana citizens from a catastrophic event.

Since 1973 the Mississippi River has exceeded flood stage on the Natchez gauge a total of 14 times. Six of these in the last seven years. Every year since 1991, with the exception of 1992, the Mississippi River has overflowed its banks in Louisiana.

History hasn't recorded much about March and April of 1997 regarding the Mississippi River, although the Mississippi reached record heights on the Natchez gauge. That's because the Levee System in the Fifth Louisiana Levee District prevented the results that would have made history.

On March 23, 1997 the Mississippi River crested at 56.3 feet at Natchez, where it held for several days. Ultimately, record stages were recorded at gauges in the lower end of the Fifth Levee District. At its peak in 1997, the Mississippi River consumed 1,340,000 acres in Louisiana, and a total of 3,490,000 acres in Louisiana, Mississippi, and Arkansas combined.

Employees of the Fifth Louisiana Levee District and Tensas Basin Levee District, personnel from the Vicksburg District, Corp of Engineers, guardsmen working under the direction of the State Office of Emergency Preparedness, agents from Louisiana Department of Wildlife and Fisheries, along with Sheriffs and deputies from within the Fifth Levee District patrolled 255 miles of mainline Mississippi River Levee and 93 miles of backwater levee in Concordia parish 24 hours a day, identifying sandboils and seepage areas. With the assistance of approximately 400 prisoners,

Levee District and Corp personnel bagged and placed approximately 200,000 bags of sand essential to containing boils that sought to undermine the mainline Levee.

Without the combined effort of all agencies involved in this flood fight, spring of 1997 would probably be indelibly recorded in our minds and history books.

Expenses incurred by the Fifth Louisiana Levee District alone, just to keep the River from coming under the Levee, totaled well over $100,000.00. The bottom line cost to all agencies is unknown, but those numbers are not the ones that are important. The important numbers are those in lives and property saved. Saved because they were never threatened, thanks to a levee system that held back waters of the largest River in North America, waters collected from 29 states and portions of Canada.

But what about this spring? Or next year? Or the one after that? With each rise and fall of the mighty Mississippi, we edge our way closer to the inevitable, the "flood of the century." Closer to the rise our levees are not prepared to contain.

That is why we must continue, and ultimately complete, all Mainline Levee Enlargement projects as designed under the Mississippi River and Tributaries Project.

We must support and continue these projects because levee enlargement projects are about flood control, and flood control is about people. People, their homes, and their business, must come first.

If the Mississippi River were to overtop the mainline levee today, in all probability it would be at a location immediately north of Lake Providence, Louisiana. There the weakest link in the Fifth District's levee chain, the section with the greatest deficiency in height, stretches north to the Arkansas line.

Should that happen, within six (6) hours, the town of Lake Providence will be virtually washed away. Eastward and south to the Tensas-Concordia parish line, approximately 1,824,000 acres and 25,000 homes would be flooded. There would be 75,000 people displaced and 1,105 miles of major public road impassable. Dollar estimates are placed at $1.3 billion. Damages in Concordia and Catahoula parishes and southward could easily double these figures. Damage from flooding will occur all the way to the Gulf of Mexico.

Life as we know it in the Louisiana Delta would be changed forever. Lives and livelihoods cannot be restored with emergency measures or dollars.

We urge the Vicksburg District, Corp of Engineers, and any and all officials with authority to make these decisions, to proceed immediately with proposed plans to heighten and enlarge the levees in the Fifth Levee District. In doing so, Corps officials must remember that the Fifth Levee District must furnish rights-ofway for proposed enlargement projects. To use lands from the protected side of the levee, more expensive lands, will ultimately cost the taxpayers of Louisiana. We support conservation measures but we do not support unreasonable cost increases just to avoid clearing any bottomiand hardwoods. We support the use of riverside borrow areas and any area already under the control of the Levee Board.

The Levee Board will do whatever it can within its limited resources to give the best protection to the greatest numbers. We have no alternative but make cost of rights-of-way a determining factor in when rights-of-way can be provided.

The Board of Commissioners for the Fifth Louisiana Levee District is in full agreement with the concept of protecting and preserving the environment, but we must consider the question of protection for lives and property to be the number one priority. To do that, flood control efforts in the form of levee enlargement projects must remain a top priority.

For the Fifth Louisiana Levee District, our top priority is flood control, as soon as possible, at reasonable costs.

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
VICKSBURG, MISSISSIPPI 39180

Public Meeting
on
Mississippi River and Tributaries Project,
Mississippi River Mainline Levees
Enlargement and Seepage Control

State Archives Building
Baton Rouge, Louisiana
31 March 1998

PRESENT:

CORPS OF ENGINEERS:

New Orleans District:

COL Bill Conner, District Engineer
Mr. Bill Wilson, Planning Division
Ms. Sue Hawes, Planning Division
Mr. Wayne Naquin, Engineering Division
Mr. Richard Bergez, Programs and Project Management Division
Mr. Robert Campos, Programs and Project Management Division
Ms. Julie Aitken, Public Affairs Office

Vicksburg District:

Mr. Bill Hobgood, Planning Division
Mr. Dan Johnson, Planning Division
Mr. Moody Culpepper, Planning Division
Mr. Gary Young, Planning Division
Mr. Wendell King, Planning Division
Mr. Stoney Burke, Planning Division
Mr. Kent Parrish, Programs and Project Management Division
Ms. Myra Dean, Planning Division
Ms. Jeannine Beatty, Planning Division
Mr. Stuart McLean, Planning Division
Mr. Erwin Roemer, Planning Division
Mr. Jim Merritt, Office of Counsel
Mr. Jim Hines, Engineering Division
Mr. Larry Banks, Engineering Division
Mr. Dave Johnson, Engineering Division
Mr. Bobby Fleming, Engineering Division
Mr. Larry Harper, Operations Division

LOWER MISSISSIPPI VALLEY DIVISION:

Mr. Steve Cobb, Planning Division

ALSO PRESENT:

Mr. Mike Babin, Pontchartrain Levee District, P.O. Box 426, Lutcher, Louisiana 70071
Ms. Bettie Dyson, Pontchartrain Levee District, 7150 Government Street, Baton Rouge, Louisiana 70806
Mr. Gerald R. Dyson, Pontchartrain Levee District, P.O. Box 426, Lutcher, Louisiana 70071
Mr. Chris Ingram, Geo-Marine, Inc., 7602 GSRI Avenue, Baton Rouge, Louisiana 70820
Mr. Warren Kron, Jr., 15825 Woodmoss Drive, Baton Rouge, Louisiana 70816

Mr. Randy Lanctot, Louisiana Wildlife Federation, 337 S. Acadian Thruway, Baton Rouge, Louisiana 70806
Mr. Dudley Lehew, Gulf South Research Corporation, 9357 Interline Avenue, Baton Rouge, Louisiana 70809
Mr. Brian Marcks, 1041 Briarridge Drive, Baton Rouge, Louisiana 70810
Mr. Ken Pastorick, WBRZ-TV, 1650 Highland Road, Baton Rouge, Louisiana 70802
Mr. Rick Portier, WBRZ-TV, 1650 Highland Road, Baton Rouge, Louisiana 70802

Mr. Ed Preau, Louisiana Department of Transportation and Development, P.O. Box 94245, Capital Station, Baton Rouge, Louisiana 70804
Mr. Pat Salvaggio, Louisiana Department of Environmental Quality, P.O. Box 82135, Baton Rouge, Louisiana 70884
Mr. Dwayne Templet, Geo-Marine, Inc., 7502 GSRI Avenue, Baton Rouge, Louisiana 70820
Mr. Michael Gene Waldon, USL, 1826 Southland Court, Baton Rouge, Louisiana 70810
Mr. David Walther, U.S. Fish and Wildlife Service, 825 Kaliste Saloom Road, Lafayette, Louisiana 70508

Ms. Kathy Rhoer Wascom, Louisiana Wildlife Federation, 1255 Aberdeen, Baton Rouge, Louisiana 70808

COL BILL CONNER: I am COL Bill Conner. I am the District Engineer of the New Orleans District. I would like to welcome you to one of a series of meetings that we have been holding in conjunction with the Mississippi River Levees Enlargement and Seepage Control Project. This is actually the last of six meetings on that subject.

Tonight we are continuing the public coordination process for a draft Project Report that is being prepared. This is a draft Supplemental Impact Statement. It also includes supporting technical appendixes for the project. A month ago, the Corps distributed the draft documents for public review.

Tonight's meeting will summarize our study findings, then give you the opportunity to make statements and then ask any questions you may have for a panel of technical experts.

If you wish to make a statement, please indicate so on a card that was available to you when you came in. The card looks like this. If you did not fill out a card, if you would raise your hand at this time, we will get one to you. That is if you want to make a statement. I will also place your name on our mailing list if you give us your address, and we will send you the next issue of our newsletter. This is the most current issue.

Anyone that has not filled out a card that would like to do so, please raise your hand.

I would like to introduce a couple of special attendees from the audience. We have Mr. Mike Babin from the Pontchartrain Levee District. Also, Mr. Jerry Dyson from the Pontchartrain Levee District. Thank you for being here.

Do we have any elected officials or their representatives in the audience at this time who I did not catch earlier?

I want to introduce the folks at the head table as well. These are specialists, our experts, our subject matter experts on this particular project. To my immediate right is Mr. Moody Culpepper. He is the Study Manager and he is from the Vicksburg District of the Corps. We also have to his right, Richard Burgez who is the Project Manager from the New Orleans office of the Corps. Filling out the table are Bill Wilson, Gary Young, and Kent Parrish.

At this time, I would like to ask Moody to make a slide presentation summarizing the findings of the studies that we have been engaged in for the past year.

MR. MOODY CULPEPPER: Thank you, sir.

SLIDE 1 - INTRODUCTION

TONIGHT WE ARE HERE TO DISCUSS THE FINDINGS OF STUDIES CONDUCTED FOR THE DRAFT MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT AND SEEPAGE CONTROL PROJECT REPORT AND DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT. THIS IS A JOINT EFFORT OF THE U.S. ARMY CORPS OF ENGINEERS, MEMPHIS, VICKSBURG, AND NEW ORLEANS DISTRICTS, CONDUCTED WITH THE OVERSIGHT OF THE MISSISSIPPI RIVER COMMISSION. VICKSBURG WAS DESIGNATED AS THE LEAD DISTRICT IN THE CONDUCT OF THE STUDIES. WE SOLICIT YOUR COMMENTS ON THE PLAN OF IMPROVEMENT THAT IS BEING PROPOSED.

SLIDE 2 - PROJECT AREA

THE MR&T PROJECT IN THE ALLUVIAL VALLEY BETWEEN CAPE GIRARDEAU, MISSOURI, AND HEAD OF PASSES, LOUISIANA, PROVIDES PROTECTION FROM FLOODS BY MEANS OF VARIOUS STRUCTURAL MEASURES. THE MISSISSIPPI RIVER MAINLINE LEVEES FEATURE--THE SUBJECT OF THESE INVESTIGATIONS--HAS BEEN UNDER CONSTRUCTION SINCE 1928.

THE MISSISSIPPI RIVER LEVEES AND CHANNEL IMPROVEMENT EIS WAS FILED WITH THE COUNCIL ON ENVIRONMENTAL QUALITY IN APRIL 1976. THIS EIS IS BEING SUPPLEMENTED TO COVER CONSTRUCTION OF ALL REMAINING MISSISSIPPI RIVER MAINLINE LEVEES AND SEEPAGE CONTROL.

THE PROJECT AREA EXTENDS 600 MILES FROM CAPE GIRARDEAU TO HEAD OF PASSES AT THE GULF OF MEXICO. THE PROJECT AREA WIDTH INCLUDES THE LEVEES, ALL LANDS RIVERSIDE OF THE LEVEES, AND A STRIP 3,000 FEET LANDSIDE OF THE LEVEES. THE PROJECT AREA IS COMPRISED OF PARTS OF SEVEN STATES--MISSOURI, ILLINOIS, TENNESSEE, KENTUCKY, ARKANSAS, MISSISSIPPI, AND LOUISIANA.

WE HAVE THE CAPABILITY TO COMPLETE THIS PROJECT IN THE YEAR 2020. UPON COMPLETION, APPROXIMATELY 35,000 SQUARE MILES OF THE ALLUVIAL VALLEY WILL BE PROTECTED FROM THE PROJECT DESIGN FLOOD--OR "P D F"--A HYPOTHETICAL FLOOD EVENT DEFINED AS THE GREATEST FLOOD HAVING A REASONABLE PROBABILITY OF OCCURRENCE. OUT OF 1,610 MILES OF MISSISSIPPI RIVER MAINLINE LEVEES, THERE REMAINS APPROXIMATELY 262 MILES THAT ARE 2 TO 8 FEET BELOW THE HEIGHT REQUIRED TO SAFELY PASS THE PDF.

SLIDE 3 - PROJECT SIGNIFICANCE

THE MISSISSIPPI RIVER FUNNELS 41 PERCENT OF THE CONTINENTAL UNITED STATES DRAINAGE. . . RUNOFF FROM ALL OR PARTS OF 31 STATES AND 2 CANADIAN PROVINCES TO THE GULF OF MEXICO. THE MISSISSIPPI RIVER LEVEES PROTECT MILLIONS OF RESIDENTS AND A MULTIBILLION DOLLAR, HIGHLY DEVELOPED AGRICULTURAL AREA.

SLIDE 4 - SIGNIFICANT ENVIRONMENTAL RESOURCES

THE PROJECT AREA CONTAINS SIGNIFICANT ENVIRONMENTAL RESOURCES. AS PART OF PREPARATION OF THE SEIS, EVALUATIONS OF WETLANDS, TERRESTRIAL RESOURCES, ENDANGERED SPECIES, NEOTROPICAL BIRDS, BATS, WATER QUALITY, AQUATIC RESOURCES, WATERFOWL, AND ARCHEOLOGICAL RESOURCES WERE CONDUCTED.

SLIDE 5 - HABITAT EVALUATION PROCEDURES

A TEAM COMPOSED OF BIOLOGISTS FROM THE U.S. ARMY CORPS OF ENGINEERS; THE U.S. FISH AND WILDLIFE SERVICE; THE ARKANSAS GAME AND FISH COMMISSION; LOUISIANA DEPARTMENT OF WILDLIFE AND FISHERIES; THE MISSISSIPPI DEPARTMENT OF WILDLIFE, FISHERIES AND PARKS; AND KENTUCKY DEPARTMENT OF FISH AND WILDLIFE RESOURCES CONDUCTED THE TERRESTRIAL HABITAT EVALUATIONS. THE U.S. ARMY ENGINEER WATERWAYS EXPERIMENT STATION DETERMINED PROJECT IMPACTS

ON AQUATIC RESOURCES. THE MIGRATORY WATERFOWL ANALYSIS WAS CONDUCTED BY THE U.S. FISH AND WILDLIFE SERVICE.

SLIDE 6 - PLANNING OBJECTIVES

OUR PLANNING OBJECTIVES WERE TO PROVIDE PROTECTION FROM THE PROJECT DESIGN FLOOD THROUGH AN ENVIRONMENTALLY SUSTAINABLE PROJECT WHICH AVOIDS AND MINIMIZES AS MANY ENVIRONMENTAL IMPACTS AS POSSIBLE AND COMPENSATES FOR UNAVOIDABLE LOSSES.

SLIDE 7 - ARRAY OF PLANS

A TEAM INCLUDING ENGINEERS, ECONOMISTS, BIOLOGISTS, AND OTHER DISCIPLINES DEVELOPED AND EVALUATED THIS ARRAY OF PROJECT PLANS COMPRISED OF NO ACTION, ONE NONSTRUCTURAL, AND THREE STRUCTURAL ALTERNATIVES.

SLIDE 8 - NO-ACTION ALTERNATIVE

NO LEVEE CONSTRUCTION OF ANY TYPE WOULD OCCUR--ONLY NORMAL MAINTENANCE AND REPAIR OF THE EXISTING LEVEES.

THEREFORE, THE INCREASED THREAT OF CATASTROPHIC FLOODING WOULD CONTINUE AND THE CITIZENS WOULD BE LIVING IN APPREHENSION OF FUTURE LEVEE FAILURES.

SLIDE 9 - FLOOD DAMAGE AREA (MAP)

LIMITED DAMAGE ANALYSES OF POTENTIAL LEVEE CREVASSES NEAR THE TOWNS OF MAYERSVILLE, MISSISSIPPI, AND LAKE PROVIDENCE, LOUISIANA, INDICATE ESTIMATED FLOOD DAMAGES APPROACHING $5.0 BILLION--ALMOST $2.0 BILLION IN THE AREAS ALONG THE EAST BANK OF THE MISSISSIPPI RIVER AND $3.0 BILLION ON THE WEST BANK. ASSOCIATED IMPACTS COULD INCREASE THE TOTAL EFFECT ON THE LOCAL ECONOMY TO ALMOST $10 BILLION.

MISSISSIPPI RIVER LEVEE FAILURES AT OTHER LOCATIONS WOULD CAUSE EVEN GREATER DAMAGES AND IMPACTS REGION-WIDE. BASED ON THE CASE STUDY, DAMAGES COULD BE EXPECTED TO APPROACH $300 BILLION.

SINCE THE NO-ACTION ALTERNATIVE WOULD NOT PROVIDE LONG-TERM FLOOD PROTECTION AND IS UNACCEPTABLE TO CONGRESS AND THE GENERAL PUBLIC AND THUS UNIMPLEMENTABLE, THE NO-ACTION OPTION WAS NOT GIVEN FURTHER CONSIDERATION.

SLIDE 10 - PLAN 1 - NONSTRUCTURAL ALTERNATIVES

PLAN 1 REPRESENTS A NONSTRUCTURAL OPTION TO STRUCTURAL FLOOD DAMAGE REDUCTION. THE NONSTRUCTURAL MEASURE ADDRESSED WAS PURCHASING EASEMENTS IN LIEU OF PROVIDING FLOOD PROTECTION. EXISTING LEVEE PROTECTION WOULD BE MAINTAINED AS IN THE NO-ACTION ALTERNATIVE. HOWEVER, SHOULD THE LEVEE BE OVERTOPPED AND CATASTROPHIC FAILURES OCCUR, THE LEVEES WOULD NOT BE RECONSTRUCTED.

CONSIDERING ONLY THE ABOVE-MENTIONED MISSISSIPPI RIVER LEVEE BREAKS AT LAKE PROVIDENCE AND MAYERSVILLE, PURCHASE OF FLOWAGE EASEMENTS COULD BE REQUIRED ON APPROXIMATELY 16 MILLION ACRES. THIS WOULD YIELD A COST IN THE MULTIBILLION DOLLAR RANGE. EMERGENCY DISASTER ACTIVITIES, TRAFFIC REROUTING, AND ROAD AND BRIDGE STRUCTURE AND PUBLIC UTILITIES DAMAGES WOULD ALSO INCREASE COST SIGNIFICANTLY.

SUCH AN ALTERNATIVE WOULD NOT ACCOMPLISH THE CONGRESSIONALLY MANDATED PROJECT PURPOSE TO PROVIDE A PRESCRIBED LEVEL OF FLOOD PROTECTION. IN VIEW OF THIS AND CONSIDERING THE PROHIBITIVE COST AND CERTAIN PUBLIC UNACCEPTABILITY, A NONSTRUCTURAL PLAN WOULD NOT BE IMPLEMENTABLE AND WAS ELIMINATED.

SLIDE 11 - STRUCTURAL ALTERNATIVES

THREE STRUCTURAL ALTERNATIVES WERE ADDRESSED IN THE PRELIMINARY SCREENING--PLAN 2, LANDSIDE BORROW; PLAN 3, TRADITIONAL METHOD (RIVERSIDE BORROW); AND PLAN 4, ENVIRONMENTAL DESIGN (AVOID-AND-MINIMIZE) TO CONSTRUCT LEVEE ENLARGEMENT AND SEEPAGE CONTROL.

SLIDE 12 - TYPICAL WORK ITEM

A TYPICAL SEGMENT OF LEVEE CONSISTING OF SEVERAL PROPOSED WORK ITEMS WAS SELECTED TO PREPARE PRELIMINARY DESIGN AND COST ESTIMATES OF THE STRUCTURAL PLANS. THE AVERAGE LEVEE RAISE WAS 2.5 TO 3 FEET AND INCLUDED EITHER SEEPAGE BERM ENLARGEMENT OR NEW SEEPAGE BERM CONSTRUCTION.

SLIDE 13 - PLAN 2 - LANDSIDE BORROW

FOR THIS ALTERNATIVE, ALL BORROW MATERIAL WOULD BE OBTAINED FROM LANDSIDE OF THE LEVEES. THREE LANDSIDE BORROW SCHEMES WERE INVESTIGATED AS SHOWN HERE.

SLIDE 14 - PLAN 2A - TRADITIONAL LANDSIDE BORROW

PLAN 2A CONSISTS OF TRADITIONAL RECTANGULAR BORROW AREAS 8 TO 10 FEET DEEP IN A BAND 2,000 TO 3,000 FEET FROM THE LEVEE. 2,000 FEET IS TO LESSEN UNDERSEEPAGE PROBLEMS AND 3,000 FEET IS TO LIMIT HAUL DISTANCE. SUITABLE MATERIAL WOULD BE EXCAVATED AND USED TO ENLARGE THE LEVEE AS SHOWN OR TO CONSTRUCT BERMS. THE LANDSIDE RIGHTS-OF-WAY AND EXTENDED HAUL DISTANCES WOULD INCREASE COST.

WATER QUALITY PROBLEMS WOULD BE CREATED BY CONSTRUCTION OF LANDSIDE BORROW AREAS AS DRAINAGE FROM ADJACENT FIELDS WOULD CONTRIBUTE SUSPENDED SEDIMENTS, NUTRIENTS, AND PESTICIDES. TESTING OF EXISTING LANDSIDE BORROW AREAS HAS INDICATED HIGH

LEVELS OF PESTICIDES IN FISH WHICH APPROACH FOOD AND DRUG ADMINISTRATION ACTION LEVELS FOR CONSUMPTION BY HUMANS.

SLIDE 15 - PLAN 2B - TRADITIONAL LANDSIDE BORROW WITH FORESTED BUFFER

THIS ALTERNATIVE CONSISTS OF BORROW AREAS 8 FEET DEEP AND PROTECTED BY A FORESTED BUFFER ZONE WITH A PROTECTIVE BERM AROUND THE OUTSIDE OF THE BUFFER. AS IN PLAN 2A, THE LOCATION FOR THE BORROW AREA IS 2,000 TO 3,000 FEET FROM THE LEVEE.

THIS IS THE EXCAVATED BORROW AREA SHOWING THE FORESTED BUFFER AREA AND PROTECTIVE DIKE. THIS DESIGN IMPROVES WATER QUALITY BY ISOLATING THE BORROW FROM THE AGRICULTURAL DRAINAGE.

SLIDE 16 - PLAN 2C - LANDSIDE SHALLOW BORROW

LANDSIDE SHALLOW BORROW ALLOWS FOR DRAINING THE BORROW AREAS SO THEY CAN BE FORESTED. BORROW EXCAVATION IS LIMITED TO 3 FEET DEEP AND SHAPED TO DRAIN AND CONNECT TO LOCAL DRAINAGE.

THIS SLIDE SHOWS A TYPICAL LAYOUT OF SHALLOW BORROW AREA LOCATION, EXCAVATION AND LEVEE ENLARGEMENT, AND FORESTED BORROW AREA. THIS SHALLOW BORROW GREATLY INCREASES THE REQUIRED ACREAGE FOR BORROW, THUS INCREASING COST.

SLIDE 17 - PLAN 3 - TRADITIONAL METHOD

PLAN 3 IS THE TRADITIONAL METHOD TO CONSTRUCT LEVEE ENLARGEMENTS AND BERMS. HERE, OUR CONSTRUCTION IS NORMALLY BASED ON THE MOST ECONOMICAL DESIGN. I WILL DISCUSS DESIGN DETAILS LATER.

SLIDE 18 - PLAN 4 - ENVIRONMENTAL DESIGN (AVOID AND MINIMIZE)

PLAN 4 IS AN ENVIRONMENTAL DESIGN WHICH INCORPORATES MEASURES TO AVOID AND MINIMIZE ENVIRONMENTAL DAMAGES TO BOTTOM-LAND HARDWOODS

AND WETLANDS. DESIGN DETAILS OF THIS PLAN WILL ALSO BE DISCUSSED LATER.

SLIDE 19 - COST COMPARISON

HERE ARE THE COST ESTIMATES OF ALL STRUCTURAL PLANS FOR THE TYPICAL LEVEE SEGMENT. AS YOU CAN SEE, COSTS FOR PLANS 2A, 2B, AND 2C--THE LANDSIDE BORROW ALTERNATIVES--EXCEED COSTS FOR PLANS 3 AND 4.

SLIDE 20 - MAJOR REASONS FOR LANDSIDE BORROW ELIMINATION

THEREFORE, PLAN 2 WAS NO LONGER EVALUATED FOR THESE REASONS.

SLIDE 21 - FINAL ARRAY OF PLANS

ONLY PLANS 3 AND 4 WERE CARRIED INTO DETAILED DESIGN BECAUSE THEY ARE THE MOST VIABLE AND IMPLEMENTABLE.

SLIDE 22 - TRADITIONAL PLAN 3 (GIS MAP RIVERSIDE BORROW)

ANALYSIS OF THIS PLAN CONSISTED FIRST OF PRINTING MAPS LIKE THIS THAT CONTAIN SEVERAL DATA LAYERS INCLUDING BASE TOPOGRAPHIC FEATURES, LAND COVER MAPPING, WETLAND MAPPING, AND WORK ITEMS.

AN ENGINEERING DESIGN TEAM LOCATED THE BORROW AREAS AS SHOWN HERE OUTLINED IN BLACK. THESE BORROW AREAS ARE NORMALLY LOCATED RIVERSIDE AS CLOSE TO THE CONSTRUCTION SITE AND EXCAVATED AS DEEP AS POSSIBLE. THIS PLAN REQUIRES NO SPECIAL CONFIGURATION OR LOCATION OF THE BORROW AREAS. NO PROVISIONS ARE MADE FOR DRAINAGE OR ENVIRONMENTAL ENHANCEMENT OF THE BORROW AREAS.

SLIDE 23 - ENVIRONMENTAL DESIGN PLAN 4 (AVOID AND MINIMIZE)

TO DEVELOP THE LAYOUT FOR PLAN 4, AN INTERDISCIPLINARY TEAM OF REPRESENTATIVES FROM STATE AND FEDERAL AGENCIES, LOCAL SPONSORS, AND CORPS STAFF WAS FORMED. THE AVOID-AND-MINIMIZE DESIGN APPLIED TO THIS WORK ITEM RELOCATED THE RIVERSIDE BORROW AREA FROM THE BOTTOM-LAND HARDWOOD WETLANDS TO RIVERSIDE CLEARED FARMLANDS (SHOWN HERE OUTLINED IN RED).

SLIDE 24 - AVOID AND MINIMIZE RELOCATION OF BORROW AREAS

WHERE FARMLANDS WERE NOT AVAILABLE RIVERSIDE, THE BORROW WAS MOVED INTO LESS ENVIRONMENTALLY DAMAGING RIVERSIDE TREE PLANTATIONS, NONWETLAND RIVERSIDE BOTTOM-LAND HARDWOODS, OR LANDSIDE FARMLANDS.

SLIDE 25 - ENVIRONMENTAL BORROW AREA DESIGN

MOST RELOCATED BORROW AREAS WOULD INCLUDE ENVIRONMENTAL FEATURES SUCH AS VARYING DEPTHS, IRREGULAR SHORELINE, ISLANDS, AND FORESTED BUFFER.

SLIDE 26 - INNOVATIVE AVOID-AND-MINIMIZE DESIGN

OTHER INNOVATIVE DESIGN APPROACHES FOR REDUCING BOTTOM-LAND HARDWOODS AND WETLANDS EFFECTS WERE ALSO CONSIDERED. DETAILS ARE IN THE FOLLOWING SLIDES.

SLIDE 27 - BERM SCHEMATIC 1

THIS SHOWS THE EXCAVATION OF AN EXISTING BERM BEING USED TO ENLARGE THE LEVEE, CONSTRUCT RETAINING DIKES FOR DREDGED MATERIAL, AND STORE MATERIAL IN A STOCKPILE OR IN THE RETAINING DIKES TO COVER FUTURE DREDGED MATERIAL.

SLIDE 28 - BERM SCHEMATIC 2

THIS SHOWS REPLACING THE EXCAVATED MATERIAL WITH MATERIAL DREDGED FROM THE RIVER. A TEMPORARY ENVIRONMENTAL IMPACT WOULD BE RELATED TO THE NARROW PATH OF THE DREDGE PIPE FROM THE RIVER TO THE BERM SITE.

SLIDE 29 - BERM SCHEMATIC 3

NOW YOU SEE THE FINAL STEP. THE STOCKPILED SOIL IS NOW USED TO COVER THE DREDGED MATERIAL FOR GROWTH OF GRASSES.

SLIDE 30 - DREDGE SITE LOCATIONS FOR BORROW

THIS SHOWS THE DREDGE SITE LOCATIONS IN THE MISSISSIPPI RIVER TO BE USED FOR BORROW TO CONSTRUCT SEVERAL WORK ITEMS AS SHOWN ON THE EAST BANK.

SLIDE 31 - RELIEF WELLS SEEPAGE CONTROL

THE USE OF RELIEF WELLS TO CONTROL SEEPAGE INSTEAD OF BERMS COULD BE USED IN SUITABLE LOCATIONS. PLEASE NOTE THAT CLEAR WATER FLOWING FROM THIS WELL INDICATES THAT NO SOIL IS BEING WASHED OUT FROM UNDER THE LEVEE.

SLIDE 32 - CUTOFF TRENCH SEEPAGE CONTROL

THE USE OF CUTOFF TRENCHES TO CONTROL SEEPAGE INSTEAD OF BERMS COULD BE USED IN SUITABLE LOCATIONS.

SLIDE 33 - COST TABLE

TOTAL COSTS FOR CONSTRUCTION AND MITIGATION FOR UNAVOIDABLE FISH AND WILDLIFE IMPACTS ARE SHOWN HERE FOR PLANS 3 AND 4. AS YOU

CAN SEE, PLAN 3 COST IS APPROXIMATELY $623 MILLION AND PLAN 4 COST IS ABOUT $652 MILLION. THERE IS ABOUT A $29 MILLION COST DIFFERENCE BETWEEN THESE TWO PLANS.

SLIDE 34 - BOTTOM-LAND HARDWOODS IMPACTS

BOTH PLANS 3 AND 4 WERE ANALYZED FOR THEIR EFFECTS ON BOTTOM-LAND HARDWOODS AS SHOWN HERE.

PLAN 3 IMPACTS ROUGHLY 11,600 ACRES OF BOTTOM-LAND HARDWOODS. PLAN 4 REDUCES BOTTOM-LAND HARDWOOD LOSSES BY NEARLY 60 PERCENT OR BY SOME 6,700 ACRES. YOU MAY RECALL IN THE 1976 EIS, AN ESTIMATED 11,400 ACRES OF BOTTOM-LAND HARDWOODS WERE TO BE AFFECTED. BY USING ENVIRONMENTAL DESIGN TECHNIQUES, WE HAVE REDUCED THIS AMOUNT TO 4,800 ACRES. THE 4,800 ACRES IMPACTED IN PLAN 4 AFFECTS LESS THAN ONE-HALF OF 1 PERCENT OF THE TOTAL 1,022,000 ACRES OF BOTTOM-LAND HARDWOODS IN THE PROJECT AREA.

SLIDE 35 - PLAN SELECTION

ALTHOUGH PLAN 4 COSTS SLIGHTLY MORE THAN PLAN 3, PLAN 4 CONSTRUCTION TECHNIQUES DRAMATICALLY REDUCE ENVIRONMENTAL IMPACTS. THEREFORE, PLAN 4 IS THE RECOMMENDED PLAN.

SLIDE 36 - DESCRIPTION OF RECOMMENDED PLAN

THE PROPOSED ACTION INCLUDES 128 WORK ITEMS, COMPRISING THE LEVEE RAISING AND SEEPAGE CONTROL SHOWN HERE. THERE ARE 262.8 MILES OF LEVEES TO BE RAISED AND 131.8 MILES OF SEEPAGE CONTROL. NOTE THAT MOST OF THE LEVEE RAISING IS IN THE VICKSBURG DISTRICT WHILE THE MAJORITY OF THE SEEPAGE CONTROL IS WITHIN THE MEMPHIS DISTRICT.

SLIDE 37 - MITIGATION ANALYSIS

RESULTS OF THE MITIGATION ANALYSIS FOR PLAN 4 WERE THAT FISH AND WILDLIFE LOSSES COULD BE OFFSET BY REFORESTING APPROXIMATELY 5,900 ACRES OF FREQUENTLY FLOODED AGRICULTURAL LANDS AT A COST OF $8.8 MILLION. THIS WOULD FULLY COMPENSATE UNAVOIDABLE LOSSES TO SIGNIFICANT ENVIRONMENTAL RESOURCES. APPROXIMATELY 89 PERCENT OF THESE ACRES ARE LOCATED IN THE VICKSBURG DISTRICT, APPROXIMATELY 11 PERCENT IN THE MEMPHIS DISTRICT AND LESS THAN 1 PERCENT IN THE NEW ORLEANS DISTRICT.

SLIDE 38 - ADDITIONAL MITIGATION FEATURES

IN ADDITION TO THE MITIGATION FEATURE, THE RECOMMENDED PLAN ALSO INCLUDES THESE ENVIRONMENTAL ATTRIBUTES.

SLIDE 39 - OPERATION AND MAINTENANCE REQUIREMENTS

LOCAL LEVEE BOARDS WILL CONTINUE TO PERFORM ALL MINOR OPERATION AND MAINTENANCE AT THEIR COST, AND THE CORPS WILL BE RESPONSIBLE FOR MAJOR MAINTENANCE.

SLIDE 40 - PLAN ACCOMPLISHMENTS

PLAN ACCOMPLISHMENTS INCLUDE:

- PROVIDING PROTECTION FROM THE PROJECT DESIGN FLOOD,
- AN ENVIRONMENTALLY SUSTAINABLE PROJECT,
- COMPENSATION FOR UNAVOIDABLE ENVIRONMENTAL LOSSES AT FULL FEDERAL EXPENSE.

SLIDE 41 - DIVISION OF PLAN RESPONSIBILITY

THESE ARE THE FEDERAL AND NON-FEDERAL IMPLEMENTATION RESPONSIBILITIES. NOTE THAT THE FEDERAL GOVERNMENT WILL CONSTRUCT THE PROJECT AND PAY FOR THE MITIGATION WHILE THE LOCAL SPONSORS WILL PAY FOR LANDS, EASEMENTS, RIGHTS-OF-WAY, RELOCATIONS, AND BORROW AREAS.

SLIDE 42 - CLEAN WATER ACT

A SECTION 404(B)(1) EVALUATION OF THE RECOMMENDED PLAN HAS BEEN PREPARED AND INCLUDED IN THE DRAFT REPORT FOR PUBLIC REVIEW. THE SECTION 404(B)(1) EVALUATION WILL BE USED TO APPLY FOR SECTION 401 CERTIFICATION FROM RESPECTIVE STATES.

SLIDE 43 - KEY MILESTONES

THE DRAFT REPORT IS CURRENTLY BEING REVIEWED BY FEDERAL, STATE, AND LOCAL AGENCIES AND THE CONCERNED PUBLIC. SIX PUBLIC MEETINGS ARE BEING HELD THIS MONTH. COMMENTS ARE BEING SOLICITED UNTIL APRIL 30, 1998, AND WILL BE ADDRESSED IN THE FINAL REPORT. COPIES OF THE LATEST NEWSLETTER WITH A LIST OF LIBRARIES WHERE THE DRAFT REPORT CAN BE READ ARE AT THE BACK OF THE ROOM.

THE FINAL SEIS WILL BE DISTRIBUTED IN JULY 1998 AND THE RECORD OF DECISION IS SCHEDULED FOR SIGNING IN OCTOBER 1998.

SLIDE 44 - CLOSING

WE WANT TO THANK ALL OF THOSE WHO ASSISTED IN THIS EFFORT. THE RECOMMENDED PLAN WILL PROVIDE THE REQUIRED LEVEL OF FLOOD PROTECTION TO THE RESIDENTS OF THE LOWER MISSISSIPPI VALLEY PERMITTING ECONOMIC DEVELOPMENT OF THE REGION WHILE CONCURRENTLY SUSTAINING ITS ENVIRONMENTAL RESOURCES.

THIS CONCLUDES THE PRESENTATION OF STUDY RESULTS.

I WILL NOW TURN THE MEETING BACK OVER TO COL CONNER.

COL CONNER: Thank you, Moody, and thanks to the Vicksburg District for preparing that excellent presentation.

At this time, what we will do is accept statements that have been indicated to us on your registration cards. As of this time, I have one speaker that has asked to be recognized, Mr. Ed Preau from the Louisiana Department of Transportation and Development.

MR. ED PREAU: I have a prepared statement here I would like to make. COL Conner, I am Ed Preau, Deputy Director of Public Works and Flood Control Directorate of the Louisiana Department of Transportation and Development.

I am pleased to be able to present comments to you this evening regarding the Corps of Engineers Draft Project Report and Draft Supplemental Environmental Impact Statement for the Mississippi River Mainline Levees Enlargement and Berm Construction feature of the Mississippi River and Tributaries Project. Whew, I got all of that out.

COL CONNER: And you did an excellent job of it, too.

MR. PREAU: Thank you. So far, so good, right?

First, I would like to stress that providing flood control to the citizens of Louisiana is of primary importance to us. One-third of our state is protected by levees behind which live about 75 percent of our people who produce about 90 percent of our disposable income.

Flood control is a necessity when you live and work in an area through which flows the mightiest river on the continent, a river which drains one and one-quarter million square miles of area including all or parts of 31 states and parts of two Canadian providences.

Louisiana is impacted every time a new subdivision or shopping mall is developed anywhere between Montana and New York. Granted, when these developments are viewed individually, the impact appears infinitesimal. But take them collectively over a number of years over the entire drainage area, these impacts are the reason we are here tonight. The cumulative effect causes the project flood flowline to be revised upward which necessitates raising the levees to maintain just a constant level of protection.

When those of us living at the bottom of this 1.25-million-square-mile drainage area attempt to protect ourselves against the impacts caused by the actions of others over whom we have no control, we are portrayed as spoilers of the environment. We are caught in a no-win situation. We are told we should not be living here at all, and if we persist in trying to survive in this area, we should be willing to make whatever sacrifices are necessary to avoid disturbing any of the natural environment. Basically, we are told just to suck it up so that the rest of the drainage area, that 1.25 million square miles, can develop as it sees fit, totally unchecked.

Those of us charged with coordinating flood control activities in Louisiana are not insensitive to environmental concerns. But with the limited funds available, we must place a higher priority on protecting the lives, property, and livelihoods of the majority of the citizens of Louisiana than on preserving the marginal habitat value of questionably labeled bottom-land hardwoods.

It should be noted that the flood control system in this state does an excellent job of protecting, not only the humans but also landside wildlife habitat, woodlands, wetlands, and other environmentally sensitive areas from the devastation of floods. Because of this, we have in the past spoken against the need for a Supplemental EIS. We felt that flood control work was being slowed down and funds from a very limited MR&T budget were being diverted for the EIS effort while levees were allowed to remain significantly deficient in section and grade.

The most deficient section, the most critical location, in the Mississippi Mainline Levee System is in the vicinity of Lake Providence in northeast Louisiana. As noted in your presentation, a levee failure there could cause as much as $3 billion in damages and would flood an area extending from the river westward to Monroe and from Arkansas all the way down to Old River. However, the Corps committed itself to the provisions to the consent decree and agreed to conduct the additional study.

During the course of these studies, the Corps developed techniques to avoid and minimize environmental damages and, in some cases, to enhance the environment. We have been greatly impressed with some of the Corps ideas. Often labeled inflexible by environmental groups, the Corps has shown that their engineering capabilities could rise to the challenge by developing innovative ways to provide the necessary flood protection while limiting damage to the environment.

However, our concern now is that the avoid-and-minimize plan shown in the draft document will cut even more deeply into the limited MR&T money. The trend in recent years at the Federal level has been to provide a ever-decreasing amount of funding for the MR&T project which is already resulted in extending the

estimated completion date all the way to the year 2031. We feel that if the Federal Government sees these environmental concerns as equal to the need for flood control work and is willing to fund 100 percent of the additional cost, then the Federal Government should provide adequate funds to complete the work in a timely manner. To leave the citizens of Louisiana at risk by further extending the completion date is not an acceptable solution.

We call upon the environmental community, especially those that filed a law suit, to assist us in our pursuit of adequate funding for the environmentally sound MR&T project. We urge all the environmentalists or conservationists or whatever they call themselves to use their congressional contacts to help us increase the MR&T funding to complete this project in a timely fashion.

I thank you for opportunity to comment, sir. I have one question though.

COL CONNER: Yes, sir.

MR. PREAU: The additional lands required for the mitigation, will that be a Federal cost or will that be a local cost?

MR. KENT PARRISH: Mitigation lands are going to be a Federal cost, 100 percent, from willing sellers. We will purchase land from willing sellers.

MR. PREAU: Even though it is a right-of-way issue?

MR. PARRISH: Even though it is a right-of-way addition.

MR. PREAU: Thank you.

COL CONNER: We have a card completed by Mr. Randy Lanctot of the Louisiana Wildlife Federation, and he indicated for making a statement, "maybe." Are you here, sir?

MR. RANDY LANCTOT: Well, since my bureaucratic friends in the stage agency had to say something somewhat derogatory about environmentalists and conservationists, I would just like to say to those bureaucrats or whatever they call themselves that they would be better served to speak more respectfully about conservationists and environmentalists.

The plan--obviously, the Corps has done a lot of hard work in presenting this preferred alternative. It is fairly innovative. It seems to me that it is a new way of doing business for the Corps. It is a drastic improvement in our view from past practices, and it is a step in the right direction.

We are going to take a closer look at the plan, and submit some formal comments at a later date. But, we are not wedded to, and I have to be careful when I say this. Taking all the borrow from the landside or all the borrow from the riverside, it is a combination of whatever works the best in both economic terms and for wildlife and the environment. There are a lot of things that can be done to maintain the quality, the quantity, and the configuration of the habitat. I think, to a large extent, the Corps has looked at that with their preferred alternative. There may be some additional examination that needs to take place, and we would hope to encourage you to do that with more specific comments.

That is all I had to say. I did not really plan to say anything, but, you know, you kind of get tired of getting ragged around, by especially state government, for goodness sakes. You know, we are all from the same state, and we all want flood control.

We appreciate the good job you are doing down in New Orleans, Colonel.

Thank you.

COL CONNER: Thank you, sir. That completes the list of individuals who filled out cards prior to the presentation. Is there anyone in the audience at this time who did not complete a card who would like to make a statement?

Very well. Is there anyone who would like to ask a question of the panel? Sir?

MR. MIKE WALDON: I have asked before. . .

COL CONNER: Sir, would you identify yourself, please?

MR. WALDON: My name is Mike Waldon, and I live in Baton Rouge, Louisiana.

I have asked some of the people from the Corps before what the basis is of the Project Design Flood. I guess it is still 3,000,000 cfs with 1,500,000 coming down past Baton Rouge. I understand that was determined around 1930. It seems to me that with all the development of reservoirs and all the development of impervious areas in the watershed, we shouldn't be spending $600 million or billion or however much money we are going to spend on a Project Design Flood that was determined in the 1930's and may really not be valid any more.

COL CONNER: That is a very good question. The Project Design Flood, the genesis of it is a historical collection of three different storms that happened at three different times in three different parts of the country which represented heavy rainfalls in the Ohio Valley, the Upper Mississippi River Valley, and the

Arkansas River Valley. The combination of those three events that actually did take place, but not at the same time, all combined together produced the Project Design Flood that Mr. Waldon has accurately described.

Since that time, we have not observed any weather data that would lead us to believe that there would be a different amount of rainfall in any drastic-type of pattern that would be such that it would cause us to have to alter the statistics that we used for the Project Design Flood. So we still use it. We consider it to still be an accurate measure of something to prepare ourselves for.

Anyone else on the panel care to comment?

MR. PARRISH: Just this past year during the 1997 up at the Old River, just north of Old River, the stages exceeded the 1927 flood. So you had extremely high events. Most of the public is unaware of that situation that existed up there.

COL CONNER: Anyone else like to ask this panel a question?

MR. WARREN KRON: My name is Warren Kron. I am just wondering if there were any Landscape Architects working on the presentation you had tonight and if there will be when you actually carry this out?

MR. CULPEPPER: Yes, there were Landscape Architects involved and will continue to be so.

MR. GARY YOUNG: A Landscape Architect actually did the Recreation and Esthetics Appendix for us. So some of this design on the aquatic borrow pits, some of that conceptual stuff, was done by a Landscape Architect, also.

COL CONNER: Another question, Jerry?

MR. GERALD DYSON: Can I comment?

COL CONNER: Sure. Please identify yourself for the record.

MR. DYSON: Gerald Dyson, representing the Pontchartrain Levee District.

There are several things in the SEIS that this Levee District will comment on, and we would like to have the privilege of submitting a written statement in about 2 weeks. We wanted to come tonight, and I promised you I would be quiet. But I must make a couple of points here regarding the increased cost.

I believe Mr. Culpepper indicated that the Levee Districts and local assuring agencies would be responsible for coming up with these extra monies. In Louisiana, we don't have it. There is a

low tax. A maximum of 5 mil, and even that has been lowered by our legislature in the State.

Right now the Pontchartrain Levee District is about, what, 3.8 mils. It is designed and was designed back the beginning of this flood control project to provide for maintenance only. That is the way it still is. So we are going to be in a bind. We will not have enough money to step out and do other things.

Regarding the compensatory mitigation. Federal will pay the entire cost. Where does that money come from? It comes from the dollars that is appropriated by Congress that should be going to construction. It will not. It will extend the project further into the future. I believe I have even heard a date of 2031 as a possible future date for completion, and even that will be extended.

I won't mention several other things that we in the Pontchartrain Levee District are interested in. We are delighted to go along with the plan as far as we can. When the funds are exhausted, there will be no more. There will be a maximum. This is not the only Levee District. Of the 22 or so in the state, they are all in the same boat.

The Fifth Louisiana Levee District in Lake Providence, your Vicksburg District knows has been at the bottom of the bucket. They have no money. And they cannot purchase rights-of-way to correct those deficiencies of up to 8 feet too low on the levees.

So we are in a bind, and we do not agree that the construction funds should be placed on environmental benefits. If these are going to be a produced fact, then we need to have supplemental appropriations or some kind of special funding from Congress to do this if the "Feds" are going to pay it. Now, the "Feds" are going to pay for it now, and unless that is written into the law, when the Administration changes, there is a good chance that the next people who sit in that chair to make those decisions will say, hey, we cannot do this; that has to be a local cost. So that has to be written into the law so that it will continue.

You will find that we will cooperate fully. The bottom-land hardwoods that are most abundant in the Pontchartrain Levee District are the lowly willow trees. I was astounded to find out, after this study got started--I believe your New Orleans staff people informed me about that--that willow trees are a bottom-land hardwood. I still cannot believe it. But we have plenty. So if you want to get some, we will give you some.

We do look forward to submitting our written comments. You have done a real good job in pursuing this required environmental assessment study. We appreciate the continuing construction. I know you Corps of Engineers people have negotiated and worked out very difficult, hard times to keep these items going. And we

appreciate that. We look forward to continuing the levee improvement items and working with you to get the best results possible.

Thank you.

COL CONNER: Thank you, sir. Do we have any other speakers. If there are no more statements, then I would like to remind you that the comment period for the written comments will remain open through the 30th of April of this year. If you wish, you may drop those comments off with the panel before you leave tonight or mail them to the office in New Orleans.

So, with that, I thank you all and wish you a pleasant evening.

Meeting adjourned at 7:50 p.m.

LIST OF EXHIBITS

No. 1 - Notice of Public Meetings

No. 2 - Copy of Newsletter, February 1998

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
4155 CLAY STREET
VICKSBURG, MISSISSIPPI 39180-3435

REPLY TO
ATTENTION OF:

NOTICE OF PUBLIC MEETINGS MISSISSIPPI RIVER AND TRIBUTARIES PROJECT, MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT MARCH 16-19 AND 30-31, 1998

The U.S. Army Corps of Engineers, Vicksburg, Memphis, and New Orleans Districts, have prepared a Draft Project Report and Draft Supplemental Environmental Impact Statement for the Mississippi River Mainline Levees Enlargement and Berm Construction feature of the Mississippi River and Tributaries Project. All planned work is located between Cape Girardeau, Missouri, and Head of Passes, Louisiana. The proposed improvements would provide the congressionally authorized level of protection from Mississippi River flooding by raising deficient levee sections and controlling underseepage.

This report will be reviewed by various Federal, state, and local agencies and other interested organizations. Copies of the Draft Project Report and Draft Supplemental Environmental Impact Statement will be on deposit March 3, 1998, in the following libraries:

Arkansas

Mississippi County Library System
200 North 5th
Blytheville, Arkansas 72315

Illinois

Cairo Public Library
1609 Washington Avenue
Cairo, Illinois 62914

Kentucky

Paducah Public Library
555 Washington Street
Paducah, Kentucky 42003-1735

Louisiana

Ascension Parish Public Library
500 Mississippi Street
Donaldsville, LA 70346-2535

East Baton Rouge Parish Library
7711 Goodwood Boulevard
Baton Rouge, LA 70806-7625

Ferriday/Concordia Parish Library
1609 Third Street
Ferriday, LA 71334-2298

Madison Parish Library
403 North Mulberry
Tallulah, LA 71282-3599

Exhibit 1

New Orleans Parish Library
219 Loyola
New Orleans, LA 70140-1016

State Library of Louisiana
Louisiana Section
760 North 3rd Street
Baton Rouge, LA 70802

Mississippi

Homochitto Valley Library Service
220 South Commerce
Natchez, Mississippi 39120

Warren County/Vicksburg Library
700 Veto Street
Vicksburg, MS 39180-3595

Carnegie Public Library
114 Delta Avenue
Clarksdale, Mississippi 38614

Washington County Library
341 Main Street
Greenville, Mississippi
38701-4097

Missouri

Cape Girardeau Public Library
711 North Clark
Cape Girardeau, MO 63701

Tennessee

McIvers Grant Public Library
204 North Mill Street
Dyersberg, TN 38024-4631

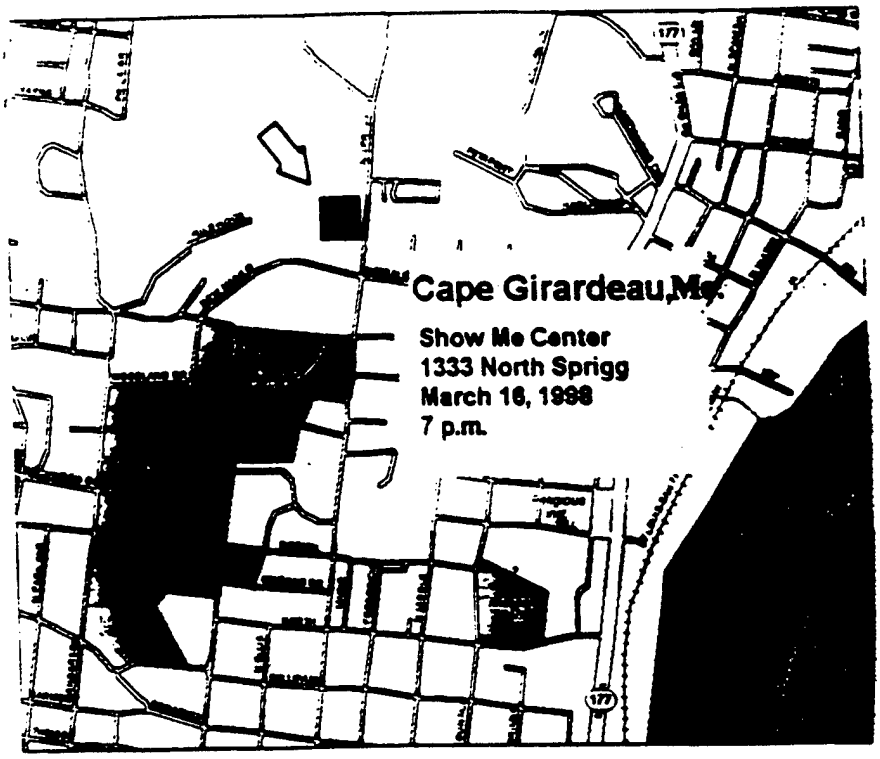
Memphis/Shelby County Public Library
1850 Peabody Avenue
Memphis, Tennessee 38104-4021

Newbern City Library
220 East Main
Nerbern, Tennessee 38059-1528

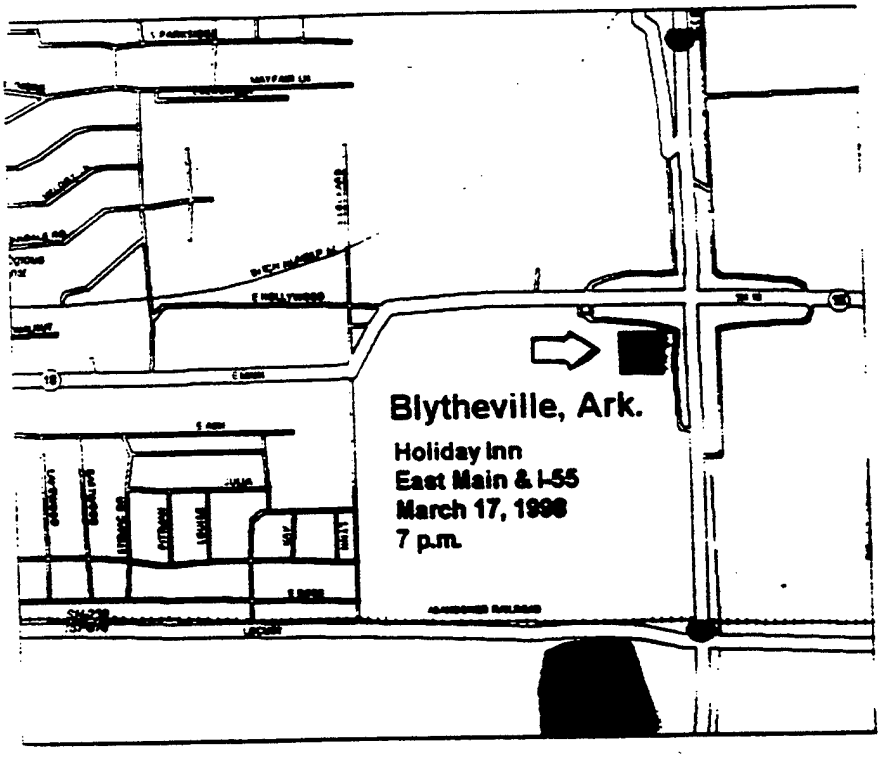
Tiptonville Public Library
126 Tipton Street
Tiptonville, TN 38079

To allow all interested individuals an opportunity to ask questions or express views, public meetings will be held in the locations shown below at 7 p.m. on the indicated dates:

Monday, March 16, 1998
Show Me Center
1333 North Sprigg Street
Cape Girardeau, Missouri

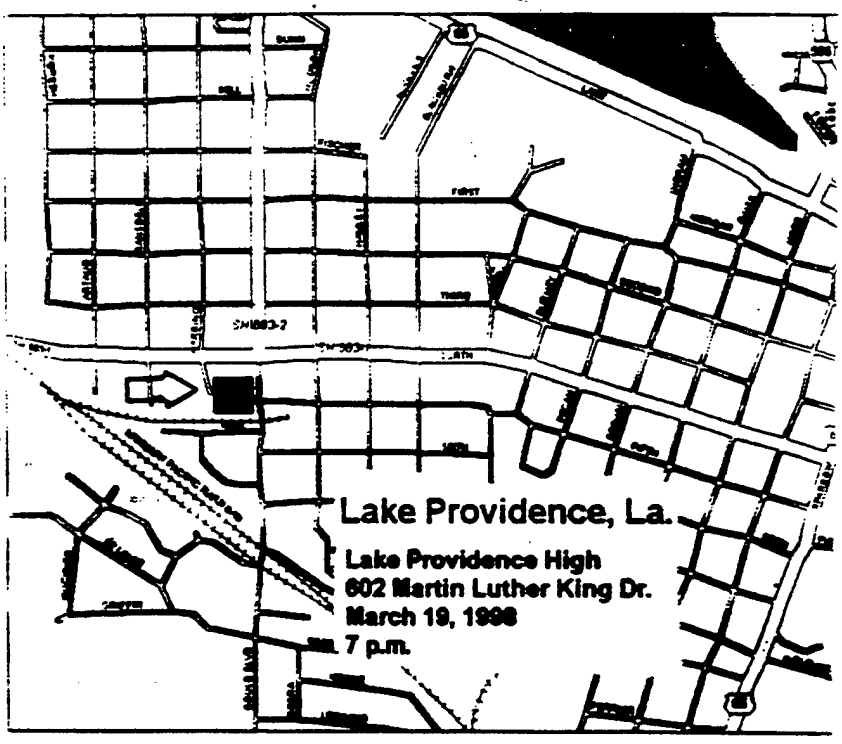


Tuesday, March 17, 1998
Holiday Inn
East Main & I-55
Blytheville, Arkansas

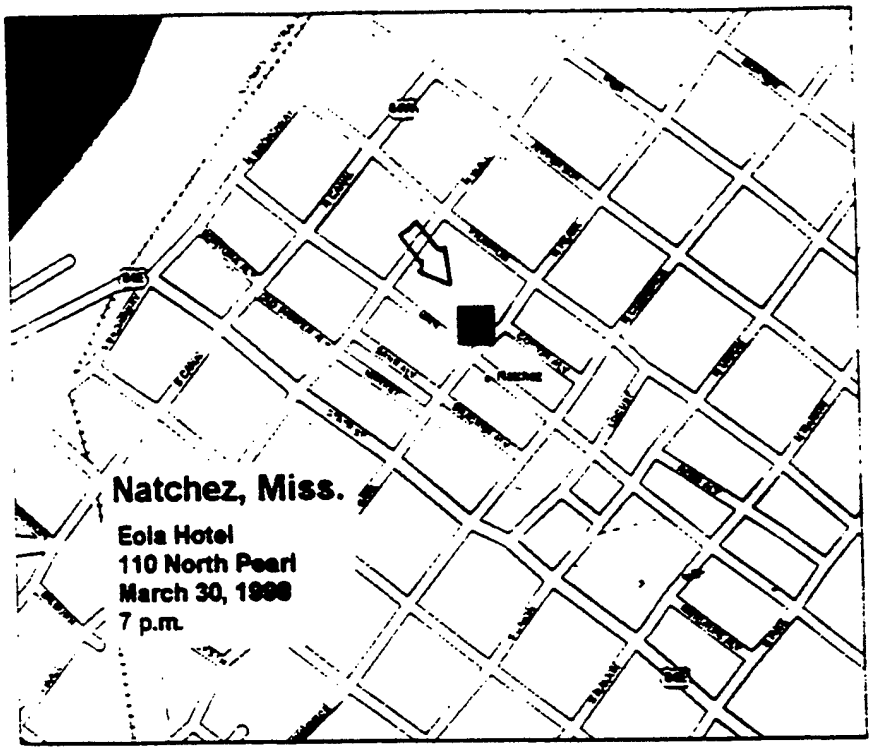


Wednesday, March 18, 1998
Solomon Jr. High School
556 Bowman Boulevard
Greenville, Mississippi

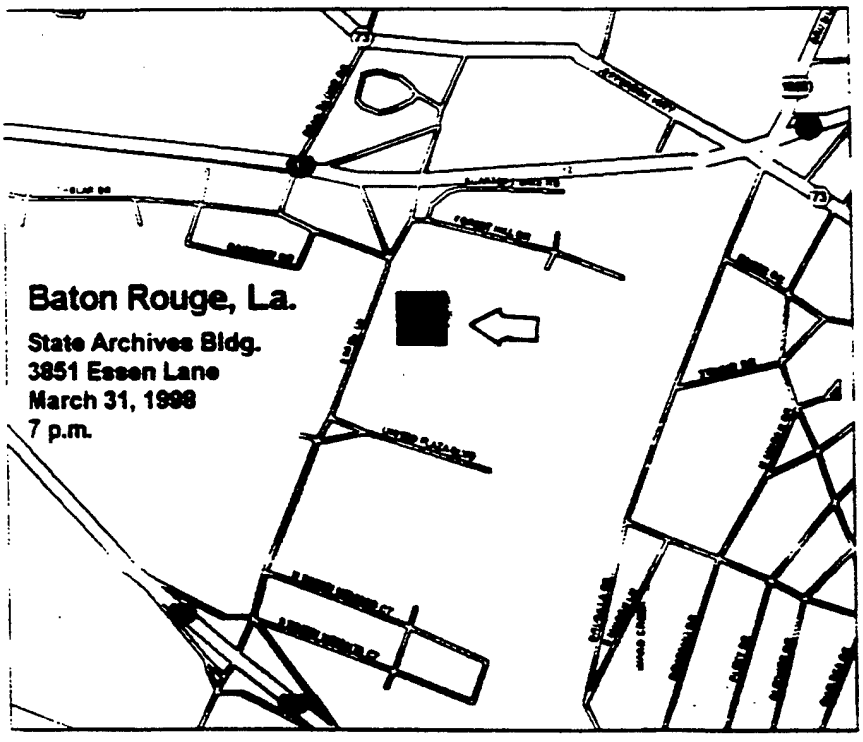
Thursday, March 19, 1998
Lake Providence High School
602 Martin Luther King Drive
Lake Providence, Louisiana



Monday, March 30, 1998
Eola Hotel
110 North Pearl
Natchez, Mississippi



Tuesday, March 31, 1998
State Archives Building
3851 Essen Lane
Baton Rouge, Louisiana



Information regarding evaluations conducted and project plan recommended will be presented. At the end of the formal presentation, oral statements may be made by the public, followed by a question-and-answer session. Written statements may be submitted at the meetings or mailed to the above address, ATTN: CEMVK-PD-F.

Proceedings of these meetings will be recorded, and summaries will be prepared and incorporated into the Project Report. Mailed statements must be received by April 30, 1998, to be included in the official record.

Gary W. Wright
Colonel, Corps of Engineers
District Engineer

DEPARTMENT OF THE ARMY
VICKSBURG DISTRICT, CORPS OF ENGINEERS
4155 CLAY STREET
VICKSBURG, MISSISSIPPI 39180-3435

OFFICIAL BUSINESS
CEMVK-PD-F

NOTICE OF PUBLIC MEETINGS

US Army Corps
of Engineers

MISSISSIPPI RIVER & TRIBUTARIES PROJECT
MISSISSIPPI RIVER MAINLINE LEVEES
DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

US Army Corps
of Engineers
February 1998

Mississippi River & Tributaries Project
Mississippi River Mainline Levee
Enlargement & Berm Construction Project
Supplemental Environmental Impact Statement

NEWSLETTER

Maj. Gen. Anderson:

"A Strong Environmental Ethic Is Part Of How We Conduct Our Business"

Comments On Levee Enlargement Program

"Our commitment is to have an environmentally sustainable project," Maj. Gen. Phillip R. Anderson, commander of the Mississippi Valley Division, U.S. Army Corps of Engineers, said in a special Newsletter interview. "Simply put, we must balance environmental and economic development concerns and we fully intend to do this."

The general, who also is president of the Mississippi River Commission, made his comment regarding an update study being conducted in relation to an ongoing enlargement program for Mississippi River mainline levees.

The Memphis, Vicksburg and New Orleans Districts of the Corps of Engineers are currently preparing a supplement to the 1976 Environmental Impact Statement that includes the mainline Mississippi River levee project. The Supplemental Environmental Impact Statement (SEIS) will describe the effects of enlarging sections of the mainline levees on environmental resources and fish and wildlife habitat of the Mississippi River floodplain. The SEIS is based on an extensive reevaluation of remaining levee work to ensure that all environmental requirements are met and that negative impacts are avoided, minimized or compensated.

The reevaluation of the environmental impact of mainline levees, berms and seepage construction will ensure that current and remaining projects meet environmental requirements.

"Environmental aspects have equal standing with economics and engineering," Anderson said. "A strong environmental ethic is part of how we conduct our business. Sustaining our environment is a necessary part of building and securing our nation."

Maj. Gen. Phillip R. Anderson

Long-Term Project Triggered by 1927 Flood

A disastrous flood caused by levee failure in 1927 led Congress to create the Mississippi Rivers & Tributaries Act. The act set in motion a long-term project where 1,600 miles of levees from Cape Girardeau, Mo., to the Gulf of Mexico, would be brought to proper height and grade to handle a "Project Flood."

The Project Flood is a model of the worst flood that could be predicted, based on past flooding and waterflow levels. Based on current funding levels, all of the MR&T levees are scheduled to be upgraded and made capable of handling the Project Flood by the year 2031.

There are about 280 miles of mainline levees which are still below height

and grade and are scheduled for improvements. Since improvements primarily involve using soil near project sites or "borrow" material, the major focus is on protecting bottomland hardwoods in borrow areas.

MR&T Project Returns $18 For Each $1 Spent

"The nation has invested almost $10 billion to date to plan, design, construct, operate and maintain the MR&T project, and savings through flood damage prevention have totaled more than $182 billion, a return of $18 for each $1 spent," Anderson said.

He added, "The Mississippi River's levees protect over 4.5 million people, or about 1.5 million households whose residences are valued at $114 billion.

"Further, an estimated 33,000 farms and farm buildings valued at $13 billion also are protected by the levees, and the earning power of people living and working in the 49,000 square miles impacted by the levees totals $64 billion annually."

General Anderson also noted that the Mississippi and its tributaries drain 41 percent of the contiguous United States, touching 31 states and Canada and encompassing more than 1.2 million square miles.

The river also forms the Mississippi Flyway, the nation's most important route for millions of annually migrating waterfowl.

Endangered Species, Fish, Waterfowl & Wildlife Habitat Included In Study

"While the focus of the SEIS is on bottomland hardwood wetlands, it also includes impacts on all areas of the environment, such as endangered species, terrestrial, aquatic and waterfowl resources.

"The SEIS will ensure that environmental impacts of the project are avoided, minimized or compensated and also ensure that the Corps is in compliance with the National Environmental Policy Act (NEPA)," Anderson said.

SITES & DATES SET FOR PUBLIC MEETINGS

Six sites in four states have been chosen for public meetings in March 1998 to receive comments on the draft Supplemental Environmental Impact Statement (SEIS).

The sites and dates:

Meetings Begin In Missouri On March 16

Monday, March 16, 1998 at the Show Me Center, 1333 North Sprigg Street, **Cape Girardeau, Mo**; March 17, 1998 at the Holiday Inn, East Main & I-55, **Blytheville, Ark.**; Wednesday, March 18, 1998, at the Solomon Junior High School, 556 Bowman Boulevard, **Greenvile, Miss.**; Thursday, March 19, 1998, at the Lake Providence High School, 602 Martin Luther King Drive, **Lake Providence, La.**; Monday, March 30, 1998, at the Eola Hotel, 110 North Pearl, **Natchez, Miss.**, and Tuesday, March 31, 1998, at the State Archives Building, 3851 Essen Lane, **Baton Rouge, La.**

The meetings are open to the public and will begin at 7 p.m.

The Corps of Engineers will make an audio-visual presentation of the report's contents. Biologists, engineers, and other specialists also will explain the development and implementation of evaluation methods that led to the draft report and its findings.

After the public meetings, there will be a 30-day period for written public responses, which will be included in a final report that is due to be completed in October.

Accompanying maps show the location of the meeting sites for persons wishing to attend.

Commonly Used Corps Terms That Could Use Some Explaining ...

Everybody does it, not just the Corps of Engineers. And that's the practice of using words in everyday conversation that is unique to a profession or trade. It's sort of like when you were in school, the teacher asked you to define a word, and you tried hard not to use the word itself in your explanation, even though that was the best word that could be used to answer the question!

Use Same Language For Better Understanding

So, if you are having a conversation about rivers and levees and the Supplemental Environmental Impact Statement with someone from the Corps,

here's some help to understand words they use every day but you probably don't:

GIS – Geographic Information Systems. An information-gathering process where a database of related information is developed and analyzed for a specific site. For example, economic, environmental, population, agricultural, industrial, etc., data for a three-mile stretch of land alongside a river.

Delineation – A process which identifies and classifies specific areas. For example, field scientists will make a delineation that determines the boundaries of a wetland in an agricultural area.

Ground Truthing – The act of personal, on-site examination of an area to determine the accuracy of previous delineations by some other means, such as aerial photography.

Sand Boil – That's where high water has seeped under a levee and is coming to the surface on the land side carrying sands and silts from beneath the levee. Sandbags are placed around the emerging water to form control rings which allows the water to keep flowing while sediments remain in place.

Water Seeping Under Levee Is Expected

Underseepage – A naturally occurring process where river water seeps under a levee to its land side. The seepage is not a danger to the levee if controlled properly.

Slurry Cutoff – An earth excavation method used to provide a positive underseepage cutoff at the riverside toe of the levee.

Berm – A blanket of earth built where the levee meets normal terrain on its land side. The berm provides added weight and safely forces the exit of underseepage further away from the levee. There are two types: seepage and stability. Stability berms are built to reinforce areas along the levee.

Plantation – No, it's not an old Southern cotton farm. Biologists generally use this term when referring to a large cluster of same species trees purposely planted in a specific area, such as "a plantation of cottonwood."

"Borrow Pits" Or "Bar Pits?"

Borrow Area – Sometimes called "borrow pits," or "bar pits." It's where earthen material was excavated and then used for levee construction. Older borrow areas have naturally developed into prime hunting and fishing areas.

Project Flood – A theoretical flood projected from data of past floods. It is the largest flood that has a reasonable probability of occurrence and it is the standard for which levee heights are determined.

Avoid and Minimize – The Corps environmental policy: Avoid any environmental loss. If unavoidable, minimize the loss. And compensate any loss so that there will be no net loss.

Relief Well – Pretty much like it says. A well device next to a levee to provide relief by collecting seepage and routing it away from the area and into a natural drainage system. These are often used in lieu of berms.

Commonly Used Term Has French Origin

Batture – A French term applied to land between a levee and the river. Commonly used along the Mississippi from Louisiana northward.

Cultural Resources – Generally used to define meaningful archaeological finds, such as Indian mounds, historical artifacts, early settlement sites, sunken paddlewheelers, etc.

Crevasse - An area where a levee fails from prolonged pressure and the river rushes through into an area it's not supposed to go. As the river rushes through the levee's gap, it erodes soil away and the crevasse quickly widens until the pressure is equalized

Interagency – Any interaction of two or more government agencies. On environmental issues, for example, the Corps of Engineers working with the U.S. Fish and Wildlife Service and the Environmental Protection Agency on a single project.

Terrestrials – Generally refers to forested habitat and animals that depend on this habitat.

Area Valuable For Birds Visiting Temporarily

Neotropical Migrants – Birds that are not permanent residents but spend part of their time in Southern areas as part of their annual migration.

Aquatics – Generally refers to fish and their habitat that are found in borrow area.

Arkansan Feels Pinched By Programs

(Editors Note: The following is written by Ms. Laura Busby of Marion, Ark., whose family farms land near the Mississippi River.

Make Repairs And Completion A National Priority

The Mississippi River has a mind of its own and without the discipline of a well-planned levee system would, without a doubt, take many thousands of lives and destroy the largest and most efficient agricultural economy in the world.

The immediate resumption of repairs and the completion of levee-raising projects under the Mississippi Rivers & Tributaries project should be a national priority. The projects need to be completed as soon as possible because they protect the safety of all people who live near the river. Most importantly, the river is the artery that feeds the heart of the United States.

It is not, as some say, better to let the river run free and return to a wilderness state as it appeared when Columbus discovered America.

I am an American farmer and I want my government to take a second look at the motive and interests of organized environmental groups whose legal actions have impacted levee-raising projects. I believe that, as a nation, those of us who farm lands alongside the river must be the first to be considered.

EPA And Other Agency Regulations Govern Land Use

As a farmer in east Arkansas, laws and regulations regulating levees are not the only government programs affecting us. For example, we now must deal with a new agenda called "Sustainable America" created by presidential order and turned over to Vice President Gore to administer. We have a number of reasons to be concerned as we see implementation of programs that have been developed mainly by appointees of this administration and a very select group of environmentalists. In addition to local and federal laws and regulations governing my family's land bordering the river and new regulations developing from Sustainable America, we also are impacted by regulations issued by other government agencies, such as the Environmental Protection Agency.

All these groups trying to tell us how to take care of our land makes me wish that everybody would simply take a few minutes and ask themselves who most benefits from the land and, therefore, who knows better how to take care of it? It's simple, the farmer. And what I see is pretty clear: if the levee enlargement program is not completed, America's citizens, their property, agriculture-producing capability, wildlife and domestic animal life could suffer tragic and perhaps permanent damage.

Levees Constantly Evolving Like the River

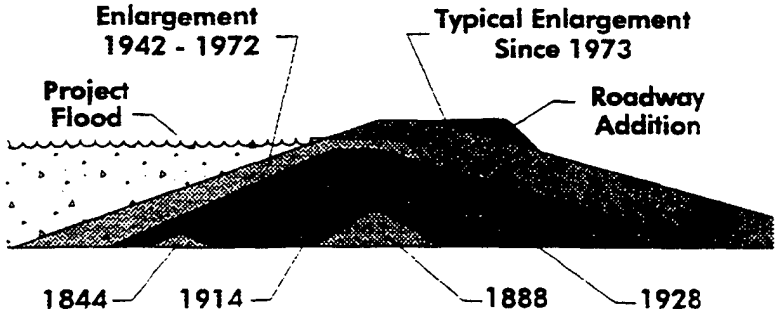
1,610 Miles of Levees Protect People, Cities, Animals & Property

The levees that keep the Mississippi River in check today are quite different from the first one built in the late 1700s to protect New Orleans.

That first levee was three feet high, 5,400 in length and 18 feet wide at its top. Today, there are 1,610 miles of levees from Cape Girardeau, Mo., to the Gulf of Mexico protecting people, cities, towns, farms, domestic animals, and property. And a typical levee today might be 20 to 25 feet high, 10 feet wide without a roadway and 25 feet wide with a roadway at the top.

The illustration below shows how levees have evolved.

EVOLUTION OF MISSISSIPPI RIVER LEVEES



SEIS Study Information Now At 18 Libraries

Mississippi, Louisiana And Tennessee Libraries Added

Three new public libraries have been added as sites for display of public documents related to the Supplemental Environmental Impact Statement (SEIS) being prepared for the Army Corps of Engineers' mainline levee-raising and enlargement project.

They are: **Carnegie Public Library**, 114 Delta Avenue, Clarksdale, MS 38614, 601-624-4461; **State Library of Louisiana**, Louisiana Section, 760 North Third Street, Baton Rouge, LA 70802, 601-342-4914, and **Tiptonville Public Library**, 126 Tipton Street, Tiptonville, TN 38079, 901-253-7391.

Fifteen other libraries already are serving as public document repositories. They are:

ARKANSAS:
Mississippi County Library System
200 North 5th
Blytheville, AR 72315
501-762-2431

KENTUCKY:
Paducah Public Library
555 Washington Street
Paducah, KY 42003-1735
502-442-2510

MISSISSIPPI:
Homochitto Valley Library Service
220 South Commerce
Natchez, MS 39120
601-445-8862

Warren County/Vicksburg Library
700 Veto Street
Vicksburg, MS 39180-3595
601-636-6411

Washington County Library
341 Main Street
Greenville, MS 38701-4097
601-335-2331

TENNESSEE:
McIvers Grant Public Library
204 North Mill Street
Dyersberg, TN 38024-4631
901-285-5032

Memphis/Shelby County Public Library
1850 Peabody Avenue
Memphis, TN 38104-4021
901-725-8853

Newbern City Library
220 East Main
Newbern, TN 38059-1528
901-627-3153

ILLINOIS:
Cairo Public Library
1609 Washington Avenue
Cairo, IL 62914
618-734-1840

LOUISIANA:
Ascension Parish Public Library
500 Mississippi Street
Donaldsonville, LA 70346-2535
504-473-8052

E. Baton Rouge Parish Library
7711 Goodwood Boulevard
Baton Rouge, LA 70806-7625
504-231-3700

Ferriday/Concordia Library
1609 Third Street
Ferriday, LA 71334-2298
318-757-3550

Madison Parish Library
403 North Mulberry
Tallulah, LA 71282-3599
318-574-4308

New Orleans Public Library
219 Loyola
New Orleans, LA 70140-1016
504-596-2602

MISSOURI:
Cape Girardeau Public Library
711 North Clark
Cape Girardeau, MO 63701
314-334-5279

District-At-A-Glance:

MEMPHIS TERRITORY TOUCHES SIX STATES

25,000 Square Miles Under District Domain

The Memphis District of the U.S. Corps of Engineers includes almost 25,000 square miles of the Lower Mississippi Valley and encompasses parts of Mississippi, Tennessee, Arkansas, Missouri, Illinois and Kentucky.

The District's major missions include inland navigation, flood control,

environmental protection and restoration, and emergency response.

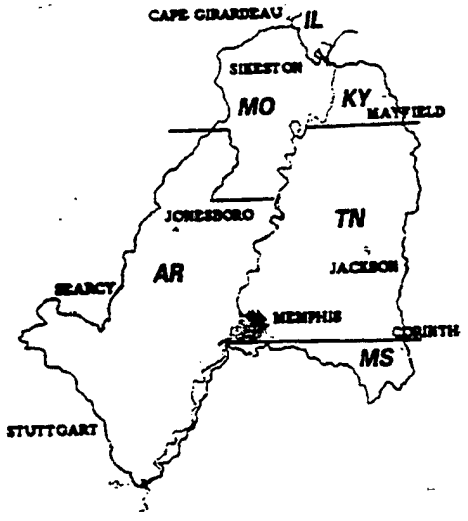
Memphis is responsible for maintaining and improving 255 miles of the Mississippi River's main channel from Cairo, Ill., to the mouth of the White River in Arkansas.

Maintains 640 Miles Of Levees, 8 Inland Harbors, 254 Miles Of Navigation

A total of 640 miles of mainline levees along the Mississippi River and its tributaries, eight inland harbors and 254 miles of navigation on the White River also is maintained by Memphis.

The District, the people of the Mid-South and many non-Federal partners have enjoyed a mutually beneficial relationship for over a century. Each year, the District circulates about $117 million in the community, including $40 million in construction projects and $50 million to vendors for operations and maintenance items.

From 1993 to 1996, flood control efforts by the Memphis District have saved American taxpayers over $4 billion. And during the same period, the Memphis Corps protected hundreds of communities, thousands of homes and businesses and millions of acres of farmland from flood damage.



District Territory

Public Affairs Office Offers Assistance

For more information, the Memphis District Public Affairs Office is located at 167 North Main Street, Room B-202, Memphis, TN 38103-1894, Telephone 901-544-3348, and FAX 901-544-3786. Or check out the district website on the internet: www.lmm.usace.army.mil

(Next: the Vicksburg District)

Internet Carries Newsletter, Other Information

The Newsletter is not the only way you can stay informed about the Supplemental Environmental Impact Statement, Mississippi River Mainline Levee project and other Corps of Engineers projects. You also can check the World Wide Web.

Internet users can get the latest information on the Supplemental Environmental Impact Statement study, and other information about the Corps of Engineers by checking the internet web site of its Vicksburg District:

www.mvk.usace.army.mil

The site will contain the Newsletter and other SEIS information that will be periodically updated until the study's final results are released in the Fall of 1998.

You also can check out happenings in the Memphis District at **www.mvm.usace.army.mil** and do the same for the New Orleans District at www.mvn.usace.army.mil.

FOR FURTHER INFORMATION ...

Here are telephone numbers of U.S. Army Corps of Engineers' project/technical managers for the Mississippi River Mainline Levees' project who can provide assistance to the public or answer specific questions from concerned parties:

Persons To Contact At New Orleans, Vicksburg, Memphis

Kent Parrish, Vicksburg District, 601-631-5006
Moody Culpepper, Vicksburg District, 601-631-5962
Billy Dycus, Memphis District, 901-544-3455
Robert Campos, New Orleans District, 504-862-2998

COMMENTS?

Editors Note: If you have a statement you would like to make regarding the Supplemental Environmental Impact Statement project, or a comment you would like to be presented in the Newsletter, please include the following information and mail your statement to: Moody Culpepper, U.S. Army Corps of Engineers, 4155 Clay Street, Vicksburg, MS 30180-3435.

Name_____Tel. No. ( )_____
Address_____

City/State_____ZIP_____

Comments (Or, if more space is needed, include on a separate sheet):

Privacy Act Statement:

In accordance with the Privacy Act of 1974 (Authority 8: Chapter 5, ER 1105-2-100), routine uses of the information obtained from this form include compiling official mailing lists for future informational publications and recording additional views and public participation in studies.

STATE OF LOUISIANA
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
P. O. Box 94245
Baton Rouge, Louisiana 70804-9245

M. J. "MIKE" FOSTER, JR.
GOVERNOR

FRANK M. DENTON
SECRETARY

DATE 4.1.98

FAX TRANSMITTAL

TO: Hoody Culpepper

PHONE #

FAX # 601 · 631 · 5027

FROM: Edmond J. Preau, Jr.
Deputy Director,
Public Works & Flood Control

PHONE # (504) 379-1250

FAX # (504) 379-1394

6 number of pages (including cover sheet)

COMMENTS: As promised at the public hearing in Baton Rouge.

If you have any trouble with this transmission please call (504) 379-1220

ORAL STATEMENT

PRESENTED TO

U.S. ARMY CORPS OF ENGINEERS
VICKSBURG DISTRICT

PUBLIC MEETING

MISSISSIPPI RIVER AND TRIBUTARIES PROJECT
MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT
AND BERM CONSTRUCTION
DRAFT PROJECT REPORT AND
DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT
BATON ROUGE, LOUISIANA

MARCH 31, 1998

ON BEHALF OF
THE STATE OF LOUISIANA

MURPHY J. "MIKE" FOSTER, JR., GOVERNOR

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
FRANK M. DENTON, SECRETARY
BY
EDMOND J. PREAU, JR.
DEPUTY DIRECTOR
PUBLIC WORKS AND FLOOD CONTROL DIRECTORATE

Colonel Conner, I am Ed Preau, Deputy Director of Public Works and Flood Control for the Louisiana Department of Transportation and Development. I am pleased to be able to present comments to you this evening regarding the Corps of Engineers' Draft Project Report and Draft Supplemental Environmental Impact Statement for the Mississippi River Mainline Levees Enlargement and Berm Construction feature of the Mississippi River and Tributaries Project.

First, I would like to stress that providing flood control to the citizens of Louisiana is of primary importance to us. One-third of our state is protected by levees behind which live about 75% of our people, producing 90% of our disposable income. Flood control is a necessity when you live and work in an area through which flows the mightiest river on the continent, a river which drains 1 1/4 million square miles containing all or part of 31 states and parts of two Canadian provinces.

Louisiana is impacted every time a new subdivision or shopping mall is developed anywhere between Montana and New York. Granted, when these new developments are viewed individually the impact appears infinitesimal. But taken collectively over a number of years, throughout the entire drainage basin, these impacts are the reason we are here tonight. The cumulative effect causes the project flood flowline to be revised upward which necessitates raising the levees just to maintain a constant level of protection.

When those of us living at the bottom of this 1 - 1/4 million square mile drainage area attempt to protect ourselves against the impacts caused by the actions of others over whom we have no control, we are portrayed as spoilers of the environment. We are caught in a no-win situation. We are told we should not be living here at all, and if we persist in trying to survive in this area, we should be willing to make whatever sacrifices necessary to avoid disturbing any of the natural environment. We are told to just suck it up so the rest of the enormous drainage basin can develop unchecked.

Those of us charged with coordinating flood control activities in Louisiana are not insensitive to environmental concerns. But with the limited funds available, we must place a higher priority on protecting the lives, property, and livelihoods of the majority of the citizens of Louisiana than on preserving the marginal habitat value of questionably labeled "bottomland hardwoods". Incidently, the flood control system in Louisiana not only protects humans but also does an excellent job of protecting landside wildlife habitat, woodlands, wetlands, and other environmentally sensitive areas from the devastation of floods.

For these reasons we have, in the past, spoken against the need for a supplemental EIS. We felt that flood control work was being slowed down and funds from the limited MR&T budget were being diverted for the EIS effort while levees were allowed to remain significantly deficient in grade and section. The most critical location in the Mississippi River mainline levee system is in the vicinity of Lake Providence in northeast Louisiana. A levee

failure there could cause as much as $3 billion in damages. The devastated area would encompass the entire northeast portion of Louisiana from the Arkansas state line to Old River extending westward from the Mississippi River to Monroe.

Be that as it may, the Corps committed itself to the provisions of the consent decree and so agreed to conduct the additional studies. During the course of these studies, the Corps developed techniques to avoid and minimize environmental damages and in some cases, to enhance the environment. We have been greatly impressed with some of the Corps' ideas. Often labeled "inflexible" by environmental groups, the Corps has shown that their engineering capabilities could rise to the challenge by developing innovative ways to provide the necessary flood protection while limiting impacts to the environment.

Our concern now is that the "avoid and minimize" plan portrayed in the draft document will cut even more deeply into the limited MR&T money. The trend in recent years at the Federal level has been to provide an ever decreasing amount of funding for the MR&T project. This has already resulted in extending the estimated completion date to the year 2031. To further extend the length of time Louisiana citizens will remain at risk is an unacceptable solution. If the Federal government sees environmental concerns as equal to the need for the flood control work, and is willing to fund 100% of the additional cost, then the Federal Government must provide an adequate amount of funds to complete the work in a timely manner.

We call upon the environmental community, especially those that

filed the lawsuit, to assist us in our pursuit of adequate funding for the environmentally sound MR&T project. We urge you environmentalists and conservationists to use your Congressional contacts so that MR&T funding can be increased to appropriate levels. We are all concerned about the environment, which is another good reason to finish the MR&T project as soon as possible.

Thank you for the opportunity to comment.

APPENDIX 6
ENGINEERING

MISSISSIPPI RIVER AND TRIBUTARIES PROJECT
MISSISSIPPI RIVER MAINLINE LEVEES
ENLARGEMENT AND SEEPAGE CONTROL
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

APPENDIX 6
ENGINEERING

Table of Contents

Item	Page
SECTION 1 - GENERAL	6-1
PURPOSE OF ENGINEERING APPENDIX	6-1
PRIOR REPORTS	6-1
SECTION 2 - HYDROLOGY/HYDRAULICS	6-2
DESCRIPTION OF MISSISSIPPI RIVER BASIN AND PROJECT AREA	6-2
DRAINAGE BASIN CHARACTERISTICS	6-2
Morphology	6-2
Temperature and Precipitation	6-3
Streamflow	6-3
HISTORY OF FLOOD CONTROL AND MISSISSIPPI RIVER FLOODING	6-6
Overview	6-6
Major Historical Mississippi River Floods	6-7
FLOOD CONTROL MEASURES	6-17
Mississippi River Levees	6-17
Impacts of Levee Construction Alternatives	6-25

Table of Contents (Cont)

Item	Page
Mississippi River Levee Seepage Handling Facilities	6-27
HYDROLOGIC AND HYDRAULIC ANALYSES FOR ENVIRONMENTAL STUDY	6-28
Hydrologic Criteria and Statistical Computations	6-28
MISSISSIPPI RIVER LEVEE SEEPAGE HANDLING FACILITIES IN THE COMMERCE TO BIRDS POINT REACH	6-32
RELIEF WELL FLOWS	6-35
SECTION 3 - GEOTECHNICAL	6-35
GEOLOGY	6-35
Introduction	6-35
Investigations Performed	6-36
Regional Geology	6-36
SITE GEOLOGY	6-38
Alluvial Topstratum Geology	6-38
Substratum	6-40
SOILS	6-40
General	6-40
SECTION 4 - LAND CLASSIFICATION AND MAPPING ANALYSIS	6-41
GENERAL	6-41
BASE MAPPING	6-41
LAND COVER MAPPING	6-41

Table of Contents (Cont)

Item	Page
SECTION 5 - DESCRIPTION OF CONSTRUCTION ACTIVITIES	6-51
ENLARGEMENT	6-51
STABILITY BERMS	6-52
UNDERSEEPAGE CONTROL	6-52
General	6-52
Landside Seepage Berm	6-52
Relief Wells	6-52
Cutoffs	6-53
Riverside Blankets and Riverside Pit Fills	6-53
EROSION PROTECTION	6-53
General	6-53
Slope Paving	6-54
Tree Screens	6-54
SECTION 6 - BASIS FOR SELECTION OF CONSTRUCTION METHODS	6-54
GENERAL	6-54
ENLARGEMENT	6-55
UNDERSEEPAGE CONTROL	6-56

Table of Contents (Cont)

Item	Page
SECTION 7 - DESCRIPTION OF PROJECT	6-56
RECOMMENDED PLAN	6-56
MEMPHIS DISTRICT	6-56
For West Bank Ohio River	6-57
For East Bank Mississippi River	6-57
For West Bank Mississippi River	6-59
VICKSBURG DISTRICT	6-62
For East Bank Mississippi	6-62
For West Bank Arkansas	6-67
For West Bank Louisiana	6-68
NEW ORLEANS DISTRICT	6-72
SECTION 8 - RELOCATION REQUIREMENTS	6-76
SECTION 9 - HAZARDOUS, TOXIC AND RADIOACTIVE WASTE (HTRW) ASSESSMENT AND AIR QUALITY ASSESSMENT	6-77
GENERAL	6-77
HTRW	6-77
Memphis District HTRW Assessment	6-77
Vicksburg District HTRW Assessment	6-78
New Orleans District HTRW Assessment	6-78

Table of Contents (Cont)

Item	Page
AIR QUALITY	6-78
Memphis District Air Quality Assessment	6-79
Vicksburg District Air Quality Assessment	6-79
New Orleans District Air Quality Assessment	6-79
SECTION 10 - REAL ESTATE REQUIREMENTS	6-81
GENERAL	6-81
Memphis District	6-81
Vicksburg District	6-82
New Orleans District	6-82
SECTION 11 - COST ENGINEERING	6-82
GENERAL	6-82
COST ESTIMATES	6-83
REFERENCES	6-83

LIST OF TABLES

No.	Title	Page
6-1	PROJECT AREA GAGES	6-4
6-2	MAXIMUM AND MINIMUM DISCHARGES FOR SELECTED GAGES	6-5
6-3	MAXIMUM AND MINIMUM ELEVATIONS FOR SELECTED GAGES	6-5

LIST OF TABLES (Cont)

No.	Title	Page
6-4	1997 FLOOD CRESTS	6-14
6-5	MAXIMUM DISCHARGES, SELECTED FLOODS 1913-1997	6-15
6-6	MAXIMUM STAGES, SELECTED FLOODS 1913-1997	6-16
6-7	LEVEE DESIGN DISCHARGES THROUGH TIME	6-20
6-8	PDF FLOWLINES THROUGH TIME FOR SELECTED LOCATIONS	6-22
6-9	DESIGN LEVEE GRADES THROUGH TIME	6-23
6-10	LEVEE DEFICIENCIES BY REACH	6-24
6-11	WETLAND SATELLITE SCENE GAGE ELEVATIONS	6-30
6-12	DRINKWATER PUMPING PLANT ANALYSIS RESULTS, ENVIRONMENTAL EVALUATIONS, 1952-1995	6-33
6-13	DRINKWATER PUMPING PLANT ANALYSIS RESULTS, MEAN MONTHLY ELEVATIONS, 1952-1995	6-34
6-14	LOWER MISSISSIPPI RIVER RIVERSIDE LANDS, 1992 LAND COVER, RIVER MILE 620 TO 320 (ALL CLASSES OF LAND COVER)	6-42
6-15	LOWER MISSISSIPPI RIVER RIVERSIDE LANDS, 1992 LAND COVER (GROUPED CLASSES OF LAND COVER)	6-15
6-16A	MISSISSIPPI RIVER MAINLINE LEVEES SEIS, IMPACTS ON BOTTOM-LAND HARDWOODS (WITHIN MEMPHIS DISTRICT)	6-47

LIST OF TABLES (Cont)

No.	Title	Page
6-16B	MISSISSIPPI RIVER MAINLINE LEVEES SEIS, IMPACTS ON BOTTOM-LAND HARDWOODS (WITHIN VICKSBURG DISTRICT)	6-47
6-16C	MISSISSIPPI RIVER MAINLINE LEVEES SEIS, IMPACTS ON BOTTOM-LAND HARDWOODS (WITHIN NEW ORLEANS DISTRICT)	6-48
6-17A	MISSISSIPPI RIVER MAINLINE LEVEES SEIS, TOTAL ACRES AFFECTED, TRADITIONAL PLAN (PLAN 3) (WITHIN MEMPHIS DISTRICT)	6-48
6-17B	MISSISSIPPI RIVER MAINLINE LEVEES SEIS, TOTAL ACRES AFFECTED, TRADITIONAL PLAN (PLAN 3) (WITHIN VICKSBURG DISTRICT)	6-49
6-17C	MISSISSIPPI RIVER MAINLINE LEVEES SEIS, TOTAL ACRES AFFECTED, TRADITIONAL PLAN (PLAN 3) (WITHIN NEW ORLEANS DISTRICT)	6-49
6-18A	MISSISSIPPI RIVER MAINLINE LEVEES SEIS, TOTAL ACRES AFFECTED, SELECTED PLAN (PLAN 4) (WITHIN MEMPHIS DISTRICT)	6-50
6-18B	MISSISSIPPI RIVER MAINLINE LEVEES SEIS, TOTAL ACRES AFFECTED, SELECTED PLAN (PLAN 4) (WITHIN VICKSBURG DISTRICT)	6-50
6-18C	MISSISSIPPI RIVER MAINLINE LEVEES SEIS, TOTAL ACRES AFFECTED, SELECTED PLAN (PLAN 4) (WITHIN NEW ORLEANS DISTRICT)	6-51
6-19	RELOCATIONS (VICKSBURG DISTRICT)	6-76

LIST OF FIGURES

No.	Title	Page
6-1	PROJECT DESIGN FLOOD FLOWS	6-19

LIST OF ATTACHMENTS

No.	Title
A	REAL ESTATE REQUIREMENTS ASSUMPTION AND LIMITING CONDITIONS FOR MEMPHIS DISTRICT PROJECTS
B	COST ESTIMATES (MCACES)
C	MEMORANDUM FOR RECORD, CEMVK-OD-FS, 20 DECEMBER 1995, SUBJECT: METHODOLOGY FOR CONDUCTING DETERMINATION OF FEDERAL REGULATORY JURISDICTION FOR FC/MR&T, MAINLINE
D	MEMORANDUM FOR RECORD, CEMVK-OD-FS, 22 FEBRUARY 1996, SUBJECT: TRIP REPORT--MISSISSIPPI RIVER LEVEES (MRL) PROJECT INTERAGENCY FIELD REVIEW MISSISSIPPI RIVER LEVEES

MISSISSIPPI RIVER AND TRIBUTARIES PROJECT
MISSISSIPPI RIVER MAINLINE LEVEES
ENLARGEMENT AND SEEPAGE CONTROL
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT

APPENDIX 6
ENGINEERING

SECTION 1 - GENERAL

PURPOSE OF ENGINEERING APPENDIX

1. This Engineering Appendix, a consolidated effort between Memphis, New Orleans, and Vicksburg Districts, presents the design assumptions and assessment of alternatives for flood control in the Mississippi River Alluvial Valley, Mississippi River Mainline Levees (MRL) Project. The purpose of this Engineering Appendix is to document the results of the engineering and environmental conditions in order to establish project alternative measures and recommendations that would minimize adverse impacts to the environment with the enlargement of the MRL within the three noted districts. The Mainline Levee System is an integral part of the overall Mississippi River and Tributaries Project (MR&T). The Mississippi River Commission (CEMRC), created by Congress in 1879, is responsible for accomplishment of work on the MR&T Project. After the 1973 flood, the MR&T Project Design Flowline was refined (see Hydrology/Hydraulics Section) to include a new project flood flowline that enables levee deficiencies along the main stem levee to be identified. The scope of this Engineering Appendix is limited to the remaining work on mainline Mississippi River levees within the lower Mississippi River Valley which provide flood protection for major cities, towns, developed industrial areas and farmlands. The proposed work plan for Memphis District includes 31.8 miles of levee enlargement and 74.3 miles of seepage control measures, within the Vicksburg District, 216.8 miles of levees will be enlarged and raised to grade with placement of approximately 57.4 miles of seepage controls measures; and in the New Orleans District, improvements will include raising 14.2 miles of deficient levees and constructing 0.1 miles of berms. A total of 128 work items is proposed for construction in this report, 31 items in Memphis District, 85 in Vicksburg District, and in the New Orleans District, 12 items.

PRIOR REPORTS

2. The MR&T Project is extensive in scope and involves a number of Tributary basins and related project reports in all three districts. The Final Environmental Impact Statement for Mississippi River and Tributaries Projects, dated February 1976, lists and discusses various project reports that are pertinent to the MRL portion of the overall project. This document was placed on file with the Council on Environmental Quality on April 8, 1976.

DESCRIPTION OF MISSISSIPPI RIVER BASIN AND FLOOD PLAIN

3. The Mississippi River has the third largest drainage basin in the world, exceeded in size only by the watersheds of the Amazon and Congo Rivers. It drains 41 percent of the 48 contiguous states of the United States.

4. The basin covers more than 1,245,000 square miles, includes all or parts of 31 states and two Canadian provinces, and roughly resembles a funnel which has its spout at the Gulf of Mexico (Plate 1, Appendix 4). Waters from as far east as New York and as far west as Montana contribute to flows in the lower (main stem) river.

5. The main stem Mississippi River channel below Cairo, Illinois, carries runoff from about 922,000 square miles of drainage area concentrated at Cairo by the upper Mississippi and Ohio Rivers. Between Cairo and the Gulf of Mexico, the Mississippi River system flow is augmented by runoff from about 324,000 square miles of intervening drainage area.

6. The lower alluvial valley of the Mississippi River is a relatively flat plain of about 35,000 square miles bordering the river. The area would be overflowed during times of high water if not for man-made protective works (Plate 2, Appendix 4). This valley begins just below Cape Girardeau, Missouri, is roughly 600 miles in length, varies in width from 30 to 125 miles, includes parts of seven states--Missouri, Illinois, Tennessee, Kentucky, Arkansas, Mississippi, and Louisiana, and extends to the Gulf of Mexico.

7. The project area includes the portion of the basin extending from Cape Girardeau, Missouri, south to Head of Passes, Louisiana, at the Gulf of Mexico. The flood plain area is confined on the west by levees and high ground and on the east by levees and the Loess Hills which follow the Ohio and Mississippi Rivers from the vicinity of Cairo, Illinois, to below New Orleans, Louisiana. Besides the Upper Mississippi and Ohio Rivers, other major tributaries within the project area are the St. Francis River, Obion-Forked Deer River, Arkansas/White River, Yazoo River, and Big Black River. Precipitation occurring within project boundaries produces runoff which reaches the Mississippi River main stem via the above-named major tributaries or via minor drainage ways. The Mississippi River in its lower valley flows through one of the most fertile regions on earth. The area is noted for its highly productive agricultural economy. It has also become industrialized.

DRAINAGE BASIN CHARACTERISTICS

Morphology

8. When the Mississippi River overflows, it deposits a part of the sediment it has been transporting. Most of the sediment is deposited adjacent to the river, forming low "natural levees," with decreasing amounts deposited away from the stream. For this reason, the banks of the river are generally 10 to 15 feet above the lowlands farther back from the river. Because of the natural levees, drainage is generally away from the Mississippi River except where tributary streams join the river. This results in drainage away from the stream to low ground near the

valley walls, and bottom-land drainage by streams running parallel to the main stream and joining it through major tributaries or at points where the main stream meanders close to the valley wall. This pattern of parallel drainage is well developed in the alluvial valley of the Mississippi River.

9. Soils in the valley are truly alluvial from a geological point of view and consist mainly of sands and silts, grading progressively to very fine sands and silts in the lower portion of the area. Scattered through these sand and silt deposits are extensive deposits of clay. As is typical of streams flowing through alluvial valleys, the Lower Mississippi River over time has developed a highly sinuous course, creating numerous meander loops and bends. It has also shifted its channel from time to time so that parts of the alluvial plain have been reworked many times, thus contributing to the complexity of the soil structure and hydrology of the area. This meandering has also produced a number of oxbow lakes.

Temperature and Precipitation

10. The normal annual temperature of the project area ranges from approximately 57-68 degrees F from north to south. Winters are usually relatively mild, with January temperatures averaging between 32-50 degrees F. Summers are distinctly hot; average July temperatures usually range between 79-82 degrees F.

11. Precipitation in the project area is usually abundant and well distributed. Normal annual precipitation ranges from 46 to 62 inches from north to south. During winter and spring, intrusions of polar air into the region are usually accompanied by widespread and persistent cloudiness and general rainfall, plus some thunderstorm activity within the frontal zone. Autumn brings the least precipitation to the region.

Streamflow

12. Flooding in the lower alluvial valley usually occurs in the winter and spring (first six months of the calendar year). This is a result of the spring rains and the melting of the snow pack in the Upper Mississippi River basin.

13. An extensive system of stream gages has been installed on the Mississippi River and its tributaries. The period of record for the older gages extends back into the 1800's. At certain gages discharge measurements have been made over a span of many years, permitting estimation of discharge as a function of stage at these locations. Selected gages in the project area are shown in Table 6-1. Gages in Table 6-1 used in this study for statistical analysis of wetlands by hydrologic criteria are noted, along with the period of record used in the study.

TABLE 6-1
PROJECT AREA GAGES

Gage Location	River Mile AHP	Corps Dist. ****	Data Type S=Stage D=Disch	Used in Wetland Determination X=Used	Study Period of Record ***
Cape Girardeau (Upper Miss)	52.1*	MVS	S	X	1950-94
Cairo (Ohio)	2.0**	MVM	S	X	1950-94
Hickman	922.0	MVM	S,D	X	1950-94
New Madrid	889.0	MVM	S	X	1950-94
Caruthersville	846.4	MVM	S	X	1950-94
Osceola	783.5	MVM	S	X	1950-94
Memphis, Beale	735.9	MVM	S		
Memphis WB	734.7	MVM	S,D	X	1950-94
Helena	663.1	MVM	S,D	X	1950-94
Fair Ldg.	632.5	MVM	S	X	1950-94
Rosedale	592.2	MVK	S	X	1950-94
Ark City	554.1	MVK	S,D	X	1950-94
Greenville	531.5	MVK	S	X	1950-94
Lake Providence	487.2	MVK	S	X	1950-94
Vicksburg	435.7	MVK	S,D	X	1950-94
St. Joseph	396.4	MVK	S	X	1950-94
Natchez	363.3	MVK	S,D	X	1950-94
Knox Landing	313.7	MVN	S	X	1955-94
Tarbert Landing	306.3	MVN	S,D		
Red River Landing	302.7	MVN	S	X	1955-94
Baton Rouge	228.4	MVN	S	X	1950-94
Carrollton Gage (New Orleans)	102.8	MVN	S	X	1950-94
Head of Passes		MVN	S	X	1950-94

* on Upper Mississippi River, miles above mouth of Ohio River
** on Ohio River, miles above mouth of Ohio
(mouth of Ohio River is at Mile 953.8 AHP)
*** Additional data available. The period of record was limited based on the effects of cutoffs and changes in operation of Old River Control Structure on river flowlines.
**** MVS-St. Louis District
MVM-Memphis District
MVK-Vicksburg District
MVN-New Orleans

14. Examples of the range of discharges and elevations in the project area are presented in Tables 6-2 and 6-3.

TABLE 6-2
MAXIMUM AND MINIMUM DISCHARGES
FOR SELECTED GAGES

Location	Maximum Discharge (1000 CFS)	Year	Minimum Discharge (1000 CFS)	Year
Hickman	2015	1912	69	1936
Memphis	2020	1937	78	1936
Helena	2041	1912	81	1936
Arkansas City	2472*	1927	88	1939
Vicksburg (Bridge)	2278**	1927	94	1936
Natchez	2046	1937	100	1936
Tarbert Landing	1977	1937	85	1939

* Estimated
** Estimated assuming no crevasses.

TABLE 6-3
MAXIMUM AND MINIMUM ELEVATIONS
FOR SELECTED GAGES

Gage Location	Max Gage	Maximum Elev. Ft, NGVD	Year	Min Gage	Minimum Elev. Ft, NGVD	Year	Difference in Elev. Ft
Cape Girardeau	48.0	352.6	1993	0.6	305.4	1909	47.2
Cairo	59.5	330.0	1937	-1.0	269.5	1871	60.5
Hickman	51.5	316.2	1937	-0.7	264.1	1988	52.1
New Madrid	48.0	303.5	1937	-1.5	254.0	1988	49.5
Caruthersville	46.0	281.5	1937	-0.1	234.8	1939	46.7
Osceola	50.9	260.3	1937	-10.3	199.1	1988	61.2
Memphis	48.7	232.6	1937	-10.7	173.2	1988	59.4
Helena	60.2	201.9	1937	-4.2	137.5	1988	64.4
Arkansas City	59.2	155.9	1927	-5.1	91.6	1936	64.3
Vicksburg (Bridge)	56.0	102.2	1927	-7.0	39.2	1940	63.0

TABLE 6-3 (Cont)

Gage Location	Max Gage	Maximum Elev. Ft, NGVD	Year	Min Gage	Minimum Elev. Ft, NGVD	Year	Difference in Elev. Ft
Natchez	58.0	75.3	1937	-1.7	15.6	1940	59.7
Knox Landing	63.1	63.1	1983	8.2	8.2	1956	54.9
Red River Landing	61.3	61.3	1997	2.9	2.9	1895	58.0
Baton Rouge	47.3	47.3	1927	-0.1	-0.1	1894	47.4
Carrollton Gage (New Orleans)	21.3	21.3	1922	-1.6	-1.6	1872	22.9

HISTORY OF FLOOD CONTROL AND MISSISSIPPI RIVER FLOODING

Overview

15. The Mississippi River has always been a threat to the security of the valley through which it flows. The first European explorer in the region, DeSoto, viewed the Mississippi River in 1541, and in 1543 the first record of a flood on the river was made. The necessity of flood control was recognized immediately by early settlers in the lower Mississippi River Valley. When Bienville founded the city of New Orleans in 1717, his engineer, de la Tour, opposed the location of the city on the site selected because he knew that the settlement would be periodically overflowed by the river. Bienville overruled this objection, so de la Tour undertook the construction of the first levee system to be erected on the Mississippi. The work was not completed until 1727. The levee was three feet high, 5,400 feet long, and 18 feet wide at the top. It carried a roadway on its crown.

16. As settlements developed along the river, the levee system was extended. By 1735, the levees on both sides of the river extended from about 30 miles above New Orleans to about 12 miles below the city. The expense of constructing this system was borne by those who owned land fronting on the river. Although the system represented extraordinary effort, the works were of insufficient strength and were crevassed at many points by the unusually high water of that year, a very great flood which lasted for nearly six months.

17. In 1743, an ordinance was passed by the French colonial government requiring landowners to complete their levees by January 1, 1744, or forfeit their lands to the French Crown. By 1812, when Louisiana was admitted to the Union, the levee system extended up the river to Baton Rouge on the east bank and to the vicinity of Morganza, 40 miles upriver from Baton Rouge, on the west bank. By 1844, in spite of several damaging floods, the levee system was continuous, except for a gap at Old River, from 20 miles below New Orleans to the mouth of the Arkansas River on the west bank and to Baton Rouge on the east bank. Many isolated levees also extended along the lower part of the Yazoo Basin. Efforts thus far to control Mississippi River floods had been almost entirely local in nature, with individual landowners bearing all costs.

18. The need for more substantial Federal participation in improvements of the river for navigation and flood control was generally recognized by 1879. The necessity for coordination of engineering operations through a centralized organization was apparent. That year, on June 28, Congress established the CEMRC, which had as its assigned duties ". . . to take into consideration and mature such plan or plans and estimates as will correct, permanently locate, and deepen the channel and protect the banks of the Mississippi River; improve and give safety and ease to the navigation thereof; prevent destructive floods; promote and facilitate commerce, trade, and the postal service...."

19. The first survey performed under the CEMRC was between 1879-80. The survey revealed a system of levees for the most part constructed along the top of the natural levees of the river.

20. The flood of 1916 resulted in passage of the first Flood Control Act, approved March 1, 1917. This act authorized the construction of levees for the control of floods and affirmed the policy of local cooperation.

21. The flood of 1927 was the most disastrous in the history of the lower Mississippi River Valley. This disaster awakened the national conscience to the dire need for flood control in the lower valley. Out of it grew the Flood Control Act of 1928, which committed the Federal Government to a definite program of flood control. The present project dates from that act. The act of 1928 authorized the expenditure of $325,000,000 for construction of a Federal project to provide flood control in the alluvial valley of the lower Mississippi River from Cairo, Illinois, to Head of Passes, Louisiana, and navigation from Cairo to New Orleans, Louisiana.

Major Historical Mississippi River Floods

22. The Mississippi Valley is subject to frequent and severe floods. Major floods on the Lower Mississippi River may result from flooding on the Upper Mississippi River, or the Ohio River, or both, augmented by contributions from other major tributaries of the Lower Mississippi River. The flood season on the Mississippi River is usually from the middle of December through July. Major floods on the Ohio River generally occur between the middle of January and the middle of April. Major floods from the Upper Mississippi and Missouri Rivers usually occur between the middle of April and the last of July; from the Arkansas and White Rivers between the first of April and the end of June.

23. Garciliaso de la Vega, in his history of the expedition begun by DeSoto, described the first recorded flood of the Mississippi River as severe and of prolonged duration, beginning about March 10, 1543, and cresting about 40 days later. By the end of May the river had returned to its banks, having been in flood for about 80 days.

24. Writings of other explorers and early settlers indicate frequent flooding in the alluvial valley. Fragmentary records indicate that great floods occurred in 1782, 1785, 1796, 1809, 1815, 1823, 1844, 1849, 1858, 1862, 1867, and 1882. Major floods of recent years happened in 1903, 1912, 1913, 1916, 1922, 1927, 1937, 1945, 1950, 1973, 1975, 1979, 1983, 1993, 1995, 1996, and 1997. The largest flood at St. Louis occurred in 1785 and based on fragmentary records the maximum discharge was estimated to be about 1,340,000 cubic feet per second (cfs). The next highest flood was in 1844 with a maximum discharge of 1,300,000 cfs. The largest flood at Cairo occurred in 1937 with a discharge of 2,002,000 cfs. The largest flood at Arkansas City occurred

in 1927 with an estimated confined discharge of 2,472,000 cfs. The largest flood at the latitude of Red River Landing occurred in 1927 with an estimated confined discharge of 2,345,000 cfs. A brief analysis of the principle floods is given in the following paragraphs:

25. Flood of 1913.

a. The 1913 flood on the Lower Mississippi River was, in general, the result of a major flood from the Ohio River. The storm which was the primary factor in causing this flood was a large torrential general storm centering over the Ohio Basin between March 23 and 27. This storm caused an immediate rise on the Ohio River which continued until April 8. There was also a small rise on the Missouri River, but most of this water passed Cairo before the Ohio peak arrived. On the other hand, the Upper Mississippi River had previously been rising and this storm accelerated the rise, resulting in high stages which were maintained for such a time that they synchronized very closely with the Ohio River flood. A slight rise was experienced on the Arkansas River and the other lower tributaries from this March storm, but these waters were discharged before the main-river crest occurred and did not add appreciably thereto. A moderate general storm during the period April 2-11 added a small amount of water to the flood wave on the Upper Mississippi River. This storm also cause a minor flood on the Arkansas and lower tributaries which added a minor amount to the main-river flood crest. During the entire period the Red River was at comparatively low stages.

b. Thus the flood of 1913 was caused principally by the storm of March 23-27 over the Ohio and Upper Mississippi River Basins, chiefly by the Ohio, aided somewhat by antecedent precipitation over the Upper Mississippi and augmented to a small extent by the storm of April 2-11.

26. Flood of 1927.

a. The flood of 1927 exceeded all floods of previous record throughout the Lower Mississippi River Valley below the mouth of the Arkansas River and was the result of a series of storms. Precipitation throughout the Mississippi River watershed was more abundant than usual during the fall of 1926 and from December 1926 to April 1927 heavy rains continued throughout the central areas of the valley. By March and April these rains had become severe. There were three flood waves on the Lower Mississippi River in January, February, and April increasing in magnitude each time. The major storm of the flood was that of April 12-16 which occurred on a rising Lower Mississippi River already high from the antecedent rainfall mentioned above. This latter storm produced extremely high stages on the Upper Mississippi and Missouri Rivers. The Ohio River was only moderately high. However, the coincidence of flows caused the third highest stage of record at Cairo. Over the Arkansas and Red River Basins and along the minor tributaries, the storm of April 12-16 was even more severe than over the upper tributaries. All streams rose rapidly. Before this rise had crested, another intense storm occurred between April 18 and 24 over a smaller area in the center of the lower Arkansas and Red River Basins. This caused the Arkansas to rise even more rapidly and resulted in the highest stage at Little Rock since 1833. The Mississippi River crested at Arkansas City on April 21 because crevasses in the main river levee caused a sharp drop in river stages. If no crevasses had occurred, a considerably higher stage would have been obtained probably about May 1. The Mississippi River would have added considerably more to the flood flow at the mouth of Red River if there had not been any breaks in the levees above.

b. The flood of 1927 was the most disastrous in the history of the Lower Mississippi River Valley. An area of about 26,000 square miles was inundated. The total length of mainline levees breached exceeded 5 miles. Cities, towns, and farms were flooded. Crops were destroyed and industry paralyzed. Property damage amounted to about $236,000,000, which was equivalent to more than $7.5 billion in 1996 dollars; 500 lives were lost and 325,000 persons were displaced.

c. Rail transportation suffered heavily with only one rail line operating, for a time, east and west below Cairo. Highways and bridges were unusable for weeks, and thousands of people were left homeless and destitute.

27. Flood of 1937. The January-March 1937 flood is the highest of record on the Mississippi River from Cairo, Illinois to the mouth of the Arkansas River. This great flood resulted from a continuity of precipitation of relatively low intensity from December 26, 1936 to January 19, 1937 over the entire drainage basin of the Ohio River climaxed by a 6-day period (January 20-25) of high intensity precipitation over an area immediately adjacent to the Ohio River and the lower reaches of the Kentucky, Green, Cumberland, Tennessee, and Wabash Rivers. There were January floods on the St. Francis, White, Arkansas, Ouachita, Red, and Yazoo Rivers, the crests of which generally occurred considerably before the crest on the Mississippi River. The floods on these tributaries of the Lower Mississippi River were not excessively high at the time of the crest of the flood on the Mississippi River.

28. Flood of 1945. A series of heavy rains from the middle of February to March 7 over most of the Ohio River Basin, aided to some extent by snow melt in the northern section, produced a major flood on the Ohio River during March. In the Upper Mississippi and Missouri River Basins, above-normal temperatures cause an early spring melt of snow and ice accumulations. Rapid thawing and above-normal precipitation caused heavy runoff. The flood crests from the Upper Mississippi and Ohio Rivers coincided to produce a crest discharge of 1,470,000 cfs at Cairo, Illinois. Exceptionally heavy rains over the Lower Mississippi River Basin during March, preceded by heavy rains in the latter part of February, kept the Arkansas, Lower White, and Ouachita Rivers above flood stage throughout March. The Red River was at moderately high stages the entire month of March. Heavy rains at the end of March produced record stages at many locations in April. The Lower Mississippi and Atchafalaya Rivers rose gradually during March as the flood waters of the Ohio, Missouri, and Upper Mississippi moved down. Excessive flows from tributaries in the Lower Mississippi River Basin combined with the rise coming down the Mississippi River the last of March and the first of April produced stages at the latitude of Red River Landing somewhat in excess of those in 1937.

29. Flood of 1950. The flood of 1950 resulted from a protracted period of moderate to heavy precipitation over the Ohio River Basin and major tributaries of the Lower Mississippi River. In January 1950, three to four times the normal rainfall covered a band 200 miles wide extending from Memphis, Tennessee to Toledo, Ohio. In general, the January 1950 rainfall over the Ohio River Basin was second only to that of January 1937. Excess precipitation continued throughout the first three weeks of February over the Ohio River Basin and the Lower Mississippi River. The Ohio River was above flood stage at its mouth from January 6 to March 7 with maximum discharges of 1,220,000 cfs on January 20 and 1,300,000 cfs on February 13. The maximum discharge from the Upper Mississippi and Missouri Rivers at Thebes, Illinois was 377,000 cfs on 17 January. The coincidence of the two peaks of the first rise was very close, which contributed considerably to the discharge on the Lower Mississippi River. Excessive January precipitation over the tributaries of the Lower Mississippi River added large volumes of water to the flood in the lower basin.

30. Flood of 1973.

a. Early in September 1972, a cold front pushed into the northern Great Plains, touching off thunderstorms, torrential rains, and some flash flooding in the Midwest. In the middle of September, another front, moving slowly, dumped heavy precipitation over a wide portion of the same area. Rainfall was especially heavy in eastern Nebraska and western Iowa. Late in the month, heavy rains pounded the already saturated fields of Nebraska, Iowa, Kansas, and Missouri. Runoff from the storm was very rapid. The Missouri River, one of the Mississippi's chief tributaries, began to rise.

b. In October, precipitation was unevenly distributed over the nation and was relatively light in the Mississippi River Basin during the first half of the month. In the latter part of October, however, Texas, Oklahoma, northern Louisiana, and western Arkansas received heavy rains. These abnormal weather conditions in September and October kept river stages on the Lower Mississippi River unseasonably high.

c. November turned out to be much, much worse than September and October had been. Storm after storm swept across the nation, bringing above normal precipitation to most of the vast Mississippi River Basin. Storms over the major tributary basins were particularly heavy, and runoff from the soggy fields and woods increased in volume and velocity.

d. December came in on the crest of a great storm that brought heavy snow to the Upper Mississippi Valley. The severe weather spread until it had covered most of the nation by the end of the first week of the month. January began with stormy weather over much of the nation, however, February proved to be an abnormally dry month in most of the great basin of the Mississippi River.

e. In the northern states, temperatures were above normal during most of March, and the snow cover melted. Most of the United States had received more than 50 percent above-normal precipitation, and large areas of the Lower Mississippi River Basin had received more than eight inches of rain in one week. Some local areas had recorded as much as 600 percent above-normal rainfall.

f. During March and early April 1973, the upper Mississippi River swelled to unprecedented flood heights. This large flow coupled with exceptionally large flows from the Missouri, Arkansas, Yazoo, and other tributaries of the lower Mississippi sustained the Mississippi River at high levels. Except for a few days in early March, the Mississippi River at Vicksburg had hovered a few feet below flood stage since December 1972. The river reached flood stage at Vicksburg on March 24, 1973 and remained above flood stage for 89 days until June 20, 1973. Opening operations at the Bonnet Carre Spillway were begun on April 8 after the flow at Tarbert Landing reached 1,292,000 cfs. All 350 bays of the spillway were opened by April 11. The flow peaked at Tarbert Landing at 1,498,000 on May 16. Closing of the spillway was begun on May 31, and was not completed until June 21. As a result of the spillway operation, the peak flow at New Orleans was held to 1,248,000 cfs, just 2,000 cfs below the maximum safe carrying capacity of the river.

g. The Old River Low Sill structure was fully open as the river rose. (This was the normal operating procedure for the Low Sill Structure before the 1973 flood.) On April 12, 1973, the wing

wall on the downstream end of the Low Sill Control Structure began separating from the structure. The wing wall at the left abutment on the upstream side of the structure completely separated from the control structure and fell into the inflow channel on April 14. In an effort to relieve stress on the Low Sill Structure, the Old River Overbank Structure (adjacent to and just upstream from the Low Sill Structure) was ordered opened on April 14.

h. Opening was completed by April 15. Emergency construction of a rock dike to prevent eddies in the area previously protected by the wing wall was begun in an effort to save the structure. Not until May 5, when Fathometer surveys were able to be taken, was the extent of the damage discovered. A large scour hole approximately 55 feet deep and 320 feet wide had developed about 200 feet upstream from the structure. Ultimately, the scour hole was filled with approximately 118,500 tons of rock. The Overbank Structure remained completely open until June 2 and was completely closed by June 13.

i. Due to the emergency situation developing at the Old River Control structure, the Morganza Floodway was ordered opened on April 15. Forty-two gates of the 125 gates available at the structure were opened the morning of April 17. The structure remained open well after stages in the river dropped below the forebay levee elevation to allow the area protected by the forebay levee to drain.

j. The 1973 flood on the Lower Mississippi River was considered the worst flood recorded since 1937. Approximately 69,000 people were made homeless by the 1973 floodwater, and approximately 13,000,000 acres of land were inundated. The peak of the 1973 flood was seven and one-half feet above flood stage at New Orleans, eight and one-half feet above flood stage at Vicksburg, and six and one-half feet above flood stage at Memphis. The peak flow at the latitude of Red River Landing was within 3.5 percent of the 1927 flood's peak flow.

k. At the peak of flood-fight operations, over 500 Division personnel, augmented with temporary duty personnel from other Corps Divisions, were heavily engaged in emergency activities. Many emergency operations were performed; the most significant being the raising of Federally constructed levees. This included 96 miles of west bank Mississippi River levees and 36 miles of Red River backwater area levees.

31. Flood of 1975. In 1975, in the reach of river above the Arkansas and White Rivers, another major flood occurred which produced the second highest stage of record at Cairo. High flows and the resultant high stages were also experienced along the Lower Mississippi River. On April 10 the President of the Mississippi River Commission ordered the New Orleans District to begin opening the Bonnet Carre Spillway on April 14 since it appeared that flows would exceed the safe carrying capacity of the river of 1,250,000 cfs at New Orleans. The peak flow of 1,294,000 was measured at New Orleans on April 14. A total of 225 bays were opened diverting a maximum of 110,000 cfs on April 17. A gradual closing of the structure was begun on April 17 and completed on April 26. The Old River Control Structure Overbank Structure was also kept fully open during this flood due to damages sustained to the low sill structure during the 1973 flood.

32. Flood of 1979. Above average rainfall within the Mississippi River Basin above New Orleans required the opening of the Bonnet Carre Spillway. Opening of the spillway was begun on April 17 when the flow at Tarbert Landing reached 1,309,000 cfs, and the spillway was completely open by April 23. The peak flow during this event was 1,419,000 cfs on April 23. Closing of the spillway was begun on May 7, and completed by May 31. As in the 1975 flood, the

Old River Control Structure Overbank Structure was kept fully open during this flood due to the damages sustained to the low sill structure in the 1973 flood.

33. Flood of 1983.

a. The 1983 flood began with heavy rains in the Mississippi River Basin occurring early in April. Prior to this time, stages had receded to well below bankfull after a significant rise during December and January.

b. Two weeks after the early April rainfall, additional rain occurred through the Mississippi River Basin which contributed to the rise on the lower Mississippi River. Three storms occurred from late April until late May producing rainfall totals up to 16 inches in the Lower Ohio and Lower Mississippi River Basins. There were 9 to 11 inches of rainfall that completely encircled the Mississippi River from above Cairo to approximately Red River Landing. Maximum rainfall amounts in this area were in excess of 15 inches. These April and May storms were responsible for the 1983 flood in the Lower Mississippi River.

c. Cairo exceeded bankfull stage on April 8, 1983 and crested at 54.3 feet on May 8. After remaining out of banks for 2 months, the stage fell below bankfull on June 6 . Only three other floods at Cairo since 1916 have had stages continuously above bankfull for a longer duration than the 1983 flood event. At Vicksburg, Mississippi, stages above bankfull occurred from April 28 to June 16 with a crest stage of 49.3 occurring on May 28-29. At Red River Landing, bankfull stages were exceeded from April 14 until June 25. The crest stage of 60.4, which was reached on May 29 and remained steady for 8 days, was only exceeded by the 1927 flood when a stage of 60.9 feet was recorded. On May 20 when the flow at Tarbert Landing reached 1,308,000 cfs, opening of Bonnet Carre Spillway was initiated to relieve pressure on the saturated levees. The opening was completed on May 24. The peak flow of 1,470,000 was reached at Tarbert Landing on May 30.

d. A maximum flow of 274,000 cfs was diverted through the Bonnet Carre spillway on June 6. Closing of the spillway was begun on June 14, and was completed on June 23. As in the 1975 and 1979 floods, the overbank structure at the old river control structure was kept fully open due to the damage sustained to the low sill structure during the 1973 flood.

34. Flood of 1993.

a. The Flood of 1993 primarily affected the Upper Mississippi River and its tributaries. High antecedent soil moisture followed by persistent, heavy rainfall from April through September produced flooding corresponding to the 100-year and even 500-year events in certain locations. The Flood of 1993 is said to have been an unprecedented hydro meteorological event. "In terms of precipitation amounts, record river levels, flood duration, area of flooding, and economic losses, it surpassed all previous floods in the United States."[1]

b. The effect of the flood at Cairo and on the Lower Mississippi River was not great. The Cairo peak for 1993 was 48.6 feet on 10 April, prior to the Upper Mississippi flood. For comparison, Cairo had a minor peak at a stage of 45.9 feet on August 1, 2 and 3, 1993, and another minor peak at stage 42.8 feet on October 4. However, Cape Girardeau peaked at 48.5 feet on August 8, the highest stage ever observed there.

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[1] Sharing the Challenge: Floodplain Management into the 21st Century. 1994. p 8.

c. The Flood of 1993 demonstrated that during high Upper Mississippi River discharges, the middle reach of the Upper Mississippi River can experience high stages even though the stage at Cairo itself is comparatively low. Consequently, flooding on the Upper Mississippi River alone will not produce a major flood on the Lower Mississippi River.

35. Flood of 1995.

a. The Flood of 1995 occurred during the months of May and June. Above average precipitation over both the Upper Mississippi and Ohio River Basins produced the runoff. The flood crested at a stage of 55.7 feet at Cairo on May 28 , which was then the fourth highest stage of record (since surpassed by the Flood of 1997). The combined Cairo discharge at peak stage was estimated at 1,500,000 cfs, with 60 percent of that discharge coming from the Upper Mississippi River and 40 percent from the Ohio River.

b. Within the Memphis District rainfall was about average during this period. Therefore no headwater flooding of Mississippi River tributaries occurred within the Memphis District. For the Memphis District the Flood of 1995 was confined to the Mississippi River floodplain and tributary outlet floodplains and produced the highest flood levels experienced since the flood of 1973. The May 28 crest at Cairo was followed in the Memphis District by crest stages of 42.8 feet May 28-29 at New Madrid, 39.1 feet June 2-4 at Memphis, and 47.2 feet June 4-5 at Helena.

36. Flood of 1997.

a. The March 1997 flood levels were the highest experienced at Arkansas City, Arkansas and Natchez, Mississippi since 1973 and the highest at Greenville and Vicksburg, Mississippi since 1983. The 1997 flood was the fourth highest of record at Natchez and Cairo following close behind, 1927, 1937 and 1973. From the mouth of the Homochitto River to Old River Control Structure, water levels exceeded all other previous floods of record. The 1997 Mississippi River flood was significantly long in duration with Arkansas City, Greenville, Vicksburg and Natchez exceeding their flood stages for 34, 33, 35 and 43 days, respectively. Within the Memphis District Cairo, New Madrid, Caruthersville, Memphis, and Helena were above flood stage for 32, 21, 29, 27, and 29 days, respectively. Peak discharges at Cairo, Memphis, and Helena were estimated at 1,450,000 cfs, 1,610,000 cfs, and 1,498,000 cfs, respectively.

b. In the Memphis District high river stages were experienced from January through April, 1997. The Mississippi River in the Vicksburg District's reach was well above normal from October through December 1996 and continued the trend during January and February 1997. In New Orleans District, higher than normal river stages were also experienced. Above normal stages on the Lower Mississippi River during the fall and winter months indicate wetter than normal ground conditions in the upper river basins. This set the stage for a rainfall event in the Ohio River Basin that will be remembered for years to come. During the last week of February a slow moving cold front stalled over the Ohio River Basin. From February 28 through March 3, 1997, a series of upper level lows developed and raced up the cold front, one after the other dumping torrential rains from the lower end to the upper end of the Ohio River Basin. Rainfall amounts up to 12 inches were reported with a large area (all or parts of nine states) receiving 4 to 8 inches of rain. This rainfall, falling on already saturated ground conditions, produced some spectacular 1 day rises on the Ohio River.

c. The river at Cincinnati, Ohio rose 19.3 feet from March 1 to March 2 while the river at Louisville, Kentucky rose 15.5 feet during the same time period. This rainfall event produced the fourth highest stage of record at Cairo, Illinois, 56.2 feet on March 11, 1997 with the Cairo stage equal to or exceeding 56.0 feet for nine consecutive days. The stage of 56.2 feet at Cairo is approximately 20 feet above normal high water for the month of March. Crests along the Mississippi River for the March 1997 flood are shown in Table 6-4.

TABLE 6-4
1997 FLOOD CRESTS

Gage Location	Bank Full Stage (Ft)	Flood Stage (Ft)	Crest Stage (Ft)	Crest Date
Cape Girardeau	32.0	32.0	39.6	3 Mar 97
Cairo	44.0	40.0	56.2	10-12 Mar 97
New Madrid	40.0	34.0	43.0	16 Mar 97
Caruthersville	35.0	32.0	42.2	10-14 Mar 97
Memphis	34.0	34.0	40.8	14 Mar 97
Helena	41.0	44.0	48.4	19-21 Mar 97
Ark City	37.0	37.0	43.7	21 Mar 97
Greenville	48.0	48.0	54.5	21 Mar 97
Vicksburg	43.0	43.0	49.1	22 Mar 97
Natchez	48.0	48.0	56.3	26 Mar 97
Red River Landing	46.0	48.0	61.3	26 Mar 97
Baton Rouge	29.5	35.0	43.8	26 Mar 97
New Orleans	10.5	17.0	16.9*	20 Mar 97

* Crest stage at New Orleans would have been 19.9 feet if the Bonnet Carre Spillway had not been opened.

d. By mid-March, Mississippi River peak flows at Red River Landing were expected to reach at least 1,300,000 cfs. Operations to open the Bonnet Carre Spillway were begun on March 17. A total of 298 bays were opened, ultimately diverting a maximum flow of 240,000 cfs through the Bonnet Carre Spillway preventing the flow at New Orleans from exceeding 1,300,000 cfs even though the river crested at a flow of 1,480,000 cfs at Red River Landing on March 26. The Mississippi River stage at Red River Landing was higher than the 1927 crest of 60.9 feet, National Geodetic Vertical Datum (NGVD), from March 21 through March 29.

e. As a result of the high flows within the New Orleans District's reach of the Mississippi River, a potato ridge levee was constructed near Marchand, Louisiana to prevent levee overtopping. Sandbagging had to be done along the Baton Rouge front levee as well to prevent overtopping. Perhaps the area most threatened by the flood of 1997 was the Louisiana State Penitentiary, where no Federal project exists. Secondary levees were overtopped and it was feared that the state penitentiary would have to be evacuated. Underseepage became a serious problem and landside seepage berms had to be constructed. Sandboils had to be sandbagged as part of the flood fight operations.

f. The above crests would have been significantly higher if normal to above normal rainfall had occurred after the February 28- March 3 storm. Instead, rainfall over the Ohio and Tennessee-Cumberland River basins as well as over the Vicksburg District from March 15 through May 15 averaged only about 50 percent of normal. The below-normal rainfall during this period resulted in significantly less flows discharging from the tributaries to the Mississippi River. The Arkansas River, for example, which has contributed flows up to 400,000 cfs during major floods on the Mississippi River, was discharging 210,000 cfs into the Mississippi River on March 4. By March 26, the discharge into the Mississippi River was 55,000 cfs, 30 percent below the long term average for March. The other tributaries (Yazoo, Ouachita-Black, and Red Rivers) also experienced similar reductions in flows during the month of March.

37. Summary of Floods. Maximum observed discharges at key stations on the Mississippi River for the floods of 1913 through 1997 described above are presented in Table 6-5, with maximum stages presented in Table 6-6.

TABLE 6-5
MAXIMUM DISCHARGES
SELECTED FLOODS 1913-1997

Location	Maximum Discharge 1000 CFS									
	Years									
	1913 *	1927 **	1937	1945	1950	1973	1975	1979	1983	1997
Hickman			2010	1470	1578	1536	1658	1572	1486	1450
Memphis		1744	2020	1468	1586	1633	1768	1544	1644	1610
Helena	1805	1756	1968	1442	1643	1627	1786	1656	1614	1498
Arkansas City	1782	2472	2159	1922	1791	1879	1841	1811	1780	1830
Vicksburg	1783	2278	2060	1970	1876	1962	1839	1694	1789	1850

TABLE 6-5 (Cont)

Location	Maximum Discharge 1000 CFS									
	Years									
	1913 *	1927 **	1937	1945	1950	1973	1975	1979	1983	1997
Natchez	--	2290	1998	1948	1872	2024	1819	1730	1810	1850
Lat. Red River Ldg	1701	2345	1896	2123	2054	2261	2009	2014	2150	2112
Tarbert Landing	1551	-	1977	1950	1912	1498	1216	1419	1470	1480

* Peak flows affected by levee crevasses. Latitude flows would be higher than values indicated.

** Values of discharge for 1927 if levees had not failed.

TABLE 6-6
MAXIMUM STAGES
SELECTED FLOODS 1913-1997

Gage Location	Maximum Stages Feet									
	Years									
	1913	1927	1937	1945	1950	1973	1975	1979	1983	1997
Cape Girardeau	35.0	40.0	30.4	38.7	32.6	45.6	36.3	44.4	44.9	39.6
Cairo	54.7	56.4	59.5	53.9	55.9	55.7	56.5	54.7	54.3	56.2
Hickman			51.5	47.3	49.0	49.1	49.5	48.5	48.3	49.0
New Madrid	44.6	43.5	48.0	42.1	43.5	43.3	43.6	42.8	42.3	43.0
Caruthersville			46.0	40.7	41.7	42.4	42.4	41.6	41.3	42.2
Memphis--Beale	46.6	45.8	50.4	40.5	41.8	41.4	41.6	40.3	40.2	42.0
Memphis--WB			48.7	39.3	40.5	40.5	40.3	39.2	39.2	40.8

TABLE 6-6 (Cont)

Gage Location	Maximum Stages Feet									
	Years									
	1913	1927	1937	1945	1950	1973	1975	1979	1983	1997
Helena	55.2	56.8	60.2	49.3	50.3	50.2	47.9	48.2	47.6	48.4
Arkansas City	55.2	60.4	53.9	46.3						
Arkansas City (New Locat.)		59.2			41.4	47.6	42.9	42.9	43.6	43.7
Vicksburg	52.2	56.0	53.2	47.5	45.0	51.6	48.3	47.9	49.3	49.1
Natchez	52.6	56.6	58.0	55.2	53.4	56.7	54.0	54.6	55.7	56.3
Red River Ldg	50.6	60.9	59.1	58.9	56.3	58.1	56.0	59.1	60.4	61.3
Baton Rouge	40.8	47.3	44.5	45.2	43.0	41.6	41.1	42.5	43.9	43.6
New Orleans	19.3	21.0	19.3	19.8	20.0	18.5	18.0	17.4	17.4	16.9

FLOOD CONTROL MEASURES

Mississippi River Levees

38. The Mississippi River levees are designed to protect the alluvial valley from extreme flood events by confining flow to the leveed floodway, except where it enters the natural backwater areas or is diverted intentionally into the floodway areas. The mainline levee system, comprised of levees, floodwalls, and various control structures, is approximately 1,600 miles long.

39. When major floods occur and the carrying capacity of the Mississippi River leveed channel is exceeded, additional conveyance through the Birds Point-New Madrid Floodway and relief outlets through the Atchafalaya Basin Floodway, Morganza Floodway, and Bonnet Carre Floodways are utilized as well as the storage capacity of flat lowlands at the junctions of tributaries with the Mississippi River. These and other tributary areas, commonly referred to as backwater areas, are in effect mid-river reservoirs that store water during major floods. They may be protected from lesser floods by levee systems that are overtopped by the major floods. The backwater levees are designed to overtop prior to the project flood peak such that the storage made available in a timely fashion will reduce the level of the Project Design Flood (PDF), thus resulting in lesser levee grades along the mainline levee.

40. Evolution of the Project Design Flood.

a. The design of a flood control system requires that flood flows be computed from which water surface elevations can be determined. Such elevations have been used to establish levee grades and other features of the flood control system. The first detailed studies were made in 1861. Subsequent studies which resulted in major changes in levee design flows were made in 1899, 1914, 1928, 1941, and 1956. Studies were conducted in the 1920's to determine the best way to convey the Project Flood past the middle reach of the river. The alternatives were floodways, very high levees and a major cutoff program. The floodway alternative was rejected as being unacceptable. Very high levees were not feasible. Consequently, the cutoff program was adopted. By 1942, 16 cutoffs were constructed.

b. The 1956 study was more detailed than the previous studies and defined the Project Design Flood as "... the greatest flood having a reasonable probability of occurrence." This study included the hypothetical arrangement of observed storms to produce the maximum flows that can be reasonably expected to occur. It made allowances for existing and proposed reservoirs through the basin. This flood is known as the 58A-EN Project Design Flood. These flows and the very efficient post-cutoff channel conditions were used to establish the 1956 flowline. The levees were subsequently designed and constructed based on the flowline.

c. The Project Design Flood Flows computed in 1956 have not been revised, are applicable to today's conditions on the Lower Mississippi River, and are the present design flows thereon. Some of the changes in project design flood discharges since 1861 are shown in Table 6-7. The present Project Design Flood Flows are shown on Figure 6-1 of this appendix.

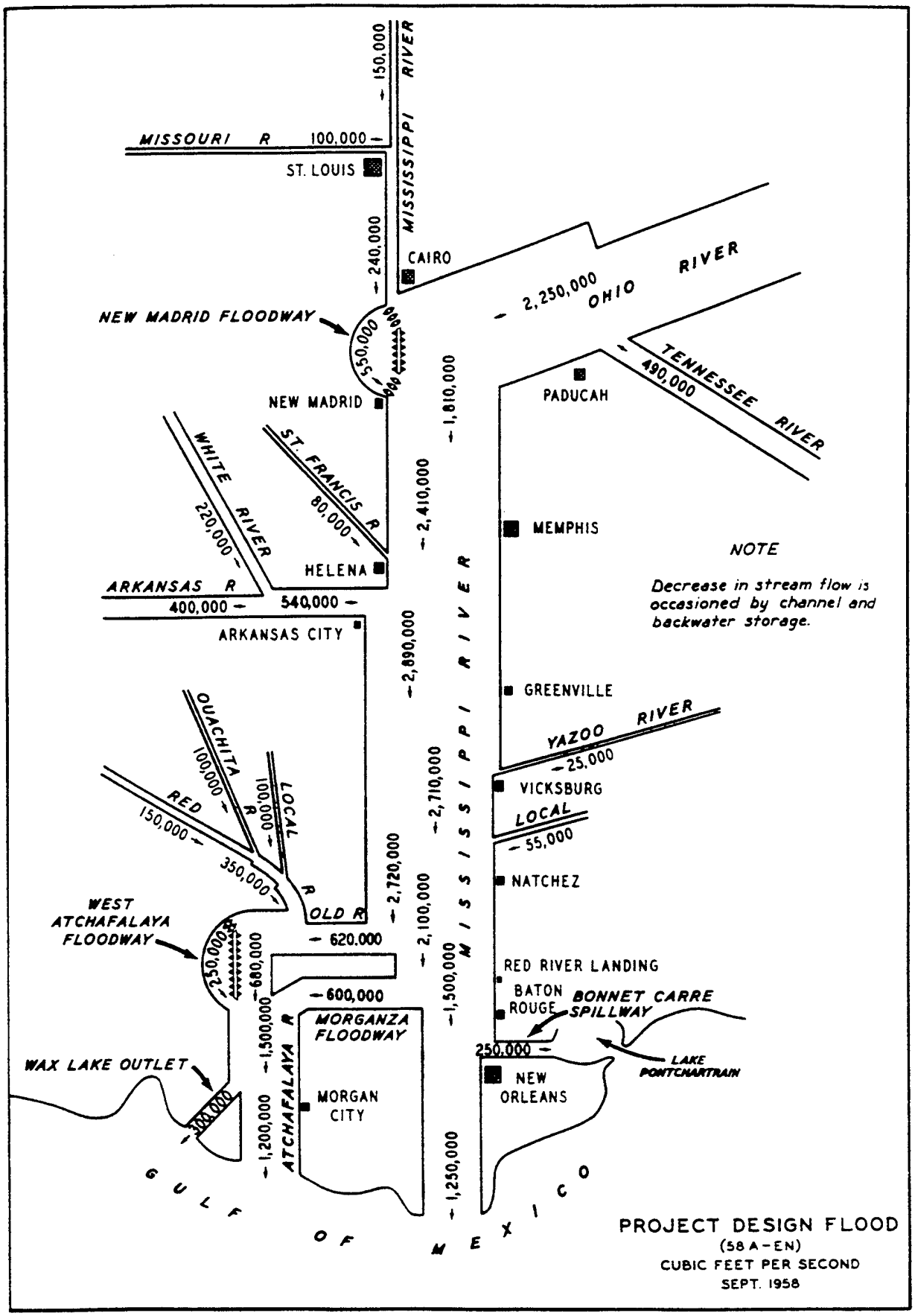
MISSOURI R
100,000
ST. LOUIS
150,000
MISSISSIPPI RIVER
240,000
CAIRO
OHIO RIVER
2,250,000
NEW MADRID FLOODWAY
550,000
NEW MADRID
1,810,000
PADUCAH
TENNESSEE RIVER
490,000
WHITE RIVER
220,000
ST. FRANCIS R
80,000
2,410,000
MEMPHIS
HELENA
ARKANSAS R
400,000
540,000
ARKANSAS CITY
2,890,000
GREENVILLE
YAZOO RIVER
25,000
OUACHITA R
100,000
RED
150,000
LOCAL
100,000
2,710,000
VICKSBURG
LOCAL
55,000
NATCHEZ
350,000
OLD R
2,720,000
WEST ATCHAFALAYA FLOODWAY
250,000
620,000
680,000
2,100,000
RED RIVER LANDING
BATON ROUGE
BONNET CARRE SPILLWAY
600,000
1,500,000
MORGANZA FLOODWAY
1,500,000
250,000
LAKE PONTCHARTRAIN
WAX LAKE OUTLET
300,000
NEW ORLEANS
MORGAN CITY
ATCHAFALAYA R
1,200,000
1,250,000
GULF OF MEXICO
NOTE
Decrease in stream flow is occasioned by channel and backwater storage.
PROJECT DESIGN FLOOD
(58 A-EN)
CUBIC FEET PER SECOND
SEPT. 1958

Figure 6-1

TABLE 6-7
LEVEE DESIGN DISCHARGES THROUGH TIME

LOCATION	Discharge 1000 CFS			
	Years			
	1861	1928	1941	1956 to Present
Cape Girardeau to Cairo	--	--	--	1000A* 1400B**
Cairo***	--	--	--	2360
Memphis	--	--	--	2410
Helena	--	--	--	2460
Arkansas City	1418	3200	3065	2890
Vicksburg	--	--	2761	2710
Red River Landing	1338	3000	3000	3030 ****
Below Morganza	--	--	--	1500
Below Bonnet Carre	--	--	--	1250

* A: 1,000,000 cfs from Upper Miss meeting
2,360,000 cfs at Cairo, w/ stage of 62.5 at Cairo
** B: 1,400,000 cfs from Upper Miss meeting
stage of 59.5 feet at Cairo
*** Combined flow of Upper Miss and Ohio rivers
**** Total latitude flow.

41. Project Flowline Elevations. From PDF discharge values a project water surface flowline was determined. Major flood events in 1973, 1993, and 1995 resulted in reevaluation of the flowline elevations.

a. Effects of 1973 Flood.

(1) The basin did not experience another flood after initiation of the 1956 levee raise until 1973. The Flood of 1973 began with above-normal stages in the fall of 1972. As the high water increased during the fall and winter, it became apparent that the stage-discharge relationship for the channel was several feet higher in the Vicksburg District than the relationship for which the levee system was designed. This increase in stage-discharge relationship was attributed to a loss of efficiency gained from the cutoff program. Additionally, the Flood of 1973 had several rises, recessions and subsequent rises. Each rise that followed a recession was higher than it would have been had the recession not occurred. This phenomenon is known as the "loop" effect. As the Flood of 1973 progressed, the project flood flowline was revised upward. Adjustments were made to the 1956 Flowline to account for the loss of channel efficiency and projected future loss of channel efficiency. These adjustments were made based

on available gage data and profiles were shaped in between gage locations. The paper, "1973 Adjustments to the 58A-EN Project Design Flood Flowline - MR&T," defined changes in the adjusted 1956 Project Flowline.

(2) A more detailed study beginning in 1974 was undertaken to refine the project design flood flowline using more detailed data and analyses. Detailed hydrographic and overbank surveys were made to accurately define the geometric properties of the leveed channel and overbank area. The 1974 high water and 1975 flood produced additional hydrologic data of value in the analyses. This study, using the design flows determined in 1956, which were determined to be applicable to current river conditions, included the use of a math model, a physical model and other related studies. The water surface data obtained from the math model was supplemented with data from the physical model. The other studies included a detailed analysis of the magnitude of the "loop" effect that could be expected for flows of the magnitude of the project flood and an analysis of the magnitude of the additional loss of channel efficiency (future deterioration) that could be expected. The "loop" effect and future deterioration were added to water surface elevations obtained from the math and physical models. The resulting flowline is the Refined 1973 MR&T Project Flood Flowline. This flowline is the basis for the design of the levee system under construction. The Vicksburg District Refined 1973 MR&T Project Flood Flowline and existing levee grades are shown on Plates 3a, 3b, and 3c in Appendix 4.

b. Effects of 1993 and 1995 Floods.

(1) The 1993 and 1995 floods revealed significant upward changes in stage-discharge relationships on the upper Mississippi River. The higher than expected water surface elevations experienced during the flood of 1995 on the reach of the Mississippi River above Cairo, Illinois indicated that significant changes in the floodplain have occurred from the conditions used to develop the 1956 PDF. Therefore, the Mississippi River and Tributaries Project design flowline from Cairo to Cape Girardeau was revised in 1996. The revision was based on available data and analyses of river hydraulic and hydrologic parameters.

(2) Two private levees located in the Upper Mississippi River Commerce to Birds-Point reach are factors in the changed floodplain conditions. The Powers Island levee and the Miller City levee are located on the right and left banks (looking downstream) of the Upper Mississippi River, respectively. The Powers Island levee was constructed in about 1969. These levees are lower than the Upper St. Francis Levee located on the right bank landward of the Powers Island levee. Earlier, these private levees have tended to fail during floods, permitting partial conveyance of flow through the floodplain. In recent years these levees have demonstrated greater resistance to failure, resulting in higher than expected flowlines against the project levee.

(3) Table 6-8 presents PDF flowline elevations for selected locations along the Mississippi River through time.

TABLE 6-8
PDF FLOWLINES THROUGH TIME
FOR SELECTED LOCATIONS

Location	1956 Flowline Elev, Ft NGVD	1973 Refined Flowline Elev, Ft NGVD	1996 Flowline Elev, Ft NGVD
Commerce	344.6	--	345.3
Cairo	333.2	333.0	333.0
New Madrid	307.2	307.9	--
Memphis	236.5	237.8	--
Helena	204.3	204.2	--
Arkansas City (New Location)	154.1	157.7	--
Vicksburg (Bridge)	104.4	109.2	--
Natchez	80.0	85.3	--
Red River Landing	61.0	64.8	--
Baton Rouge, LA	45.3	46.1	--
Carrollton Gage	19.8	19.8	--
Fort Jackson	7.5	9.2	--

c. Levee Grades.

(1) The project levee grade is the top elevation of the levee, which is higher than the project flowline due to freeboard. Design freeboard is the vertical [design] height of a levee above the estimated flowline of the Project Design Flood. The actual height of an existing levee above the flowline of the Project Design Flood is the available freeboard.

(2) The Mississippi River levees have been raised and strengthened a number of times. Plate 4, Appendix 4, shows the increase in height and cross section of Lower Mississippi River levees over time. A typical current value of design freeboard on Lower Mississippi River levees is 3.0 ft.

(3) Table 6-9 presents changes in design levee grade over time for selected locations along the Mississippi River.

TABLE 6-9

DESIGN LEVEE GRADES THROUGH TIME

LOCATION	Elevation (Ft, NGVD) Years							
	1861	1899	1914	1928	1941	1956	1973	1996
Commerce						347.6		348.3
Cairo						335.2	335.0	335.0
New Madrid						310.2	310.9	
Memphis						239.5	240.8	
Helena						207.3		
Arkansas City (Old Location)		155.0	157.2	160.2	159.6	158.8	162.5	
Vicksburg (Bridge)					107.0	107.4	112.2	
Natchez					84.1	83.0	88.3	
Red River Landing	54.3	57.1	61.1	64.1	64.1	64.0	68.8	
Baton Rouge						48.3	49.1	
Carrollton Gage						25.5	25.4	
Fort Jackson						11.5	13.2	

(4) The 1996 reanalysis of the project flowline in the Commerce to Cairo reach indicated that current conditions within the floodplain increased the PDF flowline such that additional increases to the Commerce to Birds Point Levee are necessary to provide authorized freeboard requirements.

d. Deficient Levees. As shown on Plates 3a, 3b, and 3c, the levees are deficient by varying amounts in various reaches. Table 6-10 identifies the deficient levees by reach with the range of the deficiencies. The locations of the most deficient portions of the levees are in the vicinity of Mayersville, MS, on the east bank and Lake Providence, LA, on the west bank.

TABLE 6-10
LEVEE DEFICIENCIES BY REACH

Item Name	Approximate River Mile a/	Reach Length (miles)	Deficiency Range (feet)
New Orleans District Floodwall, LA	102L	0.5	3.0-5.0
Carrollton Levee Enlargement, LA	100.2-104L	1.8	1.5
Jefferson Heights, LA	104.3L	0.8	Cross Section Only
Hohen-Solms - Modeste, LA	179-185R	3.6	1.8
Carville-Marchand, LA	181-189L	1.2	1.1
Reveille-Point Pleasant, LA	198.5-205R	2.6	Cross Section Only
Baton Rouge Front Levee, LA	230L	0.2	3.0-5.0
5th Louisiana Levee District Enlargement, LA	317-319.4R	3.5	1.5
Vidalia-Morville, LA	357R-365R	11.7	3.8-7.0
Upper Lake Concordia - Vidalia, LA	366R-367R	7.8	2.0-5.0
Waterproof-Upper Lake Concordia, LA	368R-377R	14.3	2.5-5.0
St. Joseph-Waterproof, LA	380R-393R	15.3	2.0-3.5
Yucatan-Lake Bruin, LA	398R-401R	7.9	2.8-5.0
Point Pleasant-Yucatan, LA	407R-411R	9.5	1.8-3.0
Bayou Vidal-Elkridge, LA	414R-421R	10.5	2.2-3.0
Reid Bedford-King, LA	422R-428R	9.2	3.0-6.5
Willow Point-Youngs Point, LA	445R-461R	18.8	3.5-7.5
Brunswick-Halpino, MS	452L-460L	8.6	2.8-4.0
Magna Vista-Brunswick, MS	462L-467L	11.3	3.1-6.0
Tallula-Magna Vista, MS	475L-A-475L-B	10.0	3.3-4.0
Wilson Point-Point Lookout, LA	480R-489R	14.3	6.0-8.0
Carlisle-Tallula, MS	481L-490L	8.8	3.5-5.0
Valewood-Carlisle, MS	(493L-498L) 496-L	10.5	4.5-8.0

TABLE 6-10 (Cont)

Item Name	Approximate River Mile a/	Reach Length (miles)	Deficiency Range (feet)
Carolina-Valewood, MS	502L	7.6	3.6-5.0
State Line-Wilson Point, LA	503R-506R	7.7	4.2-7.5
Lake Jackson-Palmetto, MS	509L-511L	7.1	2.0-3.5
Above Lakeport-Harwood, AR	520R-528R	8.6	2.0-4.0
James-Longwood, MS	521L	4.6	2.0-2.5
Avon, MS	526L	0.7	2.0-3.0
Sunnyside, AR	531R	3.2	3.0-3.5
Leland-Vancluse, AR	536R	6.0	1.5-2.5
Luna-Leland, AR	541R	2.3	1.0-6.0
Below Arkansas City, AR	555R	0.5	0.5
Cairo, IL	2-13L (Upper MS)	11.0	0.4
Below Commerce, MO	30-39R (Upper MS)	10.0	1.0-3.0
BP-NM Floodway	890R	0.8	Levee Extension
St. Francis Levee District	743R	3.5	0.3
Tiptonville-Obion	820L-805L	6.5	Levee Extension

a/ R=right bank; L=left bank

Impacts of Levee Construction Alternatives

42. General. The following paragraphs present a brief description of alternatives to enlargement of the Mississippi River Mainline Levees and discuss general impacts of each alternative.

43. No Action.

a. The no-action plan includes no new construction to include seepage control, frontal protection or levee height increases except normal maintenance and repair. Existing levees, berms and floodways would remain in place as the only flood protection. This plan would result in levee failures beginning at a flood of as little as 2.2 million cfs at Vicksburg, considerably less than the Project Design Flood of 2.71 million cfs. Levee failures during a Project Design Flood would be devastating for the States of Missouri, Arkansas, Louisiana, and Mississippi. The impacts would be felt nationwide due to transportation and agricultural losses. This event could cause the loss of an entire agricultural growing season and the closure of Interstates 20, 40, 55, and 57 and U.S. Highway 61 for up to 60 days. A number of people would likely lose their lives.

Thousands of homes and businesses would be damaged or destroyed. Numerous deer, bear and other wildlife species would be forced from their natural habitat and large numbers would likely drown or starve. The damage caused by silt deposition and flowing water could be so extensive as to prevent occupation of certain areas by humans or animals for several years after the flood recedes. Economic losses are addressed in Appendix 7, Socioeconomic Analysis.

b. Levee system repairs after failure would consist of restoration to current conditions, thereby setting the stage for another catastrophic event.

44. Plan 1. Plan 1 represents a nonstructural option to structural flood damage reduction. The purchase of flowage easements would be required on thousands of acres. This plan would partially compensate for future damages that might be incurred from a levee break. Unlike the no action plan, levees would not be repaired after failure since flood flowage easements would have been purchased. Consequently, areas would flood more frequently than before due to the decreased level of protection along the levee alignment in the failure areas.

45. Plan 2 - Landside Borrow. This alternative presumes continuing construction of levee enlargement and raising, seepage control, and frontal protection; however, it requires all borrow material to be obtained from landside of the levee. Three landside borrow schemes were investigated:

a. Plan 2A - Traditional landside borrow.

(1) Plan 2A consists of purchasing rights-of-way for traditional rectangular borrow areas 8 to 10 feet deep in a band 2,000 to 3,000 feet from the landside toe of the levee where feasible. A minimum distance of 2,000 feet from the landside levee toe was used to prevent seepage problems and a maximum of 3,000 feet from the landside levee toe was used to place a cap on the distance to haul borrow to the levee and berm construction.

(2) Suitable material will be excavated and used to enlarge the levee as shown on Plate 49 (Appendix 4) or construct berms. Water quality in the landside borrow area would likely be poor due to the limited amount of runoff from rains and that limited amount would be high in nutrient loading, thereby causing high levels of organochlorine pesticides to accumulate in the borrow area sediments and fish tissues because of the adjacent agricultural practices. Landside borrow area water quality is discussed in greater detail in the Water Quality Appendix. Landside right-of-way is expensive as would be the extended lengths of borrow haul.

b. Plan 2B - Traditional landside borrow with forested buffer.

(1) This alternative consists of a deep (average 8 feet) borrow surrounded by a forested buffer zone approximately equal in area to the borrow, with a protective berm around the outside of the buffer area to prevent chemicals from entering the borrow. As in Plan 2A, the preferred location for the borrow area is 2,000 to 3,000 feet landside of the levee toe.

(2) See Plate 50 (Appendix 4) showing the excavated borrow area with the material used to enlarge the levee. The forested buffer area and protective dike are shown on the borrow area periphery. This design would isolate the borrow from the local drainage which carries pesticides, thereby improving water quality to some extent. However, this requires additional cost for engineering and design and lands and damages.

c. Plan 2C - Landside shallow borrow. Landside shallow borrow is to allow for draining the borrow area so that it can be forested. Borrow excavation is limited to 3 feet deep and shaped to drain and connect to local drainage, thereby providing habitat for tree growth. As in the previous landside borrow areas, the preferred location is in a band 2,000 to 3,000 feet from the landside toe of the levee. Plate 51 (Appendix 4) shows a typical layout of borrow area location, excavation and levee enlargement, and forested borrow. This shallow borrow greatly increases the required borrow area acreage.

46. Plan 3. This plan includes the traditional method of levee construction, with borrow material from the closest engineeringly feasible area, which is normally riverside of the worksite, to enlarge the levee and construct berms. This plan requires no special configuration or location of the borrow pits other than for engineering purposes. No provisions are made for drainage or environmental enhancement of the borrow pits. However, past experience has shown the resulting borrow pits to permanently hold water which is replenished or "flushed" periodically by normal river fluctuations. Water quality and fisheries in these riverside borrow areas are excellent.

47. Plan 4. This plan includes reasonable design measures to avoid-and-minimize environmental damages to riverside woodlands and wetlands. These measures include relocation of the borrow areas from riverside bottom-land hardwood wetlands to riverside prior converted farmlands or to landside of the levee, the use of existing berm material to enlarge the levee and replace the excavated berm with material dredged from the river, and the use of relief wells and slurry trench cutoffs to control seepage instead of berms. In addition to the location of the borrow pits, environmental features such as varying depths and irregular shorelines will be incorporated into their construction. Like the "traditional" borrow pits, these would be replenished by normal river fluctuations, and water quality and fisheries in the borrow areas should be excellent. Mitigation of unavoidable fish and wildlife losses would be implemented concurrent with construction.

Mississippi River Levee Seepage Handling Facilities

48. The Drinkwater Pumping Station is located within the Memphis District in Mississippi County, Missouri. The facility provides a drainage outlet for the Big Lake Basin area into the Upper Mississippi at approximately River Mile 22.

49. The plant is approximately 5 miles southwest of Cairo, Illinois on the right descending bank. Under existing conditions the plant has two 75-cfs pumps for a total capacity of 150 cfs, permitting drainage of the basin during high water conditions in the Upper Mississippi River. The start pump elevation is 308.0, and the stop pump elevation is 307.0.

50. Approximately 100 relief wells have been installed, with approximately 100 more planned, along the reach of the Mississippi River levee near the plant. The resultant seepage flow will be directed through open channels to the Drinkwater Pumping Station for evacuation. The capacity of the plant must be increased because of the seepage flow. Without increasing the station capacity to accommodate the seepage flow, approximately 5,400 acres of agricultural lands would be negatively impacted. The additional pumping capacity necessitated by the relief wells is estimated to be approximately 150 cfs. The increased pump capacity will result in a with-project exceedance duration curve about equal to that for existing conditions. Final design capacity of the plant may vary, resulting in an actual exceedance duration curve slightly different

from that presented in this report. The Water Control/Operations Manual for Drinkwater Pumping Station will be modified to minimize any changes to current landside hydrology with the additional pumps in place.

HYDROLOGIC AND HYDRAULIC ANALYSES
FOR ENVIRONMENTAL STUDY

51. Water surface elevations will not be affected by the project. Therefore pre- and post-project elevations used in wetland delineations and habitat evaluations will be the same. In order to assess environmental impacts associated with raising the levees or reducing seepage underneath the levees, hydrologic and hydraulic analyses were conducted to identify wetlands as well as waterfowl and terrestrial habitat. After the areas were identified, changes associated with project construction were identified. Criteria for wetland determination also include soil and vegetation criteria.

Hydrologic Criteria and Statistical Computations

52. Four types of hydrologic evaluation were performed for the study--wetland profile, waterfowl habitat, terrestrial habitat, and a terrestrial/aquatic evaluation.

a. Wetland Profiles.

(1) One criterion in the determination of wetlands is the degree of continuous inundation or saturation during the growing season. The growing season in the Memphis District is March 20 to November 12; in the Vicksburg District, March 9 to November 12; and in the New Orleans District, February 25 to November 24 . Wetlands were identified in accordance with U.S. Army Engineer Waterways Experiment (CEWES) Station Technical Report Y-87-1 (Corps of Engineers Wetlands Delineation Manual). Areas that are irregularly inundated or saturated less than 5 percent of the growing season continuously are not wetlands. Areas that are inundated or saturated irregularly more than 12.5 percent of the growing season continuously are wetlands. Areas that are inundated or saturated between 5 percent and 12.5 percent of the growing season continuously may or may not be wetlands.

(2) To determine the area between the levees that met the wetland hydrologic criteria, hydrologic data (stream gage data, Table 6-1), geographic information system (GIS) data, U.S. Geological Survey (USGS) 7.5-minute quadrangle maps, and the field experience of district personnel were used.

(3) The computer program WETSORT was used to perform the statistical analyses for determination of wetland profiles. For each year of the period of record evaluated, WETSORT identifies the span of consecutive days within the growing season having the highest mean stage, and then reports the lowest water surface elevation within that span of days. For example, if the growing season were 20 March to 12 November (238 days) then 5 percent of the growing season would be 12 days. For a period of record 1950-94 (45 years) WETSORT would then identify for each year the 12 consecutive days having the highest mean stage and report the lowest elevation in that time span. Therefore, for a given year, the 5 percent duration corresponds to an elevation at least as high as that reported. WETSORT ranks the elevations in descending order (45 elevations in this example). The median elevation for the period of record is the resultant value for the gage. WETSORT was also run with a period of 12.5 percent of the growing season.

(4) In order to estimate the area of the wetlands between the levees, an off site method was needed. The use of Thematic Mapper (TM) satellite imagery was selected as the appropriate method. The following procedure was utilized by the Vicksburg District in 1996 and was then applied by the Memphis and New Orleans Districts in 1997. TM scenes were selected which approximated the 5 percent duration elevation at each gage. The satellite scenes were classified using an unsupervised classifier. The classified images were grouped into four classes: cleared flooded, forested flooded, forested, and cleared. Several representative 1:24,000 quadsheets (USGS 7.5-minute quadrangle maps) were selected and test wetland maps were produced using satellite scenes which had water surface elevations within 0.5 foot of the 5 percent duration elevation at each gage. Regulatory Branch personnel field verified these maps using the 1987 Wetland Manual, and found the mapped wetlands did not encompass all of the wetlands in some areas and encompassed nonwetlands in other areas. Another set of satellite scenes were selected which had water surface elevations from 3.5 feet below to 5.5 feet above the 5 percent duration elevation, and maps were produced from these. The team found these maps to be adequate and mapping continued using these scenes when the scene was verified by field testing. In most areas, the field verification of the wetland maps found that satellite scenes where the water surface was 1 to 2 feet greater than the 5 percent duration elevation most accurately mapped the wetlands. Whenever possible satellite scenes were selected when the trees were in the 'leaf off' condition. Imagery was not always available which had the correct water surface elevation and the 'leaf off' condition. The New Orleans District was unable to obtain imagery during the 'leaf off' condition with a water surface less than 5.5 feet above the 5 percent duration flowline. Field verification of a scene that was 2.0 feet above the 5 percent duration in the upper Memphis District was found to include too much area as wetlands. A scene 3 to 5 feet less than the 5 percent duration flowline produced maps that were consistent with field verification. Thus, satellite scenes which had water surface elevations 5 feet below to 5 feet above the 5 percent duration elevation were used to map the riverside wetlands in the three Districts. The physical mapping of the wetlands in the Vicksburg District was accomplished by plotting the classified satellite scenes at 1:24,000 scale, sandwiching the plots with 1:24,000 topographic maps and placing the sandwiched maps on a light table. Wetland extent was transferred to the topographic maps, which were subsequently digitized. The digitized layer was added to the REGIS database. Field verification of the preliminary maps confirmed that the maps accurately depicted the extent of jurisdiction for the purpose of this study and the maps are appropriate for future planning studies. The field review revealed that some areas deemed to be wetlands primarily from saturation were not included in the preliminary mapping. These areas were identified by their flat or depressional landscape positions and added to the final maps. The team recognizes that the jurisdictional areas identified may include some areas of nonwetlands due to the selection of scenes designed to encompass the preponderance of potential wetland areas. Adjustments to the study map may be made by an onsite field investigation once specific project features are identified.

(5) Wetland mapping in the Memphis and New Orleans Districts was accomplished by using satellite scenes selected as above and using software routines to produce vector coverages of the raster wetland area. The resulting maps were ground verified in the same manner as the Vicksburg District maps. At times, the wetland elevations were revised upward to accommodate specific site conditions such as blocked drainage, ponding areas not directly connected to the river, and perched ponding areas. The 5 percent duration elevations and the elevations of the Mississippi River for the satellite scenes at all the gages are listed in Table 6-11 . More information on the wetland mapping and verification can be found in paragraph 77.

TABLE 6-11
WETLAND SATELLITE SCENE GAGE ELEVATIONS

Mississippi River Gage	Satellite Acquisition Date	Area of Satellite Coverage	MS River Stage	MS River Elevation	MS River 5% Duration Elevation
Cape Girardeau	29 Nov 92	Cape Girardeau to Hickman	32.5	337.1	334.0
Cairo	29 Nov 92		40.3	310.8	314.5
Hickman	29 Nov 92		34.7	299.4	302.7
New Madrid	22 Apr 93	New Madrid to Osceola	35.0	290.5	289.3
Caruthersville	22 Apr 93		35.1	270.6	267.9
Osceola	22 Apr 93		31.4	240.8	239.0
Memphis	28 Feb 91	Memphis to Rosedale	29.8	213.7	213.0
Helena	28 Feb 91		37.0	178.7	179.3
Fair Landing	28 Feb 91		30.2	162.4	163.2
Rosedale	28 Feb 91		33.3	142.0	144.0
Rosedale	10 Mar 89	Memphis to Vicksburg	36.2	144.9	144.0
Arkansas City	10 Mar 89		34.0	130.7	129.0
Greenville	10 Mar 89		45.9	120.8	117.5
Lake Providence	10 Mar 89		33.9	103.6	101.5
Vicksburg	10 Mar 89		40.9	87.1	83.5
Vicksburg	11 Apr 89	Vicksburg to Old River Control Structure	37.3	83.5	83.5
St. Joseph	11 Apr 89		37.9	71.0	69.0
Natchez	11 Apr 89		44.2	61.5	59.5
Red River Landing	11 Apr 89		47.9	47.9	45.5
Red River Landing	16 Mar 89	Red River Landing to Reserve	51.9	51.9	45
Baton Rouge	16 Mar 89		36.0	36.0	30.5
Reserve	16 Mar 89		20.0	20.0	--

TABLE 6-11 (Cont)

Mississippi River Gage	Satellite Acquisition Date	Area of Satellite Coverage	MS River Stage	MS River Elevation	MS River 5% Duration Elevation
Reserve	17 Mar 94	Reserve to Venice	21.2	21.2	--
Carrollton Gage (New Orleans)	17 Mar 94		15.1	15.1	13.3
Venice	17 Mar 94		3.8	3.8	--
Venice	12 Dec 96	Venice to Head of Passes	3.3	3.3	--
Head of Passes	12 Dec 96		2.0	2.0	3.2

(6) Wetland profiles (5 percent and 12.5 percent duration, growing season) for the Mississippi River are presented on Plates 5a, 5b, 5c, 5d, 5e, and 5f, of Appendix 4. These plates also present a 2-year annual frequency profile.

b. Waterfowl Habitat.

(1) Waterfowl feeding habitat is defined as areas that are inundated by up to 24 inches of water. The Mississippi River stages generally increase during the waterfowl season of 1 November to 28 February. Mean monthly stages increase by 8 to 10 feet at most gaging locations during this period. The maximum waterfowl feeding area is determined by the highest average stage from observation in late February. The minimum water surface was obtained from the land use determinations which used a multitemporal classification scheme. The multitemporal classification used a June and an October TM scene from the same year. The October scene provided the minimum water surface for the waterfowl habitat determination. The land cover of the lands inundated between the minimum and maximum waterfowl scenes was used as the waterfowl habitat.

(2) A waterfowl habitat profile (50 percent duration, 1 Nov-23 Feb) is presented in Plates 6a, 6b, 6c, 6d, 6e, and 6f, Appendix 4.

c. Terrestrial Habitat.

(1) To identify the area available for terrestrial habitat, the average minimum elevation for the March through May time period was computed. STATS was used to perform the statistical analyses for determination of terrestrial habitat.

(2) A terrestrial habitat profile (average minimum elevation, March-May) is presented in Plates 7a, 7b, 7c, 7d, 7e, and 7f, Appendix 4. Those areas lower in elevation than the associated profile elevation were considered potential terrestrial habitat areas.

d. Terrestrial and Aquatic Evaluation.

(1) To identify areas for terrestrial and aquatic evaluation the elevation equaled or exceeded 5, 10, 25, 50, 75, and 100 percent of the time annually (annual exceedance duration) for the period of record was computed. The elevations were determined by counting the number of days an elevation in a given incremental elevation range was equaled or exceeded. The percent of the total time these days represented was computed and plotted on a graph of elevation versus the percent of the time the elevation was equaled or exceeded. The 5, 10, 25, 50, 75, and 100 percent elevations were thus determined for each gage. STATS was used to perform the statistical analyses for determination of terrestrial and aquatic habitat.

(2) Six terrestrial and aquatic evaluation wetland profiles (5-100 percent annual duration) for the Mississippi River are presented in Plates 8a, 8b, 8c, 8d, 8e, and 8f, Appendix 4.

e. Water Quality. Mississippi River water quality is generally good. Most parameters are within acceptable ranges. The river does have high levels of nutrients (nitrates, total Kjeldahl nitrogen, and total phosphorus). Nitrate levels are especially high, exceeding the Mississippi Department of Environmental Quality benchmark of 1.0 milligram per liter 75 percent of the time. Construction of levees and berms for this project is not expected to have a noticeable impact on Mississippi River water quality. Some localized increases in suspended solids and turbidity may occur due to site disturbances stemming from construction. Storm Water Prevention Plans will be filed with the appropriate state for each construction item and best management practices for storm water management will be employed to reduce the localized impacts. Water quality is covered in greater detail in the Water Quality Appendix.

MISSISSIPPI RIVER LEVEE SEEPAGE HANDLING FACILITIES
IN THE COMMERCE TO BIRDS POINT REACH

53. Four hydrologic analyses for Drinkwater Pumping Plant were performed comparable to those performed for the Mississippi River Levees. Since the computed elevations refer to one ponded area upstream of the pump station, the results are presented in Table 6-12. Existing and with-project conditions were modeled using the HEC-IFH Interior Flood Hydrology computer program. HEC-IFH produced the daily elevations for the 1952-95 period of record required as input to WETSORT and STATS. Terrestrial-aquatic elevations were obtained directly from the HEC-IFH output and are presented on Plate 9, Appendix 4, as well as in Table 6-12. Mean monthly stages are presented in Table 6-13. Although the differences shown in Table 6-12 indicate an approximate 1-foot reduction of water levels for the Wetland profile and the 5 and 10 percent annual exceedance durations, the Water Control/Operations Manual for Drinkwater Pumping Plant will be modified such that changes in current landside hydrology will be minimized with the additional pumps in place. Therefore, the reductions shown in Table 6-12 indicate "worst-case" conditions. Actual changes are anticipated to be much less than shown and are likely to be in the -0.5- to +0.5-foot range. Additionally, the increased capacity required to accommodate the relief wells will only be utilized during high river stages.

TABLE 6-12
DRINKWATER PUMPING PLANT ANALYSIS RESULTS
ENVIRONMENTAL EVALUATIONS
1952-1995

Evaluation Type	Initial Conditions (150 cfs) Elev, Ft NGVD	W/Project Conditions (285 cfs) Elev, Ft NGVD	Diff. Elev Ft
Wetland Profile (20 Mar-12 Nov)			
5 percent duration	309.7	308.7	-1.0
12.5 percent duration	308.2	307.0	-1.2
Waterfowl Habitat (1 Nov-28 Feb)			
50 percent duration	304.3	304.5	0.2
Terrestrial Habitat (1 Mar-31 May)			
average minimum elevation	306.1	305.5	-0.6
Terrestrial and Aquatic (1 Jan-31 Dec) annual exceedance durations			
5 percent	311.6	310.3	-1.3
10 percent	309.7	308.3	-1.4
25 percent	307.6	307.5	-0.1
50 percent	304.8	305.0	0.2
75 percent	299.1	299.2	0.1
100 percent	295.2	295.2	0.0

TABLE 6-13
DRINKWATER PUMPING PLANT ANALYSIS RESULTS
MEAN MONTHLY ELEVATIONS
1952-1995

Month	Initial Conditions (150 cfs) Elev, Ft NGVD	W/Project Conditions Elev, Ft NGVD	Diff. Elev Ft
January	304.3	304.2	-0.1
February	305.3	305.2	-0.1
March	307.4	307.1	-0.3
April	308.7	308.0	-0.7
May	308.2	307.6	-0.6
June	305.9	305.5	-0.4
July	303.4	303.4	0.0
August	300.5	300.5	0.0
September	298.4	298.4	0.0
October	299.0	299.1	0.1
November	300.6	300.6	0.0
December	303.1	303.0	-0.1

54. As indicated in Tables 6-12 and 6-13, Drinkwater Pumping Plant water surface elevations will not be significantly affected by the project. It is estimated that for with-project conditions both the 5 and 12.5 percent limiting wetland elevations will drop about 1.0 foot, waterfowl habitat elevation will rise about 1.0 foot, terrestrial habitat elevation will drop about 0.6 foot, and terrestrial-aquatic elevation will be essentially unchanged for the 25, 50, 75, and 100 percent annual exceedance durations and will drop about 1.3 feet and 1.4 feet for the 5 and 10 percent durations, respectively. The greatest changes are for the less frequent conditions. These changes indicate a "worst-case" impact and do not reflect any operational constraints imposed by the station Water Control/Operation Manual. Peak flood elevations for initial and with-project exceedance frequency curves will be similar resulting in the same areas inundated and the same frequency of inundation for both conditions. Only the duration of inundation will be affected as shown in the tables. Prior to implementing the additional capacity at the pumping station, the Water Control/Operation Manual will be modified such that changes to existing hydrology will be minimized. The increased capacity at the station is primarily intended to accommodate the additional flow produced by the relief wells during high Mississippi River stages. Therefore, actual impacts to landside hydrology at Drinkwater Pumping Plant will be much less than shown in the tables.

55. The estimated difference in mean monthly elevations between initial and with-project conditions is small. From July through February, the estimated elevation difference ranges from 0.1 foot to -0.1 foot. From March through June, with-project condition elevations are estimated to range from -0.3 foot to -0.7 foot, with the maximum difference of -0.7 foot occurring in April. Again, the numbers shown in Table 6-13 are presented as "worst-case." The greatest changes shown in Table 6-13, March through June, are due to use of the additional capacity at the pumping station during periods of high Mississippi River stages (i.e., periods of flow from the relief wells). Again, the peak exceedance frequency stages will result in similar inundated areas and frequency of inundation for initial and with-project conditions. The data presented do not reflect operational constraints imposed by the Water Control/Operations Manual for Drinkwater Pumping Plant. Prior to implementing the additional capacity at the pumping station, the Water Control/Operations Manual will be modified such that changes to existing hydrology will be minimized. The increased capacity at the station is primarily intended to accommodate the additional flow produced by the relief wells during high Mississippi River stages. Therefore, actual impacts to landside hydrology at Drinkwater Pumping Plant will be much less than shown in the table.

RELIEF WELL FLOWS

56. At other sites along the levee, relief well flows are low and do not increase overall flooding in the protected area. In such areas, the discharge will be allowed to flow into wetlands, forests, or other such areas and seek its own course to a receiving stream or the flow will be confined at the toe of the levee and channeled into the existing drainage system by constructing and enlarging minor ditches.

SECTION 3 - GEOTECHNICAL

GEOLOGY

Introduction

57. Mississippi River Mainline flood control levees in the Lower Mississippi Valley are founded on Quaternary alluvium of the Mississippi River system. These surficial sediments were deposited by the Mississippi River as a result of river meandering and overbank flooding. The sediments are generally highly stratified and loosely consolidated. These alluvial deposits overlie a series of Pleistocene and Tertiary age formations that dip in a southerly direction and range from sands to silts and clays. In the extreme upper reaches of the Lower Mississippi Valley, between approximately Cape Girardeau, Missouri, and the confluence with the Ohio River, the Quaternary alluvium of the Mississippi River directly overlies Cretaceous, and in some locations, Paleozoic age bedrock. Cretaceous formations are represented by the Ripley Formation. This formation is composed of fine to coarse sands and sandy shales of the McNairy Member overlying glauconitic, fossiliferous, sandy shales of the Owl Creek Member. Paleozoic formations are represented by the Powell Formation of Ordovician Period. The Powell Formation consists of cherty dolomites with thin interbedded sandstones. Nomenclature and stratigraphy used in this report are in keeping with the system utilized by the U.S. Army Engineer Waterways Experiment Station in a series of published technical reports on the geology of the Lower Mississippi Valley.

It is a recognized fact that seismic events can damage or destroy earthen embankments such as levees. Furthermore, there are numerous published works that present evidence of Tertiary and Recent faulting. However, current design practices do not address seismic events for levee construction. A detailed discussion of the tectonics of southeast Missouri is considered beyond the scope of this report.

Investigations Performed

58. The information presented in this report is based on a wide variety of sources and techniques, developed through time, and used to explore and categorize the surface and subsurface conditions in alluvial flood plain. Numerous geotechnical borings have been drilled along the MRL alignment and in the adjoining riverside zones. Early exploratory borings were performed by auger and bailer or examination of wash samples. More recent boring procedures involve rotary drilling using circulating fluid and undisturbed sampling techniques that yield higher quality samples. Other investigative techniques include mapping of the surface geology, interpretation of aerial photography, down hole geophysical explorations and cone penetrometer holes.

Regional Geology

59. Physiography - Topography. The Mississippi River is located on a broad, flat, southernly sloping flood plain composed of alluvial sediments deposited by the Mississippi River system. The flood plain has a typical downstream average slope of 0.6 feet per mile. Relief is generally less than 10 feet. The greatest relief is associated with natural levees and point bar ridges. Ground surface elevations in the delta range from near 300 feet, NGVD, in the northern part of the valley to sea level.

60. Structure-Tectonics.

a. Regional Structure. The Lower Mississippi River runs parallel to the axis of the Mississippi Structural Trough, a regional, southerly plunging syncline outlined at the surface by the Mississippi Embayment. The Mississippi Embayment reflects the presence of the structural trough and is a northward extension of the Central Gulf Coastal Plain. The Mississippi Structural Trough is bounded on the east by the Paleozoic age Appalachian Mountains, on the west by the Paleozoic age Ouachita Mountains, and on the north by Paleozoic age sedimentary sequences of the Interior Lowlands. Initial downwarping of the Mississippi Structural Trough began during the Mesozoic Era and continued to the Eocene Epoch of the Tertiary Period. Sedimentation and subsidence in the Mississippi Structural trough occurred concurrently. Subsidence was caused by subcrustal movements, isostatic adjustments to sediment loading, and consolidation of sediments. Through time the depo-center migrated south and formed a series of basins (and intervening domes) that effect the local strike and dip of the Tertiary formations. The depo-center eventually moved in to the Gulf Coast Geosyncline which is an east-west trending depression in the crust of the earth that roughly parallels the current coast of Louisiana. Tertiary Formations younger than Paleocene generally have a strike and dip related to this structure.

b. Local Structures. Local structures that influence the suballuvial geology along the Lower Mississippi River include a series of uplifts (or domes) and basins. Basins are areas of the structural trough where Tertiary age sequences attained their greatest thickness because subsidence occurred more rapidly than in the trough at large, especially during Eocene time. The largest of these sub-features is the Desha Basin. Uplifts, including the Monroe and

Southern Mississippi, are areas where subsidence was not initiated until Upper Cretaceous time and then proceeded at a relatively slower rate. These structures affect the attitude of the suballuvial (Tertiary) formations by imparting various dips to the strata. They do not affect the engineering properties of alluvial strata.

c. Faulting. A series of northeast-southwest, and northwest-southeast lineaments, inferred from physiographic evidence, have been postulated by various authors to be in and around the Mississippi River area. However, only two faults have been actually demonstrated to exist in the Lower Mississippi Valley. These faults are associated with Reelfoot lake and Catahoula Lake and typically have surface displacements on the order of 10 feet. There is no evidence that faults have substantially affected either Tertiary or Recent sediments along the Mississippi River, although there is evidence that certain reaches of the river may approximately follow some of these fault zones.

d. Earthquake History. The most serious earthquake threat is from the New Madrid Fault Zone located in the northern end of the embayment in the boot heel of Missouri. In the winter of 1811 - 1812 a series of major earthquakes emanated from this fault zone. These earthquakes resulted in extensive liquefaction of the substratum, ground subsidence, and ruptures at the ground surface.

61. History.

a. Pre-Pleistocene (Mesozoic and Cenozoic) History. The Mississippi Embayment is a northward extension of the Central Gulf Coastal Plain. The Mississippi Embayment reflects the presence of the Mississippi Structural Trough, a regional, southerly plunging syncline that developed during the late Mesozoic Era. During Mesozoic and Cenozoic time, the Mississippi Structural Trough was subjected to repeated inundations by the sea. As a result, the embayment's stratigraphy contains sedimentary sequences that range from continental (fluvial) to near-shore to marine. During Cretaceous time, marine conditions extended as far north as southern Illinois and resulted in the deposition of the Selma Group. Since then five major ocean transgressions of the structure have occurred; each one has left a complete sedimentary transgression/regression record. These inundations occurred as late as the Miocene Epoch and resulted in the deposition of (from oldest to youngest) the Midway, Claiborne, Jackson, Vicksburg, and Grand Gulf Groups. Formations assigned to these Groups directly underlie the alluvium along the Mississippi Rivers' course as far south as New Roads, Louisiana. South of New Roads, Louisiana, the Mississippi River alluvium is underlain by Pleistocene and Recent formations which were deposited by the ancestral Mississippi River.

b. Pleistocene and Recent History. The Mississippi Valley is an erosional feature in the Tertiary sediments of the Central Gulf Coastal Plain that has been filled with alluvial sands, gravels, and clays. Entrenchment of the Lower Mississippi River System occurred during the Pleistocene Epoch as a result of continental glaciation. There were four major periods of Pleistocene glaciation and each followed the same basic cycle. During the building (waxing) portion of each "ice age," water was removed from the oceans and deposited on the continents as ice, forming giant glaciers. The volume of water removed from the oceans was such that sea level was lowered as much as 400 feet. The lowering of sea level increased the energy regimes of the Mississippi River and its tributaries, which caused the rivers to degrade their channels and form deeply entrenched valleys. At the close of each glacial stage, retreating (waning) ice sheets left tremendous quantities of glacial debris exposed to erosion and transportation by the river system. Another result of waning glaciers was a rebounding of sea level. Therefore, the net

effect at the close of each ice age was increased sediment load and decreased river energies. Initially, these changes resulted in the development of large alluvial cones where the Mississippi River and its tributaries entered their entrenched valleys in the Gulf Coastal Plain. As sea level continued to rise and the transporting energies continued to decrease, finer and finer materials were deposited until the entire entrenched valley was alleviated, much as it is today. These alluviations occurred during each interglacial stage. With the onset of the next "ice age" and its corresponding high river energies, the alluvial valleys were quickly flushed out and the cycle repeated. During high stands of sea level the rivers adjusted to the lower energy regime by developing meandering patterns. Alluvial sequences along the Mississippi River typically display a fine grained upper unit known as the topstratum and a course grained lower unit known as the substratum. The topstratum sequences were deposited by a meandering river regime. The substratum unit was deposited by a braided river regime during the earlier stages of the last valley alluviation.

SITE GEOLOGY

Alluvial Topstratum Geology

62. Beginning in the 1960's, a program was initiated to map the surface geology throughout the Mississippi alluvial valley. The geological mapping program was performed by CEWES and the results were published in a series of Technical Reports. Recent alluvial deposits in the Mississippi River Valley are generally divisible into an upper, fine-grained topstratum and a lower, coarse-grained substratum. The CEWES Technical Reports classify topstratum sediments according to the environment in which they are deposited. The Technical Reports recognize six separate environments of deposition. Each topstratum category is related to a specific depositional environment in which the constituent materials were laid down in a specific manner resulting in a deposit whose engineering properties vary within known limits. The character of the topstratum, and its spatial relationship to the Mississippi River levee alignment, is the primary factor influencing levee performance. The categories of topstratum deposits, and their relevant engineering characteristics as related to levee performance, are listed below.

a. Point Bar. Point bar deposits consist of sediments laid down on the inside of river bends as a result of meandering of the stream. Within the point bar topstratum there are two types of deposits: silty, sandy, elongated bars known as ridges which are deposited during high river stages and silty, clayey deposits known as swales which accumulate between ridges during falling river stages. Characteristically, the ridges and swales form an alternating series which conform to the curvature of the migrating channel. Point bar topstratum deposits generally consist of tan to gray clays, silts and fine sands in the ridges, and soft gray clays and silty clays in the swales. Both water and organic content are commonly high in swale deposits and low in ridge deposits. Point bar deposits are a result of active channel migrations and, as one might expect, they are the most common topstratum type encountered along the Mississippi river. Ridge deposits are laid down during high stages and they form the highest ground. In addition, they are often parallel (or sub-parallel) to the rivers course. As a result, early flood control efforts often followed these existing ridges when constructing levees. The thin nature of the topstratum in point bar ridge deposits can lead to underseepage problems, especially when the seepage is blocked landside of the levee by a by a point bar swale. Levees constructed on swales display little or no seepage due to the thick, clayey nature of the topstratum. On the down side, swales are typically topographic lows and larger levees may be necessary. Furthermore, the clayey foundation conditions are likely to result in settlement and require substantial over build. Where the levee alignment crosses the point bar topstratum at high angles to the "strike" of the ridge

and swale features the levee is often characterize by alternating reaches of seepage (where the alignment crosses ridge deposits) and reaches with little or no seepage (where the levee crosses swales).

b. Natural Levee. Natural levee deposits form low ridges which flank the outside of stream bends and are deposited during times of overbank flooding. The coarsest and thickest natural levee sections are deposited adjacent to the stream bank and, in general, the grain size and thickness of the levee decreases with distance from the stream. Natural levees vary in thickness from a feather edge up to 30 feet and are typically composed of brown and gray sands, very stiff brown to grayish brown silts, clayey silts, and clays. The natural water content is typically low and organic matter is seldom present. Natural levees mask other topstratum types and the pervious nature of the materials may lead to shallow underseepage. The largest natural levees develop along reaches where the channel is stable for a long period of time. Natural levees are well drained and highly prized as agricultural land. Archeological evidence shows that natural levees were often occupied by archaic peoples and were the first areas settled and developed by Europeans.

c. Abandoned Channel. Abandoned channels, or "clay plugs", are partially or wholly filled segments of a stream channel that form when a stream shortens its course by a chute or neck cut-off. Abandoned channel deposits extend to the thalweg of the parent stream and typically the ends of the loop are filled with a short wedge of fine, silty sand. Soft blue-gray clays (CH) with high water content occur throughout the loop between the sand wedges and comprise the "clay plug" portion of the abandoned channel. Abandoned channel deposits are topographically low and swampy. These features act as barriers to groundwater migration and enhance the levee's performance when they are tied into the embankment to prevent seepage. When Abandoned Channels occur landside of an artificial levee they concentrate seepage between the levee and the clay plug.

d. Backswamp. Backswamp topstratum forms when floodwaters are impounded between two meander belts or a meander belt and the valley wall. They are very low energy environments. Fine grained clayey sediments carried by the floodwaters slowly settle out of suspension and accumulate as vertical accretions on the basin floor. Seasonal drying typically causes desiccation which results in an over-consolidated, clayey deposit. Backswamp deposits often display silt strata or lamination in those areas closest to natural levee splays. Levees constructed on thick backswamp deposits are generally trouble free of underseepage. Backswamp deposits mask other topstratum types and may be as thin as a couple of feet. In which case the levee performance is dependent on the characteristics of the underlying topstratum type.

e. Abandoned Course. Abandoned course topstratum is formed when a river shifts its course in favor of a new route with a steeper gradient. The existing, but now abandoned river channel is occupied by smaller former tributary streams that enter the channel downstream of the point of diversion. These under fit streams are essentially trapped within the natural levees of the parent stream and unable to significantly modify the existing landforms. The new channel occupant may meander within the confines of the abandoned course from which it is rarely able to depart. The abandoned course is filled with sediments transported in by the smaller streams that join it. The nature of the deposits varies widely, depending on the source area of the smaller streams, and ranges from sand and gravel to silt and clay. Like abandoned channel deposits,

abandoned course topstratum extends to the thalweg of the parent stream and it may act as a barrier to ground-water movement. When a levee is constructed over or along an abandoned course the subsurface conditions should be thoroughly explored.

f. Braided Relic Alluvial Fan. Braided fan deposits occur where a tributary river enters the Mississippi Valley. These deposits were formed during the early stages of valley alluviation. They generally consist of sands and silts which have relatively high permeability. They are also topographically higher than the flood plain of the Mississippi river and as a result they are rarely encountered in levee construction. They represent area where subsurface conditions, especially as relates to underseepage, should be fully explored.

g. Crevasse Splays and Channels. Crevasse splays and channels form during flood events when the flood waters breach a natural levee. The splays and channels are analogous to abandoned courses. Crevasse splays and channels can eventually fill with fine sands (SP) with thin clay layers, indicative of episodic discharge. Subsurface conditions can vary immensely and should be fully explored.

Substratum

63. The Technical Reports published by CEWES indicates that the substratum typically ranges from 100 to 300 feet in thickness. The substratum is composed of gray, fine sands overlying a section of sands with gravel and was deposited by braided streams during the early stages of valley filling. This is the geologic unit through which ground-water migration occurs. Its depth below the surface (i.e., the thickness of the overlying topstratum) is the primary geologic parameter related to underseepage performance for the Mississippi River levee system.

SOILS

General

64. Geotechnical evaluation is performed using existing geological information, soils data and performance records along with site specific field exploration, laboratory testing and analysis. Geological mapping depict the general location, type, thickness and elevation of topstratum and substratum deposits. Soil borings show site specific topstratum and substratum deposits along with soil characteristics from which strength and permeabilities may be correlated. Detailed seepage records compiled since the 1937 high water document the location and severity of seepage and sand boils.

65. Levee Section. Design levee sections are for semicompacted levees as determined in the "Code For Utilization of Soils Data For Levees" published in April 1947. For a levee enlargement this base section is analyzed for slope stability, underseepage, and settlement based on site specific conditions. The base section is then modified to add additional height if required for settlement, stability berms if required for slope stability, or seepage berms, relief wells, or cutoffs if required for underseepage control. Required slopes for levees less than 25 feet in height are 1V on 4H riverside and 1V on 5.5H landside slopes with a 10-foot crown width. For levees 25 feet and higher, required slopes are 1V on 4H riverside and 1V on 6H landside with a 10-foot crown width. Road extensions are added to the landside crown of the levee. The roadway extensions are 15 feet wide and tie into the landside slope at a 1V on 3.5H slope.

66. Slope Stability. The landside and riverside slopes of the gross levee section are analyzed for slope stability based on site specific foundation conditions and design flowlines. In reaches that do not meet the required factors of safety a berm or slope flattening is utilized to achieve the required degree of safety.

67. Underseepage. The design section with any stability berm modification is analyzed for underseepage. Sections with a hydraulic gradient greater than 0.5 at the landside levee toe require seepage control to reduce the excess pressures to a safe value to prevent piping of material from beneath the levee and to control erosional seepage at the design flood stage. Underseepage control measures such as berms add weight at the landside toe to resist uplift pressures whereas relief wells relieve these pressures. An impervious cutoff blocks the passage of seepage beneath levees.

68. Settlement. Analyses are performed to estimate the ultimate foundation settlement. An estimate of consolidation of the enlargement is made assuming 10 percent shrinkage. The gross levee grade is based on the net section plus any significant amount of settlement and/or fill consolidation.

SECTION 4 - LAND CLASSIFICATION AND MAPPING ANALYSIS

GENERAL

69. Analyses performed for this project were done within the REEGIS database (Regional Environmental and Engineering Geospatial Information System). Currently, REEGIS runs on Intergraph's Modular GIS Environment (MGE). REEGIS is in use in four Districts of the Mississippi Valley Division (CEMVD), including the New Orleans, Vicksburg, and Memphis Districts, and is based on North American Datum (NAD) 1983, State Plane Coordinate System, Zone 2302 Mississippi West. UTM (Universal Transverse Mecaton) Zones 15 and 16 in the Memphis District, in the Vicksburg District and State Plane Coordinate System, Louisiana South Zone 17. The majority of mapping data used in these analyses was already in REEGIS and was generally controlled to a mapping scale of 1:10,000. The mapping included the following layers.

BASE MAPPING

70. Base topographic features in this GIS were taken from the 1988-1989 Mississippi River Comprehensive Survey. This survey was conducted using GPS and conventional survey technologies and photogrammetry. Baselines and photo control was established on both the east and west bank levee systems through the district. This survey was accurate to third order. Control mapping scale was 1:10,000 horizontal and 5-foot vertical contours were also developed. This survey meets mapping accuracy standards in use in the Mississippi Valley Division at the time of the survey.

LAND COVER MAPPING

71. The 1992 land cover map of the Lower Mississippi River encompasses the portion of the floodplain lying between the mainline MR&T levees or the toe of the bluffs where levees are not present. Coverage also uniformly extends 0.5 mile from the landward toe of the mainline levees. The flood plain region mapped extends from Cairo, IL, at the mouth of the Ohio River, to the Head of Passes, LA, an area approximately 2.3 million acres.

72. The nominal smallest mapping unit for the land cover was 20 acres for all classes except nonforested wetlands (herbaceous) and cypress and Tupelo gum associations for which the smallest unit was 5 acres. In reality, however, the smallest unit for any land cover class that could be discerned from the aerial photography was delineated. Thus the actual mapping unit was generally much smaller than the nominal specifications. The specified classification accuracy was 85 percent. However, classification accuracy was typically greater, depending on the quality of individual frames of photography.

73. The land cover maps were derived from photo-interpretation of uncontrolled false-color infra-red aerial photographs flown at 1:20,000 scale between approximately 15 Sep 92 and 15 Oct 97 by the St. Louis District over the lower basin. Approximately 2,600 9-inch format photographs were interpreted. The aerial photographs were geo-referenced using land marks visible on the photographs, in particular turns in the levees and road intersections. Only the effective area, the central portion of each photograph, was interpreted to avoid distortion. Land cover types mapped from the photographs were transferred to a matte finish film and registered to the bases maps.

74. Approximately 37 classes of land cover were found in the project area. Land cover class codes and names are contained in Table 6-14 along with summary acres for the riverside lands. For the analyses used in this report, all tree classes (1 through 6, 8 through 18, 27 and 28) were grouped under the class forested and the term herbaceous was used for nonforested wetlands. Table 6-15 shows the groups of land cover according to the way it presented elsewhere in this report.

TABLE 6-14
LOWER MISSISSIPPI RIVER RIVERSIDE LANDS 1992 LAND COVER
RIVER MILE 620 TO 320
(ALL CLASSES OF LAND COVER)

CLASS	NAME	ACRES
24	Open Water	443,246
21	Cropland	296,952
*11	Hackberry/Am Elm/Green Ash	281,222
*4	Sycamore/Sweetgum/Am Elm	273,458
*1	Black Willow	192,513
*3	Cottonwood	173,242
20	Tree Plantation	87,039
*2	Cottonwood black Willow	73,658
19	Scrub	72,964
*9	Sweetgum/Oak	59,576
31	Sandbar	56,821
*8	Pecan	42,397

TABLE 6-14 (Cont)

CLASS	NAME	ACRES
30	Levee	42,202
22	Pasture, Open Field	32,415
*16	Cypress/Tupelo Gum	30,514
25	Nonforested Wetland (Herbaceous)	20,611
32	Urban	11,698
*17	Cypress	9,889
29	Marsh	8,154
*14	Overcup Oak/Bitter Pecan	8,105
*12	Hackberry	7,737
*13	Green Ash	7,309
33	Bare Soil	6,986
*6	Sweetgum	6,096
*18	Tupelo Gum	1,579
*5	Sycamore	1,567
0	Oak	183
*15	Overcup Oak	121
*27	Live Oak/Pecan	44
*28	Live Oak	22
		2,248,318

*Denotes Forested

TABLE 6-15
LOWER MISSISSIPPI RIVER RIVERSIDE LANDS 1992 LAND COVER
(GROUPED CLASSES OF LAND COVER)

CLASS	NAME	ACRES
33	Bare Soil	6,986
21	Cropland	296,952
1-6, 8-18, 27, 28	Forested	1,169,230
25	Herbaceous	20,611
30	Levee	42,202
29	Marsh	8,154
22	Pasture/Open Field	32,415
31	Sandbar	56,821
19	Scrub/Shrub	72,964
20	Tree Plantation	87,039
32	Urban	11,698
24	Open Water	443,246
ALL	**TOTAL**	**2,248,318**

75. Ground truthing was conducted along the entire river corridor to verify the accuracy of land cover classifications derived from the aerial photo-interpretation. Representative areas of each land cover type were field checked using the digital land cover maps and the global positioning system. Results of the ground truthing were used to adjust signatures for the various land cover types and required corrections were made to each land cover base map.

76. The ARC/INFO version of the land cover maps were converted to GRASS 4.0 grid cell files and into Intergraph MGE format; i.e., Microstation design files with linkages of the centroid of each polygon to a relational database record containing the land cover class number. These files were then processed into the specified format for the REEGIS geospatial database.

77. Jurisdictional Wetland Mapping. Development of the jurisdictional wetland mapping layer was performed independently by each District. For continuity, the Vicksburg District's Regulatory Branch provided general guidance and oversight of the delineation process for all Districts. The methodology for conducting the determination of jurisdictional areas and followup ground truthing is documented in CEMVK-OD-FS memorandums for record dated 20 December 1995 and 22 February 1996, respectively, and are summarized here (Attachments C and D). This methodology was followed by each District and documented in a similar manner.

a. The 1987 Corps of Engineers Wetlands Delineation Manual. (Technical Report Y-87-1) with supplemental guidance was used as the basis for determining the extent of wetlands within the project area. Due to the magnitude of the area delineated, offsite procedures of the manual (Part IV, Section D, Subsection 1) were used to establish the approximate extent of jurisdictional wetlands. Other waters of the United States; e.g., rivers, lakes, streams, etc., were also added as jurisdictional areas. Many different existing data sets were used in preparing the jurisdictional wetland delineation. These include existing GIS databases with coverage of the project area, U.S. Department of Agriculture soil survey maps, river stage data, USGS quadrangle maps, aerial photography, satellite imagery, NWI maps, and the land cover layer. All data were compiled and evaluated. Only those areas which indicate positive signatures of wetland criteria for all three parameters (vegetation, soils, and hydrology) were considered jurisdictional. Certain assumptions were made with respect to vegetation, soils, and hydrology. These assumptions are detailed in CEMVK-OD-FS memorandum for record dated 20 December 1995 (Attachment C). These data were used as the basis for the preliminary jurisdictional determination. The preliminary determination was provided by Regulatory Branch of each District on USGS 7.5-minute quadrangle maps. The jurisdictional/nonjurisdictional areas were then digitized into the REEGIS database and printed.

b. A field review of the preliminary jurisdictional map was conducted in each District by an interagency team consisting of the U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, Natural Resources Conservation Service (U.S. Department of Agriculture), local levee boards, as well as state representatives from the Department of Environmental Quality and Game and Fish. Representatives of the Sierra Club and private landowners were also represented in various aspects of the field review. The purpose of the field review was to verify the accuracy of the offsite jurisdictional determination and validate assumptions used in preparing the preliminary maps. After reviewing over 60 field sites in seven states, the team for each District concluded that the original assumptions were appropriate for use in the offsite determination and that the resulting maps were accurate for planning and analysis of environmental impacts. Some anomalies were found in interpreting the hydrology parameter in flat landscape positions. The team concluded that minor adjustments should be made to account for wetlands occurring in flat landscape positions where wetland hydrology is derived from saturation in combination with flooding or ponding. These adjustments were made manually by a team of environmental specialists from the Corps of Engineers and incorporated into the final jurisdictional maps.

78. Items of Work. The location of work items showing the enlargement footprints, berm footprints, and original borrow areas were delineated into a digital GIS layer using the existing base mapping layers, land cover layers, and original project planning information. This was accomplished using heads-up digitizing techniques. The most accurate layer used was the base mapping layer; hence these areas are not exact positions and are only accurate to a scale of 1:10,000.

79. Initial Analysis. All new data layers were projected and/or controlled to NAD 83 State Plane Coordinate System, Zone 2302 Mississippi West. Intergraph's MGE analysis module (MGA) was used for spatial analysis. This process includes building a topological file that contains all data layers required for analysis. Queries were then processed using the topological files to obtain the land classifications and acreage for each work item. Reports were then constructed using Microsoft Access. The result of this process was a baseline for impacted areas before avoid-and-minimize efforts began.

80. Avoid and Minimize.

a. Memphis District. The avoid-and-minimize analysis consisted first of generating GIS maps that contained the following data layers: the base topographic features layer, the land cover mapping layer, the jurisdictional wetland mapping layer and the items of work layer. The items of work layer included the features described in paragraph 78 of this appendix. This layer is described as Plan 3 and represents the layout for the "Traditional" method of construction. To develop the layout of the plan described as Plan 4, the "Avoid-and-Minimize Plan," an interdisciplinary team was created consisting of representatives from all appropriate disciplines within the Memphis District. Using construction activities described in Section 5 of the appendix, the team analyzed each item to determine if the levee footprint and borrow areas could be moved or adjusted to avoid bottom-land hardwoods and both nonwetland and jurisdictional wetlands. The team then evaluated the potential for further reductions by using relief wells and cutoffs to control underseepage. A total of eight items were selected, evaluated, and deemed feasible for use of relief wells, and two deemed feasible for use of cutoffs. An overall comparison of the two plans, "Traditional" versus "Avoid and Minimize," is shown in Table 6-16A. Tables 6-17A and 6-18A show effects on the various land classifications by the traditional Plan 3 and selected Plan 4.

b. Vicksburg District. The avoid-and-minimize analysis consisted first of printing GIS maps that contained the following data layers: The base topographic features layer, the land cover mapping layer, the jurisdictional wetland mapping layer and the items of work layer. The items of work layer included the features described earlier in this appendix. The layer also is described as Plan 3 in paragraph 46 and represents the layout for the traditional method of levee construction. To develop the layout of the plan described as Plan 4, in paragraph 47, the "Avoid-and-Minimize Plan," an interdisciplinary team was created consisting of Mr. Robert Seyfarth and Mr. Jim Morris of the Mississippi DEQ; Mr. Daniel Gregg and Mr. Charles McCabe of the U.S. Fish and Wildlife Service; Mr. Reynolds Minsky, Fifth Louisiana Levee District; Mr. Jay DePrato, Louisiana Department of Wildlife and Fisheries; Mr. Jim Wanamaker, Mississippi Levee Board; and representatives of all appropriate disciplines within the Vicksburg District. The summarized results of bottom-land hardwoods (forested land classification) affected by Plan 3 and Plan 4 are shown in Table 6-16B. Table 6-17B gives the effects on the various land classifications by the traditional plan (Plan 3). Using the ranking criteria described in Section 6 of the appendix, the team looked at each item to see if the levee footprint and borrow areas could be moved or adjusted to avoid bottom-land hardwoods from both nonwetland and jurisdictional wetland areas. Further efforts by members of the team identified potential items suitable for dredging sand from the river to construct seepage berms. These potential sites were evaluated further for a cost/distance from the river standpoint. A total of six items were identified as being cost effective and were added to the avoid-and-minimize plan and the effects were further reduced. A team evaluated the potential for further reductions in the impact of bottom-land hardwoods by selective use of relief wells to control underseepage. A total of 12 items was selected, evaluated, and deemed feasible for use of relief wells. The effects on all land classifications from the adjustment of borrow pits, use of dredged berms, and relief wells are shown in Table 6-18B (selected Plan 4). These final results of the mapping and land classification analyses to include the layout of effected areas is presented on Plates 10 through 24 (Memphis District), 25 through 36 (Vicksburg District), and 37 through 46 (New Orleans District), in Appendix 4.

c. New Orleans District. The batture area between the levee and the river in this district becomes very narrow and typically ranges from 200 to 400 feet in width in most locations. Very little farmed wetlands occur on the batture in this District and none occurs in the vicinity of any of

the proposed work items. The decision was made to obtain construction material from borrowing areas on the batture as with the traditional alternative, but to mitigate through compensation the unavoidable loss of habitat and wetland values caused by construction works. Although avoid-and-minimize measures were not developed to result in fewer losses of bottom-land hardwoods and wetlands, measures were developed to benefit aquatic and wetland habitats. Environmental measures incorporated into borrow pit design includes constructing 1 vertical on 5 horizontal side slopes on the riverside of the pit, burying woody debris on that shallow side which results in a shallow shelf that produces desirable spawning habitat for several fish species as well as foraging habitat for several species of wading birds, leaving selected trees for shading as possible, and creation of some amount of sinuosity into the final delineation of the riverside bank. Table 6-16C shows 17 acres affected in both Plans 3 and 4. Tables 6-17C and 6-18C present the effects on the various land classification for both Plans 3 and 4.

TABLE 6-16A
MISSISSIPPI RIVER MAINLINE LEVEES SEIS
IMPACTS ON BOTTOM-LAND HARDWOODS
(WITHIN MEMPHIS DISTRICT)

Design Alternative	Total Acres Affected	BLH Nonwetland Acres	BLH Wetland Acres	Total BLH Acres	BLH Acres Avoided
Traditional Plan (Plan 3)	7743	923	2150	3073	--
Avoid & Minimize (Plan 4)	4406	313	201	514	2559

TABLE 6-16B
MISSISSIPPI RIVER MAINLINE LEVEES SEIS
IMPACTS ON BOTTOM-LAND HARDWOODS
(WITHIN VICKSBURG DISTRICT)

Design Alternative	Total Acres Affected	BLH Nonwetland Acres	BLH Wetland Acres	Total BLH Acres	BLH Acres Avoided
Traditional Plan (Plan 3)	17,200	2,730	5,760	8,490	--
Avoid & Minimize (Plan 4)	15,484	1,760	2,543	4,303	4,187

TABLE 6-16C
MISSISSIPPI RIVER MAINLINE LEVEES SEIS
IMPACTS ON BOTTOM-LAND HARDWOODS
(WITHIN NEW ORLEANS DISTRICT)

Design Alternative	Total Acres Affected	BLH Nonwetland Acres	BLH Wetland Acres	Total BLH Acres	BLH Acres Avoided
Traditional Plan (Plan 3)	17	0	17	17	0
Avoid & Minimize (Plan 4)	17	0	17	17	0

TABLE 6-17A
MISSISSIPPI RIVER MAINLINE LEVEES SEIS
TOTAL ACRES AFFECTED
TRADITIONAL PLAN (PLAN 3)
(WITHIN MEMPHIS DISTRICT)

Land Classification	Nonwetland	Wetland	Totals
Cropland	3009	812	**3821**
Levee	346	51	**397**
Open Water	49	64	**113**
Pasture/Open Field	17	109	**126**
Scrub/Shrub	27	90	**117**
Urban/Other	82	15	**97**
Forested	923	2150	**3073**
TOTALS	**4453**	**3291**	**7744**

TABLE 6-17B
MISSISSIPPI RIVER MAINLINE LEVEES SEIS
TOTAL ACRES AFFECTED
TRADITIONAL PLAN (PLAN 3)
(WITHIN VICKSBURG DISTRICT)

Land Classification	Nonwetland	Wetland	Outside Wetland Classification a/	Totals
Cropland	3,522	1,282	153	**4,957**
Forested	2,718	5,762	9	**8,489**
Herbaceous	113	274	--	**387**
Levee	306	36	--	**342**
Marsh	4	40	--	**44**
Open Water	95	378	--	**473**
Outside Project Area	256	2	406	**664**
Pasture/Open Field	283	312	6	**601**
Scrub/Shrub	148	316	--	**464**
Tree Plantation	284	331	21	**636**
Urban/Other	81	57	--	**138**
TOTALS	**7,809**	**8,790**	**595**	**17,195**

a/ Outside wetland classification denotes areas that are outside the 3,000-foot landside wetland classification.

TABLE 6-17C
MISSISSIPPI RIVER MAINLINE LEVEES SEIS
TOTAL ACRES AFFECTED
TRADITIONAL PLAN (PLAN 3)
(WITHIN NEW ORLEANS DISTRICT)

Land Classification	Nonwetland	Wetland	Outside Wetland Classification	Totals
Forested	0	17	0	**17**
Urban/Other	0	0	0	**0**
TOTALS	**0**	**17**	**0**	**17**

TABLE 6-18A
MISSISSIPPI RIVER MAINLINE LEVEES SEIS
TOTAL ACRES AFFECTED
SELECTED PLAN (PLAN 4)
(WITHIN MEMPHIS DISTRICT)

Land Classification	Nonwetland	Wetland	Totals
Cropland	2151	1109	**3260**
Levee	338	50	**388**
Open Water	12	22	**34**
Pasture/Open Field	44	0	**44**
Scrub/Shrub	41	44	**85**
Urban/Other	72	2	**74**
Forested	313	201	**514**
TOTALS	**2971**	**1428**	**4399**

TABLE 6-18B
MISSISSIPPI RIVER MAINLINE LEVEES SEIS
TOTAL ACRES AFFECTED
SELECTED PLAN (PLAN 4)
(WITHIN VICKSBURG DISTRICT)

Land Classification	Nonwetland	Wetland	Outside Wetland Classification	Totals
Cropland	4,462	2,177	104	**6,743**
Forested	1,760	2,543	9	**4,312**
Herbaceous	95	165	--	**260**
Levee	273	15	--	**288**
Marsh	4	21	--	**25**
Open Water	62	924	--	**986**
Outside Project Area	255	2	395	**652**
Pasture/Open Field	332	306	6	**644**
Scrub/Shrub	123	201	--	**324**

TABLE 6-18B (Cont)

Land Classification	Nonwetland	Wetland	Outside Wetland Classification	Totals
Tree Plantation	585	498	21	**1,104**
Urban/Other	101	45	--	**146**
TOTALS	**8,052**	**6,897**	**535**	**15,484**

TABLE 6-18C
MISSISSIPPI RIVER MAINLINE LEVEES SEIS
TOTAL ACRES AFFECTED
SELECTED PLAN (PLAN 4)
(WITHIN NEW ORLEANS DISTRICT)

Land Classification	Nonwetland	Wetland	Outside Wetland Classification	Totals
Forested	0	17	0	**17**
Urban/Other	0	0	0	**0**
TOTALS	**0**	**17**	**0**	**17**

SECTION 5 - DESCRIPTION OF CONSTRUCTION ACTIVITIES

ENLARGEMENT

81. The term levee enlargement refers to the additional material added to an existing levee to raise it to the required grade. A levee enlargement is accomplished by one of three methods: riverside, straddle, or landside enlargement.

a. Landside. A landside levee enlargement generally extends from the riverside levee crown and is accomplished by increasing the levee section landward and upward to the required new levee grade and adding material to obtain the required levee slopes.

b. Straddle. A straddle levee enlargement is accomplished by increasing the levee section vertically to the required levee grade and adding material to both the riverside and landside slopes of the levee to obtain the required levee slopes.

c. Riverside. A riverside levee enlargement generally extends from the landside levee crown and is accomplished by increasing the levee section riverward and upward to the required new levee grade and adding material to obtain the required levee slopes.

STABILITY BERMS

82. Stability berms are used where the foundation conditions are soft or weak. They prevent deep-seated sliding failures. In most cases, stability berms are required where the levee crosses an old river crossing that is filled with soft deep unconsolidated deposits. Stability berms may be required on either the landside or riverside, but mostly riverside, due to the flatter landside slopes incorporated into the design levee section.

UNDERSEEPAGE CONTROL

General

83. Underseepage control measures are designed to control excess pressures beneath the landside levee toe and control erosional seepage beneath the levee at design flood stage. Effective seepage control measures are landside seepage berms, pressure relief wells, and slurry trench cutoffs. Control measures most suitable for the Mississippi River Valley are landside seepage berms, pressure relief wells, cutoffs, riverside blankets, and riverside pitfills.

Landside Seepage Berm

84. Landside seepage berms control underseepage by increasing the thickness of the landward topstratum so the weight of the berm and topstratum is sufficient to resist uplift pressures. They lengthen the path of seepage flow through the pervious aquifer to the extent that the residual excess pressure at the toe of the berm no longer endangers the levee. Seepage berms also protect against landside sloughing of the levee slope as a result of levee through seepage. Seepage berms are used to control seepage effectively where the landside topstratum is relatively thin and uniform, or where no topstratum is present. Seepage berms are constructed along the landside levee toe. They may vary in character from impervious to completely pervious and free draining. Berm widths and thicknesses vary based on the type of berm material and foundation conditions at each site. Semipervious berms are constructed of material which has a permeability equal to or greater than that of the underlying topstratum. Sand berms are constructed of material with a vertical permeability of at least 100×10^{-4} cm per second. Sand berms require slightly less material to provide the same amount of protection as a semipervious berm. Typical berm widths range from 150 to 300 feet. Seepage berms require additional right-of-way over that which is required for the typical levee construction. Landside seepage berms require relatively little maintenance other than mowing.

Relief Wells

85. Relief wells control seepage by relieving substratum pressure. They also provide controlled seepage outlets that offer little resistance to flow but at the same time prevent internal erosion of the soil. Proper spacing and penetration will provide adequate pressure relief for almost any combination of riverside conditions, pervious foundation and landward top strata. The wells penetrate the principal pervious stratum to obtain efficient relief of pressure. Relief wells are installed along the landside toe of a levee. Well size and spacing are based on the individual site conditions. Relief wells typically increase the total seepage about 20 to 40 percent, depending on conditions. Typically, collector ditches are constructed to channel the seepage water away from the levees. Relief wells require little right-of-way outside of the levee section as they are located at the landside levee toe. Some clearing may be required to install the relief wells. However, this area can be replanted as soon as the wells are installed. Relief wells create an

additional cost for those areas where underseepage must be pumped back over the levee to prevent flooding. Relief wells require periodic maintenance and replacement to ensure their continued and proper functioning.

Cutoffs

86. Cutoffs involve the construction of a relatively impermeable barrier to underseepage. This is the most positive method of ground-water control. The most common cutoff constructed involves excavating a relatively narrow (typically 3-foot wide) trench through the underlying pervious foundation and backfilling the trench with a material of much lower permeability. Often the backfill material specified is a mixture of the excavated fine grained topstratum and the foundation sands along with a small percentage of a highly expansive clay such as bentonite. Based on construction requirements, other additives such as cement may be utilized in the design of the backfill. The cutoff trench parallels the levee and is generally located beneath the levee footprint near the riverside toe. Acquisition of additional permanent right-of-way is not required for cutoff trenches; however, there may be a necessity for temporary easements to provide mixing and stockpiling areas during construction. Additionally, there are no maintenance costs associated with a cutoff and, in fact, there may be a reduction in operation costs for those areas where underseepage must be pumped back into the river. Though cutoffs are the most effective method of control and have minimum impacts on the environment, they are limited in their application. To be effective in reducing seepage and pressures beneath the levee, the cutoffs must penetrate at least 95 percent of the underlying pervious aquifer. This is not an economically viable alternative for aquifer depths greater than approximately 90 feet. Below this depth there is an exponential increase in cost versus depth for cutoff construction. Also, if cutoff trenches are considered for a long and contiguous reach of levee, ground-water modeling may be required to address the impacts. As cutoffs also serve as a barrier to ground-water movement during nonflood events, they can alter the local ground-water regime.

Riverside Blankets and Riverside Pit Fills

87. The concept and design of blankets and fills are essentially identical. Their purpose is to eliminate entry sources for underseepage near the riverside toe and thus reduce the amount of underseepage and uplift pressures. Riverside blankets consist of the placement of a 3- to 5-foot-thick layer of impervious material riverside of the levee. These riverside blankets are most beneficial when there is a localized absence of the impervious topstratum along or near the riverside toe of the levee. The absence of the normally less pervious topstratum may be due to natural deposition or scouring. When the topstratum is absent due to the presence of borrow pits, riverside pit fills can be employed to control the seepage. This is particularly true when there is a direct hydraulically connectivity between the riverside pit and the aquifer sands. Construction techniques and requirements are similar as for a landside berm. Minimum maintenance requirements are necessary and it is preferable that a tree screen be established to provide erosion protection.

EROSION PROTECTION

General

88. Some form of protection is required in the lower reaches of the project to protect the levees from wave wash. The conditions that create severe wave exposures are associated with levees

located in areas of narrow batture with insufficient tree screens and the presence of ocean-going vessels with their accompanying vessel-generated waves. Tree screens less than 300 feet in width are considered insufficient to protect the levee for serious wave erosion. These conditions exist in the New Orleans District from Baton Rouge to Venice in reaches of narrow battures.

Slope Paving

89. Concrete slope paving is placed on the floodside slope of levees where natural turf cannot be maintained due to exposure to severe wave action. Concrete slope paving consists of 4-inch unreinforced concrete pavement which extends from 1 foot below design grade down to 3 feet below the batture. The concrete is placed in 20-foot-wide ribbons parallel to the levee centerline using road paving machines. The ribbons are separated into 10-foot-long slabs using dummy joints. Expansion joints are placed across the ribbons at 80-foot spacing.

Tree Screens

90. In those areas north of Baton Rouge the land between the levees is sufficient to provide tree screens that are greater than 300 feet. The use of tree screens for wave protection is the preferred choice of protection.

SECTION 6 - BASIS FOR SELECTION OF CONSTRUCTION METHODS

GENERAL

91. The items of work described later in this appendix have been identified where seepage control is needed and where levee enlargement is needed. Items selected for seepage control measures are determined as described in paragraph 83. Items selected for levee enlargement are determined by comparing the existing levee grade to the design flowline described in paragraph 52. Prior to design and preparation of plans and specifications, soils reports are prepared based on geotechnical data in the area. These reports document seepage control measures and stability requirements for each item of work. Design is initiated by comparing riverside, landside, and straddle levee enlargements to assess the fill material requirements. Seepage berms and stability berms, if required by the soils report, are added to the selected enlargement section and the total amount of fill material determined. To determine initial environmental impacts, all work items were laid out without any environmental considerations. It is important to understand that the footprint of the levee and stability berms cannot be avoided. Different design considerations were developed in an effort to reduce environmental impacts. These design considerations are to avoid impacts to bottom-land hardwood wetland areas if possible and if unavoidable, minimize the impacts. Some of these avoid-and-minimize considerations are: (1) increase depth in borrow areas to reduce the surface area, (2) drain borrow areas and reforest if possible, (3) relocate borrow areas to less environmentally sensitive areas, (4) use dredge material, if suitable, and (5) use relief wells/slurry trenches where feasible. The avoid-and-minimize considerations used for items of work in this document consist mainly of relocating borrow areas to less environmentally sensitive areas. However, where we are confident that dredging and the installation of relief wells can be utilized effectively, they are included and addressed in the work item descriptions. Using avoid-and-minimize techniques, a source of borrow is selected. This document presents the borrow locations having the least environmental impacts using only the design information that is available at the time this report was prepared. As additional design data becomes available and the actual detailed design for a given item of work progresses, every effort will be made to make further reductions to

environmental impacts. This additional effort may include replacing earthen seepage berms with relief wells.

92. To develop the design layout of the plan, interdisciplinary teams of state and Federal agencies representatives, local sponsors, and Corps staff were formed. They initially focused on relocating the construction borrow areas using the following placement prioritization criteria as a guide.

a. Landside cropland from willing sellers.

b. Landside cropland when riverside locations were unavailable.

c. Riverside prior-converted cropland.

d. Riverside tree plantations.

e. Riverside farmed wetlands (cropland).

f. Riverside farmed wetlands (pasture).

g. Riverside herbaceous wetlands.

h. Riverside forested nonwetland.

i. Riverside forested wetland.

j. Landside and riverside bottom-land hardwoods with black bear presence.

k. Landside cropland condemnation.

93. However, as various methods of construction were evaluated for each work item, it became apparent that the prioritization criteria could not be strictly and consistently applied to the entire MRL study area. For example, in the New Orleans District, the area between the top bank of the river and the levee is relatively narrow and often developed, whereas in the Vicksburg District, these areas are relatively wide and undeveloped. Riverside land use in the Vicksburg District is split between cropland and forested, but in the Memphis District, the riverside land use becomes predominantly cropland. Rather than apply the prioritization scheme mechanically, the study team evaluated each individual item and applied the avoid-and-minimize techniques as was most reasonable, considering the environmental, economic, and engineering solutions available for that item.

ENLARGEMENT

94. The levee will be enlarged by either a riverside, landside, or straddle enlargement. Normally a riverside enlargement requires the least amount of fill material because the riverside slope is steeper. For impacts related to this document, all enlargements were considered to be riverside enlargements and would typically involve more bottom-land hardwoods. The footprint of a riverside levee enlargement was used to calculate total project impacts. The impacts related to

a riverside enlargement may be reduced for each item in the detailed design phase. In cases where it is determined that a landside enlargement requires the least amount of fill, a landside enlargement will be used. This will not only reduce impacts associated with the total amount of area required for borrow, but also the area impacted by the footprint associated with a riverside enlargement.

UNDERSEEPAGE CONTROL

95. Selection of the underseepage control method depends on several factors, including the character of the foundation, cost, availability of right-of-way, maintenance, availability of suitable borrow material, and disposal of seepage water. Seepage berms are the more appropriate solution when topstratum thickness is relatively thin, semipervious material is available and accessible from riverside pits or sand is accessible from the river, and landside right-of-way and borrow pits are available with minimal damage to environmentally sensitive or highly developed areas. Relief wells are generally more suitable when the topstratum is relatively thick, right-of-way required for berms and/or borrow pits would be in an environmentally sensitive or highly developed area and seepage water could be disposed of easily.

SECTION 7 - DESCRIPTION OF PROJECT

96. The MRL feature of the Mississippi River and Tributaries Project (MR&T) addresses work within three districts: Memphis District, Vicksburg District, and New Orleans District. The main purpose of this project is to protect landside properties and structures from the project flood. The levee enlargement and berm program is designed to bring the levees that were deficient in grade, as determined by the Refined 1973 MR&T Project Design Flowline, up to design grade. In areas where seepage is a problem, landside seepage berms or other measures will be constructed to control the adverse effects of through seepage or underseepage. Stability berms will be constructed where required because of soft foundations. The levee enlargement requires a 15-foot roadway addition with an all-weather road surfacing. This is required for access to monitor the levees during the flood season and for annual inspections.

RECOMMENDED PLAN

97. All work items for construction have been analyzed to incorporate avoid-and-minimize features that reduce impacts to bottom-land hardwood wetland forest. Although other options or locations for the borrow areas were evaluated, the recommended plan that is described in this appendix is referred to as the avoid-and-minimize plan (Plan 4). However, it should be pointed out that during final design and preparation of plans and specifications, additional methods of reducing impacts will be evaluated and the most cost effective method that gives the least environmental impacts will be utilized.

MEMPHIS DISTRICT

98. The total number of Memphis District work items shown in this report is 31. This breakdown by state includes 6 items in Illinois, 1 item in Kentucky, 2 items in Tennessee, 3 items in Mississippi, 13 items in Missouri, and 6 items in Arkansas. Through FY 97, the Memphis District has completed to approved grade and section 606 miles of the authorized 637.8 miles of mainline Mississippi River levees. Approximately 1.1 miles of new levee construction was completed in FY 97. No new levee construction is planned for FY 98. Through FY 97, approximately 266.5 miles of seepage control features (berms, relief wells, and slurry trenches)

have been constructed in the Memphis District out of the authorized 340.8 miles planned. In FY 98, approximately 5 miles of additional seepage control works are scheduled to be completed, which leaves about 70 miles remaining after FY 98.

For West Bank Ohio River

99. Above Mound City, IL, Cutoff Wall, Item 965 R. This item of work is 3 miles long and located on the right descending bank opposite river mile 965. It consists of constructing a cutoff wall to control seepage. Preliminary design indicates that the cutoff wall will be located at levee stations 0/0+00-2/0+00 riverside of the levee.

100. Mound City Wave Wash Protection, IL, Item 963 R. This item of work is 1 mile long and located on the right descending bank riverside of Mound City opposite of river mile 963. It consists of placing stone paving along the levee for erosion protection. Preliminary design indicates that it will be located at levee stations 2/0+00-3/0+00.

101. Cairo to Mound City, IL, Item 961 R. This item of work is 1 mile long and located on the right descending bank opposite river mile 961. It consists of constructing a cutoff wall and installing relief wells with the associated drainage work to control seepage. Preliminary design indicates that the cutoff wall and relief wells will be located at levee stations 5/8+00-6/0+00 landside of the levee.

102. Cairo Floodwall, IL, Item 957 R. This item of work is 1 mile long and located on the right descending bank opposite of river mile 957. It consists of constructing 2 seepage berms to control seepage. Preliminary design indicates that the berms will be located at levee stations 8/9+00-8/31+00 and 9/8+00-9/16+00 landside of the levee. It is assumed that the borrow material for the embankment can be obtained from a cultivated field riverside of levee stations 14/4+00-14/13+00.

For East Bank Mississippi River

103. Above Cairo, IL, Item L-5.1 AC. This item of work is approximately 10 miles long and located on the left descending bank opposite river mile 5 AC. It consists of raising the grade of the existing levee approximately 1 foot. Preliminary design indicates that the grade raise will be located between levee station 10/30+00-20/11+79. The current plan is to raise the levee using clay gravel from commercial pits.

104. Above Cairo, IL, Parcel 1, Item L-10 AC. This item of work is 3 miles long and located on the left descending bank opposite river mile 10 AC. It consists of constructing 4 seepage berms and 1 pitfill to control seepage. Preliminary design indicates that the berms will be located at levee stations 16/35+00-16/45+00, 17/25+00-17/52+00, 18/50+00-19/21+00, and 19/36+00-20/13+00 landside of the levee, and the pitfill will be located at levee stations 19/0+00-19/22+00 riverside of the levee. It is assumed that the borrow material for the embankment and pitfill can be obtained from a cultivated field riverside of levee stations 16/40+00-16/50+00, 17/45+00-18/15+00, 18/20+00-18/53+00, 19/22+00-19/30+00, and 19/12+00-19/23+00, respectively.

105. Island 8, KY, Item 915 L. This item of work is 10 miles long and located on the left descending bank opposite river mile 915. It consists of installing 7 sections of relief wells with the associated drainage work to control seepage. Preliminary design indicates that the relief well

sections will be located at levee stations 5/13+00-7/0+00, 10/20+00-11/11+00, 11/18+00-11/40+00, 12/11+00-12/43+00, 13/18+00-13/45+00, 13/46+00-14/10+00, and 15/0+00-15/15+00 landside of the levee.

106. Phillipy, TN, Item 905 L. This item of work is 3000 feet long and is located on the left descending bank opposite river mile 905. It consists of constructing a seepage berm to control seepage. Preliminary design indicates that the seepage berm will be located at levee stations 16/52+00-17/20+00 landside of the levee. It is assumed that the borrow material for the embankment can be obtained from a cultivated field riverside of levee stations 16/52+00-17/20+00.

107. Miston, TN, Item 841 L. This item of work is 3.5 miles long and is located on the left descending bank opposite river mile 841. It consists of constructing 4 seepage berms to control seepage. Preliminary design indicates that the seepage berms will be located at levee stations 16/6+00-16/17+00, 17/42+00-17/51+00, 18/12+00-18/30+00, and 19/19+00-19/30+00 landside of the levee. It is assumed that the borrow material for the embankment can be obtained from a cultivated field riverside of levee stations 15/50+00-16/6+00, 17/42+00-17/51+00, 18/12+00-18/30+00, and 19/19+00-19/30+00, respectively.

108. Tiptonville-Obion Levee Extension and Obion River Diversion. This item was authorized for construction by the Flood Control Act of 24 July 1946 and amended by the River Basin Monetary Authorization Act of 1971. The authorized levee extension would be located along the left bank of the Mississippi River in Dyer and Lauderdale Counties, Tennessee, at approximately river mile 820. The levee would extend from the existing levee, which ends near the Dyer-Lauderdale County line, approximately 7.6 miles to the mouth of the Middle Fork of the Forked Deer River. Approximately 21 miles of the Tiptonville-Obion levee were completed in the early 1960's, but construction was stopped at the Dyer-Lauderdale County line because of a lack of support from Lauderdale County residents and adverse environmental impacts. Additional detailed studies would be required to determine if there is a flood control plan for this area that is feasible and acceptable to local and environmental interests. The Memphis District does not anticipate implementing this feature; therefore, this proposed work item was not included in the SEIS analysis.

109. Austin, MS, Item 675 L. This item of work is 4 miles long and is located on the left descending bank opposite river mile 675. It consists of installing relief wells with the associated drainage work to control seepage. Preliminary design indicates that the relief wells will be located at levee stations 41/0+00-45/0+00 landside of the levee.

110. Trotters, MS, Item 670 L. This item of work is 5 miles long and is located on the left descending bank opposite river mile 670. It consists of constructing a seepage berm to control seepage. Preliminary design indicates that the seepage berm will be located at levee stations 48/0+00-52/0+00 landside of the levee. It is assumed that the borrow material for the embankment can be obtained from a cultivated field riverside of levee stations 48/0+00-48/30+00, 49/0+00-49/25+00, and 52/20+00-52/45+00.

111. Hillhouse, MS, Item 628 L. This item of work is 4 miles long and is located on the left descending bank opposite river mile 628. It consists of installing relief wells with the associated drainage work to control seepage. Preliminary design indicates that the relief wells will be located at levee stations 91/0+00-95/0+00 landside of the levee.

For West Bank Mississippi River

112. Nash, MO, Item 48 AC R. This item of work is 3.3 miles long and located on the headwater diversion channel levee on the right descending bank opposite river mile 48 AC. It consists of installing relief wells with the associated drainage to control seepage. Preliminary design indicates that the wells will be located within the headwater diversion levee stations 3/0+00-6/30+00.

113. Commerce to Birds Point, MO Grade Raise, Item 33 AC R. This item of work is 16 miles long and is located on the right descending bank opposite river mile 33 AC. It consists of raising the grade and flattening the slope of the existing levee to control through seepage. The grade raise is approximately 1.5 feet on average with the riverside face slope flattened to 1 foot vertical on 4 feet horizontal which will increase the width of the riverside base of the levee approximately 35 feet on average. Preliminary design indicates that the grade raise will be located at levee stations 4/5+00-20/0+00. It is assumed that the borrow material for the embankment can be obtained from a cultivated field riverside of levee stations 9/10+00-12/17+00 and from an area 3 miles northwest of Commerce.

114. Drinkwater Pumping Station, MO, Item 22 AC R. This item of work is 1,000 feet in length and is located on the right descending bank opposite river mile 22 AC. It consists of expanding the capacity of the existing pumping station or constructing a new pumping station. Preliminary design indicates that the capacity will be increased by approximately 150 cfs which would double the capacity of the existing station.

115. Above Dorena, MO, Parcel 3, Item 929 R. This item of work is 6 miles long and is located on the right descending bank opposite river mile 929. It consists of constructing 4 seepage berms and relocating three drainage ditches to control seepage. Preliminary design indicates that the seepage berms will be located at levee stations 48/45+00-48/60+00, 51/40+00-51/50+00, 52/14+00-52/22+00, and 53/14+00-53/25+00 landside of the levee.
It is assumed that the borrow material for the embankment can be obtained from a cultivated field riverside of levee stations 48/39+00-48/42+00, 51/29+00-51/43+00, 52/19+00-52/28+00, and 53/14+00-53/25+00. Preliminary design also indicates that relocation of landside drainage ditches will be required between levee stations 47/63+00-48/2+00, 50/18+00-50/26+00, and 51/0+00-52/0+00.

116. Above Dorena, MO, Parcel 2, Item 929 R. This item of work is 5000 feet long and is located on the right descending bank opposite river mile 929. It consists of constructing a seepage berm to control seepage. Preliminary design indicates that the seepage berm will be located at levee stations 61/5+00-62/10+00 landside of the levee. It is assumed that the borrow material for the embankment can be obtained from a cultivated field riverside of levee stations 61/0+00-61/46+00.

117. Above Dorena, MO, Parcel 1, Item 929 R. This item of work is 5 miles long and is located on the right descending bank opposite river mile 929. It consists of constructing 5 seepage berms to control seepage. Preliminary design indicates that the seepage berms will be located at levee stations 62/47+00-63/20+00, 64/13+00-64/42+00, 66/33+00-66/41+00, 67/26+00-67/47+00, and 68/45+00-69/5+00 landside of the levee. It is assumed that the borrow material for the embankment can be obtained from a cultivated field riverside of levee stations 62/30+00-62/40+00, 64/10+00-64/26+00, and 66/65+00-67/52+00.

118. Bayouville, MO, Item 913 R. This item of work is 9 miles long and is located on the right descending bank opposite river mile 913. It consists of constructing 3 seepage berms and two pitfills to control seepage. Preliminary design indicates that the seepage berms will be located at levee stations 70/25+00-71/5+00, 71/15+00-72/35+00, and 78/44+00-79/19+00 landside of the levee. It is assumed that the borrow material for the embankment can be obtained from a cultivated field riverside of levee stations 70/17+00-70/50+00, 70/50+00-71/55+00, and 78/44+00-79/19+00. Preliminary design also indicates that the pitfills will be located at levee stations 74/0+00-74/15+00 and 77/9+00-77/20+00 riverside of the levee. It is assumed that the borrow material for the pitfills can be obtained from a cultivated field riverside of levee stations 73/53+00-74/17+00 and 77/9+00-77/20+00.

119. Birds Point New Madrid High Water Drainage, MO, Item 916 R. This item of work is 8 miles long and is located on the right descending bank opposite river mile 916. It consists of replacing existing riverside culverts and improving the ditch connecting the existing riverside borrow pits to assist the drainage of high water away from the toe of the levee.

120. Hubbard Lake, MO, Item 892 R. This item of work is 5 miles long and is located on the right descending bank opposite river mile 892. It consists of constructing 3 seepage berms to control seepage. Preliminary design indicates that the seepage berms will be located at levee stations 81/47+00-82/10+00, 83/0+00-84/56+00, and 85/32+00-86/5+00 landside of the levee. It is assumed that the borrow material for the embankment can be obtained from a cultivated field riverside of levee stations 80/42+00-81/0+00, 85/5+00-85/45+00, and 85/37+00-86/8+00.

121. Samos, MO, Item 946 R. This item of work is 5 miles long and is located on the right descending bank opposite river mile 946 on the setback levee. It consists of constructing 2 seepage berms to control seepage. Preliminary design indicates that the seepage berms will be located at levee stations 6/0+00-6/27+00 and 10/30+00-11/5+00. It is assumed that the borrow material for the embankment can be obtained from a cultivated field riverside of levee stations 6/0+00-6/27+00 and 10/30+00-11/5+00.

122. Barnes Ridge, MO, Item 910 R. This item of work is 13 miles long and is located on the right descending bank opposite river mile 910 on the setback levee. It consists of installing relief wells with the associated drainage work to control seepage. Preliminary design indicates that the relief wells will be located between levee stations 20/8+50-34/19+00 landside of the levee.

123. South Caruthersville, MO, Item 843 R. This item of work is 5 miles long and is located on the right descending bank opposite river mile 843. It consists of constructing a seepage berm to control seepage. Preliminary design indicates that the seepage berm will be located at levee stations 29/0+00-34/0+00 landside of the levee. It is assumed that the borrow material for the embankment can be obtained from a cultivated field riverside of levee stations 29/18+00-30/0+00, 31/0+00-33/0+00, and 33/0+00-34/0+00.

124. Baders-Cottonwood Point, MO, Item 833 R. This item of work is 13 miles long and is located on the right descending bank opposite river mile 833. It consists of constructing a seepage berm to control seepage. Preliminary design indicates that the seepage berm will be located at levee stations 33/25+00-46/50+00 landside of the levee. It is assumed that the borrow material for the embankment can be obtained from a cultivated field riverside of levee stations 35/58+00-37/38+00, 37/39+00-39/0+00, and 42/25+00-46/7+00.

125. Butler, AR, Item 782 R. This item of work is 2.5 miles long and is located on the right descending bank opposite river mile 782. It consists of constructing 2 seepage berms to control seepage. Preliminary design indicates that the 2 seepage berms will be located at levee stations 84/0+00-85/30+00 and 86/25+00-87/31+00 landside of the levee. It is assumed that the borrow material for the embankment can be obtained from a cultivated field riverside of levee stations 84/17+00-85/31+00 and 86/7+00-86/28+00.

126. Pecan Point, AR, Item 766 R. This item of work is 4 miles long and is located on the right descending bank opposite river mile 766. It consists of constructing a seepage berm to control seepage. Preliminary design indicates that the seepage berm will be located at levee stations 103/0+00-107/8+00 landside of the levee. It is assumed that the borrow material for the embankment can be obtained from a cultivated field riverside of levee stations 102/37+00-103/25+00, 103/26+00-103/46+00, and 106/15+00-107/8+00.

127. Louise, AR, Item 719 R. This item of work is 10 miles long and is located on the right descending bank opposite river mile 719. It consists of constructing 4 seepage berms and one pitfill to control seepage. Preliminary design indicates that the seepage berms will be located at levee stations 158/39+00-158/59+00, 165/0+00-165/10+00, 166/13+00-166/32+00, and 168/7+00-168/30+00 landside of the levee. It is assumed that the borrow material for the embankment can be obtained from a cultivated field riverside of levee stations 159/0+00-158/59+00, 164/32+00-165/5+00, 166/13+00-166/32+00, and 168/0+00-168/18+00. Preliminary design also indicates that the pitfill will be located at levee stations 164/32+00-164/39+00 landside of the levee. It is assumed that the borrow material for the pitfill can be obtained from a cultivated field riverside of levee stations 164/32+00-164/39+00.

128. Blue Lake, AR, Item 716 R. This item of work is 3 miles long and is located on the right descending bank opposite river mile 716. It consists of installing relief wells with the associated drainage work to control seepage. Preliminary design indicates that the relief wells will be located at levee stations 168/30+00-171/0+00 landside of the levee.

129. Knowlton, AR, Item 612 R. This item of work is 4.5 miles long and is located on the right descending bank opposite river mile 612. It consists of constructing 4 seepage berms to control seepage. Preliminary design indicates that the seepage berms will be located at levee stations 52/49+00-53/48+00, 55/39+00-55/45+00, 55/45+00-55/48+00, and 56/41+00-57/3+00 landside of the levee. It is assumed that the borrow material for the embankment can be obtained from a cultivated field riverside of levee stations 53/42+00-54/0+00, 55/39+00-55/49+00, and 56/27+00-56/37+00.

130. Henrico, AR, Item 606 R. This item of work is 6 miles long and is located on the right descending bank opposite river mile 606. It consists of constructing 4 seepage berms to control seepage. Preliminary design indicates that the seepage berms will be located at levee stations 57/44+00-57/51+00, 59/19+00-59/32+00, 61/28+00-61/38+00, and 62/52+000-63/8+00 landside of the levee. It is assumed that the borrow material for the embankment can be obtained from a cultivated field riverside of levee stations 56/35+00-56/45+00, 55/40+00-56/40+00, and 56/35+00-56/45+00.

VICKSBURG DISTRICT

131. The total number of Vicksburg District work items shown in this report is 85. They are broken down with 37 items in Mississippi, 11 items in Arkansas, and 37 items in Louisiana. Through FY 97, the Vicksburg District has completed to approved grade and section 240.0 miles of the authorized 460.4 miles of Mississippi River levees in place, and 251.8 miles of the authorized 309.2 miles of seepage control measures. Work currently under construction and scheduled for award in FY 98 totals 32.3 miles of levees and 13.4 miles of berms, which leaves 188.1 miles of levees and 44 miles of berms remaining after FY 98. The individual items are described in the following paragraphs.

For East Bank Mississippi

132. Francis, MS, Berms, Item 616-L. This item of work is 2.7 miles long and located on the left descending bank opposite river mile 616. It consists of constructing a berm and/or enlarging an existing berm to control Underseepage. Preliminary design indicates that the berm will be constructed of fill material obtained from a borrow area located riverside in a cultivated field.

133. Round Lake, MS, Berms, Item 614-L. This item of work is 1.4 miles long and located on the left descending bank opposite river mile 614. It consists of constructing a berm and/or enlarging an existing berm to control Underseepage. Preliminary design indicates that the berm will be constructed of fill material taken from a borrow area located riverside in a bottom-land hardwood area.

134. Deeson, MS, Berms, Item 611-L. This item of work is 2.9 miles long and located on the left descending bank opposite river mile 611. It consists of constructing a berm and/or enlarging an existing berm to control Underseepage. Preliminary design indicates that the berm will be constructed of fill material obtained from two borrow areas located riverside in a bottom-land hardwood wetland area.

135. Sledge to Washaw, MS, Berms, Item 607-L. This item of work is 0.8 miles long and located on the left descending bank opposite river mile 607. It consists of enlarging or extending an existing berm to control seepage. Preliminary design indicates that the berm will be constructed of fill material obtained from a borrow area located riverside in a cultivated field.

136. Rosedale, MS, Berms, Item 589-L. This item of work is 0.5 miles long and located on the left descending bank opposite river mile 589. It consists of constructing a berm and/or enlarging an existing berm to control seepage. Preliminary design indicates that the berm will be constructed of fill material obtained from a borrow area located riverside in cultivated fields and farmed wetlands.

137. Riverton, MS, Berms, Item 585-L. This item of work is 2.1 miles long and located on the left descending bank opposite river mile 585. It consists of constructing a berm and/or enlarging an existing berm to control seepage. Preliminary design indicates that the berm will be constructed of fill material obtained from a borrow area located riverside in a cultivated field.

138. Upper Lake Bolivar, MS, Berms, Item 575-L. This item of work is 0.9 miles long and located on the left descending bank opposite river mile 575. It consists of constructing a berm and/or enlarging an existing berm to control seepage. Preliminary design indicates that the berm will be constructed of fill material obtained from a borrow area located riverside in a bottom-land hardwood area.

139. Catfish Point, MS, Berms, Item 571-L. This item of work is 1.0 miles long and located on the left descending bank opposite river mile 571. It consists of constructing a berm and/or enlarging an existing berm to control seepage. Preliminary design indicates that the berm will be constructed of fill material obtained from a borrow area located riverside in a tree farm.

140. Below Catfish Point, MS, Berms, Item 570-L. This item of work is 3.2 miles long and located on the left descending bank opposite river mile 570. It consists of constructing a berm and/or enlarging an existing berm to control seepage. Preliminary design indicates that the berm will be constructed of fill material obtained from a borrow area located riverside in a tree farm.

141. Above Greenville, MS, Berms, Item 543-L. This item of work is 4.8 miles long and located on the left descending bank opposite river mile 543. It consists of constructing a berm and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a cultivated field.

142. Lagrange, MS, Berms, Item 540-L. This item of work is 1.5 miles long and located on the left descending bank opposite river mile 540. It consists of constructing a berm and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a bottom-land hardwood wetland area.

143. Warfield, MS, Berms, Item 538-L. This item of work is 0.8 miles long and located on the left descending bank opposite river mile 538. It consists of constructing a berm and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a bottom-land hardwood wetlands area.

144. Deerfield, MS, Berms, Item 531.5-L-A. This item of work is 2.2 miles long and located on the left descending bank opposite river mile 531.5. It consists of constructing a berm and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a tree plantation area.

145. Refuge, MS, Berms, Item 531-L. This item of work is 1.1 miles long and located on the left descending bank opposite river mile 531. This item requires control of Underseepage. In order to reduce riverside impacts to bottom-land hardwood wetland areas and landside historical sites, relief wells are being considered instead of the standard berm embankment. The use of relief wells will eliminate the need for any borrow material.

146. Avon, MS, Levee and Berms, Item 526-L. This item of work is 0.7 miles long and located on the left descending bank opposite river mile 526. It consists of raising the levee an average of 2.5 feet and enlarging or extending an existing berm to control seepage. Preliminary design indicates that the berm will be constructed of embankment with the borrow taken from an area located landside in a cultivated field.

147. Avon, MS, Berms, Item 525-L. This item of work is 1.6 miles long and located on the left descending bank opposite river mile 525. It consists of constructing a berm and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a bottom-land hardwood area.

148. Avon-Longwood, MS, Berms, Item 524-L. This item of work is 3.8 miles long and located on the left descending bank opposite river mile 524. It consists of constructing a berm and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside primarily cultivated fields and in a bottom-land hardwood area.

149. James-Longwood, MS, Levee and Berms, Item 521-L. This item of work is 4.6 miles long and located on the left descending bank opposite river mile 521. It consists of raising the levee an average of 2.1 feet and enlarging or extending an existing berm to control seepage. The borrow area for this item is located riverside in prior converted cropland.

150. Lake Jackson-Palmetto, MS, Levee, Item 511-L. This item of work is 3.2 miles long and located on the left descending bank opposite river mile 511. It consists of raising the levee an average of 2.0 feet and enlarging or extending an existing berm to control seepage. The borrow area for this item is located riverside in a tree plantation area and cultivated field.

151. Lake Jackson-Palmetto, MS, Levee, Item 509-L. This item of work is 3.9 miles long and located on the left descending bank opposite river mile 509. It consists of raising the levee an average of 2.1 feet and enlarging or extending an existing berm to control seepage. The borrow area for this item is located riverside in a tree plantation area and in a cultivated field.

152. Carolina-Valewood, MS, Levee, Item 502-L. This item of work is 7.6 miles long and located on the left descending bank opposite river mile 502. It consists of raising the levee an average of 4.2 feet. The borrow area for this item is located riverside in a bottom-land hardwood wetland area where the timber has been harvested and in cultivated fields.

153. Valewood-Carlisle, MS, Levee and Berms, Item 498-L*. This item of work is 2.4 miles long and located on the left descending bank opposite river mile 498. It consists of raising the levee an average of 5.6 feet and enlarging or extending an existing berm to control seepage. Initially the borrow area for this item was located riverside partially in a bottom-land hardwood area and partially in a bottom-land hardwood wetland area. This item and the next three items have been identified as items where the avoid-and-minimize design features of dredging can be utilized. Some of the existing berm can be used for borrow material for levee raising and then replace or enlarge the berm with dredge material. If additional borrow material is required, it will be taken from riverside bottom-land hardwoods.

154. Valewood-Carlisle, MS, Levee and Berms, Item 497-L*. This item of work is 2.3 miles long and located on the left descending bank opposite river mile 497. It consists of raising the levee an average of 5.6 feet and enlarging or extending an existing berm to control seepage. Initially the borrow area for this item was located riverside in a bottom-land hardwood wetland area. However this item has been identified as an item to use the dredging avoid-and-minimize feature. The existing berm will be used as borrow material for the levee raising and then replace or enlarge the berm with dredge material. If additional borrow material is required, it will be taken from riverside bottom-land hardwoods.

* Items 498-L, 497-L, 495-L, and 493-L have been combined to form Item 496-L.

155. Valewood-Carlisle, MS, Levee and Berms, Item 495-L*. This item of work is 2.7 miles long and located on the left descending bank opposite river mile 495. It consists of raising the levee an average of 6.5 feet and enlarging or extending an existing berm to control seepage. Initially the borrow area for this item was located riverside in a bottom-land hardwood wetland area and landside in a cultivated field. However this item has been identified as an item to use the dredging avoid-and-minimize feature. The existing berm will be used as borrow material for the levee raising and then replace or enlarge the berm with dredge material. If additional borrow material is required, it will be taken from riverside bottom-land hardwoods.

156. Valewood-Carlisle, MS, Levee and Berms, Item 493-L*. This item of work is 3.1 miles long and located on the left descending bank opposite river mile 493. It consists of raising the levee an average of 4.5 feet and enlarging or extending an existing berm to control seepage. Initially the borrow area for this item was located riverside in a bottom-land hardwood wetland area and in a cultivated field and landside from an old back line levee. However this item has been identified as an item to use the dredging avoid-and-minimize feature. The existing berm will be used as borrow material for the levee raising and then replace or enlarge the berm with dredge material. If additional borrow material is required, it will be taken from riverside bottom-land hardwoods.

157. Carlisle-Tallula, MS, Levee and Berms, Item 490-L. This item of work is 2.8 miles long and located on the left descending bank opposite river mile 490. It consists of raising the levee an average of 3.5 feet and constructing and/or enlarging an existing berm to control seepage. Initially the borrow area for this item was located riverside in a tree plantation. This item and the next have been identified as items where the avoid-and-minimize design features of dredging can be utilized. Some of the existing berm may be used for borrow material for levee raising and then replace or enlarge the berm with dredge material. If additional borrow material is required, it will be taken from riverside a tree plantation.

158. Carlisle-Tallula, MS, Levee and Berms, Item 486-L. This item of work is 2.8 miles long and located on the left descending bank opposite river mile 486. It consists of raising the levee an average of 3.5 feet and constructing and/or enlarging an existing berm to control seepage. Initially the borrow area for this item was located riverside in a cultivated field. This item has been identified as an item where the avoid-and-minimize design features of dredging can be utilized. Some of the existing berm may be used for borrow material for levee raising and then replace or enlarge the berm with dredge material. If additional borrow material is required, it will be taken from a riverside tree plantation.

159. Carlisle-Tallula, MS, Levee and Berms, Item 481-L. This item of work is 3.2 miles long and located on the left descending bank opposite river mile 495. It consists of raising the levee an average of 3.7 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a tree plantation.

160. Tallula-Magna Vista, MS, Levee and Berms, Item 477-L. This item of work is 5.1 miles long and located on the left descending bank opposite river mile 477. It consists of raising the levee an average of 3.5 feet and constructing and/or enlarging an existing berm to control seepage. In order to reduce riverside impacts to bottom-land hardwood wetland areas, relief wells are being used instead of the standard berm embankment. The borrow area to construct the levee raise for this item is located riverside in a tree plantation.

161. Tallula-Magna Vista, MS, Levee and Berms, Item 471-L. This item of work is 4.9 miles long and located on the left descending bank opposite river mile 471. It consists of raising the levee an average of 3.3 feet and constructing and/or enlarging an existing berm to control seepage. In order to reduce riverside impacts to bottom-land hardwood wetland areas, relief wells are being used instead of the standard berm embankment. The borrow area to construct the levee raise for this item is located riverside in a bottom-land hardwood area and a cultivated field.

162. Magna Vista-Brunswick, MS, Levee and Berms, Item 467-L. This item of work is 3.2 miles long and located on the left descending bank opposite river mile 467. It consists of raising the levee an average of 3.6 feet and constructing and/or enlarging an existing berm to control seepage. In order to reduce riverside impacts to bottom-land hardwood wetland areas, relief wells are being used instead of the standard berm embankment. The borrow area to construct the levee raise for this item is located riverside in a tree plantation and bottom-land hardwood area.

163. Magna Vista-Brunswick, MS, Levee and Berms, Item 465-L. This item of work is 2.7 miles long and located on the left descending bank opposite river mile 465. It consists of raising the levee an average of 3.5 feet and constructing and/or enlarging an existing berm to control seepage. In order to reduce riverside impacts to bottom-land hardwood wetland areas, relief wells are being used instead of the standard berm embankment. The borrow area to construct the levee raise for this item is located riverside in a bottom-land hardwood wetland area.

164. Magna Vista-Brunswick, MS, Levee and Berms, Item 463-L. This item of work is 2.7 miles long and located on the left descending bank opposite river mile 463. It consists of raising the levee an average of 4 feet and constructing and/or enlarging an existing berm to control seepage. In order to reduce riverside impacts to bottom-land hardwood wetland areas, relief wells are being used instead of the standard berm embankment. The borrow area to construct the levee raise for this item is located riverside in a bottom-land hardwood wetland area.

165. Magna Vista-Brunswick, MS, Levee and Berms, Item 462-L. This item of work is 2.7 miles long and located on the left descending bank opposite river mile 462. It consists of raising the levee an average of 3.1 feet and constructing and/or enlarging an existing berm to control seepage. In order to reduce riverside impacts to bottom-land hardwood wetland areas, relief wells are being used instead of the standard berm embankment. The borrow area to construct the levee raise for this item is located riverside in a bottom-land hardwood area and a pasture.

166. Brunswick-Halpino, MS, Levee and Berms, Item 460-L. This item of work is 2.4 miles long and located on the left descending bank opposite river mile 460. It consists of raising the levee an average of 3.0 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a tree plantation and a pasture.

167. Brunswick-Halpino, MS, Levee and Berms, Item 458-L. This item of work is 2.4 miles long and located on the left descending bank opposite river mile 458. It consists of raising the levee an average of 2.8 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a tree plantation.

168. Brunswick-Halpino, MS, Levee and Berms, Item 452-L. This item of work is 3.8 miles long and located on the left descending bank opposite river mile 463. It consists of raising the levee an average of 2.7 feet and constructing and/or enlarging an existing berm to control seepage. This item has been identified as an item where the avoid-and-minimize design feature of

installing relief wells can be utilized. This will reduce the amount of borrow material required. However borrow material will be required for the levee raise. The borrow material for the levee raise is located riverside in a combination of bottom-land hardwood, pasture and cropland areas.

For West Bank Arkansas

169. Cypress Creek, AR, Berm, Item 576-R. This item of work is 2.1 miles long and located on the right descending bank opposite river mile 576. It consists of constructing a berm and/or enlarging an existing berm to control underseepage. Preliminary design indicates that the berm will be constructed of embankment with the borrow taken from an area located riverside in cropland.

170. Below Arkansas City, AR, Levee, Item 555-R. This item of work is 0.5 miles long and located on the right descending bank opposite river mile 555. It consists of raising the levee an average of 1.5. The borrow area for this item is located riverside in a bottom-land hardwood wetland area.

171. Dewey, AR, Berm, Item 548-R. This item of work is 0.9 miles long and located on the right descending bank opposite river mile 548. It consists of constructing a berm and/or enlarging an existing berm to control underseepage. Preliminary design indicates that the berm will be constructed of embankment with the borrow taken from an area located riverside in a tree plantation.

172. Gaines Landing, AR, Berm, Item 546-R. This item of work is 3.7 miles long and located on the right descending bank opposite river mile 546. It consists of constructing a berm and/or enlarging an existing berm to control underseepage. Preliminary design indicates that the berm will be constructed of embankment with the borrow taken from an area located riverside cropland.

173. Panther Forest, AR, Berm, Item 543-R. This item of work is 1.4 miles long and located on the right descending bank opposite river mile 543. It consists of constructing a berm and/or enlarging an existing berm to control seepage. Preliminary design indicates that the berm will be constructed of embankment with the borrow taken from an area located riverside in cropland.

174. Luna-Leland, AR, Levee and Berm, Item 541-R. This item of work is 2.3 miles long and located on the right descending bank opposite river mile 541. It consists of raising the levee an average of 1.6 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located landside in cropland.

175. Leland-Vaucluse, AR, Levee and Berm, Item 536-R. This item of work is 6 miles long and located on the right descending bank opposite river mile 536. It consists of raising the levee an average of 2 feet and constructing and/or enlarging an existing berm to control seepage. In order to reduce riverside impacts to bottom-land hardwood wetland areas, relief wells are being considered instead of the standard berm embankment. The borrow area to construct the levee raise for this item is located riverside in a bottom-land hardwood and scrub and shrub area.

176. Sunnyside, AR, Levee, Item 531-R. This item of work is 3.2 miles long and located on the right descending bank opposite river mile 575. It consists of raising the levee an average of 1.8 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in cropland and pasture.

177. Above Lakeport-Harwood, AR, Levee and Berm, Item 528-R. This item of work is 3 miles long and located on the right descending bank opposite river mile 528. It consists of raising the levee an average of 2.1 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a cropland area.

178. Above Lakeport-Harwood, AR, Levee and Berm, Item 525-R. This item of work is 3 miles long and located on the right descending bank opposite river mile 525. It consists of raising the levee an average of 2 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a bottom-land hardwood area.

179. Above Lakeport-Harwood, AR, Levee and Berm, Item 520-R. This item of work is 2.6 miles long and located on the right descending bank opposite river mile 520. It consists of raising the levee an average of 2 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a bottom-land hardwood area.

For West Bank Louisiana

180. State Line-Wilson Point, LA, Levee and Berm, Item 506-R. This item of work is 3.6 miles long and located on the right descending bank opposite river mile 506. It consists of raising the levee an average of 4.2 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a cropland area.

181. State Line-Wilson Point, LA, Levee and Berm, Item 503-R. This item of work is 4.1 miles long and located on the right descending bank opposite river mile 503. It consists of raising the levee an average of 6 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a bottom-land hardwood wetland area.

182. Wilson Point-Point Lookout, LA, Levee and Berm, Item 489-R. This item of work is 3.5 miles long and located on the right descending bank opposite river mile 489. It consists of raising the levee an average of 6 feet and constructing and/or enlarging an existing berm to control seepage. In order to reduce riverside impacts to bottom-land hardwood wetland areas, relief wells are being considered instead of the standard berm embankment. The borrow area to construct the levee raise for this item is located riverside in a cropland area.

183. Wilson Point-Point Lookout, LA, Levee and Berm, Item 487-R. This item of work is 2.3 miles long and located on the right descending bank opposite river mile 487. It consists of raising the levee an average of 6 feet and constructing and/or enlarging an existing berm to control seepage. In order to reduce riverside impacts to bottom-land hardwood wetland areas, relief wells are being considered instead of the standard berm embankment. The borrow area to construct the levee raise for this item is located riverside in a bottom-land hardwood wetland area and cropland areas.

184. Wilson Point-Point Lookout, LA, Levee and Berm, Item 485-R. This item of work is 3.5 miles long and located on the right descending bank opposite river mile 485. It consists of raising the levee an average of 6 feet and constructing and/or enlarging an existing berm to control seepage. In order to reduce riverside impacts to bottom-land hardwood wetland areas,

relief wells are being considered instead of the standard berm embankment. The borrow area to construct the levee raise for this item is located riverside in a bottom-land hardwood wetland area.

185. Wilson Point-Point Lookout, LA, Levee and Berm, Item 483-R. This item of work is 2.5 miles long and located on the right descending bank opposite river mile 483. It consists of raising the levee an average of 5 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a cropland area.

186. Wilson Point-Point Lookout, LA, Levee and Berm, Item 480-R. This item of work is 2.5 miles long and located on the right descending bank opposite river mile 483. It consists of raising the levee an average of 6 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a cropland areas.

187. Willow Point-Youngs Point, LA, Levee and Berm, Item 461-R. This item of work is 4 miles long and located on the right descending bank opposite river mile 461. It consists of raising the levee an average of 5 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a bottom-land hardwood wetland area.

188. Willow Point-Youngs Point, LA, Levee and Berm, Item 457-R. This item of work is 3.9 miles long and located on the right descending bank opposite river mile 457. It consists of raising the levee an average of 4.7 feet and constructing and/or enlarging an existing berm to control seepage. In order to reduce riverside impacts to bottom-land hardwood wetland areas, relief wells are being considered instead of the standard berm embankment. The borrow area to construct the levee raise for this item is located riverside in a bottom-land hardwood wetland area and landside in a cropland area.

189. Willow Point-Youngs Point, LA, Levee and Berm, Item 453-R. This item of work is 3.5 miles long and located on the right descending bank opposite river mile 453. It consists of raising the levee an average of 5 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located landside in a cropland area.

190. Willow Point-Youngs Point, LA, Levee and Berm, Item 450-R. This item of work is 3.7 miles long and located on the right descending bank opposite river mile 450. It consists of raising the levee an average of 3.7 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a cropland area.

191. Willow Point-Youngs Point, LA, Levee and Berm, Item 445-R. This item of work is 3.7 miles long and located on the right descending bank opposite river mile 445. It consists of raising the levee an average of 3.5 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a cropland area.

192. Reid Bedford-King, LA, Levee and Berm, Item 428-R. This item of work is 2.8 miles long and located on the right descending bank opposite river mile 428. It consists of raising the levee an average of 3 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a cropland area.

193. Reid Bedford-King, LA, Levee and Berm, Item 424-R. This item of work is 3.6 miles long and located on the right descending bank opposite river mile 424. It consists of raising the levee an average of 3 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a cropland area.

194. Reid Bedford-King, LA, Levee and Berm, Item 422-R. This item of work is 2.8 miles long and located on the right descending bank opposite river mile 422. It consists of raising the levee an average of 3 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a cropland area.

195. Bayou Vidal-Elkridge, LA, Levee and Berm, Item 421-R. This item of work is 2.5 miles long and located on the right descending bank opposite river mile 421. It consists of raising the levee an average of 3 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located landside from a back line levee no longer used for flood control.

196. Bayou Vidal-Elkridge, LA, Levee and Berm, Item 419-R. This item of work is 2.9 miles long and located on the right descending bank opposite river mile 419. It consists of raising the levee an average of 3 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located landside from a back line levee no longer used for flood control.

197. Bayou Vidal-Elkridge, LA, Levee and Berm, Item 416-R. This item of work is 2.3 miles long and located on the right descending bank opposite river mile 416. It consists of raising the levee an average of 2.2 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located landside from a back line levee no longer used for flood control.

198. Bayou Vidal-Elkridge, LA, Levee and Berm, Item 414-R. This item of work is 2.8 miles long and located on the right descending bank opposite river mile 414. It consists of raising the levee an average of 2.7 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located landside from a back line levee no longer used for flood control.

199. Point Pleasant-Yucatan, LA, Levee and Berm, Item 411-R. This item of work is 2.7 miles long and located on the right descending bank opposite river mile 411. It consists of raising the levee an average of 1.8 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a cropland area.

200. Point Pleasant-Yucatan, LA, Levee and Berm, Item 409-R. This item of work is 3.4 miles long and located on the right descending bank opposite river mile 409. It consists of raising the levee an average of 2 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a cropland area.

201. Point Pleasant-Yucatan, LA, Levee and Berm, Item 407-R. This item of work is 3.4 miles long and located on the right descending bank opposite river mile 407. It consists of raising the levee an average of 2 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a cropland area.

202. Yucatan-Lake Bruin, LA, Levee and Berm, Item 401-R. This item of work is 3.8 miles long and located on the right descending bank opposite river mile 401. It consists of raising the levee an average of 3 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a bottom-land hardwood wetland area.

203. Yucatan-Lake Bruin, LA, Levee and Berm, Item 398-R. This item of work is 4.1 miles long and located on the right descending bank opposite river mile 398. It consists of raising the levee an average of 2.8 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a bottom-land hardwood wetland area.

204. St. Joseph-Waterproof, LA, Levee and Berm, Item 393-R. This item of work is 4.1 miles long and located on the right descending bank opposite river mile 393. It consists of raising the levee an average of 2.2 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a cropland area.

205. St. Joseph-Waterproof, LA, Levee and Berm, Item 388-R. This item of work is 3 miles long and located on the right descending bank opposite river mile 388. It consists of raising the levee an average of 2.2 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a cropland area.

206. St. Joseph-Waterproof, LA, Levee and Berm, Item 385-R. This item of work is 4.4 miles long and located on the right descending bank opposite river mile 385. It consists of raising the levee an average of 2.0 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a bottom-land hardwood wetland area.

207. St. Joseph-Waterproof, LA, Levee and Berm, Item 380-R. This item of work is 3.8 miles long and located on the right descending bank opposite river mile 380. It consists of raising the levee an average of 2.0 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a cropland area.

208. Waterproof-Upper Lake Concordia, LA, Levee and Berm, Item 377-R. This item of work is 3.4 miles long and located on the right descending bank opposite river mile 377. It consists of raising the levee an average of 2.5 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a cropland area.

209. Waterproof-Upper Lake Concordia, LA, Levee and Berm, Item 374-R. This item of work is 3.4 miles long and located on the right descending bank opposite river mile 374. It consists of raising the levee an average of 3 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a cropland area.

210. Waterproof-Upper Lake Concordia, LA, Levee and Berm, Item 370-R. This item of work is 3.7 miles long and located on the right descending bank opposite river mile 370. It consists of raising the levee an average of 3 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in a cropland area.

211. Waterproof-Upper Lake Concordia, LA, Levee and Berm, Item 368-R. This item of work is 3.8 miles long and located on the right descending bank opposite river mile 368. It consists of raising the levee an average of 3 feet and constructing and/or enlarging an existing berm to control seepage. In order to reduce riverside impacts to bottom-land hardwood wetland areas,

relief wells are being considered instead of the standard berm embankment. The borrow area to construct the levee raise for this item is located riverside in a cropland area.

212. Upper Lake Concordia-Vidalia, LA, Levee and Berm, Item 367-R. This item of work is 4.7 miles long and located on the right descending bank opposite river mile 367. It consists of raising the levee an average of 2.5 feet and constructing and/or enlarging an existing berm to control seepage. In order to reduce riverside impacts to bottom-land hardwood wetland areas, relief wells are being considered instead of the standard berm embankment. The borrow area to construct the levee raise for this item is located riverside in a bottom-land hardwood wetland area.

213. Upper Lake Concordia-Vidalia, LA, Levee and Berm, Item 366-R. This item of work is 3.1 miles long and located on the right descending bank opposite river mile 366. It consists of raising the levee an average of 2 feet and constructing and/or enlarging an existing berm to control seepage. In order to reduce riverside impacts to bottom-land hardwood wetland areas, relief wells are being considered instead of the standard berm embankment. The borrow area to construct the levee raise for this item is located riverside in a bottom-land hardwood wetland area.

214. Vidalia-Moreville, LA, Levee and Berm, Item 365-R. This item of work is 4.1 miles long and located on the right descending bank opposite river mile 365. It consists of raising the levee an average of 3.8 feet and constructing and/or enlarging an existing berm to control seepage. In order to reduce riverside impacts to bottom-land hardwood wetland areas, relief wells are being considered instead of the standard berm embankment. The borrow area to construct the levee raise for this item is located landside in a cropland area.

215. Vidalia-Moreville, LA, Levee and Berm, Item 361-R. This item of work is 3.8 miles long and located on the right descending bank opposite river mile 361. It consists of raising the levee an average of 5 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located landside in a cropland area.

216. Vidalia-Moreville, LA, Levee and Berm, Item 357-R. This item of work is 3.8 miles long and located on the right descending bank opposite river mile 357. It consists of raising the levee an average of 4 feet and constructing and/or enlarging an existing berm to control seepage. The borrow area for this item is located riverside in cropland areas with a small portion in a bottom-land hardwood area.

NEW ORLEANS DISTRICT

217. The total number of New Orleans District work items shown in this report is 12. Through FY 97, the New Orleans District has completed to approved grade and section 477.7 miles of the existing 511.6 miles of Mississippi River levees authorized. Work currently under construction and scheduled for award in FY 98 totals 19.7 miles, which leaves 14.2 miles remaining after FY 98. The 1.2 miles of berms authorized are virtually complete. All 12 items are in the State of Louisiana and are described in the following paragraphs.

218. Fifth Louisiana Levee District Levee Enlargement, Item M-319.4 to M-317-R (Sta. 0+00 to Sta. 181+00).

a. This item of work is located approximately 88 miles upstream from Baton Rouge on the west bank and extends for 3.5 miles. State Highway 15 is located on the upper landside slope of the levee. The levee has an average grade deficiency of 1.5 feet extending over the length of the work item. The embankment work consists of 26,700 cubic yards of levee enlargement contained within the existing levee foot print. A another part of the work item includes 1,700 cubic yards of highway drainage excavation located between the levee crown and highway. The work item will also include 16.0 acres of fertilizing, seeding, and mulching. The levee crown will be surfaced through the length of the work item.

b. The borrow pit is 5.0 acres in size and is located in the batture between Sta. 162+00 and Sta. 170+75 just inside the lower limit of the work item. Suitable clay material required for the embankment work is only found at very limited locations in the batture. This location is the closest source to the levee work. Batture lands are normally provided by the local assuring agency for use as borrow pits. The access road to the pit is 0.9 acres in area. Both the access road and the borrow pit will require tree clearing.

219. Baton Rouge Front Levee, Item M-230-L (Sta. 30+00 to Sta. 36+00).

a. This item of work is located on the east bank in the Central Business District of Baton Rouge. The work item is located along the top of the bank just upstream of the terminus of the Mississippi River Levee System where it encounters a natural high bank. The work item foot print extends for 1,000 feet in a low spot in the high bank which is approximately 3 to 5 feet deficient in grade. The foot print covers approximately 0.5 acres and is located over an existing parking lot. The work item will require the placement of 2,400 cubic yards of fill. The levee will be fertilized, seeded, and mulched.

b. The borrow pit is 0.6 acres in size an is located in the batture between Sta. 687+82 and Sta. 690+82 approximately 15 miles downstream. This location represents to closest source of suitable clay material found in the batture. Batture lands are normally provided by the local assuring agency for use as borrow pits. The access road to the pit is 0.1 acre in area. Only a fraction of the area occupied by the borrow area and access road will require clearing of trees.

220. Reveille to Point Pleasant Levee Enlargement and Concrete Slope Pavement, Item M-205 to M-198.5-R (Sta. 4705+00 to Sta. 5005+00).

a. This work item is located approximately 30 miles downstream from Baton Rouge on the west bank and extends for 5.7 miles. The work item provides for the installation of 2.6 miles of erosion protection with the placement of 9,500 squares of concrete slope paving. The levee is to grade, however, the flood side slope is deficient for 2.6 miles. The embankment work is minor consisting of 4,300 cubic yards of levee enlargement contained within the existing levee foot print. The work item will also include 6.0 acres of fertilizing, seeding, and mulching. The levee crown will be surfaced through the length of the project.

b. The borrow pit is 2.9 acres in size an is located in the batture between Sta. 5012+00 and Sta. 5025+00 just outside the lower limit of the work item. Suitable clay material required for the embankment work is only found at very limited locations in the batture. This location is the closest source to the levee work. Batture lands are normally provided by the local assuring agency for use as borrow pits. The access road to the pit is 0.4 acres in area. Both the access road and borrow pit will require tree clearing.

221. Alhambra to Hohen-Solms Concrete Slope Pavement, Item M-191 to M-185-R (Sta. 5460+00 to Sta. 5730+00). This work item is located approximately 42 miles downstream from Baton Rouge on the west bank and extends for 5.1 miles. The work item provides for the installation of 1.7 miles of erosion protection with the placement of 5,500 squares of concrete slope paving. The levee is to grade and consequently no embankment fill is required. The work item will also include 2.0 acres of fertilizing, seeding, and mulching. The levee crown will be surfaced through the length of the work item.

222. Carville to Marchand Levee Enlargement and Concrete Slope Pavement, Item M-189 to M-181-L (Sta. 2119+00 to Sta. 2487+00).

a. This work item extends for 7.9 miles and is located on the east bank approximately 45 miles downstream of Baton Rouge. The work item provides for the installation of 7.2 miles of erosion protection with the placement of 23,000 squares of concrete slope paving. The embankment work is minor consisting of 12,600 cubic yards of levee enlargement contained within the existing levee footprint. The average grade deficiency is 1.1 feet extending over 1.2 miles of the work item. The work item will also include 10.0 acres of fertilizing, seeding, and mulching. The levee crown road will be surfaced through the length of the project.

b. The borrow pit is 1.9 acres in size and is located in the batture near the upstream end of the project between Sta. 2104+00 and Sta. 2109+50. Suitable clay material required for the embankment work is only found at very limited locations on the batture. This location is the closest source to the levee work. Batture lands are normally provided by the local assuring agency for use as borrow pits. The access road to the pit will require 0.2 acres of clearing. The borrow pit will also require tree clearing.

223. Hohen-Solms to Modeste Levee Enlargement and Concrete Slope Pavement, Item M-185 to M-179-R (Sta. 5730+00 to Sta. 6000+00).

a. This work item is located approximately 48 miles downstream of Baton Rouge on the west bank. The work item provides for the placement of 5,500 squares of concrete slope paving over a distance of 1.7 miles. The embankment work is very minor and consists of 3,000 cubic yards of levee enlargement. The average grade deficiency is 1.8 feet at scattered locations extending over 3.6 miles of the 5.1-mile-long work item. Also included in the work item will be 2.0 acres of fertilizing, seeding, and mulching. The levee crown will be surfaced with aggregate through the length of the work item.

b. The borrow pit is 1.0 acre in size and is located in the batture between Sta. 5993+50 and Sta. 5996+50 just inside the lower limit of the work item. Suitable clay material required for the embankment work is only found at very limited locations on the batture. This location is the closest source to the levee work. Batture lands are normally provided by the local assuring agency for use as borrow pits. The access road to the pit will require 0.1 acre of clearing. The borrow pit will also require tree clearing.

224. Jefferson Heights Concrete Slope Pavement, Item M-104.3-L (Sta. 550+00 to Sta. 599+00). This work item is located on the east bank of the river in Jefferson Parish just upstream of the Jefferson-Orleans Parish line and extends for approximately 1 mile. The work item includes the placement of 1,000 squares of concrete slope paving erosion protection. The levee floodside slope will be graded to correct 0.8 mile of deficient slope. The levee is to grade consequently, no fill material is required. Also included is 0.2 acre of fertilizing, seeding, and mulching. The levee crown will not be surfaced due to the existing asphalt surfacing.

225. Carrollton Levee Enlargement, Item M-104 to M-100.2-L (Sta. 0+00 to Sta. 165+00).

a. This work item is located on the east bank within the City of New Orleans and extends downstream from the Orleans-Jefferson Parish Line. The reach extends for 3.1 miles and includes the New Orleans District Floodwall reach. The levee has an average grade deficiency of 1.5 feet extending over 1.8 miles of the work item. The embankment work consists of 22,100 cubic yards of levee enlargement contained within the existing levee foot print. The levee does not require erosion protection since it is already slope paved. The work item will also include 9.4 acres of fertilizing, seeding, and mulching. The levee crown will be surfaced through the length of the work item.

b. The borrow pit is 3.3 acres in size and is located in the batture between Sta. 726+50 and Sta. 733+00 on the west bank approximately 20 miles downstream of the levee work. This location is the closest available batture site with suitable clay material required for the embankment work. Although on the west bank, this area is still within the jurisdiction of the local assuring agency who normally provides the batture lands for use as borrow pits. The access road to the pit is 0.2 acre in area. Both the access road and the borrow pit will require tree clearing.

226. New Orleans District Floodwall, Item M-102.9-L (Sta. 49+00 to Sta. 76+00). The work item is located on the east bank within the city of New Orleans just downstream of the Jefferson-Orleans Parish line. The work consists of 1,770 feet of 4-foot high concrete "I" wall, 350 feet of 3-foot high concrete "I" wall, and 170 feet of 5-foot high concrete "I" wall. The gate openings consists of two 5-foot-wide swing gates, three 30-foot-wide swing gates, and one 45-foot-wide roller gate. No fill will be required to construct the work item. The average grade deficiency is 3.0 feet over the 0.5-mile length of the work item. This work item is located inside the levee reach of the Carrollton Levee Enlargement.

227. Gap Closures East Bank, Item M-218.5 to M-112.5-L. This levee work item consists of placing concrete slope paving at 19 scattered locations remaining in completed work items where concrete slope pavement was left out at pipeline, ramp, or dock access crossings of the levee. These gaps are small, averaging 50 feet in length. Borrow pits will not be required since the levee at these locations is to grade.

228. Gap Closures West Bank, Item M-138 to M-119.2-R. This levee work item consists of placing concrete slope paving at 12 scattered locations remaining in completed work items where concrete slope pavement was left out at pipeline, ramp, or dock access crossings of the levee. These gaps are small, averaging 300 feet in length. Borrow pits will not be required since the levee at these locations is to grade.

229. Lower Venice 2nd Lift, Item M-10.4-R (Sta. 1792+00). This work item is located on the west bank approximately 87 miles downstream of New Orleans at the end of the Mississippi River Levee system. The work consists of raising a highway crossing over the levee after settlement has taken place following the construction of a levee enlargement. The road crossing was done in conjunction with the levee item. The levee under Louisiana Highway 23 has settled down approximately 1 foot for a distance of 30 feet along the levee centerline. Since the freeboard is 4 feet, more settlement must occur to justify raising the road crossing. If the settlement does take place and the road is raised, the levee earthwork involved is so minimal that a borrow pit would not be used. The embankment for raising the highway would utilize pump river sand and would not require a borrow pit.

SECTION 8 - RELOCATION REQUIREMENTS

230. The financial responsibility for utility relocations related to levee work will be determined on a case-by-case basis according to an attorney's opinion of compensable interest and obligation to pay. Each case must be evaluated according to applicable assurances executed by the affected levee districts and local sponsors and the applicable flood control act or acts authorizing the project. The evaluation of relocations requirements in the Memphis District was based primarily on conceptual plans for future work items. A more detailed cost breakdown for relocation requirements will be available as plans and specifications for the work items are finalized.

231. The relocations that will be required in the Vicksburg District, relate to levee and berm enlargement only. Some additional relocations may be required for landside borrow areas and will have to be identified later when the location of these borrow areas is definite. A breakdown of cost, Federal and non-Federal within the Vicksburg District, is shown in the following Table 6-19.

TABLE 6-19
RELOCATIONS (VICKSBURG DISTRICT)

RELOCATION	FEDERAL EXPENSE	NON-FEDERAL EXPENSE
Power lines	72	81
Telephone Lines	29	30
Streets and Roads	8	13
TV Cables	2	2
Railroads	2	2
Waterlines	1	6
Grain Loading Facilities	0	2
Pipelines	22	91

232. There are no relocations requirements identified in the New Orleans District.

SECTION 9 - HAZARDOUS, TOXIC AND RADIOACTIVE WASTE (HTRW) ASSESSMENT AND AIR QUALITY ASSESSMENT

GENERAL

233. This section addresses the methodologies, procedures, and significant findings of the Hazardous, Toxic and Radioactive Waste (HTRW) Assessment and Air Quality Assessment conducted on the MRL Project, Supplement to the Environmental Impact Statement. This section consists of a brief overview of the HTRW and Air Quality Assessments conducted on this project and a synopsis of each District's assessments. If required, additional information may be obtained from the respective District's HTRW and Air Quality Assessment Report.

HTRW

234. All HTRW assessments were conducted following guidelines and procedures outlined in the regulation, "Hazardous, Toxic, and Radioactive (HTRW) Waste Guidance for Civil Works Projects," ER 1165-2-132 (U.S. Army Corps of Engineers, 1992), Lower Mississippi Valley Regulation 1165-2-132, Water Resources and Authorities for Hazardous, Toxic and Radioactive Waste for Civil Works Projects (14 June 1996), and the American Society for Testing and Materials, E1527-97, Standard Practice for Environmental Site Assessments: Phase 1 Environmental Site Assessment Process (ASTM, 1997). ER 1165-2-132, state that civil works project funds are not to be employed for HTRW-related activities except when specifically provided by law or where HTRW contaminated areas or impacts cannot be avoided. The objective for conducting HTRW assessments is to identify HTRW problems early in a project design to ensure appropriate consideration of HTRW problems that can be addressed in the reconnaissance, feasibility, preconstruction engineering and design, land acquisition, construction, operations, maintenance, repair, replacement and rehabilitation phases of Civil Works Projects.

235. Memphis, Vicksburg, and New Orleans Districts conducted HTRW assessments on 128 proposed work items located within the MRL Project boundaries extending from Cape Girardeau, Missouri, to Head of Passes, Louisiana, near the Gulf of Mexico. Based on these assessments, the overall risk associated with HTRW for this project is low. The following paragraphs provide a synopsis of each District's HTRW assessment.

Memphis District HTRW Assessment

236. Gulf Engineers and Consultants, Inc., (GEC) was contracted by the Memphis District to provide an HTRW assessment on 31 proposed work items located within the Memphis District. The Memphis District study area extends from Cape Girardeau, Missouri, to Rosedale, Mississippi. The majority of the project area traverses existing levees and undeveloped rural agricultural land, with the exception of projects in Cairo and Mound City, Illinois, where the project area adjoins downtown riverfront developments. GEC reported that they did not observe any signs of significant contamination within or adjacent to most of the project sites nor did their records researches indicate any strong potential for contamination to be present within the project site. However, GEC identified four work items that may have a potential for encountering HTRW during construction. These work items include: Commerce to Birds Point; New Madrid Levee Grade; Miston Seepage Berm; Butler Seepage Berm; and Blue Lake Relief Wells. It is recommended that additional investigations be performed on these sites (depending on actual

construction locations) prior to project design and acquisition of any rights-of-way. Results of additional investigations will be incorporated into final project design.

Vicksburg District HTRW Assessment

237. HTRW assessments were conducted by the Vicksburg District on 85 proposed work items identified within the Vicksburg District study area for the MRL Project. Results of the HTRW evaluations and assessments identified several hazardous sites which are adjacent to the MRL Project property. The assessments did not identify any hazardous, toxic or radiological wastes located on MRL Project property. Of the 85 proposed work items investigated, six were identified to have known or suspected hazardous waste within the minimum search distances required for reporting purposes. The six work items are: The item's 367-R and 368-R on the West Bank, Mississippi River Levee, and Items 495-L, 526-L, 531-L, and 543-L on the East Bank, Mississippi River Levee. Based on site investigations on these sites, evaluation of proposed work to be conducted within the work items, and review of state records concerning these sites, it is determined that the overall risk of encountering HTRW on any of the 88 work items within the Vicksburg District is low.

New Orleans District HTRW Assessment

238. HTRW assessments were conducted by the New Orleans District on 11 proposed work items within the New Orleans District. An assessment was not required for the lower Venice item which consists of a minimal raise of an existing road crossing. The HTRW assessments consisted of evaluating all proposed borrow pit alternatives and levee segments associated with the 11 proposed work items. Ten HTRW sites of potential concern were identified as having known or suspected hazardous waste within the minimum required search distances. However, based on investigations of these ten sites, the overall risk of encountering HTRW is low. No further HTRW investigation is warranted for these levee improvement projects or any of their associated borrow sites.

AIR QUALITY

239. The existing air quality located within the MRL Project area has been evaluated by the Memphis, Vicksburg and New Orleans Districts. Presently, the air quality within all of the work items identified within the Memphis and Vicksburg Districts are in attainment with current state air quality standards. The air quality within the New Orleans District, in particular within the parishes of the Ascension, East Baton Rouge and Iberville, are in serious non attainment of current air standards.

240. Air quality permitting requirements are currently exempt in areas where the air quality is in compliance with air quality standards. Work proposed within the Memphis and Vicksburg Districts is presently located in "unclassifiable/attainment zones" and it is anticipated that air quality permits will not be required. The proposed work items located within the New Orleans District, however, will be required to comply with current air permitting requirements including applicability determinations. In general, all construction processes will be required to comply with state air quality regulations and incorporate best management practices in controlling dust and minimizing open burning where possible.

241. Based on the assessments reported by the three districts, the overall air quality within the project area is good and the risk in degrading air quality as a result of this project is low. A summary of each District's Air Quality Assessment is provided below.

Memphis District Air Quality Assessment

242. Gulf Engineers and Consultants, Inc. (GEC), was contracted by the Memphis District to evaluate the existing air quality within the 31 proposed work items located within the Memphis District. GEC has indicated that all the work items located within the Memphis District are located in unclassifiable/attainment zones. Air quality within this portion of the MRL project currently meet state air quality standards. All construction practices conducted within the Memphis District as part of this project will be required to comply with all current state air quality regulations and standards. Thirty of the project work items will utilize mobile sources, which are presently exempt from air permitting requirements. However, the Drinkwater Pump Station Expansion work item will require an official determination from the State of Missouri. No significant impacts to air quality are anticipated as a result of project construction.

Vicksburg District Air Quality Assessment

243. The existing air quality located within the 85 proposed work items located within the Vicksburg District was evaluated using information provided by applicable state quality regulations, annual reports, and correspondence with state agency air quality personnel. Presently, the air quality within all of the work items is in full compliance with current state air regulations. Since all 85 work items are located in "unclassifiable/attainment zones," it is anticipated that air permitting requirements will not be required for any of these projects. However, construction processes will need to be monitored to ensure that air quality standards are not violated. In general, this applies to incorporating best management practices in controlling dust and minimizing open burning where possible. All construction practices conducted within the Vicksburg District as part of this project will be required to comply with current state air quality regulations and standards. Based on this air quality assessment, no significant impacts are anticipated to air quality as a result of project construction.

New Orleans District Air Quality Assessment

244. The parishes in which work items are proposed in the New Orleans District include Concordia, East Baton Rouge, Iberville, Ascension, St. John, St. Charles, Jefferson, Orleans, and Plaquemines. Parishes within Louisiana are classified by the Louisiana Department of Environmental Quality as being in various forms of attainment of the state air quality standards. The parishes of Concordia, St. John, Assumption, and Plaquemines are classified as being in attainment. The parishes of St. James, St. Charles, Jefferson, and Orleans are classified as in attainment but are operating under a full maintenance plan approved under Section 175A of the Clean Air Act (CAA). The parishes of East Baton Rouge, Iberville, and Assumption are classified as in serious nonattainment.

245. As required by LAC 33:111.1405B of the Louisiana Department of Environmental Quality, General Conformity, State Implementation Plan and Section 176 "c" of the Clean Air Act, as amended (42 U.S.C. 7401, et seq.), an applicability determination for general conformity was made for the separate items of the proposed project in the New Orleans District. The applicability determination was based upon both direct and indirect emissions including those

resulting directly from the construction of the proposed project and open burning of cleared vegetation. The analysis was based upon the estimated construction hours and acreage cleared for all work items located within the New Orleans District.

246. Horsepower hours were calculated for the completion of each levee construction item and all of these were totaled. Most items are estimated to require less than a year for construction, although some may require longer than 1 year. The total horsepower hours calculated for all of the construction items were 312,712 total hours for gasoline equipment and 2,357,312 total hours for diesel equipment. From these horsepower hours, total project emissions were calculated. Categories of emissions from nitrogen oxides (NO_x) and volatile organic compounds (VOC's) were considered. The NO_x category was determined not to be a concern since a waiver is in effect for NO_x for each parish in the District that is in "nonattainment" or "full maintenance" status. The emission factors, measured in pounds per horsepower hour, were obtained from Table 3.3-2 entitled, "Emission Factors for Uncontrolled Gasoline and Diesel Industrial Engines," found in EPA's publication AP42. The sums of these factors for both diesel and gasoline engines were applied to the horsepower hours for the project to produce tons of emissions resulting from the completion of all work items. The projected total amount of VOC emissions for all construction items of this project in the New Orleans District were calculated to be 6.47 tons. This is significantly lower than the annual threshold limit applicable to VOC's for those parishes where the most stringent requirement (50 tons per year) is in effect.

247. Nonmethane emissions of 19 pounds per ton resulting from open burning of cleared vegetation were derived from Table 2.5-5, "Emission Factors and Fuel Loading Factors for Open Burning of Agricultural Materials," in AP42. The tonnage of woody biomass was estimated at 107 tons of vegetation per acre, which was based on an average timber production as published in "The Woody Biomass Resource of Louisiana" (1991, U.S. Department of Agriculture, Southern Forest Experiment Station, Resource Bulletin SO-181). A total of 17 acres is proposed for clearing for all of the work items, which is subject to open burning. Based on these values, the total nonmethane emissions resulting from open burning of the entire 17 acres, regardless of the parish attainment status, was calculated to be 17.3 tons.

248. Based on this applicability determination, the total direct and indirect emissions resulting from the construction of all of the projects, if conducted within 1 year, is estimated to be 23.8 tons, which is below the state's most stringent requirement of 50 tons per year. Since the construction of these projects will not be conducted at the same time nor within the same parish, the actual annual emissions resulting from the construction of these projects will be much lower. Based on this applicability determination, the emissions for this project are classified as de minimus and no further action is required.

249. At the time levee project items are constructed within the New Orleans District, construction practices will be evaluated and best management practices incorporated to control air emissions. In addition, all construction practices conducted during this project will be required to comply with all current state air quality regulations and standards. The New Orleans District has concluded that no significant impacts to air quality are anticipated due to the proposed items of project construction.

SECTION 10 - REAL ESTATE REQUIREMENTS

GENERAL

250. The proposed real estate requirements for this project are complex due to the various project construction improvement methods identified within this report. The estimated requirements are subdivided by district. The following paragraphs discuss the assumptions and limiting conditions used in preparing real estate requirements for each district.

Memphis District

251. The MRL involves construction work that will be completed in portions of six states, Kentucky, Tennessee, Missouri, Arkansas, Mississippi, and Illinois. Levee construction items will be situated along both the left and right descending banks of the River from approximately Cape Girardeau, Missouri on the north to Rosedale, Mississippi, on the south.

252. Two construction alternatives have been developed for the MRL Project. The alternatives are: (a) Plan 3, Traditional Plan and (b) Plan 4, Avoid and Minimize (A&M). The Traditional Plan is the "original design concept" while the A&M Plan is an "environmentally sensitive design." The A&M Plan was developed due to environmental concerns. This is a modification of the original Traditional Plan and attempts to avoid environmentally sensitive bottom-land hardwoods and wetlands. If avoidance is not possible, the A&M Plan attempts to minimize the damages to the bottom-land hardwoods and wetlands.

253. The MRL Project is a cost-shared project. Non-Federal sponsor(s) will acquire all of the right-of-way needed for construction. Regardless of which plan is finalized, the Corps will provide right-of-way maps/drawings to the sponsor(s). These maps will then be used by the sponsor(s) to acquire right-of-way for the respective item of work.

254. The lands required for either plan are, for purposes of this report, perpetual easements that may change the highest and best use of the land acquired for project purposes. Thus, compensation due the property owners is estimated to be tantamount to a fee. Right-of-way acquisition costs are estimated based on our records and discussions with local sponsors concerning their land acquisition experience.

255. Users of information from this section must refer to the Assumptions and Limiting Conditions included as Attachment A to this Engineering Appendix. These assumptions and limiting conditions govern how the Real Estate Cost Estimates for these two plans were prepared. This document was not prepared in accordance with provisions found in either The Uniform Appraisal Standards for Federal Land Acquisitions, or The Uniform Standards of Professional Appraisal Practice. The Real Estate Costs shown in this report are provided for planning purposes only and are not to be interpreted as appraisal reports or estimates of value.

256. No appraisal reports have been completed for any of the work items for this project. Real Estate Cost Estimates were prepared for right-of-way requirements of both the Traditional Plan and the Avoid and Minimize Plan. The Traditional Plan contains 30 work items, while the Avoid and Minimize Plan has 31 work items, of which only 30 work items have associated real estate costs. The individual estimated right-of-way costs for the work items contained in the two plans are shown in the Cost Estimate Attachment. The total real estate costs are shown in this appendix in Attachment B, Cost Estimates.

Vicksburg District

257. The proposed work items are located in Mississippi, Arkansas, and Louisiana. Previously acquired rights-of-way was provided by the local levee board in the state of Mississippi. Real Estate acquisition costs for rights-of-way are based on historical data and have been applied to the various levee improvement methods and alternatives furnished by Engineering Division. Proposed Real Estate requirements in the Vicksburg District relate to enlargement and berm areas only; enlargement and berm areas (before avoid and minimize); enlargement and berm areas (after avoid and minimize); enlargement and berm areas (after dredging); and enlargement and berm areas (after relief wells). The real estate interest to be acquired will be a perpetual easement and will be acquired by the local levee districts in each respective state. Rights-of-way requirements for the construction of proposed improvements will be shown on maps and provided to the levee districts for their use in acquiring the necessary real estate interest.

258. Real Estate Estimates for this project are based on the following assumptions and limiting conditions: (a) property titles are marketable legal matters, especially those affecting title of the property, and method of acquisition are not the responsibility of the Corps of Engineers; (b) maps, acreage, and land classifications used in real estate estimates were furnished by others and are assumed to be correct; (c) tract ownership information was developed from tax maps and quadrangle maps and are only estimates; (d) it is assumed that there will be no improvements located in the proposed rights-of-way; (e) real estate requirements within the states of Louisiana and Arkansas are outside of existing right-of-way; and (f) value estimates are predicated on the assumption that there are no potential hazardous materials located in the proposed right-of-way. Estimated real estate costs for the Vicksburg District are shown in the Cost Estimate Attachment B.

New Orleans District

259. Real Estate acquisition is not required.

SECTION 11 - COST ENGINEERING

GENERAL

260. Estimates have been computed in order to evaluate each of the plans discussed in this appendix. These estimates display incremental costs. The baseline estimate for the recommended plan was developed with a price level date of 1 October 1997 and was then escalated for inflation (fully funded) through project completion. This estimate supports the project scope and schedule developed in this report. The baseline estimate for the recommended plan presented in the appendix is $911,291,702. Cost summaries for each estimate prepared are presented in Attachment B as follows:

Tab 1 - Initial Screening Estimates, Representative Plans 2a through 4
Tab 2 - Plan 3 with Mitigation
Tab 3 - Plan 4 with Mitigation
Tab 4 - Baseline Estimate for Recommended Plan

COST ESTIMATES

261. The baseline estimate covers work in Memphis, Vicksburg, and New Orleans Districts. Work items to be accomplished in the New Orleans District are identified as Item Nos. 1 through 12; Vicksburg District, 13 through 97; Memphis District, 98 through 128. Mitigation for the project is shown in Item No. 129.

REFERENCES

Stages and Discharges of the Mississippi River and Tributaries in the Memphis District. U.S.Army Engineer District, Memphis Corps of Engineers. 1994.

Stages and Discharges of the Mississippi River and Tributaries in the St. Louis District. U.S.Army Engineer District, St. Louis Corps of Engineers. 1994.

STATS--Statistical Analysis of Time Series Data (CPD-63). U.S. Army Corps of Engineers Hydrologic Engineering Center. 1987.

WETSORT. Unpublished FORTRAN computer program. U.S. Army Corps of Engineers Vicksburg District. Undated.

HEC-IFH--Interior Flood Hydrology Package (CPD-31). U.S. Army Corps of Engineers Hydrologic Engineering Center. 1992.

Big Lake Basin--Drinkwater Sewer, Missouri--Detailed Project Report. U.S. Army Corps of Engineers Memphis District. July 1976.

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Refined 1973 MR&T Project Flood Flowline Report. U.S. Army Corps of Engineers Memphis District, Memphis, Tennessee. July 1978.

Hydraulic Engineering Analysis of the Upper St. Francis Levee--Commerce to Birds-Point Reach. U.S. Army Corps of Engineers Memphis District, Memphis, Tennessee. June 1996.

Sharing the Challenge: Floodplain Management into the 21st Century. Report of the Interagency Floodplain Management Review Committee to the Administration Floodplain Management Task Force. Washington, DC, June 1994.

Mississippi River Basin--After Action Report--Flood of May/June 1995. U.S. Army Corps of Engineers Memphis District. November 1995.

U.S. Army Corps of Engineers, EM 1110-2-1415, Hydraulic Frequency Analysis. 5 March 1993

Interagency Advisory Committee on Water Data, Bulletin #17B of the Hydrology Subcommittee, Guidelines for Determining Flood Flow Frequency. March 1982

Department of the Army, Waterways Experiment Station, Technical Report Y-87-1, Corps of Engineers Wetlands Delineation Manual. January 1987

U.S. Army Corps of Engineers, New Orleans District, Flood of '73 Post Flood Report, Volumes I and II. August 1974

U.S. Army Corps of Engineers, New Orleans District, Flood of '75 Post Flood Report. August 1976

U.S. Army Corps of Engineers, New Orleans District, Flood of '79 Post Flood Report.

U.S. Army Corps of Engineers, New Orleans District, Flood of '83 Post Flood Report. April 1984

ATTACHMENT A

REAL ESTATE REQUIREMENTS
ASSUMPTION AND LIMITING CONDITIONS

MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT
SUPPLEMENT TO THE ENVIRONMENTAL IMPACT STATEMENT

FOR
MEMPHIS DISTRICT PROJECTS

MISSISSIPPI RIVER LEVEES
SUPPLEMENTAL ENVIRONMENTAL IMPACT STATEMENT
REAL ESTATE REQUIREMENTS

ASSUMPTIONS AND LIMITING CONDITIONS

Assumptions and Limiting Conditions under which the cost estimates were prepared are as follows. No responsibility is assumed for legal or title considerations. Title to the property is assumed to be marketable. The property is appraised free and clear of any or all liens and encumbrances. The maps, acreages and land use classifications were furnished by the U.S. Army Corps of Engineers, Engineering Division, and are assumed to be reliable. However, no warranty is given for their accuracy. This estimate is made without the physical inspection of the proposed acquisitions. Engineering Division personnel indicated that no improvements are located within the proposed acquisitions. Engineering Division maps provided to Real Estate Division indicate that all acquisition will be outside of the existing right-of-way. All easements are assumed to be perpetual easements and compensation is tantamount to fee. Acquisition costs are based on the estimated number of ownerships per work item. Ownerships have been estimated by studying the aerial photographs and noting fences, roads, and changes in land use. It is assumed that there is full compliance with all applicable federal, state, and local environmental regulations and laws. The preparer of this report is not qualified to detect hazardous waste and/or toxic materials. Such determination would require investigation by a qualified expert in the field of environmental assessment. The presence of substances such as asbestos, urea-formaldehyde foam insulation, or other potentially hazardous materials may affect the value of the property. The value estimate is predicated on the assumption that there is no such material on or in the property that would cause a loss in value. No responsibility is assumed for any environmental conditions, or for any expertise or engineering knowledge required to discover them. This estimate is prepared contingent that all of the project right-of-way will be acquired outside of the agricultural growing season. If the right-of-way is acquired during the growing season, the property owner (or tenant farmer leasing the land) may be entitled to an additional payment not considered in this report. Thus, this report may require revision to estimate the compensation due for the cost of the agricultural planting. This estimate is made contingent that any privately owned drain pipes, culverts, roads, etc. that are situated within the right-of-way, and affected by project construction, will be removed and replaced by the Corps contractor. It assumes that no irrigation system will be adversely impacted by construction. If irrigation systems are included in the project right-of-way, these estimates will require revision. This estimate is contingent that there will be no public access to, or use of, the right-of-way acquired for this Project, during construction or after construction work is completed. No temporary work areas are identified. This report assumes that all access will be from the existing levee right-of-way or from a public road since no temporary access easements areas are indicated. All construction work must be completed within existing or proposed right-of-way. It is assumed that there are no hidden or unapparent conditions of the property, subsoil, or structures that render it more or less valuable.

This document is not an appraisal report and has not been prepared in accordance with provisions found in either The Uniform Appraisal Standards for Federal Land Acquisitions, or The Uniform Standards of Professional Appraisal Practice. This report is provided for planning purposes only.

ATTACHMENT B

COST ESTIMATES (MCACES)

MISSISSIPPI RIVER MAINLINE LEVEES ENLARGEMENT
SUPPLEMENT TO THE ENVIRONMENTAL IMPACT STATEMENT

TAB 1

REPRESENTATIVE PLANS
INITIAL SCREENING ESTIMATES
PLANS 2a, 2b, 2c, 3 AND 4

MRL Representative Plans
Initial Screening Estimates
Plans 2a, 2b, 2c, 3, & 4

Designed By: Vicksburg District
Estimated By: Cost Engineering Branch

Prepared By: Cost Engineering Team Members
Vicksburg District

Preparation Date: 10/01/97
Effective Date of Pricing: 10/01/97

Sales Tax: 0.00%

** PROJECT OWNER SUMMARY - Contract **

		CONTRACT COST	CONTINGN	TOTAL COST
01	Typ. Item for Traditional Plan	16,816,025	2,390,115	19,206,141
02	Typ. Item for Avoid & Min. Plan	19,839,402	2,775,563	22,614,965
03	Typ. Item for Landside Borrow	21,117,359	2,956,052	24,073,411
04	Typ. Item for Shallow LS Borrow	25,576,835	3,601,920	29,178,755
05	Typ. Item for LS Borrow w/Trees	22,424,279	3,161,604	25,585,883
TOTAL	MRL Representative Plans	105,773,900	14,885,254	120,659,154

** PROJECT OWNER SUMMARY - Feature **

		CONTRACT COST	CONTINGN	TOTAL COST
01	Typ. Item for Traditional Plan			
01.01	Lands and Damages	666,700	140,300	807,000
01.02	Relocations	658,000	164,500	822,500
01.11	Levees and Floodwalls	11,304,463	1,247,943	12,552,406
01.30	Planning, Engineering and Design	2,990,616	598,123	3,588,739
01.31	Supervision and Administration	1,196,246	239,249	1,435,495
TOTAL	Typ. Item for Traditional Plan	16,816,025	2,390,115	19,206,141
02	Typ. Item for Avoid & Min. Plan			
02.01	Lands and Damages	607,700	126,300	734,000
02.02	Relocations	658,000	164,500	822,500
02.11	Levees and Floodwalls	13,587,705	1,487,563	15,075,269
02.30	Planning, Engineering and Design	3,561,426	712,285	4,273,711
02.31	Supervision and Administration	1,424,571	284,914	1,709,485
TOTAL	Typ. Item for Avoid & Min. Plan	19,839,402	2,775,563	22,614,965
03	Typ. Item for Landside Borrow			
03.01	Lands and Damages	1,025,000	220,000	1,245,000
03.02	Relocations	658,000	164,500	822,500
03.11	Levees and Floodwalls	14,225,229	1,529,726	15,754,955
03.30	Planning, Engineering and Design	3,720,807	744,161	4,464,968
03.31	Supervision and Administration	1,488,323	297,665	1,785,988
TOTAL	Typ. Item for Landside Borrow	21,117,359	2,956,052	24,073,411
04	Typ. Item for Shallow LS Borrow			
04.01	Lands and Damages	2,379,055	535,945	2,915,000
04.02	Relocations	658,000	164,500	822,500
04.11	Levees and Floodwalls	16,525,541	1,698,627	18,224,168
04.30	Planning, Engineering and Design	4,295,885	859,177	5,155,062
04.31	Supervision and Administration	1,718,354	343,671	2,062,025
TOTAL	Typ. Item for Shallow LS Borrow	25,576,835	3,601,920	29,178,755
05	Typ. Item for LS Borrow w/Trees			
05.01	Lands and Damages	1,726,200	394,800	2,121,000
05.02	Relocations	658,000	164,500	822,500
05.11	Levees and Floodwalls	14,673,910	1,529,070	16,202,980
05.30	Planning, Engineering and Design	3,832,978	766,596	4,599,574

** PROJECT OWNER SUMMARY - Feature **

		CONTRACT COST	CONTINGN	TOTAL COST
05.31	Supervision and Administration	1,533,191	306,638	1,839,829
TOTAL	Typ. Item for LS Borrow w/Trees	22,424,279	3,161,604	25,585,883
TOTAL	MRL Representative Plans	105,773,900	14,885,254	120,659,154

TAB 2

PLAN 3 WITH MITIGATION

Mississippi River Levees Project
Cost Estimate For
Plan 3, Traditional Constrution

Prepared In Support Of The SEIS

Designed By: CEMVM, CEMVN, and CEMVK
Estimated By: Cost Engineering Branch

Prepared By: Cost Engineering Team Members
Vicksburg, Memphis & New Orleans

Preparation Date: 01/08/98
Effective Date of Pricing: 10/01/97

Sales Tax: 0.00%

SUMMARY REPORTS SUMMARY PAGE

PROJECT OWNER SUMMARY - Contract.....1
PROJECT OWNER SUMMARY - Feature.....4

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

		CONTRACT COST	CONTINGN	TOTAL COST
01	LOWER VENICE 2ND LIFT	535,854	107,171	643,025
02	NEW ORLEANS DISTRICT FLOODWALL	893,700	178,740	1,072,439
03	CARROLLTON LEVEE ENLARGEMENT	728,425	145,685	874,110
04	JEFFERSON HEIGHTS	283,174	56,635	339,809
05	CARVILLE TO MARCHAND	4,184,400	836,880	5,021,280
06	HOHEN-SOLMS TO MODESTE	1,140,700	228,140	1,368,840
07	ALHAMBRA TO HOHEN-SOLMS	987,600	197,520	1,185,120
08	REVEILLE TO POINT PLEASANT	2,016,676	403,335	2,420,011
09	GAP CLOSURES WEST BANK	354,616	70,923	425,539
10	GAP CLOSURES EAST BANK	528,850	105,770	634,620
11	BATON ROUGE FRONT LEVEE	136,100	27,220	163,320
12	5TH LEVEE DIST LEVEE ENLRGMNT	578,360	115,672	694,032
13	Item 357-R: Sta 8470+39-8673+00	5,867,194	786,535	6,653,729
14	Item 361-R: Sta 8269+12-8470+39	9,376,658	1,257,721	10,634,379
15	Item 365-R: Sta 8053+00-8269+12	8,347,959	1,114,484	9,462,443
16	Item 366-R: Sta 7800+39-8053+00	4,892,240	673,708	5,565,948
17	Item 367-R: Sta 7550+00-7800+39	5,776,840	816,451	6,593,291
18	Item 368-R: Sta 7350+00-7550+00	5,311,355	756,492	6,067,847
19	Item 370-R: Sta 7157+21-7350+00	3,775,472	531,697	4,307,169
20	Item 374-R: Sta 6980+00-7157+21	4,544,994	557,298	5,102,292
21	Item 377-R: Sta 6802+00-6980+00	4,212,274	587,314	4,799,589
22	Item 380-R: Sta 6602+94-6802+00	3,834,867	529,985	4,364,853
23	Item 385-R: Sta 6370+00-6602+94	4,858,743	717,678	5,576,421
24	Item 388-R: Sta 6135+92-6370+00	3,506,230	536,657	4,042,887
25	Item 393-R: Sta 5864+39-6135+92	5,774,023	810,557	6,584,580
26	Item 398-R: Sta 5590+00-5864+39	7,742,691	1,041,463	8,784,155
27	Item 401-R: Sta 5390+00-5590+00	4,339,395	581,967	4,921,362
28	Item 407-R: Sta 5210+00-5390+00	4,526,082	640,024	5,166,106
29	Item 409-R: Sta 5030+00-5210+00	3,911,868	557,112	4,468,981
30	Item 411-R: Sta 4885+46-5030+00	3,295,099	467,305	3,762,404
31	Item 414-R: Sta 4725+00-4885+46	4,959,971	659,565	5,619,536
32	Item 416-R: Sta 4575+00-4725+00	5,916,428	798,812	6,715,240
33	Item 419-R: Sta 4420+00-4575+00	9,910,888	1,286,000	11,196,888
34	Item 421-R: Sta 4290+32-4420+00	7,197,646	954,139	8,151,785
35	Item 422-R: Sta 4141+35-4290+32	3,725,326	518,152	4,243,478
36	Item 424-R: Sta 3950+00-4141+35	5,075,492	698,522	5,774,014
37	Item 428-R: Sta 3803+00-3950+00	4,034,067	579,346	4,613,413
38	Item 445-R: Sta 2905+40-3100+00	5,820,805	795,962	6,616,767
39	Item 450-R: Sta 2710+00-2905+40	5,512,829	764,208	6,277,037
40	Item 452-L: Sta 250+00- 453+00	4,949,029	702,539	5,651,568
41	Item 453-R: Sta 2527+00-2710+00	7,573,984	1,022,513	8,596,496
42	Item 457-R: Sta 2323+50-2527+00	6,381,545	893,556	7,275,102
43	Item 458-L: Sta 125+00- 250+00	3,388,535	472,151	3,860,686
44	Item 460-L: Sta 0+00- 125+00	3,816,557	526,375	4,342,932
45	Item 461-R: Sta 2113+83-2323+50	8,473,764	1,167,660	9,641,424
46	Item 462-L: Sta 8450+00-8590+60	3,842,466	543,965	4,386,431
47	Item 463-L: Sta 8305+00-8450+00	4,712,233	635,402	5,347,635
48	Item 465-L: Sta 8160+00-8305+00	5,078,807	695,000	5,773,807
49	Item 467-L: Sta 7991+68-8160+00	6,118,524	831,033	6,949,557
50	Item 475A-L: Sta 7735+00-7991+68	9,000,242	1,268,056	10,268,298
51	Item 475B-L: Sta 7467+00-7735+00	10,233,640	1,434,597	11,668,237

		CONTRACT COST	CONTINGN	TOTAL COST
52	Item 480-R: Sta 1270+00-1405+38	8,624,296	1,233,688	9,857,985
53	Item 481-L: Sta 7300+00-7467+00	5,009,480	713,655	5,723,136
54	Item 483-R: Sta 1140+00-1270+00	3,911,876	534,426	4,446,302
55	Item 485-R: Sta 956+00-1140+00	6,653,415	925,092	7,578,507
56	Item 486-L: Sta 7150+00-7300+00	4,700,745	654,854	5,355,599
57	Item 487-R: Sta 835+00- 956+00	4,880,850	661,241	5,542,092
58	Item 489-R: Sta 650+00- 835+00	7,040,792	1,001,712	8,042,504
59	Item 490-L: Sta 7000+00-7150+00	4,175,452	581,829	4,757,281
60	Item 493-L: Sta 6860+00-7000+00	3,932,025	558,180	4,490,205
61	Item 495-L: Sta 6720+00-6860+00	8,286,949	1,166,886	9,453,835
62	Item 497-L: Sta 6600+00-6720+00	4,003,715	576,769	4,580,483
63	Item 498-L: Sta 6475+00-6600+00	3,984,175	560,824	4,544,999
64	Item 502-L: Sta 6075+00-6475+00	11,679,418	1,534,488	13,213,906
65	Item 503-R: Sta 190+00- 405+00	8,145,579	1,127,120	9,272,699
66	Item 506-R: Sta 0+00- 190+00	8,860,710	1,184,907	10,045,617
67	Item 509-L: Sta 5870+00-6075+00	3,883,724	538,844	4,422,568
68	Item 511-L: Sta 5689+62-5870+00	2,508,816	346,293	2,855,110
69	Item 520-R: Sta 2980+00-3115+00	2,994,727	436,982	3,431,709
70	Item 521-L: Sta 5162+00-5427+00	5,185,517	740,514	5,926,031
71	Item 524-L: Sta 4980+00-5180+00	2,089,530	312,106	2,401,637
72	Item 525-L: Sta 4895+00-4980+00	836,450	120,949	957,399
73	Item 525-R: Sta 2820+00-2980+00	3,668,242	549,369	4,217,611
74	Item 526-L: Sta 4856+00-4895+00	1,327,512	185,606	1,513,117
75	Item 528-R: Sta 2660+00-2820+00	5,328,063	758,212	6,086,275
76	Item 531-L: Sta 4419+00-4475+00	1,553,615	313,981	1,867,597
77	Item 531-R: Sta 2490+00-2660+00	3,582,491	617,709	4,200,200
78	Item 533-L: Sta 4300+00-4419+50	1,041,461	147,681	1,189,142
79	Item 536-R: Sta 2027+68-2342+50	10,990,237	1,541,257	12,531,494
80	Item 538-L: Sta 4110+00-4150+00	315,549	47,797	363,347
81	Item 540-L: Sta 3946+00-4085+00	1,341,336	201,140	1,542,476
82	Item 541-R: Sta 1748+00-2027+68	3,365,225	503,443	3,868,668
83	Item 543-L: Sta 3590+00-3843+00	2,738,289	413,124	3,151,413
84	Item 543-R: Sta 1656+85-1731+55	699,390	115,027	814,417
85	Item 546-R: Sta 1386+85-1580+00	1,409,816	209,414	1,619,230
86	Item 548-R: Sta 1335+00-1380+00	375,335	59,941	435,276
87	Item 555-R: Sta 970+00- 997+71	421,607	62,019	483,626
88	Item 570-L: Sta 2670+00-2840+00	1,164,125	167,748	1,331,873
89	Item 571-L: Sta 2615+00-2670+00	407,485	61,613	469,098
90	Item 575-L: Sta 2285+00-2333+75	367,550	57,014	424,564
91	Item 576-R: Sta 190+00- 300+00	1,338,059	210,110	1,548,169
92	Item 585-L: Sta 1572+00-1681+00	788,399	120,046	908,445
93	Item 589-L: Sta 1392+00-1417+00	276,713	47,768	324,481
94	Item 607-L: Sta 612+50- 652+50	504,416	76,495	580,911
95	Item 611-L: Sta 300+00- 452+00	959,335	129,757	1,089,092
96	Item 614-L: Sta 225+00- 300+00	878,222	128,727	1,006,949
97	Item 616-L: Sta 65+00- 205+00	1,132,613	173,502	1,306,114
98	AR Henrico Berm TD	2,827,306	539,861	3,367,167
99	AR Knowlton Berm TD	1,495,724	282,545	1,778,269
100	MS Hillhouse Berm, TD	15,593,802	2,030,680	17,624,482
101	MS Trotters Berm, TD	4,648,136	609,464	5,257,600
102	MS Austin Berm, TD	3,241,280	424,828	3,666,108

		CONTRACT COST	CONTINGN	TOTAL COST
103	AR Blue Lake Berm TD	5,765,603	756,360	6,521,963
104	AR Louise Berm/Pit fill, TD	974,139	179,028	1,153,167
105	AR Pecan Pt. Berm, TD	4,346,070	563,257	4,909,327
106	AR Butler Berm, TD	2,020,029	263,303	2,283,332
107	MO Baders-Cottonwood Berm TD	14,610,050	1,953,005	16,563,055
108	TN Miston Berm, TD	691,388	129,478	820,866
109	MO South Caruthersville Berm TD	6,001,440	1,152,688	7,154,128
110	MO Hubbard Lake Berm TD	3,347,165	646,233	3,993,398
111	TN Phillipy Berm, TD	331,882	63,576	395,458
112	MO Barnes Ridge Berm TD	30,943,043	3,841,304	34,784,347
113	MO Bayouville Berm TD	4,318,149	828,978	5,147,126
114	KY Island 8 Berm TD	3,400,977	657,709	4,058,686
115	MO BPNM Pit Drain	895,003	121,250	1,016,253
116	MO Ab. Dorena Par 1 Berm TD	1,597,530	303,906	1,901,436
117	MO Ab. Dorena Par 2 Berm TD	892,975	167,317	1,060,291
118	MO Ab. Dorena Par 3 Berm TD	1,133,075	204,284	1,337,359
119	MO Samos Berm TD	1,457,000	257,000	1,714,000
120	IL Cairo Floodwall Berm TD	972,445	186,489	1,158,934
121	IL Cairo to Mound C Berm TD	976,169	115,317	1,091,486
122	IL Mound City Wash Prot	368,929	56,814	425,743
123	IL A. Mound City Berm TD	2,287,927	276,293	2,564,220
124	IL Cairo Grade Raise	1,041,799	132,430	1,174,229
125	IL A. Cario Par. 1 Berm TD	1,727,937	312,587	2,040,525
126	MO Commerce to BP Grade Raise TD	8,861,903	1,415,185	10,277,088
127	MO Nash Berm TD	4,413,092	872,018	5,285,110
128	Item 22AC R, MO Drinkwater PS	7,232,947	1,082,492	8,315,439
129	Mitigation	15,883,247	3,970,812	19,854,059
TOTAL	Mississippi River Levees Project	543,646,707	79,492,046	623,138,753

	CONTRACT COST	CONTINGN	TOTAL COST
01 LOWER VENICE 2ND LIFT			
01.11 LOWER VENICE 2ND LIFT	419,154	83,831	502,985
01.30 PLANNING, ENGINEERING & DESIGN	66,300	13,260	79,560
01.31 CONSTRUCTION MANAGEMENT	50,400	10,080	60,480
TOTAL LOWER VENICE 2ND LIFT	535,854	107,171	643,025
02 NEW ORLEANS DISTRICT FLOODWALL			
02.11 NEW ORLEANS DISTRICT FLOODWALL	734,500	146,900	881,399
02.30 PLANNING, ENGINEERING & DESIGN	71,000	14,200	85,200
02.31 CONSTRUCTION MANAGEMENT	88,200	17,640	105,840
TOTAL NEW ORLEANS DISTRICT FLOODWALL	893,700	178,740	1,072,439
03 CARROLLTON LEVEE ENLARGEMENT			
03.11 CARROLLTON LEVEE ENLARGEMENT	562,525	112,505	675,030
03.30 PLANNING, ENGINEERING & DESIGN	98,400	19,680	118,080
03.31 CONSTRUCTION MANAGEMENT	67,500	13,500	81,000
TOTAL CARROLLTON LEVEE ENLARGEMENT	728,425	145,685	874,110
04 JEFFERSON HEIGHTS			
04.11 JEFFERSON HEIGHTS	187,874	37,575	225,449
04.30 PLANNING, ENGINEERING & DESIGN	72,800	14,560	87,360
04.31 CONSTRUCTION MANAGEMENT	22,500	4,500	27,000
TOTAL JEFFERSON HEIGHTS	283,174	56,635	339,809
05 CARVILLE TO MARCHAND			
05.11 CARVILLE TO MARCHAND	3,642,700	728,540	4,371,240
05.30 PLANNING, ENGINEERING & DESIGN	104,600	20,920	125,520
05.31 CONSTRUCTION MANAGEMENT	437,100	87,420	524,520
TOTAL CARVILLE TO MARCHAND	4,184,400	836,880	5,021,280
06 HOHEN-SOLMS TO MODESTE			
06.11 HOHEN-SOLMS TO MODESTE	925,800	185,160	1,110,960
06.30 PLANNING, ENGINEERING & DESIGN	103,900	20,780	124,680

	CONTRACT COST	CONTINGN	TOTAL COST
06.31 CONSTRUCTION MANAGEMENT	111,000	22,200	133,200
TOTAL HOHEN-SOLMS TO MODESTE	1,140,700	228,140	1,368,840
07 ALHAMBRA TO HOHEN-SOLMS			
07.11 ALHAMBRA TO HOHEN-SOLMS	817,200	163,440	980,640
07.30 PLANNING, ENGINEERING & DESIGN	72,300	14,460	86,760
07.31 CONSTRUCTION MANAGEMENT	98,100	19,620	117,720
TOTAL ALHAMBRA TO HOHEN-SOLMS	987,600	197,520	1,185,120
08 REVEILLE TO POINT PLEASANT			
08.11 REVEILLE TO POINT PLEASANT	1,732,776	346,555	2,079,331
08.30 PLANNING, ENGINEERING & DESIGN	76,000	15,200	91,200
08.31 CONSTRUCTION MANAGEMENT	207,900	41,580	249,480
TOTAL REVEILLE TO POINT PLEASANT	2,016,676	403,335	2,420,011
09 GAP CLOSURES WEST BANK			
09.11 GAP CLOSURES WEST BANK	259,576	51,915	311,491
09.30 PLANNING, ENGINEERING & DESIGN	63,900	12,780	76,680
09.31 CONSTRUCTION MANAGEMENT	31,140	6,228	37,368
TOTAL GAP CLOSURES WEST BANK	354,616	70,923	425,539
10 GAP CLOSURES EAST BANK			
10.11 GAP CLOSURES EAST BANK	413,150	82,630	495,780
10.30 PLANNING, ENGINEERING & DESIGN	66,200	13,240	79,440
10.31 CONSTRUCTION MANAGEMENT	49,500	9,900	59,400
TOTAL GAP CLOSURES EAST BANK	528,850	105,770	634,620
11 BATON ROUGE FRONT LEVEE			
11.11 BATON ROUGE FRONT LEVEE	67,060	13,412	80,472
11.30 PLANNING, ENGINEERING & DESIGN	61,000	12,200	73,200
11.31 CONSTRUCTION MANAGEMENT	8,040	1,608	9,648
TOTAL BATON ROUGE FRONT LEVEE	136,100	27,220	163,320
12 5TH LEVEE DIST LEVEE ENLRGMNT			

		CONTRACT COST	CONTINGN	TOTAL COST
12.11	5TH LEVEE DIST LEVEE ENLRGMNT	465,500	93,100	558,600
12.30	PLANNING, ENGINEERING & DESIGN	57,000	11,400	68,400
12.31	CONSTRUCTION MANAGEMENT	55,860	11,172	67,032
TOTAL	5TH LEVEE DIST LEVEE ENLRGMNT	578,360	115,672	694,032
13	Item 357-R: Sta 8470+39-8673+00			
13.01	Lands and Damages	134,200	29,800	164,000
13.02	Relocations	5,000	1,250	6,250
13.11	Levees and Floodwalls	4,241,662	458,219	4,699,881
13.30	Planning, Engineering and Design	1,061,666	212,333	1,273,999
13.31	Supervision and Administration	424,666	84,933	509,599
TOTAL	Item 357-R: Sta 8470+39-8673+00	5,867,194	786,535	6,653,729
14	Item 361-R: Sta 8269+12-8470+39			
14.01	Lands and Damages	367,700	83,300	451,000
14.02	Relocations	15,000	3,750	18,750
14.11	Levees and Floodwalls	6,658,302	703,540	7,361,842
14.30	Planning, Engineering and Design	1,668,326	333,665	2,001,991
14.31	Supervision and Administration	667,330	133,466	800,796
TOTAL	Item 361-R: Sta 8269+12-8470+39	9,376,658	1,257,721	10,634,379
15	Item 365-R: Sta 8053+00-8269+12			
15.01	Lands and Damages	203,900	43,100	247,000
15.02	Relocations	5,000	1,250	6,250
15.11	Levees and Floodwalls	6,027,636	647,850	6,675,486
15.30	Planning, Engineering and Design	1,508,159	301,632	1,809,791
15.31	Supervision and Administration	603,264	120,653	723,917
TOTAL	Item 365-R: Sta 8053+00-8269+12	8,347,959	1,114,484	9,462,443
16	Item 366-R: Sta 7800+39-8053+00			
16.01	Lands and Damages	170,000	35,000	205,000
16.02	Relocations	41,000	10,250	51,250
16.11	Levees and Floodwalls	3,456,955	383,601	3,840,556
16.30	Planning, Engineering and Design	874,489	174,898	1,049,387
16.31	Supervision and Administration	349,796	69,959	419,755
TOTAL	Item 366-R: Sta 7800+39-8053+00	4,892,240	673,708	5,565,948

	CONTRACT COST	CONTINGN	TOTAL COS
17 Item 367-R: Sta 7550+00-7800+39			
17.01 Lands and Damages	380,100	87,900	468,000
17.02 Relocations	18,000	4,500	22,500
17.11 Levees and Floodwalls	3,979,585	444,220	4,423,805
17.30 Planning, Engineering and Design	999,396	199,879	1,199,275
17.31 Supervision and Administration	399,759	79,952	479,71
TOTAL Item 367-R: Sta 7550+00-7800+39	5,776,840	816,451	6,593,291
18 Item 368-R: Sta 7350+00-7550+00			
18.01 Lands and Damages	175,200	34,800	210,000
18.02 Relocations	225,000	56,250	281,250
18.11 Levees and Floodwalls	3,579,559	399,123	3,978,681
18.30 Planning, Engineering and Design	951,140	190,228	1,141,368
18.31 Supervision and Administration	380,456	76,091	456,547
TOTAL Item 368-R: Sta 7350+00-7550+00	5,311,355	756,492	6,067,847
19 Item 370-R: Sta 7157+21-7350+00			
19.01 Lands and Damages	156,700	31,300	188,000
19.02 Relocations	60,000	15,000	75,000
19.11 Levees and Floodwalls	2,620,572	297,757	2,918,329
19.30 Planning, Engineering and Design	670,143	134,029	804,172
19.31 Supervision and Administration	268,057	53,611	321,668
TOTAL Item 370-R: Sta 7157+21-7350+00	3,775,472	531,697	4,307,169
20 Item 374-R: Sta 6980+00-7157+21			
20.01 Lands and Damages	157,300	32,700	190,000
20.02 Relocations	613,000	0	613,000
20.11 Levees and Floodwalls	2,637,144	297,088	2,934,232
20.30 Planning, Engineering and Design	812,536	162,507	975,043
20.31 Supervision and Administration	325,014	65,003	390,0
TOTAL Item 374-R: Sta 6980+00-7157+21	4,544,994	557,298	5,102,29
21 Item 377-R: Sta 6802+00-6980+00			
21.01 Lands and Damages	201,000	41,000	242,00
21.11 Levees and Floodwalls	2,971,314	338,322	3,309,63
21.30 Planning, Engineering and Design	742,829	148,566	891,395
21.31 Supervision and Administration	297,131	59,426	356,557

	CONTRACT COST	CONTINGN	TOTAL COST
TOTAL Item 377-R: Sta 6802+00-6980+00	4,212,274	587,314	4,799,589
22 Item 380-R: Sta 6602+94-6802+00			
22.01 Lands and Damages	123,600	26,400	150,000
22.02 Relocations	36,000	9,000	45,000
22.11 Levees and Floodwalls	2,713,086	302,149	3,015,236
22.30 Planning, Engineering and Design	687,272	137,454	824,726
22.31 Supervision and Administration	274,909	54,982	329,891
TOTAL Item 380-R: Sta 6602+94-6802+00	3,834,867	529,985	4,364,853
23 Item 385-R: Sta 6370+00-6602+94			
23.01 Lands and Damages	218,400	48,600	267,000
23.02 Relocations	248,000	62,000	310,000
23.11 Levees and Floodwalls	3,189,291	366,468	3,555,759
23.30 Planning, Engineering and Design	859,323	171,865	1,031,188
23.31 Supervision and Administration	343,729	68,746	412,475
TOTAL Item 385-R: Sta 6370+00-6602+94	4,858,743	717,678	5,576,421
24 Item 388-R: Sta 6135+92-6370+00			
24.01 Lands and Damages	177,000	38,000	215,000
24.02 Relocations	300,000	75,000	375,000
24.11 Levees and Floodwalls	2,166,096	251,030	2,417,126
24.30 Planning, Engineering and Design	616,524	123,305	739,829
24.31 Supervision and Administration	246,610	49,322	295,932
TOTAL Item 388-R: Sta 6135+92-6370+00	3,506,230	536,657	4,042,887
25 Item 393-R: Sta 5864+39-6135+92			
25.01 Lands and Damages	245,300	50,700	296,000
25.02 Relocations	91,000	22,750	113,750
25.11 Levees and Floodwalls	4,004,350	450,432	4,454,782
25.30 Planning, Engineering and Design	1,023,838	204,768	1,228,606
25.31 Supervision and Administration	409,535	81,907	491,442
TOTAL Item 393-R: Sta 5864+39-6135+92	5,774,023	810,557	6,584,580
26 Item 398-R: Sta 5590+00-5864+39			
26.01 Lands and Damages	212,800	43,200	256,000
26.02 Relocations	34,000	8,500	42,500

		CONTRACT COST	CONTINGN	TOTAL COST
26.11	Levees and Floodwalls	5,543,697	599,325	6,143,022
26.30	Planning, Engineering and Design	1,394,424	278,885	1,673,309
26.31	Supervision and Administration	557,770	111,554	669,324
TOTAL	Item 398-R: Sta 5590+00-5864+39	7,742,691	1,041,463	8,784,155
27	Item 401-R: Sta 5390+00-5590+00			
27.01	Lands and Damages	84,100	12,900	97,000
27.11	Levees and Floodwalls	3,152,070	348,422	3,500,492
27.30	Planning, Engineering and Design	788,018	157,604	945,622
27.31	Supervision and Administration	315,207	63,041	378,248
TOTAL	Item 401-R: Sta 5390+00-5590+00	4,339,395	581,967	4,921,362
28	Item 407-R: Sta 5210+00-5390+00			
28.01	Lands and Damages	248,300	47,700	296,000
28.02	Relocations	8,000	2,000	10,000
28.11	Levees and Floodwalls	3,160,727	368,513	3,529,240
28.30	Planning, Engineering and Design	792,182	158,436	950,618
28.31	Supervision and Administration	316,873	63,375	380,248
TOTAL	Item 407-R: Sta 5210+00-5390+00	4,526,082	640,024	5,166,106
29	Item 409-R: Sta 5030+00-5210+00			
29.01	Lands and Damages	195,000	43,000	238,000
29.11	Levees and Floodwalls	2,753,235	321,386	3,074,621
29.30	Planning, Engineering and Design	688,309	137,662	825,971
29.31	Supervision and Administration	275,324	55,065	330,389
TOTAL	Item 409-R: Sta 5030+00-5210+00	3,911,868	557,112	4,468,981
30	Item 411-R: Sta 4885+46-5030+00			
30.01	Lands and Damages	157,300	31,700	189,000
30.02	Relocations	30,000	7,500	37,500
30.11	Levees and Floodwalls	2,294,295	265,405	2,559,699
30.30	Planning, Engineering and Design	581,074	116,215	697,289
30.31	Supervision and Administration	232,430	46,486	278,916
TOTAL	Item 411-R: Sta 4885+46-5030+00	3,295,099	467,305	3,762,404
31	Item 414-R: Sta 4725+00-4885+46			

		CONTRACT COST	CONTINGN	TOTAL COST
31.01	Lands and Damages	99,700	16,300	116,000
31.02	Relocations	41,000	10,250	51,250
31.11	Levees and Floodwalls	3,559,201	381,001	3,940,202
31.30	Planning, Engineering and Design	900,050	180,010	1,080,060
31.31	Supervision and Administration	360,020	72,004	432,024
TOTAL	Item 414-R: Sta 4725+00-4885+46	4,959,971	659,565	5,619,536
32	Item 416-R: Sta 4575+00-4725+00			
32.01	Lands and Damages	131,500	24,500	156,000
32.02	Relocations	50,000	12,500	62,500
32.11	Levees and Floodwalls	4,235,132	461,852	4,696,985
32.30	Planning, Engineering and Design	1,071,283	214,257	1,285,540
32.31	Supervision and Administration	428,513	85,703	514,216
TOTAL	Item 416-R: Sta 4575+00-4725+00	5,916,428	798,812	6,715,240
33	Item 419-R: Sta 4420+00-4575+00			
33.01	Lands and Damages	71,700	11,300	83,000
33.02	Relocations	5,000	1,250	6,250
33.11	Levees and Floodwalls	7,283,287	763,270	8,046,557
33.30	Planning, Engineering and Design	1,822,072	364,414	2,186,486
33.31	Supervision and Administration	728,829	145,766	874,595
TOTAL	Item 419-R: Sta 4420+00-4575+00	9,910,888	1,286,000	11,196,888
34	Item 421-R: Sta 4290+32-4420+00			
34.01	Lands and Damages	109,200	19,800	129,000
34.02	Relocations	58,000	14,500	72,500
34.11	Levees and Floodwalls	5,192,701	552,290	5,744,991
34.30	Planning, Engineering and Design	1,312,675	262,535	1,575,210
34.31	Supervision and Administration	525,070	105,014	630,084
TOTAL	Item 421-R: Sta 4290+32-4420+00	7,197,646	954,139	8,151,785
35	Item 422-R: Sta 4141+35-4290+32			
35.01	Lands and Damages	119,000	26,000	145,000
35.02	Relocations	45,000	11,250	56,250
35.11	Levees and Floodwalls	2,626,353	293,908	2,920,260
35.30	Planning, Engineering and Design	667,838	133,568	801,406
35.31	Supervision and Administration	267,135	53,427	320,562
TOTAL	Item 422-R: Sta 4141+35-4290+32	3,725,326	518,152	4,243,478

	CONTRACT COST	CONTINGN	TOTAL COST
36 Item 424-R: Sta 3950+00-4141+35			
36.01 Lands and Damages	189,400	40,600	230,000
36.11 Levees and Floodwalls	3,619,327	404,569	4,023,896
36.30 Planning, Engineering and Design	904,832	180,966	1,085,798
36.31 Supervision and Administration	361,933	72,387	434,320
TOTAL Item 424-R: Sta 3950+00-4141+35	5,075,492	698,522	5,774,014
37 Item 428-R: Sta 3803+00-3950+00			
37.01 Lands and Damages	218,800	47,200	266,000
37.02 Relocations	41,000	10,250	51,250
37.11 Levees and Floodwalls	2,785,124	324,067	3,109,191
37.30 Planning, Engineering and Design	706,531	141,306	847,837
37.31 Supervision and Administration	282,612	56,522	339,134
TOTAL Item 428-R: Sta 3803+00-3950+00	4,034,067	579,346	4,613,413
38 Item 445-R: Sta 2905+40-3100+00			
38.01 Lands and Damages	187,400	40,600	228,000
38.11 Levees and Floodwalls	4,172,893	463,260	4,636,152
38.30 Planning, Engineering and Design	1,043,223	208,645	1,251,868
38.31 Supervision and Administration	417,289	83,458	500,747
TOTAL Item 445-R: Sta 2905+40-3100+00	5,820,805	795,962	6,616,767
39 Item 450-R: Sta 2710+00-2905+40			
39.01 Lands and Damages	144,000	32,000	176,000
39.02 Relocations	25,000	6,250	31,250
39.11 Levees and Floodwalls	3,757,268	408,646	4,165,914
39.30 Planning, Engineering and Design	1,133,258	226,652	1,359,910
39.31 Supervision and Administration	453,303	90,661	543,964
TOTAL Item 450-R: Sta 2710+00-2905+40	5,512,829	764,208	6,277,037
40 Item 452-L: Sta 250+00- 453+00			
40.01 Lands and Damages	217,100	48,900	266,000
40.11 Levees and Floodwalls	3,505,133	408,280	3,913,413
40.30 Planning, Engineering and Design	876,283	175,257	1,051,540
40.31 Supervision and Administration	350,513	70,103	420,616
TOTAL Item 452-L: Sta 250+00- 453+00	4,949,029	702,539	5,651,568

	CONTRACT COST	CONTINGN	TOTAL COST
41 Item 453-R: Sta 2527+00-2710+00			
41.01 Lands and Damages	293,600	66,400	360,000
41.11 Levees and Floodwalls	5,392,877	578,611	5,971,488
41.30 Planning, Engineering and Design	1,348,219	269,644	1,617,863
41.31 Supervision and Administration	539,288	107,858	647,146
TOTAL Item 453-R: Sta 2527+00-2710+00	7,573,984	1,022,513	8,596,496
42 Item 457-R: Sta 2323+50-2527+00			
42.01 Lands and Damages	240,800	51,200	292,000
42.02 Relocations	214,000	53,500	267,500
42.11 Levees and Floodwalls	4,334,700	470,447	4,805,148
42.30 Planning, Engineering and Design	1,137,175	227,435	1,364,610
42.31 Supervision and Administration	454,870	90,974	545,844
TOTAL Item 457-R: Sta 2323+50-2527+00	6,381,545	893,556	7,275,102
43 Item 458-L: Sta 125+00- 250+00			
43.01 Lands and Damages	111,600	22,400	134,000
43.02 Relocations	5,000	1,250	6,250
43.11 Levees and Floodwalls	2,422,359	278,586	2,700,945
43.30 Planning, Engineering and Design	606,840	121,368	728,208
43.31 Supervision and Administration	242,736	48,547	291,283
TOTAL Item 458-L: Sta 125+00- 250+00	3,388,535	472,151	3,860,686
44 Item 460-L: Sta 0+00- 125+00			
44.01 Lands and Damages	47,300	7,700	55,000
44.02 Relocations	23,000	5,750	28,750
44.11 Levees and Floodwalls	2,769,042	317,482	3,086,524
44.30 Planning, Engineering and Design	698,011	139,602	837,613
44.31 Supervision and Administration	279,204	55,841	335,045
TOTAL Item 460-L: Sta 0+00- 125+00	3,816,557	526,375	4,342,932
45 Item 461-R: Sta 2113+83-2323+50			
45.01 Lands and Damages	329,200	74,800	404,000
45.11 Levees and Floodwalls	6,033,010	670,550	6,703,560
45.30 Planning, Engineering and Design	1,508,253	301,651	1,809,904
45.31 Supervision and Administration	603,301	120,660	723,961
TOTAL Item 461-R: Sta 2113+83-2323+50	8,473,764	1,167,660	9,641,424

		CONTRACT COST	CONTINGN	TOTAL COST
46	Item 462-L: Sta 8450+00-8590+60			
46.01	Lands and Damages	103,400	21,600	125,000
46.02	Relocations	59,000	14,750	73,750
46.11	Levees and Floodwalls	2,710,678	313,738	3,024,415
46.30	Planning, Engineering and Design	692,420	138,484	830,904
46.31	Supervision and Administration	276,968	55,394	332,362
TOTAL	Item 462-L: Sta 8450+00-8590+60	3,842,466	543,965	4,386,431
47	Item 463-L: Sta 8305+00-8450+00			
47.01	Lands and Damages	76,100	12,900	89,000
47.02	Relocations	48,000	12,000	60,000
47.11	Levees and Floodwalls	3,386,173	370,110	3,756,283
47.30	Planning, Engineering and Design	858,543	171,709	1,030,252
47.31	Supervision and Administration	343,417	68,683	412,100
TOTAL	Item 463-L: Sta 8305+00-8450+00	4,712,233	635,402	5,347,635
48	Item 465-L: Sta 8160+00-8305+00			
48.01	Lands and Damages	156,800	35,200	192,000
48.02	Relocations	4,000	1,000	5,000
48.11	Levees and Floodwalls	3,641,931	403,585	4,045,516
48.30	Planning, Engineering and Design	911,483	182,297	1,093,780
48.31	Supervision and Administration	364,593	72,919	437,512
TOTAL	Item 465-L: Sta 8160+00-8305+00	5,078,807	695,000	5,773,807
49	Item 467-L: Sta 7991+68-8160+00			
49.01	Lands and Damages	74,800	12,200	87,000
49.02	Relocations	121,000	30,250	151,250
49.11	Levees and Floodwalls	4,355,833	475,205	4,831,038
49.30	Planning, Engineering and Design	1,119,208	223,842	1,343,050
49.31	Supervision and Administration	447,683	89,537	537,220
TOTAL	Item 467-L: Sta 7991+68-8160+00	6,118,524	831,033	6,949,557
50	Item 475A-L: Sta 7735+00-7991+68			
50.01	Lands and Damages	180,600	38,400	219,000
50.02	Relocations	321,000	80,250	401,250
50.11	Levees and Floodwalls	6,212,068	692,091	6,904,159
50.30	Planning, Engineering and Design	1,633,267	326,653	1,959,920

	CONTRACT COST	CONTINGN	TOTAL COST
50.31 Supervision and Administration	653,307	130,661	783,968
TOTAL Item 475A-L: Sta 7735+00-7991+68	9,000,242	1,268,056	10,268,298
51 Item 475B-L: Sta 7467+00-7735+00			
51.01 Lands and Damages	300,400	63,600	364,000
51.02 Relocations	150,000	37,500	187,500
51.11 Levees and Floodwalls	7,207,955	818,440	8,026,395
51.30 Planning, Engineering and Design	1,839,489	367,898	2,207,387
51.31 Supervision and Administration	735,796	147,159	882,955
TOTAL Item 475B-L: Sta 7467+00-7735+00	10,233,640	1,434,597	11,668,237
52 Item 480-R: Sta 1270+00-1405+38			
52.01 Lands and Damages	307,600	66,400	374,000
52.02 Relocations	385,000	96,250	481,250
52.11 Levees and Floodwalls	5,775,515	639,802	6,415,318
52.30 Planning, Engineering and Design	1,540,129	308,026	1,848,155
52.31 Supervision and Administration	616,052	123,210	739,262
TOTAL Item 480-R: Sta 1270+00-1405+38	8,624,296	1,233,688	9,857,985
53 Item 481-L: Sta 7300+00-7467+00			
53.01 Lands and Damages	130,100	29,900	160,000
53.02 Relocations	160,000	40,000	200,000
53.11 Levees and Floodwalls	3,454,355	390,750	3,845,106
53.30 Planning, Engineering and Design	903,589	180,718	1,084,307
53.31 Supervision and Administration	361,436	72,287	433,723
TOTAL Item 481-L: Sta 7300+00-7467+00	5,009,480	713,655	5,723,136
54 Item 483-R: Sta 1140+00-1270+00			
54.01 Lands and Damages	125,600	26,400	152,000
54.02 Relocations	15,000	3,750	18,750
54.11 Levees and Floodwalls	2,789,649	307,951	3,097,600
54.30 Planning, Engineering and Design	701,162	140,232	841,394
54.31 Supervision and Administration	280,465	56,093	336,558
TOTAL Item 483-R: Sta 1140+00-1270+00	3,911,876	534,426	4,446,302
55 Item 485-R: Sta 956+00-1140+00			

		CONTRACT COST	CONTINGN	TOTAL COST
55.01	Lands and Damages	180,300	38,700	219,000
55.02	Relocations	94,000	23,500	117,500
55.11	Levees and Floodwalls	4,700,900	527,249	5,228,149
55.30	Planning, Engineering and Design	1,198,725	239,745	1,438,470
55.31	Supervision and Administration	479,490	95,898	575,388
TOTAL	Item 485-R: Sta 956+00-1140+00	6,653,415	925,092	7,578,507
56	Item 486-L: Sta 7150+00-7300+00			
56.01	Lands and Damages	108,600	22,400	131,000
56.02	Relocations	58,000	14,500	72,500
56.11	Levees and Floodwalls	3,343,589	379,843	3,723,432
56.30	Planning, Engineering and Design	850,397	170,079	1,020,476
56.31	Supervision and Administration	340,159	68,032	408,191
TOTAL	Item 486-L: Sta 7150+00-7300+00	4,700,745	654,854	5,355,599
57	Item 487-R: Sta 835+00- 956+00			
57.01	Lands and Damages	172,000	31,000	203,000
57.02	Relocations	10,000	2,500	12,500
57.11	Levees and Floodwalls	3,478,037	383,579	3,861,616
57.30	Planning, Engineering and Design	872,009	174,402	1,046,411
57.31	Supervision and Administration	348,804	69,761	418,565
TOTAL	Item 487-R: Sta 835+00- 956+00	4,880,850	661,241	5,542,092
58	Item 489-R: Sta 650+00- 835+00			
58.01	Lands and Damages	373,000	83,000	456,000
58.02	Relocations	70,000	17,500	87,500
58.11	Levees and Floodwalls	4,869,105	555,475	5,424,579
58.30	Planning, Engineering and Design	1,234,776	246,955	1,481,731
58.31	Supervision and Administration	493,911	98,782	592,693
TOTAL	Item 489-R: Sta 650+00- 835+00	7,040,792	1,001,712	8,042,504
59	Item 490-L: Sta 7000+00-7150+00			
59.01	Lands and Damages	111,200	25,800	137,000
59.02	Relocations	33,000	8,250	41,250
59.11	Levees and Floodwalls	2,977,557	337,040	3,314,597
59.30	Planning, Engineering and Design	752,639	150,528	903,167
59.31	Supervision and Administration	301,056	60,211	361,267
TOTAL	Item 490-L: Sta 7000+00-7150+00	4,175,452	581,829	4,757,281

	CONTRACT COST	CONTINGN	TOTAL COST
60 Item 493-L: Sta 6860+00-7000+00			
60.01 Lands and Damages	96,000	20,000	116,000
60.11 Levees and Floodwalls	2,841,500	339,275	3,180,775
60.30 Planning, Engineering and Design	710,375	142,075	852,450
60.31 Supervision and Administration	284,150	56,830	340,980
TOTAL Item 493-L: Sta 6860+00-7000+00	3,932,025	558,180	4,490,205
61 Item 495-L: Sta 6720+00-6860+00			
61.01 Lands and Damages	228,000	53,000	281,000
61.02 Relocations	163,000	40,750	203,750
61.11 Levees and Floodwalls	5,806,592	655,265	6,461,857
61.30 Planning, Engineering and Design	1,492,398	298,480	1,790,878
61.31 Supervision and Administration	596,959	119,392	716,351
TOTAL Item 495-L: Sta 6720+00-6860+00	8,286,949	1,166,886	9,453,835
62 Item 497-L: Sta 6600+00-6720+00			
62.01 Lands and Damages	102,000	22,000	124,000
62.02 Relocations	41,000	10,250	51,250
62.11 Levees and Floodwalls	2,849,159	342,207	3,191,366
62.30 Planning, Engineering and Design	722,540	144,508	867,048
62.31 Supervision and Administration	289,016	57,803	346,819
TOTAL Item 497-L: Sta 6600+00-6720+00	4,003,715	576,769	4,580,483
63 Item 498-L: Sta 6475+00-6600+00			
63.01 Lands and Damages	134,400	28,600	163,000
63.02 Relocations	155,000	38,750	193,750
63.11 Levees and Floodwalls	2,696,685	293,856	2,990,541
63.30 Planning, Engineering and Design	712,921	142,584	855,505
63.31 Supervision and Administration	285,169	57,034	342,203
TOTAL Item 498-L: Sta 6475+00-6600+00	3,984,175	560,824	4,544,999
64 Item 502-L: Sta 6075+00-6475+00			
64.02 Relocations	5,000	1,250	6,250
64.11 Levees and Floodwalls	8,646,421	927,638	9,574,060
64.30 Planning, Engineering and Design	2,162,855	432,571	2,595,426
64.31 Supervision and Administration	865,142	173,028	1,038,170
TOTAL Item 502-L: Sta 6075+00-6475+00	11,679,418	1,534,488	13,213,906

		CONTRACT COST	CONTINGN	TOTAL COST
65	Item 503-R: Sta 190+00- 405+00			
65.01	Lands and Damages	315,000	73,000	388,000
65.02	Relocations	18,000	4,500	22,500
65.11	Levees and Floodwalls	5,782,429	643,590	6,426,019
65.30	Planning, Engineering and Design	1,450,107	290,021	1,740,128
65.31	Supervision and Administration	580,043	116,009	696,052
TOTAL	Item 503-R: Sta 190+00- 405+00	8,145,579	1,127,120	9,272,699
66	Item 506-R: Sta 0+00- 190+00			
66.01	Lands and Damages	207,400	43,600	251,000
66.02	Relocations	13,000	3,250	16,250
66.11	Levees and Floodwalls	6,396,859	689,367	7,086,226
66.30	Planning, Engineering and Design	1,602,465	320,493	1,922,958
66.31	Supervision and Administration	640,986	128,197	769,183
TOTAL	Item 506-R: Sta 0+00- 190+00	8,860,710	1,184,907	10,045,617
67	Item 509-L: Sta 5870+00-6075+00			
67.01	Lands and Damages	24,800	4,200	29,000
67.02	Relocations	38,000	9,500	47,500
67.11	Levees and Floodwalls	2,820,462	325,052	3,145,513
67.30	Planning, Engineering and Design	714,616	142,923	857,539
67.31	Supervision and Administration	285,846	57,169	343,015
TOTAL	Item 509-L: Sta 5870+00-6075+00	3,883,724	538,844	4,422,568
68	Item 511-L: Sta 5689+62-5870+00			
68.11	Levees and Floodwalls	1,858,382	216,206	2,074,589
68.30	Planning, Engineering and Design	464,596	92,919	557,515
68.31	Supervision and Administration	185,838	37,168	223,006
TOTAL	Item 511-L: Sta 5689+62-5870+00	2,508,816	346,293	2,855,110
69	Item 520-R: Sta 2980+00-3115+00			
69.01	Lands and Damages	190,500	41,500	232,000
69.02	Relocations	5,000	1,250	6,250
69.11	Levees and Floodwalls	2,072,205	248,827	2,321,033
69.30	Planning, Engineering and Design	519,301	103,860	623,161
69.31	Supervision and Administration	207,721	41,544	249,265
TOTAL	Item 520-R: Sta 2980+00-3115+00	2,994,727	436,982	3,431,709

	CONTRACT COST	CONTINGN	TOTAL COST
70 Item 521-L: Sta 5162+00-5427+00			
70.01 Lands and Damages	149,500	31,500	181,000
70.02 Relocations	75,000	18,750	93,750
70.11 Levees and Floodwalls	3,655,383	429,137	4,084,520
70.30 Planning, Engineering and Design	932,596	186,519	1,119,115
70.31 Supervision and Administration	373,038	74,608	447,646
TOTAL Item 521-L: Sta 5162+00-5427+00	5,185,517	740,514	5,926,031
71 Item 524-L: Sta 4980+00-5180+00			
71.01 Lands and Damages	15,800	2,200	18,000
71.02 Relocations	83,000	20,750	103,750
71.11 Levees and Floodwalls	1,453,096	181,630	1,634,726
71.30 Planning, Engineering and Design	384,024	76,805	460,829
71.31 Supervision and Administration	153,610	30,722	184,332
TOTAL Item 524-L: Sta 4980+00-5180+00	2,089,530	312,106	2,401,637
72 Item 525-L: Sta 4895+00-4980+00			
72.11 Levees and Floodwalls	619,593	77,578	697,171
72.30 Planning, Engineering and Design	154,898	30,980	185,878
72.31 Supervision and Administration	61,959	12,392	74,351
TOTAL Item 525-L: Sta 4895+00-4980+00	836,450	120,949	957,399
73 Item 525-R: Sta 2820+00-2980+00			
73.01 Lands and Damages	214,300	45,700	260,000
73.02 Relocations	160,000	40,000	200,000
73.11 Levees and Floodwalls	2,398,475	284,575	2,683,051
73.30 Planning, Engineering and Design	639,619	127,924	767,543
73.31 Supervision and Administration	255,848	51,170	307,018
TOTAL Item 525-R: Sta 2820+00-2980+00	3,668,242	549,369	4,217,611
74 Item 526-L: Sta 4856+00-4895+00			
74.01 Lands and Damages	47,600	10,400	58,000
74.02 Relocations	8,000	2,000	10,000
74.11 Levees and Floodwalls	940,083	106,840	1,046,923
74.30 Planning, Engineering and Design	237,021	47,404	284,425
74.31 Supervision and Administration	94,808	18,962	113,770
TOTAL Item 526-L: Sta 4856+00-4895+00	1,327,512	185,606	1,513,117

		CONTRACT COST	CONTINGN	TOTAL COST
75	Item 528-R: Sta 2660+00-2820+00			
75.01	Lands and Damages	232,400	51,600	284,000
75.02	Relocations	80,000	20,000	100,000
75.11	Levees and Floodwalls	3,694,565	422,392	4,116,958
75.30	Planning, Engineering and Design	943,641	188,728	1,132,369
75.31	Supervision and Administration	377,457	75,491	452,948
TOTAL	Item 528-R: Sta 2660+00-2820+00	5,328,063	758,212	6,086,275
76	Item 531-L: Sta 4419+00-4475+00			
76.01	Lands and Damages	24,000	4,000	28,000
76.02	Relocations	705,000	176,250	881,250
76.11	Levees and Floodwalls	428,048	54,418	482,466
76.30	Planning, Engineering and Design	283,262	56,652	339,914
76.31	Supervision and Administration	113,305	22,661	135,966
TOTAL	Item 531-L: Sta 4419+00-4475+00	1,553,615	313,981	1,867,597
77	Item 531-R: Sta 2490+00-2660+00			
77.01	Lands and Damages	193,000	40,000	233,000
77.02	Relocations	713,000	178,250	891,250
77.11	Levees and Floodwalls	1,797,734	223,707	2,021,442
77.30	Planning, Engineering and Design	627,684	125,537	753,221
77.31	Supervision and Administration	251,073	50,215	301,288
TOTAL	Item 531-R: Sta 2490+00-2660+00	3,582,491	617,709	4,200,200
78	Item 533-L: Sta 4300+00-4419+50			
78.01	Lands and Damages	32,800	6,200	39,000
78.11	Levees and Floodwalls	747,156	89,180	836,336
78.30	Planning, Engineering and Design	186,789	37,358	224,147
78.31	Supervision and Administration	74,716	14,943	89,659
TOTAL	Item 533-L: Sta 4300+00-4419+50	1,041,461	147,681	1,189,142
79	Item 536-R: Sta 2027+68-2342+50			
79.01	Lands and Damages	525,300	118,700	644,000
79.02	Relocations	10,000	2,500	12,500
79.11	Levees and Floodwalls	7,741,805	877,430	8,619,235
79.30	Planning, Engineering and Design	1,937,951	387,590	2,325,54
79.31	Supervision and Administration	775,181	155,036	930,21

	CONTRACT COST	CONTINGN	TOTAL COST
TOTAL Item 536-R: Sta 2027+68-2342+50	10,990,237	1,541,257	12,531,494
80 Item 538-L: Sta 4110+00-4150+00			
80.11 Levees and Floodwalls	233,740	31,435	265,176
80.30 Planning, Engineering and Design	58,435	11,687	70,122
80.31 Supervision and Administration	23,374	4,675	28,049
TOTAL Item 538-L: Sta 4110+00-4150+00	315,549	47,797	363,347
81 Item 540-L: Sta 3946+00-4085+00			
81.02 Relocations	161,000	40,250	201,250
81.11 Levees and Floodwalls	832,582	91,339	923,921
81.30 Planning, Engineering and Design	248,396	49,679	298,075
81.31 Supervision and Administration	99,358	19,872	119,230
TOTAL Item 540-L: Sta 3946+00-4085+00	1,341,336	201,140	1,542,476
82 Item 541-R: Sta 1748+00-2027+68			
82.01 Lands and Damages	260,200	58,800	319,000
82.02 Relocations	25,000	6,250	31,250
82.11 Levees and Floodwalls	2,275,018	277,391	2,552,410
82.30 Planning, Engineering and Design	575,005	115,001	690,006
82.31 Supervision and Administration	230,002	46,000	276,002
TOTAL Item 541-R: Sta 1748+00-2027+68	3,365,225	503,443	3,868,668
83 Item 543-L: Sta 3590+00-3843+00			
83.01 Lands and Damages	42,200	8,800	51,000
83.02 Relocations	247,000	61,750	308,750
83.11 Levees and Floodwalls	1,750,103	202,777	1,952,880
83.30 Planning, Engineering and Design	499,276	99,855	599,131
83.31 Supervision and Administration	199,710	39,942	239,652
TOTAL Item 543-L: Sta 3590+00-3843+00	2,738,289	413,124	3,151,413
84 Item 543-R: Sta 1656+85-1731+55			
84.01 Lands and Damages	61,800	12,200	74,000
84.02 Relocations	5,000	1,250	6,250
84.11 Levees and Floodwalls	467,289	68,517	535,806
84.30 Planning, Engineering and Design	118,072	23,614	141,686

	CONTRACT COST	CONTINGN	TOTAL COST
84.31 Supervision and Administration	47,229	9,446	56,675
TOTAL Item 543-R: Sta 1656+85-1731+55	699,390	115,027	814,417
85 Item 546-R: Sta 1386+85-1580+00			
85.01 Lands and Damages	144,700	30,300	175,000
85.02 Relocations	5,000	1,250	6,250
85.11 Levees and Floodwalls	932,123	112,265	1,044,389
85.30 Planning, Engineering and Design	234,281	46,856	281,137
85.31 Supervision and Administration	93,712	18,742	112,454
TOTAL Item 546-R: Sta 1386+85-1580+00	1,409,816	209,414	1,619,230
86 Item 548-R: Sta 1335+00-1380+00			
86.01 Lands and Damages	44,800	7,200	52,000
86.02 Relocations	30,000	7,500	37,500
86.11 Levees and Floodwalls	214,841	28,102	242,943
86.30 Planning, Engineering and Design	61,210	12,242	73,452
86.31 Supervision and Administration	24,484	4,897	29,381
TOTAL Item 548-R: Sta 1335+00-1380+00	375,335	59,941	435,276
87 Item 555-R: Sta 970+00- 997+71			
87.01 Lands and Damages	40,000	6,000	46,000
87.11 Levees and Floodwalls	282,672	36,232	318,904
87.30 Planning, Engineering and Design	70,668	14,134	84,802
87.31 Supervision and Administration	28,267	5,653	33,920
TOTAL Item 555-R: Sta 970+00- 997+71	421,607	62,019	483,626
88 Item 570-L: Sta 2670+00-2840+00			
88.01 Lands and Damages	22,400	3,600	26,000
88.11 Levees and Floodwalls	845,722	104,947	950,669
88.30 Planning, Engineering and Design	211,431	42,286	253,717
88.31 Supervision and Administration	84,572	16,914	101,486
TOTAL Item 570-L: Sta 2670+00-2840+00	1,164,125	167,748	1,331,873
89 Item 571-L: Sta 2615+00-2670+00			
89.02 Relocations	8,000	2,000	10,000
89.11 Levees and Floodwalls	293,841	38,484	332,325

	CONTRACT COST	CONTINGN	TOTAL COST
89.30 Planning, Engineering and Design	75,460	15,092	90,552
89.31 Supervision and Administration	30,184	6,037	36,221
TOTAL Item 571-L: Sta 2615+00-2670+00	407,485	61,613	469,098
90 Item 575-L: Sta 2285+00-2333+75			
90.02 Relocations	9,000	2,250	11,250
90.11 Levees and Floodwalls	263,259	35,706	298,965
90.30 Planning, Engineering and Design	68,065	13,613	81,678
90.31 Supervision and Administration	27,226	5,445	32,671
TOTAL Item 575-L: Sta 2285+00-2333+75	367,550	57,014	424,564
91 Item 576-R: Sta 190+00- 300+00			
91.01 Lands and Damages	157,600	32,400	190,000
91.02 Relocations	48,000	12,000	60,000
91.11 Levees and Floodwalls	826,414	104,501	930,915
91.30 Planning, Engineering and Design	218,604	43,721	262,325
91.31 Supervision and Administration	87,441	17,488	104,929
TOTAL Item 576-R: Sta 190+00- 300+00	1,338,059	210,110	1,548,169
92 Item 585-L: Sta 1572+00-1681+00			
92.01 Lands and Damages	16,000	2,000	18,000
92.11 Levees and Floodwalls	572,147	77,996	650,143
92.30 Planning, Engineering and Design	143,037	28,607	171,644
92.31 Supervision and Administration	57,215	11,443	68,658
TOTAL Item 585-L: Sta 1572+00-1681+00	788,399	120,046	908,445
93 Item 589-L: Sta 1392+00-1417+00			
93.01 Lands and Damages	23,200	3,800	27,000
93.02 Relocations	20,000	5,000	25,000
93.11 Levees and Floodwalls	167,787	25,823	193,610
93.30 Planning, Engineering and Design	46,947	9,389	56,336
93.31 Supervision and Administration	18,779	3,756	22,535
TOTAL Item 589-L: Sta 1392+00-1417+00	276,713	47,768	324,481
94 Item 607-L: Sta 612+50- 652+50			
94.01 Lands and Damages	55,000	10,000	65,000

		CONTRACT COST	CONTINGN	TOTAL COST
94.11	Levees and Floodwalls	332,901	43,192	376,093
94.30	Planning, Engineering and Design	83,225	16,645	99,870
94.31	Supervision and Administration	33,290	6,658	39,948
TOTAL	Item 607-L: Sta 612+50- 652+50	504,416	76,495	580,911
95	Item 611-L: Sta 300+00- 452+00			
95.01	Lands and Damages	55,800	7,200	63,000
95.11	Levees and Floodwalls	669,285	75,707	744,992
95.30	Planning, Engineering and Design	167,321	33,464	200,785
95.31	Supervision and Administration	66,929	13,386	80,315
TOTAL	Item 611-L: Sta 300+00- 452+00	959,335	129,757	1,089,092
96	Item 614-L: Sta 225+00- 300+00			
96.01	Lands and Damages	81,400	14,600	96,000
96.11	Levees and Floodwalls	590,238	72,810	663,048
96.30	Planning, Engineering and Design	147,560	29,512	177,072
96.31	Supervision and Administration	59,024	11,805	70,829
TOTAL	Item 614-L: Sta 225+00- 300+00	878,222	128,727	1,006,949
97	Item 616-L: Sta 65+00- 205+00			
97.02	Relocations	8,000	2,000	10,000
97.11	Levees and Floodwalls	830,973	112,774	943,746
97.30	Planning, Engineering and Design	209,743	41,949	251,692
97.31	Supervision and Administration	83,897	16,779	100,676
TOTAL	Item 616-L: Sta 65+00- 205+00	1,132,613	173,502	1,306,114
98	AR Henrico Berm TD			
98.01	Lands and Damages	398,000	54,000	452,000
98.11	Levees and Floodwalls	1,767,056	353,411	2,120,467
98.30	Planning, Engineering and Design	441,750	88,350	530,100
98.31	Supervision and Administration	220,500	44,100	264,600
TOTAL	AR Henrico Berm TD	2,827,306	539,861	3,367,167
99	AR Knowlton Berm TD			
99.01	Lands and Damages	233,000	30,000	263,000
99.11	Levees and Floodwalls	917,724	183,545	1,101,269

		CONTRACT COST	CONTINGN	TOTAL COST
99.30	Planning, Engineering and Design	230,000	46,000	276,000
99.31	Supervision and Administration	115,000	23,000	138,000
TOTAL	AR Knowlton Berm TD	1,495,724	282,545	1,778,269
100	MS Hillhouse Berm, TD			
100.01	Lands and Damages	1,227,000	204,000	1,431,000
100.11	Levees and Floodwalls	10,466,802	1,046,680	11,513,482
100.30	Planning, Engineering and Design	2,600,000	520,000	3,120,000
100.31	Supervision and Administration	1,300,000	260,000	1,560,000
TOTAL	MS Hillhouse Berm, TD	15,593,802	2,030,680	17,624,482
101	MS Trotters Berm, TD			
101.01	Lands and Damages	441,000	74,000	515,000
101.11	Levees and Floodwalls	3,059,636	305,964	3,365,600
101.30	Planning, Engineering and Design	765,000	153,000	918,000
101.31	Supervision and Administration	382,500	76,500	459,000
TOTAL	MS Trotters Berm, TD	4,648,136	609,464	5,257,600
102	MS Austin Berm, TD			
102.01	Lands and Damages	438,000	68,000	506,000
102.11	Levees and Floodwalls	2,038,280	203,828	2,242,108
102.30	Planning, Engineering and Design	510,000	102,000	612,000
102.31	Supervision and Administration	255,000	51,000	306,000
TOTAL	MS Austin Berm, TD	3,241,280	424,828	3,666,108
103	AR Blue Lake Berm TD			
103.01	Lands and Damages	482,000	84,000	566,000
103.11	Levees and Floodwalls	3,843,603	384,360	4,227,963
103.30	Planning, Engineering and Design	960,000	192,000	1,152,000
103.31	Supervision and Administration	480,000	96,000	576,000
TOTAL	AR Blue Lake Berm TD	5,765,603	756,360	6,521,963
104	AR Louise Berm/Pit fill, TD			
104.01	Lands and Damages	204,000	25,000	229,000
104.11	Levees and Floodwalls	560,139	112,028	672,167
104.30	Planning, Engineering and Design	140,000	28,000	168,000

		CONTRACT COST	CONTINGN	TOTAL COST
104.31	Supervision and Administration	70,000	14,000	84,000
TOTAL	AR Louise Berm/Pit fill, TD	974,139	179,028	1,153,167
105	AR Pecan Pt. Berm, TD			
105.01	Lands and Damages	636,000	91,000	727,000
105.11	Levees and Floodwalls	2,697,570	269,757	2,967,327
105.30	Planning, Engineering and Design	675,000	135,000	810,000
105.31	Supervision and Administration	337,500	67,500	405,000
TOTAL	AR Pecan Pt. Berm, TD	4,346,070	563,257	4,909,327
106	AR Butler Berm, TD			
106.01	Lands and Damages	274,000	41,000	315,000
106.11	Levees and Floodwalls	1,269,029	126,903	1,395,932
106.30	Planning, Engineering and Design	318,000	63,600	381,600
106.31	Supervision and Administration	159,000	31,800	190,800
TOTAL	AR Butler Berm, TD	2,020,029	263,303	2,283,332
107	MO Baders-Cottonwood Berm TD			
107.01	Lands and Damages	1,830,000	325,000	2,155,000
107.11	Levees and Floodwalls	9,280,050	928,005	10,208,055
107.30	Planning, Engineering and Design	2,300,000	460,000	2,760,000
107.31	Supervision and Administration	1,200,000	240,000	1,440,000
TOTAL	MO Baders-Cottonwood Berm TD	14,610,050	1,953,005	16,563,055
108	TN Miston Berm, TD			
108.01	Lands and Damages	144,000	20,000	164,000
108.11	Levees and Floodwalls	397,388	79,478	476,866
108.30	Planning, Engineering and Design	100,000	20,000	120,000
108.31	Supervision and Administration	50,000	10,000	60,000
TOTAL	TN Miston Berm, TD	691,388	129,478	820,866
109	MO South Caruthersville Berm TD			
109.01	Lands and Damages	1,008,000	154,000	1,162,000
109.11	Levees and Floodwalls	3,628,440	725,688	4,354,128
109.30	Planning, Engineering and Design	910,000	182,000	1,092,000

		CONTRACT COST	CONTINGN	TOTAL COST
109.31	Supervision and Administration	455,000	91,000	546,000
TOTAL	MO South Caruthersville Berm TD	6,001,440	1,152,688	7,154,128
110	MO Hubbard Lake Berm TD			
110.01	Lands and Damages	376,000	52,000	428,000
110.11	Levees and Floodwalls	2,161,165	432,233	2,593,398
110.30	Planning, Engineering and Design	540,000	108,000	648,000
110.31	Supervision and Administration	270,000	54,000	324,000
TOTAL	MO Hubbard Lake Berm TD	3,347,165	646,233	3,993,398
111	TN Phillipy Berm, TD			
111.01	Lands and Damages	49,000	7,000	56,000
111.11	Levees and Floodwalls	204,882	40,976	245,858
111.30	Planning, Engineering and Design	52,000	10,400	62,400
111.31	Supervision and Administration	26,000	5,200	31,200
TOTAL	TN Phillipy Berm, TD	331,882	63,576	395,458
112	MO Barnes Ridge Berm TD			
112.01	Lands and Damages	3,860,000	393,000	4,253,000
112.11	Levees and Floodwalls	19,683,043	1,968,304	21,651,347
112.30	Planning, Engineering and Design	4,900,000	980,000	5,880,000
112.31	Supervision and Administration	2,500,000	500,000	3,000,000
TOTAL	MO Barnes Ridge Berm TD	30,943,043	3,841,304	34,784,347
113	MO Bayouville Berm TD			
113.01	Lands and Damages	610,000	90,000	700,000
113.02	Relocations	53,044	7,957	61,001
113.11	Levees and Floodwalls	2,645,605	529,121	3,174,726
113.30	Planning, Engineering and Design	673,000	134,600	807,600
113.31	Supervision and Administration	336,500	67,300	403,800
TOTAL	MO Bayouville Berm TD	4,318,149	828,978	5,147,126
114	KY Island 8 Berm TD			
114.01	Lands and Damages	427,000	63,000	490,000
114.02	Relocations	1,739	261	2,000
114.11	Levees and Floodwalls	2,274,738	454,948	2,729,686

		CONTRACT COST	CONTINGN	TOTAL COST
114.30	Planning, Engineering and Design	465,000	93,000	558,000
114.31	Supervision and Administration	232,500	46,500	279,000
TOTAL	KY Island 8 Berm TD	3,400,977	657,709	4,058,686
115	MO BPNM Pit Drain			
115.01	Lands and Damages	258,000	17,000	275,000
115.11	Levees and Floodwalls	463,003	69,450	532,453
115.30	Planning, Engineering and Design	116,000	23,200	139,200
115.31	Supervision and Administration	58,000	11,600	69,600
TOTAL	MO BPNM Pit Drain	895,003	121,250	1,016,253
116	MO Ab. Dorena Par 1 Berm TD			
116.01	Lands and Damages	243,000	33,000	276,000
116.11	Levees and Floodwalls	985,530	197,106	1,182,636
116.30	Planning, Engineering and Design	246,000	49,200	295,200
116.31	Supervision and Administration	123,000	24,600	147,600
TOTAL	MO Ab. Dorena Par 1 Berm TD	1,597,530	303,906	1,901,436
117	MO Ab. Dorena Par 2 Berm TD			
117.01	Lands and Damages	159,000	21,000	180,000
117.02	Relocations	9,565	1,435	11,000
117.11	Levees and Floodwalls	524,910	104,982	629,892
117.30	Planning, Engineering and Design	133,000	26,600	159,600
117.31	Supervision and Administration	66,500	13,300	79,800
TOTAL	MO Ab. Dorena Par 2 Berm TD	892,975	167,317	1,060,291
118	MO Ab. Dorena Par 3 Berm TD			
118.01	Lands and Damages	251,000	28,000	279,000
118.02	Relocations	2,609	391	3,000
118.11	Levees and Floodwalls	639,466	127,893	767,359
118.30	Planning, Engineering and Design	160,000	32,000	192,000
118.31	Supervision and Administration	80,000	16,000	96,000
TOTAL	MO Ab. Dorena Par 3 Berm TD	1,133,075	204,284	1,337,359
119	MO Samos Berm TD			
119.01	Lands and Damages	327,000	31,000	358,000

		CONTRACT COST	CONTINGN	TOTAL COST
119.11	Levees and Floodwalls	821,000	164,200	985,200
119.30	Planning, Engineering and Design	206,000	41,200	247,200
119.31	Supervision and Administration	103,000	20,600	123,600
TOTAL	MO Samos Berm TD	1,457,000	257,000	1,714,000
120	IL Cairo Floodwall Berm TD			
120.01	Lands and Damages	80,000	8,000	88,000
120.11	Levees and Floodwalls	649,445	129,889	779,334
120.30	Planning, Engineering and Design	162,000	32,400	194,400
120.31	Supervision and Administration	81,000	16,200	97,200
TOTAL	IL Cairo Floodwall Berm TD	972,445	186,489	1,158,934
121	IL Cairo to Mound C Berm TD			
121.01	Lands and Damages	141,000	9,000	150,000
121.11	Levees and Floodwalls	607,169	60,717	667,886
121.30	Planning, Engineering and Design	152,000	30,400	182,400
121.31	Supervision and Administration	76,000	15,200	91,200
TOTAL	IL Cairo to Mound C Berm TD	976,169	115,317	1,091,486
122	IL Mound City Wash Prot			
122.01	Lands and Damages	34,000	2,000	36,000
122.11	Levees and Floodwalls	243,429	36,514	279,943
122.30	Planning, Engineering and Design	61,000	12,200	73,200
122.31	Supervision and Administration	30,500	6,100	36,600
TOTAL	IL Mound City Wash Prot	368,929	56,814	425,743
123	IL A. Mound City Berm TD			
123.01	Lands and Damages	250,000	17,000	267,000
123.11	Levees and Floodwalls	1,482,927	148,293	1,631,220
123.30	Planning, Engineering and Design	370,000	74,000	444,000
123.31	Supervision and Administration	185,000	37,000	222,000
TOTAL	IL A. Mound City Berm TD	2,287,927	276,293	2,564,220
124	IL Cairo Grade Raise			
124.01	Lands and Damages	1,000	0	1,000
124.11	Levees and Floodwalls	757,299	75,730	833,029

		CONTRACT COST	CONTINGN	TOTAL COST
124.30	Planning, Engineering and Design	189,000	37,800	226,800
124.31	Supervision and Administration	94,500	18,900	113,400
TOTAL	IL Cairo Grade Raise	1,041,799	132,430	1,174,229
125	IL A. Cario Par. 1 Berm TD			
125.01	Lands and Damages	275,000	22,000	297,000
125.11	Levees and Floodwalls	1,056,937	211,387	1,268,325
125.30	Planning, Engineering and Design	264,000	52,800	316,800
125.31	Supervision and Administration	132,000	26,400	158,400
TOTAL	IL A. Cario Par. 1 Berm TD	1,727,937	312,587	2,040,525
126	MO Commerce to BP Grade Raise TD			
126.01	Lands and Damages	1,684,000	241,000	1,925,000
126.11	Levees and Floodwalls	5,227,903	784,185	6,012,088
126.30	Planning, Engineering and Design	1,300,000	260,000	1,560,000
126.31	Supervision and Administration	650,000	130,000	780,000
TOTAL	MO Commerce to BP Grade Raise TD	8,861,903	1,415,185	10,277,088
127	MO Nash Berm TD			
127.01	Lands and Damages	268,000	43,000	311,000
127.11	Levees and Floodwalls	3,014,092	602,818	3,616,910
127.30	Planning, Engineering and Design	754,000	150,800	904,800
127.31	Supervision and Administration	377,000	75,400	452,400
TOTAL	MO Nash Berm TD	4,413,092	872,018	5,285,110
128	Item 22AC R, MO Drinkwater PS			
128.01	Lands and Damages	23,000	1,000	24,000
128.13	Pumping Plant	5,599,947	839,992	6,439,939
128.30	Planning, Engineering and Design	966,000	144,900	1,110,900
128.31	Construction Management	644,000	96,600	740,600
TOTAL	Item 22AC R, MO Drinkwater PS	7,232,947	1,082,492	8,315,439
129	Mitigation			
129.01	Lands and Damages	9,884,450	2,471,113	12,355,563
129.06	Fish and Wildlife Facilities	4,398,797	1,099,699	5,498,497
129.30	Planning, Engineering and Design	1,100,000	275,000	1,375,000

	CONTRACT COST	CONTINGN	TOTAL COST
129.31 Supervision and Administration	500,000	125,000	625,000
TOTAL Mitigation	15,883,247	3,970,812	19,854,059
TOTAL Mississippi River Levees Project	543,646,707	79,492,046	623,138,753

TAB 3

PLAN 4 WITH MITIGATION

Mississippi River Levees Project
Cost Estimate
For Plan 4, Avoid & Minimize

Prepared In Support Of The SEIS

Designed By: CEMVM, CEMVN, and CEMVK
Estimated By: Cost Engineering Branch

Prepared By: Cost Engineering Team Members
Vicksburg, Memphis & New Orleans

Preparation Date: 01/08/98
Effective Date of Pricing: 10/01/97

Sales Tax: 0.00%

SUMMARY REPORTS SUMMARY PAGE

PROJECT OWNER SUMMARY - Contract.....1
PROJECT OWNER SUMMARY - Feature.....4

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

		CONTRACT COST	CONTINGN	TOTAL COST
01	LOWER VENICE 2ND LIFT	535,854	107,171	643,025
02	NEW ORLEANS DISTRICT FLOODWALL	893,700	178,740	1,072,439
03	CARROLLTON LEVEE ENLARGEMENT	728,425	145,685	874,110
04	JEFFERSON HEIGHTS	283,174	56,635	339,809
05	CARVILLE TO MARCHAND	4,184,400	836,880	5,021,280
06	HOHEN-SOLMS TO MODESTE	1,140,700	228,140	1,368,840
07	ALHAMBRA TO HOHEN-SOLMS	987,600	197,520	1,185,120
08	REVEILLE TO POINT PLEASANT	2,016,676	403,335	2,420,011
09	GAP CLOSURES WEST BANK	354,616	70,923	425,539
10	GAP CLOSURES EAST BANK	528,850	105,770	634,620
11	BATON ROUGE FRONT LEVEE	136,100	27,220	163,320
12	5TH LEVEE DIST LEVEE ENLRGMNT	578,360	115,672	694,032
13	Item 357-R Vidalia-Moreville	5,622,744	799,739	6,422,483
14	Item 361-R Vidalia-Moreville	8,326,028	1,111,846	9,437,875
15	Item 365-R Vidalia-Moreville	7,323,833	964,024	8,287,857
16	Item 366-R Up Concordia-Vidalia	6,328,552	784,816	7,113,368
17	Item 367-R Up Concordia-Vidalia	8,271,995	915,864	9,187,859
18	Item 368-R Waterproof-Concordia	8,304,931	982,161	9,287,092
19	Item 370-R Waterproof-Concordia	5,059,917	763,080	5,822,997
20	Item 374-R Waterproof-Concordia	5,676,013	895,982	6,571,995
21	Item 377-R Waterproof-Concordia	5,419,926	775,802	6,195,728
22	Item 380-R St. Joseph-Waterproof	4,921,939	709,797	5,631,735
23	Item 385-R St. Joseph-Waterproof	4,646,436	724,754	5,371,190
24	Item 388-R St. Joseph-Waterproof	4,440,637	691,752	5,132,389
25	Item 393-R St. Joseph-Waterproof	6,575,077	886,496	7,461,573
26	Item 398-R Yucatan-Lake Bruin	6,944,040	939,410	7,883,451
27	Item 401-R Yucatan-Lake Bruin	5,735,686	790,520	6,526,206
28	Item 407-R Pt. Pleasant-Yucatan	5,509,846	782,296	6,292,142
29	Item 409-R Pt. Pleasant-Yucatan	5,071,912	726,390	5,798,302
30	Item 411-R Pt. Pleasant-Yucatan	4,383,604	670,955	5,054,559
31	Item 414-R Bayou Vidal-Elkridge	5,710,271	754,610	6,464,880
32	Item 416-R Bayou Vidal-Elkridge	5,325,258	726,009	6,051,267
33	Item 419-R Bayou Vidal-Elkridge	8,274,616	1,004,477	9,279,093
34	Item 421-R Bayou Vidal-Elkridge	6,270,530	814,248	7,084,778
35	Item 422-R Reid Bedford-King	4,651,476	679,239	5,330,716
36	Item 424-R Reid Bedford-King	7,048,195	954,788	8,002,983
37	Item 428-R Reid Bedford-King	4,170,293	662,859	4,833,153
38	Item 445-R Willow Pt.-Youngs Pt.	5,565,052	805,050	6,370,101
39	Item 450-R Willow Pt.-Youngs Pt.	6,251,495	865,984	7,117,479
40	Item 452-L Brunswick-Halpino	5,431,628	704,866	6,136,494
41	Item 453-R Willow Pt.-Youngs Pt.	8,561,442	1,128,493	9,689,935
42	Item 457-R Willow Pt.-Youngs Pt.	9,400,240	785,946	10,186,187
43	Item 458-L Brunswick-Halpino	4,567,784	659,815	5,227,599
44	Item 460-L Brunswick-Halpino	4,773,153	678,070	5,451,223
45	Item 461-R Willow Pt.-Youngs Pt.	7,737,086	1,089,069	8,826,155
46	Item 462-L Magna Vista-Brunswick	3,934,538	542,194	4,476,733
47	Item 463-L Magna Vista-Brunswick	4,946,526	581,746	5,528,272
48	Item 465-L Magna Vista-Brunswick	4,461,037	616,145	5,077,182
49	Item 467-L Magna Vista-Brunswick	5,185,554	609,074	5,794,628
50	Item 477-L Tallula-Magna Vista	9,703,763	1,242,709	10,946,473
51	Item 471-L Tallula-Magna Vista	8,455,571	1,118,844	9,574,415

		CONTRACT COST	CONTINGN	TOTAL COST
52	Item 480-R Wilson Pt.-Pt Lookout	9,101,179	1,258,734	10,359,913
53	Item 481-L Carlisle-Tallula	7,351,722	1,011,354	8,363,076
54	Item 483-R Wilson Pt.-Pt Lookout	4,294,060	560,000	4,854,060
55	Item 485-R Wilson Pt.-Pt Lookout	6,252,568	664,429	6,916,997
56	Item 486-L Carlisle-Tallula	4,297,589	433,990	4,731,579
57	Item 487-R Wilson Pt.-Pt Lookout	6,018,444	799,266	6,817,710
58	Item 489-R Wilson Pt.-Pt Lookout	5,994,425	826,555	6,820,979
59	Item 490-L Carlisle-Tallula	4,305,509	429,979	4,735,488
60	Item 493-L Valewood-Carlisle	4,545,298	636,114	5,181,412
61	Item 495-L Valewood-Carlisle	7,409,158	975,434	8,384,592
62	Item 497-L Valewood-Carlisle	4,449,044	587,933	5,036,977
63	Item 498-L Valewood-Carlisle	4,505,491	537,936	5,043,427
64	Item 502-L Carolina-Valewood	9,629,721	1,173,463	10,803,185
65	Item 503-R State Line-Wilson Pt.	7,329,424	1,024,588	8,354,013
66	Item 506-R State Line-Wilson Pt.	7,403,309	932,729	8,336,038
67	Item 509-L Lake Jackson-Palmetto	5,104,780	752,626	5,857,406
68	Item 511-L Lake Jackson-Palmetto	2,797,416	450,965	3,248,381
69	Item 520-R AboveLakeport-Harwood	4,293,245	626,206	4,919,451
70	Item 521-L James-Longwood	6,353,758	927,275	7,281,033
71	Item 524-L Avon-Longwood	3,550,990	559,387	4,110,377
72	Item 525-L Avon	1,592,836	255,100	1,847,936
73	Item 525-R AboveLakeport-Harwood	4,685,412	715,442	5,400,853
74	Item 526-L Avon	1,475,202	239,119	1,714,321
75	Item 528-R AboveLakeport-Harwood	5,447,831	767,222	6,215,052
76	Item 531-L Refuge	1,789,301	408,916	2,198,217
77	Item 531-R Sunnyside	4,533,868	769,133	5,303,001
78	Item 531.5-L-A Deerfield	1,749,730	275,322	2,025,052
79	Item 536-R Leland-Vancluse	4,526,329	972,935	5,499,265
80	Item 538-L Warfield	594,033	121,509	715,542
81	Item 540-L Lagrange	1,650,031	295,702	1,945,732
82	Item 541-R Luna-Leland	5,279,349	814,714	6,094,063
83	Item 543-L Above Greenville	3,468,292	575,567	4,043,859
84	Item 543-R Panther Forest	1,206,717	214,109	1,420,826
85	Item 546-R Gaines Landing	2,314,198	401,037	2,715,235
86	Item 548-R Dewey	787,940	151,012	938,952
87	Item 555-R Below Arkansas City	736,957	145,803	882,760
88	Item 570-L Below Catfish Point	2,092,308	352,789	2,445,097
89	Item 571-L Catfish Point	1,036,974	190,145	1,227,119
90	Item 575-L Upper Lake Bolivar	814,566	153,801	968,368
91	Item 576-R Cypress Creek	2,110,627	366,222	2,476,850
92	Item 585-L Riverton	1,620,875	290,676	1,911,551
93	Item 589-L Rosedale	595,666	120,215	715,881
94	Item 607-L Sledge-Waxhaw	876,841	161,360	1,038,200
95	Item 611-L Deeson	1,489,898	274,110	1,764,008
96	Item 614-L Round Lake	1,304,809	228,750	1,533,559
97	Item 616-L Fransis	2,090,558	345,521	2,436,079
98	Item 606R, AR Henrico Berm	4,002,030	753,356	4,755,385
99	Item 612R, AR Knowlton Berm	1,538,620	278,436	1,817,056
100	Item 628L, MS Hillhouse R. Wells	5,966,961	1,087,798	7,054,759
101	Item 670L, MS Trotters Berm	5,360,830	615,815	5,976,645
102	Item 675L, MS Austin R. Wells	2,323,330	417,497	2,740,827

		CONTRACT COST	CONTINGN	TOTAL COST
103	Item 716R, AR Blue Lake R. Wells	3,206,785	600,163	3,806,948
104	Item719R,AR Louise Berm/Pit fill	1,018,671	182,100	1,200,771
105	Item 766R, AR Pecan Pt. Berm	8,137,722	931,391	9,069,113
106	Item 782R, AR Butler Berm	2,355,843	281,863	2,637,706
107	Itm833R,MO Baders-Cottonw'd Berm	21,078,427	2,497,452	23,575,879
108	Item 841L, TN Miston Berm	712,529	124,204	836,733
109	It843R,MO S. Caruthersville Berm	6,839,794	1,277,384	8,117,178
110	Item 892R, MO Hubbard Lake Berm	5,301,580	997,444	6,299,024
111	Item 905L, TN Phillipy Berm	310,170	55,770	365,940
112	Item910R,MO Barnes Ridge R.Wells	21,904,629	3,957,064	25,861,694
113	Item 913R, MO Bayouville Berm	5,378,720	1,004,292	6,383,012
114	Item 915R, KY Island 8 R. Wells	5,327,421	982,879	6,310,301
115	Item 916R, MO BPNM Pit Drain	845,117	104,417	949,534
116	Item929R,MO Ab.Dorena Par 1 Berm	2,196,890	406,479	2,603,370
117	Item929R,MO Ab.Dorena Par 2 Berm	914,747	167,281	1,082,027
118	Item929R,MO Ab.Dorena Par 3 Berm	1,063,734	189,230	1,252,964
119	Item 946R, MO Samos Berm	1,470,735	263,177	1,733,912
120	Item957R,IL Cairo Floodwall Berm	930,278	168,114	1,098,392
121	Item 961R, IL Cairo - Mound C	1,240,951	232,987	1,473,937
122	Item963R,IL Mound City Wash Prot	347,414	49,012	396,426
123	Item 965R, IL A. Mound City	4,700,627	875,622	5,576,249
124	IL Cairo Grade Rse	819,299	84,880	904,179
125	ItemL10AC,IL A. Cario Par.1 Berm	1,710,819	297,554	2,008,373
126	Item 22AC R, MO Drinkwater PS	7,232,947	1,082,492	8,315,439
127	It33ACR,MO Commerce - BP Gra Rse	11,063,534	1,658,580	12,722,114
128	Item 48R AC,MO Nash Berm R.Wells	3,582,421	652,586	4,235,006
129	Mitigation	7,328,725	1,832,181	9,160,907
TOTAL	Mississippi River Levees Project	568,427,655	83,298,307	651,725,962

	CONTRACT COST	CONTINGN	TOTAL COST
01 LOWER VENICE 2ND LIFT			
01.11 LOWER VENICE 2ND LIFT	419,154	83,831	502,985
01.30 PLANNING, ENGINEERING & DESIGN	66,300	13,260	79,560
01.31 CONSTRUCTION MANAGEMENT	50,400	10,080	60,480
TOTAL LOWER VENICE 2ND LIFT	535,854	107,171	643,025
02 NEW ORLEANS DISTRICT FLOODWALL			
02.11 NEW ORLEANS DISTRICT FLOODWALL	734,500	146,900	881,399
02.30 PLANNING, ENGINEERING & DESIGN	71,000	14,200	85,200
02.31 CONSTRUCTION MANAGEMENT	88,200	17,640	105,840
TOTAL NEW ORLEANS DISTRICT FLOODWALL	893,700	178,740	1,072,439
03 CARROLLTON LEVEE ENLARGEMENT			
03.11 CARROLLTON LEVEE ENLARGEMENT	562,525	112,505	675,030
03.30 PLANNING, ENGINEERING & DESIGN	98,400	19,680	118,080
03.31 CONSTRUCTION MANAGEMENT	67,500	13,500	81,000
TOTAL CARROLLTON LEVEE ENLARGEMENT	728,425	145,685	874,110
04 JEFFERSON HEIGHTS			
04.11 JEFFERSON HEIGHTS	187,874	37,575	225,449
04.30 PLANNING, ENGINEERING & DESIGN	72,800	14,560	87,360
04.31 CONSTRUCTION MANAGEMENT	22,500	4,500	27,000
TOTAL JEFFERSON HEIGHTS	283,174	56,635	339,809
05 CARVILLE TO MARCHAND			
05.11 CARVILLE TO MARCHAND	3,642,700	728,540	4,371,240
05.30 PLANNING, ENGINEERING & DESIGN	104,600	20,920	125,520
05.31 CONSTRUCTION MANAGEMENT	437,100	87,420	524,520
TOTAL CARVILLE TO MARCHAND	4,184,400	836,880	5,021,280
06 HOHEN-SOLMS TO MODESTE			
06.11 HOHEN-SOLMS TO MODESTE	925,800	185,160	1,110,960
06.30 PLANNING, ENGINEERING & DESIGN	103,900	20,780	124,680

		CONTRACT COST	CONTINGN	TOTAL COST
06.31	CONSTRUCTION MANAGEMENT	111,000	22,200	133,200
	TOTAL HOHEN-SOLMS TO MODESTE	1,140,700	228,140	1,368,840
07	ALHAMBRA TO HOHEN-SOLMS			
07.11	ALHAMBRA TO HOHEN-SOLMS	817,200	163,440	980,640
07.30	PLANNING, ENGINEERING & DESIGN	72,300	14,460	86,760
07.31	CONSTRUCTION MANAGEMENT	98,100	19,620	117,720
	TOTAL ALHAMBRA TO HOHEN-SOLMS	987,600	197,520	1,185,120
08	REVEILLE TO POINT PLEASANT			
08.11	REVEILLE TO POINT PLEASANT	1,732,776	346,555	2,079,331
08.30	PLANNING, ENGINEERING & DESIGN	76,000	15,200	91,200
08.31	CONSTRUCTION MANAGEMENT	207,900	41,580	249,480
	TOTAL REVEILLE TO POINT PLEASANT	2,016,676	403,335	2,420,011
09	GAP CLOSURES WEST BANK			
09.11	GAP CLOSURES WEST BANK	259,576	51,915	311,491
09.30	PLANNING, ENGINEERING & DESIGN	63,900	12,780	76,680
09.31	CONSTRUCTION MANAGEMENT	31,140	6,228	37,368
	TOTAL GAP CLOSURES WEST BANK	354,616	70,923	425,539
10	GAP CLOSURES EAST BANK			
10.11	GAP CLOSURES EAST BANK	413,150	82,630	495,780
10.30	PLANNING, ENGINEERING & DESIGN	66,200	13,240	79,440
10.31	CONSTRUCTION MANAGEMENT	49,500	9,900	59,400
	TOTAL GAP CLOSURES EAST BANK	528,850	105,770	634,620
11	BATON ROUGE FRONT LEVEE			
11.11	BATON ROUGE FRONT LEVEE	67,060	13,412	80,472
11.30	PLANNING, ENGINEERING & DESIGN	61,000	12,200	73,200
11.31	CONSTRUCTION MANAGEMENT	8,040	1,608	9,648
	TOTAL BATON ROUGE FRONT LEVEE	136,100	27,220	163,320
12	5TH LEVEE DIST LEVEE ENLRGMNT			

		CONTRACT COST	CONTINGN	TOTAL COST
12.11	5TH LEVEE DIST LEVEE ENLRGMNT	465,500	93,100	558,600
12.30	PLANNING, ENGINEERING & DESIGN	57,000	11,400	68,400
12.31	CONSTRUCTION MANAGEMENT	55,860	11,172	67,032
TOTAL	5TH LEVEE DIST LEVEE ENLRGMNT	578,360	115,672	694,032
13	Item 357-R Vidalia-Moreville			
13.01	Lands and Damages	134,200	29,800	164,000
13.02	Relocations	5,000	1,250	6,250
13.11	Levees and Floodwalls	4,241,662	458,219	4,699,881
13.30	Planning, Engineering and Design	779,186	194,797	973,983
13.31	Supervision and Administration	462,696	115,674	578,370
TOTAL	Item 357-R Vidalia-Moreville	5,622,744	799,739	6,422,483
14	Item 361-R Vidalia-Moreville			
14.01	Lands and Damages	367,700	83,300	451,000
14.02	Relocations	15,000	3,750	18,750
14.11	Levees and Floodwalls	6,658,302	703,540	7,361,842
14.30	Planning, Engineering and Design	784,726	196,182	980,908
14.31	Supervision and Administration	500,300	125,075	625,375
TOTAL	Item 361-R Vidalia-Moreville	8,326,028	1,111,846	9,437,875
15	Item 365-R Vidalia-Moreville			
15.01	Lands and Damages	203,900	43,100	247,000
15.02	Relocations	5,000	1,250	6,250
15.11	Levees and Floodwalls	6,027,636	647,850	6,675,486
15.30	Planning, Engineering and Design	750,797	187,699	938,496
15.31	Supervision and Administration	336,500	84,125	420,625
TOTAL	Item 365-R Vidalia-Moreville	7,323,833	964,024	8,287,857
16	Item 366-R Up Concordia-Vidalia			
16.01	Lands and Damages	153,200	31,800	185,000
16.02	Relocations	41,000	10,250	51,250
16.11	Levees and Floodwalls	4,912,041	437,188	5,349,229
16.30	Planning, Engineering and Design	896,167	224,042	1,120,209
16.31	Supervision and Administration	326,144	81,536	407,680
TOTAL	Item 366-R Up Concordia-Vidalia	6,328,552	784,816	7,113,368

		CONTRACT COST	CONTINGN	TOTAL COST
17	Item 367-R Up Concordia-Vidalia			
17.01	Lands and Damages	362,500	83,500	446,000
17.02	Relocations	18,000	4,500	22,500
17.11	Levees and Floodwalls	6,351,709	442,917	6,794,627
17.30	Planning, Engineering and Design	987,499	246,875	1,234,374
17.31	Supervision and Administration	552,287	138,072	690,359
TOTAL	Item 367-R Up Concordia-Vidalia	8,271,995	915,864	9,187,859
18	Item 368-R Waterproof-Concordia			
18.01	Lands and Damages	162,800	23,875	186,675
18.02	Relocations	225,000	56,250	281,250
18.11	Levees and Floodwalls	6,549,785	560,199	7,109,984
18.30	Planning, Engineering and Design	961,846	240,462	1,202,308
18.31	Supervision and Administration	405,500	101,375	506,875
TOTAL	Item 368-R Waterproof-Concordia	8,304,931	982,161	9,287,092
19	Item 370-R Waterproof-Concordia			
19.01	Lands and Damages	140,900	27,100	168,000
19.02	Relocations	60,000	15,000	75,000
19.11	Levees and Floodwalls	3,520,215	386,279	3,906,495
19.30	Planning, Engineering and Design	915,209	228,802	1,144,011
19.31	Supervision and Administration	423,593	105,898	529,491
TOTAL	Item 370-R Waterproof-Concordia	5,059,917	763,080	5,822,997
20	Item 374-R Waterproof-Concordia			
20.01	Lands and Damages	138,400	27,600	166,000
20.02	Relocations	613,000	153,250	766,250
20.11	Levees and Floodwalls	3,656,059	397,994	4,054,053
20.30	Planning, Engineering and Design	897,548	224,387	1,121,935
20.31	Supervision and Administration	371,006	92,752	463,758
TOTAL	Item 374-R Waterproof-Concordia	5,676,013	895,982	6,571,995
21	Item 377-R Waterproof-Concordia			
21.01	Lands and Damages	200,000	40,000	240,000
21.11	Levees and Floodwalls	4,008,302	432,896	4,441,198
21.30	Planning, Engineering and Design	848,708	212,177	1,060,885
21.31	Supervision and Administration	362,916	90,729	453,645

		CONTRACT COST	CONTINGN	TOTAL COST
	TOTAL Item 377-R Waterproof-Concordia	5,419,926	775,802	6,195,728
22	Item 380-R St. Joseph-Waterproof			
22.01	Lands and Damages	127,900	29,100	157,000
22.02	Relocations	36,000	9,000	45,000
22.11	Levees and Floodwalls	3,688,693	404,360	4,093,053
22.30	Planning, Engineering and Design	708,146	177,037	885,183
22.31	Supervision and Administration	361,200	90,300	451,500
	TOTAL Item 380-R St. Joseph-Waterproof	4,921,939	709,797	5,631,735
23	Item 385-R St. Joseph-Waterproof			
23.01	Lands and Damages	218,400	48,600	267,000
23.02	Relocations	248,000	62,000	310,000
23.11	Levees and Floodwalls	3,189,291	366,468	3,555,759
23.30	Planning, Engineering and Design	724,308	181,077	905,385
23.31	Supervision and Administration	266,437	66,609	333,046
	TOTAL Item 385-R St. Joseph-Waterproof	4,646,436	724,754	5,371,190
24	Item 388-R St. Joseph-Waterproof			
24.01	Lands and Damages	150,800	34,200	185,000
24.02	Relocations	300,000	75,000	375,000
24.11	Levees and Floodwalls	3,000,087	335,114	3,335,202
24.30	Planning, Engineering and Design	668,390	167,098	835,488
24.31	Supervision and Administration	321,360	80,340	401,700
	TOTAL Item 388-R St. Joseph-Waterproof	4,440,637	691,752	5,132,389
25	Item 393-R St. Joseph-Waterproof			
25.01	Lands and Damages	218,800	49,200	268,000
25.02	Relocations	91,000	22,750	113,750
25.11	Levees and Floodwalls	5,303,224	574,033	5,877,257
25.30	Planning, Engineering and Design	709,497	177,374	886,871
25.31	Supervision and Administration	252,556	63,139	315,695
	TOTAL Item 393-R St. Joseph-Waterproof	6,575,077	886,496	7,461,573
26	Item 398-R Yucatan-Lake Bruin			
26.01	Lands and Damages	212,800	43,200	256,000
26.02	Relocations	34,000	8,500	42,500

		CONTRACT COST	CONTINGN	TOTAL COST
26.11	Levees and Floodwalls	5,543,697	599,325	6,143,022
26.30	Planning, Engineering and Design	836,807	209,202	1,046,009
26.31	Supervision and Administration	316,736	79,184	395,920
TOTAL	Item 398-R Yucatan-Lake Bruin	6,944,040	939,410	7,883,451
27	Item 401-R Yucatan-Lake Bruin			
27.01	Lands and Damages	105,300	18,700	124,000
27.11	Levees and Floodwalls	4,426,710	470,901	4,897,611
27.30	Planning, Engineering and Design	829,876	207,469	1,037,345
27.31	Supervision and Administration	373,800	93,450	467,250
TOTAL	Item 401-R Yucatan-Lake Bruin	5,735,686	790,520	6,526,206
28	Item 407-R Pt. Pleasant-Yucatan			
28.01	Lands and Damages	242,900	47,100	290,000
28.02	Relocations	8,000	2,000	10,000
28.11	Levees and Floodwalls	4,237,120	477,740	4,714,860
28.30	Planning, Engineering and Design	788,348	197,087	985,435
28.31	Supervision and Administration	233,478	58,370	291,848
TOTAL	Item 407-R Pt. Pleasant-Yucatan	5,509,846	782,296	6,292,142
29	Item 409-R Pt. Pleasant-Yucatan			
29.01	Lands and Damages	175,600	38,150	213,750
29.11	Levees and Floodwalls	3,865,564	430,553	4,296,117
29.30	Planning, Engineering and Design	789,358	197,340	986,698
29.31	Supervision and Administration	241,390	60,348	301,738
TOTAL	Item 409-R Pt. Pleasant-Yucatan	5,071,912	726,390	5,798,302
30	Item 411-R Pt. Pleasant-Yucatan			
30.01	Lands and Damages	151,000	30,000	181,000
30.02	Relocations	30,000	7,500	37,500
30.11	Levees and Floodwalls	3,069,305	350,131	3,419,436
30.30	Planning, Engineering and Design	820,699	205,175	1,025,874
30.31	Supervision and Administration	312,600	78,150	390,750
TOTAL	Item 411-R Pt. Pleasant-Yucatan	4,383,604	670,955	5,054,559
31	Item 414-R Bayou Vidal-Elkridge			

		CONTRACT COST	CONTINGN	TOTAL COST
31.01	Lands and Damages	99,700	16,300	116,000
31.02	Relocations	41,000	10,250	51,250
31.11	Levees and Floodwalls	4,647,205	497,468	5,144,673
31.30	Planning, Engineering and Design	645,626	161,407	807,033
31.31	Supervision and Administration	276,740	69,185	345,925
TOTAL	Item 414-R Bayou Vidal-Elkridge	5,710,271	754,610	6,464,880
32	Item 416-R Bayou Vidal-Elkridge			
32.01	Lands and Damages	131,500	24,500	156,000
32.02	Relocations	50,000	12,500	62,500
32.11	Levees and Floodwalls	4,235,132	461,852	4,696,985
32.30	Planning, Engineering and Design	644,626	161,157	805,783
32.31	Supervision and Administration	264,000	66,000	330,000
TOTAL	Item 416-R Bayou Vidal-Elkridge	5,325,258	726,009	6,051,267
33	Item 419-R Bayou Vidal-Elkridge			
33.01	Lands and Damages	71,700	11,300	83,000
33.02	Relocations	5,000	1,250	6,250
33.11	Levees and Floodwalls	7,283,287	763,270	8,046,557
33.30	Planning, Engineering and Design	644,563	161,141	805,704
33.31	Supervision and Administration	270,066	67,517	337,583
TOTAL	Item 419-R Bayou Vidal-Elkridge	8,274,616	1,004,477	9,279,093
34	Item 421-R Bayou Vidal-Elkridge			
34.01	Lands and Damages	109,200	19,800	129,000
34.02	Relocations	58,000	14,500	72,500
34.11	Levees and Floodwalls	5,192,701	552,290	5,744,991
34.30	Planning, Engineering and Design	631,965	157,991	789,956
34.31	Supervision and Administration	278,664	69,666	348,330
TOTAL	Item 421-R Bayou Vidal-Elkridge	6,270,530	814,248	7,084,778
35	Item 422-R Reid Bedford-King			
35.01	Lands and Damages	105,300	21,700	127,000
35.02	Relocations	45,000	11,250	56,250
35.11	Levees and Floodwalls	3,472,450	389,108	3,861,558
35.30	Planning, Engineering and Design	780,426	195,107	975,533
35.31	Supervision and Administration	248,300	62,075	310,375
TOTAL	Item 422-R Reid Bedford-King	4,651,476	679,239	5,330,716

		CONTRACT COST	CONTINGN	TOTAL COST
36	Item 424-R Reid Bedford-King			
36.01	Lands and Damages	164,000	35,000	199,000
36.11	Levees and Floodwalls	5,703,771	624,682	6,328,453
36.30	Planning, Engineering and Design	829,442	207,361	1,036,803
36.31	Supervision and Administration	350,982	87,746	438,728
TOTAL	Item 424-R Reid Bedford-King	7,048,195	954,788	8,002,983
37	Item 428-R Reid Bedford-King			
37.01	Lands and Damages	218,800	47,200	266,000
37.02	Relocations	41,000	10,250	51,250
37.11	Levees and Floodwalls	2,785,124	324,067	3,109,191
37.30	Planning, Engineering and Design	831,156	207,789	1,038,945
37.31	Supervision and Administration	294,213	73,553	367,766
TOTAL	Item 428-R Reid Bedford-King	4,170,293	662,859	4,833,153
38	Item 445-R Willow Pt.-Youngs Pt.			
38.01	Lands and Damages	187,400	40,600	228,000
38.11	Levees and Floodwalls	4,172,893	463,260	4,636,152
38.30	Planning, Engineering and Design	808,959	202,240	1,011,199
38.31	Supervision and Administration	395,800	98,950	494,750
TOTAL	Item 445-R Willow Pt.-Youngs Pt.	5,565,052	805,050	6,370,101
39	Item 450-R Willow Pt.-Youngs Pt.			
39.01	Lands and Damages	144,000	32,000	176,000
39.02	Relocations	25,000	6,250	31,250
39.11	Levees and Floodwalls	4,905,818	533,564	5,439,382
39.30	Planning, Engineering and Design	769,209	192,302	961,511
39.31	Supervision and Administration	407,468	101,867	509,335
TOTAL	Item 450-R Willow Pt.-Youngs Pt.	6,251,495	865,984	7,117,479
40	Item 452-L Brunswick-Halpino			
40.01	Lands and Damages	92,100	18,900	111,000
40.11	Levees and Floodwalls	4,024,812	357,287	4,382,099
40.30	Planning, Engineering and Design	864,396	216,099	1,080,495
40.31	Supervision and Administration	450,320	112,580	562,900
TOTAL	Item 452-L Brunswick-Halpino	5,431,628	704,866	6,136,494

		CONTRACT COST	CONTINGN	TOTAL COST
41	Item 453-R Willow Pt.-Youngs Pt.			
41.01	Lands and Damages	293,600	66,400	360,000
41.11	Levees and Floodwalls	7,041,412	755,486	7,796,898
41.30	Planning, Engineering and Design	808,795	202,199	1,010,994
41.31	Supervision and Administration	417,635	104,409	522,044
TOTAL	Item 453-R Willow Pt.-Youngs Pt.	8,561,442	1,128,493	9,689,935
42	Item 457-R Willow Pt.-Youngs Pt.			
42.01	Lands and Damages	206,500	42,500	249,000
42.02	Relocations	214,000	53,500	267,500
42.11	Levees and Floodwalls	7,664,934	361,245	8,026,179
42.30	Planning, Engineering and Design	820,613	205,153	1,025,766
42.31	Supervision and Administration	494,193	123,548	617,741
TOTAL	Item 457-R Willow Pt.-Youngs Pt.	9,400,240	785,946	10,186,187
43	Item 458-L Brunswick-Halpino			
43.01	Lands and Damages	165,200	33,800	199,000
43.02	Relocations	5,000	1,250	6,250
43.11	Levees and Floodwalls	3,435,645	384,280	3,819,925
43.30	Planning, Engineering and Design	690,328	172,582	862,910
43.31	Supervision and Administration	271,611	67,903	339,514
TOTAL	Item 458-L Brunswick-Halpino	4,567,784	659,815	5,227,599
44	Item 460-L Brunswick-Halpino			
44.01	Lands and Damages	126,100	23,900	150,000
44.02	Relocations	23,000	5,750	28,750
44.11	Levees and Floodwalls	3,663,072	408,175	4,071,247
44.30	Planning, Engineering and Design	690,478	172,620	863,098
44.31	Supervision and Administration	270,503	67,626	338,129
TOTAL	Item 460-L Brunswick-Halpino	4,773,153	678,070	5,451,223
45	Item 461-R Willow Pt.-Youngs Pt.			
45.01	Lands and Damages	329,200	74,800	404,000
45.11	Levees and Floodwalls	6,033,010	670,550	6,703,560
45.30	Planning, Engineering and Design	832,580	208,145	1,040,725
45.31	Supervision and Administration	542,296	135,574	677,870
TOTAL	Item 461-R Willow Pt.-Youngs Pt.	7,737,086	1,089,069	8,826,155

		CONTRACT COST	CONTINGN	TOTAL COST
46	Item 462-L Magna Vista-Brunswick			
46.01	Lands and Damages	13,400	600	14,000
46.02	Relocations	5,000	1,250	6,250
46.11	Levees and Floodwalls	2,793,621	259,715	3,053,336
46.30	Planning, Engineering and Design	787,429	196,857	984,286
46.31	Supervision and Administration	335,088	83,772	418,860
TOTAL	Item 462-L Magna Vista-Brunswick	3,934,538	542,194	4,476,733
47	Item 463-L Magna Vista-Brunswick			
47.01	Lands and Damages	34,500	7,500	42,000
47.02	Relocations	5,000	1,250	6,250
47.11	Levees and Floodwalls	3,675,154	265,028	3,940,182
47.30	Planning, Engineering and Design	859,879	214,970	1,074,849
47.31	Supervision and Administration	371,993	92,998	464,991
TOTAL	Item 463-L Magna Vista-Brunswick	4,946,526	581,746	5,528,272
48	Item 465-L Magna Vista-Brunswick			
48.01	Lands and Damages	72,000	16,000	88,000
48.02	Relocations	5,000	1,250	6,250
48.11	Levees and Floodwalls	3,029,831	260,343	3,290,175
48.30	Planning, Engineering and Design	927,599	231,900	1,159,499
48.31	Supervision and Administration	426,607	106,652	533,259
TOTAL	Item 465-L Magna Vista-Brunswick	4,461,037	616,145	5,077,182
49	Item 467-L Magna Vista-Brunswick			
49.01	Lands and Damages	14,400	1,600	16,000
49.02	Relocations	5,000	1,250	6,250
49.11	Levees and Floodwalls	3,919,690	294,608	4,214,298
49.30	Planning, Engineering and Design	876,464	219,116	1,095,580
49.31	Supervision and Administration	370,000	92,500	462,500
TOTAL	Item 467-L Magna Vista-Brunswick	5,185,554	609,074	5,794,628
50	Item 477-L Tallula-Magna Vista			
50.01	Lands and Damages	206,400	44,600	251,000
50.02	Relocations	321,000	80,250	401,250
50.11	Levees and Floodwalls	8,395,495	922,642	9,318,138
50.30	Planning, Engineering and Design	492,982	123,246	616,228

		CONTRACT COST	CONTINGN	TOTAL COST
50.31	Supervision and Administration	287,886	71,972	359,858
TOTAL	Item 477-L Tallula-Magna Vista	9,703,763	1,242,709	10,946,473
51	Item 471-L Tallula-Magna Vista			
51.01	Lands and Damages	300,400	63,600	364,000
51.02	Relocations	150,000	37,500	187,500
51.11	Levees and Floodwalls	7,207,955	818,440	8,026,395
51.30	Planning, Engineering and Design	515,390	128,848	644,238
51.31	Supervision and Administration	281,826	70,457	352,283
TOTAL	Item 471-L Tallula-Magna Vista	8,455,571	1,118,844	9,574,415
52	Item 480-R Wilson Pt.-Pt Lookout			
52.01	Lands and Damages	306,800	66,200	373,000
52.02	Relocations	385,000	96,250	481,250
52.11	Levees and Floodwalls	7,082,101	764,464	7,846,565
52.30	Planning, Engineering and Design	813,205	203,301	1,016,506
52.31	Supervision and Administration	514,073	128,518	642,591
TOTAL	Item 480-R Wilson Pt.-Pt Lookout	9,101,179	1,258,734	10,359,913
53	Item 481-L Carlisle-Tallula			
53.01	Lands and Damages	214,000	50,000	264,000
53.02	Relocations	160,000	40,000	200,000
53.11	Levees and Floodwalls	5,844,308	638,001	6,482,309
53.30	Planning, Engineering and Design	780,214	195,054	975,268
53.31	Supervision and Administration	353,200	88,300	441,500
TOTAL	Item 481-L Carlisle-Tallula	7,351,722	1,011,354	8,363,076
54	Item 483-R Wilson Pt.-Pt Lookout			
54.01	Lands and Damages	125,600	26,400	152,000
54.02	Relocations	15,000	3,750	18,750
54.11	Levees and Floodwalls	3,642,410	402,088	4,044,498
54.30	Planning, Engineering and Design	245,130	61,283	306,413
54.31	Supervision and Administration	265,920	66,480	332,400
TOTAL	Item 483-R Wilson Pt.-Pt Lookout	4,294,060	560,000	4,854,060
55	Item 485-R Wilson Pt.-Pt Lookout			

		CONTRACT COST	CONTINGN	TOTAL COST
55.01	Lands and Damages	97,900	21,100	119,000
55.02	Relocations	94,000	23,500	117,500
55.11	Levees and Floodwalls	4,894,386	328,258	5,222,645
55.30	Planning, Engineering and Design	693,410	173,353	866,763
55.31	Supervision and Administration	472,872	118,218	591,090
TOTAL	Item 485-R Wilson Pt.-Pt Lookout	6,252,568	664,429	6,916,997
56	Item 486-L Carlisle-Tallula			
56.01	Lands and Damages	155,400	34,600	190,000
56.02	Relocations	58,000	14,500	72,500
56.11	Levees and Floodwalls	3,070,416	131,446	3,201,863
56.30	Planning, Engineering and Design	701,066	175,267	876,333
56.31	Supervision and Administration	312,707	78,177	390,884
TOTAL	Item 486-L Carlisle-Tallula	4,297,589	433,990	4,731,579
57	Item 487-R Wilson Pt.-Pt Lookout			
57.01	Lands and Damages	172,800	31,200	204,000
57.02	Relocations	10,000	2,500	12,500
57.11	Levees and Floodwalls	4,919,164	536,446	5,455,610
57.30	Planning, Engineering and Design	610,450	152,613	763,063
57.31	Supervision and Administration	306,030	76,508	382,538
TOTAL	Item 487-R Wilson Pt.-Pt Lookout	6,018,444	799,266	6,817,710
58	Item 489-R Wilson Pt.-Pt Lookout			
58.01	Lands and Damages	373,000	83,000	456,000
58.02	Relocations	70,000	17,500	87,500
58.11	Levees and Floodwalls	4,869,105	555,475	5,424,579
58.30	Planning, Engineering and Design	589,320	147,330	736,650
58.31	Supervision and Administration	93,000	23,250	116,250
TOTAL	Item 489-R Wilson Pt.-Pt Lookout	5,994,425	826,555	6,820,979
59	Item 490-L Carlisle-Tallula			
59.01	Lands and Damages	109,600	23,400	133,000
59.02	Relocations	33,000	8,250	41,250
59.11	Levees and Floodwalls	3,087,761	129,542	3,217,303
59.30	Planning, Engineering and Design	762,836	190,709	953,545
59.31	Supervision and Administration	312,312	78,078	390,390
TOTAL	Item 490-L Carlisle-Tallula	4,305,509	429,979	4,735,488

	CONTRACT COST	CONTINGN	TOTAL COST
60 Item 493-L Valewood-Carlisle			
60.01 Lands and Damages	54,800	12,200	67,000
60.11 Levees and Floodwalls	3,532,193	384,338	3,916,531
60.30 Planning, Engineering and Design	625,280	156,320	781,600
60.31 Supervision and Administration	333,025	83,256	416,281
TOTAL Item 493-L Valewood-Carlisle	4,545,298	636,114	5,181,412
61 Item 495-L Valewood-Carlisle			
61.01 Lands and Damages	32,000	6,000	38,000
61.02 Relocations	163,000	40,750	203,750
61.11 Levees and Floodwalls	6,255,853	689,108	6,944,961
61.30 Planning, Engineering and Design	625,280	156,320	781,600
61.31 Supervision and Administration	333,025	83,256	416,281
TOTAL Item 495-L Valewood-Carlisle	7,409,158	975,434	8,384,592
62 Item 497-L Valewood-Carlisle			
62.01 Lands and Damages	86,000	20,000	106,000
62.02 Relocations	41,000	10,250	51,250
62.11 Levees and Floodwalls	3,363,739	318,107	3,681,846
62.30 Planning, Engineering and Design	625,280	156,320	781,600
62.31 Supervision and Administration	333,025	83,256	416,281
TOTAL Item 497-L Valewood-Carlisle	4,449,044	587,933	5,036,977
63 Item 498-L Valewood-Carlisle			
63.01 Lands and Damages	93,600	17,400	111,000
63.02 Relocations	155,000	38,750	193,750
63.11 Levees and Floodwalls	3,298,586	242,210	3,540,796
63.30 Planning, Engineering and Design	625,280	156,320	781,600
63.31 Supervision and Administration	333,025	83,256	416,281
TOTAL Item 498-L Valewood-Carlisle	4,505,491	537,936	5,043,427
64 Item 502-L Carolina-Valewood			
64.02 Relocations	5,000	1,250	6,250
64.11 Levees and Floodwalls	8,646,421	927,638	9,574,060
64.30 Planning, Engineering and Design	458,340	114,585	572,925
64.31 Supervision and Administration	519,960	129,990	649,950
TOTAL Item 502-L Carolina-Valewood	9,629,721	1,173,463	10,803,185

		CONTRACT COST	CONTINGN	TOTAL COST
65	Item 503-R State Line-Wilson Pt.			
65.01	Lands and Damages	315,000	73,000	388,000
65.02	Relocations	18,000	4,500	22,500
65.11	Levees and Floodwalls	5,782,429	643,590	6,426,019
65.30	Planning, Engineering and Design	712,227	178,057	890,284
65.31	Supervision and Administration	501,768	125,442	627,210
TOTAL	Item 503-R State Line-Wilson Pt.	7,329,424	1,024,588	8,354,013
66	Item 506-R State Line-Wilson Pt.			
66.01	Lands and Damages	207,400	43,600	251,000
66.02	Relocations	13,000	3,250	16,250
66.11	Levees and Floodwalls	6,396,859	689,367	7,086,226
66.30	Planning, Engineering and Design	342,530	85,633	428,163
66.31	Supervision and Administration	443,520	110,880	554,400
TOTAL	Item 506-R State Line-Wilson Pt.	7,403,309	932,729	8,336,038
67	Item 509-L Lake Jackson-Palmetto			
67.02	Relocations	38,000	9,500	47,500
67.11	Levees and Floodwalls	3,927,944	458,417	4,386,361
67.30	Planning, Engineering and Design	779,073	194,768	973,841
67.31	Supervision and Administration	359,763	89,941	449,704
TOTAL	Item 509-L Lake Jackson-Palmetto	5,104,780	752,626	5,857,406
68	Item 511-L Lake Jackson-Palmetto			
68.11	Levees and Floodwalls	1,858,382	216,206	2,074,589
68.30	Planning, Engineering and Design	684,034	171,009	855,043
68.31	Supervision and Administration	255,000	63,750	318,750
TOTAL	Item 511-L Lake Jackson-Palmetto	2,797,416	450,965	3,248,381
69	Item 520-R AboveLakeport-Harwood			
69.01	Lands and Damages	193,100	41,900	235,000
69.02	Relocations	5,000	1,250	6,250
69.11	Levees and Floodwalls	3,234,907	367,996	3,602,903
69.30	Planning, Engineering and Design	608,712	152,178	760,890
69.31	Supervision and Administration	251,526	62,882	314,408
TOTAL	Item 520-R AboveLakeport-Harwood	4,293,245	626,206	4,919,451

		CONTRACT COST	CONTINGN	TOTAL COST
70	Item 521-L James-Longwood			
70.01	Lands and Damages	73,400	14,600	88,000
70.02	Relocations	75,000	18,750	93,750
70.11	Levees and Floodwalls	4,888,779	564,780	5,453,559
70.30	Planning, Engineering and Design	866,522	216,631	1,083,153
70.31	Supervision and Administration	450,057	112,514	562,571
TOTAL	Item 521-L James-Longwood	6,353,758	927,275	7,281,033
71	Item 524-L Avon-Longwood			
71.01	Lands and Damages	103,400	23,600	127,000
71.02	Relocations	83,000	20,750	103,750
71.11	Levees and Floodwalls	2,426,890	280,612	2,707,502
71.30	Planning, Engineering and Design	802,946	200,737	1,003,683
71.31	Supervision and Administration	134,754	33,689	168,443
TOTAL	Item 524-L Avon-Longwood	3,550,990	559,387	4,110,377
72	Item 525-L Avon			
72.11	Levees and Floodwalls	1,081,556	127,280	1,208,836
72.30	Planning, Engineering and Design	446,072	111,518	557,590
72.31	Supervision and Administration	65,208	16,302	81,510
TOTAL	Item 525-L Avon	1,592,836	255,100	1,847,936
73	Item 525-R AboveLakeport-Harwood			
73.01	Lands and Damages	225,500	48,500	274,000
73.02	Relocations	160,000	40,000	200,000
73.11	Levees and Floodwalls	3,317,812	381,417	3,699,228
73.30	Planning, Engineering and Design	689,360	172,340	861,700
73.31	Supervision and Administration	292,740	73,185	365,925
TOTAL	Item 525-R AboveLakeport-Harwood	4,685,412	715,442	5,400,853
74	Item 526-L Avon			
74.01	Lands and Damages	47,600	10,400	58,000
74.02	Relocations	8,000	2,000	10,000
74.11	Levees and Floodwalls	940,083	106,840	1,046,923
74.30	Planning, Engineering and Design	393,839	98,460	492,299
74.31	Supervision and Administration	85,680	21,420	107,100
TOTAL	Item 526-L Avon	1,475,202	239,119	1,714,321

		CONTRACT COST	CONTINGN	TOTAL COS
75	Item 528-R AboveLakeport-Harwood			
75.01	Lands and Damages	225,400	49,600	275,000
75.02	Relocations	80,000	20,000	100,000
75.11	Levees and Floodwalls	4,257,377	476,358	4,733,735
75.30	Planning, Engineering and Design	627,100	156,775	783,875
75.31	Supervision and Administration	257,954	64,489	322,443
TOTAL	Item 528-R AboveLakeport-Harwood	5,447,831	767,222	6,215,052
76	Item 531-L Refuge			
76.02	Relocations	713,000	178,250	891,250
76.11	Levees and Floodwalls	578,214	106,145	684,358
76.30	Planning, Engineering and Design	462,987	115,747	578,734
76.31	Supervision and Administration	35,100	8,775	43,875
TOTAL	Item 531-L Refuge	1,789,301	408,916	2,198,217
77	Item 531-R Sunnyside			
77.01	Lands and Damages	178,600	37,400	216,000
77.02	Relocations	713,000	178,250	891,250
77.11	Levees and Floodwalls	2,715,804	321,867	3,037,671
77.30	Planning, Engineering and Design	675,864	168,966	844,830
77.31	Supervision and Administration	250,600	62,650	313,250
TOTAL	Item 531-R Sunnyside	4,533,868	769,133	5,303,001
78	Item 531.5-L-A Deerfield			
78.01	Lands and Damages	47,200	9,800	57,000
78.11	Levees and Floodwalls	1,169,516	132,268	1,301,785
78.30	Planning, Engineering and Design	455,494	113,874	569,368
78.31	Supervision and Administration	77,520	19,380	96,900
TOTAL	Item 531.5-L-A Deerfield	1,749,730	275,322	2,025,052
79	Item 536-R Leland-Vancluse			
79.01	Lands and Damages	146,300	24,725	171,02
79.02	Relocations	10,000	2,500	12,500
79.11	Levees and Floodwalls	2,752,399	541,303	3,293,702
79.30	Planning, Engineering and Design	979,070	244,768	1,223,838
79.31	Supervision and Administration	638,560	159,640	798,200
TOTAL	Item 536-R Leland-Vancluse	4,526,329	972,935	5,499,265

		CONTRACT COST	CONTINGN	TOTAL COST
80	Item 538-L Warfield			
80.11	Levees and Floodwalls	233,740	31,435	265,176
80.30	Planning, Engineering and Design	336,976	84,244	421,220
80.31	Supervision and Administration	23,317	5,829	29,146
TOTAL	Item 538-L Warfield	594,033	121,509	715,542
81	Item 540-L Lagrange			
81.02	Relocations	161,000	40,250	201,250
81.11	Levees and Floodwalls	832,582	91,339	923,921
81.30	Planning, Engineering and Design	511,185	127,796	638,981
81.31	Supervision and Administration	145,264	36,316	181,580
TOTAL	Item 540-L Lagrange	1,650,031	295,702	1,945,732
82	Item 541-R Luna-Leland			
82.01	Lands and Damages	367,100	85,900	453,000
82.02	Relocations	25,000	6,250	31,250
82.11	Levees and Floodwalls	3,749,824	438,208	4,188,032
82.30	Planning, Engineering and Design	796,651	199,163	995,814
82.31	Supervision and Administration	340,774	85,194	425,968
TOTAL	Item 541-R Luna-Leland	5,279,349	814,714	6,094,063
83	Item 543-L Above Greenville			
83.01	Lands and Damages	67,600	15,400	83,000
83.02	Relocations	247,000	61,750	308,750
83.11	Levees and Floodwalls	2,137,043	244,255	2,381,298
83.30	Planning, Engineering and Design	895,216	223,804	1,119,020
83.31	Supervision and Administration	121,433	30,358	151,791
TOTAL	Item 543-L Above Greenville	3,468,292	575,567	4,043,859
84	Item 543-R Panther Forest			
84.01	Lands and Damages	56,400	11,600	68,000
84.02	Relocations	5,000	1,250	6,250
84.11	Levees and Floodwalls	663,618	80,834	744,452
84.30	Planning, Engineering and Design	438,148	109,537	547,685
84.31	Supervision and Administration	43,551	10,888	54,439
TOTAL	Item 543-R Panther Forest	1,206,717	214,109	1,420,826

		CONTRACT COST	CONTINGN	TOTAL COST
85	Item 546-R Gaines Landing			
85.01	Lands and Damages	138,500	29,500	168,000
85.02	Relocations	5,000	1,250	6,250
85.11	Levees and Floodwalls	1,275,919	146,593	1,422,511
85.30	Planning, Engineering and Design	794,819	198,705	993,524
85.31	Supervision and Administration	99,960	24,990	124,950
TOTAL	Item 546-R Gaines Landing	2,314,198	401,037	2,715,235
86	Item 548-R Dewey			
86.01	Lands and Damages	44,800	7,200	52,000
86.02	Relocations	30,000	7,500	37,500
86.11	Levees and Floodwalls	329,440	40,387	369,827
86.30	Planning, Engineering and Design	356,583	89,146	445,729
86.31	Supervision and Administration	27,117	6,779	33,896
TOTAL	Item 548-R Dewey	787,940	151,012	938,952
87	Item 555-R Below Arkansas City			
87.01	Lands and Damages	40,000	6,000	46,000
87.11	Levees and Floodwalls	282,672	36,232	318,904
87.30	Planning, Engineering and Design	362,155	90,539	452,694
87.31	Supervision and Administration	52,130	13,033	65,163
TOTAL	Item 555-R Below Arkansas City	736,957	145,803	882,760
88	Item 570-L Below Catfish Point			
88.01	Lands and Damages	56,800	12,200	69,000
88.11	Levees and Floodwalls	1,236,223	140,768	1,376,991
88.30	Planning, Engineering and Design	706,174	176,544	882,718
88.31	Supervision and Administration	93,111	23,278	116,389
TOTAL	Item 570-L Below Catfish Point	2,092,308	352,789	2,445,097
89	Item 571-L Catfish Point			
89.01	Lands and Damages	30,400	5,600	36,000
89.02	Relocations	8,000	2,000	10,000
89.11	Levees and Floodwalls	528,622	65,057	593,679
89.30	Planning, Engineering and Design	438,250	109,563	547,813
89.31	Supervision and Administration	31,702	7,926	39,628
TOTAL	Item 571-L Catfish Point	1,036,974	190,145	1,227,119

	CONTRACT COST	CONTINGN	TOTAL COST
90 Item 575-L Upper Lake Bolivar			
90.02 Relocations	9,000	2,250	11,250
90.11 Levees and Floodwalls	399,833	50,118	449,951
90.30 Planning, Engineering and Design	378,013	94,503	472,516
90.31 Supervision and Administration	27,720	6,930	34,650
TOTAL Item 575-L Upper Lake Bolivar	814,566	153,801	968,368
91 Item 576-R Cypress Creek			
91.01 Lands and Damages	142,600	30,400	173,000
91.02 Relocations	48,000	12,000	60,000
91.11 Levees and Floodwalls	1,184,130	139,848	1,323,978
91.30 Planning, Engineering and Design	651,177	162,794	813,971
91.31 Supervision and Administration	84,720	21,180	105,900
TOTAL Item 576-R Cypress Creek	2,110,627	366,222	2,476,850
92 Item 585-L Riverton			
92.01 Lands and Damages	50,800	11,200	62,000
92.11 Levees and Floodwalls	908,338	114,042	1,022,379
92.30 Planning, Engineering and Design	603,497	150,874	754,371
92.31 Supervision and Administration	58,240	14,560	72,800
TOTAL Item 585-L Riverton	1,620,875	290,676	1,911,551
93 Item 589-L Rosedale			
93.01 Lands and Damages	20,000	3,000	23,000
93.02 Relocations	20,000	5,000	25,000
93.11 Levees and Floodwalls	235,481	32,169	267,650
93.30 Planning, Engineering and Design	305,105	76,276	381,381
93.31 Supervision and Administration	15,080	3,770	18,850
TOTAL Item 589-L Rosedale	595,666	120,215	715,881
94 Item 607-L Sledge-Waxhaw			
94.01 Lands and Damages	55,000	10,000	65,000
94.11 Levees and Floodwalls	449,879	58,369	508,248
94.30 Planning, Engineering and Design	342,526	85,632	428,158
94.31 Supervision and Administration	29,436	7,359	36,795
TOTAL Item 607-L Sledge-Waxhaw	876,841	161,360	1,038,200

	CONTRACT COST	CONTINGN	TOTAL COST
95 Item 611-L Deeson			
95.01 Lands and Damages	55,800	7,200	63,000
95.11 Levees and Floodwalls	669,285	75,707	744,992
95.30 Planning, Engineering and Design	685,453	171,363	856,816
95.31 Supervision and Administration	79,360	19,840	99,200
TOTAL Item 611-L Deeson	1,489,898	274,110	1,764,008
96 Item 614-L Round Lake			
96.01 Lands and Damages	80,000	16,000	96,000
96.11 Levees and Floodwalls	683,797	77,497	761,294
96.30 Planning, Engineering and Design	481,538	120,385	601,923
96.31 Supervision and Administration	59,474	14,869	74,343
TOTAL Item 614-L Round Lake	1,304,809	228,750	1,533,559
97 Item 616-L Fransis			
97.01 Lands and Damages	24,800	4,200	29,000
97.02 Relocations	8,000	2,000	10,000
97.11 Levees and Floodwalls	1,278,539	144,516	1,423,055
97.30 Planning, Engineering and Design	708,419	177,105	885,524
97.31 Supervision and Administration	70,800	17,700	88,500
TOTAL Item 616-L Fransis	2,090,558	345,521	2,436,079
98 Item 606R, AR Henrico Berm			
98.01 Lands and Damages	323,000	60,000	383,000
98.11 Levees and Floodwalls	2,830,023	566,005	3,396,027
98.30 Planning, Engineering and Design	509,404	76,411	585,815
98.31 Construction Management	339,603	50,940	390,543
TOTAL Item 606R, AR Henrico Berm	4,002,030	753,356	4,755,385
99 Item 612R, AR Knowlton Berm			
99.01 Lands and Damages	231,000	32,000	263,000
99.11 Levees and Floodwalls	1,005,862	201,172	1,207,034
99.30 Planning, Engineering and Design	181,055	27,158	208,213
99.31 Construction Management	120,703	18,105	138,808
TOTAL Item 612R, AR Knowlton Berm	1,538,620	278,436	1,817,056

	CONTRACT COST	CONTINGN	TOTAL COST
100 Item 628L, MS Hillhouse R. Wells			
100.01 Lands and Damages	206,000	25,000	231,000
100.11 Levees and Floodwalls	3,973,077	794,615	4,767,692
100.30 Planning, Engineering and Design	1,072,730	160,910	1,233,640
100.31 Construction Management	715,154	107,273	822,427
TOTAL Item 628L, MS Hillhouse R. Wells	5,966,961	1,087,798	7,054,759
101 Item 670L, MS Trotters Berm			
101.01 Lands and Damages	434,000	70,000	504,000
101.11 Levees and Floodwalls	3,864,180	386,418	4,250,598
101.30 Planning, Engineering and Design	637,590	95,638	733,229
101.31 Construction Management	425,060	63,759	488,819
TOTAL Item 670L, MS Trotters Berm	5,360,830	615,815	5,976,645
102 Item 675L, MS Austin R. Wells			
102.01 Lands and Damages	53,000	6,000	59,000
102.11 Levees and Floodwalls	1,418,956	283,791	1,702,747
102.30 Planning, Engineering and Design	510,824	76,624	587,448
102.31 Construction Management	340,550	51,083	391,633
TOTAL Item 675L, MS Austin R. Wells	2,323,330	417,497	2,740,827
103 Item 716R, AR Blue Lake R. Wells			
103.01 Lands and Damages	70,000	9,000	79,000
103.11 Levees and Floodwalls	2,412,911	482,582	2,895,493
103.30 Planning, Engineering and Design	434,324	65,149	499,473
103.31 Construction Management	289,550	43,433	332,983
TOTAL Item 716R, AR Blue Lake R. Wells	3,206,785	600,163	3,806,948
104 Item719R,AR Louise Berm/Pit fill			
104.01 Lands and Damages	201,000	28,000	229,000
104.11 Levees and Floodwalls	628,978	125,796	754,774
104.30 Planning, Engineering and Design	113,216	16,982	130,198
104.31 Construction Management	75,477	11,322	86,799
TOTAL Item719R,AR Louise Berm/Pit fill	1,018,671	182,100	1,200,771
105 Item 766R, AR Pecan Pt. Berm			

		CONTRACT COST	CONTINGN	TOTAL COST
105.01	Lands and Damages	588,000	95,000	683,000
105.11	Levees and Floodwalls	5,921,350	592,135	6,513,486
105.30	Planning, Engineering and Design	977,023	146,553	1,123,576
105.31	Construction Management	651,349	97,702	749,051
TOTAL	Item 766R, AR Pecan Pt. Berm	8,137,722	931,391	9,069,113
106	Item 782R, AR Butler Berm			
106.01	Lands and Damages	290,000	53,000	343,000
106.11	Levees and Floodwalls	1,620,269	162,027	1,782,295
106.30	Planning, Engineering and Design	267,344	40,102	307,446
106.31	Construction Management	178,230	26,735	204,965
TOTAL	Item 782R, AR Butler Berm	2,355,843	281,863	2,637,706
107	Itm833R,MO Baders-Cottonw'd Berm			
107.01	Lands and Damages	1,577,000	337,000	1,914,000
107.11	Levees and Floodwalls	15,295,237	1,529,524	16,824,761
107.30	Planning, Engineering and Design	2,523,714	378,557	2,902,271
107.31	Construction Management	1,682,476	252,371	1,934,847
TOTAL	Itm833R,MO Baders-Cottonw'd Berm	21,078,427	2,497,452	23,575,879
108	Item 841L, TN Miston Berm			
108.01	Lands and Damages	149,000	18,000	167,000
108.11	Levees and Floodwalls	433,483	86,697	520,180
108.30	Planning, Engineering and Design	78,027	11,704	89,731
108.31	Construction Management	52,019	7,803	59,822
TOTAL	Item 841L, TN Miston Berm	712,529	124,204	836,733
109	It843R,MO S. Caruthersville Berm			
109.01	Lands and Damages	810,000	141,000	951,000
109.11	Levees and Floodwalls	4,638,303	927,661	5,565,963
109.30	Planning, Engineering and Design	834,895	125,234	960,129
109.31	Construction Management	556,596	83,489	640,085
TOTAL	It843R,MO S. Caruthersville Berm	6,839,794	1,277,384	8,117,178
110	Item 892R, MO Hubbard Lake Berm			
110.01	Lands and Damages	338,000	62,000	400,000

		CONTRACT COST	CONTINGN	TOTAL COST
110.11	Levees and Floodwalls	3,818,138	763,628	4,581,766
110.30	Planning, Engineering and Design	687,265	103,090	790,355
110.31	Construction Management	458,177	68,727	526,904
TOTAL	Item 892R, MO Hubbard Lake Berm	5,301,580	997,444	6,299,024
111	Item 905L, TN Phillipy Berm			
111.01	Lands and Damages	62,000	9,000	71,000
111.11	Levees and Floodwalls	190,899	38,180	229,079
111.30	Planning, Engineering and Design	34,362	5,154	39,516
111.31	Construction Management	22,909	3,436	26,345
TOTAL	Item 905L, TN Phillipy Berm	310,170	55,770	365,940
112	Item910R,MO Barnes Ridge R.Wells			
112.01	Lands and Damages	634,000	33,000	667,000
112.11	Levees and Floodwalls	14,669,400	2,933,880	17,603,280
112.30	Planning, Engineering and Design	3,960,738	594,111	4,554,849
112.31	Construction Management	2,640,491	396,074	3,036,565
TOTAL	Item910R,MO Barnes Ridge R.Wells	21,904,629	3,957,064	25,861,694
113	Item 913R, MO Bayouville Berm			
113.01	Lands and Damages	559,000	98,000	657,000
113.02	Relocations	53,043	7,956	60,999
113.11	Levees and Floodwalls	3,666,675	733,335	4,400,010
113.30	Planning, Engineering and Design	660,001	99,000	759,001
113.31	Construction Management	440,001	66,000	506,001
TOTAL	Item 913R, MO Bayouville Berm	5,378,720	1,004,292	6,383,012
114	Item 915R, KY Island 8 R. Wells			
114.01	Lands and Damages	84,000	9,000	93,000
114.02	Relocations	1,739	261	2,000
114.11	Levees and Floodwalls	3,747,323	749,465	4,496,788
114.30	Planning, Engineering and Design	896,615	134,492	1,031,107
114.31	Construction Management	597,744	89,662	687,406
TOTAL	Item 915R, KY Island 8 R. Wells	5,327,421	982,879	6,310,301
115	Item 916R, MO BPNM Pit Drain			

		CONTRACT COST	CONTINGN	TOTAL COST
115.01	Lands and Damages	249,000	15,000	264,000
115.11	Levees and Floodwalls	463,003	69,450	532,453
115.30	Planning, Engineering and Design	79,868	11,980	91,848
115.31	Construction Management	53,246	7,987	61,233
TOTAL	Item 916R, MO BPNM Pit Drain	845,117	104,417	949,534
116	Item929R,MO Ab.Dorena Par 1 Berm			
116.01	Lands and Damages	247,000	39,000	286,000
116.11	Levees and Floodwalls	1,499,915	299,983	1,799,899
116.30	Planning, Engineering and Design	269,985	40,498	310,483
116.31	Construction Management	179,990	26,999	206,989
TOTAL	Item929R,MO Ab.Dorena Par 1 Berm	2,196,890	406,479	2,603,370
117	Item929R,MO Ab.Dorena Par 2 Berm			
117.01	Lands and Damages	126,000	19,000	145,000
117.02	Relocations	9,565	1,435	11,000
117.11	Levees and Floodwalls	599,372	119,874	719,246
117.30	Planning, Engineering and Design	107,886	16,183	124,069
117.31	Construction Management	71,924	10,789	82,713
TOTAL	Item929R,MO Ab.Dorena Par 2 Berm	914,747	167,281	1,082,027
118	Item929R,MO Ab.Dorena Par 3 Berm			
118.01	Lands and Damages	213,000	29,000	242,000
118.02	Relocations	2,609	391	3,000
118.11	Levees and Floodwalls	652,403	130,481	782,884
118.30	Planning, Engineering and Design	117,433	17,615	135,048
118.31	Construction Management	78,289	11,743	90,032
TOTAL	Item929R,MO Ab.Dorena Par 3 Berm	1,063,734	189,230	1,252,964
119	Item 946R, MO Samos Berm			
119.01	Lands and Damages	260,000	35,000	295,000
119.11	Levees and Floodwalls	931,335	186,267	1,117,602
119.30	Planning, Engineering and Design	167,640	25,146	192,786
119.31	Construction Management	111,760	16,764	128,524
TOTAL	Item 946R, MO Samos Berm	1,470,735	263,177	1,733,912
120	Item957R,IL Cairo Floodwall Berm			

		CONTRACT COST	CONTINGN	TOTAL COST
120.01	Lands and Damages	86,000	9,000	95,000
120.11	Levees and Floodwalls	649,445	129,889	779,334
120.30	Planning, Engineering and Design	116,900	17,535	134,435
120.31	Construction Management	77,933	11,690	89,623
TOTAL	Item957R,IL Cairo Floodwall Berm	930,278	168,114	1,098,392
121	Item 961R, IL Cairo - Mound C			
121.01	Lands and Damages	10,000	1,000	11,000
121.11	Levees and Floodwalls	946,885	189,377	1,136,262
121.30	Planning, Engineering and Design	170,440	25,566	196,006
121.31	Construction Management	113,626	17,044	130,670
TOTAL	Item 961R, IL Cairo - Mound C	1,240,951	232,987	1,473,937
122	Item963R,IL Mound City Wash Prot			
122.01	Lands and Damages	34,000	2,000	36,000
122.11	Levees and Floodwalls	243,429	36,514	279,943
122.30	Planning, Engineering and Design	41,991	6,299	48,290
122.31	Construction Management	27,994	4,199	32,193
TOTAL	Item963R,IL Mound City Wash Prot	347,414	49,012	396,426
123	Item 965R, IL A. Mound City			
123.01	Lands and Damages	81,000	5,000	86,000
123.11	Levees and Floodwalls	3,553,559	710,712	4,264,271
123.30	Planning, Engineering and Design	639,641	95,946	735,587
123.31	Construction Management	426,427	63,964	490,391
TOTAL	Item 965R, IL A. Mound City	4,700,627	875,622	5,576,249
124	IL Cairo Grade Rse			
124.01	Lands and Damages	1,000	0	1,000
124.11	Levees and Floodwalls	757,299	75,730	833,029
124.30	Planning, Engineering and Design	11,000	1,650	12,650
124.31	Construction Management	50,000	7,500	57,500
TOTAL	IL Cairo Grade Rse	819,299	84,880	904,179
125	ItemL10AC,IL A. Cario Par.1 Berm			
125.01	Lands and Damages	254,000	23,000	277,000

		CONTRACT COST	CONTINGN	TOTAL COST
125.11	Levees and Floodwalls	1,120,629	224,126	1,344,755
125.30	Planning, Engineering and Design	201,714	30,257	231,971
125.31	Construction Management	134,476	20,171	154,647
TOTAL	ItemL10AC,IL A. Cario Par.1 Berm	1,710,819	297,554	2,008,373
126	Item 22AC R, MO Drinkwater PS			
126.01	Lands and Damages	23,000	1,000	24,000
126.13	Pumping Plant	5,599,947	839,992	6,439,939
126.30	Planning, Engineering and Design	966,000	144,900	1,110,900
126.31	Construction Management	644,000	96,600	740,600
TOTAL	Item 22AC R, MO Drinkwater PS	7,232,947	1,082,492	8,315,439
127	It33ACR,MO Commerce - BP Gra Rse			
127.01	Lands and Damages	833,000	124,000	957,000
127.11	Levees and Floodwalls	7,946,045	1,191,907	9,137,952
127.30	Planning, Engineering and Design	1,370,693	205,604	1,576,297
127.31	Construction Management	913,796	137,069	1,050,865
TOTAL	It33ACR,MO Commerce - BP Gra Rse	11,063,534	1,658,580	12,722,114
128	Item 48R AC,MO Nash Berm R.Wells			
128.01	Lands and Damages	123,000	8,000	131,000
128.11	Levees and Floodwalls	2,513,449	502,690	3,016,138
128.30	Planning, Engineering and Design	567,583	85,137	652,720
128.31	Construction Management	378,389	56,758	435,147
TOTAL	Item 48R AC,MO Nash Berm R.Wells	3,582,421	652,586	4,235,006
129	Mitigation			
129.01	Lands and Damages	4,653,150	1,163,288	5,816,438
129.06	Fish and Wildlife Facilities	2,043,125	510,781	2,553,907
129.30	Planning, Engineering and Design	452,900	113,225	566,125
129.31	Supervision and Administration	179,550	44,888	224,438
TOTAL	Mitigation	7,328,725	1,832,181	9,160,907
TOTAL	Mississippi River Levees Project	568,427,655	83,298,307	651,725,962

TAB 4

BASELINE ESTIMATE FOR RECOMMENDED PLAN (WITH ESCALATION AND MITIGATION)

Mississippi River Levees Project
Baseline Cost Estimate
For The Recommended Plan

Prepared In Support Of The SEIS

Designed By: CEMVM, CEMVN, and CEMVK
Estimated By: Cost Engineering Branch

Prepared By: Cost Engineering Team Members
Vicksburg, Memphis & New Orleans

Preparation Date: 01/08/98
Effective Date of Pricing: 10/01/97

Sales Tax: 0.00%

		CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
01	LOWER VENICE 2ND LIFT	535,854	107,171	12,217	655,242
02	NEW ORLEANS DISTRICT FLOODWALL	893,700	178,740	90,085	1,162,524
03	CARROLLTON LEVEE ENLARGEMENT	728,425	145,685	21,853	895,963
04	JEFFERSON HEIGHTS	283,174	56,635	0	339,809
05	CARVILLE TO MARCHAND	4,184,400	836,880	0	5,021,280
06	HOHEN-SOLMS TO MODESTE	1,140,700	228,140	0	1,368,840
07	ALHAMBRA TO HOHEN-SOLMS	987,600	197,520	0	1,185,120
08	REVEILLE TO POINT PLEASANT	2,016,676	403,335	0	2,420,011
09	GAP CLOSURES WEST BANK	354,616	70,923	8,936	434,475
10	GAP CLOSURES EAST BANK	528,850	105,770	0	634,620
11	BATON ROUGE FRONT LEVEE	136,100	27,220	0	163,320
12	5TH LEVEE DIST LEVEE ENLRGMNT	578,360	115,672	11,799	705,830
13	Item 357-R Vidalia-Moreville	5,622,744	799,739	2,523,389	8,945,873
14	Item 361-R Vidalia-Moreville	8,326,028	1,111,846	3,604,478	13,042,353
15	Item 365-R Vidalia-Moreville	7,323,833	964,024	2,553,803	10,841,659
16	Item 366-R Up Concordia-Vidalia	6,328,552	784,816	4,396,372	11,509,740
17	Item 367-R Up Concordia-Vidalia	8,271,995	915,864	5,553,683	14,741,542
18	Item 368-R Waterproof-Concordia	8,304,931	982,161	5,284,761	14,571,853
19	Item 370-R Waterproof-Concordia	5,059,917	763,080	3,340,652	9,163,649
20	Item 374-R Waterproof-Concordia	5,676,013	895,982	3,693,816	10,265,811
21	Item 377-R Waterproof-Concordia	5,419,926	775,802	3,081,946	9,277,674
22	Item 380-R St. Joseph-Waterproof	4,921,939	709,797	3,907,491	9,539,226
23	Item 385-R St. Joseph-Waterproof	4,646,436	724,754	3,623,588	8,994,778
24	Item 388-R St. Joseph-Waterproof	4,440,637	691,752	3,507,806	8,640,196
25	Item 393-R St. Joseph-Waterproof	6,575,077	886,496	4,705,756	12,167,329
26	Item 398-R Yucatan-Lake Bruin	6,944,040	939,410	3,910,104	11,793,554
27	Item 401-R Yucatan-Lake Bruin	5,735,686	790,520	3,301,524	9,827,730
28	Item 407-R Pt. Pleasant-Yucatan	5,509,846	782,296	3,977,076	10,269,218
29	Item 409-R Pt. Pleasant-Yucatan	5,071,912	726,390	3,690,918	9,489,220
30	Item 411-R Pt. Pleasant-Yucatan	4,383,604	670,955	3,124,975	8,179,535
31	Item 414-R Bayou Vidal-Elkridge	5,710,271	754,610	2,962,430	9,427,310
32	Item 416-R Bayou Vidal-Elkridge	5,325,258	726,009	2,753,300	8,804,568
33	Item 419-R Bayou Vidal-Elkridge	8,274,616	1,004,477	3,861,135	13,140,227
34	Item 421-R Bayou Vidal-Elkridge	6,270,530	814,248	2,634,919	9,719,697
35	Item 422-R Reid Bedford-King	4,651,476	679,239	1,977,920	7,308,636
36	Item 424-R Reid Bedford-King	7,048,195	954,788	2,638,341	10,641,324
37	Item 428-R Reid Bedford-King	4,170,293	662,859	1,867,269	6,700,422
38	Item 445-R Willow Pt.-Youngs Pt.	5,565,052	805,050	1,357,614	7,727,715
39	Item 450-R Willow Pt.-Youngs Pt.	6,251,495	865,984	1,931,203	9,048,682
40	Item 452-L Brunswick-Halpino	5,431,628	704,866	3,257,134	9,393,628
41	Item 453-R Willow Pt.-Youngs Pt.	8,561,442	1,128,493	2,414,129	12,104,064
42	Item 457-R Willow Pt.-Youngs Pt.	9,400,240	785,946	3,138,492	13,324,679
43	Item 458-L Brunswick-Halpino	4,567,784	659,815	2,363,938	7,591,537
44	Item 460-L Brunswick-Halpino	4,773,153	678,070	2,486,815	7,938,037
45	Item 461-R Willow Pt.-Youngs Pt.	7,737,086	1,089,069	3,207,758	12,033,913
46	Item 462-L Magna Vista-Brunswick	4,791,014	756,313	2,275,943	7,823,270
47	Item 463-L Magna Vista-Brunswick	5,688,815	767,319	1,465,894	7,922,028
48	Item 465-L Magna Vista-Brunswick	5,203,327	801,717	1,678,223	7,683,267
49	Item 467-L Magna Vista-Brunswick	5,699,440	737,545	1,991,345	8,428,330
50	Item 477-L Tallula-Magna Vista	9,703,763	1,242,709	1,210,423	12,156,896
51	Item 471-L Tallula-Magna Vista	8,455,571	1,118,844	904,897	10,479,312

		CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
52	Item 480-R Wilson Pt.-Pt Lookout	9,101,179	1,258,734	1,611,407	11,971,319
53	Item 481-L Carlisle-Tallula	7,351,722	1,011,354	1,470,527	9,833,604
54	Item 483-R Wilson Pt.-Pt Lookout	4,294,060	560,000	112,338	4,966,398
55	Item 485-R Wilson Pt.-Pt Lookout	6,252,568	664,429	1,121,305	8,038,302
56	Item 486-L Carlisle-Tallula	4,297,589	433,990	912,453	5,644,032
57	Item 487-R Wilson Pt.-Pt Lookout	6,018,444	799,266	1,100,034	7,917,744
58	Item 489-R Wilson Pt.-Pt Lookout	5,994,425	826,555	500,945	7,321,924
59	Item 490-L Carlisle-Tallula	4,305,509	429,979	1,012,173	5,747,661
60	Item 493-L Valewood-Carlisle	4,792,187	636,114	511,994	5,940,296
61	Item 495-L Valewood-Carlisle	7,026,619	975,434	752,811	8,754,864
62	Item 497-L Valewood-Carlisle	5,722,891	594,433	587,886	6,905,210
63	Item 498-L Valewood-Carlisle	4,562,772	533,436	458,950	5,555,159
64	Item 502-L Carolina-Valewood	9,629,721	1,173,463	410,758	11,213,943
65	Item 503-R State Line-Wilson Pt.	7,329,424	1,024,588	904,797	9,258,810
66	Item 506-R State Line-Wilson Pt.	7,403,309	932,729	307,662	8,643,700
67	Item 509-L Lake Jackson-Palmetto	5,104,780	752,626	3,423,412	9,280,818
68	Item 511-L Lake Jackson-Palmetto	2,797,416	450,965	1,998,050	5,246,432
69	Item 520-R AboveLakeport-Harwood	4,293,245	626,206	3,596,170	8,515,620
70	Item 521-L James-Longwood	6,353,758	927,275	5,117,187	12,398,220
71	Item 524-L Avon-Longwood	3,550,990	559,387	3,631,780	7,742,157
72	Item 525-L Avon	1,592,836	255,100	1,533,334	3,381,270
73	Item 525-R AboveLakeport-Harwood	4,685,412	715,442	4,065,537	9,466,390
74	Item 526-L Avon	1,475,202	239,119	1,155,022	2,869,343
75	Item 528-R AboveLakeport-Harwood	5,447,831	767,222	4,526,378	10,741,430
76	Item 531-L Refuge	1,789,301	408,916	1,777,766	3,975,983
77	Item 531-R Sunnyside	4,533,868	769,133	4,114,660	9,417,661
78	Item 531.5-L-A Deerfield	1,749,730	275,322	1,872,783	3,897,835
79	Item 536-R Leland-Vancluse	4,526,329	972,935	4,503,350	10,002,615
80	Item 538-L Warfield	594,033	121,509	704,695	1,420,237
81	Item 540-L Lagrange	1,650,031	295,702	1,796,816	3,742,549
82	Item 541-R Luna-Leland	5,279,349	814,714	4,817,604	10,911,667
83	Item 543-L Above Greenville	3,468,292	575,567	3,851,377	7,895,236
84	Item 543-R Panther Forest	1,206,717	214,109	1,150,517	2,571,343
85	Item 546-R Gaines Landing	2,314,198	401,037	2,227,113	4,942,348
86	Item 548-R Dewey	787,940	151,012	766,959	1,705,911
87	Item 555-R Below Arkansas City	736,957	145,803	707,932	1,590,692
88	Item 570-L Below Catfish Point	2,092,308	352,789	2,284,706	4,729,803
89	Item 571-L Catfish Point	1,036,974	190,145	1,159,403	2,386,522
90	Item 575-L Upper Lake Bolivar	814,566	153,801	939,699	1,908,067
91	Item 576-R Cypress Creek	2,110,627	366,222	1,875,483	4,352,333
92	Item 585-L Riverton	1,620,875	290,676	1,671,401	3,582,952
93	Item 589-L Rosedale	595,666	120,215	684,652	1,400,533
94	Item 607-L Sledge-Waxhaw	876,841	161,360	894,290	1,932,490
95	Item 611-L Deeson	1,489,898	274,110	1,741,981	3,505,990
96	Item 614-L Round Lake	1,304,809	228,750	1,313,393	2,846,952
97	Item 616-L Fransis	2,090,558	345,521	2,233,067	4,669,146
98	Item 606R, AR Henrico Berm	4,002,030	753,356	1,050,202	5,805,587
99	Item 612R, AR Knowlton Berm	1,538,620	278,436	543,068	2,360,124
100	Item 628L, MS Hillhouse R. Wells	5,966,961	1,087,798	4,693,077	11,747,836
101	Item 670L, MS Trotters Berm	5,360,830	615,815	3,969,039	9,945,685
102	Item 675L, MS Austin R. Wells	2,323,330	417,497	1,290,545	4,031,372

		CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
103	Item 716R, AR Blue Lake R. Wells	3,206,785	600,163	1,616,154	5,423,102
104	Item719R,AR Louise Berm/Pit fill	1,018,671	182,100	218,079	1,418,850
105	Item 766R, AR Pecan Pt. Berm	8,137,722	931,391	4,681,985	13,751,099
106	Item 782R, AR Butler Berm	2,355,843	281,863	1,242,730	3,880,436
107	Itm833R,MO Baders-Cottonw'd Berm	21,078,427	2,497,452	9,003,232	32,579,111
108	Item 841L, TN Miston Berm	712,529	124,204	284,578	1,121,311
109	It843R,MO S. Caruthersville Berm	6,839,794	1,277,384	4,587,972	12,705,150
110	Item 892R, MO Hubbard Lake Berm	5,301,580	997,444	1,634,626	7,933,650
111	Item 905L, TN Phillipy Berm	310,170	55,770	109,330	475,270
112	Item910R,MO Barnes Ridge R.Wells	21,904,629	3,957,064	3,760,061	29,621,754
113	Item 913R, MO Bayouville Berm	5,378,720	1,004,292	1,654,939	8,037,951
114	Item 915R, KY Island 8 R. Wells	5,327,421	982,879	1,390,144	7,700,445
115	Item 916R, MO BPNM Pit Drain	845,117	104,417	589,770	1,539,305
116	Item929R,MO Ab.Dorena Par 1 Berm	2,196,890	406,479	209,333	2,812,702
117	Item929R,MO Ab.Dorena Par 2 Berm	914,747	167,281	323,447	1,405,475
118	Item929R,MO Ab.Dorena Par 3 Berm	1,063,734	189,230	374,353	1,627,317
119	Item 946R, MO Samos Berm	1,470,735	263,177	381,094	2,115,005
120	Item957R,IL Cairo Floodwall Berm	930,278	168,114	201,412	1,299,805
121	Item 961R, IL Cairo - Mound C	1,240,951	232,987	899,529	2,373,467
122	Item963R,IL Mound City Wash Prot	347,414	49,012	168,676	565,102
123	Item 965R, IL A. Mound City	4,700,627	875,622	3,133,299	8,709,549
124	IL Cairo Grade Rse	819,299	84,880	385,781	1,289,960
125	ItemL10AC,IL A. Cario Par.1 Berm	1,710,819	297,554	520,170	2,528,543
126	Item 22AC R, MO Drinkwater PS	7,232,947	1,082,492	414,921	8,730,360
127	It33ACR,MO Commerce - BP Gra Rse	11,063,534	1,658,580	632,126	13,354,240
128	Item 48R AC,MO Nash Berm R.Wells	3,582,421	652,586	922,429	5,157,435
129	Mitigation	7,328,725	1,832,181	3,694,769	12,855,676
TOTAL	Mississippi River Levees Project	572,478,073	84,014,042	254,799,586	911,291,702

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
01 LOWER VENICE 2ND LIFT				
01.11 LOWER VENICE 2ND LIFT	419,154	83,831	9,557	512,542
01.30 PLANNING, ENGINEERING & DESIGN	66,300	13,260	1,512	81,072
01.31 CONSTRUCTION MANAGEMENT	50,400	10,080	1,149	61,629
TOTAL LOWER VENICE 2ND LIFT	535,854	107,171	12,217	655,242
02 NEW ORLEANS DISTRICT FLOODWALL				
02.11 NEW ORLEANS DISTRICT FLOODWALL	734,500	146,900	74,038	955,437
02.30 PLANNING, ENGINEERING & DESIGN	71,000	14,200	7,157	92,357
02.31 CONSTRUCTION MANAGEMENT	88,200	17,640	8,891	114,731
TOTAL NEW ORLEANS DISTRICT FLOODWALL	893,700	178,740	90,085	1,162,524
03 CARROLLTON LEVEE ENLARGEMENT				
03.11 CARROLLTON LEVEE ENLARGEMENT	562,525	112,505	16,876	691,906
03.30 PLANNING, ENGINEERING & DESIGN	98,400	19,680	2,952	121,032
03.31 CONSTRUCTION MANAGEMENT	67,500	13,500	2,025	83,025
TOTAL CARROLLTON LEVEE ENLARGEMENT	728,425	145,685	21,853	895,963
04 JEFFERSON HEIGHTS				
04.11 JEFFERSON HEIGHTS	187,874	37,575	0	225,449
04.30 PLANNING, ENGINEERING & DESIGN	72,800	14,560	0	87,360
04.31 CONSTRUCTION MANAGEMENT	22,500	4,500	0	27,000
TOTAL JEFFERSON HEIGHTS	283,174	56,635	0	339,809
05 CARVILLE TO MARCHAND				
05.11 CARVILLE TO MARCHAND	3,642,700	728,540	0	4,371,240
05.30 PLANNING, ENGINEERING & DESIGN	104,600	20,920	0	125,520
05.31 CONSTRUCTION MANAGEMENT	437,100	87,420	0	524,520
TOTAL CARVILLE TO MARCHAND	4,184,400	836,880	0	5,021,280
06 HOHEN-SOLMS TO MODESTE				
06.11 HOHEN-SOLMS TO MODESTE	925,800	185,160	0	1,110,960
06.30 PLANNING, ENGINEERING & DESIGN	103,900	20,780	0	124,680

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
06.31 CONSTRUCTION MANAGEMENT	111,000	22,200	0	133,200
TOTAL HOHEN-SOLMS TO MODESTE	1,140,700	228,140	0	1,368,840
07 ALHAMBRA TO HOHEN-SOLMS				
07.11 ALHAMBRA TO HOHEN-SOLMS	817,200	163,440	0	980,640
07.30 PLANNING, ENGINEERING & DESIGN	72,300	14,460	0	86,760
07.31 CONSTRUCTION MANAGEMENT	98,100	19,620	0	117,720
TOTAL ALHAMBRA TO HOHEN-SOLMS	987,600	197,520	0	1,185,120
08 REVEILLE TO POINT PLEASANT				
08.11 REVEILLE TO POINT PLEASANT	1,732,776	346,555	0	2,079,331
08.30 PLANNING, ENGINEERING & DESIGN	76,000	15,200	0	91,200
08.31 CONSTRUCTION MANAGEMENT	207,900	41,580	0	249,480
TOTAL REVEILLE TO POINT PLEASANT	2,016,676	403,335	0	2,420,011
09 GAP CLOSURES WEST BANK				
09.11 GAP CLOSURES WEST BANK	259,576	51,915	6,541	318,032
09.30 PLANNING, ENGINEERING & DESIGN	63,900	12,780	1,610	78,290
09.31 CONSTRUCTION MANAGEMENT	31,140	6,228	785	38,153
TOTAL GAP CLOSURES WEST BANK	354,616	70,923	8,936	434,475
10 GAP CLOSURES EAST BANK				
10.11 GAP CLOSURES EAST BANK	413,150	82,630	0	495,780
10.30 PLANNING, ENGINEERING & DESIGN	66,200	13,240	0	79,440
10.31 CONSTRUCTION MANAGEMENT	49,500	9,900	0	59,400
TOTAL GAP CLOSURES EAST BANK	528,850	105,770	0	634,620
11 BATON ROUGE FRONT LEVEE				
11.11 BATON ROUGE FRONT LEVEE	67,060	13,412	0	80,472
11.30 PLANNING, ENGINEERING & DESIGN	61,000	12,200	0	73,200
11.31 CONSTRUCTION MANAGEMENT	8,040	1,608	0	9,648
TOTAL BATON ROUGE FRONT LEVEE	136,100	27,220	0	163,320
12 5TH LEVEE DIST LEVEE ENLRGMNT				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
12.11 5TH LEVEE DIST LEVEE ENLRGMNT	465,500	93,100	9,496	568,096
12.30 PLANNING, ENGINEERING & DESIGN	57,000	11,400	1,163	69,563
12.31 CONSTRUCTION MANAGEMENT	55,860	11,172	1,140	68,172
TOTAL 5TH LEVEE DIST LEVEE ENLRGMNT	578,360	115,672	11,799	705,830
13 Item 357-R Vidalia-Moreville				
13.01 Lands and Damages	134,200	29,800	5,597	169,597
13.02 Relocations	5,000	1,250	1,929	8,179
13.11 Levees and Floodwalls	4,241,662	458,219	1,849,403	6,549,284
13.30 Planning, Engineering and Design	779,186	194,797	404,690	1,378,672
13.31 Supervision and Administration	462,696	115,674	261,770	840,140
TOTAL Item 357-R Vidalia-Moreville	5,622,744	799,739	2,523,389	8,945,873
14 Item 361-R Vidalia-Moreville				
14.01 Lands and Damages	367,700	83,300	11,194	462,194
14.02 Relocations	15,000	3,750	5,788	24,538
14.11 Levees and Floodwalls	6,658,302	703,540	2,896,885	10,258,727
14.30 Planning, Engineering and Design	784,726	196,182	407,567	1,388,475
14.31 Supervision and Administration	500,300	125,075	283,045	908,420
TOTAL Item 361-R Vidalia-Moreville	8,326,028	1,111,846	3,604,478	13,042,353
15 Item 365-R Vidalia-Moreville				
15.01 Lands and Damages	203,900	43,100	8,330	255,330
15.02 Relocations	5,000	1,250	1,459	7,709
15.11 Levees and Floodwalls	6,027,636	647,850	2,092,765	8,768,250
15.30 Planning, Engineering and Design	750,797	187,699	301,633	1,240,129
15.31 Supervision and Administration	336,500	84,125	149,616	570,241
TOTAL Item 365-R Vidalia-Moreville	7,323,833	964,024	2,553,803	10,841,659
16 Item 366-R Up Concordia-Vidalia				
16.01 Lands and Damages	153,200	31,800	19,306	204,306
16.02 Relocations	41,000	10,250	26,501	77,751
16.11 Levees and Floodwalls	4,912,041	437,188	3,292,451	8,641,680
16.30 Planning, Engineering and Design	896,167	224,042	762,750	1,882,959
16.31 Supervision and Administration	326,144	81,536	295,364	703,044
TOTAL Item 366-R Up Concordia-Vidalia	6,328,552	784,816	4,396,372	11,509,740

		CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
17	Item 367-R Up Concordia-Vidalia				
17.01	Lands and Damages	362,500	83,500	19,306	465,306
17.02	Relocations	18,000	4,500	11,635	34,135
17.11	Levees and Floodwalls	6,351,709	442,917	4,182,093	10,976,719
17.30	Planning, Engineering and Design	987,499	246,875	840,485	2,074,859
17.31	Supervision and Administration	552,287	138,072	500,165	1,190,524
TOTAL	Item 367-R Up Concordia-Vidalia	8,271,995	915,864	5,553,683	14,741,542
18	Item 368-R Waterproof-Concordia				
18.01	Lands and Damages	162,800	23,875	21,960	208,635
18.02	Relocations	225,000	56,250	133,003	414,253
18.11	Levees and Floodwalls	6,549,785	560,199	4,041,315	11,151,299
18.30	Planning, Engineering and Design	961,846	240,462	750,601	1,952,908
18.31	Supervision and Administration	405,500	101,375	337,883	844,758
TOTAL	Item 368-R Waterproof-Concordia	8,304,931	982,161	5,284,761	14,571,853
19	Item 370-R Waterproof-Concordia				
19.01	Lands and Damages	140,900	27,100	17,568	185,568
19.02	Relocations	60,000	15,000	35,468	110,468
19.11	Levees and Floodwalls	3,520,215	386,279	2,220,452	6,126,946
19.30	Planning, Engineering and Design	915,209	228,802	714,206	1,858,217
19.31	Supervision and Administration	423,593	105,898	352,959	882,450
TOTAL	Item 370-R Waterproof-Concordia	5,059,917	763,080	3,340,652	9,163,649
20	Item 374-R Waterproof-Concordia				
20.01	Lands and Damages	138,400	27,600	17,568	183,568
20.02	Relocations	613,000	153,250	362,360	1,128,610
20.11	Levees and Floodwalls	3,656,059	397,994	2,304,324	6,358,376
20.30	Planning, Engineering and Design	897,548	224,387	700,424	1,822,359
20.31	Supervision and Administration	371,006	92,752	309,141	772,898
TOTAL	Item 374-R Waterproof-Concordia	5,676,013	895,982	3,693,816	10,265,811
21	Item 377-R Waterproof-Concordia				
21.01	Lands and Damages	200,000	40,000	19,868	259,868
21.11	Levees and Floodwalls	4,008,302	432,896	2,222,376	6,663,574
21.30	Planning, Engineering and Design	848,708	212,177	575,318	1,636,203
21.31	Supervision and Administration	362,916	90,729	264,384	718,029

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
TOTAL Item 377-R Waterproof-Concordia	5,419,926	775,802	3,081,946	9,277,674
22 Item 380-R St. Joseph-Waterproof				
22.01 Lands and Damages	127,900	29,100	11,472	168,472
22.02 Relocations	36,000	9,000	27,428	72,428
22.11 Levees and Floodwalls	3,688,693	404,360	2,818,885	6,911,938
22.30 Planning, Engineering and Design	708,146	177,037	681,236	1,566,419
22.31 Supervision and Administration	361,200	90,300	368,469	819,969
TOTAL Item 380-R St. Joseph-Waterproof	4,921,939	709,797	3,907,491	9,539,226
23 Item 385-R St. Joseph-Waterproof				
23.01 Lands and Damages	218,400	48,600	17,208	284,208
23.02 Relocations	248,000	62,000	188,945	498,945
23.11 Levees and Floodwalls	3,189,291	366,468	2,448,851	6,004,610
23.30 Planning, Engineering and Design	724,308	181,077	696,784	1,602,169
23.31 Supervision and Administration	266,437	66,609	271,799	604,845
TOTAL Item 385-R St. Joseph-Waterproof	4,646,436	724,754	3,623,588	8,994,778
24 Item 388-R St. Joseph-Waterproof				
24.01 Lands and Damages	150,800	34,200	11,472	196,472
24.02 Relocations	300,000	75,000	228,563	603,563
24.11 Levees and Floodwalls	3,000,087	335,114	2,296,953	5,632,155
24.30 Planning, Engineering and Design	668,390	167,098	642,991	1,478,479
24.31 Supervision and Administration	321,360	80,340	327,827	729,527
TOTAL Item 388-R St. Joseph-Waterproof	4,440,637	691,752	3,507,806	8,640,196
25 Item 393-R St. Joseph-Waterproof				
25.01 Lands and Damages	218,800	49,200	15,828	283,828
25.02 Relocations	91,000	22,750	63,996	177,746
25.11 Levees and Floodwalls	5,303,224	574,033	3,758,506	9,635,762
25.30 Planning, Engineering and Design	709,497	177,374	629,235	1,516,106
25.31 Supervision and Administration	252,556	63,139	238,192	553,887
TOTAL Item 393-R St. Joseph-Waterproof	6,575,077	886,496	4,705,756	12,167,329
26 Item 398-R Yucatan-Lake Bruin				
26.01 Lands and Damages	212,800	43,200	19,868	275,868
26.02 Relocations	34,000	8,500	18,275	60,775

		CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
26.11	Levees and Floodwalls	5,543,697	599,325	3,073,968	9,216,990
26.30	Planning, Engineering and Design	836,807	209,202	567,251	1,613,259
26.31	Supervision and Administration	316,736	79,184	230,742	626,662
TOTAL	Item 398-R Yucatan-Lake Bruin	6,944,040	939,410	3,910,104	11,793,554
27	Item 401-R Yucatan-Lake Bruin				
27.01	Lands and Damages	105,300	18,700	15,894	139,894
27.11	Levees and Floodwalls	4,426,710	470,901	2,450,765	7,348,375
27.30	Planning, Engineering and Design	829,876	207,469	562,552	1,599,897
27.31	Supervision and Administration	373,800	93,450	272,313	739,563
TOTAL	Item 401-R Yucatan-Lake Bruin	5,735,686	790,520	3,301,524	9,827,730
28	Item 407-R Pt. Pleasant-Yucatan				
28.01	Lands and Damages	242,900	47,100	36,932	326,932
28.02	Relocations	8,000	2,000	5,626	15,626
28.11	Levees and Floodwalls	4,237,120	477,740	3,015,153	7,730,013
28.30	Planning, Engineering and Design	788,348	197,087	699,166	1,684,601
28.31	Supervision and Administration	233,478	58,370	220,199	512,046
TOTAL	Item 407-R Pt. Pleasant-Yucatan	5,509,846	782,296	3,977,076	10,269,218
29	Item 409-R Pt. Pleasant-Yucatan				
29.01	Lands and Damages	175,600	38,150	15,828	229,578
29.11	Levees and Floodwalls	3,865,564	430,553	2,747,367	7,043,484
29.30	Planning, Engineering and Design	789,358	197,340	700,062	1,686,759
29.31	Supervision and Administration	241,390	60,348	227,661	529,398
TOTAL	Item 409-R Pt. Pleasant-Yucatan	5,071,912	726,390	3,690,918	9,489,220
30	Item 411-R Pt. Pleasant-Yucatan				
30.01	Lands and Damages	151,000	30,000	19,306	200,306
30.02	Relocations	30,000	7,500	19,391	56,891
30.11	Levees and Floodwalls	3,069,305	350,131	2,104,663	5,524,098
30.30	Planning, Engineering and Design	820,699	205,175	698,517	1,724,391
30.31	Supervision and Administration	312,600	78,150	283,098	673,848
TOTAL	Item 411-R Pt. Pleasant-Yucatan	4,383,604	670,955	3,124,975	8,179,535
31	Item 414-R Bayou Vidal-Elkridge				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
31.01 Lands and Damages	99,700	16,300	14,282	130,282
31.02 Relocations	41,000	10,250	19,906	71,156
31.11 Levees and Floodwalls	4,647,205	497,468	2,349,572	7,494,245
31.30 Planning, Engineering and Design	645,626	161,407	395,607	1,202,640
31.31 Supervision and Administration	276,740	69,185	183,064	528,989
TOTAL Item 414-R Bayou Vidal-Elkridge	5,710,271	754,610	2,962,430	9,427,310
32 Item 416-R Bayou Vidal-Elkridge				
32.01 Lands and Damages	131,500	24,500	14,282	170,282
32.02 Relocations	50,000	12,500	24,275	86,775
32.11 Levees and Floodwalls	4,235,132	461,852	2,145,113	6,842,098
32.30 Planning, Engineering and Design	644,626	161,157	394,995	1,200,777
32.31 Supervision and Administration	264,000	66,000	174,636	504,636
TOTAL Item 416-R Bayou Vidal-Elkridge	5,325,258	726,009	2,753,300	8,804,568
33 Item 419-R Bayou Vidal-Elkridge				
33.01 Lands and Damages	71,700	11,300	9,533	92,533
33.02 Relocations	5,000	1,250	2,174	8,424
33.11 Levees and Floodwalls	7,283,287	763,270	3,333,688	11,380,245
33.30 Planning, Engineering and Design	644,563	161,141	354,510	1,160,213
33.31 Supervision and Administration	270,066	67,517	161,229	498,812
TOTAL Item 419-R Bayou Vidal-Elkridge	8,274,616	1,004,477	3,861,135	13,140,227
34 Item 421-R Bayou Vidal-Elkridge				
34.01 Lands and Damages	109,200	19,800	11,194	140,194
34.02 Relocations	58,000	14,500	22,381	94,881
34.11 Levees and Floodwalls	5,192,701	552,290	2,143,456	7,888,448
34.30 Planning, Engineering and Design	631,965	157,991	308,873	1,098,829
34.31 Supervision and Administration	278,664	69,666	149,016	497,346
TOTAL Item 421-R Bayou Vidal-Elkridge	6,270,530	814,248	2,634,919	9,719,697
35 Item 422-R Reid Bedford-King				
35.01 Lands and Damages	105,300	21,700	5,597	132,597
35.02 Relocations	45,000	11,250	17,364	73,614
35.11 Levees and Floodwalls	3,472,450	389,108	1,440,747	5,302,305
35.30 Planning, Engineering and Design	780,426	195,107	381,433	1,356,966
35.31 Supervision and Administration	248,300	62,075	132,778	443,153
TOTAL Item 422-R Reid Bedford-King	4,651,476	679,239	1,977,920	7,308,636

		CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
36	Item 424-R Reid Bedford-King				
36.01	Lands and Damages	164,000	35,000	7,308	206,308
36.11	Levees and Floodwalls	5,703,771	624,682	2,108,008	8,436,460
36.30	Planning, Engineering and Design	829,442	207,361	356,660	1,393,463
36.31	Supervision and Administration	350,982	87,746	166,365	605,093
TOTAL	Item 424-R Reid Bedford-King	7,048,195	954,788	2,638,341	10,641,324
37	Item 428-R Reid Bedford-King				
37.01	Lands and Damages	218,800	47,200	11,194	277,194
37.02	Relocations	41,000	10,250	15,821	67,071
37.11	Levees and Floodwalls	2,785,124	324,067	1,242,122	4,351,313
37.30	Planning, Engineering and Design	831,156	207,789	431,682	1,470,627
37.31	Supervision and Administration	294,213	73,553	166,451	534,217
TOTAL	Item 428-R Reid Bedford-King	4,170,293	662,859	1,867,269	6,700,422
38	Item 445-R Willow Pt.-Youngs Pt.				
38.01	Lands and Damages	187,400	40,600	3,233	231,233
38.11	Levees and Floodwalls	4,172,893	463,260	1,019,490	5,655,642
38.30	Planning, Engineering and Design	808,959	202,240	214,172	1,225,371
38.31	Supervision and Administration	395,800	98,950	120,719	615,469
TOTAL	Item 445-R Willow Pt.-Youngs Pt.	5,565,052	805,050	1,357,614	7,727,715
39	Item 450-R Willow Pt.-Youngs Pt.				
39.01	Lands and Damages	144,000	32,000	3,475	179,475
39.02	Relocations	25,000	6,250	6,175	37,425
39.11	Levees and Floodwalls	4,905,818	533,564	1,497,462	6,936,844
39.30	Planning, Engineering and Design	769,209	192,302	266,146	1,227,658
39.31	Supervision and Administration	407,468	101,867	157,945	667,280
TOTAL	Item 450-R Willow Pt.-Youngs Pt.	6,251,495	865,984	1,931,203	9,048,682
40	Item 452-L Brunswick-Halpino				
40.01	Lands and Damages	92,100	18,900	7,947	118,947
40.11	Levees and Floodwalls	4,024,812	357,287	2,290,523	6,672,622
40.30	Planning, Engineering and Design	864,396	216,099	615,126	1,695,621
40.31	Supervision and Administration	450,320	112,580	343,538	906,438
TOTAL	Item 452-L Brunswick-Halpino	5,431,628	704,866	3,257,134	9,393,628

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
41 Item 453-R Willow Pt.-Youngs Pt.				
41.01 Lands and Damages	293,600	66,400	5,600	365,600
41.11 Levees and Floodwalls	7,041,412	755,486	2,000,684	9,797,582
41.30 Planning, Engineering and Design	808,795	202,199	257,601	1,268,595
41.31 Supervision and Administration	417,635	104,409	150,244	672,288
TOTAL Item 453-R Willow Pt.-Youngs Pt.	8,561,442	1,128,493	2,414,129	12,104,064
42 Item 457-R Willow Pt.-Youngs Pt.				
42.01 Lands and Damages	206,500	42,500	10,412	259,412
42.02 Relocations	214,000	53,500	62,461	329,961
42.11 Levees and Floodwalls	7,664,934	361,245	2,516,207	10,542,386
42.30 Planning, Engineering and Design	820,613	205,153	329,681	1,355,448
42.31 Supervision and Administration	494,193	123,548	219,731	837,472
TOTAL Item 457-R Willow Pt.-Youngs Pt.	9,400,240	785,946	3,138,492	13,324,679
43 Item 458-L Brunswick-Halpino				
43.01 Lands and Damages	165,200	33,800	14,282	213,282
43.02 Relocations	5,000	1,250	2,428	8,678
43.11 Levees and Floodwalls	3,435,645	384,280	1,744,560	5,564,485
43.30 Planning, Engineering and Design	690,328	172,582	422,998	1,285,908
43.31 Supervision and Administration	271,611	67,903	179,671	519,184
TOTAL Item 458-L Brunswick-Halpino	4,567,784	659,815	2,363,938	7,591,537
44 Item 460-L Brunswick-Halpino				
44.01 Lands and Damages	126,100	23,900	14,282	164,282
44.02 Relocations	23,000	5,750	11,167	39,917
44.11 Levees and Floodwalls	3,663,072	408,175	1,859,338	5,930,585
44.30 Planning, Engineering and Design	690,478	172,620	423,090	1,286,188
44.31 Supervision and Administration	270,503	67,626	178,938	517,066
TOTAL Item 460-L Brunswick-Halpino	4,773,153	678,070	2,486,815	7,938,037
45 Item 461-R Willow Pt.-Youngs Pt.				
45.01 Lands and Damages	329,200	74,800	9,744	413,744
45.11 Levees and Floodwalls	6,033,010	670,550	2,501,098	9,204,658
45.30 Planning, Engineering and Design	832,580	208,145	406,923	1,447,648
45.31 Supervision and Administration	542,296	135,574	289,993	967,863
TOTAL Item 461-R Willow Pt.-Youngs Pt.	7,737,086	1,089,069	3,207,758	12,033,913

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
46 Item 462-L Magna Vista-Brunswick				
46.01 Lands and Damages	13,400	600	3,178	17,17
46.02 Relocations	861,476	215,369	374,634	1,451,47
46.11 Levees and Floodwalls	2,793,621	259,715	1,264,997	4,318,33
46.30 Planning, Engineering and Design	787,429	196,857	433,086	1,417,37
46.31 Supervision and Administration	335,088	83,772	200,048	618,908
TOTAL Item 462-L Magna Vista-Brunswick	4,791,014	756,313	2,275,943	7,823,270
47 Item 463-L Magna Vista-Brunswick				
47.01 Lands and Damages	34,500	7,500	1,400	43,400
47.02 Relocations	747,289	186,822	151,980	1,086,091
47.11 Levees and Floodwalls	3,675,154	265,028	938,157	4,878,340
47.30 Planning, Engineering and Design	859,879	214,970	250,762	1,325,611
47.31 Supervision and Administration	371,993	92,998	123,595	588,586
TOTAL Item 463-L Magna Vista-Brunswick	5,688,815	767,319	1,465,894	7,922,028
48 Item 465-L Magna Vista-Brunswick				
48.01 Lands and Damages	72,000	16,000	1,738	89,738
48.02 Relocations	747,289	186,822	184,580	1,118,692
48.11 Levees and Floodwalls	3,029,831	260,343	967,969	4,258,144
48.30 Planning, Engineering and Design	927,599	231,900	346,574	1,506,073
48.31 Supervision and Administration	426,607	106,652	177,362	710,621
TOTAL Item 465-L Magna Vista-Brunswick	5,203,327	801,717	1,678,223	7,683,267
49 Item 467-L Magna Vista-Brunswick				
49.01 Lands and Damages	14,400	1,600	2,082	18,082
49.02 Relocations	518,886	129,721	151,450	800,057
49.11 Levees and Floodwalls	3,919,690	294,608	1,321,182	5,535,481
49.30 Planning, Engineering and Design	876,464	219,116	352,119	1,447,69
49.31 Supervision and Administration	370,000	92,500	164,511	627,01
TOTAL Item 467-L Magna Vista-Brunswick	5,699,440	737,545	1,991,345	8,428,330
50 Item 477-L Tallula-Magna Vista				
50.01 Lands and Damages	206,400	44,600	1,722	252,722
50.02 Relocations	321,000	80,250	25,720	426,97
50.11 Levees and Floodwalls	8,395,495	922,642	1,084,631	10,402,769
50.30 Planning, Engineering and Design	492,982	123,246	55,276	671,503

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
50.31 Supervision and Administration	287,886	71,972	43,075	402,932
TOTAL Item 477-L Tallula-Magna Vista	9,703,763	1,242,709	1,210,423	12,156,896
51 Item 471-L Tallula-Magna Vista				
51.01 Lands and Damages	300,400	63,600	2,256	366,256
51.02 Relocations	150,000	37,500	6,206	193,706
51.11 Levees and Floodwalls	7,207,955	818,440	802,639	8,829,034
51.30 Planning, Engineering and Design	515,390	128,848	44,581	688,819
51.31 Supervision and Administration	281,826	70,457	49,214	401,496
TOTAL Item 471-L Tallula-Magna Vista	8,455,571	1,118,844	904,897	10,479,312
52 Item 480-R Wilson Pt.-Pt Lookout				
52.01 Lands and Damages	306,800	66,200	2,152	375,152
52.02 Relocations	385,000	96,250	30,848	512,098
52.11 Levees and Floodwalls	7,082,101	764,464	1,310,376	9,156,941
52.30 Planning, Engineering and Design	813,205	203,301	152,171	1,168,677
52.31 Supervision and Administration	514,073	128,518	115,859	758,450
TOTAL Item 480-R Wilson Pt.-Pt Lookout	9,101,179	1,258,734	1,611,407	11,971,319
53 Item 481-L Carlisle-Tallula				
53.01 Lands and Damages	214,000	50,000	1,515	265,515
53.02 Relocations	160,000	40,000	19,200	219,200
53.11 Levees and Floodwalls	5,844,308	638,001	1,195,338	7,677,646
53.30 Planning, Engineering and Design	780,214	195,054	165,600	1,140,868
53.31 Supervision and Administration	353,200	88,300	88,874	530,374
TOTAL Item 481-L Carlisle-Tallula	7,351,722	1,011,354	1,470,527	9,833,604
54 Item 483-R Wilson Pt.-Pt Lookout				
54.01 Lands and Damages	125,600	26,400	0	152,000
54.02 Relocations	15,000	3,750	0	18,750
54.11 Levees and Floodwalls	3,642,410	402,088	88,574	4,133,072
54.30 Planning, Engineering and Design	245,130	61,283	11,399	317,811
54.31 Supervision and Administration	265,920	66,480	12,365	344,765
TOTAL Item 483-R Wilson Pt.-Pt Lookout	4,294,060	560,000	112,338	4,966,398
55 Item 485-R Wilson Pt.-Pt Lookout				

		CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
55.01	Lands and Damages	97,900	21,100	1,515	120,515
55.02	Relocations	94,000	23,500	11,280	128,780
55.11	Levees and Floodwalls	4,894,386	328,258	872,182	6,094,826
55.30	Planning, Engineering and Design	693,410	173,353	129,754	996,517
55.31	Supervision and Administration	472,872	118,218	106,574	697,664
TOTAL	Item 485-R Wilson Pt.-Pt Lookout	6,252,568	664,429	1,121,305	8,038,302
56	Item 486-L Carlisle-Tallula				
56.01	Lands and Damages	155,400	34,600	2,155	192,155
56.02	Relocations	58,000	14,500	9,345	81,845
56.11	Levees and Floodwalls	3,070,416	131,446	646,776	3,848,639
56.30	Planning, Engineering and Design	701,066	175,267	167,204	1,043,537
56.31	Supervision and Administration	312,707	78,177	86,972	477,855
TOTAL	Item 486-L Carlisle-Tallula	4,297,589	433,990	912,453	5,644,032
57	Item 487-R Wilson Pt.-Pt Lookout				
57.01	Lands and Damages	172,800	31,200	4,546	208,546
57.02	Relocations	10,000	2,500	1,200	13,700
57.11	Levees and Floodwalls	4,919,164	536,446	911,087	6,366,697
57.30	Planning, Engineering and Design	610,450	152,613	114,230	877,293
57.31	Supervision and Administration	306,030	76,508	68,972	451,509
TOTAL	Item 487-R Wilson Pt.-Pt Lookout	6,018,444	799,266	1,100,034	7,917,744
58	Item 489-R Wilson Pt.-Pt Lookout				
58.01	Lands and Damages	373,000	83,000	312	456,312
58.02	Relocations	70,000	17,500	394	87,894
58.11	Levees and Floodwalls	4,869,105	555,475	455,122	5,879,702
58.30	Planning, Engineering and Design	589,320	147,330	35,875	772,525
58.31	Supervision and Administration	93,000	23,250	9,242	125,492
TOTAL	Item 489-R Wilson Pt.-Pt Lookout	5,994,425	826,555	500,945	7,321,924
59	Item 490-L Carlisle-Tallula				
59.01	Lands and Damages	109,600	23,400	2,155	135,155
59.02	Relocations	33,000	8,250	5,317	46,567
59.11	Levees and Floodwalls	3,087,761	129,542	707,485	3,924,788
59.30	Planning, Engineering and Design	762,836	190,709	201,961	1,155,506
59.31	Supervision and Administration	312,312	78,078	95,255	485,645
TOTAL	Item 490-L Carlisle-Tallula	4,305,509	429,979	1,012,173	5,747,661

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
60 Item 493-L Valewood-Carlisle				
60.01 Lands and Damages	54,800	12,200	62	67,062
60.11 Levees and Floodwalls	3,779,082	384,338	416,342	4,579,762
60.30 Planning, Engineering and Design	625,280	156,320	54,087	835,687
60.31 Supervision and Administration	333,025	83,256	41,503	457,784
TOTAL Item 493-L Valewood-Carlisle	4,792,187	636,114	511,994	5,940,296
61 Item 495-L Valewood-Carlisle				
61.01 Lands and Damages	32,000	6,000	62	38,062
61.02 Relocations	163,000	40,750	917	204,667
61.11 Levees and Floodwalls	5,873,314	689,108	656,242	7,218,664
61.30 Planning, Engineering and Design	625,280	156,320	54,087	835,687
61.31 Supervision and Administration	333,025	83,256	41,503	457,784
TOTAL Item 495-L Valewood-Carlisle	7,026,619	975,434	752,811	8,754,864
62 Item 497-L Valewood-Carlisle				
62.01 Lands and Damages	122,441	26,500	140	149,082
62.02 Relocations	41,000	10,250	231	51,481
62.11 Levees and Floodwalls	4,601,145	318,107	491,925	5,411,177
62.30 Planning, Engineering and Design	625,280	156,320	54,087	835,687
62.31 Supervision and Administration	333,025	83,256	41,503	457,784
TOTAL Item 497-L Valewood-Carlisle	5,722,891	594,433	587,886	6,905,210
63 Item 498-L Valewood-Carlisle				
63.01 Lands and Damages	68,041	12,900	125	81,066
63.02 Relocations	155,000	38,750	872	194,622
63.11 Levees and Floodwalls	3,381,426	242,210	362,364	3,985,999
63.30 Planning, Engineering and Design	625,280	156,320	54,087	835,687
63.31 Supervision and Administration	333,025	83,256	41,503	457,784
TOTAL Item 498-L Valewood-Carlisle	4,562,772	533,436	458,950	5,555,159
64 Item 502-L Carolina-Valewood				
64.02 Relocations	5,000	1,250	0	6,250
64.11 Levees and Floodwalls	8,646,421	927,638	353,283	9,927,342
64.30 Planning, Engineering and Design	458,340	114,585	26,927	599,852
64.31 Supervision and Administration	519,960	129,990	30,548	680,498
TOTAL Item 502-L Carolina-Valewood	9,629,721	1,173,463	410,758	11,213,943

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
65 Item 503-R State Line-Wilson Pt.				
65.01 Lands and Damages	315,000	73,000	1,128	389,128
65.02 Relocations	18,000	4,500	745	23,245
65.11 Levees and Floodwalls	5,782,429	643,590	747,989	7,174,008
65.30 Planning, Engineering and Design	712,227	178,057	79,858	970,142
65.31 Supervision and Administration	501,768	125,442	75,077	702,287
TOTAL Item 503-R State Line-Wilson Pt.	7,329,424	1,024,588	904,797	9,258,810
66 Item 506-R State Line-Wilson Pt.				
66.01 Lands and Damages	207,400	43,600	0	251,000
66.02 Relocations	13,000	3,250	0	16,250
66.11 Levees and Floodwalls	6,396,859	689,367	261,482	7,347,707
66.30 Planning, Engineering and Design	342,530	85,633	20,124	448,286
66.31 Supervision and Administration	443,520	110,880	26,057	580,457
TOTAL Item 506-R State Line-Wilson Pt.	7,403,309	932,729	307,662	8,643,700
67 Item 509-L Lake Jackson-Palmetto				
67.02 Relocations	38,000	9,500	22,463	69,963
67.11 Levees and Floodwalls	3,927,944	458,417	2,493,207	6,879,568
67.30 Planning, Engineering and Design	779,073	194,768	607,969	1,581,810
67.31 Supervision and Administration	359,763	89,941	299,773	749,476
TOTAL Item 509-L Lake Jackson-Palmetto	5,104,780	752,626	3,423,412	9,280,818
68 Item 511-L Lake Jackson-Palmetto				
68.11 Levees and Floodwalls	1,858,382	216,206	1,227,742	3,302,331
68.30 Planning, Engineering and Design	684,034	171,009	557,830	1,412,872
68.31 Supervision and Administration	255,000	63,750	212,479	531,229
TOTAL Item 511-L Lake Jackson-Palmetto	2,797,416	450,965	1,998,050	5,246,432
69 Item 520-R AboveLakeport-Harwood				
69.01 Lands and Damages	193,100	41,900	18,655	253,655
69.02 Relocations	5,000	1,250	4,111	10,361
69.11 Levees and Floodwalls	3,234,907	367,996	2,663,987	6,266,890
69.30 Planning, Engineering and Design	608,712	152,178	632,832	1,393,722
69.31 Supervision and Administration	251,526	62,882	276,584	590,992
TOTAL Item 520-R AboveLakeport-Harwood	4,293,245	626,206	3,596,170	8,515,620

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
70 Item 521-L James-Longwood				
70.01 Lands and Damages	73,400	14,600	11,472	99,472
70.02 Relocations	75,000	18,750	57,141	150,891
70.11 Levees and Floodwalls	4,888,779	564,780	3,755,866	9,209,425
70.30 Planning, Engineering and Design	866,522	216,631	833,594	1,916,747
70.31 Supervision and Administration	450,057	112,514	459,114	1,021,686
TOTAL Item 521-L James-Longwood	6,353,758	927,275	5,117,187	12,398,220
71 Item 524-L Avon-Longwood				
71.01 Lands and Damages	103,400	23,600	7,764	134,764
71.02 Relocations	83,000	20,750	84,193	187,943
71.11 Levees and Floodwalls	2,426,890	280,612	2,363,108	5,070,610
71.30 Planning, Engineering and Design	802,946	200,737	1,000,069	2,003,752
71.31 Supervision and Administration	134,754	33,689	176,646	345,088
TOTAL Item 524-L Avon-Longwood	3,550,990	559,387	3,631,780	7,742,157
72 Item 525-L Avon				
72.11 Levees and Floodwalls	1,081,556	127,280	956,794	2,165,629
72.30 Planning, Engineering and Design	446,072	111,518	499,489	1,057,079
72.31 Supervision and Administration	65,208	16,302	77,051	158,561
TOTAL Item 525-L Avon	1,592,836	255,100	1,533,334	3,381,270
73 Item 525-R AboveLakeport-Harwood				
73.01 Lands and Damages	225,500	48,500	24,874	298,874
73.02 Relocations	160,000	40,000	131,560	331,560
73.11 Levees and Floodwalls	3,317,812	381,417	2,831,019	6,530,248
73.30 Planning, Engineering and Design	689,360	172,340	744,250	1,605,950
73.31 Supervision and Administration	292,740	73,185	333,833	699,758
TOTAL Item 525-R AboveLakeport-Harwood	4,685,412	715,442	4,065,537	9,466,390
74 Item 526-L Avon				
74.01 Lands and Damages	47,600	10,400	5,736	63,736
74.02 Relocations	8,000	2,000	6,095	16,095
74.11 Levees and Floodwalls	940,083	106,840	695,052	1,741,975
74.30 Planning, Engineering and Design	393,839	98,460	364,055	856,354
74.31 Supervision and Administration	85,680	21,420	84,084	191,184
TOTAL Item 526-L Avon	1,475,202	239,119	1,155,022	2,869,343

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
75 Item 528-R AboveLakeport-Harwood				
75.01 Lands and Damages	225,400	49,600	24,874	299,874
75.02 Relocations	80,000	20,000	65,780	165,780
75.11 Levees and Floodwalls	4,257,377	476,358	3,500,123	8,233,858
75.30 Planning, Engineering and Design	627,100	156,775	651,949	1,435,824
75.31 Supervision and Administration	257,954	64,489	283,653	606,095
TOTAL Item 528-R AboveLakeport-Harwood	5,447,831	767,222	4,526,378	10,741,430
76 Item 531-L Refuge				
76.02 Relocations	713,000	178,250	676,191	1,567,441
76.11 Levees and Floodwalls	578,214	106,145	541,670	1,226,028
76.30 Planning, Engineering and Design	462,987	115,747	518,430	1,097,163
76.31 Supervision and Administration	35,100	8,775	41,475	85,350
TOTAL Item 531-L Refuge	1,789,301	408,916	1,777,766	3,975,983
77 Item 531-R Sunnyside				
77.01 Lands and Damages	178,600	37,400	26,870	242,870
77.02 Relocations	713,000	178,250	630,559	1,521,809
77.11 Levees and Floodwalls	2,715,804	321,867	2,404,317	5,441,988
77.30 Planning, Engineering and Design	675,864	168,966	756,799	1,601,629
77.31 Supervision and Administration	250,600	62,650	296,115	609,365
TOTAL Item 531-R Sunnyside	4,533,868	769,133	4,114,660	9,417,661
78 Item 531.5-L-A Deerfield				
78.01 Lands and Damages	47,200	9,800	8,318	65,318
78.11 Levees and Floodwalls	1,169,516	132,268	1,172,387	2,474,172
78.30 Planning, Engineering and Design	455,494	113,874	587,018	1,156,385
78.31 Supervision and Administration	77,520	19,380	105,059	201,959
TOTAL Item 531.5-L-A Deerfield	1,749,730	275,322	1,872,783	3,897,835
79 Item 536-R Leland-Vancluse				
79.01 Lands and Damages	146,300	24,725	37,310	208,335
79.02 Relocations	10,000	2,500	8,223	20,723
79.11 Levees and Floodwalls	2,752,399	541,303	2,606,965	5,900,668
79.30 Planning, Engineering and Design	979,070	244,768	1,096,314	2,320,151
79.31 Supervision and Administration	638,560	159,640	754,538	1,552,738
TOTAL Item 536-R Leland-Vancluse	4,526,329	972,935	4,503,350	10,002,615

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
80 Item 538-L Warfield				
80.11 Levees and Floodwalls	233,740	31,435	238,817	503,993
80.30 Planning, Engineering and Design	336,976	84,244	434,278	855,498
80.31 Supervision and Administration	23,317	5,829	31,600	60,747
TOTAL Item 538-L Warfield	594,033	121,509	704,695	1,420,237
81 Item 540-L Lagrange				
81.02 Relocations	161,000	40,250	163,314	364,564
81.11 Levees and Floodwalls	832,582	91,339	806,398	1,730,319
81.30 Planning, Engineering and Design	511,185	127,796	636,681	1,275,662
81.31 Supervision and Administration	145,264	36,316	190,423	372,003
TOTAL Item 540-L Lagrange	1,650,031	295,702	1,796,816	3,742,549
82 Item 541-R Luna-Leland				
82.01 Lands and Damages	367,100	85,900	26,870	479,870
82.02 Relocations	25,000	6,250	22,109	53,359
82.11 Levees and Floodwalls	3,749,824	438,208	3,426,648	7,614,679
82.30 Planning, Engineering and Design	796,651	199,163	924,912	1,920,726
82.31 Supervision and Administration	340,774	85,194	417,065	843,032
TOTAL Item 541-R Luna-Leland	5,279,349	814,714	4,817,604	10,911,667
83 Item 543-L Above Greenville				
83.01 Lands and Damages	67,600	15,400	8,318	91,318
83.02 Relocations	247,000	61,750	267,347	576,097
83.11 Levees and Floodwalls	2,137,043	244,255	2,212,225	4,593,523
83.30 Planning, Engineering and Design	895,216	223,804	1,193,435	2,312,455
83.31 Supervision and Administration	121,433	30,358	170,052	321,843
TOTAL Item 543-L Above Greenville	3,468,292	575,567	3,851,377	7,895,236
84 Item 543-R Panther Forest				
84.01 Lands and Damages	56,400	11,600	14,464	82,464
84.02 Relocations	5,000	1,250	4,742	10,992
84.11 Levees and Floodwalls	663,618	80,834	589,234	1,333,686
84.30 Planning, Engineering and Design	438,148	109,537	490,616	1,038,301
84.31 Supervision and Administration	43,551	10,888	51,461	105,900
TOTAL Item 543-R Panther Forest	1,206,717	214,109	1,150,517	2,571,343

		CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
85	Item 546-R Gaines Landing				
85.01	Lands and Damages	138,500	29,500	21,696	189,696
85.02	Relocations	5,000	1,250	4,742	10,992
85.11	Levees and Floodwalls	1,275,919	146,593	1,163,899	2,586,410
85.30	Planning, Engineering and Design	794,819	198,705	922,785	1,916,309
85.31	Supervision and Administration	99,960	24,990	113,992	238,942
TOTAL	Item 546-R Gaines Landing	2,314,198	401,037	2,227,113	4,942,348
86	Item 548-R Dewey				
86.01	Lands and Damages	44,800	7,200	14,464	66,464
86.02	Relocations	30,000	7,500	28,451	65,951
86.11	Levees and Floodwalls	329,440	40,387	292,718	662,545
86.30	Planning, Engineering and Design	356,583	89,146	399,284	845,013
86.31	Supervision and Administration	27,117	6,779	32,042	65,938
TOTAL	Item 548-R Dewey	787,940	151,012	766,959	1,705,911
87	Item 555-R Below Arkansas City				
87.01	Lands and Damages	40,000	6,000	13,435	59,435
87.11	Levees and Floodwalls	282,672	36,232	244,057	562,961
87.30	Planning, Engineering and Design	362,155	90,539	390,992	843,685
87.31	Supervision and Administration	52,130	13,033	59,448	124,610
TOTAL	Item 555-R Below Arkansas City	736,957	145,803	707,932	1,590,692
88	Item 570-L Below Catfish Point				
88.01	Lands and Damages	56,800	12,200	8,318	77,318
88.11	Levees and Floodwalls	1,236,223	140,768	1,240,118	2,617,108
88.30	Planning, Engineering and Design	706,174	176,544	910,082	1,792,799
88.31	Supervision and Administration	93,111	23,278	126,189	242,577
TOTAL	Item 570-L Below Catfish Point	2,092,308	352,789	2,284,706	4,729,803
89	Item 571-L Catfish Point				
89.01	Lands and Damages	30,400	5,600	8,318	44,318
89.02	Relocations	8,000	2,000	8,659	18,659
89.11	Levees and Floodwalls	528,622	65,057	534,667	1,128,346
89.30	Planning, Engineering and Design	438,250	109,563	564,795	1,112,607
89.31	Supervision and Administration	31,702	7,926	42,964	82,592
TOTAL	Item 571-L Catfish Point	1,036,974	190,145	1,159,403	2,386,522

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
90 Item 575-L Upper Lake Bolivar				
90.02 Relocations	9,000	2,250	9,741	20,991
90.11 Levees and Floodwalls	399,833	50,118	405,226	855,177
90.30 Planning, Engineering and Design	378,013	94,503	487,164	959,681
90.31 Supervision and Administration	27,720	6,930	37,568	72,218
TOTAL Item 575-L Upper Lake Bolivar	814,566	153,801	939,699	1,908,067
91 Item 576-R Cypress Creek				
91.01 Lands and Damages	142,600	30,400	20,153	193,153
91.02 Relocations	48,000	12,000	42,450	102,450
91.11 Levees and Floodwalls	1,184,130	139,848	1,013,241	2,337,219
91.30 Planning, Engineering and Design	651,177	162,794	703,027	1,516,998
91.31 Supervision and Administration	84,720	21,180	96,613	202,513
TOTAL Item 576-R Cypress Creek	2,110,627	366,222	1,875,483	4,352,333
92 Item 585-L Riverton				
92.01 Lands and Damages	50,800	11,200	7,764	69,764
92.11 Levees and Floodwalls	908,338	114,042	864,217	1,886,597
92.30 Planning, Engineering and Design	603,497	150,874	725,630	1,480,001
92.31 Supervision and Administration	58,240	14,560	73,790	146,590
TOTAL Item 585-L Riverton	1,620,875	290,676	1,671,401	3,582,952
93 Item 589-L Rosedale				
93.01 Lands and Damages	20,000	3,000	8,318	31,318
93.02 Relocations	20,000	5,000	21,648	46,648
93.11 Levees and Floodwalls	235,481	32,169	241,045	508,695
93.30 Planning, Engineering and Design	305,105	76,276	393,204	774,585
93.31 Supervision and Administration	15,080	3,770	20,437	39,287
TOTAL Item 589-L Rosedale	595,666	120,215	684,652	1,400,533
94 Item 607-L Sledge-Waxhaw				
94.01 Lands and Damages	55,000	10,000	15,528	80,528
94.11 Levees and Floodwalls	449,879	58,369	429,622	937,870
94.30 Planning, Engineering and Design	342,526	85,632	411,845	840,002
94.31 Supervision and Administration	29,436	7,359	37,295	74,090
TOTAL Item 607-L Sledge-Waxhaw	876,841	161,360	894,290	1,932,490

		CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
95	Item 611-L Deeson				
95.01	Lands and Damages	55,800	7,200	24,955	87,955
95.11	Levees and Floodwalls	669,285	75,707	692,098	1,437,090
95.30	Planning, Engineering and Design	685,453	171,363	913,795	1,770,611
95.31	Supervision and Administration	79,360	19,840	111,134	210,334
TOTAL	Item 611-L Deeson	1,489,898	274,110	1,741,981	3,505,990
96	Item 614-L Round Lake				
96.01	Lands and Damages	80,000	16,000	15,528	111,528
96.11	Levees and Floodwalls	683,797	77,497	643,522	1,404,817
96.30	Planning, Engineering and Design	481,538	120,385	578,989	1,180,912
96.31	Supervision and Administration	59,474	14,869	75,354	149,696
TOTAL	Item 614-L Round Lake	1,304,809	228,750	1,313,393	2,846,952
97	Item 616-L Fransis				
97.01	Lands and Damages	24,800	4,200	7,764	36,764
97.02	Relocations	8,000	2,000	8,115	18,115
97.11	Levees and Floodwalls	1,278,539	144,516	1,242,042	2,665,097
97.30	Planning, Engineering and Design	708,419	177,105	882,336	1,767,860
97.31	Supervision and Administration	70,800	17,700	92,810	181,310
TOTAL	Item 616-L Fransis	2,090,558	345,521	2,233,067	4,669,146
98	Item 606R, AR Henrico Berm				
98.01	Lands and Damages	323,000	60,000	80,430	463,430
98.11	Levees and Floodwalls	2,830,023	566,005	772,548	4,168,575
98.30	Planning, Engineering and Design	509,404	76,411	98,417	684,231
98.31	Construction Management	339,603	50,940	98,807	489,351
TOTAL	Item 606R, AR Henrico Berm	4,002,030	753,356	1,050,202	5,805,587
99	Item 612R, AR Knowlton Berm				
99.01	Lands and Damages	231,000	32,000	78,111	341,111
99.11	Levees and Floodwalls	1,005,862	201,172	364,807	1,571,841
99.30	Planning, Engineering and Design	181,055	27,158	52,678	260,891
99.31	Construction Management	120,703	18,105	47,472	186,281
TOTAL	Item 612R, AR Knowlton Berm	1,538,620	278,436	543,068	2,360,124

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
100 Item 628L, MS Hillhouse R. Wells				
100.01 Lands and Damages	206,000	25,000	163,317	394,317
100.11 Levees and Floodwalls	3,973,077	794,615	3,097,093	7,864,785
100.30 Planning, Engineering and Design	1,072,730	160,910	801,866	2,035,505
100.31 Construction Management	715,154	107,273	630,802	1,453,229
TOTAL Item 628L, MS Hillhouse R. Wells	5,966,961	1,087,798	4,693,077	11,747,836
101 Item 670L, MS Trotters Berm				
101.01 Lands and Damages	434,000	70,000	356,328	860,328
101.11 Levees and Floodwalls	3,864,180	386,418	2,761,188	7,011,786
101.30 Planning, Engineering and Design	637,590	95,638	476,599	1,209,827
101.31 Construction Management	425,060	63,759	374,924	863,743
TOTAL Item 670L, MS Trotters Berm	5,360,830	615,815	3,969,039	9,945,685
102 Item 675L, MS Austin R. Wells				
102.01 Lands and Damages	53,000	6,000	28,792	87,792
102.11 Levees and Floodwalls	1,418,956	283,791	792,969	2,495,717
102.30 Planning, Engineering and Design	510,824	76,624	257,302	844,750
102.31 Construction Management	340,550	51,083	211,482	603,114
TOTAL Item 675L, MS Austin R. Wells	2,323,330	417,497	1,290,545	4,031,372
103 Item 716R, AR Blue Lake R. Wells				
103.01 Lands and Damages	70,000	9,000	34,602	113,602
103.11 Levees and Floodwalls	2,412,911	482,582	1,224,762	4,120,254
103.30 Planning, Engineering and Design	434,324	65,149	194,295	693,767
103.31 Construction Management	289,550	43,433	162,495	495,478
TOTAL Item 716R, AR Blue Lake R. Wells	3,206,785	600,163	1,616,154	5,423,102
104 Item719R,AR Louise Berm/Pit fill				
104.01 Lands and Damages	201,000	28,000	38,472	267,472
104.11 Levees and Floodwalls	628,978	125,796	144,714	899,488
104.30 Planning, Engineering and Design	113,216	16,982	16,665	146,864
104.31 Construction Management	75,477	11,322	18,228	105,026
TOTAL Item719R,AR Louise Berm/Pit fill	1,018,671	182,100	218,079	1,418,850
105 Item 766R, AR Pecan Pt. Berm				

		CONTRACT COST	CONTINGN	ESCALATN	TOTAL CO
105.01	Lands and Damages	588,000	95,000	368,820	1,051,8
105.11	Levees and Floodwalls	5,921,350	592,135	3,319,924	9,833,409
105.30	Planning, Engineering and Design	977,023	146,553	548,305	1,671,882
105.31	Construction Management	651,349	97,702	444,937	1,193,988
TOTAL	Item 766R, AR Pecan Pt. Berm	8,137,722	931,391	4,681,985	13,751,0
106	Item 782R, AR Butler Berm				
106.01	Lands and Damages	290,000	53,000	167,384	510,384
106.11	Levees and Floodwalls	1,620,269	162,027	830,004	2,612,299
106.30	Planning, Engineering and Design	267,344	40,102	134,661	442,107
106.31	Construction Management	178,230	26,735	110,681	315,645
TOTAL	Item 782R, AR Butler Berm	2,355,843	281,863	1,242,730	3,880,436
107	Itm833R,MO Baders-Cottonw'd Berm				
107.01	Lands and Damages	1,577,000	337,000	744,546	2,658,546
107.11	Levees and Floodwalls	15,295,237	1,529,524	6,418,646	23,243,407
107.30	Planning, Engineering and Design	2,523,714	378,557	992,577	3,894,848
107.31	Construction Management	1,682,476	252,371	847,463	2,782,311
TOTAL	Itm833R,MO Baders-Cottonw'd Berm	21,078,427	2,497,452	9,003,232	32,579,111
108	Item 841L, TN Miston Berm				
108.01	Lands and Damages	149,000	18,000	57,114	224,114
108.11	Levees and Floodwalls	433,483	86,697	177,543	697,72
108.30	Planning, Engineering and Design	78,027	11,704	26,650	116,38
108.31	Construction Management	52,019	7,803	23,271	83,09
TOTAL	Item 841L, TN Miston Berm	712,529	124,204	284,578	1,121,311
109	It843R,MO S. Caruthersville Berm				
109.01	Lands and Damages	810,000	141,000	564,894	1,515,894
109.11	Levees and Floodwalls	4,638,303	927,661	3,088,553	8,654,516
109.30	Planning, Engineering and Design	834,895	125,234	518,470	1,478,599
109.31	Construction Management	556,596	83,489	416,056	1,056,14
TOTAL	It843R,MO S. Caruthersville Berm	6,839,794	1,277,384	4,587,972	12,705,150
110	Item 892R, MO Hubbard Lake Berm				
110.01	Lands and Damages	338,000	62,000	101,200	501,200

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
110.11 Levees and Floodwalls	3,818,138	763,628	1,210,961	5,792,727
110.30 Planning, Engineering and Design	687,265	103,090	165,974	956,329
110.31 Construction Management	458,177	68,727	156,490	683,394
TOTAL Item 892R, MO Hubbard Lake Berm	5,301,580	997,444	1,634,626	7,933,650
111 Item 905L, TN Phillipy Berm				
111.01 Lands and Damages	62,000	9,000	21,087	92,087
111.11 Levees and Floodwalls	190,899	38,180	69,235	298,314
111.30 Planning, Engineering and Design	34,362	5,154	9,998	49,514
111.31 Construction Management	22,909	3,436	9,010	35,355
TOTAL Item 905L, TN Phillipy Berm	310,170	55,770	109,330	475,270
112 Item910R,MO Barnes Ridge R.Wells				
112.01 Lands and Damages	634,000	33,000	85,376	752,376
112.11 Levees and Floodwalls	14,669,400	2,933,880	2,763,715	20,366,995
112.30 Planning, Engineering and Design	3,960,738	594,111	400,827	4,955,675
112.31 Construction Management	2,640,491	396,074	510,143	3,546,708
TOTAL Item910R,MO Barnes Ridge R.Wells	21,904,629	3,957,064	3,760,061	29,621,754
113 Item 913R, MO Bayouville Berm				
113.01 Lands and Damages	559,000	98,000	166,221	823,221
113.02 Relocations	53,043	7,956	16,123	77,122
113.11 Levees and Floodwalls	3,666,675	733,335	1,162,923	5,562,932
113.30 Planning, Engineering and Design	660,001	99,000	159,390	918,391
113.31 Construction Management	440,001	66,000	150,282	656,283
TOTAL Item 913R, MO Bayouville Berm	5,378,720	1,004,292	1,654,939	8,037,951
114 Item 915R, KY Island 8 R. Wells				
114.01 Lands and Damages	84,000	9,000	19,530	112,530
114.02 Relocations	1,739	261	455	2,455
114.11 Levees and Floodwalls	3,747,323	749,465	1,023,019	5,519,807
114.30 Planning, Engineering and Design	896,615	134,492	173,226	1,204,333
114.31 Construction Management	597,744	89,662	173,914	861,319
TOTAL Item 915R, KY Island 8 R. Wells	5,327,421	982,879	1,390,144	7,700,445
115 Item 916R, MO BPNM Pit Drain				

		CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
115.01	Lands and Damages	249,000	15,000	171,600	435,600
115.11	Levees and Floodwalls	463,003	69,450	320,321	852,774
115.30	Planning, Engineering and Design	79,868	11,980	54,558	146,406
115.31	Construction Management	53,246	7,987	43,292	104,525
TOTAL	Item 916R, MO BPNM Pit Drain	845,117	104,417	589,770	1,539,305
116	Item929R,MO Ab.Dorena Par 1 Berm				
116.01	Lands and Damages	247,000	39,000	13,442	299,442
116.11	Levees and Floodwalls	1,499,915	299,983	163,083	1,962,982
116.30	Planning, Engineering and Design	269,985	40,498	14,593	325,075
116.31	Construction Management	179,990	26,999	18,215	225,203
TOTAL	Item929R,MO Ab.Dorena Par 1 Berm	2,196,890	406,479	209,333	2,812,702
117	Item929R,MO Ab.Dorena Par 2 Berm				
117.01	Lands and Damages	126,000	19,000	43,065	188,065
117.02	Relocations	9,565	1,435	3,324	14,324
117.11	Levees and Floodwalls	599,372	119,874	217,381	936,627
117.30	Planning, Engineering and Design	107,886	16,183	31,389	155,458
117.31	Construction Management	71,924	10,789	28,288	111,000
TOTAL	Item929R,MO Ab.Dorena Par 2 Berm	914,747	167,281	323,447	1,405,475
118	Item929R,MO Ab.Dorena Par 3 Berm				
118.01	Lands and Damages	213,000	29,000	71,874	313,874
118.02	Relocations	2,609	391	907	3,907
118.11	Levees and Floodwalls	652,403	130,481	236,614	1,019,498
118.30	Planning, Engineering and Design	117,433	17,615	34,167	169,215
118.31	Construction Management	78,289	11,743	30,791	120,823
TOTAL	Item929R,MO Ab.Dorena Par 3 Berm	1,063,734	189,230	374,353	1,627,317
119	Item 946R, MO Samos Berm				
119.01	Lands and Damages	260,000	35,000	61,950	356,950
119.11	Levees and Floodwalls	931,335	186,267	254,239	1,371,841
119.30	Planning, Engineering and Design	167,640	25,146	32,388	225,174
119.31	Construction Management	111,760	16,764	32,517	161,041
TOTAL	Item 946R, MO Samos Berm	1,470,735	263,177	381,094	2,115,005
120	Item957R,IL Cairo Floodwall Berm				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
120.01 Lands and Damages	86,000	9,000	15,960	110,960
120.11 Levees and Floodwalls	649,445	129,889	149,424	928,758
120.30 Planning, Engineering and Design	116,900	17,535	17,208	151,643
120.31 Construction Management	77,933	11,690	18,821	108,444
TOTAL Item957R,IL Cairo Floodwall Berm	930,278	168,114	201,412	1,299,805
121 Item 961R, IL Cairo - Mound C				
121.01 Lands and Damages	10,000	1,000	7,150	18,150
121.11 Levees and Floodwalls	946,885	189,377	683,568	1,819,830
121.30 Planning, Engineering and Design	170,440	25,566	116,428	312,434
121.31 Construction Management	113,626	17,044	92,384	223,054
TOTAL Item 961R, IL Cairo - Mound C	1,240,951	232,987	899,529	2,373,467
122 Item963R,IL Mound City Wash Prot				
122.01 Lands and Damages	34,000	2,000	15,768	51,768
122.11 Levees and Floodwalls	243,429	36,514	118,413	398,356
122.30 Planning, Engineering and Design	41,991	6,299	18,785	67,074
122.31 Construction Management	27,994	4,199	15,710	47,903
TOTAL Item963R,IL Mound City Wash Prot	347,414	49,012	168,676	565,102
123 Item 965R, IL A. Mound City				
123.01 Lands and Damages	81,000	5,000	51,084	137,084
123.11 Levees and Floodwalls	3,553,559	710,712	2,366,244	6,630,515
123.30 Planning, Engineering and Design	639,641	95,946	397,217	1,132,804
123.31 Construction Management	426,427	63,964	318,754	809,145
TOTAL Item 965R, IL A. Mound City	4,700,627	875,622	3,133,299	8,709,549
124 IL Cairo Grade Rse				
124.01 Lands and Damages	1,000	0	438	1,438
124.11 Levees and Floodwalls	757,299	75,730	352,362	1,185,391
124.30 Planning, Engineering and Design	11,000	1,650	4,921	17,571
124.31 Construction Management	50,000	7,500	28,060	85,560
TOTAL IL Cairo Grade Rse	819,299	84,880	385,781	1,289,960
125 ItemL10AC,IL A. Cario Par.1 Berm				
125.01 Lands and Damages	254,000	23,000	70,081	347,081

		CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
125.11	Levees and Floodwalls	1,120,629	224,126	355,445	1,700,200
125.30	Planning, Engineering and Design	201,714	30,257	48,714	280,685
125.31	Construction Management	134,476	20,171	45,930	200,578
TOTAL	ItemL10AC,IL A. Cario Par.1 Berm	1,710,819	297,554	520,170	2,528,543
126	Item 22AC R, MO Drinkwater PS				
126.01	Lands and Damages	23,000	1,000	1,128	25,128
126.13	Pumping Plant	5,599,947	839,992	378,985	6,818,924
126.30	Planning, Engineering and Design	966,000	144,900	0	1,110,900
126.31	Construction Management	644,000	96,600	34,808	775,408
TOTAL	Item 22AC R, MO Drinkwater PS	7,232,947	1,082,492	414,921	8,730,360
127	It33ACR,MO Commerce - BP Gra Rse				
127.01	Lands and Damages	833,000	124,000	44,979	1,001,979
127.11	Levees and Floodwalls	7,946,045	1,191,907	537,757	9,675,708
127.30	Planning, Engineering and Design	1,370,693	205,604	0	1,576,297
127.31	Construction Management	913,796	137,069	49,391	1,100,256
TOTAL	It33ACR,MO Commerce - BP Gra Rse	11,063,534	1,658,580	632,126	13,354,240
128	Item 48R AC,MO Nash Berm R.Wells				
128.01	Lands and Damages	123,000	8,000	22,008	153,008
128.11	Levees and Floodwalls	2,513,449	502,690	725,492	3,741,630
128.30	Planning, Engineering and Design	567,583	85,137	83,548	736,269
128.31	Construction Management	378,389	56,758	91,381	526,528
TOTAL	Item 48R AC,MO Nash Berm R.Wells	3,582,421	652,586	922,429	5,157,435
129	Mitigation				
129.01	Lands and Damages	4,653,150	1,163,288	2,502,231	8,318,669
129.06	Fish and Wildlife Facilities	2,043,125	510,781	989,152	3,543,059
129.30	Planning, Engineering and Design	452,900	113,225	145,989	712,114
129.31	Supervision and Administration	179,550	44,888	57,397	281,835
TOTAL	Mitigation	7,328,725	1,832,181	3,694,769	12,855,676
TOTAL	Mississippi River Levees Project	572,478,073	84,014,042	254,799,586	911,291,702

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
01 LOWER VENICE 2ND LIFT				
01.11 LOWER VENICE 2ND LIFT				
01.11.01 LOWER VENICE 2ND LIFT	419,154	83,831	9,557	512,542
TOTAL LOWER VENICE 2ND LIFT	419,154	83,831	9,557	512,542
01.30 PLANNING, ENGINEERING & DESIGN				
01.30.04 CONSTRUCTION CONTRACT PE&D	60,000	12,000	1,368	73,368
01.30.05 PROGRAM & PROJECT MANAGEMENT	6,300	1,260	144	7,704
TOTAL PLANNING, ENGINEERING & DESIGN	66,300	13,260	1,512	81,072
01.31 CONSTRUCTION MANAGEMENT				
01.31.01 PROJECT OFFICE S&A	16,800	3,360	383	20,543
01.31.02 AREA OFFICE S&A	16,800	3,360	383	20,543
01.31.03 DISTRICT OFFICE S&A	16,800	3,360	383	20,543
TOTAL CONSTRUCTION MANAGEMENT	50,400	10,080	1,149	61,629
TOTAL LOWER VENICE 2ND LIFT	535,854	107,171	12,217	655,242
02 NEW ORLEANS DISTRICT FLOODWALL				
02.11 NEW ORLEANS DISTRICT FLOODWALL				
02.11.01 NEW ORLEANS DISTRICT FLOODWALL	734,500	146,900	74,038	955,437
TOTAL NEW ORLEANS DISTRICT FLOODWALL	734,500	146,900	74,038	955,437
02.30 PLANNING, ENGINEERING & DESIGN				
02.30.04 CONSTRUCTION CONTRACT PE&D	60,000	12,000	6,048	78,048
02.30.05 PROGRAM & PROJECT MANAGEMENT	11,000	2,200	1,109	14,309
TOTAL PLANNING, ENGINEERING & DESIGN	71,000	14,200	7,157	92,357
02.31 CONSTRUCTION MANAGEMENT				
02.31.01 PROJECT OFFICE S&A	29,400	5,880	2,964	38,244
02.31.02 AREA OFFICE S&A	29,400	5,880	2,964	38,244

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
02.31.03 DISTRICT OFFICE S&A	29,400	5,880	2,964	38,244
TOTAL CONSTRUCTION MANAGEMENT	88,200	17,640	8,891	114,731
TOTAL NEW ORLEANS DISTRICT FLOODWALL	893,700	178,740	90,085	1,162,524
03 CARROLLTON LEVEE ENLARGEMENT				
03.11 CARROLLTON LEVEE ENLARGEMENT				
03.11.01 CARROLLTON LEVEE ENLARGEMENT	562,525	112,505	16,876	691,906
TOTAL CARROLLTON LEVEE ENLARGEMENT	562,525	112,505	16,876	691,906
03.30 PLANNING, ENGINEERING & DESIGN				
03.30.04 CONSTRUCTION CONTRACT PE&D	90,000	18,000	2,700	110,700
03.30.05 PROGRAM & PROJECT MANAGEMENT	8,400	1,680	252	10,332
TOTAL PLANNING, ENGINEERING & DESIGN	98,400	19,680	2,952	121,032
03.31 CONSTRUCTION MANAGEMENT				
03.31.01 PROJECT OFFICE S&A	22,500	4,500	675	27,675
03.31.02 AREA OFFICE S&A	22,500	4,500	675	27,675
03.31.03 DISTRICT OFFICE S&A	22,500	4,500	675	27,675
TOTAL CONSTRUCTION MANAGEMENT	67,500	13,500	2,025	83,025
TOTAL CARROLLTON LEVEE ENLARGEMENT	728,425	145,685	21,853	895,963
04 JEFFERSON HEIGHTS				
04.11 JEFFERSON HEIGHTS				
04.11.01 JEFFERSON HEIGHTS	187,874	37,575	0	225,449
TOTAL JEFFERSON HEIGHTS	187,874	37,575	0	225,449
04.30 PLANNING, ENGINEERING & DESIGN				
04.30.04 CONSTRUCTION CONTRACT PE&D	70,000	14,000	0	84,000
04.30.05 PROGRAM & PROJECT MANAGEMENT	2,800	560	0	3,360
TOTAL PLANNING, ENGINEERING & DESIGN	72,800	14,560	0	87,360

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
04.31 CONSTRUCTION MANAGEMENT				
04.31.01 PROJECT OFFICE S&A	7,500	1,500	0	9,000
04.31.02 AREA OFFICE S&A	7,500	1,500	0	9,000
04.31.03 DISTRICT OFFICE S&A	7,500	1,500	0	9,000
TOTAL CONSTRUCTION MANAGEMENT	22,500	4,500	0	27,000
TOTAL JEFFERSON HEIGHTS	283,174	56,635	0	339,809
05 CARVILLE TO MARCHAND				
05.11 CARVILLE TO MARCHAND				
05.11.01 CARVILLE TO MARCHAND	3,642,700	728,540	0	4,371,240
TOTAL CARVILLE TO MARCHAND	3,642,700	728,540	0	4,371,240
05.30 PLANNING, ENGINEERING & DESIGN				
05.30.04 CONSTRUCTION CONTRACT PE&D	50,000	10,000	0	60,000
05.30.05 PROGRAM & PROJECT MANAGEMENT	54,600	10,920	0	65,520
TOTAL PLANNING, ENGINEERING & DESIGN	104,600	20,920	0	125,520
05.31 CONSTRUCTION MANAGEMENT				
05.31.01 PROJECT OFFICE S&A	145,700	29,140	0	174,840
05.31.02 AREA OFFICE S&A	145,700	29,140	0	174,840
05.31.03 DISTRICT OFFICE S&A	145,700	29,140	0	174,840
TOTAL CONSTRUCTION MANAGEMENT	437,100	87,420	0	524,520
TOTAL CARVILLE TO MARCHAND	4,184,400	836,880	0	5,021,280
06 HOHEN-SOLMS TO MODESTE				
06.11 HOHEN-SOLMS TO MODESTE				
06.11.01 HOHEN-SOLMS TO MODESTE	925,800	185,160	0	1,110,960
TOTAL HOHEN-SOLMS TO MODESTE	925,800	185,160	0	1,110,960
06.30 PLANNING, ENGINEERING & DESIGN				
06.30.04 CONSTRUCTION CONTRACT PE&D	90,000	18,000	0	108,000

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
06.30.05 PROGRAM & PROJECT MANAGEMENT	13,900	2,780	0	16,680
TOTAL PLANNING, ENGINEERING & DESIGN	103,900	20,780	0	124,680
06.31 CONSTRUCTION MANAGEMENT				
06.31.01 PROJECT OFFICE S&A	37,000	7,400	0	44,400
06.31.02 AREA OFFICE S&A	37,000	7,400	0	44,400
06.31.03 DISTRICT OFFICE S&A	37,000	7,400	0	44,400
TOTAL CONSTRUCTION MANAGEMENT	111,000	22,200	0	133,200
TOTAL HOHEN-SOLMS TO MODESTE	1,140,700	228,140	0	1,368,840
07 ALHAMBRA TO HOHEN-SOLMS				
07.11 ALHAMBRA TO HOHEN-SOLMS				
07.11.01 ALHAMBRA TO HOHEN-SOLMS	817,200	163,440	0	980,640
TOTAL ALHAMBRA TO HOHEN-SOLMS	817,200	163,440	0	980,640
07.30 PLANNING, ENGINEERING & DESIGN				
07.30.04 CONSTRUCTION CONTRACT PE&D	60,000	12,000	0	72,000
07.30.05 PROGRAM & PROJECT MANAGEMENT	12,300	2,460	0	14,760
TOTAL PLANNING, ENGINEERING & DESIGN	72,300	14,460	0	86,760
07.31 CONSTRUCTION MANAGEMENT				
07.31.01 PROJECT OFFICE S&A	32,700	6,540	0	39,240
07.31.02 AREA OFFICE S&A	32,700	6,540	0	39,240
07.31.03 DISTRICT OFFICE S&A	32,700	6,540	0	39,240
TOTAL CONSTRUCTION MANAGEMENT	98,100	19,620	0	117,720
TOTAL ALHAMBRA TO HOHEN-SOLMS	987,600	197,520	0	1,185,120
08 REVEILLE TO POINT PLEASANT				
08.11 REVEILLE TO POINT PLEASANT				
08.11.01 REVEILLE TO POINT PLEASANT	1,732,776	346,555	0	2,079,331
TOTAL REVEILLE TO POINT PLEASANT	1,732,776	346,555	0	2,079,331

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
08.30 PLANNING, ENGINEERING & DESIGN				
08.30.04 CONSTRUCTION CONTRACT PE&D	50,000	10,000	0	60,000
08.30.05 PROGRAM & PROJECT MANAGEMENT	26,000	5,200	0	31,200
TOTAL PLANNING, ENGINEERING & DESIGN	76,000	15,200	0	91,200
08.31 CONSTRUCTION MANAGEMENT				
08.31.01 PROJECT OFFICE S&A	69,300	13,860	0	83,160
08.31.02 AREA OFFICE S&A	69,300	13,860	0	83,160
08.31.03 DISTRICT OFFICE S&A	69,300	13,860	0	83,160
TOTAL CONSTRUCTION MANAGEMENT	207,900	41,580	0	249,480
TOTAL REVEILLE TO POINT PLEASANT	2,016,676	403,335	0	2,420,011
09 GAP CLOSURES WEST BANK				
09.11 GAP CLOSURES WEST BANK				
09.11.01 GAP CLOSURES WEST BANK	259,576	51,915	6,541	318,032
TOTAL GAP CLOSURES WEST BANK	259,576	51,915	6,541	318,032
09.30 PLANNING, ENGINEERING & DESIGN				
09.30.04 CONSTRUCTION CONTRACT PE&D	60,000	12,000	1,512	73,512
09.30.05 PROGRAM & PROJECT MANAGEMENT	3,900	780	98	4,778
TOTAL PLANNING, ENGINEERING & DESIGN	63,900	12,780	1,610	78,290
09.31 CONSTRUCTION MANAGEMENT				
09.31.01 PROJECT OFFICE S&A	10,380	2,076	262	12,718
09.31.02 AREA OFFICE S&A	10,380	2,076	262	12,718
09.31.03 DISTRICT OFFICE S&A	10,380	2,076	262	12,718
TOTAL CONSTRUCTION MANAGEMENT	31,140	6,228	785	38,153
TOTAL GAP CLOSURES WEST BANK	354,616	70,923	8,936	434,475
10 GAP CLOSURES EAST BANK				
10.11 GAP CLOSURES EAST BANK				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
10.11.01 GAP CLOSURES EAST BANK	413,150	82,630	0	495,780
TOTAL GAP CLOSURES EAST BANK	413,150	82,630	0	495,780
10.30 PLANNING, ENGINEERING & DESIGN				
10.30.04 CONSTRUCTION CONTRACT PE&D	60,000	12,000	0	72,000
10.30.05 PROGRAM & PROJECT MANAGEMENT	6,200	1,240	0	7,440
TOTAL PLANNING, ENGINEERING & DESIGN	66,200	13,240	0	79,440
10.31 CONSTRUCTION MANAGEMENT				
10.31.01 PROJECT OFFICE S&A	16,500	3,300	0	19,800
10.31.02 AREA OFFICE S&A	16,500	3,300	0	19,800
10.31.03 DISTRICT OFFICE S&A	16,500	3,300	0	19,800
TOTAL CONSTRUCTION MANAGEMENT	49,500	9,900	0	59,400
TOTAL GAP CLOSURES EAST BANK	528,850	105,770	0	634,620
11 BATON ROUGE FRONT LEVEE				
11.11 BATON ROUGE FRONT LEVEE				
11.11.01 BATON ROUGE FRONT LEVEE	67,060	13,412	0	80,472
TOTAL BATON ROUGE FRONT LEVEE	67,060	13,412	0	80,472
11.30 PLANNING, ENGINEERING & DESIGN				
11.30.04 CONSTRUCTION CONTRACT PE&D	60,000	12,000	0	72,000
11.30.05 PROGRAM & PROJECT MANAGEMENT	1,000	200	0	1,200
TOTAL PLANNING, ENGINEERING & DESIGN	61,000	12,200	0	73,200
11.31 CONSTRUCTION MANAGEMENT				
11.31.01 PROJECT OFFICE S&A	2,680	536	0	3,216
11.31.02 AREA OFFICE S&A	2,680	536	0	3,216
11.31.03 DISTRICT OFFICE S&A	2,680	536	0	3,216
TOTAL CONSTRUCTION MANAGEMENT	8,040	1,608	0	9,648
TOTAL BATON ROUGE FRONT LEVEE	136,100	27,220	0	163,320

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
12 5TH LEVEE DIST LEVEE ENLRGMNT				
12.11 5TH LEVEE DIST LEVEE ENLRGMNT				
12.11.01 5TH LEVEE DIST LEVEE ENLRGMNT	465,500	93,100	9,496	568,096
TOTAL 5TH LEVEE DIST LEVEE ENLRGMNT	465,500	93,100	9,496	568,096
12.30 PLANNING, ENGINEERING & DESIGN				
12.30.04 CONSTRUCTION CONTRACT PE&D	50,000	10,000	1,020	61,020
12.30.05 PROGRAM & PROJECT MANAGEMENT	7,000	1,400	143	8,543
TOTAL PLANNING, ENGINEERING & DESIGN	57,000	11,400	1,163	69,563
12.31 CONSTRUCTION MANAGEMENT				
12.31.01 PROJECT OFFICE S&A	18,620	3,724	380	22,724
12.31.02 AREA OFFICE S&A	18,620	3,724	380	22,724
12.31.03 DISTRICT OFFICE S&A	18,620	3,724	380	22,724
TOTAL CONSTRUCTION MANAGEMENT	55,860	11,172	1,140	68,172
TOTAL 5TH LEVEE DIST LEVEE ENLRGMNT	578,360	115,672	11,799	705,830
13 Item 357-R Vidalia-Moreville				
13.01 Lands and Damages				
13.01.02 Acquisitions	16,000	0	5,597	21,597
13.01.18 Real Estate Payments	118,200	29,800	0	148,000
TOTAL Lands and Damages	134,200	29,800	5,597	169,597
13.02 Relocations				
13.02.03 Cemetery, Utilities, & Structure	5,000	1,250	1,929	8,179
TOTAL Relocations	5,000	1,250	1,929	8,179
13.11 Levees and Floodwalls				
13.11.01 Levees	4,241,662	458,219	1,849,403	6,549,284
TOTAL Levees and Floodwalls	4,241,662	458,219	1,849,403	6,549,284

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
13.30 Planning, Engineering and Design				
13.30.04 Constructn Contracts(s) Documnts	578,556	144,639	300,488	1,023,683
13.30.05 Programs & Project Managmt Dcmnt	200,630	50,158	104,202	354,990
TOTAL Planning, Engineering and Design	779,186	194,797	404,690	1,378,672
13.31 Supervision and Administration				
13.31.01 Prjt Office Supervn and Adminstn	272,101	68,025	153,941	494,067
13.31.02 Area Office S&A Documents	78,480	19,620	44,400	142,500
13.31.03 District Office S&A Documents	112,115	28,029	63,429	203,573
TOTAL Supervision and Administration	462,696	115,674	261,770	840,140
TOTAL Item 357-R Vidalia-Moreville	5,622,744	799,739	2,523,389	8,945,873
14 Item 361-R Vidalia-Moreville				
14.01 Lands and Damages				
14.01.02 Acquisitions	32,000	0	11,194	43,194
14.01.18 Real Estate Payments	335,700	83,300	0	419,000
TOTAL Lands and Damages	367,700	83,300	11,194	462,194
14.02 Relocations				
14.02.03 Cemetery, Utilities, & Structure	15,000	3,750	5,788	24,538
TOTAL Relocations	15,000	3,750	5,788	24,538
14.11 Levees and Floodwalls				
14.11.01 Levees	6,658,302	703,540	2,896,885	10,258,727
TOTAL Levees and Floodwalls	6,658,302	703,540	2,896,885	10,258,727
14.30 Planning, Engineering and Design				
14.30.04 Constructn Contracts(s) Documnts	584,096	146,024	303,365	1,033,485
14.30.05 Programs & Project Managmt Dcmnt	200,630	50,158	104,202	354,990
TOTAL Planning, Engineering and Design	784,726	196,182	407,567	1,388,4[illegible]

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
14.31 Supervision and Administration				
14.31.01 Prjt Office Supervn and Adminstn	296,178	74,045	167,563	537,785
14.31.02 Area Office S&A Documents	84,050	21,013	47,551	152,614
14.31.03 District Office S&A Documents	120,072	30,018	67,931	218,021
TOTAL Supervision and Administration	500,300	125,075	283,045	908,420
TOTAL Item 361-R Vidalia-Moreville	8,326,028	1,111,846	3,604,478	13,042,353
15 Item 365-R Vidalia-Moreville				
15.01 Lands and Damages				
15.01.02 Acquisitions	32,000	0	8,330	40,330
15.01.18 Real Estate Payments	171,900	43,100	0	215,000
TOTAL Lands and Damages	203,900	43,100	8,330	255,330
15.02 Relocations				
15.02.03 Cemetery, Utilities, & Structure	5,000	1,250	1,459	7,709
TOTAL Relocations	5,000	1,250	1,459	7,709
15.11 Levees and Floodwalls				
15.11.01 Levees	6,027,636	647,850	2,092,765	8,768,250
TOTAL Levees and Floodwalls	6,027,636	647,850	2,092,765	8,768,250
15.30 Planning, Engineering and Design				
15.30.04 Constructn Contracts(s) Documnts	537,497	134,374	215,939	887,811
15.30.05 Programs & Project Managmt Dcmnt	213,300	53,325	85,693	352,318
TOTAL Planning, Engineering and Design	750,797	187,699	301,633	1,240,129
15.31 Supervision and Administration				
15.31.01 Prjt Office Supervn and Adminstn	199,208	49,802	88,573	337,583
15.31.02 Area Office S&A Documents	56,532	14,133	25,136	95,801
15.31.03 District Office S&A Documents	80,760	20,190	35,908	136,858
TOTAL Supervision and Administration	336,500	84,125	149,616	570,241

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
TOTAL Item 365-R Vidalia-Moreville	7,323,833	964,024	2,553,803	10,841,659
16 Item 366-R Up Concordia-Vidalia				
16.01 Lands and Damages				
16.01.02 Acquisitions	32,000	0	19,306	51,306
16.01.18 Real Estate Payments	121,200	31,800	0	153,000
TOTAL Lands and Damages	153,200	31,800	19,306	204,306
16.02 Relocations				
16.02.03 Cemetery, Utilities, & Structure	41,000	10,250	26,501	77,751
TOTAL Relocations	41,000	10,250	26,501	77,751
16.11 Levees and Floodwalls				
16.11.01 Levees	4,912,041	437,188	3,292,451	8,641,680
TOTAL Levees and Floodwalls	4,912,041	437,188	3,292,451	8,641,680
16.30 Planning, Engineering and Design				
16.30.04 Constructn Contracts(s) Documnts	703,807	175,952	599,028	1,478,786
16.30.05 Programs & Project Managmt Dcmnt	192,360	48,090	163,722	404,172
TOTAL Planning, Engineering and Design	896,167	224,042	762,750	1,882,959
16.31 Supervision and Administration				
16.31.01 Prjt Office Supervn and Adminstn	191,798	47,950	173,697	413,445
16.31.02 Area Office S&A Documents	55,319	13,830	50,098	119,247
16.31.03 District Office S&A Documents	79,027	19,757	71,569	170,353
TOTAL Supervision and Administration	326,144	81,536	295,364	703,044
TOTAL Item 366-R Up Concordia-Vidalia	6,328,552	784,816	4,396,372	11,509,740
17 Item 367-R Up Concordia-Vidalia				
17.01 Lands and Damages				
17.01.02 Acquisitions	32,000	0	19,306	51,306

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
17.01.18 Real Estate Payments	330,500	83,500	0	414,000
TOTAL Lands and Damages	362,500	83,500	19,306	465,306
17.02 Relocations				
17.02.03 Cemetery, Utilities, & Structure	18,000	4,500	11,635	34,135
TOTAL Relocations	18,000	4,500	11,635	34,135
17.11 Levees and Floodwalls				
17.11.01 Levees	6,351,709	442,917	4,182,093	10,976,719
TOTAL Levees and Floodwalls	6,351,709	442,917	4,182,093	10,976,719
17.30 Planning, Engineering and Design				
17.30.04 Constructn Contracts(s) Documnts	795,139	198,785	676,763	1,670,686
17.30.05 Programs & Project Managmt Dcmnt	192,360	48,090	163,722	404,172
TOTAL Planning, Engineering and Design	987,499	246,875	840,485	2,074,859
17.31 Supervision and Administration				
17.31.01 Prjt Office Supervn and Adminstn	325,313	81,328	294,612	701,253
17.31.02 Area Office S&A Documents	93,460	23,365	84,640	201,465
17.31.03 District Office S&A Documents	133,514	33,379	120,914	287,806
TOTAL Supervision and Administration	552,287	138,072	500,165	1,190,524
TOTAL Item 367-R Up Concordia-Vidalia	8,271,995	915,864	5,553,683	14,741,542
18 Item 368-R Waterproof-Concordia				
18.01 Lands and Damages				
18.01.02 Acquisitions	40,000	0	21,960	61,960
18.01.18 Real Estate Payments	122,800	23,875	0	146,675
TOTAL Lands and Damages	162,800	23,875	21,960	208,635
18.02 Relocations				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
18.02.03 Cemetery, Utilities, & Structure	225,000	56,250	133,003	414,253
TOTAL Relocations	225,000	56,250	133,003	414,253
18.11 Levees and Floodwalls				
18.11.01 Levees	6,549,785	560,199	4,041,315	11,151,299
TOTAL Levees and Floodwalls	6,549,785	560,199	4,041,315	11,151,299
18.30 Planning, Engineering and Design				
18.30.04 Constructn Contracts(s) Documnts	758,616	189,654	592,005	1,540,275
18.30.05 Programs & Project Managmt Dcmnt	203,230	50,808	158,596	412,633
TOTAL Planning, Engineering and Design	961,846	240,462	750,601	1,952,908
18.31 Supervision and Administration				
18.31.01 Prjt Office Supervn and Adminstn	240,056	60,014	200,027	500,097
18.31.02 Area Office S&A Documents	68,124	17,031	56,764	141,919
18.31.03 District Office S&A Documents	97,320	24,330	81,092	202,742
TOTAL Supervision and Administration	405,500	101,375	337,883	844,758
TOTAL Item 368-R Waterproof-Concordia	8,304,931	982,161	5,284,761	14,571,853
19 Item 370-R Waterproof-Concordia				
19.01 Lands and Damages				
19.01.02 Acquisitions	32,000	0	17,568	49,568
19.01.18 Real Estate Payments	108,900	27,100	0	136,000
TOTAL Lands and Damages	140,900	27,100	17,568	185,568
19.02 Relocations				
19.02.03 Cemetery, Utilities, & Structure	60,000	15,000	35,468	110,468
TOTAL Relocations	60,000	15,000	35,468	110,468
19.11 Levees and Floodwalls				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
19.11.01 Levees	3,520,215	386,279	2,220,452	6,126,946
TOTAL Levees and Floodwalls	3,520,215	386,279	2,220,452	6,126,946
19.30 Planning, Engineering and Design				
19.30.04 Constructn Contracts(s) Documnts	711,979	177,995	555,611	1,445,584
19.30.05 Programs & Project Managmt Dcmnt	203,230	50,808	158,596	412,633
TOTAL Planning, Engineering and Design	915,209	228,802	714,206	1,858,217
19.31 Supervision and Administration				
19.31.01 Prjt Office Supervn and Adminstn	249,105	62,276	207,567	518,948
19.31.02 Area Office S&A Documents	71,848	17,962	59,867	149,677
19.31.03 District Office S&A Documents	102,640	25,660	85,525	213,825
TOTAL Supervision and Administration	423,593	105,898	352,959	882,450
TOTAL Item 370-R Waterproof-Concordia	5,059,917	763,080	3,340,652	9,163,649
20 Item 374-R Waterproof-Concordia				
20.01 Lands and Damages				
20.01.02 Acquisitions	32,000	0	17,568	49,568
20.01.18 Real Estate Payments	106,400	27,600	0	134,000
TOTAL Lands and Damages	138,400	27,600	17,568	183,568
20.02 Relocations				
20.02.03 Cemetery, Utilities, & Structure	613,000	153,250	362,360	1,128,610
TOTAL Relocations	613,000	153,250	362,360	1,128,610
20.11 Levees and Floodwalls				
20.11.01 Levees	3,656,059	397,994	2,304,324	6,358,376
TOTAL Levees and Floodwalls	3,656,059	397,994	2,304,324	6,358,376
20.30 Planning, Engineering and Design				
20.30.04 Constructn Contracts(s) Documnts	694,318	173,580	541,828	1,409,726

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
20.30.05 Programs & Project Managmt Dcmnt	203,230	50,808	158,596	412,633
TOTAL Planning, Engineering and Design	897,548	224,387	700,424	1,822,359
20.31 Supervision and Administration				
20.31.01 Prjt Office Supervn and Adminstn	218,533	54,633	182,093	455,259
20.31.02 Area Office S&A Documents	62,783	15,696	52,314	130,793
20.31.03 District Office S&A Documents	89,690	22,423	74,734	186,847
TOTAL Supervision and Administration	371,006	92,752	309,141	772,898
TOTAL Item 374-R Waterproof-Concordia	5,676,013	895,982	3,693,816	10,265,811
21 Item 377-R Waterproof-Concordia				
21.01 Lands and Damages				
21.01.02 Acquisitions	40,000	0	19,868	59,868
21.01.18 Real Estate Payments	160,000	40,000	0	200,000
TOTAL Lands and Damages	200,000	40,000	19,868	259,868
21.11 Levees and Floodwalls				
21.11.01 Levees	4,008,302	432,896	2,222,376	6,663,574
TOTAL Levees and Floodwalls	4,008,302	432,896	2,222,376	6,663,574
21.30 Planning, Engineering and Design				
21.30.04 Constructn Contracts(s) Documnts	693,878	173,470	470,363	1,337,710
21.30.05 Programs & Project Managmt Dcmnt	154,830	38,708	104,955	298,493
TOTAL Planning, Engineering and Design	848,708	212,177	575,318	1,636,203
21.31 Supervision and Administration				
21.31.01 Prjt Office Supervn and Adminstn	214,120	53,530	155,986	423,636
21.31.02 Area Office S&A Documents	61,269	15,317	44,634	121,221
21.31.03 District Office S&A Documents	87,527	21,882	63,763	173,172
TOTAL Supervision and Administration	362,916	90,729	264,384	718,029
TOTAL Item 377-R Waterproof-Concordia	5,419,926	775,802	3,081,946	9,277,674

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
22 Item 380-R St. Joseph-Waterproof				
22.01 Lands and Damages				
22.01.02 Acquisitions	16,000	0	11,472	27,472
22.01.18 Real Estate Payments	111,900	29,100	0	141,000
TOTAL Lands and Damages	127,900	29,100	11,472	168,472
22.02 Relocations				
22.02.03 Cemetery, Utilities, & Structure	36,000	9,000	27,428	72,428
TOTAL Relocations	36,000	9,000	27,428	72,428
22.11 Levees and Floodwalls				
22.11.01 Levees	3,688,693	404,360	2,818,885	6,911,938
TOTAL Levees and Floodwalls	3,688,693	404,360	2,818,885	6,911,938
22.30 Planning, Engineering and Design				
22.30.04 Constructn Contracts(s) Documnts	569,986	142,497	548,327	1,260,809
22.30.05 Programs & Project Managmt Dcmnt	138,160	34,540	132,910	305,610
TOTAL Planning, Engineering and Design	708,146	177,037	681,236	1,566,419
22.31 Supervision and Administration				
22.31.01 Prjt Office Supervn and Adminstn	213,830	53,458	218,133	485,421
22.31.02 Area Office S&A Documents	60,682	15,171	61,903	137,756
22.31.03 District Office S&A Documents	86,688	21,672	88,433	196,793
TOTAL Supervision and Administration	361,200	90,300	368,469	819,969
TOTAL Item 380-R St. Joseph-Waterproof	4,921,939	709,797	3,907,491	9,539,226
23 Item 385-R St. Joseph-Waterproof				
23.01 Lands and Damages				
23.01.02 Acquisitions	24,000	0	17,208	41,208
23.01.18 Real Estate Payments	194,400	48,600	0	243,000
TOTAL Lands and Damages	218,400	48,600	17,208	284,208

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
23.02 Relocations				
23.02.03 Cemetery, Utilities, & Structure	248,000	62,000	188,945	498,945
TOTAL Relocations	248,000	62,000	188,945	498,945
23.11 Levees and Floodwalls				
23.11.01 Levees	3,189,291	366,468	2,448,851	6,004,610
TOTAL Levees and Floodwalls	3,189,291	366,468	2,448,851	6,004,610
23.30 Planning, Engineering and Design				
23.30.04 Constructn Contracts(s) Documnts	586,148	146,537	563,874	1,296,559
23.30.05 Programs & Project Managmt Dcmnt	138,160	34,540	132,910	305,610
TOTAL Planning, Engineering and Design	724,308	181,077	696,784	1,602,169
23.31 Supervision and Administration				
23.31.01 Prjt Office Supervn and Adminstn	157,462	39,366	160,631	357,458
23.31.02 Area Office S&A Documents	44,872	11,218	45,775	101,865
23.31.03 District Office S&A Documents	64,103	16,026	65,393	145,522
TOTAL Supervision and Administration	266,437	66,609	271,799	604,845
TOTAL Item 385-R St. Joseph-Waterproof	4,646,436	724,754	3,623,588	8,994,778
24 Item 388-R St. Joseph-Waterproof				
24.01 Lands and Damages				
24.01.02 Acquisitions	16,000	0	11,472	27,472
24.01.18 Real Estate Payments	134,800	34,200	0	169,000
TOTAL Lands and Damages	150,800	34,200	11,472	196,472
24.02 Relocations				
24.02.03 Cemetery, Utilities, & Structure	300,000	75,000	228,563	603,563
TOTAL Relocations	300,000	75,000	228,563	603,563
24.11 Levees and Floodwalls				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
24.11.01 Levees	3,000,087	335,114	2,296,953	5,632,155
TOTAL Levees and Floodwalls	3,000,087	335,114	2,296,953	5,632,155
24.30 Planning, Engineering and Design				
24.30.04 Constructn Contracts(s) Documnts	530,230	132,558	510,081	1,172,869
24.30.05 Programs & Project Managmt Dcmnt	138,160	34,540	132,910	305,610
TOTAL Planning, Engineering and Design	668,390	167,098	642,991	1,478,479
24.31 Supervision and Administration				
24.31.01 Prjt Office Supervn and Adminstn	188,984	47,246	192,787	429,017
24.31.02 Area Office S&A Documents	54,508	13,627	55,605	123,740
24.31.03 District Office S&A Documents	77,868	19,467	79,435	176,770
TOTAL Supervision and Administration	321,360	80,340	327,827	729,527
TOTAL Item 388-R St. Joseph-Waterproof	4,440,637	691,752	3,507,806	8,640,196
25 Item 393-R St. Joseph-Waterproof				
25.01 Lands and Damages				
25.01.02 Acquisitions	24,000	0	15,828	39,828
25.01.18 Real Estate Payments	194,800	49,200	0	244,000
TOTAL Lands and Damages	218,800	49,200	15,828	283,828
25.02 Relocations				
25.02.01 Roads, Construction Activities	18,000	4,500	12,659	35,159
25.02.03 Cemetery, Utilities, & Structure	73,000	18,250	51,337	142,587
TOTAL Relocations	91,000	22,750	63,996	177,746
25.11 Levees and Floodwalls				
25.11.01 Levees	5,303,224	574,033	3,758,506	9,635,762
TOTAL Levees and Floodwalls	5,303,224	574,033	3,758,506	9,635,762
25.30 Planning, Engineering and Design				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
25.30.04 Constructn Contracts(s) Documnts	571,337	142,834	506,705	1,220,876
25.30.05 Programs & Project Managmt Dcmnt	138,160	34,540	122,531	295,231
TOTAL Planning, Engineering and Design	709,497	177,374	629,235	1,516,106
25.31 Supervision and Administration				
25.31.01 Prjt Office Supervn and Adminstn	148,763	37,191	140,302	326,256
25.31.02 Area Office S&A Documents	42,738	10,685	40,307	93,730
25.31.03 District Office S&A Documents	61,055	15,264	57,582	133,901
TOTAL Supervision and Administration	252,556	63,139	238,192	553,887
TOTAL Item 393-R St. Joseph-Waterproof	6,575,077	886,496	4,705,756	12,167,329
26 Item 398-R Yucatan-Lake Bruin				
26.01 Lands and Damages				
26.01.02 Acquisitions	40,000	0	19,868	59,868
26.01.18 Real Estate Payments	172,800	43,200	0	216,000
TOTAL Lands and Damages	212,800	43,200	19,868	275,868
26.02 Relocations				
26.02.01 Roads, Construction Activities	25,000	6,250	13,438	44,688
26.02.03 Cemetery, Utilities, & Structure	9,000	2,250	4,838	16,088
TOTAL Relocations	34,000	8,500	18,275	60,775
26.11 Levees and Floodwalls				
26.11.01 Levees	5,543,697	599,325	3,073,968	9,216,990
TOTAL Levees and Floodwalls	5,543,697	599,325	3,073,968	9,216,990
26.30 Planning, Engineering and Design				
26.30.04 Constructn Contracts(s) Documnts	681,977	170,494	462,295	1,314,766
26.30.05 Programs & Project Managmt Dcmnt	154,830	38,708	104,955	298,493
TOTAL Planning, Engineering and Design	836,807	209,202	567,251	1,613,259
26.31 Supervision and Administration				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
26.31.01 Prjt Office Supervn and Adminstn	187,188	46,797	136,366	370,351
26.31.02 Area Office S&A Documents	53,343	13,336	38,860	105,539
26.31.03 District Office S&A Documents	76,205	19,051	55,515	150,772
TOTAL Supervision and Administration	316,736	79,184	230,742	626,662
TOTAL Item 398-R Yucatan-Lake Bruin	6,944,040	939,410	3,910,104	11,793,554
27 Item 401-R Yucatan-Lake Bruin				
27.01 Lands and Damages				
27.01.02 Acquisitions	32,000	0	15,894	47,894
27.01.18 Real Estate Payments	73,300	18,700	0	92,000
TOTAL Lands and Damages	105,300	18,700	15,894	139,894
27.11 Levees and Floodwalls				
27.11.01 Levees	4,426,710	470,901	2,450,765	7,348,375
TOTAL Levees and Floodwalls	4,426,710	470,901	2,450,765	7,348,375
27.30 Planning, Engineering and Design				
27.30.04 Constructn Contracts(s) Documnts	675,046	168,762	457,597	1,301,404
27.30.05 Programs & Project Managmt Dcmnt	154,830	38,708	104,955	298,493
TOTAL Planning, Engineering and Design	829,876	207,469	562,552	1,599,897
27.31 Supervision and Administration				
27.31.01 Prjt Office Supervn and Adminstn	221,290	55,323	161,210	437,822
27.31.02 Area Office S&A Documents	62,798	15,700	45,748	124,246
27.31.03 District Office S&A Documents	89,712	22,428	65,355	177,495
TOTAL Supervision and Administration	373,800	93,450	272,313	739,563
TOTAL Item 401-R Yucatan-Lake Bruin	5,735,686	790,520	3,301,524	9,827,730
28 Item 407-R Pt. Pleasant-Yucatan				
28.01 Lands and Damages				
28.01.02 Acquisitions	56,000	0	36,932	92,932

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
28.01.18 Real Estate Payments	186,900	47,100	0	234,000
TOTAL Lands and Damages	242,900	47,100	36,932	326,932
28.02 Relocations				
28.02.03 Cemetery, Utilities, & Structure	8,000	2,000	5,626	15,626
TOTAL Relocations	8,000	2,000	5,626	15,626
28.11 Levees and Floodwalls				
28.11.01 Levees	4,237,120	477,740	3,015,153	7,730,013
TOTAL Levees and Floodwalls	4,237,120	477,740	3,015,153	7,730,013
28.30 Planning, Engineering and Design				
28.30.04 Constructn Contracts(s) Documnts	650,188	162,547	576,635	1,389,370
28.30.05 Programs & Project Managmt Dcmnt	138,160	34,540	122,531	295,231
TOTAL Planning, Engineering and Design	788,348	197,087	699,166	1,684,601
28.31 Supervision and Administration				
28.31.01 Prjt Office Supervn and Adminstn	137,752	34,438	129,917	302,107
28.31.02 Area Office S&A Documents	39,417	9,854	37,175	86,446
28.31.03 District Office S&A Documents	56,309	14,077	53,106	123,493
TOTAL Supervision and Administration	233,478	58,370	220,199	512,046
TOTAL Item 407-R Pt. Pleasant-Yucatan	5,509,846	782,296	3,977,076	10,269,218
29 Item 409-R Pt. Pleasant-Yucatan				
29.01 Lands and Damages				
29.01.02 Acquisitions	24,000	0	15,828	39,828
29.01.18 Real Estate Payments	151,600	38,150	0	189,750
TOTAL Lands and Damages	175,600	38,150	15,828	229,578
29.11 Levees and Floodwalls				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
29.11.01 Levees	3,865,564	430,553	2,747,367	7,043,484
TOTAL Levees and Floodwalls	3,865,564	430,553	2,747,367	7,043,484
29.30 Planning, Engineering and Design				
29.30.04 Constructn Contracts(s) Documnts	651,198	162,800	577,531	1,391,529
29.30.05 Programs & Project Managmt Dcmnt	138,160	34,540	122,531	295,231
TOTAL Planning, Engineering and Design	789,358	197,340	700,062	1,686,759
29.31 Supervision and Administration				
29.31.01 Prjt Office Supervn and Adminstn	142,659	35,665	134,545	312,869
29.31.02 Area Office S&A Documents	40,654	10,164	38,342	89,159
29.31.03 District Office S&A Documents	58,077	14,519	54,774	127,370
TOTAL Supervision and Administration	241,390	60,348	227,661	529,398
TOTAL Item 409-R Pt. Pleasant-Yucatan	5,071,912	726,390	3,690,918	9,489,220
30 Item 411-R Pt. Pleasant-Yucatan				
30.01 Lands and Damages				
30.01.02 Acquisitions	32,000	0	19,306	51,306
30.01.18 Real Estate Payments	119,000	30,000	0	149,000
TOTAL Lands and Damages	151,000	30,000	19,306	200,306
30.02 Relocations				
30.02.03 Cemetery, Utilities, & Structure	30,000	7,500	19,391	56,891
TOTAL Relocations	30,000	7,500	19,391	56,891
30.11 Levees and Floodwalls				
30.11.01 Levees	3,069,305	350,131	2,104,663	5,524,098
TOTAL Levees and Floodwalls	3,069,305	350,131	2,104,663	5,524,098
30.30 Planning, Engineering and Design				
30.30.04 Constructn Contracts(s) Documnts	628,339	157,085	534,795	1,320,219

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
30.30.05 Programs & Project Managmt Dcmnt	192,360	48,090	163,722	404,172
TOTAL Planning, Engineering and Design	820,699	205,175	698,517	1,724,391
30.31 Supervision and Administration				
30.31.01 Prjt Office Supervn and Adminstn	185,059	46,265	167,594	398,918
30.31.02 Area Office S&A Documents	52,517	13,129	47,561	113,207
30.31.03 District Office S&A Documents	75,024	18,756	67,944	161,724
TOTAL Supervision and Administration	312,600	78,150	283,098	673,848
TOTAL Item 411-R Pt. Pleasant-Yucatan	4,383,604	670,955	3,124,975	8,179,535
31 Item 414-R Bayou Vidal-Elkridge				
31.01 Lands and Damages				
31.01.02 Acquisitions	32,000	0	14,282	46,282
31.01.18 Real Estate Payments	67,700	16,300	0	84,000
TOTAL Lands and Damages	99,700	16,300	14,282	130,282
31.02 Relocations				
31.02.01 Roads, Construction Activities	25,000	6,250	12,138	43,388
31.02.03 Cemetery, Utilities, & Structure	16,000	4,000	7,768	27,768
TOTAL Relocations	41,000	10,250	19,906	71,156
31.11 Levees and Floodwalls				
31.11.01 Levees	4,647,205	497,468	2,349,572	7,494,245
TOTAL Levees and Floodwalls	4,647,205	497,468	2,349,572	7,494,245
31.30 Planning, Engineering and Design				
31.30.04 Constructn Contracts(s) Documnts	490,796	122,699	300,735	914,230
31.30.05 Programs & Project Managmt Dcmnt	154,830	38,708	94,872	288,410
TOTAL Planning, Engineering and Design	645,626	161,407	395,607	1,202,640
31.31 Supervision and Administration				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
31.31.01 Prjt Office Supervn and Adminstn	163,551	40,888	108,189	312,628
31.31.02 Area Office S&A Documents	46,607	11,652	30,831	89,089
31.31.03 District Office S&A Documents	66,582	16,646	44,044	127,271
TOTAL Supervision and Administration	276,740	69,185	183,064	528,989
TOTAL Item 414-R Bayou Vidal-Elkridge	5,710,271	754,610	2,962,430	9,427,310
32 Item 416-R Bayou Vidal-Elkridge				
32.01 Lands and Damages				
32.01.02 Acquisitions	32,000	0	14,282	46,282
32.01.18 Real Estate Payments	99,500	24,500	0	124,000
TOTAL Lands and Damages	131,500	24,500	14,282	170,282
32.02 Relocations				
32.02.03 Cemetery, Utilities, & Structure	50,000	12,500	24,275	86,775
TOTAL Relocations	50,000	12,500	24,275	86,775
32.11 Levees and Floodwalls				
32.11.01 Levees	4,235,132	461,852	2,145,113	6,842,098
TOTAL Levees and Floodwalls	4,235,132	461,852	2,145,113	6,842,098
32.30 Planning, Engineering and Design				
32.30.04 Constructn Contracts(s) Documnts	489,796	122,449	300,122	912,367
32.30.05 Programs & Project Managmt Dcmnt	154,830	38,708	94,872	288,410
TOTAL Planning, Engineering and Design	644,626	161,157	394,995	1,200,777
32.31 Supervision and Administration				
32.31.01 Prjt Office Supervn and Adminstn	156,288	39,072	103,385	298,745
32.31.02 Area Office S&A Documents	44,352	11,088	29,339	84,779
32.31.03 District Office S&A Documents	63,360	15,840	41,913	121,113
TOTAL Supervision and Administration	264,000	66,000	174,636	504,636
TOTAL Item 416-R Bayou Vidal-Elkridge	5,325,258	726,009	2,753,300	8,804,568

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
33 Item 419-R Bayou Vidal-Elkridge				
33.01 Lands and Damages				
33.01.02 Acquisitions	24,000	0	9,533	33,533
33.01.18 Real Estate Payments	47,700	11,300	0	59,000
TOTAL Lands and Damages	71,700	11,300	9,533	92,533
33.02 Relocations				
33.02.03 Cemetery, Utilities, & Structure	5,000	1,250	2,174	8,424
TOTAL Relocations	5,000	1,250	2,174	8,424
33.11 Levees and Floodwalls				
33.11.01 Levees	7,283,287	763,270	3,333,688	11,380,245
TOTAL Levees and Floodwalls	7,283,287	763,270	3,333,688	11,380,245
33.30 Planning, Engineering and Design				
33.30.04 Constructn Contracts(s) Documnts	493,933	123,483	271,663	889,07
33.30.05 Programs & Project Managmt Dcmnt	150,630	37,658	82,847	271,13
TOTAL Planning, Engineering and Design	644,563	161,141	354,510	1,160,213
33.31 Supervision and Administration				
33.31.01 Prjt Office Supervn and Adminstn	159,077	39,769	94,969	293,81
33.31.02 Area Office S&A Documents	45,701	11,425	27,283	84,410
33.31.03 District Office S&A Documents	65,288	16,322	38,977	120,587
TOTAL Supervision and Administration	270,066	67,517	161,229	498,812
TOTAL Item 419-R Bayou Vidal-Elkridge	8,274,616	1,004,477	3,861,135	13,140,227
34 Item 421-R Bayou Vidal-Elkridge				
34.01 Lands and Damages				
34.01.02 Acquisitions	32,000	0	11,194	43,194
34.01.18 Real Estate Payments	77,200	19,800	0	97,000
TOTAL Lands and Damages	109,200	19,800	11,194	140,194

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
34.02 Relocations				
34.02.03 Cemetery, Utilities, & Structure	58,000	14,500	22,381	94,881
TOTAL Relocations	58,000	14,500	22,381	94,881
34.11 Levees and Floodwalls				
34.11.01 Levees	5,192,701	552,290	2,143,456	7,888,448
TOTAL Levees and Floodwalls	5,192,701	552,290	2,143,456	7,888,448
34.30 Planning, Engineering and Design				
34.30.04 Constructn Contracts(s) Documnts	477,765	119,441	233,508	830,714
34.30.05 Programs & Project Managmt Dcmnt	154,200	38,550	75,365	268,115
TOTAL Planning, Engineering and Design	631,965	157,991	308,873	1,098,829
34.31 Supervision and Administration				
34.31.01 Prjt Office Supervn and Adminstn	164,412	41,103	87,919	293,434
34.31.02 Area Office S&A Documents	47,045	11,761	25,157	83,964
34.31.03 District Office S&A Documents	67,207	16,802	35,939	119,948
TOTAL Supervision and Administration	278,664	69,666	149,016	497,346
TOTAL Item 421-R Bayou Vidal-Elkridge	6,270,530	814,248	2,634,919	9,719,697
35 Item 422-R Reid Bedford-King				
35.01 Lands and Damages				
35.01.02 Acquisitions	16,000	0	5,597	21,597
35.01.18 Real Estate Payments	89,300	21,700	0	111,000
TOTAL Lands and Damages	105,300	21,700	5,597	132,597
35.02 Relocations				
35.02.03 Cemetery, Utilities, & Structure	45,000	11,250	17,364	73,614
TOTAL Relocations	45,000	11,250	17,364	73,614
35.11 Levees and Floodwalls				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
35.11.01 Levees	3,472,450	389,108	1,440,747	5,302,305
TOTAL Levees and Floodwalls	3,472,450	389,108	1,440,747	5,302,305
35.30 Planning, Engineering and Design				
35.30.04 Constructn Contracts(s) Documnts	626,226	156,557	306,068	1,088,850
35.30.05 Programs & Project Managmt Dcmnt	154,200	38,550	75,365	268,115
TOTAL Planning, Engineering and Design	780,426	195,107	381,433	1,356,966
35.31 Supervision and Administration				
35.31.01 Prjt Office Supervn and Adminstn	146,994	36,749	78,605	262,348
35.31.02 Area Office S&A Documents	41,714	10,429	22,307	74,449
35.31.03 District Office S&A Documents	59,592	14,898	31,867	106,357
TOTAL Supervision and Administration	248,300	62,075	132,778	443,153
TOTAL Item 422-R Reid Bedford-King	4,651,476	679,239	1,977,920	7,308,636
36 Item 424-R Reid Bedford-King				
36.01 Lands and Damages				
36.01.02 Acquisitions	24,000	0	7,308	31,308
36.01.18 Real Estate Payments	140,000	35,000	0	175,000
TOTAL Lands and Damages	164,000	35,000	7,308	206,308
36.11 Levees and Floodwalls				
36.11.01 Levees	5,703,771	624,682	2,108,008	8,436,460
TOTAL Levees and Floodwalls	5,703,771	624,682	2,108,008	8,436,460
36.30 Planning, Engineering and Design				
36.30.04 Constructn Contracts(s) Documnts	670,342	167,586	288,247	1,126,175
36.30.05 Programs & Project Managmt Dcmnt	159,100	39,775	68,413	267,288
TOTAL Planning, Engineering and Design	829,442	207,361	356,660	1,393,463
36.31 Supervision and Administration				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
36.31.01 Prjt Office Supervn and Adminstn	207,079	51,770	98,155	357,004
36.31.02 Area Office S&A Documents	59,254	14,814	28,086	102,154
36.31.03 District Office S&A Documents	84,649	21,162	40,124	145,935
TOTAL Supervision and Administration	350,982	87,746	166,365	605,093
TOTAL Item 424-R Reid Bedford-King	7,048,195	954,788	2,638,341	10,641,324
37 Item 428-R Reid Bedford-King				
37.01 Lands and Damages				
37.01.02 Acquisitions	32,000	0	11,194	43,194
37.01.18 Real Estate Payments	186,800	47,200	0	234,000
TOTAL Lands and Damages	218,800	47,200	11,194	277,194
37.02 Relocations				
37.02.03 Cemetery, Utilities, & Structure	41,000	10,250	15,821	67,071
TOTAL Relocations	41,000	10,250	15,821	67,071
37.11 Levees and Floodwalls				
37.11.01 Levees	2,785,124	324,067	1,242,122	4,351,313
TOTAL Levees and Floodwalls	2,785,124	324,067	1,242,122	4,351,313
37.30 Planning, Engineering and Design				
37.30.04 Constructn Contracts(s) Documnts	630,526	157,632	327,479	1,115,637
37.30.05 Programs & Project Managmt Dcmnt	200,630	50,158	104,202	354,990
TOTAL Planning, Engineering and Design	831,156	207,789	431,682	1,470,627
37.31 Supervision and Administration				
37.31.01 Prjt Office Supervn and Adminstn	173,877	43,469	98,371	315,717
37.31.02 Area Office S&A Documents	49,550	12,388	28,033	89,970
37.31.03 District Office S&A Documents	70,786	17,697	40,047	128,530
TOTAL Supervision and Administration	294,213	73,553	166,451	534,217
TOTAL Item 428-R Reid Bedford-King	4,170,293	662,859	1,867,269	6,700,422

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
38 Item 445-R Willow Pt.-Youngs Pt.				
38.01 Lands and Damages				
38.01.02 Acquisitions	24,000	0	3,233	27,233
38.01.18 Real Estate Payments	163,400	40,600	0	204,000
TOTAL Lands and Damages	187,400	40,600	3,233	231,233
38.11 Levees and Floodwalls				
38.11.01 Levees	4,172,893	463,260	1,019,490	5,655,642
TOTAL Levees and Floodwalls	4,172,893	463,260	1,019,490	5,655,642
38.30 Planning, Engineering and Design				
38.30.04 Constructn Contracts(s) Documnts	546,829	136,707	144,773	828,309
38.30.05 Programs & Project Managmt Dcmnt	262,130	65,533	69,399	397,061
TOTAL Planning, Engineering and Design	808,959	202,240	214,172	1,225,371
38.31 Supervision and Administration				
38.31.01 Prjt Office Supervn and Adminstn	234,314	58,579	71,466	364,358
38.31.02 Area Office S&A Documents	66,494	16,624	20,281	103,398
38.31.03 District Office S&A Documents	94,992	23,748	28,973	147,713
TOTAL Supervision and Administration	395,800	98,950	120,719	615,469
TOTAL Item 445-R Willow Pt.-Youngs Pt.	5,565,052	805,050	1,357,614	7,727,715
39 Item 450-R Willow Pt.-Youngs Pt.				
39.01 Lands and Damages				
39.01.02 Acquisitions	16,000	0	3,475	19,475
39.01.18 Real Estate Payments	128,000	32,000	0	160,000
TOTAL Lands and Damages	144,000	32,000	3,475	179,475
39.02 Relocations				
39.02.03 Cemetery, Utilities, & Structure	25,000	6,250	6,175	37,425
TOTAL Relocations	25,000	6,250	6,175	37,425

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
39.11 Levees and Floodwalls				
39.11.01 Levees	4,905,818	533,564	1,497,462	6,936,844
TOTAL Levees and Floodwalls	4,905,818	533,564	1,497,462	6,936,844
39.30 Planning, Engineering and Design				
39.30.04 Constructn Contracts(s) Documnts	546,809	136,702	189,196	872,707
39.30.05 Programs & Project Managmt Dcmnt	222,400	55,600	76,950	354,950
TOTAL Planning, Engineering and Design	769,209	192,302	266,146	1,227,658
39.31 Supervision and Administration				
39.31.01 Prjt Office Supervn and Adminstn	240,011	60,003	93,034	393,048
39.31.02 Area Office S&A Documents	68,953	17,238	26,728	112,919
39.31.03 District Office S&A Documents	98,504	24,626	38,183	161,313
TOTAL Supervision and Administration	407,468	101,867	157,945	667,280
TOTAL Item 450-R Willow Pt.-Youngs Pt.	6,251,495	865,984	1,931,203	9,048,682
40 Item 452-L Brunswick-Halpino				
40.01 Lands and Damages				
40.01.02 Acquisitions	16,000	0	7,947	23,947
40.01.18 Real Estate Payments	76,100	18,900	0	95,000
TOTAL Lands and Damages	92,100	18,900	7,947	118,947
40.11 Levees and Floodwalls				
40.11.01 Levees	4,024,812	357,287	2,290,523	6,672,622
TOTAL Levees and Floodwalls	4,024,812	357,287	2,290,523	6,672,622
40.30 Planning, Engineering and Design				
40.30.04 Constructn Contracts(s) Documnts	655,366	163,842	466,375	1,285,582
40.30.05 Programs & Project Managmt Dcmnt	209,030	52,258	148,751	410,038
TOTAL Planning, Engineering and Design	864,396	216,099	615,126	1,695,621

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
40.31 Supervision and Administration				
40.31.01 Prjt Office Supervn and Adminstn	264,823	66,206	202,027	533,056
40.31.02 Area Office S&A Documents	76,381	19,095	58,269	153,745
40.31.03 District Office S&A Documents	109,116	27,279	83,242	219,637
TOTAL Supervision and Administration	450,320	112,580	343,538	906,438
TOTAL Item 452-L Brunswick-Halpino	5,431,628	704,866	3,257,134	9,393,628
41 Item 453-R Willow Pt.-Youngs Pt.				
41.01 Lands and Damages				
41.01.02 Acquisitions	32,000	0	5,600	37,600
41.01.18 Real Estate Payments	261,600	66,400	0	328,000
TOTAL Lands and Damages	293,600	66,400	5,600	365,600
41.11 Levees and Floodwalls				
41.11.01 Levees	7,041,412	755,486	2,000,684	9,797,582
TOTAL Levees and Floodwalls	7,041,412	755,486	2,000,684	9,797,582
41.30 Planning, Engineering and Design				
41.30.04 Constructn Contracts(s) Documnts	539,965	134,991	171,979	846,935
41.30.05 Programs & Project Managmt Dcmnt	268,830	67,208	85,622	421,660
TOTAL Planning, Engineering and Design	808,795	202,199	257,601	1,268,595
41.31 Supervision and Administration				
41.31.01 Prjt Office Supervn and Adminstn	246,818	61,705	88,793	397,315
41.31.02 Area Office S&A Documents	70,336	17,584	25,303	113,223
41.31.03 District Office S&A Documents	100,481	25,120	36,148	161,749
TOTAL Supervision and Administration	417,635	104,409	150,244	672,288
TOTAL Item 453-R Willow Pt.-Youngs Pt.	8,561,442	1,128,493	2,414,129	12,104,064
42 Item 457-R Willow Pt.-Youngs Pt.				
42.01 Lands and Damages				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
42.01.02 Acquisitions	40,000	0	10,412	50,412
42.01.18 Real Estate Payments	166,500	42,500	0	209,000
TOTAL Lands and Damages	206,500	42,500	10,412	259,412
42.02 Relocations				
42.02.01 Roads, Construction Activities	20,000	5,000	5,838	30,838
42.02.02 Railroads, Construction Activity	100,000	25,000	29,188	154,188
42.02.03 Cemetery, Utilities, & Structure	94,000	23,500	27,436	144,936
TOTAL Relocations	214,000	53,500	62,461	329,961
42.11 Levees and Floodwalls				
42.11.01 Levees	7,664,934	361,245	2,516,207	10,542,386
TOTAL Levees and Floodwalls	7,664,934	361,245	2,516,207	10,542,386
42.30 Planning, Engineering and Design				
42.30.04 Constructn Contracts(s) Documnts	607,313	151,828	243,988	1,003,129
42.30.05 Programs & Project Managmt Dcmnt	213,300	53,325	85,693	352,318
TOTAL Planning, Engineering and Design	820,613	205,153	329,681	1,355,448
42.31 Supervision and Administration				
42.31.01 Prjt Office Supervn and Adminstn	292,063	73,016	129,859	494,937
42.31.02 Area Office S&A Documents	83,230	20,808	37,006	141,044
42.31.03 District Office S&A Documents	118,900	29,725	52,866	201,491
TOTAL Supervision and Administration	494,193	123,548	219,731	837,472
TOTAL Item 457-R Willow Pt.-Youngs Pt.	9,400,240	785,946	3,138,492	13,324,679
43 Item 458-L Brunswick-Halpino				
43.01 Lands and Damages				
43.01.02 Acquisitions	32,000	0	14,282	46,282
43.01.18 Real Estate Payments	133,200	33,800	0	167,000
TOTAL Lands and Damages	165,200	33,800	14,282	213,282

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
43.02 Relocations				
43.02.03 Cemetery, Utilities, & Structure	5,000	1,250	2,428	8,678
TOTAL Relocations	5,000	1,250	2,428	8,678
43.11 Levees and Floodwalls				
43.11.01 Levees	3,435,645	384,280	1,744,560	5,564,485
TOTAL Levees and Floodwalls	3,435,645	384,280	1,744,560	5,564,485
43.30 Planning, Engineering and Design				
43.30.04 Constructn Contracts(s) Documnts	535,498	133,875	328,126	997,499
43.30.05 Programs & Project Managmt Dcmnt	154,830	38,708	94,872	288,410
TOTAL Planning, Engineering and Design	690,328	172,582	422,998	1,285,908
43.31 Supervision and Administration				
43.31.01 Prjt Office Supervn and Adminstn	159,987	39,997	105,831	305,815
43.31.02 Area Office S&A Documents	45,963	11,491	30,405	87,859
43.31.03 District Office S&A Documents	65,661	16,415	43,435	125,511
TOTAL Supervision and Administration	271,611	67,903	179,671	519,184
TOTAL Item 458-L Brunswick-Halpino	4,567,784	659,815	2,363,938	7,591,537
44 Item 460-L Brunswick-Halpino				
44.01 Lands and Damages				
44.01.02 Acquisitions	32,000	0	14,282	46,282
44.01.18 Real Estate Payments	94,100	23,900	0	118,000
TOTAL Lands and Damages	126,100	23,900	14,282	164,282
44.02 Relocations				
44.02.03 Cemetery, Utilities, & Structure	23,000	5,750	11,167	39,917
TOTAL Relocations	23,000	5,750	11,167	39,917
44.11 Levees and Floodwalls				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
44.11.01 Levees	3,663,072	408,175	1,859,338	5,930,585
TOTAL Levees and Floodwalls	3,663,072	408,175	1,859,338	5,930,585
44.30 Planning, Engineering and Design				
44.30.04 Constructn Contracts(s) Documnts	535,648	133,912	328,218	997,778
44.30.05 Programs & Project Managmt Dcmnt	154,830	38,708	94,872	288,410
TOTAL Planning, Engineering and Design	690,478	172,620	423,090	1,286,188
44.31 Supervision and Administration				
44.31.01 Prjt Office Supervn and Adminstn	159,597	39,899	105,573	305,070
44.31.02 Area Office S&A Documents	45,667	11,417	30,209	87,292
44.31.03 District Office S&A Documents	65,239	16,310	43,156	124,704
TOTAL Supervision and Administration	270,503	67,626	178,938	517,066
TOTAL Item 460-L Brunswick-Halpino	4,773,153	678,070	2,486,815	7,938,037
45 Item 461-R Willow Pt.-Youngs Pt.				
45.01 Lands and Damages				
45.01.02 Acquisitions	32,000	0	9,744	41,744
45.01.18 Real Estate Payments	297,200	74,800	0	372,000
TOTAL Lands and Damages	329,200	74,800	9,744	413,744
45.11 Levees and Floodwalls				
45.11.01 Levees	6,033,010	670,550	2,501,098	9,204,658
TOTAL Levees and Floodwalls	6,033,010	670,550	2,501,098	9,204,658
45.30 Planning, Engineering and Design				
45.30.04 Constructn Contracts(s) Documnts	572,850	143,213	279,980	996,043
45.30.05 Programs & Project Managmt Dcmnt	259,730	64,933	126,943	451,606
TOTAL Planning, Engineering and Design	832,580	208,145	406,923	1,447,648
45.31 Supervision and Administration				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
45.31.01 Prjt Office Supervn and Adminstn	319,428	79,857	170,814	570,099
45.31.02 Area Office S&A Documents	91,769	22,942	49,073	163,785
45.31.03 District Office S&A Documents	131,099	32,775	70,105	233,979
TOTAL Supervision and Administration	542,296	135,574	289,993	967,863
TOTAL Item 461-R Willow Pt.-Youngs Pt.	7,737,086	1,089,069	3,207,758	12,033,913
46 Item 462-L Magna Vista-Brunswick				
46.01 Lands and Damages				
46.01.02 Acquisitions	8,000	0	3,178	11,178
46.01.18 Real Estate Payments	5,400	600	0	6,000
TOTAL Lands and Damages	13,400	600	3,178	17,178
46.02 Relocations				
46.02.01 Roads, Construction Activities	856,476	214,119	372,460	1,443,055
46.02.03 Cemetery, Utilities, & Structure	5,000	1,250	2,174	8,424
TOTAL Relocations	861,476	215,369	374,634	1,451,479
46.11 Levees and Floodwalls				
46.11.01 Levees	2,793,621	259,715	1,264,997	4,318,334
TOTAL Levees and Floodwalls	2,793,621	259,715	1,264,997	4,318,334
46.30 Planning, Engineering and Design				
46.30.04 Constructn Contracts(s) Documnts	636,799	159,200	350,239	1,146,238
46.30.05 Programs & Project Managmt Dcmnt	150,630	37,658	82,847	271,134
TOTAL Planning, Engineering and Design	787,429	196,857	433,086	1,417,372
46.31 Supervision and Administration				
46.31.01 Prjt Office Supervn and Adminstn	197,058	49,265	117,644	363,966
46.31.02 Area Office S&A Documents	56,836	14,209	33,931	104,976
46.31.03 District Office S&A Documents	81,194	20,299	48,473	149,965
TOTAL Supervision and Administration	335,088	83,772	200,048	618,908
TOTAL Item 462-L Magna Vista-Brunswick	4,791,014	756,313	2,275,943	7,823,270

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
47 Item 463-L Magna Vista-Brunswick				
47.01 Lands and Damages				
47.01.02 Acquisitions	8,000	0	1,400	9,400
47.01.18 Real Estate Payments	26,500	7,500	0	34,000
TOTAL Lands and Damages	34,500	7,500	1,400	43,400
47.02 Relocations				
47.02.01 Roads, Construction Activities	*742,289*	*185,572*	*150,963*	*1,078,825*
47.02.03 Cemetery, Utilities, & Structure	5,000	1,250	1,017	7,267
TOTAL Relocations	747,289	186,822	151,980	1,086,091
47.11 Levees and Floodwalls				
47.11.01 Levees	3,675,154	265,028	938,157	4,878,340
TOTAL Levees and Floodwalls	3,675,154	265,028	938,157	4,878,340
47.30 Planning, Engineering and Design				
47.30.04 Constructn Contracts(s) Documnts	641,049	160,262	186,946	988,257
47.30.05 Programs & Project Managmt Dcmnt	218,830	54,708	63,816	337,354
TOTAL Planning, Engineering and Design	859,879	214,970	250,762	1,325,611
47.31 Supervision and Administration				
47.31.01 Prjt Office Supervn and Adminstn	219,476	54,869	72,921	347,266
47.31.02 Area Office S&A Documents	62,801	15,700	20,866	99,367
47.31.03 District Office S&A Documents	89,716	22,429	29,808	141,953
TOTAL Supervision and Administration	371,993	92,998	123,595	588,586
TOTAL Item 463-L Magna Vista-Brunswick	5,688,815	767,319	1,465,894	7,922,028
48 Item 465-L Magna Vista-Brunswick				
48.01 Lands and Damages				
48.01.02 Acquisitions	8,000	0	1,738	9,738
48.01.18 Real Estate Payments	64,000	16,000	0	80,000

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
TOTAL Lands and Damages	72,000	16,000	1,738	89,738
48.02 Relocations				
48.02.01 Roads, Construction Activities	742,289	185,572	183,345	1,111,207
48.02.03 Cemetery, Utilities, & Structure	5,000	1,250	1,235	7,485
TOTAL Relocations	747,289	186,822	184,580	1,118,692
48.11 Levees and Floodwalls				
48.11.01 Levees	3,029,831	260,343	967,969	4,258,144
TOTAL Levees and Floodwalls	3,029,831	260,343	967,969	4,258,144
48.30 Planning, Engineering and Design				
48.30.04 Constructn Contracts(s) Documnts	655,199	163,800	244,799	1,063,79
48.30.05 Programs & Project Managmt Dcmnt	272,400	68,100	101,775	442,275
TOTAL Planning, Engineering and Design	927,599	231,900	346,574	1,506,073
48.31 Supervision and Administration				
48.31.01 Prjt Office Supervn and Adminstn	250,878	62,720	104,303	417,900
48.31.02 Area Office S&A Documents	72,359	18,090	30,083	120,53
48.31.03 District Office S&A Documents	103,370	25,843	42,976	172,18
TOTAL Supervision and Administration	426,607	106,652	177,362	710,621
TOTAL Item 465-L Magna Vista-Brunswick	5,203,327	801,717	1,678,223	7,683,267
49 Item 467-L Magna Vista-Brunswick				
49.01 Lands and Damages				
49.01.02 Acquisitions	8,000	0	2,082	10,082
49.01.18 Real Estate Payments	6,400	1,600	0	8,000
TOTAL Lands and Damages	14,400	1,600	2,082	18,082
49.02 Relocations				
49.02.01 Roads, Construction Activities	513,886	128,471	149,990	792,347

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
49.02.03 Cemetery, Utilities, & Structure	5,000	1,250	1,459	7,709
TOTAL Relocations	518,886	129,721	151,450	800,057
49.11 Levees and Floodwalls				
49.11.01 Levees	3,919,690	294,608	1,321,182	5,535,481
TOTAL Levees and Floodwalls	3,919,690	294,608	1,321,182	5,535,481
49.30 Planning, Engineering and Design				
49.30.04 Constructn Contracts(s) Documnts	663,164	165,791	266,426	1,095,381
49.30.05 Programs & Project Managmt Dcmnt	213,300	53,325	85,693	352,318
TOTAL Planning, Engineering and Design	876,464	219,116	352,119	1,447,699
49.31 Supervision and Administration				
49.31.01 Prjt Office Supervn and Adminstn	219,040	54,760	97,391	371,191
49.31.02 Area Office S&A Documents	62,160	15,540	27,638	105,338
49.31.03 District Office S&A Documents	88,800	22,200	39,483	150,483
TOTAL Supervision and Administration	370,000	92,500	164,511	627,011
TOTAL Item 467-L Magna Vista-Brunswick	5,699,440	737,545	1,991,345	8,428,330
50 Item 477-L Tallula-Magna Vista				
50.01 Lands and Damages				
50.01.02 Acquisitions	32,000	0	1,722	33,722
50.01.18 Real Estate Payments	174,400	44,600	0	219,000
TOTAL Lands and Damages	206,400	44,600	1,722	252,722
50.02 Relocations				
50.02.03 Cemetery, Utilities, & Structure	321,000	80,250	25,720	426,970
TOTAL Relocations	321,000	80,250	25,720	426,970
50.11 Levees and Floodwalls				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
50.11.01 Levees	8,395,495	922,642	1,084,631	10,402,769
TOTAL Levees and Floodwalls	8,395,495	922,642	1,084,631	10,402,769
50.30 Planning, Engineering and Design				
50.30.04 Constructn Contracts(s) Documnts	336,382	84,096	37,717	458,194
50.30.05 Programs & Project Managmt Dcmnt	156,600	39,150	17,559	213,309
TOTAL Planning, Engineering and Design	492,982	123,246	55,276	671,503
50.31 Supervision and Administration				
50.31.01 Prjt Office Supervn and Adminstn	169,573	42,393	25,372	237,339
50.31.02 Area Office S&A Documents	48,717	12,179	7,289	68,186
50.31.03 District Office S&A Documents	69,596	17,399	10,413	97,408
TOTAL Supervision and Administration	287,886	71,972	43,075	402,932
TOTAL Item 477-L Tallula-Magna Vista	9,703,763	1,242,709	1,210,423	12,156,896
51 Item 471-L Tallula-Magna Vista				
51.01 Lands and Damages				
51.01.02 Acquisitions	48,000	0	2,256	50,256
51.01.18 Real Estate Payments	252,400	63,600	0	316,000
TOTAL Lands and Damages	300,400	63,600	2,256	366,256
51.02 Relocations				
51.02.03 Cemetery, Utilities, & Structure	150,000	37,500	6,206	193,706
TOTAL Relocations	150,000	37,500	6,206	193,706
51.11 Levees and Floodwalls				
51.11.01 Levees	7,207,955	818,440	802,639	8,829,034
TOTAL Levees and Floodwalls	7,207,955	818,440	802,639	8,829,034
51.30 Planning, Engineering and Design				
51.30.04 Constructn Contracts(s) Documnts	293,790	73,448	25,413	392,650

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
51.30.05 Programs & Project Managmt Dcmnt	221,600	55,400	19,168	296,168
TOTAL Planning, Engineering and Design	515,390	128,848	44,581	688,819
51.31 Supervision and Administration				
51.31.01 Prjt Office Supervn and Adminstn	166,277	41,569	29,036	236,882
51.31.02 Area Office S&A Documents	47,579	11,895	8,308	67,782
51.31.03 District Office S&A Documents	67,970	16,993	11,869	96,832
TOTAL Supervision and Administration	281,826	70,457	49,214	401,496
TOTAL Item 471-L Tallula-Magna Vista	8,455,571	1,118,844	904,897	10,479,312
52 Item 480-R Wilson Pt.-Pt Lookout				
52.01 Lands and Damages				
52.01.02 Acquisitions	40,000	0	2,152	42,152
52.01.18 Real Estate Payments	266,800	66,200	0	333,000
TOTAL Lands and Damages	306,800	66,200	2,152	375,152
52.02 Relocations				
52.02.03 Cemetery, Utilities, & Structure	385,000	96,250	30,848	512,098
TOTAL Relocations	385,000	96,250	30,848	512,098
52.11 Levees and Floodwalls				
52.11.01 Levees	7,082,101	764,464	1,310,376	9,156,941
TOTAL Levees and Floodwalls	7,082,101	764,464	1,310,376	9,156,941
52.30 Planning, Engineering and Design				
52.30.04 Constructn Contracts(s) Documnts	496,875	124,219	92,978	714,071
52.30.05 Programs & Project Managmt Dcmnt	316,330	79,083	59,193	454,606
TOTAL Planning, Engineering and Design	813,205	203,301	152,171	1,168,677
52.31 Supervision and Administration				
52.31.01 Prjt Office Supervn and Adminstn	302,314	75,579	68,134	446,027

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
52.31.02 Area Office S&A Documents	87,195	21,799	19,652	128,645
52.31.03 District Office S&A Documents	124,564	31,141	28,074	183,779
TOTAL Supervision and Administration	514,073	128,518	115,859	758,450
TOTAL Item 480-R Wilson Pt.-Pt Lookout	9,101,179	1,258,734	1,611,407	11,971,319
53 Item 481-L Carlisle-Tallula				
53.01 Lands and Damages				
53.01.02 Acquisitions	16,000	0	1,515	17,515
53.01.18 Real Estate Payments	198,000	50,000	0	248,000
TOTAL Lands and Damages	214,000	50,000	1,515	265,515
53.02 Relocations				
53.02.03 Cemetery, Utilities, & Structure	160,000	40,000	19,200	219,200
TOTAL Relocations	160,000	40,000	19,200	219,200
53.11 Levees and Floodwalls				
53.11.01 Levees	5,844,308	638,001	1,195,338	7,677,646
TOTAL Levees and Floodwalls	5,844,308	638,001	1,195,338	7,677,646
53.30 Planning, Engineering and Design				
53.30.04 Constructn Contracts(s) Documnts	522,984	130,746	111,003	764,733
53.30.05 Programs & Project Managmt Dcmnt	257,230	64,308	54,597	376,135
TOTAL Planning, Engineering and Design	780,214	195,054	165,600	1,140,868
53.31 Supervision and Administration				
53.31.01 Prjt Office Supervn and Adminstn	209,094	52,274	52,613	313,981
53.31.02 Area Office S&A Documents	59,338	14,835	14,931	89,103
53.31.03 District Office S&A Documents	84,768	21,192	21,330	127,290
TOTAL Supervision and Administration	353,200	88,300	88,874	530,374
TOTAL Item 481-L Carlisle-Tallula	7,351,722	1,011,354	1,470,527	9,833,604

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
54 Item 483-R Wilson Pt.-Pt Lookout				
54.01 Lands and Damages				
54.01.02 Acquisitions	16,000	0	0	16,000
54.01.18 Real Estate Payments	109,600	26,400	0	136,000
TOTAL Lands and Damages	125,600	26,400	0	152,000
54.02 Relocations				
54.02.03 Cemetery, Utilities, & Structure	15,000	3,750	0	18,750
TOTAL Relocations	15,000	3,750	0	18,750
54.11 Levees and Floodwalls				
54.11.01 Levees	3,642,410	402,088	88,574	4,133,072
TOTAL Levees and Floodwalls	3,642,410	402,088	88,574	4,133,072
54.30 Planning, Engineering and Design				
54.30.04 Constructn Contracts(s) Documnts	98,880	24,720	4,598	128,198
54.30.05 Programs & Project Managmt Dcmnt	146,250	36,563	6,801	189,613
TOTAL Planning, Engineering and Design	245,130	61,283	11,399	317,811
54.31 Supervision and Administration				
54.31.01 Prjt Office Supervn and Adminstn	152,904	38,226	7,110	198,240
54.31.02 Area Office S&A Documents	46,536	11,634	2,164	60,334
54.31.03 District Office S&A Documents	66,480	16,620	3,091	86,191
TOTAL Supervision and Administration	265,920	66,480	12,365	344,765
TOTAL Item 483-R Wilson Pt.-Pt Lookout	4,294,060	560,000	112,338	4,966,398
55 Item 485-R Wilson Pt.-Pt Lookout				
55.01 Lands and Damages				
55.01.02 Acquisitions	16,000	0	1,515	17,515
55.01.18 Real Estate Payments	81,900	21,100	0	103,000
TOTAL Lands and Damages	97,900	21,100	1,515	120,515

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
55.02 Relocations				
55.02.01 Roads, Construction Activities	25,000	6,250	3,000	34,250
55.02.03 Cemetery, Utilities, & Structure	69,000	17,250	8,280	94,530
TOTAL Relocations	94,000	23,500	11,280	128,780
55.11 Levees and Floodwalls				
55.11.01 Levees	4,894,386	328,258	872,182	6,094,826
TOTAL Levees and Floodwalls	4,894,386	328,258	872,182	6,094,826
55.30 Planning, Engineering and Design				
55.30.04 Constructn Contracts(s) Documnts	490,380	122,595	91,762	704,737
55.30.05 Programs & Project Managmt Dcmnt	203,030	50,758	37,992	291,779
TOTAL Planning, Engineering and Design	693,410	173,353	129,754	996,517
55.31 Supervision and Administration				
55.31.01 Prjt Office Supervn and Adminstn	278,994	69,749	62,878	411,621
55.31.02 Area Office S&A Documents	79,832	19,958	17,992	117,782
55.31.03 District Office S&A Documents	114,046	28,512	25,703	168,261
TOTAL Supervision and Administration	472,872	118,218	106,574	697,664
TOTAL Item 485-R Wilson Pt.-Pt Lookout	6,252,568	664,429	1,121,305	8,038,302
56 Item 486-L Carlisle-Tallula				
56.01 Lands and Damages				
56.01.02 Acquisitions	16,000	0	2,155	18,155
56.01.18 Real Estate Payments	139,400	34,600	0	174,000
TOTAL Lands and Damages	155,400	34,600	2,155	192,155
56.02 Relocations				
56.02.01 Roads, Construction Activities	15,000	3,750	2,417	21,167
56.02.03 Cemetery, Utilities, & Structure	43,000	10,750	6,928	60,678
TOTAL Relocations	58,000	14,500	9,345	81,845

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
56.11 Levees and Floodwalls				
56.11.01 Levees	3,070,416	131,446	646,776	3,848,639
TOTAL Levees and Floodwalls	3,070,416	131,446	646,776	3,848,639
56.30 Planning, Engineering and Design				
56.30.04 Constructn Contracts(s) Documnts	498,036	124,509	118,782	741,327
56.30.05 Programs & Project Managmt Dcmnt	203,030	50,758	48,423	302,210
TOTAL Planning, Engineering and Design	701,066	175,267	167,204	1,043,537
56.31 Supervision and Administration				
56.31.01 Prjt Office Supervn and Adminstn	184,194	46,049	51,229	281,471
56.31.02 Area Office S&A Documents	52,917	13,229	14,718	80,864
56.31.03 District Office S&A Documents	75,596	18,899	21,025	115,520
TOTAL Supervision and Administration	312,707	78,177	86,972	477,855
TOTAL Item 486-L Carlisle-Tallula	4,297,589	433,990	912,453	5,644,032
57 Item 487-R Wilson Pt.-Pt Lookout				
57.01 Lands and Damages				
57.01.02 Acquisitions	48,000	0	4,546	52,546
57.01.18 Real Estate Payments	124,800	31,200	0	156,000
TOTAL Lands and Damages	172,800	31,200	4,546	208,546
57.02 Relocations				
57.02.03 Cemetery, Utilities, & Structure	10,000	2,500	1,200	13,700
TOTAL Relocations	10,000	2,500	1,200	13,700
57.11 Levees and Floodwalls				
57.11.01 Levees	4,919,164	536,446	911,087	6,366,697
TOTAL Levees and Floodwalls	4,919,164	536,446	911,087	6,366,697
57.30 Planning, Engineering and Design				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
57.30.04 Constructn Contracts(s) Documnts	407,420	101,855	76,238	585,513
57.30.05 Programs & Project Managmt Dcmnt	203,030	50,758	37,992	291,779
TOTAL Planning, Engineering and Design	610,450	152,613	114,230	877,293
57.31 Supervision and Administration				
57.31.01 Prjt Office Supervn and Adminstn	180,861	45,215	40,762	266,838
57.31.02 Area Office S&A Documents	51,540	12,885	11,616	76,041
57.31.03 District Office S&A Documents	73,629	18,407	16,594	108,630
TOTAL Supervision and Administration	306,030	76,508	68,972	451,509
TOTAL Item 487-R Wilson Pt.-Pt Lookout	6,018,444	799,266	1,100,034	7,917,744
58 Item 489-R Wilson Pt.-Pt Lookout				
58.01 Lands and Damages				
58.01.02 Acquisitions	40,000	0	312	40,312
58.01.18 Real Estate Payments	333,000	83,000	0	416,000
TOTAL Lands and Damages	373,000	83,000	312	456,312
58.02 Relocations				
58.02.01 Roads, Construction Activities	15,000	3,750	84	18,834
58.02.03 Cemetery, Utilities, & Structure	55,000	13,750	309	69,059
TOTAL Relocations	70,000	17,500	394	87,894
58.11 Levees and Floodwalls				
58.11.01 Levees	4,869,105	555,475	455,122	5,879,702
TOTAL Levees and Floodwalls	4,869,105	555,475	455,122	5,879,702
58.30 Planning, Engineering and Design				
58.30.04 Constructn Contracts(s) Documnts	286,470	71,618	17,439	375,526
58.30.05 Programs & Project Managmt Dcmnt	302,850	75,713	18,436	396,998
TOTAL Planning, Engineering and Design	589,320	147,330	35,875	772,525
58.31 Supervision and Administration				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
58.31.01 Prjt Office Supervn and Adminstn	53,475	13,369	5,314	72,158
58.31.02 Area Office S&A Documents	16,275	4,069	1,617	21,961
58.31.03 District Office S&A Documents	23,250	5,813	2,310	31,373
TOTAL Supervision and Administration	93,000	23,250	9,242	125,492
TOTAL Item 489-R Wilson Pt.-Pt Lookout	5,994,425	826,555	500,945	7,321,924
59 Item 490-L Carlisle-Tallula				
59.01 Lands and Damages				
59.01.02 Acquisitions	16,000	0	2,155	18,155
59.01.18 Real Estate Payments	93,600	23,400	0	117,000
TOTAL Lands and Damages	109,600	23,400	2,155	135,155
59.02 Relocations				
59.02.03 Cemetery, Utilities, & Structure	33,000	8,250	5,317	46,567
TOTAL Relocations	33,000	8,250	5,317	46,567
59.11 Levees and Floodwalls				
59.11.01 Levees	3,087,761	129,542	707,485	3,924,788
TOTAL Levees and Floodwalls	3,087,761	129,542	707,485	3,924,788
59.30 Planning, Engineering and Design				
59.30.04 Constructn Contracts(s) Documnts	500,706	125,177	132,562	758,444
59.30.05 Programs & Project Managmt Dcmnt	262,130	65,533	69,399	397,061
TOTAL Planning, Engineering and Design	762,836	190,709	201,961	1,155,506
59.31 Supervision and Administration				
59.31.01 Prjt Office Supervn and Adminstn	183,663	45,916	56,017	285,596
59.31.02 Area Office S&A Documents	52,973	13,243	16,157	82,373
59.31.03 District Office S&A Documents	75,676	18,919	23,081	117,676
TOTAL Supervision and Administration	312,312	78,078	95,255	485,645
TOTAL Item 490-L Carlisle-Tallula	4,305,509	429,979	1,012,173	5,747,661

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
60 Item 493-L Valewood-Carlisle				
60.01 Lands and Damages				
60.01.02 Acquisitions	8,000	0	62	8,062
60.01.18 Real Estate Payments	46,800	12,200	0	59,000
TOTAL Lands and Damages	54,800	12,200	62	67,062
60.11 Levees and Floodwalls				
60.11.01 Levees	3,779,082	384,338	416,342	4,579,762
TOTAL Levees and Floodwalls	3,779,082	384,338	416,342	4,579,762
60.30 Planning, Engineering and Design				
60.30.04 Constructn Contracts(s) Documnts	276,000	69,000	23,874	368,874
60.30.05 Programs & Project Managmt Dcmnt	349,280	87,320	30,213	466,813
TOTAL Planning, Engineering and Design	625,280	156,320	54,087	835,687
60.31 Supervision and Administration				
60.31.01 Prjt Office Supervn and Adminstn	191,232	47,808	23,832	262,872
60.31.02 Area Office S&A Documents	58,385	14,596	7,276	80,257
60.31.03 District Office S&A Documents	83,408	20,852	10,395	114,655
TOTAL Supervision and Administration	333,025	83,256	41,503	457,784
TOTAL Item 493-L Valewood-Carlisle	4,792,187	636,114	511,994	5,940,296
61 Item 495-L Valewood-Carlisle				
61.01 Lands and Damages				
61.01.02 Acquisitions	8,000	0	62	8,062
61.01.18 Real Estate Payments	24,000	6,000	0	30,000
TOTAL Lands and Damages	32,000	6,000	62	38,062
61.02 Relocations				
61.02.03 Cemetery, Utilities, & Structure	163,000	40,750	917	204,667
TOTAL Relocations	163,000	40,750	917	204,667

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
61.11 Levees and Floodwalls				
61.11.01 Levees	5,873,314	689,108	656,242	7,218,664
TOTAL Levees and Floodwalls	5,873,314	689,108	656,242	7,218,664
61.30 Planning, Engineering and Design				
61.30.04 Constructn Contracts(s) Documnts	276,000	69,000	23,874	368,874
61.30.05 Programs & Project Managmt Dcmnt	349,280	87,320	30,213	466,813
TOTAL Planning, Engineering and Design	625,280	156,320	54,087	835,687
61.31 Supervision and Administration				
61.31.01 Prjt Office Supervn and Adminstn	191,232	47,808	23,832	262,872
61.31.02 Area Office S&A Documents	58,385	14,596	7,276	80,257
61.31.03 District Office S&A Documents	83,408	20,852	10,395	114,655
TOTAL Supervision and Administration	333,025	83,256	41,503	457,784
TOTAL Item 495-L Valewood-Carlisle	7,026,619	975,434	752,811	8,754,864
62 Item 497-L Valewood-Carlisle				
62.01 Lands and Damages				
62.01.02 Acquisitions	18,000	0	140	18,140
62.01.18 Real Estate Payments	104,441	26,500	0	130,941
TOTAL Lands and Damages	122,441	26,500	140	149,082
62.02 Relocations				
62.02.01 Roads, Construction Activities	30,000	7,500	169	37,669
62.02.03 Cemetery, Utilities, & Structure	11,000	2,750	62	13,812
TOTAL Relocations	41,000	10,250	231	51,481
62.11 Levees and Floodwalls				
62.11.01 Levees	4,601,145	318,107	491,925	5,411,177
TOTAL Levees and Floodwalls	4,601,145	318,107	491,925	5,411,177

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL CO
62.30 Planning, Engineering and Design				
62.30.04 Constructn Contracts(s) Documnts	276,000	69,000	23,874	368,87
62.30.05 Programs & Project Managmt Dcmnt	349,280	87,320	30,213	466,813
TOTAL Planning, Engineering and Design	625,280	156,320	54,087	835,687
62.31 Supervision and Administration				
62.31.01 Prjt Office Supervn and Adminstn	191,232	47,808	23,832	262,872
62.31.02 Area Office S&A Documents	58,385	14,596	7,276	80,257
62.31.03 District Office S&A Documents	83,408	20,852	10,395	114,65
TOTAL Supervision and Administration	333,025	83,256	41,503	457,7
TOTAL Item 497-L Valewood-Carlisle	5,722,891	594,433	587,886	6,905,21
63 Item 498-L Valewood-Carlisle				
63.01 Lands and Damages				
63.01.02 Acquisitions	16,000	0	125	16,12
63.01.18 Real Estate Payments	52,041	12,900	0	64,94
TOTAL Lands and Damages	68,041	12,900	125	81,06
63.02 Relocations				
63.02.03 Cemetery, Utilities, & Structure	155,000	38,750	872	194,622
TOTAL Relocations	155,000	38,750	872	194,622
63.11 Levees and Floodwalls				
63.11.01 Levees	3,381,426	242,210	362,364	3,985,99
TOTAL Levees and Floodwalls	3,381,426	242,210	362,364	3,985,999
63.30 Planning, Engineering and Design				
63.30.04 Constructn Contracts(s) Documnts	276,000	69,000	23,874	368,8
63.30.05 Programs & Project Managmt Dcmnt	349,280	87,320	30,213	466,8
TOTAL Planning, Engineering and Design	625,280	156,320	54,087	835,687

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
63.31 Supervision and Administration				
63.31.01 Prjt Office Supervn and Adminstn	191,232	47,808	23,832	262,872
63.31.02 Area Office S&A Documents	58,385	14,596	7,276	80,257
63.31.03 District Office S&A Documents	83,408	20,852	10,395	114,655
TOTAL Supervision and Administration	333,025	83,256	41,503	457,784
TOTAL Item 498-L Valewood-Carlisle	4,562,772	533,436	458,950	5,555,159
64 Item 502-L Carolina-Valewood				
64.01 Lands and Damages				
64.02 Relocations				
64.02.03 Cemetery, Utilities, & Structure	5,000	1,250	0	6,250
TOTAL Relocations	5,000	1,250	0	6,250
64.11 Levees and Floodwalls				
64.11.01 Levees	8,646,421	927,638	353,283	9,927,342
TOTAL Levees and Floodwalls	8,646,421	927,638	353,283	9,927,342
64.30 Planning, Engineering and Design				
64.30.04 Constructn Contracts(s) Documnts	252,990	63,248	14,863	331,101
64.30.05 Programs & Project Managmt Dcmnt	205,350	51,338	12,064	268,752
TOTAL Planning, Engineering and Design	458,340	114,585	26,927	599,852
64.31 Supervision and Administration				
64.31.01 Prjt Office Supervn and Adminstn	298,977	74,744	17,565	391,286
64.31.02 Area Office S&A Documents	90,993	22,748	5,346	119,087
64.31.03 District Office S&A Documents	129,990	32,498	7,637	170,124
TOTAL Supervision and Administration	519,960	129,990	30,548	680,498
TOTAL Item 502-L Carolina-Valewood	9,629,721	1,173,463	410,758	11,213,943
65 Item 503-R State Line-Wilson Pt.				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
65.01 Lands and Damages				
65.01.02 Acquisitions	24,000	0	1,128	25,128
65.01.18 Real Estate Payments	291,000	73,000	0	364,000
TOTAL Lands and Damages	315,000	73,000	1,128	389,128
65.02 Relocations				
65.02.03 Cemetery, Utilities, & Structure	18,000	4,500	745	23,245
TOTAL Relocations	18,000	4,500	745	23,245
65.11 Levees and Floodwalls				
65.11.01 Levees	5,782,429	643,590	747,989	7,174,008
TOTAL Levees and Floodwalls	5,782,429	643,590	747,989	7,174,008
65.30 Planning, Engineering and Design				
65.30.04 Constructn Contracts(s) Documnts	444,197	111,049	49,806	605,052
65.30.05 Programs & Project Managmt Dcmnt	268,030	67,008	30,053	365,090
TOTAL Planning, Engineering and Design	712,227	178,057	79,858	970,142
65.31 Supervision and Administration				
65.31.01 Prjt Office Supervn and Adminstn	296,540	74,135	44,370	415,045
65.31.02 Area Office S&A Documents	84,506	21,127	12,644	118,277
65.31.03 District Office S&A Documents	120,722	30,181	18,063	168,966
TOTAL Supervision and Administration	501,768	125,442	75,077	702,287
TOTAL Item 503-R State Line-Wilson Pt.	7,329,424	1,024,588	904,797	9,258,810
66 Item 506-R State Line-Wilson Pt.				
66.01 Lands and Damages				
66.01.02 Acquisitions	32,000	0	0	32,000
66.01.18 Real Estate Payments	175,400	43,600	0	219,000
TOTAL Lands and Damages	207,400	43,600	0	251,000

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
66.02 Relocations				
66.02.03 Cemetery, Utilities, & Structure	13,000	3,250	0	16,250
TOTAL Relocations	13,000	3,250	0	16,250
66.11 Levees and Floodwalls				
66.11.01 Levees	6,396,859	689,367	261,482	7,347,707
TOTAL Levees and Floodwalls	6,396,859	689,367	261,482	7,347,707
66.30 Planning, Engineering and Design				
66.30.04 Constructn Contracts(s) Documnts	137,180	34,295	8,059	179,534
66.30.05 Programs & Project Managmt Dcmnt	205,350	51,338	12,064	268,752
TOTAL Planning, Engineering and Design	342,530	85,633	20,124	448,286
66.31 Supervision and Administration				
66.31.01 Prjt Office Supervn and Adminstn	255,024	63,756	14,983	333,763
66.31.02 Area Office S&A Documents	77,616	19,404	4,560	101,580
66.31.03 District Office S&A Documents	110,880	27,720	6,514	145,114
TOTAL Supervision and Administration	443,520	110,880	26,057	580,457
TOTAL Item 506-R State Line-Wilson Pt.	7,403,309	932,729	307,662	8,643,700
67 Item 509-L Lake Jackson-Palmetto				
67.01 Lands and Damages				
67.02 Relocations				
67.02.01 Roads, Construction Activities	30,000	7,500	17,734	55,234
67.02.03 Cemetery, Utilities, & Structure	8,000	2,000	4,729	14,729
TOTAL Relocations	38,000	9,500	22,463	69,963
67.11 Levees and Floodwalls				
67.11.01 Levees	3,927,944	458,417	2,493,207	6,879,568
TOTAL Levees and Floodwalls	3,927,944	458,417	2,493,207	6,879,568

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
67.30 Planning, Engineering and Design				
67.30.04 Constructn Contracts(s) Documnts	575,843	143,961	449,373	1,169,177
67.30.05 Programs & Project Managmt Dcmnt	203,230	50,808	158,596	412,633
TOTAL Planning, Engineering and Design	779,073	194,768	607,969	1,581,810
67.31 Supervision and Administration				
67.31.01 Prjt Office Supervn and Adminstn	212,616	53,154	177,162	442,932
67.31.02 Area Office S&A Documents	60,590	15,148	50,487	126,224
67.31.03 District Office S&A Documents	86,557	21,639	72,124	180,320
TOTAL Supervision and Administration	359,763	89,941	299,773	749,476
TOTAL Item 509-L Lake Jackson-Palmetto	5,104,780	752,626	3,423,412	9,280,818
68 Item 511-L Lake Jackson-Palmetto				
68.01 Lands and Damages				
68.11 Levees and Floodwalls				
68.11.01 Levees	1,858,382	216,206	1,227,742	3,302,331
TOTAL Levees and Floodwalls	1,858,382	216,206	1,227,742	3,302,331
68.30 Planning, Engineering and Design				
68.30.04 Constructn Contracts(s) Documnts	535,004	133,751	436,296	1,105,051
68.30.05 Programs & Project Managmt Dcmnt	149,030	37,258	121,534	307,821
TOTAL Planning, Engineering and Design	684,034	171,009	557,830	1,412,872
68.31 Supervision and Administration				
68.31.01 Prjt Office Supervn and Adminstn	150,450	37,613	125,362	313,425
68.31.02 Area Office S&A Documents	43,050	10,763	35,871	89,684
68.31.03 District Office S&A Documents	61,500	15,375	51,245	128,120
TOTAL Supervision and Administration	255,000	63,750	212,479	531,229
TOTAL Item 511-L Lake Jackson-Palmetto	2,797,416	450,965	1,998,050	5,246,432
69 Item 520-R AboveLakeport-Harwood				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
69.01 Lands and Damages				
69.01.02 Acquisitions	24,000	0	18,655	42,655
69.01.18 Real Estate Payments	169,100	41,900	0	211,000
TOTAL Lands and Damages	193,100	41,900	18,655	253,655
69.02 Relocations				
69.02.03 Cemetery, Utilities, & Structure	5,000	1,250	4,111	10,361
TOTAL Relocations	5,000	1,250	4,111	10,361
69.11 Levees and Floodwalls				
69.11.01 Levees	3,234,907	367,996	2,663,987	6,266,890
TOTAL Levees and Floodwalls	3,234,907	367,996	2,663,987	6,266,890
69.30 Planning, Engineering and Design				
69.30.04 Constructn Contracts(s) Documnts	461,182	115,296	479,456	1,055,934
69.30.05 Programs & Project Managmt Dcmnt	147,530	36,883	153,376	337,788
TOTAL Planning, Engineering and Design	608,712	152,178	632,832	1,393,722
69.31 Supervision and Administration				
69.31.01 Prjt Office Supervn and Adminstn	148,156	37,039	162,916	348,111
69.31.02 Area Office S&A Documents	42,564	10,641	46,804	100,009
69.31.03 District Office S&A Documents	60,806	15,202	66,864	142,871
TOTAL Supervision and Administration	251,526	62,882	276,584	590,992
TOTAL Item 520-R AboveLakeport-Harwood	4,293,245	626,206	3,596,170	8,515,620
70 Item 521-L James-Longwood				
70.01 Lands and Damages				
70.01.02 Acquisitions	16,000	0	11,472	27,472
70.01.18 Real Estate Payments	57,400	14,600	0	72,000
TOTAL Lands and Damages	73,400	14,600	11,472	99,472

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
70.02 Relocations				
70.02.03 Cemetery, Utilities, & Structure	75,000	18,750	57,141	150,891
TOTAL Relocations	75,000	18,750	57,141	150,891
70.11 Levees and Floodwalls				
70.11.01 Levees	4,888,779	564,780	3,755,866	9,209,425
TOTAL Levees and Floodwalls	4,888,779	564,780	3,755,866	9,209,425
70.30 Planning, Engineering and Design				
70.30.04 Constructn Contracts(s) Documnts	728,362	182,091	700,684	1,611,137
70.30.05 Programs & Project Managmt Dcmnt	138,160	34,540	132,910	305,610
TOTAL Planning, Engineering and Design	866,522	216,631	833,594	1,916,747
70.31 Supervision and Administration				
70.31.01 Prjt Office Supervn and Adminstn	265,979	66,495	271,332	603,806
70.31.02 Area Office S&A Documents	75,797	18,949	77,322	172,069
70.31.03 District Office S&A Documents	108,281	27,070	110,460	245,811
TOTAL Supervision and Administration	450,057	112,514	459,114	1,021,686
TOTAL Item 521-L James-Longwood	6,353,758	927,275	5,117,187	12,398,220
71 Item 524-L Avon-Longwood				
71.01 Lands and Damages				
71.01.02 Acquisitions	8,000	0	7,764	15,764
71.01.18 Real Estate Payments	95,400	23,600	0	119,000
TOTAL Lands and Damages	103,400	23,600	7,764	134,764
71.02 Relocations				
71.02.03 Cemetery, Utilities, & Structure	83,000	20,750	84,193	187,943
TOTAL Relocations	83,000	20,750	84,193	187,943
71.11 Levees and Floodwalls				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
71.11.01 Levees	2,426,890	280,612	2,363,108	5,070,610
TOTAL Levees and Floodwalls	2,426,890	280,612	2,363,108	5,070,610
71.30 Planning, Engineering and Design				
71.30.04 Constructn Contracts(s) Documnts	693,846	173,462	864,185	1,731,493
71.30.05 Programs & Project Managmt Dcmnt	109,100	27,275	135,884	272,259
TOTAL Planning, Engineering and Design	802,946	200,737	1,000,069	2,003,752
71.31 Supervision and Administration				
71.31.01 Prjt Office Supervn and Adminstn	78,412	19,603	102,788	200,803
71.31.02 Area Office S&A Documents	23,200	5,800	30,412	59,412
71.31.03 District Office S&A Documents	33,142	8,286	43,445	84,873
TOTAL Supervision and Administration	134,754	33,689	176,646	345,088
TOTAL Item 524-L Avon-Longwood	3,550,990	559,387	3,631,780	7,742,157
72 Item 525-L Avon				
72.01 Lands and Damages				
72.11 Levees and Floodwalls				
72.11.01 Levees	1,081,556	127,280	956,794	2,165,629
TOTAL Levees and Floodwalls	1,081,556	127,280	956,794	2,165,629
72.30 Planning, Engineering and Design				
72.30.04 Constructn Contracts(s) Documnts	396,072	99,018	443,502	938,592
72.30.05 Programs & Project Managmt Dcmnt	50,000	12,500	55,988	118,488
TOTAL Planning, Engineering and Design	446,072	111,518	499,489	1,057,079
72.31 Supervision and Administration				
72.31.01 Prjt Office Supervn and Adminstn	36,991	9,248	43,709	89,948
72.31.02 Area Office S&A Documents	11,619	2,905	13,729	28,253
72.31.03 District Office S&A Documents	16,598	4,150	19,613	40,360

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
TOTAL Supervision and Administration	65,208	16,302	77,051	158,561
TOTAL Item 525-L Avon	1,592,836	255,100	1,533,334	3,381,270
73 Item 525-R AboveLakeport-Harwood				
73.01 Lands and Damages				
73.01.02 Acquisitions	32,000	0	24,874	56,874
73.01.18 Real Estate Payments	193,500	48,500	0	242,000
TOTAL Lands and Damages	225,500	48,500	24,874	298,874
73.02 Relocations				
73.02.03 Cemetery, Utilities, & Structure	160,000	40,000	131,560	331,560
TOTAL Relocations	160,000	40,000	131,560	331,560
73.11 Levees and Floodwalls				
73.11.01 Levees	3,317,812	381,417	2,831,019	6,530,248
TOTAL Levees and Floodwalls	3,317,812	381,417	2,831,019	6,530,248
73.30 Planning, Engineering and Design				
73.30.04 Constructn Contracts(s) Documnts	482,730	120,683	521,167	1,124,580
73.30.05 Programs & Project Managmt Dcmnt	206,630	51,658	223,083	481,370
TOTAL Planning, Engineering and Design	689,360	172,340	744,250	1,605,950
73.31 Supervision and Administration				
73.31.01 Prjt Office Supervn and Adminstn	172,717	43,179	196,962	412,858
73.31.02 Area Office S&A Documents	49,421	12,355	56,358	118,135
73.31.03 District Office S&A Documents	70,602	17,651	80,513	168,765
TOTAL Supervision and Administration	292,740	73,185	333,833	699,758
TOTAL Item 525-R AboveLakeport-Harwood	4,685,412	715,442	4,065,537	9,466,390
74 Item 526-L Avon				
74.01 Lands and Damages				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
74.01.02 Acquisitions	8,000	0	5,736	13,736
74.01.18 Real Estate Payments	39,600	10,400	0	50,000
TOTAL Lands and Damages	47,600	10,400	5,736	63,736
74.02 Relocations				
74.02.03 Cemetery, Utilities, & Structure	8,000	2,000	6,095	16,095
TOTAL Relocations	8,000	2,000	6,095	16,095
74.11 Levees and Floodwalls				
74.11.01 Levees	940,083	106,840	695,052	1,741,975
TOTAL Levees and Floodwalls	940,083	106,840	695,052	1,741,975
74.30 Planning, Engineering and Design				
74.30.04 Constructn Contracts(s) Documnts	309,879	77,470	286,444	673,793
74.30.05 Programs & Project Managmt Dcmnt	83,960	20,990	77,611	182,561
TOTAL Planning, Engineering and Design	393,839	98,460	364,055	856,354
74.31 Supervision and Administration				
74.31.01 Prjt Office Supervn and Adminstn	49,266	12,317	48,348	109,931
74.31.02 Area Office S&A Documents	14,994	3,749	14,715	33,457
74.31.03 District Office S&A Documents	21,420	5,355	21,021	47,796
TOTAL Supervision and Administration	85,680	21,420	84,084	191,184
TOTAL Item 526-L Avon	1,475,202	239,119	1,155,022	2,869,343
75 Item 528-R AboveLakeport-Harwood				
75.01 Lands and Damages				
75.01.02 Acquisitions	32,000	0	24,874	56,874
75.01.18 Real Estate Payments	193,400	49,600	0	243,000
TOTAL Lands and Damages	225,400	49,600	24,874	299,874
75.02 Relocations				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
75.02.03 Cemetery, Utilities, & Structure	80,000	20,000	65,780	165,780
TOTAL Relocations	80,000	20,000	65,780	165,780
75.11 Levees and Floodwalls				
75.11.01 Levees	4,257,377	476,358	3,500,123	8,233,858
TOTAL Levees and Floodwalls	4,257,377	476,358	3,500,123	8,233,858
75.30 Planning, Engineering and Design				
75.30.04 Constructn Contracts(s) Documnts	479,570	119,893	498,573	1,098,035
75.30.05 Programs & Project Managmt Dcmnt	147,530	36,883	153,376	337,788
TOTAL Planning, Engineering and Design	627,100	156,775	651,949	1,435,824
75.31 Supervision and Administration				
75.31.01 Prjt Office Supervn and Adminstn	152,448	38,112	167,636	358,196
75.31.02 Area Office S&A Documents	43,444	10,861	47,772	102,077
75.31.03 District Office S&A Documents	62,062	15,516	68,245	145,822
TOTAL Supervision and Administration	257,954	64,489	283,653	606,095
TOTAL Item 528-R AboveLakeport-Harwood	5,447,831	767,222	4,526,378	10,741,430
76 Item 531-L Refuge				
76.01 Lands and Damages				
76.02 Relocations				
76.02.03 Cemetery, Utilities, & Structure	713,000	178,250	676,191	1,567,441
TOTAL Relocations	713,000	178,250	676,191	1,567,441
76.11 Levees and Floodwalls				
76.11.01 Levees	578,214	106,145	541,670	1,226,028
TOTAL Levees and Floodwalls	578,214	106,145	541,670	1,226,028
76.30 Planning, Engineering and Design				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
76.30.04 Constructn Contracts(s) Documnts	412,987	103,247	462,442	978,676
76.30.05 Programs & Project Managmt Dcmnt	50,000	12,500	55,988	118,488
TOTAL Planning, Engineering and Design	462,987	115,747	518,430	1,097,163
76.31 Supervision and Administration				
76.31.01 Prjt Office Supervn and Adminstn	19,953	4,988	23,577	48,518
76.31.02 Area Office S&A Documents	6,237	1,559	7,370	15,166
76.31.03 District Office S&A Documents	8,910	2,228	10,528	21,666
TOTAL Supervision and Administration	35,100	8,775	41,475	85,350
TOTAL Item 531-L Refuge	1,789,301	408,916	1,777,766	3,975,983
77 Item 531-R Sunnyside				
77.01 Lands and Damages				
77.01.02 Acquisitions	32,000	0	26,870	58,870
77.01.18 Real Estate Payments	146,600	37,400	0	184,000
TOTAL Lands and Damages	178,600	37,400	26,870	242,870
77.02 Relocations				
77.02.03 Cemetery, Utilities, & Structure	713,000	178,250	630,559	1,521,809
TOTAL Relocations	713,000	178,250	630,559	1,521,809
77.11 Levees and Floodwalls				
77.11.01 Levees	2,715,804	321,867	2,404,317	5,441,988
TOTAL Levees and Floodwalls	2,715,804	321,867	2,404,317	5,441,988
77.30 Planning, Engineering and Design				
77.30.04 Constructn Contracts(s) Documnts	512,564	128,141	573,944	1,214,649
77.30.05 Programs & Project Managmt Dcmnt	163,300	40,825	182,855	386,980
TOTAL Planning, Engineering and Design	675,864	168,966	756,799	1,601,629
77.31 Supervision and Administration				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
77.31.01 Prjt Office Supervn and Adminstn	148,355	37,089	175,300	360,744
77.31.02 Area Office S&A Documents	42,101	10,525	49,748	102,374
77.31.03 District Office S&A Documents	60,144	15,036	71,068	146,248
TOTAL Supervision and Administration	250,600	62,650	296,115	609,365
TOTAL Item 531-R Sunnyside	4,533,868	769,133	4,114,660	9,417,661
78 Item 531.5-L-A Deerfield				
78.01 Lands and Damages				
78.01.02 Acquisitions	8,000	0	8,318	16,318
78.01.18 Real Estate Payments	39,200	9,800	0	49,000
TOTAL Lands and Damages	47,200	9,800	8,318	65,318
78.11 Levees and Floodwalls				
78.11.01 Levees	1,169,516	132,268	1,172,387	2,474,172
TOTAL Levees and Floodwalls	1,169,516	132,268	1,172,387	2,474,172
78.30 Planning, Engineering and Design				
78.30.04 Constructn Contracts(s) Documnts	405,494	101,374	522,580	1,029,448
78.30.05 Programs & Project Managmt Dcmnt	50,000	12,500	64,437	126,938
TOTAL Planning, Engineering and Design	455,494	113,874	587,018	1,156,385
78.31 Supervision and Administration				
78.31.01 Prjt Office Supervn and Adminstn	44,574	11,144	60,409	116,126
78.31.02 Area Office S&A Documents	13,566	3,392	18,385	35,343
78.31.03 District Office S&A Documents	19,380	4,845	26,265	50,490
TOTAL Supervision and Administration	77,520	19,380	105,059	201,959
TOTAL Item 531.5-L-A Deerfield	1,749,730	275,322	1,872,783	3,897,835
79 Item 536-R Leland-Vancluse				
79.01 Lands and Damages				
79.01.02 Acquisitions	48,000	0	37,310	85,310

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
79.01.18 Real Estate Payments	98,300	24,725	0	123,025
TOTAL Lands and Damages	146,300	24,725	37,310	208,335
79.02 Relocations				
79.02.03 Cemetery, Utilities, & Structure	10,000	2,500	8,223	20,723
TOTAL Relocations	10,000	2,500	8,223	20,723
79.11 Levees and Floodwalls				
79.11.01 Levees	2,752,399	541,303	2,606,965	5,900,668
TOTAL Levees and Floodwalls	2,752,399	541,303	2,606,965	5,900,668
79.30 Planning, Engineering and Design				
79.30.04 Constructn Contracts(s) Documnts	722,440	180,610	808,952	1,712,002
79.30.05 Programs & Project Managmt Dcmnt	256,630	64,158	287,361	608,149
TOTAL Planning, Engineering and Design	979,070	244,768	1,096,314	2,320,151
79.31 Supervision and Administration				
79.31.01 Prjt Office Supervn and Adminstn	375,522	93,881	443,726	913,129
79.31.02 Area Office S&A Documents	108,310	27,078	127,982	263,369
79.31.03 District Office S&A Documents	154,728	38,682	182,830	376,240
TOTAL Supervision and Administration	638,560	159,640	754,538	1,552,738
TOTAL Item 536-R Leland-Vancluse	4,526,329	972,935	4,503,350	10,002,615
80 Item 538-L Warfield				
80.01 Lands and Damages				
80.11 Levees and Floodwalls				
80.11.01 Levees	233,740	31,435	238,817	503,993
TOTAL Levees and Floodwalls	233,740	31,435	238,817	503,993
80.30 Planning, Engineering and Design				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
80.30.04 Constructn Contracts(s) Documnts	286,976	71,744	369,840	728,560
80.30.05 Programs & Project Managmt Dcmnt	50,000	12,500	64,437	126,938
TOTAL Planning, Engineering and Design	336,976	84,244	434,278	855,498
80.31 Supervision and Administration				
80.31.01 Prjt Office Supervn and Adminstn	13,241	3,310	17,945	34,496
80.31.02 Area Office S&A Documents	4,149	1,037	5,623	10,809
80.31.03 District Office S&A Documents	5,927	1,482	8,033	15,441
TOTAL Supervision and Administration	23,317	5,829	31,600	60,747
TOTAL Item 538-L Warfield	594,033	121,509	704,695	1,420,237
81 Item 540-L Lagrange				
81.01 Lands and Damages				
81.02 Relocations				
81.02.01 Roads, Construction Activities	20,000	5,000	20,288	45,288
81.02.02 Railroads, Construction Activity	100,000	25,000	101,438	226,438
81.02.03 Cemetery, Utilities, & Structure	41,000	10,250	41,589	92,839
TOTAL Relocations	161,000	40,250	163,314	364,564
81.11 Levees and Floodwalls				
81.11.01 Levees	832,582	91,339	806,398	1,730,319
TOTAL Levees and Floodwalls	832,582	91,339	806,398	1,730,319
81.30 Planning, Engineering and Design				
81.30.04 Constructn Contracts(s) Documnts	402,085	100,521	500,797	1,003,403
81.30.05 Programs & Project Managmt Dcmnt	109,100	27,275	135,884	272,259
TOTAL Planning, Engineering and Design	511,185	127,796	636,681	1,275,662
81.31 Supervision and Administration				
81.31.01 Prjt Office Supervn and Adminstn	84,409	21,102	110,650	216,161
81.31.02 Area Office S&A Documents	25,058	6,265	32,848	64,170

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
81.31.03 District Office S&A Documents	35,797	8,949	46,925	91,672
TOTAL Supervision and Administration	145,264	36,316	190,423	372,003
TOTAL Item 540-L Lagrange	1,650,031	295,702	1,796,816	3,742,549
82 Item 541-R Luna-Leland				
82.01 Lands and Damages				
82.01.02 Acquisitions	32,000	0	26,870	58,870
82.01.18 Real Estate Payments	335,100	85,900	0	421,000
TOTAL Lands and Damages	367,100	85,900	26,870	479,870
82.02 Relocations				
82.02.03 Cemetery, Utilities, & Structure	25,000	6,250	22,109	53,359
TOTAL Relocations	25,000	6,250	22,109	53,359
82.11 Levees and Floodwalls				
82.11.01 Levees	3,749,824	438,208	3,426,648	7,614,679
TOTAL Levees and Floodwalls	3,749,824	438,208	3,426,648	7,614,679
82.30 Planning, Engineering and Design				
82.30.04 Constructn Contracts(s) Documnts	583,351	145,838	677,271	1,406,459
82.30.05 Programs & Project Managmt Dcmnt	213,300	53,325	247,641	514,266
TOTAL Planning, Engineering and Design	796,651	199,163	924,912	1,920,726
82.31 Supervision and Administration				
82.31.01 Prjt Office Supervn and Adminstn	201,394	50,349	246,481	498,224
82.31.02 Area Office S&A Documents	57,392	14,348	70,241	141,981
82.31.03 District Office S&A Documents	81,988	20,497	100,343	202,828
TOTAL Supervision and Administration	340,774	85,194	417,065	843,032
TOTAL Item 541-R Luna-Leland	5,279,349	814,714	4,817,604	10,911,667
83 Item 543-L Above Greenville				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
83.01 Lands and Damages				
83.01.02 Acquisitions	8,000	0	8,318	16,318
83.01.18 Real Estate Payments	59,600	15,400	0	75,000
TOTAL Lands and Damages	67,600	15,400	8,318	91,318
83.02 Relocations				
83.02.01 Roads, Construction Activities	38,000	9,500	41,130	88,630
83.02.03 Cemetery, Utilities, & Structure	209,000	52,250	226,216	487,466
TOTAL Relocations	247,000	61,750	267,347	576,097
83.11 Levees and Floodwalls				
83.11.01 Levees	2,137,043	244,255	2,212,225	4,593,523
TOTAL Levees and Floodwalls	2,137,043	244,255	2,212,225	4,593,523
83.30 Planning, Engineering and Design				
83.30.04 Constructn Contracts(s) Documnts	795,216	198,804	1,060,122	2,054,142
83.30.05 Programs & Project Managmt Dcmnt	100,000	25,000	133,313	258,313
TOTAL Planning, Engineering and Design	895,216	223,804	1,193,435	2,312,455
83.31 Supervision and Administration				
83.31.01 Prjt Office Supervn and Adminstn	70,661	17,665	98,952	187,278
83.31.02 Area Office S&A Documents	20,906	5,227	29,276	55,409
83.31.03 District Office S&A Documents	29,866	7,467	41,824	79,156
TOTAL Supervision and Administration	121,433	30,358	170,052	321,843
TOTAL Item 543-L Above Greenville	3,468,292	575,567	3,851,377	7,895,236
84 Item 543-R Panther Forest				
84.01 Lands and Damages				
84.01.02 Acquisitions	16,000	0	14,464	30,464
84.01.18 Real Estate Payments	40,400	11,600	0	52,000
TOTAL Lands and Damages	56,400	11,600	14,464	82,464

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
84.02 Relocations				
84.02.03 Cemetery, Utilities, & Structure	5,000	1,250	4,742	10,992
TOTAL Relocations	5,000	1,250	4,742	10,992
84.11 Levees and Floodwalls				
84.11.01 Levees	663,618	80,834	589,234	1,333,686
TOTAL Levees and Floodwalls	663,618	80,834	589,234	1,333,686
84.30 Planning, Engineering and Design				
84.30.04 Constructn Contracts(s) Documnts	388,148	97,037	434,629	919,814
84.30.05 Programs & Project Managmt Dcmnt	50,000	12,500	55,988	118,488
TOTAL Planning, Engineering and Design	438,148	109,537	490,616	1,038,301
84.31 Supervision and Administration				
84.31.01 Prjt Office Supervn and Adminstn	24,757	6,189	29,253	60,200
84.31.02 Area Office S&A Documents	7,739	1,935	9,145	18,818
84.31.03 District Office S&A Documents	11,055	2,764	13,063	26,882
TOTAL Supervision and Administration	43,551	10,888	51,461	105,900
TOTAL Item 543-R Panther Forest	1,206,717	214,109	1,150,517	2,571,343
85 Item 546-R Gaines Landing				
85.01 Lands and Damages				
85.01.02 Acquisitions	24,000	0	21,696	45,696
85.01.18 Real Estate Payments	114,500	29,500	0	144,000
TOTAL Lands and Damages	138,500	29,500	21,696	189,696
85.02 Relocations				
85.02.03 Cemetery, Utilities, & Structure	5,000	1,250	4,742	10,992
TOTAL Relocations	5,000	1,250	4,742	10,992
85.11 Levees and Floodwalls				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
85.11.01 Levees	1,275,919	146,593	1,163,899	2,586,410
TOTAL Levees and Floodwalls	1,275,919	146,593	1,163,899	2,586,410
85.30 Planning, Engineering and Design				
85.30.04 Constructn Contracts(s) Documnts	685,719	171,430	796,120	1,653,269
85.30.05 Programs & Project Managmt Dcmnt	109,100	27,275	126,665	263,040
TOTAL Planning, Engineering and Design	794,819	198,705	922,785	1,916,309
85.31 Supervision and Administration				
85.31.01 Prjt Office Supervn and Adminstn	57,477	14,369	65,545	137,392
85.31.02 Area Office S&A Documents	17,493	4,373	19,949	41,815
85.31.03 District Office S&A Documents	24,990	6,248	28,498	59,735
TOTAL Supervision and Administration	99,960	24,990	113,992	238,942
TOTAL Item 546-R Gaines Landing	2,314,198	401,037	2,227,113	4,942,348
86 Item 548-R Dewey				
86.01 Lands and Damages				
86.01.02 Acquisitions	16,000	0	14,464	30,464
86.01.18 Real Estate Payments	28,800	7,200	0	36,000
TOTAL Lands and Damages	44,800	7,200	14,464	66,464
86.02 Relocations				
86.02.03 Cemetery, Utilities, & Structure	30,000	7,500	28,451	65,951
TOTAL Relocations	30,000	7,500	28,451	65,951
86.11 Levees and Floodwalls				
86.11.01 Levees	329,440	40,387	292,718	662,545
TOTAL Levees and Floodwalls	329,440	40,387	292,718	662,545
86.30 Planning, Engineering and Design				
86.30.04 Constructn Contracts(s) Documnts	306,583	76,646	343,296	726,525

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
86.30.05 Programs & Project Managmt Dcmnt	50,000	12,500	55,988	118,488
TOTAL Planning, Engineering and Design	356,583	89,146	399,284	845,013
86.31 Supervision and Administration				
86.31.01 Prjt Office Supervn and Adminstn	15,399	3,850	18,196	37,445
86.31.02 Area Office S&A Documents	4,825	1,206	5,701	11,733
86.31.03 District Office S&A Documents	6,893	1,723	8,145	16,761
TOTAL Supervision and Administration	27,117	6,779	32,042	65,938
TOTAL Item 548-R Dewey	787,940	151,012	766,959	1,705,911
87 Item 555-R Below Arkansas City				
87.01 Lands and Damages				
87.01.02 Acquisitions	16,000	0	13,435	29,435
87.01.18 Real Estate Payments	24,000	6,000	0	30,000
TOTAL Lands and Damages	40,000	6,000	13,435	59,435
87.11 Levees and Floodwalls				
87.11.01 Levees	282,672	36,232	244,057	562,961
TOTAL Levees and Floodwalls	282,672	36,232	244,057	562,961
87.30 Planning, Engineering and Design				
87.30.04 Constructn Contracts(s) Documnts	257,955	64,489	278,495	600,938
87.30.05 Programs & Project Managmt Dcmnt	104,200	26,050	112,497	242,747
TOTAL Planning, Engineering and Design	362,155	90,539	390,992	843,685
87.31 Supervision and Administration				
87.31.01 Prjt Office Supervn and Adminstn	29,634	7,409	33,794	70,836
87.31.02 Area Office S&A Documents	9,263	2,316	10,563	22,142
87.31.03 District Office S&A Documents	13,233	3,308	15,091	31,632
TOTAL Supervision and Administration	52,130	13,033	59,448	124,610
TOTAL Item 555-R Below Arkansas City	736,957	145,803	707,932	1,590,692

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
88 Item 570-L Below Catfish Point				
88.01 Lands and Damages				
88.01.02 Acquisitions	8,000	0	8,318	16,318
88.01.18 Real Estate Payments	48,800	12,200	0	61,000
TOTAL Lands and Damages	56,800	12,200	8,318	77,318
88.11 Levees and Floodwalls				
88.11.01 Levees	1,236,223	140,768	1,240,118	2,617,108
TOTAL Levees and Floodwalls	1,236,223	140,768	1,240,118	2,617,108
88.30 Planning, Engineering and Design				
88.30.04 Constructn Contracts(s) Documnts	656,174	164,044	845,644	1,665,862
88.30.05 Programs & Project Managmt Dcmnt	50,000	12,500	64,437	126,938
TOTAL Planning, Engineering and Design	706,174	176,544	910,082	1,792,799
88.31 Supervision and Administration				
88.31.01 Prjt Office Supervn and Adminstn	53,346	13,337	72,297	138,980
88.31.02 Area Office S&A Documents	16,374	4,094	22,191	42,658
88.31.03 District Office S&A Documents	23,391	5,848	31,701	60,939
TOTAL Supervision and Administration	93,111	23,278	126,189	242,577
TOTAL Item 570-L Below Catfish Point	2,092,308	352,789	2,284,706	4,729,803
89 Item 571-L Catfish Point				
89.01 Lands and Damages				
89.01.02 Acquisitions	8,000	0	8,318	16,318
89.01.18 Real Estate Payments	22,400	5,600	0	28,000
TOTAL Lands and Damages	30,400	5,600	8,318	44,318
89.02 Relocations				
89.02.03 Cemetery, Utilities, & Structure	8,000	2,000	8,659	18,659
TOTAL Relocations	8,000	2,000	8,659	18,659

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
89.11 Levees and Floodwalls				
89.11.01 Levees	528,622	65,057	534,667	1,128,346
TOTAL Levees and Floodwalls	528,622	65,057	534,667	1,128,346
89.30 Planning, Engineering and Design				
89.30.04 Constructn Contracts(s) Documnts	388,250	97,063	500,357	985,670
89.30.05 Programs & Project Managmt Dcmnt	50,000	12,500	64,437	126,938
TOTAL Planning, Engineering and Design	438,250	109,563	564,795	1,112,607
89.31 Supervision and Administration				
89.31.01 Prjt Office Supervn and Adminstn	18,002	4,501	24,397	46,900
89.31.02 Area Office S&A Documents	5,641	1,410	7,645	14,696
89.31.03 District Office S&A Documents	8,059	2,015	10,922	20,996
TOTAL Supervision and Administration	31,702	7,926	42,964	82,592
TOTAL Item 571-L Catfish Point	1,036,974	190,145	1,159,403	2,386,522
90 Item 575-L Upper Lake Bolivar				
90.01 Lands and Damages				
90.02 Relocations				
90.02.03 Cemetery, Utilities, & Structure	9,000	2,250	9,741	20,991
TOTAL Relocations	9,000	2,250	9,741	20,991
90.11 Levees and Floodwalls				
90.11.01 Levees	399,833	50,118	405,226	855,177
TOTAL Levees and Floodwalls	399,833	50,118	405,226	855,177
90.30 Planning, Engineering and Design				
90.30.04 Constructn Contracts(s) Documnts	328,013	82,003	422,727	832,743
90.30.05 Programs & Project Managmt Dcmnt	50,000	12,500	64,437	126,938
TOTAL Planning, Engineering and Design	378,013	94,503	487,164	959,681

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
90.31 Supervision and Administration				
90.31.01 Prjt Office Supervn and Adminstn	15,725	3,931	21,311	40,968
90.31.02 Area Office S&A Documents	4,939	1,235	6,694	12,867
90.31.03 District Office S&A Documents	7,056	1,764	9,563	18,383
TOTAL Supervision and Administration	27,720	6,930	37,568	72,218
TOTAL Item 575-L Upper Lake Bolivar	814,566	153,801	939,699	1,908,067
91 Item 576-R Cypress Creek				
91.01 Lands and Damages				
91.01.02 Acquisitions	24,000	0	20,153	44,153
91.01.18 Real Estate Payments	118,600	30,400	0	149,000
TOTAL Lands and Damages	142,600	30,400	20,153	193,153
91.02 Relocations				
91.02.03 Cemetery, Utilities, & Structure	48,000	12,000	42,450	102,450
TOTAL Relocations	48,000	12,000	42,450	102,450
91.11 Levees and Floodwalls				
91.11.01 Levees	1,184,130	139,848	1,013,241	2,337,219
TOTAL Levees and Floodwalls	1,184,130	139,848	1,013,241	2,337,219
91.30 Planning, Engineering and Design				
91.30.04 Constructn Contracts(s) Documnts	546,977	136,744	590,530	1,274,251
91.30.05 Programs & Project Managmt Dcmnt	104,200	26,050	112,497	242,747
TOTAL Planning, Engineering and Design	651,177	162,794	703,027	1,516,998
91.31 Supervision and Administration				
91.31.01 Prjt Office Supervn and Adminstn	48,714	12,179	55,552	116,445
91.31.02 Area Office S&A Documents	14,826	3,707	16,907	35,440
91.31.03 District Office S&A Documents	21,180	5,295	24,153	50,628
TOTAL Supervision and Administration	84,720	21,180	96,613	202,513

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
TOTAL Item 576-R Cypress Creek	2,110,627	366,222	1,875,483	4,352,333
92 Item 585-L Riverton				
92.01 Lands and Damages				
92.01.02 Acquisitions	8,000	0	7,764	15,764
92.01.18 Real Estate Payments	42,800	11,200	0	54,000
TOTAL Lands and Damages	50,800	11,200	7,764	69,764
92.11 Levees and Floodwalls				
92.11.01 Levees	908,338	114,042	864,217	1,886,597
TOTAL Levees and Floodwalls	908,338	114,042	864,217	1,886,597
92.30 Planning, Engineering and Design				
92.30.04 Constructn Contracts(s) Documnts	544,397	136,099	654,569	1,335,066
92.30.05 Programs & Project Managmt Dcmnt	59,100	14,775	71,060	144,935
TOTAL Planning, Engineering and Design	603,497	150,874	725,630	1,480,001
92.31 Supervision and Administration				
92.31.01 Prjt Office Supervn and Adminstn	33,107	8,277	41,947	83,330
92.31.02 Area Office S&A Documents	10,349	2,587	13,112	26,048
92.31.03 District Office S&A Documents	14,784	3,696	18,731	37,211
TOTAL Supervision and Administration	58,240	14,560	73,790	146,590
TOTAL Item 585-L Riverton	1,620,875	290,676	1,671,401	3,582,952
93 Item 589-L Rosedale				
93.01 Lands and Damages				
93.01.02 Acquisitions	8,000	0	8,318	16,318
93.01.18 Real Estate Payments	12,000	3,000	0	15,000
TOTAL Lands and Damages	20,000	3,000	8,318	31,318
93.02 Relocations				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
93.02.01 Roads, Construction Activities	20,000	5,000	21,648	46,648
TOTAL Relocations	20,000	5,000	21,648	46,648
93.11 Levees and Floodwalls				
93.11.01 Levees	235,481	32,169	241,045	508,695
TOTAL Levees and Floodwalls	235,481	32,169	241,045	508,695
93.30 Planning, Engineering and Design				
93.30.04 Constructn Contracts(s) Documnts	255,105	63,776	328,767	647,648
93.30.05 Programs & Project Managmt Dcmnt	50,000	12,500	64,437	126,938
TOTAL Planning, Engineering and Design	305,105	76,276	393,204	774,585
93.31 Supervision and Administration				
93.31.01 Prjt Office Supervn and Adminstn	8,572	2,143	11,617	22,332
93.31.02 Area Office S&A Documents	2,680	670	3,632	6,982
93.31.03 District Office S&A Documents	3,828	957	5,188	9,973
TOTAL Supervision and Administration	15,080	3,770	20,437	39,287
TOTAL Item 589-L Rosedale	595,666	120,215	684,652	1,400,533
94 Item 607-L Sledge-Waxhaw				
94.01 Lands and Damages				
94.01.02 Acquisitions	16,000	0	15,528	31,528
94.01.18 Real Estate Payments	39,000	10,000	0	49,000
TOTAL Lands and Damages	55,000	10,000	15,528	80,528
94.11 Levees and Floodwalls				
94.11.01 Levees	449,879	58,369	429,622	937,870
TOTAL Levees and Floodwalls	449,879	58,369	429,622	937,870
94.30 Planning, Engineering and Design				
94.30.04 Constructn Contracts(s) Documnts	283,426	70,857	340,784	695,067

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
94.30.05 Programs & Project Managmt Dcmnt	59,100	14,775	71,060	144,935
TOTAL Planning, Engineering and Design	342,526	85,632	411,845	840,002
94.31 Supervision and Administration				
94.31.01 Prjt Office Supervn and Adminstn	16,698	4,175	21,156	42,029
94.31.02 Area Office S&A Documents	5,245	1,311	6,645	13,202
94.31.03 District Office S&A Documents	7,493	1,873	9,494	18,860
TOTAL Supervision and Administration	29,436	7,359	37,295	74,090
TOTAL Item 607-L Sledge-Waxhaw	876,841	161,360	894,290	1,932,490
95 Item 611-L Deeson				
95.01 Lands and Damages				
95.01.02 Acquisitions	24,000	0	24,955	48,955
95.01.18 Real Estate Payments	31,800	7,200	0	39,000
TOTAL Lands and Damages	55,800	7,200	24,955	87,955
95.11 Levees and Floodwalls				
95.11.01 Levees	669,285	75,707	692,098	1,437,090
TOTAL Levees and Floodwalls	669,285	75,707	692,098	1,437,090
95.30 Planning, Engineering and Design				
95.30.04 Constructn Contracts(s) Documnts	585,453	146,363	780,482	1,512,298
95.30.05 Programs & Project Managmt Dcmnt	100,000	25,000	133,313	258,313
TOTAL Planning, Engineering and Design	685,453	171,363	913,795	1,770,611
95.31 Supervision and Administration				
95.31.01 Prjt Office Supervn and Adminstn	45,414	11,354	63,597	120,364
95.31.02 Area Office S&A Documents	13,978	3,495	19,574	37,047
95.31.03 District Office S&A Documents	19,968	4,992	27,963	52,923
TOTAL Supervision and Administration	79,360	19,840	111,134	210,334
TOTAL Item 611-L Deeson	1,489,898	274,110	1,741,981	3,505,990

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
96 Item 614-L Round Lake				
96.01 Lands and Damages				
96.01.02 Acquisitions	16,000	0	15,528	31,528
96.01.18 Real Estate Payments	64,000	16,000	0	80,000
TOTAL Lands and Damages	80,000	16,000	15,528	111,528
96.11 Levees and Floodwalls				
96.11.01 Levees	683,797	77,497	643,522	1,404,817
TOTAL Levees and Floodwalls	683,797	77,497	643,522	1,404,817
96.30 Planning, Engineering and Design				
96.30.04 Constructn Contracts(s) Documnts	422,438	105,610	507,929	1,035,976
96.30.05 Programs & Project Managmt Dcmnt	59,100	14,775	71,060	144,935
TOTAL Planning, Engineering and Design	481,538	120,385	578,989	1,180,912
96.31 Supervision and Administration				
96.31.01 Prjt Office Supervn and Adminstn	33,773	8,443	42,790	85,007
96.31.02 Area Office S&A Documents	10,583	2,646	13,409	26,637
96.31.03 District Office S&A Documents	15,118	3,780	19,155	38,052
TOTAL Supervision and Administration	59,474	14,869	75,354	149,696
TOTAL Item 614-L Round Lake	1,304,809	228,750	1,313,393	2,846,952
97 Item 616-L Fransis				
97.01 Lands and Damages				
97.01.02 Acquisitions	8,000	0	7,764	15,764
97.01.18 Real Estate Payments	16,800	4,200	0	21,000
TOTAL Lands and Damages	24,800	4,200	7,764	36,764
97.02 Relocations				
97.02.03 Cemetery, Utilities, & Structure	8,000	2,000	8,115	18,115
TOTAL Relocations	8,000	2,000	8,115	18,115

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
97.11 Levees and Floodwalls				
97.11.01 Levees	1,278,539	144,516	1,242,042	2,665,097
TOTAL Levees and Floodwalls	1,278,539	144,516	1,242,042	2,665,097
97.30 Planning, Engineering and Design				
97.30.04 Constructn Contracts(s) Documnts	599,319	149,830	746,452	1,495,601
97.30.05 Programs & Project Managmt Dcmnt	109,100	27,275	135,884	272,259
TOTAL Planning, Engineering and Design	708,419	177,105	882,336	1,767,860
97.31 Supervision and Administration				
97.31.01 Prjt Office Supervn and Adminstn	40,710	10,178	53,366	104,253
97.31.02 Area Office S&A Documents	12,390	3,098	16,242	31,729
97.31.03 District Office S&A Documents	17,700	4,425	23,202	45,327
TOTAL Supervision and Administration	70,800	17,700	92,810	181,310
TOTAL Item 616-L Fransis	2,090,558	345,521	2,233,067	4,669,146
98 Item 606R, AR Henrico Berm				
98.01 Lands and Damages				
98.01.02 Acquisitions	84,000	0	20,917	104,917
98.01.18 Real Estate Payments	239,000	60,000	59,513	358,513
TOTAL Lands and Damages	323,000	60,000	80,430	463,430
98.02 Relocations				
98.11 Levees and Floodwalls				
98.11.01 Levees	2,830,023	566,005	772,548	4,168,575
TOTAL Levees and Floodwalls	2,830,023	566,005	772,548	4,168,575
98.30 Planning, Engineering and Design				
98.30.04 Construction Contract P, E, & D	475,444	71,317	91,856	638,616
98.30.05 Programs and Project Management	33,960	5,094	6,561	45,615
TOTAL Planning, Engineering and Design	509,404	76,411	98,417	684,231

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
98.31 Construction Management				
98.31.02 Area Office S & A	237,722	35,658	69,165	342,546
98.31.03 Districe Office S & A	67,921	10,188	19,762	97,871
98.31.05 Programs/Project Managmnt Docmnt	33,960	5,094	9,881	48,935
TOTAL Construction Management	339,603	50,940	98,807	489,351
TOTAL Item 606R, AR Henrico Berm	4,002,030	753,356	1,050,202	5,805,587
99 Item 612R, AR Knowlton Berm				
99.01 Lands and Damages				
99.01.02 Acquisitions	105,000	0	35,505	140,505
99.01.18 Real Estate Payments	126,000	32,000	42,606	200,606
TOTAL Lands and Damages	231,000	32,000	78,111	341,111
99.02 Relocations				
99.11 Levees and Floodwalls				
99.11.01 Levees	1,005,862	201,172	364,807	1,571,841
TOTAL Levees and Floodwalls	1,005,862	201,172	364,807	1,571,841
99.30 Planning, Engineering and Design				
99.30.04 Construction Contract P, E, & D	168,985	25,348	49,166	243,499
99.30.05 Programs and Project Management	12,070	1,811	3,512	17,392
TOTAL Planning, Engineering and Design	181,055	27,158	52,678	260,891
99.31 Construction Management				
99.31.02 Area Office S & A	84,492	12,674	33,231	130,397
99.31.03 Districe Office S & A	24,141	3,621	9,495	37,257
99.31.05 Programs/Project Managmnt Docmnt	12,070	1,811	4,747	18,628
TOTAL Construction Management	120,703	18,105	47,472	186,281
TOTAL Item 612R, AR Knowlton Berm	1,538,620	278,436	543,068	2,360,124
100 Item 628L, MS Hillhouse R. Wells				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
100.01 Lands and Damages				
100.01.02 Acquisitions	105,000	0	83,244	188,244
100.01.18 Real Estate Payments	101,000	25,000	80,073	206,073
TOTAL Lands and Damages	206,000	25,000	163,317	394,317
100.02 Relocations				
100.11 Levees and Floodwalls				
100.11.01 Levees	3,973,077	794,615	3,097,093	7,864,785
TOTAL Levees and Floodwalls	3,973,077	794,615	3,097,093	7,864,785
100.30 Planning, Engineering and Design				
100.30.04 Construction Contract P, E, & D	1,001,215	150,182	748,408	1,899,805
100.30.05 Programs and Project Management	71,515	10,727	53,457	135,700
TOTAL Planning, Engineering and Design	1,072,730	160,910	801,866	2,035,505
100.31 Construction Management				
100.31.02 Area Office S & A	500,608	75,091	441,561	1,017,260
100.31.03 Districe Office S & A	143,031	21,455	126,160	290,646
100.31.05 Programs/Project Managmnt Docmnt	71,515	10,727	63,080	145,322
TOTAL Construction Management	715,154	107,273	630,802	1,453,229
TOTAL Item 628L, MS Hillhouse R. Wells	5,966,961	1,087,798	4,693,077	11,747,836
101 Item 670L, MS Trotters Berm				
101.01 Lands and Damages				
101.01.02 Acquisitions	154,000	0	126,439	280,439
101.01.18 Real Estate Payments	280,000	70,000	229,889	579,889
TOTAL Lands and Damages	434,000	70,000	356,328	860,328
101.02 Relocations				
101.11 Levees and Floodwalls				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
101.11.01 Levees	3,864,180	386,418	2,761,188	7,011,786
TOTAL Levees and Floodwalls	3,864,180	386,418	2,761,188	7,011,786
101.30 Planning, Engineering and Design				
101.30.04 Construction Contract P, E, & D	595,084	89,263	444,825	1,129,172
101.30.05 Programs and Project Management	42,506	6,376	31,773	80,655
TOTAL Planning, Engineering and Design	637,590	95,638	476,599	1,209,827
101.31 Construction Management				
101.31.02 Area Office S & A	297,542	44,631	262,447	604,620
101.31.03 Districe Office S & A	85,012	12,752	74,985	172,749
101.31.05 Programs/Project Managmnt Docmnt	42,506	6,376	37,492	86,374
TOTAL Construction Management	425,060	63,759	374,924	863,743
TOTAL Item 670L, MS Trotters Berm	5,360,830	615,815	3,969,039	9,945,685
102 Item 675L, MS Austin R. Wells				
102.01 Lands and Damages				
102.01.02 Acquisitions	28,000	0	15,211	43,211
102.01.18 Real Estate Payments	25,000	6,000	13,581	44,581
TOTAL Lands and Damages	53,000	6,000	28,792	87,792
102.02 Relocations				
102.11 Levees and Floodwalls				
102.11.01 Levees	1,418,956	283,791	792,969	2,495,717
TOTAL Levees and Floodwalls	1,418,956	283,791	792,969	2,495,717
102.30 Planning, Engineering and Design				
102.30.04 Construction Contract P, E, & D	476,769	71,515	240,149	788,433
102.30.05 Programs and Project Management	34,055	5,108	17,154	56,317
TOTAL Planning, Engineering and Design	510,824	76,624	257,302	844,750

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
102.31 Construction Management				
102.31.02 Area Office S & A	238,385	35,758	148,037	422,180
102.31.03 Districe Office S & A	68,110	10,217	42,296	120,623
102.31.05 Programs/Project Managmnt Docmnt	34,055	5,108	21,148	60,311
TOTAL Construction Management	340,550	51,083	211,482	603,114
TOTAL Item 675L, MS Austin R. Wells	2,323,330	417,497	1,290,545	4,031,372
103 Item 716R, AR Blue Lake R. Wells				
103.01 Lands and Damages				
103.01.02 Acquisitions	35,000	0	17,301	52,301
103.01.18 Real Estate Payments	35,000	9,000	17,301	61,301
TOTAL Lands and Damages	70,000	9,000	34,602	113,602
103.02 Relocations				
103.11 Levees and Floodwalls				
103.11.01 Levees	2,412,911	482,582	1,224,762	4,120,254
TOTAL Levees and Floodwalls	2,412,911	482,582	1,224,762	4,120,254
103.30 Planning, Engineering and Design				
103.30.04 Construction Contract P, E, & D	405,369	60,805	181,342	647,516
103.30.05 Programs and Project Management	28,955	4,343	12,953	46,251
TOTAL Planning, Engineering and Design	434,324	65,149	194,295	693,767
103.31 Construction Management				
103.31.02 Area Office S & A	202,685	30,403	113,747	346,835
103.31.03 Districe Office S & A	57,910	8,687	32,499	99,096
103.31.05 Programs/Project Managmnt Docmnt	28,955	4,343	16,250	49,548
TOTAL Construction Management	289,550	43,433	162,495	495,478
TOTAL Item 716R, AR Blue Lake R. Wells	3,206,785	600,163	1,616,154	5,423,102
104 Item719R,AR Louise Berm/Pit fill				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL CO
104.01 Lands and Damages				
104.01.02 Acquisitions	91,000	0	17,418	108,418
104.01.18 Real Estate Payments	110,000	28,000	21,054	159,05
TOTAL Lands and Damages	201,000	28,000	38,472	267,4
104.02 Relocations				
104.11 Levees and Floodwalls				
104.11.01 Levees	628,978	125,796	144,714	899,4
TOTAL Levees and Floodwalls	628,978	125,796	144,714	899,4
104.30 Planning, Engineering and Design				
104.30.04 Construction Contract P, E, & D	105,668	15,850	15,554	137,073
104.30.05 Programs and Project Management	7,548	1,132	1,111	9,791
TOTAL Planning, Engineering and Design	113,216	16,982	16,665	146,864
104.31 Construction Management				
104.31.02 Area Office S & A	52,834	7,925	12,759	73,519
104.31.03 Districe Office S & A	15,095	2,264	3,645	21,005
104.31.05 Programs/Project Managmnt Docmnt	7,548	1,132	1,823	10,503
TOTAL Construction Management	75,477	11,322	18,228	105,026
TOTAL Item719R,AR Louise Berm/Pit fill	1,018,671	182,100	218,079	1,418,850
105 Item 766R, AR Pecan Pt. Berm				
105.01 Lands and Damages				
105.01.02 Acquisitions	210,000	0	131,721	341,721
105.01.18 Real Estate Payments	378,000	95,000	237,099	710,09
TOTAL Lands and Damages	588,000	95,000	368,820	1,051,820
105.02 Relocations				
105.11 Levees and Floodwalls				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
105.11.01 Levees	5,921,350	592,135	3,319,924	9,833,409
TOTAL Levees and Floodwalls	5,921,350	592,135	3,319,924	9,833,409
105.30 Planning, Engineering and Design				
105.30.04 Construction Contract P, E, & D	911,888	136,783	511,752	1,560,423
105.30.05 Programs and Project Management	65,135	9,770	36,554	111,459
TOTAL Planning, Engineering and Design	977,023	146,553	548,305	1,671,882
105.31 Construction Management				
105.31.02 Area Office S & A	455,944	68,392	311,455	835,791
105.31.03 Districe Office S & A	130,270	19,541	88,987	238,798
105.31.05 Programs/Project Managmnt Docmnt	65,135	9,770	44,494	119,399
TOTAL Construction Management	651,349	97,702	444,937	1,193,988
TOTAL Item 766R, AR Pecan Pt. Berm	8,137,722	931,391	4,681,985	13,751,099
106 Item 782R, AR Butler Berm				
106.01 Lands and Damages				
106.01.02 Acquisitions	77,000	0	44,443	121,443
106.01.18 Real Estate Payments	213,000	53,000	122,941	388,941
TOTAL Lands and Damages	290,000	53,000	167,384	510,384
106.02 Relocations				
106.11 Levees and Floodwalls				
106.11.01 Levees	1,620,269	162,027	830,004	2,612,299
TOTAL Levees and Floodwalls	1,620,269	162,027	830,004	2,612,299
106.30 Planning, Engineering and Design				
106.30.04 Construction Contract P, E, & D	249,521	37,428	125,684	412,633
106.30.05 Programs and Project Management	17,823	2,673	8,977	29,474
TOTAL Planning, Engineering and Design	267,344	40,102	134,661	442,107

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
106.31 Construction Management				
106.31.02 Area Office S & A	124,761	18,714	77,477	220,952
106.31.03 Districe Office S & A	35,646	5,347	22,136	63,129
106.31.05 Programs/Project Managmnt Docmnt	17,823	2,673	11,068	31,565
TOTAL Construction Management	178,230	26,735	110,681	315,645
TOTAL Item 782R, AR Butler Berm	2,355,843	281,863	1,242,730	3,880,436
107 Itm833R,MO Baders-Cottonw'd Berm				
107.01 Lands and Damages				
107.01.02 Acquisitions	231,000	0	109,062	340,062
107.01.18 Real Estate Payments	1,346,000	337,000	635,484	2,318,484
TOTAL Lands and Damages	1,577,000	337,000	744,546	2,658,546
107.02 Relocations				
107.11 Levees and Floodwalls				
107.11.01 Levees	15,295,237	1,529,524	6,418,646	23,243,407
TOTAL Levees and Floodwalls	15,295,237	1,529,524	6,418,646	23,243,407
107.30 Planning, Engineering and Design				
107.30.04 Construction Contract P, E, & D	2,355,466	353,320	926,405	3,635,191
107.30.05 Programs and Project Management	168,248	25,237	66,172	259,657
TOTAL Planning, Engineering and Design	2,523,714	378,557	992,577	3,894,848
107.31 Construction Management				
107.31.02 Area Office S & A	1,177,733	176,660	593,224	1,947,617
107.31.03 Districe Office S & A	336,495	50,474	169,493	556,462
107.31.05 Programs/Project Managmnt Docmnt	168,248	25,237	84,747	278,232
TOTAL Construction Management	1,682,476	252,371	847,463	2,782,311
TOTAL Itm833R,MO Baders-Cottonw'd Berm	21,078,427	2,497,452	9,003,232	32,579,111
108 Item 841L, TN Miston Berm				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
108.01 Lands and Damages				
108.01.02 Acquisitions	77,000	0	29,515	106,515
108.01.18 Real Estate Payments	72,000	18,000	27,599	117,599
TOTAL Lands and Damages	149,000	18,000	57,114	224,114
108.02 Relocations				
108.11 Levees and Floodwalls				
108.11.01 Levees	433,483	86,697	177,543	697,723
TOTAL Levees and Floodwalls	433,483	86,697	177,543	697,723
108.30 Planning, Engineering and Design				
108.30.04 Construction Contract P, E, & D	72,825	10,924	24,873	108,622
108.30.05 Programs and Project Management	5,202	780	1,777	7,759
TOTAL Planning, Engineering and Design	78,027	11,704	26,650	116,381
108.31 Construction Management				
108.31.02 Area Office S & A	36,413	5,462	16,289	58,164
108.31.03 Districe Office S & A	10,404	1,561	4,654	16,619
108.31.05 Programs/Project Managmnt Docmnt	5,202	780	2,327	8,309
TOTAL Construction Management	52,019	7,803	23,271	83,093
TOTAL Item 841L, TN Miston Berm	712,529	124,204	284,578	1,121,311
109 It843R,MO S. Caruthersville Berm				
109.01 Lands and Damages				
109.01.02 Acquisitions	245,000	0	170,863	415,863
109.01.18 Real Estate Payments	565,000	141,000	394,031	1,100,031
TOTAL Lands and Damages	810,000	141,000	564,894	1,515,894
109.02 Relocations				
109.11 Levees and Floodwalls				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
109.11.01 Levees	4,638,303	927,661	3,088,553	8,654,516
TOTAL Levees and Floodwalls	4,638,303	927,661	3,088,553	8,654,516
109.30 Planning, Engineering and Design				
109.30.04 Construction Contract P, E, & D	779,235	116,885	483,905	1,380,025
109.30.05 Programs and Project Management	55,660	8,349	34,565	98,574
TOTAL Planning, Engineering and Design	834,895	125,234	518,470	1,478,599
109.31 Construction Management				
109.31.02 Area Office S & A	389,617	58,443	291,239	739,298
109.31.03 Districe Office S & A	111,319	16,698	83,211	211,228
109.31.05 Programs/Project Managmnt Docmnt	55,660	8,349	41,606	105,615
TOTAL Construction Management	556,596	83,489	416,056	1,056,141
TOTAL It843R,MO S. Caruthersville Berm	6,839,794	1,277,384	4,587,972	12,705,150
110 Item 892R, MO Hubbard Lake Berm				
110.01 Lands and Damages				
110.01.02 Acquisitions	91,000	0	27,246	118,246
110.01.18 Real Estate Payments	247,000	62,000	73,954	382,954
TOTAL Lands and Damages	338,000	62,000	101,200	501,200
110.02 Relocations				
110.11 Levees and Floodwalls				
110.11.01 Levees	3,818,138	763,628	1,210,961	5,792,727
TOTAL Levees and Floodwalls	3,818,138	763,628	1,210,961	5,792,727
110.30 Planning, Engineering and Design				
110.30.04 Construction Contract P, E, & D	641,447	96,217	154,909	892,574
110.30.05 Programs and Project Management	45,818	6,873	11,065	63,756
TOTAL Planning, Engineering and Design	687,265	103,090	165,974	956,329

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
110.31 Construction Management				
110.31.02 Area Office S & A	320,724	48,109	109,543	478,376
110.31.03 Districe Office S & A	91,635	13,745	31,298	136,678
110.31.05 Programs/Project Managmnt Docmnt	45,818	6,873	15,649	68,340
TOTAL Construction Management	458,177	68,727	156,490	683,394
TOTAL Item 892R, MO Hubbard Lake Berm	5,301,580	997,444	1,634,626	7,933,650
111 Item 905L, TN Phillipy Berm				
111.01 Lands and Damages				
111.01.02 Acquisitions	28,000	0	9,523	37,523
111.01.18 Real Estate Payments	34,000	9,000	11,564	54,564
TOTAL Lands and Damages	62,000	9,000	21,087	92,087
111.02 Relocations				
111.11 Levees and Floodwalls				
111.11.01 Levees	190,899	38,180	69,235	298,314
TOTAL Levees and Floodwalls	190,899	38,180	69,235	298,314
111.30 Planning, Engineering and Design				
111.30.04 Construction Contract P, E, & D	32,071	4,811	9,331	46,213
111.30.05 Programs and Project Management	2,291	344	667	3,301
TOTAL Planning, Engineering and Design	34,362	5,154	9,998	49,514
111.31 Construction Management				
111.31.02 Area Office S & A	16,036	2,405	6,307	24,748
111.31.03 Districe Office S & A	4,582	687	1,802	7,071
111.31.05 Programs/Project Managmnt Docmnt	2,291	344	901	3,536
TOTAL Construction Management	22,909	3,436	9,010	35,355
TOTAL Item 905L, TN Phillipy Berm	310,170	55,770	109,330	475,270
112 Item910R,MO Barnes Ridge R.Wells				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
112.01 Lands and Damages				
112.01.02 Acquisitions	504,000	0	67,870	571,870
112.01.18 Real Estate Payments	130,000	33,000	17,506	180,506
TOTAL Lands and Damages	634,000	33,000	85,376	752,376
112.02 Relocations				
112.11 Levees and Floodwalls				
112.11.01 Levees	14,669,400	2,933,880	2,763,715	20,366,995
TOTAL Levees and Floodwalls	14,669,400	2,933,880	2,763,715	20,366,995
112.30 Planning, Engineering and Design				
112.30.04 Construction Contract P, E, & D	3,696,689	554,503	374,105	4,625,297
112.30.05 Programs and Project Management	264,049	39,607	26,722	330,378
TOTAL Planning, Engineering and Design	3,960,738	594,111	400,827	4,955,675
112.31 Construction Management				
112.31.02 Area Office S & A	1,848,344	277,252	357,100	2,482,696
112.31.03 Districe Office S & A	528,098	79,215	102,029	709,341
112.31.05 Programs/Project Managmnt Docmnt	264,049	39,607	51,014	354,671
TOTAL Construction Management	2,640,491	396,074	510,143	3,546,708
TOTAL Item910R,MO Barnes Ridge R.Wells	21,904,629	3,957,064	3,760,061	29,621,754
113 Item 913R, MO Bayouville Berm				
113.01 Lands and Damages				
113.01.02 Acquisitions	168,000	0	49,956	217,956
113.01.18 Real Estate Payments	391,000	98,000	116,265	605,265
TOTAL Lands and Damages	559,000	98,000	166,221	823,221
113.02 Relocations				
113.02.03 Cemetery, Utilities, & Structure	53,043	7,956	16,123	77,122
TOTAL Relocations	53,043	7,956	16,123	77,122

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
113.11 Levees and Floodwalls				
113.11.01 Levees	3,666,675	733,335	1,162,923	5,562,932
TOTAL Levees and Floodwalls	3,666,675	733,335	1,162,923	5,562,932
113.30 Planning, Engineering and Design				
113.30.04 Construction Contract P, E, & D	616,001	92,400	148,764	857,165
113.30.05 Programs and Project Management	44,000	6,600	10,626	61,226
TOTAL Planning, Engineering and Design	660,001	99,000	159,390	918,391
113.31 Construction Management				
113.31.02 Area Office S & A	308,001	46,200	105,198	459,399
113.31.03 Districe Office S & A	88,000	13,200	30,056	131,256
113.31.05 Programs/Project Managmnt Docmnt	44,000	6,600	15,028	65,628
TOTAL Construction Management	440,001	66,000	150,282	656,283
TOTAL Item 913R, MO Bayouville Berm	5,378,720	1,004,292	1,654,939	8,037,951
114 Item 915R, KY Island 8 R. Wells				
114.01 Lands and Damages				
114.01.02 Acquisitions	49,000	0	11,393	60,393
114.01.18 Real Estate Payments	35,000	9,000	8,138	52,138
TOTAL Lands and Damages	84,000	9,000	19,530	112,530
114.02 Relocations				
114.02.03 Cemetery, Utilities, & Structure	1,739	261	455	2,455
TOTAL Relocations	1,739	261	455	2,455
114.11 Levees and Floodwalls				
114.11.01 Levees	3,747,323	749,465	1,023,019	5,519,807
TOTAL Levees and Floodwalls	3,747,323	749,465	1,023,019	5,519,807
114.30 Planning, Engineering and Design				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
114.30.04 Construction Contract P, E, & D	836,841	125,526	161,678	1,124,045
114.30.05 Programs and Project Management	59,774	8,966	11,548	80,288
TOTAL Planning, Engineering and Design	896,615	134,492	173,226	1,204,333
114.31 Construction Management				
114.31.02 Area Office S & A	418,421	62,763	121,740	602,924
114.31.03 Districe Office S & A	119,549	17,932	34,783	172,264
114.31.05 Programs/Project Managmnt Docmnt	59,774	8,966	17,391	86,131
TOTAL Construction Management	597,744	89,662	173,914	861,319
TOTAL Item 915R, KY Island 8 R. Wells	5,327,421	982,879	1,390,144	7,700,445
115 Item 916R, MO BPNM Pit Drain				
115.01 Lands and Damages				
115.01.02 Acquisitions	189,000	11,386	130,251	330,636
115.01.18 Real Estate Payments	60,000	3,614	41,349	104,964
TOTAL Lands and Damages	249,000	15,000	171,600	435,600
115.02 Relocations				
115.11 Levees and Floodwalls				
115.11.01 Levees	463,003	69,450	320,321	852,774
TOTAL Levees and Floodwalls	463,003	69,450	320,321	852,774
115.30 Planning, Engineering and Design				
115.30.04 Construction Contract P, E, & D	74,543	11,181	50,920	136,645
115.30.05 Programs and Project Management	5,325	799	3,638	9,761
TOTAL Planning, Engineering and Design	79,868	11,980	54,558	146,406
115.31 Construction Management				
115.31.02 Area Office S & A	37,272	5,591	30,304	73,167
115.31.03 Districe Office S & A	10,649	1,597	8,658	20,905
115.31.05 Programs/Project Managmnt Docmnt	5,325	799	4,329	10,453

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
TOTAL Construction Management	53,246	7,987	43,292	104,525
TOTAL Item 916R, MO BPNM Pit Drain	845,117	104,417	589,770	1,539,305
116 Item929R,MO Ab.Dorena Par 1 Berm				
116.01 Lands and Damages				
116.01.02 Acquisitions	91,000	0	4,952	95,952
116.01.18 Real Estate Payments	156,000	39,000	8,490	203,490
TOTAL Lands and Damages	247,000	39,000	13,442	299,442
116.02 Relocations				
116.11 Levees and Floodwalls				
116.11.01 Levees	1,499,915	299,983	163,083	1,962,982
TOTAL Levees and Floodwalls	1,499,915	299,983	163,083	1,962,982
116.30 Planning, Engineering and Design				
116.30.04 Construction Contract P, E, & D	251,986	37,798	13,620	303,404
116.30.05 Programs and Project Management	17,999	2,700	973	21,672
TOTAL Planning, Engineering and Design	269,985	40,498	14,593	325,075
116.31 Construction Management				
116.31.02 Area Office S & A	125,993	18,899	12,750	157,642
116.31.03 Districe Office S & A	35,998	5,400	3,643	45,041
116.31.05 Programs/Project Managmnt Docmnt	17,999	2,700	1,821	22,520
TOTAL Construction Management	179,990	26,999	18,215	225,203
TOTAL Item929R,MO Ab.Dorena Par 1 Berm	2,196,890	406,479	209,333	2,812,702
117 Item929R,MO Ab.Dorena Par 2 Berm				
117.01 Lands and Damages				
117.01.02 Acquisitions	49,000	0	16,748	65,748
117.01.18 Real Estate Payments	77,000	19,000	26,318	122,318
TOTAL Lands and Damages	126,000	19,000	43,065	188,065

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
117.02 Relocations				
117.02.03 Cemetery, Utilities, & Structure	9,565	1,435	3,324	14,324
TOTAL Relocations	9,565	1,435	3,324	14,324
117.11 Levees and Floodwalls				
117.11.01 Levees	599,372	119,874	217,381	936,627
TOTAL Levees and Floodwalls	599,372	119,874	217,381	936,627
117.30 Planning, Engineering and Design				
117.30.04 Construction Contract P, E, & D	100,694	15,104	29,297	145,095
117.30.05 Programs and Project Management	7,192	1,079	2,093	10,363
TOTAL Planning, Engineering and Design	107,886	16,183	31,389	155,458
117.31 Construction Management				
117.31.02 Area Office S & A	50,347	7,552	19,801	77,701
117.31.03 Districe Office S & A	14,385	2,158	5,658	22,200
117.31.05 Programs/Project Managmnt Docmnt	7,192	1,079	2,829	11,099
TOTAL Construction Management	71,924	10,789	28,288	111,000
TOTAL Item929R,MO Ab.Dorena Par 2 Berm	914,747	167,281	323,447	1,405,475
118 Item929R,MO Ab.Dorena Par 3 Berm				
118.01 Lands and Damages				
118.01.02 Acquisitions	98,000	0	33,069	131,069
118.01.18 Real Estate Payments	115,000	29,000	38,805	182,805
TOTAL Lands and Damages	213,000	29,000	71,874	313,874
118.02 Relocations				
118.02.03 Cemetery, Utilities, & Structure	2,609	391	907	3,907
TOTAL Relocations	2,609	391	907	3,907
118.11 Levees and Floodwalls				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
118.11.01 Levees	652,403	130,481	236,614	1,019,498
TOTAL Levees and Floodwalls	652,403	130,481	236,614	1,019,498
118.30 Planning, Engineering and Design				
118.30.04 Construction Contract P, E, & D	109,604	16,441	31,889	157,934
118.30.05 Programs and Project Management	7,829	1,174	2,278	11,281
TOTAL Planning, Engineering and Design	117,433	17,615	34,167	169,215
118.31 Construction Management				
118.31.02 Area Office S & A	54,802	8,220	21,554	84,576
118.31.03 Districe Office S & A	15,658	2,349	6,158	24,165
118.31.05 Programs/Project Managmnt Docmnt	7,829	1,174	3,079	12,082
TOTAL Construction Management	78,289	11,743	30,791	120,823
TOTAL Item929R,MO Ab.Dorena Par 3 Berm	1,063,734	189,230	374,353	1,627,317
119 Item 946R, MO Samos Berm				
119.01 Lands and Damages				
119.01.02 Acquisitions	119,000	0	28,354	147,354
119.01.18 Real Estate Payments	141,000	35,000	33,596	209,596
TOTAL Lands and Damages	260,000	35,000	61,950	356,950
119.02 Relocations				
119.11 Levees and Floodwalls				
119.11.01 Levees	931,335	186,267	254,239	1,371,841
TOTAL Levees and Floodwalls	931,335	186,267	254,239	1,371,841
119.30 Planning, Engineering and Design				
119.30.04 Construction Contract P, E, & D	156,464	23,470	30,229	210,162
119.30.05 Programs and Project Management	11,176	1,676	2,159	15,012
TOTAL Planning, Engineering and Design	167,640	25,146	32,388	225,174

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
119.31 Construction Management				
119.31.02 Area Office S & A	78,232	11,735	22,762	112,728
119.31.03 Districe Office S & A	22,352	3,353	6,503	32,208
119.31.05 Programs/Project Managmnt Docmnt	11,176	1,676	3,252	16,104
TOTAL Construction Management	111,760	16,764	32,517	161,041
TOTAL Item 946R, MO Samos Berm	1,470,735	263,177	381,094	2,115,005
120 Item957R,IL Cairo Floodwall Berm				
120.01 Lands and Damages				
120.01.02 Acquisitions	49,000	0	9,093	58,093
120.01.18 Real Estate Payments	37,000	9,000	6,867	52,867
TOTAL Lands and Damages	86,000	9,000	15,960	110,960
120.02 Relocations				
120.11 Levees and Floodwalls				
120.11.01 Levees	649,445	129,889	149,424	928,758
TOTAL Levees and Floodwalls	649,445	129,889	149,424	928,758
120.30 Planning, Engineering and Design				
120.30.04 Construction Contract P, E, & D	109,107	16,366	16,061	141,534
120.30.05 Programs and Project Management	7,793	1,169	1,147	10,109
TOTAL Planning, Engineering and Design	116,900	17,535	17,208	151,643
120.31 Construction Management				
120.31.02 Area Office S & A	54,553	8,183	13,175	75,910
120.31.03 Districe Office S & A	15,587	2,338	3,764	21,689
120.31.05 Programs/Project Managmnt Docmnt	7,793	1,169	1,882	10,844
TOTAL Construction Management	77,933	11,690	18,821	108,44
TOTAL Item957R,IL Cairo Floodwall Berm	930,278	168,114	201,412	1,299,805
121 Item 961R, IL Cairo - Mound C				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
121.01 Lands and Damages				
121.01.02 Acquisitions	7,000	0	5,005	12,005
121.01.18 Real Estate Payments	3,000	1,000	2,145	6,145
TOTAL Lands and Damages	10,000	1,000	7,150	18,150
121.02 Relocations				
121.11 Levees and Floodwalls				
121.11.01 Levees	946,885	189,377	683,568	1,819,830
TOTAL Levees and Floodwalls	946,885	189,377	683,568	1,819,830
121.30 Planning, Engineering and Design				
121.30.04 Construction Contract P, E, & D	159,077	23,862	108,665	291,604
121.30.05 Programs and Project Management	11,363	1,704	7,762	20,830
TOTAL Planning, Engineering and Design	170,440	25,566	116,428	312,434
121.31 Construction Management				
121.31.02 Area Office S & A	79,538	11,931	64,668	156,137
121.31.03 Districe Office S & A	22,725	3,409	18,477	44,610
121.31.05 Programs/Project Managmnt Docmnt	11,363	1,704	9,239	22,306
TOTAL Construction Management	113,626	17,044	92,384	223,054
TOTAL Item 961R, IL Cairo - Mound C	1,240,951	232,987	899,529	2,373,467
122 Item963R,IL Mound City Wash Prot				
122.01 Lands and Damages				
122.01.02 Acquisitions	28,000	0	12,985	40,985
122.01.18 Real Estate Payments	6,000	2,000	2,783	10,783
TOTAL Lands and Damages	34,000	2,000	15,768	51,768
122.02 Relocations				
122.11 Levees and Floodwalls				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
122.11.01 Levees	243,429	36,514	118,413	398,356
TOTAL Levees and Floodwalls	243,429	36,514	118,413	398,356
122.30 Planning, Engineering and Design				
122.30.04 Construction Contract P, E, & D	39,192	5,879	17,533	62,603
122.30.05 Programs and Project Management	2,799	420	1,252	4,471
TOTAL Planning, Engineering and Design	41,991	6,299	18,785	67,074
122.31 Construction Management				
122.31.02 Area Office S & A	19,596	2,939	10,997	33,533
122.31.03 Districe Office S & A	5,599	840	3,142	9,581
122.31.05 Programs/Project Managmnt Docmnt	2,799	420	1,571	4,790
TOTAL Construction Management	27,994	4,199	15,710	47,903
TOTAL Item963R,IL Mound City Wash Prot	347,414	49,012	168,676	565,102
123 Item 965R, IL A. Mound City				
123.01 Lands and Damages				
123.01.02 Acquisitions	63,000	0	39,732	102,732
123.01.18 Real Estate Payments	18,000	5,000	11,352	34,352
TOTAL Lands and Damages	81,000	5,000	51,084	137,084
123.02 Relocations				
123.11 Levees and Floodwalls				
123.11.01 Levees	3,553,559	710,712	2,366,244	6,630,515
TOTAL Levees and Floodwalls	3,553,559	710,712	2,366,244	6,630,515
123.30 Planning, Engineering and Design				
123.30.04 Construction Contract P, E, & D	596,998	89,550	370,736	1,057,283
123.30.05 Programs and Project Management	42,643	6,396	26,481	75,521
TOTAL Planning, Engineering and Design	639,641	95,946	397,217	1,132,804

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
123.31 Construction Management				
123.31.02 Area Office S & A	298,499	44,775	223,128	566,402
123.31.03 Districe Office S & A	85,285	12,793	63,751	161,828
123.31.05 Programs/Project Managmnt Docmnt	42,643	6,396	31,876	80,915
TOTAL Construction Management	426,427	63,964	318,754	809,145
TOTAL Item 965R, IL A. Mound City	4,700,627	875,622	3,133,299	8,709,549
124 IL Cairo Grade Rse				
124.01 Lands and Damages				
124.01.02 Acquisitions	1,000	0	438	1,438
TOTAL Lands and Damages	1,000	0	438	1,438
124.02 Relocations				
124.11 Levees and Floodwalls				
124.11.01 Levees	757,299	75,730	352,362	1,185,391
TOTAL Levees and Floodwalls	757,299	75,730	352,362	1,185,391
124.30 Planning, Engineering and Design				
124.30.04 Construction Contract P, E, & D	10,000	1,500	4,474	15,974
124.30.05 Programs and Project Management	1,000	150	447	1,597
TOTAL Planning, Engineering and Design	11,000	1,650	4,921	17,571
124.31 Construction Management				
124.31.02 Area Office S & A	45,000	6,750	25,254	77,004
124.31.03 Districe Office S & A	4,000	600	2,245	6,845
124.31.05 Programs/Project Managmnt Docmnt	1,000	150	561	1,711
TOTAL Construction Management	50,000	7,500	28,060	85,560
TOTAL IL Cairo Grade Rse	819,299	84,880	385,781	1,289,960
125 ItemL10AC,IL A. Cario Par.1 Berm				
125.01 Lands and Damages				

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
125.01.02 Acquisitions	161,000	0	44,421	205,421
125.01.18 Real Estate Payments	93,000	23,000	25,660	141,660
TOTAL Lands and Damages	254,000	23,000	70,081	347,081
125.02 Relocations				
125.11 Levees and Floodwalls				
125.11.01 Levees	1,120,629	224,126	355,445	1,700,200
TOTAL Levees and Floodwalls	1,120,629	224,126	355,445	1,700,200
125.30 Planning, Engineering and Design				
125.30.04 Construction Contract P, E, & D	188,266	28,240	45,466	261,972
125.30.05 Programs and Project Management	13,448	2,017	3,248	18,713
TOTAL Planning, Engineering and Design	201,714	30,257	48,714	280,685
125.31 Construction Management				
125.31.02 Area Office S & A	94,133	14,120	32,151	140,404
125.31.03 Districe Office S & A	26,895	4,034	9,186	40,115
125.31.05 Programs/Project Managmnt Docmnt	13,448	2,017	4,593	20,058
TOTAL Construction Management	134,476	20,171	45,930	200,578
TOTAL ItemL10AC,IL A. Cario Par.1 Berm	1,710,819	297,554	520,170	2,528,543
126 Item 22AC R, MO Drinkwater PS				
126.01 Lands and Damages				
126.01.02 Acquisitions	21,000	0	1,030	22,030
126.01.18 Real Estate Payments	2,000	1,000	98	3,098
TOTAL Lands and Damages	23,000	1,000	1,128	25,128
126.02 Relocations				
126.13 Pumping Plant				
126.13.00 Pumping Plant	5,599,947	839,992	378,985	6,818,924
TOTAL Pumping Plant	5,599,947	839,992	378,985	6,818,924

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
126.30 Planning, Engineering and Design				
126.30.04 Construction Contract P, E, & D	901,600	135,240	0	1,036,840
126.30.05 Programs and Project Management	64,400	9,660	0	74,060
TOTAL Planning, Engineering and Design	966,000	144,900	0	1,110,900
126.31 Construction Management				
126.31.02 Area Office S & A	450,800	67,620	24,366	542,786
126.31.03 Districe Office S & A	128,800	19,320	6,962	155,082
126.31.05 Programs/Project Managmnt Docmnt	64,400	9,660	3,481	77,541
TOTAL Construction Management	644,000	96,600	34,808	775,408
TOTAL Item 22AC R, MO Drinkwater PS	7,232,947	1,082,492	414,921	8,730,360
127 It33ACR,MO Commerce - BP Gra Rse				
127.01 Lands and Damages				
127.01.02 Acquisitions	336,000	0	18,143	354,143
127.01.18 Real Estate Payments	497,000	124,000	26,836	647,836
TOTAL Lands and Damages	833,000	124,000	44,979	1,001,979
127.02 Relocations				
127.11 Levees and Floodwalls				
127.11.01 Levees	7,946,045	1,191,907	537,757	9,675,708
TOTAL Levees and Floodwalls	7,946,045	1,191,907	537,757	9,675,708
127.30 Planning, Engineering and Design				
127.30.04 Construction Contract P, E, & D	1,279,313	191,897	0	1,471,210
127.30.05 Programs and Project Management	91,380	13,707	0	105,087
TOTAL Planning, Engineering and Design	1,370,693	205,604	0	1,576,297
127.31 Construction Management				
127.31.02 Area Office S & A	639,657	95,949	34,573	770,179
127.31.03 Districe Office S & A	182,759	27,414	9,878	220,051

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
127.31.05 Programs/Project Managmnt Docmnt	91,380	13,707	4,939	110,026
TOTAL Construction Management	913,796	137,069	49,391	1,100,256
TOTAL It33ACR,MO Commerce - BP Gra Rse	11,063,534	1,658,580	632,126	13,354,240
128 Item 48R AC,MO Nash Berm R.Wells				
128.01 Lands and Damages				
128.01.02 Acquisitions	91,000	0	16,282	107,282
128.01.18 Real Estate Payments	32,000	8,000	5,726	45,726
TOTAL Lands and Damages	123,000	8,000	22,008	153,008
128.02 Relocations				
128.11 Levees and Floodwalls				
128.11.01 Levees	2,513,449	502,690	725,492	3,741,630
TOTAL Levees and Floodwalls	2,513,449	502,690	725,492	3,741,630
128.30 Planning, Engineering and Design				
128.30.04 Construction Contract P, E, & D	529,744	79,462	77,978	687,184
128.30.05 Programs and Project Management	37,839	5,676	5,570	49,085
TOTAL Planning, Engineering and Design	567,583	85,137	83,548	736,269
128.31 Construction Management				
128.31.02 Area Office S & A	264,872	39,731	63,967	368,569
128.31.03 Districe Office S & A	75,678	11,352	18,276	105,306
128.31.05 Programs/Project Managmnt Docmnt	37,839	5,676	9,138	52,653
TOTAL Construction Management	378,389	56,758	91,381	526,528
TOTAL Item 48R AC,MO Nash Berm R.Wells	3,582,421	652,586	922,429	5,157,435
129 Mitigation				
129.01 Lands and Damages				
129.01.02 Acquisition Costs	144,000	36,000	77,436	257,436
129.01.06 PL 91-646	97,000	24,250	52,162	173,412

	CONTRACT COST	CONTINGN	ESCALATN	TOTAL COST
129.01.07 Temporary Permits	14,900	3,725	8,012	26,637
129.01.18 Real Estate Payments	4,397,250	1,099,313	2,364,621	7,861,184
TOTAL Lands and Damages	4,653,150	1,163,288	2,502,231	8,318,669
129.06 Fish and Wildlife Facilities				
129.06.01 Reforestation	1,172,600	293,150	567,699	2,033,449
129.06.02 Wood Duck Boxes	17,760	4,440	8,598	30,798
129.06.03 Road Construction	828,565	207,141	401,139	1,436,845
129.06.04 Survey	24,200	6,050	11,716	41,966
TOTAL Fish and Wildlife Facilities	2,043,125	510,781	989,152	3,543,059
129.30 Planning, Engineering and Design				
129.30.04 Constructn Contracts(s) Documnts	302,900	75,725	97,638	476,263
129.30.05 Programs & Project Managmt Dcmnt	150,000	37,500	48,351	235,851
TOTAL Planning, Engineering and Design	452,900	113,225	145,989	712,114
129.31 Supervision and Administration				
129.31.01 Prjt Office Supervn and Adminstn	119,550	29,888	38,217	187,654
129.31.02 Area Office S&A Documents	24,000	6,000	7,672	37,672
129.31.03 District Office S&A Documents	36,000	9,000	11,508	56,508
TOTAL Supervision and Administration	179,550	44,888	57,397	281,835
TOTAL Mitigation	7,328,725	1,832,181	3,694,769	12,855,676
TOTAL Mississippi River Levees Project	572,478,073	84,014,042	254,799,586	911,291,702

No errors detected...

* * * END OF ERROR REPORT * * *

SUMMARY REPORTS SUMMARY PAGE

PROJECT OWNER SUMMARY - Contract.....1
PROJECT OWNER SUMMARY - Feature.....4
PROJECT OWNER SUMMARY - Sub-Feat.....30

No Detailed Estimate...

No Backup Reports...

* * * END TABLE OF CONTENTS * * *

ATTACHMENT C

CELMK-OD-FS (1145b) DEC 2 0 1995

MEMORANDUM FOR RECORD

SUBJECT: Methodology for Conducting Determination of Federal Regulatory Jurisdiction for FC/MR&T, Mainline Mississippi River Levees

1. Purpose. The purpose of this memorandum is to explain the procedures and methods to be used by the Regulatory Branch to establish the extent of Federal regulatory jurisdiction pursuant to Section 404 of the Clean Water Act (CWA) for the Mainline Mississippi River levee project.

2. Mission. Identify the lateral extent of regulatory jurisdiction pursuant to Section 404 of the Clean Water Act for the Mainline Mississippi River levee project within the Vicksburg District.

3. Project Boundary. The project boundary for this jurisdictional determination includes all lands riverward of the landside toe of the mainline Mississippi River levee within the Vicksburg District. Where no levee system exists, the project area would extend from the Mississippi River landward to apparent upland areas (e.g., hill line) or to the lateral extent of the Mississippi River flood plain, whichever is greater. This area is generally known as the batture land.

4. Methods. The 1987 Corps of Engineers Wetlands Delineation Manual with supplemental guidance will be used as the basis for determining the extent of wetlands within the project area. Other regulated waters of the United States, e.g., rivers, lakes and streams will also be identified as jurisdictional areas. Due to the magnitude of the area to be delineated, offsite procedures of the manual (Part IV, Section D, Subsection 1) will be used to establish the approximate extent of jurisdiction. An interdisciplinary team will also conduct random ground truthing of the preliminary determination to assess the accuracy of the offsite determination and determine if adjustments to the final map should be made.

5. Offsite Procedures. Offsite procedures will use available data to characterize vegetation, soils, and hydrology, employing the criteria specified in the 1987 Corps manual's multiparameter approach for wetland delineation. Delineators from Regulatory Branch will utilize existing GIS data bases to characterize hydrology and vegetation. Natural Resources Conservation Service Soil Surveys, in conjunction with the local hydric soils list,

will be used to evaluate the soils parameter. The District has excellent gauge data for the project area which will be incorporated into the GIS data base. Other available data such as USGS quadrangle maps, aerial photography, NWI maps, and land use maps will also be used. When all data is compiled and evaluated, only those areas which indicate positive signatures of wetland criteria for all three parameters (vegetation, soils, and hydrology) will be considered jurisdictional. The resulting map should be considered preliminary and appropriate for planning and estimating project impacts to wetlands and other waters of the United States.

6. Assumptions.

a. Vegetation - An existing GIS data base characterizing vegetative cover type and land use in the project area will be used to determine those areas believed to meet the vegetative parameter. Based upon existing hydrology data, landscape position, and soil survey information, delineators assumed that those areas dominated by facultative plants are nonwetlands and those with communities dominated by obligate and facultative wetland plants would typically be found in wetlands. It has been our experience that documented upland areas in the Mississippi River flood plain are normally dominated by facultative plants. In addition, the 1987 manual is replete with cautions and guidance that facultative dominated plant communities may not be wetlands and strong evidence is needed to conclude that these areas are in fact wetlands, thereby the basis for our assumption.

b. Soils - Areas with soils listed on the local hydric soils list will be assumed to meet the soils parameter. Areas with nonhydric soils and those soils with hydric inclusions generally are not wetlands; however, an attempt will be made to identify inclusions from data available from one or both of the other two parameters.

c. Hydrology - The upper limit of jurisdictional areas meeting wetland hydrology are those which are flooded, ponded, or saturated for 5 percent of the growing season in most years. Elevations correlating to this criterion can be calculated from existing gauge data and applied to topographical maps. GIS data reflecting flooding or ponding for 5 percent of the growing season in most years will also be useful in estimating the upper limit of wetlands subject to flooding or ponding. Saturated wetlands meeting the 5 percent duration will have to be analyzed separately by interpreting landscape position, vegetative cover, and soils.

7. Base Map. The base map for the jurisdictional determination will be USGS quadrangle maps (7.5 minute). The maps provided by Regulatory Branch will contain a single symbol (crosshatch) that will represent all jurisdictional waters of the United States

subject to regulation pursuant to Section 404 of the Clean Water Act. The term "waters of the United States" includes all rivers, lakes, streams, and their adjacent wetlands. Therefore, planners and users of these maps should be aware that there are varying types of aquatic habitats within the area designated as jurisdictional. This mapping effort will not distinguish the relative functions and values of areas identified as jurisdictional.

8. Coordination. An internal working group will be established to oversee all aspects of the project. In accordance with a Memorandum of Agreement between U.S. Department of Agriculture and Department of the Army, it will be necessary for the Natural Resources Conservation Service to review the preliminary maps for compliance with any jurisdictional determinations they may have made in the project area under provisions of Subtitle B of the Food Security Act. Also, an interdisciplinary team consisting of representatives from the U.S. Fish and Wildlife Service, Natural Resources Conservation Service, Environmental Protection Agency, and the U.S. Army Corps of Engineers will conduct a field test of preliminary jurisdictional maps. Any interested state, local, or private interests will be allowed to participate in the field review.

9. Point of Contact. The point of contact for preparation of the jurisdictional map will be Mr. Larry Harper of the Regulatory Branch, telephone (601) 631-5290 or fax number (601) 631-5459.

ELIZABETH S. GUYNES
Chief, Regulatory Branch

ATTACHMENT D

CELMK-OD-FS (1145) 22 Feb 96

MEMORANDUM FOR RECORD

SUBJECT: Trip Report--Mississippi River Levees (MRL) Project Interagency Field Review

1. PURPOSE. During the period 12-16 Feb 96, representatives from the U.S. Army Corps of Engineers, U.S. Environmental Protection Agency (EPA), U.S. Fish and Wildlife Service (FWS), Natural Resources Conservation Service (NRCS), local levee boards, and state representatives of the Departments of Environmental Quality and Game and Fish participated in a field review of preliminary jurisdictional maps prepared for the MRL project. The purpose of the field review was to verify the accuracy of the offsite jurisdictional determination and validate assumptions used to prepare the preliminary maps. The resource agencies were also able to observe site conditions in preparation for commenting on the subsequent 404 review of the project. An agenda for the field trip is enclosed (encl 1). A list of attendees during the initial briefing and those joining the group at various points during the field review is also enclosed (encl 2).

2. DISCUSSION. In all, 24 jurisdictional determinations were made in the batture area along the Mississippi River (within the Vicksburg District) in Arkansas, Louisiana, and Mississippi. Each parameter (vegetation, soils, and hydrology) was discussed independently and the group determined by consensus if the area met the criteria for wetlands in accordance with the 1987 Corps of Engineers Wetlands Delineation Manual. The following is a brief summary of key observations and results of the field review:

a. Assumptions. In general, assumptions used as the basis for the offsite determination were determined to be valid. The most difficulty centered around the assessment of the hydrology parameter in those wetland systems where hydrology was derived from saturation (see discussion in 2.b. below). The study assumed that the upper limit of hydrology would be those areas which were below the elevation of durations calculated for 5 percent of the growing season in most years (CECW-OR Q&A of 7 Oct 91). The District has excellent historical gage data for the study area and was able to use this information in a GIS system to depict the lateral limit of hydrologic events that approximate the 5-percent duration. Those areas which supported dominant FAC plant communities were almost always found to be nonwetlands. In some instances hydric soils were present in

areas determined to be nonwetlands. Therefore, the assumption that all areas with hydric soils are wetlands did not hold true in every case. The group did find that those areas determined to be nonwetland (with hydric soils) did have marginal hydric soil indicators and supported weak evidence of surface and subsurface hydrology. In addition, the hydrology criteria for hydric soils and hydrology under the 87 manual are slightly different (7 days of flooding, ponding, or saturation vs 12 days respectively), which may account for the difference.

b. Accuracy of Offsite Jurisdictional Maps. The field review confirmed overall accuracy of the offsite jurisdictional maps for planning and analysis of environmental impacts. Field sites intentionally focused on controversial areas and the group found that minor adjustments were needed (and were made) at some locations to account for wetland areas with hydrology derived from saturation and not necessarily from flooding or ponding occuring at or below the 5-percent duration. In every case where an adjustment was made, the determination was always more expansive than the 5-percent duration criteria assumed in the offsite call to be the upper limit of wetland hydrology. This consistency gave the group a high degree of confidence that those areas in the batture below the 5-percent duration elevation would generally meet the criteria for wetlands according to the 87 manual. Those areas determined to be wetlands above the 5-percent duration were almost always associated with relatively level (flat) or concave (depressional) landscape positions with FACW dominated plant communities and strong evidence of hydrology. These areas will be captured as wetlands in the final offsite wetland determination.

3. RECOMMENDATIONS/FOLLOW-UP.

a. The preliminary determination attempted to account for saturated areas beyond the 5-percent duration. However, based on information learned from the field review, there may be some areas that have not been designated as wetlands in saturated systems. Even with this discrepancy, we believe that the current maps depict with a high degree of accuracy (90 percent or higher) the jurisdictional areas within the project boundary. Nevertheless, Regulatory Branch will conduct a final assessment of the offsite maps and make necessary adjustments to ensure that all wetlands that may be present in relatively flat or concave landscape positions have been accounted for.

b. The group found that there were some agricultural lands that were not accurately depicted on the preliminary maps due to human error in transposing from the NRCS inventory maps. NRCS representatives in all three states tentatively agreed to allow the Corps to reassess agricultural areas in the batture using the existing GIS data base in order to create interstate consistency. In general, the GIS will be queried to determine those agricultural lands (farmed or pastured) that are above and below the 5-percent duration. Those lands above the 5-percent duration will be labeled prior-converted (PC) and the land below the 5-percent duration will be labeled farmed wetland/pasture (FW/FWP). The NRCS may also find these maps useful for compliance inspections since the Corps will use late 80's or early 90's vintage photography.

4. The follow-up actions stated above will be completed prior to finalizing the jurisdictional map. As requested, I am providing field review participants a copy of this memorandum. Any individual or agency who does not concur with any aspect of this document or feels that other areas of discussion need to be documented should contact me as soon as possible.

2 Encls

LARRY N. HARPER
Environmental Specialist
Regulatory Branch

AGENDA
MISSISSIPPI RIVER LEVEE PROJECT
INTERAGENCY FIELD REVIEW OF JURISDICTIONAL WETLANDS AND OTHER WATERS OF THE UNITED STATES
FEBRUARY 12-16 1996

Monday, February 12, 1996

1000	Meet in Executive Conference Room Vicksburg District Corps of Engineers	All
1000-1015	Introduction to Interagency Field Trip	Harper
1015-1045	Overview of MRL Project	Parrish
1045-1100	Hydrology of Project Area	Banks
1100-1115	Use of GIS in Off-Site Determination	Johnson
1115-1130	404 Review	Guynes
1130-1145	Off-Site Procedure for Jurisdictional Determination	Harper
1145-1200	Administrative Instructions	Harper
1200-1300	Lunch (on your own)	All
1300	Meet in Vicksburg District Motor Pool (Fenced Area East of Building)	All
1300-1315	Travel to Vicksburg Site	All
1315-1430	Vicksburg Site	All
1430-1445	Travel to Ashley Site 2	All
1445-1600	Ashley Site 2	All
1600-1630	Travel to Vicksburg*	All

Tuesday, February 13, 1996

0730	Meet at Vicksburg District Motor Pool	All
0730-0815	Travel to Lake Bruin Site	All
0815-0915	Lake Bruin Site	All
0915-0945	Travel to Waterproof Site	All

ENCL - 1

0945-1100	Waterproof Site	All
1100-1130	Travel to Tallulah, LA	All
1130-1230	Lunch	All
1230-1300	Travel to Fitler Site 1	All
1300-1400	Fitler Site 1	All
1400-1430	Travel to Millikin Site	All
1430-1600	Millikin Site	All
1600-1700	Travel to Vicksburg*	All

Wednesday, February 14, 1996

0730	Meet at Vicksburg District Motor Pool	All
0730-0930	Travel to Arkansas (Avon Site 2)	All
0930-1030	Avon Site 2	All
1030-1100	Travel to Luna Site 2	All
1100-1200	Luna Site 2	All
1200-1230	Travel to Lake Village	All
1230-1300	Lunch	
1300-1330	Travel to Luna Site 1	All
1330-1430	Luna Site 1	All
1430-1500	Travel to Arkansas City	All
1500-1600	Arkansas City Site	All
1600-1700	Travel to Greenville**	All

Thursday, February 15, 1996

0730	Meet in Hotel Lobby (Holiday Inn Exp, Greenville)	All
0730-0800	Travel to Wayside Site	All
0800-0930	Wayside Site	All
0930-1030	Travel To Greenville Site	All
1030-1130	Greenville Site	All

1130-1145	Travel to Greenville	All
1145-1230	Lunch	All
1230-1315	Travel to Rosedale Site 1	All
1315-1430	Rosedale Site 1	All
1430-1500	Travel to Rosedale Site 2	All
1500-1600	Rosedale Site 2	All
1600-1700	Travel to Greenville**	All

Friday, February 16, 1996

0730	Meet in Hotel Lobby (Holiday Inn Exp., Greenville)	All
0730-0800	Travel to Mayersville Site	All
0800-0900	Mayersville Site	All
0900-0915	Travel to Lake Providence Site	All
0915-1015	Lake Providence Site	All
1015-1030	Travel to Fitler Site	All
1030-1130	Fitler Site	All
1130-1200	Travel to Vicksburg	All
1200	Interagency Field Review Ends	All

* Hotel accommodations in Vicksburg available at Quality Inn, I-20 Frontage Road (south) telephone (601) 634-8607. $40.00 plus tax.

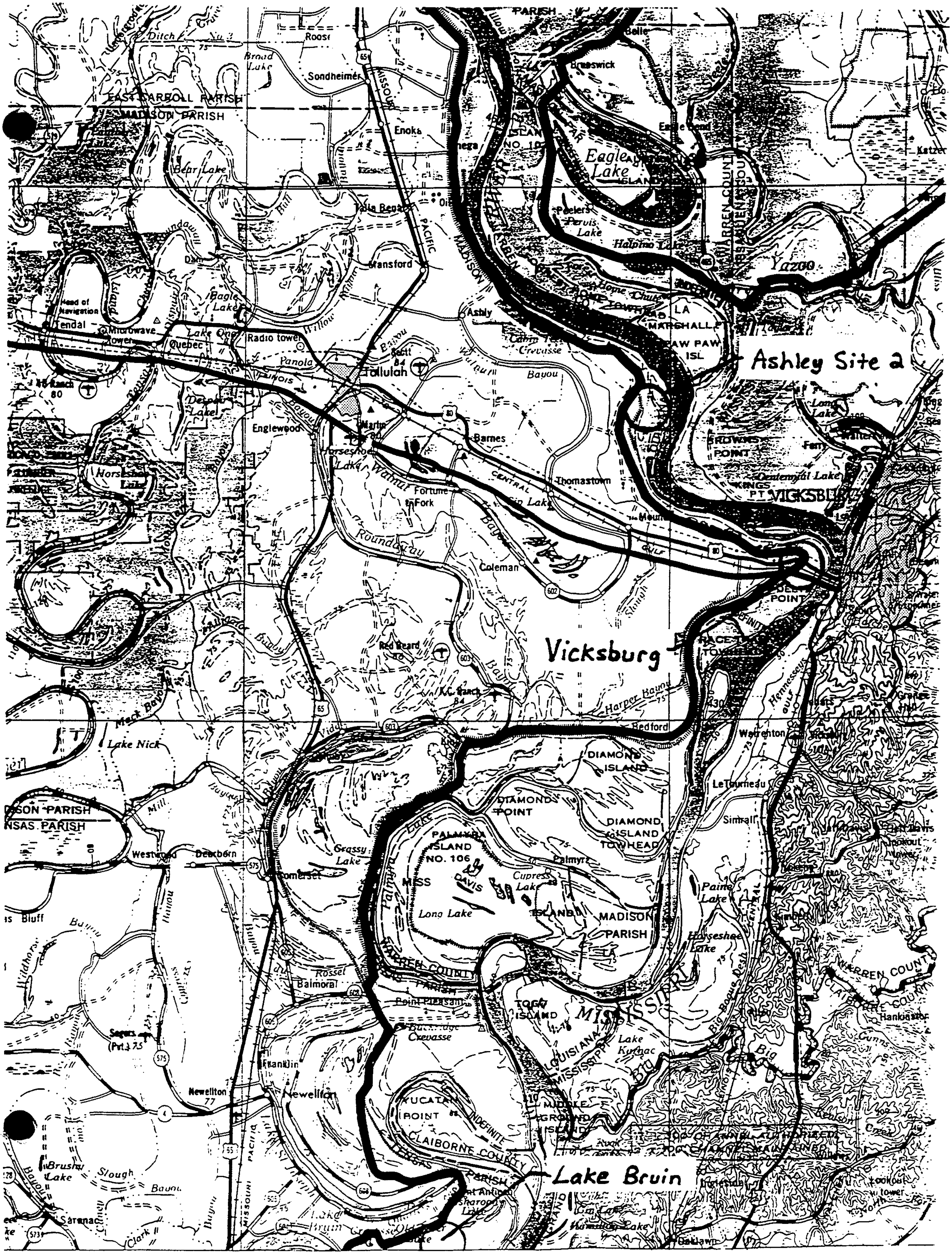
** Hotel accommodations in Greenville available at Holiday Inn Express (Regency Inn) on 2428 Hwy 82. Telephone (601) 334-6900, $42.00 plus tax.

NOTES:

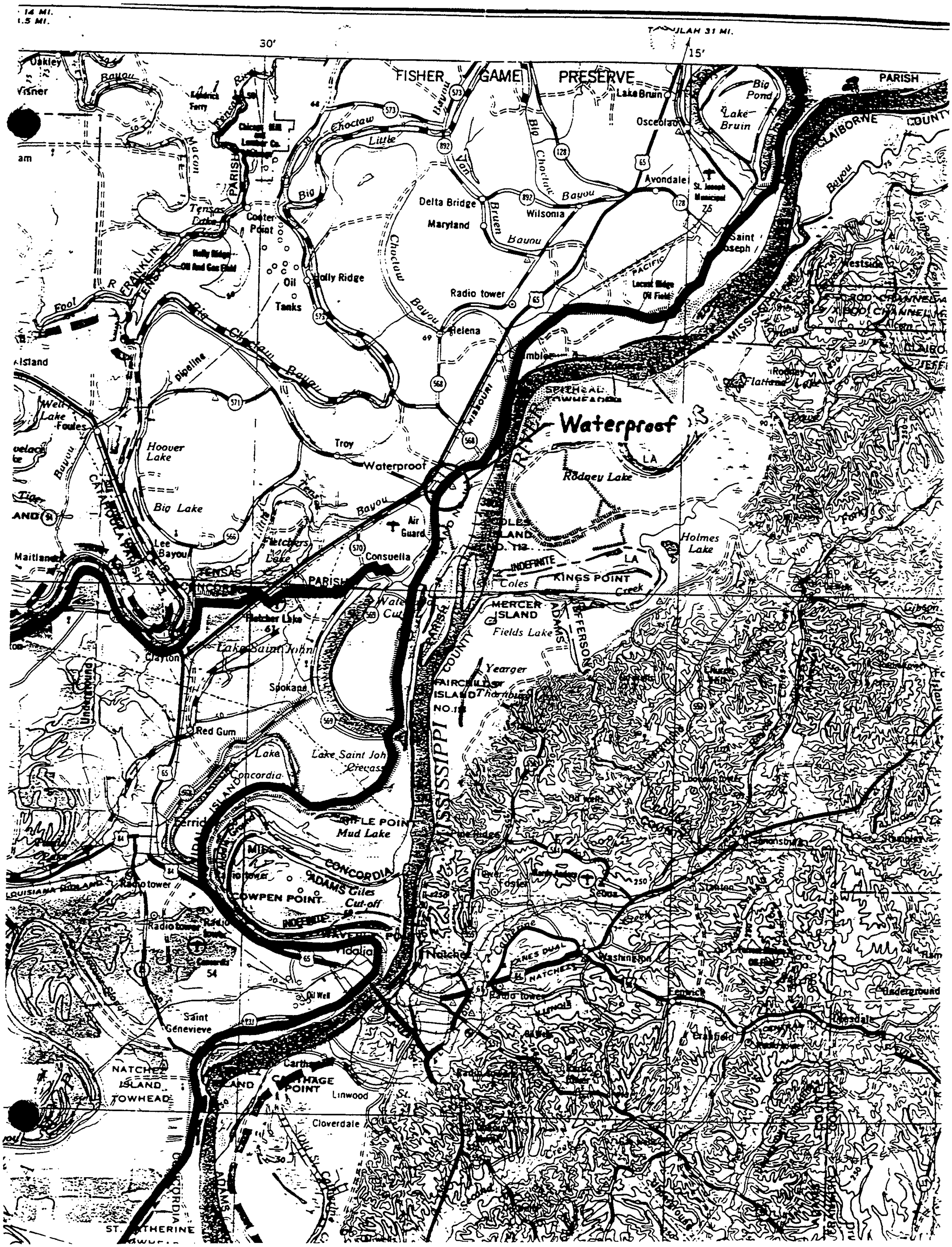
1. On February 12 we will consolidate transportation as much as possible. 4WD vehicles may be needed in some areas, but come with what you have, we will shuttle into the site if needed.

2. Emergency phone numbers are (601) 630-6910 (cellular phone) or call Ken Mosley at (601) 631-5289 and ask him to contact the group by radio.

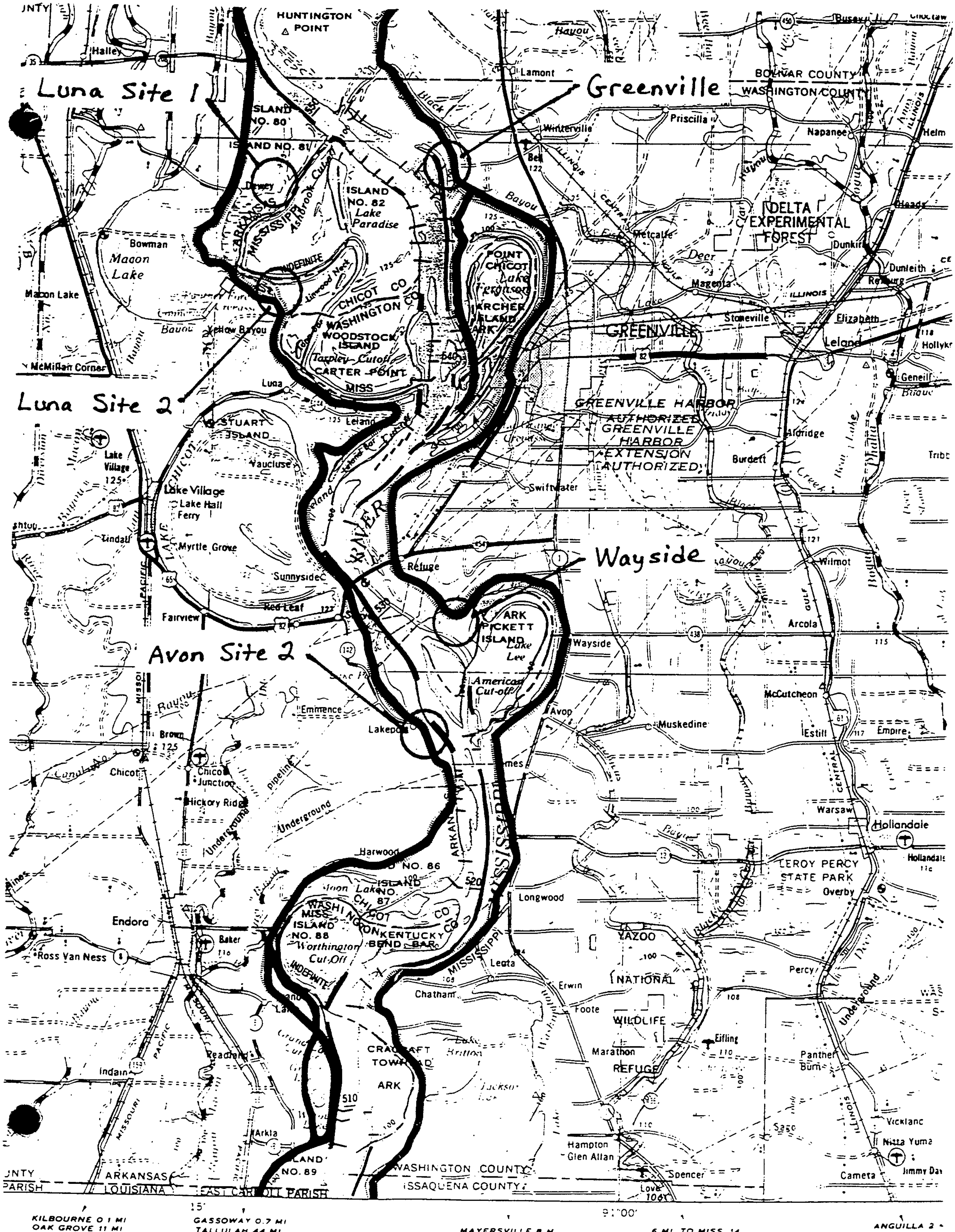
3. Bring appropriate field gear. We may have to work in inclement weather.

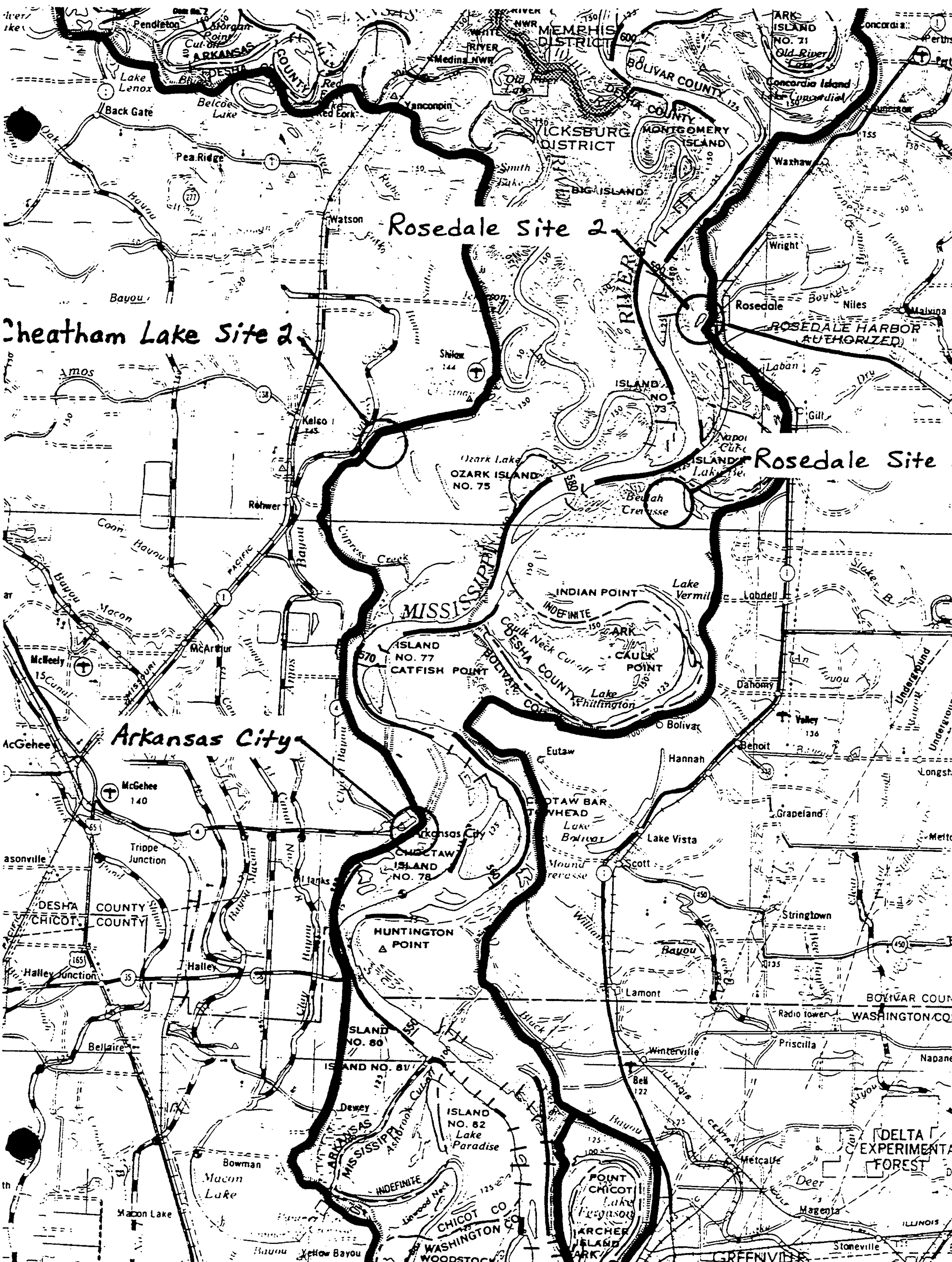


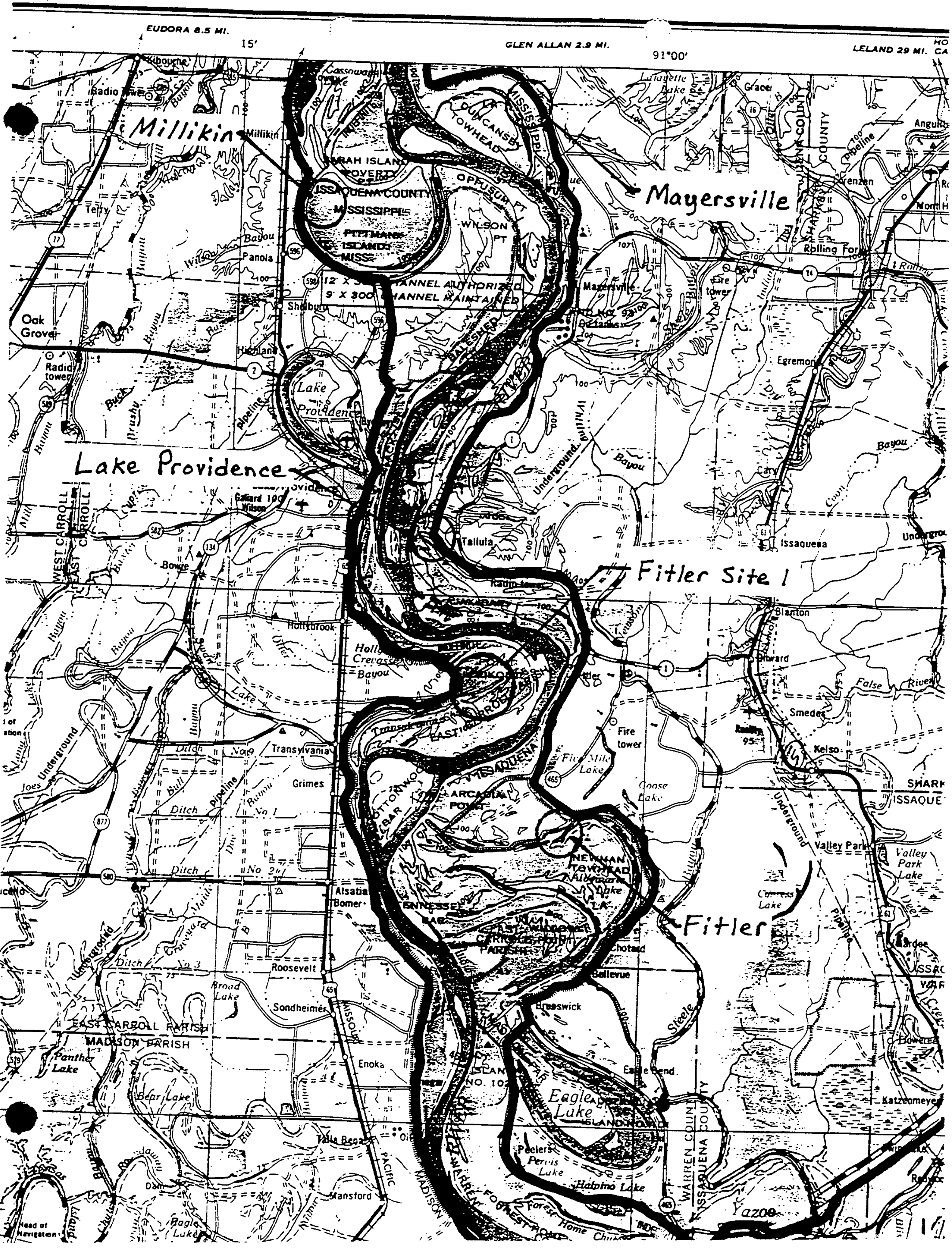
Ashley Site 2
Vicksburg
Lake Bruin
Yazoo
Eagle Lake
Tallulah
Mansford
Sondheimer
Enoka
Ashley
Englewood
Barnes
Thomastown
Coleman
Bedford
Diamond Island
Diamond Point
Palmyra Island No. 106
Davis Island
Long Lake
Madison Parish
Warren County
Claiborne County
Tensas Parish
Madison Parish
East Carroll Parish
Newellton
Somerset
Balmoral
Point Pleasant
Yucatan Point
Franklin
Lake Nick
Westwood
Dearborn
Warrenton
LeTourneau
Simrall
Hankinson
Brunswick
Belle
Mississippi
Louisiana
Saranac
Brushy Lake



FISHER GAME PRESERVE
PARISH
CLAIBORNE COUNTY
Lake Bruin
Big Pond
Osceola
Avondale
St. Joseph Municipal
Saint Joseph
Delta Bridge
Maryland
Wilsonia
Big Choctaw Bayou
Little Choctaw
Holly Ridge
Holly Ridge Oil And Gas Field
Oil Tanks
Radio tower
Helena
Locust Ridge Oil Field
MISSISSIPPI RIVER
Tensas
Coster Point
FRANKLIN
TENSAS
Hoover Lake
Big Lake
Lee Bayou
Foules
Troy
Waterproof
Waterproof LA
Rodney Lake
Holmes Lake
Coles Island No. 112
Kings Point
Coles Creek
Air Guard
Consuella
Fletchers Lake
Maitland
Clayton
Lake Saint John
Fletcher Lake
Spokane
Red Gum
Lake Concordia
Lake Saint John Crevasse
Mercer Island
Fields Lake
ADAMS
JEFFERSON
Yearger
Fairchild Island No. 111
MISSISSIPPI
RIFLE POINT
Mud Lake
CONCORDIA
ADAMS
Giles Cut-off
COWPEN POINT
Radio tower
Vidalia
Natchez
Washington
Fenwick
Saint Genevieve
NATCHEZ ISLAND TOWHEAD
CARTHAGE POINT
Linwood
Cloverdale
ST. CATHERINE
CONCORDIA
TALLULAH 31 MI.
30'
15'


Luna Site 1
Greenville
Luna Site 2
Wayside
Avon Site 2
HUNTINGTON POINT
Halley
Lamont
BOLIVAR COUNTY
WASHINGTON COUNTY
ISLAND NO. 80
ISLAND NO. 81
Winterville
Priscilla
Napanee
Helm
ISLAND NO. 82
Lake Paradise
DELTA EXPERIMENTAL FOREST
Bowman
Macon Lake
Metcalfe
Dunkirk
Dunleith
POINT CHICOT
ARCHER ISLAND
ARK
CHICOT CO
WASHINGTON CO
Magenta
Stoneville
Elizabeth
GREENVILLE
Leland
WOODSTOCK ISLAND
Tarpley Cutoff
CARTER POINT
MISS
Yellow Bayou
McMillan Corner
Luna
GREENVILLE HARBOR
AUTHORIZED
GREENVILLE HARBOR
EXTENSION
AUTHORIZED
STUART ISLAND
Vaucluse
Lake Village
Lake Hall
Ferry
Swiftwater
Burdett
Aldridge
Myrtle Grove
Tindall
Sunnyside
Refuge
Wilmot
Red Leaf
Fairview
ARK
PICKETT ISLAND
Lake Lee
Wayside
Arcola
American Cut-off
Emmence
Lakeport
Avon
Muskedine
McCutcheon
Estill
Empire
Brown
Chicot
Chicot Junction
Hickory Ridge
Underground
Warsaw
Hollandale
Harwood
ISLAND NO. 86
ISLAND NO. 87
LEROY PERCY STATE PARK
Overby
Longwood
Endora
Baker
MISS ISLAND NO. 88
Worthington Cut-Off
KENTUCKY BEND BAR
Ross Van Ness
Leota
YAZOO
NATIONAL
WILDLIFE
REFUGE
Chatham
Erwin
Foote
Percy
Eifling
Marathon
Readland
Indain
CRAGCRAFT TOWHEAD
ARK
Panther Burn
Arkla
ISLAND NO. 89
Hampton
Glen Allan
Spencer
Vicklanc
Nitta Yuma
Cameta
WASHINGTON COUNTY
ISSAQUENA COUNTY
ARKANSAS
LOUISIANA
EAST CARROLL PARISH
KILBOURNE 0.1 MI
OAK GROVE 11 MI
GASSOWAY 0.7 MI
TALLULAH 44 MI
MAYERSVILLE 8 M
6 MI TO MISS. 14
ANGUILLA 2
VICKSBURG 5


Rosedale Site 2
Cheatham Lake Site 2
Rosedale Site 1
Arkansas City
MEMPHIS DISTRICT
VICKSBURG DISTRICT
BOLIVAR COUNTY
DESHA COUNTY
CHICOT COUNTY
WASHINGTON CO
MISSISSIPPI RIVER
ROSEDALE HARBOR AUTHORIZED
Rosedale
Niles
Wright
Pendleton
Lake Lenox
Back Gate
Pea Ridge
Watson
Kelso
Rohwer
McArthur
McGehee
Trippe Junction
Halley
Halley Junction
Bellaire
Bowman
Macon Lake
Yellow Bayou
Yancopin
Red Fork
Medina NWR
Shiloh
Concordia
Waxhaw
Laban
Gill
Malvina
Lobdell
Dahomy
Bolivar
Valley
Benoit
Eutaw
Hannah
Grapeland
Lake Vista
Scott
Stringtown
Lamont
Radio tower
Priscilla
Winterville
Bell
Metcalfe
Magenta
Stoneville
GREENVILLE
Napanee
Longshot
DELTA EXPERIMENTAL FOREST
ISLAND NO. 73
OZARK ISLAND NO. 75
Ozark Lake
INDIAN POINT
ARK CAULK POINT
Caulk Neck Cutoff
Lake Whittington
ISLAND NO. 77
CATFISH POINT
CHOCTAW BAR TOWHEAD
Lake Bolivar
CHOCTAW ISLAND NO. 78
HUNTINGTON POINT
ISLAND NO. 80
ISLAND NO. 81
ISLAND NO. 82
Lake Paradise
Dewey
POINT CHICOT
ARCHER ISLAND
WOODSTOCK ISLAND
INDEFINITE
Cypress Creek
Beulah Crevasse
Smith Lake
BIG ISLAND
MONTGOMERY ISLAND
Concordia Island
Old River Lake
Mound Crevasse
Lake Ferguson
Macon Lake
Bayou Macon
Amos Bayou
Coon Bayou


EUDORA 8.5 MI.
GLEN ALLAN 2.9 MI.
LELAND 29 MI.
91°00'
Millikin
Mayersville
Lake Providence
Fitler Site 1
Fitler
ISSAQUENA COUNTY
MISSISSIPPI
12' X 300' CHANNEL AUTHORIZED
9' X 300' CHANNEL MAINTAINED
Kilbourne
Radio tower
Terry
Panola
Shelburn
Highland
Oak Grove
WEST CARROLL
EAST CARROLL
Bowie
Hollybrook
Transylvania
Grimes
Alsatia
Bomer
Roosevelt
Sondheimer
Enoka
EAST CARROLL PARISH
MADISON PARISH
Panther Lake
Bear Lake
Tallula
Blanton
Howard
Smedes
Kelso
Valley Park
Valley Park Lake
Chotard
Bellevue
Eagle Bend
Eagle Lake
Peelers
Halpino Lake
Issaquena
Egremont
Rolling Fork
Grace
Lafayette Lake
Fire tower
Five Mile Lake
Goose Lake
WARREN COUNTY
ISSAQUENA COUNTY
SHARKEY COUNTY
Yazoo
MADISON
WARREN
PACIFIC
Head of Navigation
Eagle Lake
Underground
Pipeline

ATTENDANCE ROSTER
MRL FIELD REVIEW
12 FEB 96

NAME	AGENCY	PHONE
Larry Harper	COE, Regulatory	(601) 631-5290
Jim Wiseman	COE, Regulatory	(601) 631-5292
Charles Allred	COE, Regulatory	(601) 631-5546
Tom McCabe	COE, Regulatory	(601) 631-5152
Tim Scott	COE, Regulatory	(601) 631-7528
Wayne S. Watts	MDWFP	(601) 364-2174
Clarence Thomas	COE, Engineering Div	(601) 631-5736
Susan Hampton	COE, LMVD	(601) 634-5821
Yvonne Vallette	EPA, Region 6	(214) 665-6420
David Johnson	COE, Hydraulics	(601) 631-7221
Beth Guynes	COE, Regulatory	(601) 631-5276
Delmer C. Stamps	NRCS, Vicksburg, MS	(601) 634-7996
Wesley J. Kerr	NRCS, Brookhaven, MS	(601) 833-5621
Ken Mosley	COE, Regulatory	(601) 631-5289
Thurman Allen	NRCS	(318) 387-8683
Marvin Cannon	COE	(601) 631-5437
Dan Gregg	USFWS	(601) 629-6612
James Little	LADEQ	(504) 765 0664
Jay DePrato	LDWF	(504) 765-2821
Eddie Brooks	COE, Hydraulics	(601) 631-5682
Eddie Miller	COE, ED-DL	(601) 631-5590
Henry Black	COE, OC	(601) 631-5074
Nick Chandler	Levee Board	(601) 254 7082
Steve Reed	COE	(601) 631-5439

Larry Banks	COE	(601) 631-5946
Jim Wanamaker	MS Levee Board	(601) 334-4813
Rick Boyd	MS Levee Board	(601) 334-4813
Jim Parkman	NRCS, MS	(601) 453-2762
Paul Benadict	NRCS, AR	(501) 324-5419
Craig Uyeda	AR Game & Fish	(501) 223-6300
Jim Morris	MSDEQ	(601) 961-5171
Herbert Jones	AR Levee Board	(501) 877-2366
Robert Stanley	COE, Chicot/Project Office	(601) 629-7184
James E. Shivers	5th LA Levee Dist	(318) 574-2206
Chris Avery	NRCS, AR	(501) 367-2473