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SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

NEW 1200-FOOT LOCK
UPPER MISSISSIPPI RIVER

LOCK AND DAM 22
RIVER MILE 301.2

SAVERTON, MISSOURI

JUNE 2008

US Army Corps
of Engineers ®
Rock Island District

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CONTENTS

I. Introduction SEA-1
II. Purpose and Need for the Action SEA-2
III. Authority SEA-2
IV. Project Description SEA-2
V. Alternatives SEA-3
VI. Affected Environment SEA-5
VII. Environmental Impacts of the Preferred Alternative SEA-11
VIII. Social and Economic Effects of the Preferred Alternative SEA-22
IX. Compliance with Environmental Quality Statutes SEA-25
X. Environmental Impacts of Non-Preferred Alternative SEA-29
XI. Probable Adverse Environmental Effects Which Cannot Be Avoided SEA-29
XII. Relationship Between Short-Term Use and Long-Term Productivity SEA-31
XIII. Any Irreversible or Irretrievable Commitments of Resources SEA-31
XIV. Relationship of the Proposed Project to Land-Use Plans SEA-31
XV. Conclusions SEA-32
XVI. Coordination SEA-32
XVII. References Cited SEA-38
Acronyms SEA-40
Finding of No Significant Impact (FONSI)

TABLES

Table SEA-1 Summary of Alternative Staging Area Locations SEA-4
Table SEA-2 Summary of Alternative Staging Area Access SEA-4
Table SEA-3 Green Report vs. Site-Specific Impacts SEA-19

FIGURES

Figure SEA-1 Project Location SEA-34
Figure SEA-2 Upstream Rockwork SEA-35
Figure SEA-3 Emergent Wingdam… SEA-36
Figure SEA-4 Lower Project Area, Lower Guardwall and Vane Dike SEA-37
Figure SEA-5 Downstream Staging Area SEA-38
Figure SEA-6 Fleeting Area SEA-39

APPENDICES

A Pertinent Correspondence
B Clean Water Act, Section 404(b)(1) Evaluation
C Coordination Act Report
D Distribution List
E Programmatic Memorandum of Agreement
F Tier II Biological Assessment
G Mitigation Plan

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I. INTRODUCTION

The U.S. Army Corps of Engineers (Corps) has prepared a *Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Feasibility Study* (System Study). Typically, a programmatic environmental impact statement (PEIS) would be prepared as a separate stand-alone document. However, it was determined that a single integrated document would meet the requirements of the National Environmental Policy Act (NEPA) and the Corps' decision making process without duplication. For the remainder of this report, the term Upper Mississippi River System (UMRS) will be used synonymously with but in preference to Upper Mississippi River-Illinois Waterway (UMR-IWW). The draft System Study with unsigned Record of Decision (ROD) was first circulated for public review from May 14 to July 30, 2004. After comments were received and the System Study amended, where appropriate, the Final System Study with unsigned ROD was circulated for public review again from October 8 to November 8, 2004. The ROD for the Final Integrated Feasibility Report and PEIS for the UMR-IWW System Navigation Feasibility Study was signed on June 4, 2008. The System Study recommends a dual-purpose authorization to address the navigation efficiency and ecosystem restoration needs of the UMRS over a 50-year planning horizon. This Supplemental Environmental Assessment (SEA) will tier off the System Study and evaluate the site-specific impacts of construction of a new 1200-foot lock at Lock and Dam 22, near Saverton, Missouri on the UMRS at River Mile (RM) 301.2. For the remainder of this report the letter R or L following any stated RM will refer to right descending bank or left descending bank, respectively.

Tiering is the use of an umbrella or PEIS to address broad general environmental matters such as descriptions of the environmental setting and general types of impacts associated with certain types of actions. The PEIS would be followed later (tiered off of) by many site-specific NEPA documents should the Navigation and Ecosystem Sustainability Program (NESP) be funded for construction. These site specific NEPA documents would incorporate information by reference or summary from the PEIS as well as discuss site-specific information on the environmental setting and impacts of the proposed action. The intent of tiering is to eliminate repetitive discussions and to focus on the actual issues ripe for discussion and decision at each level of environmental review. The Corps, Rock Island District (District) is preparing this SEA and Finding of No Significant Impact (FONSI) for a new 1200-foot lock at Lock and Dam 22. This SEA will tier from the System Study because this project has unique project features and site-specific characteristics (e.g., footprint area, topography and hydraulic conditions, associated biota, etc) that were not addressed in the System Study. Following public review of this SEA; and the review and consideration of public review comments, the FONSI for this SEA will be signed. An EIS/ROD will be prepared if public review determines that a SEA/FONSI is not appropriate.

II. PURPOSE AND NEED FOR THE ACTION

Reference the System Study, chapter 1, section 1.1, page 1; section 1.3, pages 1 through 3; and section 1.7, pages 12 through 16.

The primary benefit of this large-scale measure is to provide a lock chamber long enough to eliminate the necessity of double lockages, thus creating significant time savings, increasing navigation efficiency, and improving safety.

The Corps of Engineers is charged with developing new models, gathering additional data, and re-evaluating the economics underpinning the recommendations to improve and expand the Lock and Dam system on the UMRS as presented in the System Study.

The Corps of Engineers study team has produced an Interim Report dated December 2007 which is focused on reanalysis of the National Economic Development (NED) benefits of the recommended plan for navigation efficiency, but will also consider the other three accounts: Regional Economic Development (RED), Other Social Effects, and Environmental Quality.

III. AUTHORITY

The authority to plan, evaluate and design this project is the same authority for the System Study [Section 216 of the Flood Control Act of 1970 (Public Law 91-611)]. Authority to construct this project is the Water Resources Development Act of 2007, Title VIII, Section 8003(b), H.R. 1495.

IV. PROJECT DESCRIPTION

Based on the recommendation of the recently completed UMRS Navigation Feasibility Study that examined system needs over the next 50 years, the NESP was implemented to achieve the dual purposes of UMRS ecosystem restoration and navigation improvements. The proposed new 1200-foot lock at Lock and Dam 22 is one of eight initial NESP navigation efficiency component projects being planned, evaluated, and designed under this new UMRS program.

The proposed new lock will be a 1200-foot, rock founded lock constructed in the downstream direction in the auxiliary miter gate bay (location 3 in the System Study, section 6.1.2.2). The new lock will have an upstream, ported guardwall and will be approximately 1200 feet long. The downstream approach wall has been designed to block flow through the wall and will be 800 feet long. The length and location have been analyzed during the initial design work (figure SEA-1). The existing 600-foot lock was opened in 1938 and will remain in place and become an auxiliary lock chamber. Recreation traffic will primarily use this lock once the new 1200-foot lock is completed.

Some rock/riprap work will be required to facilitate safe and efficient ingress and egress to the new lock. This work consists of removal of a stub dike upstream of the lock (RM 301.6R), shortening of three existing wingdams upstream of the lock (RM 301.6L, RM 301.9L, and RM 302.2L), construction of a new emergent wingdam upstream of the lock from the existing mooring cell to the shoreline (RM 301.9R) and landward to tie into high ground, and construction of a vane dike at the end of the lower guardwall at RM 300.5R, (figures SEA-1, SEA-2, SEA -3, and SEA-4).

V. ALTERNATIVES

A. No Action. Refer to System Study chapter 6, section 6.1.8.1., and chapter 7, section 7.1.1.E.

B. Small Scale Measures (e.g. Switchboats, Mooring Cells, Lock Scheduling, Helper Boats, Congestion Fees, etc). Refer to System Study chapter 6, section 6.1.2.1.; and chapter 7, section 7.1.1.E.

C. New Lock. Refer to System Study chapter 6, sections 6.1.2.2., 6.1.4.2., and 6.1.5.; and System Study chapter 14, sections 14.2., 14.2.3; and 14.6. See figure SEA-1.

Staging Area Alternatives. Several alternative locations for staging areas for construction equipment and materials were considered. The table SEA-1 summarizes the comparison. The preferred location for staging area, in addition to an area on lock property, is the agricultural field along the right descending bank (Missouri side of the river) at approximate RM 300.3 with riverine access at RM 300.4.

Access to Staging Area Alternatives. Evaluation and comparison on how to access the agricultural field staging area has resulted in a preferred riverine access at RM 300.4. Table SEA-2 summarizes the comparison.

Table SEA-1. Summary of Alternative Staging Area Locations

Staging Site Options	Cost	Impact	Federal T & E Impacts
Ag field near Saverton, MO	Undetermined	Now a housing development	None
Bottomland hardwoods upstream of lock at RM 301.7	Unjustifiable cost increase	Loss of long-term vegetation on 22 acres	Bald eagle; gray bat; Indiana bat
Ag field downstream of lock w/riverine access at RM 300.4 [1]	Relocation & monitoring costs	Relocate mussels in 0.93 acre of access corridor	None
Ag field downstream of lock w/access through community, crossing No-Name Creek; no riverine access	Unjustifiable cost increase	Socioeconomic, safety, noise, etc.; natural resource impacts from clearing riparian vegetation adjacent to No-Name Creek	None

[1] Preferred staging area alternative

Table SEA-2. Summary of Alternative Staging Area Access

Alternatives	Cost	Impact	Federal T & E Impacts
RM 300.4, just downstream of No-Name Creek [1]	Relocation and monitoring costs	Approx 1 acre mussels	None
RM 300.3, downstream	Add'l costs over and above the preferred alternative from mussels and access to staging area	Mussel densities increase in downstream direction, increase impacts	None
RM 300.5, upstream of No-Name Creek	Unjustifiable cost over and above preferred alternative for bridge to cross No-Name Creek	Approx 0.5 acre mussels	None
RM 300.5, with low water crossing over No-Name Creek	Lower costs for mussel relocation and monitoring, but engineeringly unreliable ingress/egress to staging area	Added socioeconomic impacts to community by construction equipment; added riparian impacts from clearing the crossing	None
Docking Pier at RM 300.4 out into river	Not determined	Hazard to navigation; would minimize mussel impacts	None
RM 300.4 with floating barge to dock to	Operationally infeasible; would squat/drop to bottom upon loading	No mussel relocation; loaded barge would impact mussels	None

[1] Preferred alternative

VI. AFFECTED ENVIRONMENT

A. Natural Resources. The potential natural resource impacts from this project are:

- loss of benthic and riparian habitat in and adjacent to the construction site from the footprint impacts of the lock chamber, and upper and lower guidewalls, emergent wingdam, and vane dike, with attendant effects on benthic invertebrates;
- changes in the lock and/or dam structure that could alter tailwater velocities, current patterns, water depths, or substrate composition;
- changes in lock approach patterns that could cause towboats to increase bank erosion or benthic disturbance, or require dredging for new navigation realignment; and
- changes to terrestrial or shoreline areas due to bankline excavation, or staging areas and fleeting areas.

During earlier planning /scoping exercises for the System Study, the following list of resources of concern was developed:

native mussels	backwater habitat
side channel habitat	backwater lakes
bottomland hardwood (BLH) forest	non-forested wetlands
migratory waterfowl	colonial nesting birds
shore/wading bird habitat	neotropical migrants
commercial fish	recreational fish
migratory fish/fish passage	other fish (blue sucker)
main channel border	cutbanks
water quality	raptor
furbearers	

This initial, broad list of habitats and species of concern for all potential new lock locations and their associated species was reduced for this SEA to: 1) BLH forest; 2) main channel; and 3) main channel border (MCB). This reduction represents the habitats that have the potential to be impacted at Lock and Dam 22.

The initial draft Coordination Act Report (CAR) from the USFWS (appendix C) is summarized as follows:

Recommendations

1. All mussels in the footprint of the emergent wingdam and a minimum of 2 meters upstream and downstream should be relocated outside the impact area. Documentation relative to the number and species of mussels relocated and the relocation site should be provided to the USFWS upon completion of the relocation effort.
2. Construction contracts for fleeting/mooring of barges near Cottel Island require construction barges to use off-shore mooring devices to minimize potential impacts to mussels. Any potential to impact mussels should be temporary and insignificant if barges would be moored off-shore and upstream of RM 300.2 and 300.6.

3. If the survey to assess the mussel assemblage adjacent to the staging area, downstream of the dam RDB, reflects species richness and diversity similar to that of the adjacent State of Missouri mussel sanctuary, mitigation measures should be developed in consultation with Federal and State biologists.

Conclusions

1. Construction impacts of the new lock construction and new guardwalls/guidewalls that were previously documented in the Green Report (ENV Report 7) are still generally accurate. The interagency habitat assessment team agreed that conducting a new habitat assessment was unnecessary.
2. The notch in the emergent wingdam should reduce the potential adverse impacts to mussels from sedimentation that frequently accumulates under similar emergent wingdam construction without a notch.
3. Considering that the fat pocketbook mussel has not been found in recent surveys, habitats for the grey bat and Indiana bat are not present in the affected area, and construction activities will have negligible impacts on any wintering bald eagles, the proposed project is not likely to adversely affect any federally-listed endangered species.

Two items stated in the draft CAR are not quite correct and are addressed here. The sentence that reads "In order to reduce sedimentation, the wing dike will include a notch (5 ft. deep x 35 ft. wide) to provide flow at most river stages," is not correct. A more accurate sentence would read, "In order to reduce sedimentation, the wingdam will include a notch (5.5 ft below flat pool x 22 ft wide at flat pool and 10 feet deep from top of emergent wingdam x 40 ft wide at top of the emergent wingdam) to provide flow at all river stages."

Also, the draft CAR states the downstream approach wall will be 600 ft. The actual length of the lower approach wall is 800 ft.

The District investigated the potential use of dolphins (cabled timber pilings driven into the riverbed) so barge fleeting/mooring could avoid the Cottel Island bankline (potential mussel impacts). These structures would result in higher project costs to avoid potential mussel impacts. The District has already altered the original fleeting/mooring area to avoid impacts to the known mussel bed there. Additionally, recent bathymetry along the Cottel Island shoreline shows sufficient depth to minimize direct contact with barge hulls and near shore mussels. The District will not require the construction contractor to use off-shore mooring devices.

The District will require the construction contractor to use on-shore anchorage/pilings for barge fleeting/mooring along the Cottel Island shoreline. This should eliminate tie-off to large trees and minimize adverse impacts to long-term vegetation.

Due to some new information regarding project features, mainly the riparian access to the agricultural field staging area at approximate RM 300.4R, the USFWS provided the District with an amended Draft CAR which is found in appendix C and is summarized here:

DRAFT CAR

Recommendations

1. All mussels within the approximate 0.93 acre impact zone should be relocated to a nearby location deemed suitable to the USFWS and Missouri Department of Conservation. Relocation should follow guidelines described Dunn, Sietman, and Kelner in order to minimize mortality. Monitoring the survival of the relocated mussels by means of a mark and recapture study should be included as part of the mitigation plan. If practicable, potential relocation sites should include the planned fish passageway at Lock and Dam 22. Prior to construction, a mussel relocation plan should be coordinated with the MDOC, IDNR, and the USFWS.

2. Following construction, the staging area riverine access corridor should be restored to its pre-construction contours and particle size distribution.

3. It is highly likely that little or no mussel recruitment will occur in the staging area riverine access corridor during construction. Mussel propagation should be adopted to compensate for any loss of mussels during the dredging of the access corridor. The timing, number, and species selection should be developed in consultation with the USFWS and State agency biologists. Propagation should begin 3 years prior to the planned re-introduction date.

4. The status of the access corridor and adjacent mussel community should be monitored periodically during construction and afterward.

5. As part of overall Navigation and Ecosystem Sustainability Program, a mussel assessment team should be established to conduct mussel assessment and mitigation activities for NESP projects. Such a team could provide timely services to all NESP activities, consistent data collection, and likely a cost savings compared to private contractors.

6. Following post-construction mussel surveys, State and Federal agency biologists should be consulted to assess the current status of the mussel community and appropriate mitigation actions to fit that current condition. A detailed mitigation and monitoring plan should be developed in consultation State and Federal biologists as soon as possible.

7. The riverine access corridor should be marked with buoys to help ensure barges/tows stay within the corridor while accessing/departing the staging area. All project Plans and Specifications should include a requirement to stay within the buoys. All barges should be free of zebra mussels.

8. The railroad crossing between the riverine access corridor and the staging area should be as far upstream as possible to minimize impacts to mussels.

9. Well in advance of construction, agency biologists should meet with the District to draft a mussel mitigation plan to aid in relocation, mitigation planning, and mussel propagation.

District Responses

1. The mussels within the staging area access corridor will be relocated to nearby suitable locations after District coordination/consultation with appropriate State and Federal natural resource agencies. Possible relocation sites include Cottel Island; Blackbird Island at RM 292; just downstream of the access corridor; and the area of the proposed fish passage structure on the overflow section of Lock and Dam 22. Relocation will follow the guidelines recommended by the USFWS in the amended draft CAR (Dunn 1999). Due to the conditions/restrictions of the proven aforementioned mussel relocation protocol, significant impacts are not anticipated and monitoring of the survival of the relocated mussels with mark/recapture techniques will not be undertaken. Proper relocation site selection, strictly following the proven relocation guidelines should result in acceptable rates of survival. The general mitigation plan is shown in appendix G. A detailed relocation plan with specific relocation sites, post construction monitoring schedules, mussel collection design, and potential use of propagation mussels will be coordinated with all appropriate State and Federal natural resource agencies prior to relocation.

2. The sediments from the delta of no-name creek will be dredged and placed for temporary storage on the staging area. This should allow safe ingress/egress of barges/tows in the access corridor. Following completion of construction, and after the first mussel dive survey is completed, the stored sediments will be replaced to the original delta location. Following completion of the new lock, pre-construction conditions at the delta of no-name creek, as to contours and particle size distribution will be replicated to the extent practicable. Natural forces from the river and no-name creek should return the delta area to pre-construction conditions after the original delta sediments are replaced. When replacing the stored delta sediments, no placement of sediment will occur on the bedrock area exhibited in the 2007 mussel survey (60 m from shore), but only on the area where the delta existed previously.

3. The District feels the unlikelihood of any mussel recruitment in the access corridor during construction (recommendation 3 above) may be overstated. The delta sediments will not be dredged until the mussels have been relocated. Overall recruitment in this area of the river should not be significantly impacted since the relocated mussels will still be reproducing in an established mussel bed at one or more carefully selected relocation sites. Using propagated mussels of various ages, numbers, and species, with consultation with appropriate State and Federal resource agencies will be evaluated. This could augment natural recolonization of the staging area access corridor if needed. The data gathered from mussel surveys of the access corridor the summer following, 2 years and 5 years following construction should reveal if adequate natural recolonization is taking place. These data will be provided to the resource agencies for evaluation and consultation. Should natural recolonization 5 years post-construction be inadequate, utilization of propagation will be considered.

4. Post construction surveys for mussels and sediment present in the staging area access corridor will be undertaken beginning the first survey season following construction. Mussel dive surveys cease at approximately October 15 of any given year because of cooling water temperatures. If construction is concluded after October 15, the first dive survey would occur

the spring of the following year (after May 1). No mussel surveys will be undertaken in the access corridor during the construction period. In an effort to determine if the use of the access corridor could be impacting the geomorphology of the area, a bathymetric survey will be performed the third summer following initial use of the corridor. If a significant change in the bathymetry has occurred in the area downstream of the access corridor that is reasonably attributable to the usage of the access corridor, mussel dive surveys may be undertaken to help determine impacts to the resident mussel community.

5. This recommendation will be forwarded to the NESP management team for consideration by the partnership. No further action on this issue will be undertaken in this SEA.

6. Following each post construction mussel survey, the District will provide all data and will initiate consultation/coordination with all appropriate State and Federal biologists. This effort will use adaptive management to review recent data and adapt monitoring plans and mitigation as appropriate.

7. The staging area access corridor will have buoys placed to mark the upstream and downstream boundaries of the corridor. All barges/tows and other boats utilizing the access corridor for construction purposes will be required to stay within this marked area. The barges/tows utilizing the access corridor will not be encumbered with any rules, restrictions, or guidelines pertaining to zebra mussel-free barges or tows over and above those that are imposed on any other river traffic, either recreational or commercial.

8. The staging area riverine access corridor has been located as far upstream as is practicable (RM 300.4R), as has the crossing over the railroad tracks to minimize impacts to mussels.

9. Extensive coordination with State and Federal natural resource agencies has taken place during the planning process (prior to construction). Avenues of communication/coordination/consultation will be maintained during and after construction. The mitigation plan is included in this SEA as appendix G. A specific, detailed relocation plan will be coordinated with appropriated State and Federal resource agencies, particularly as it pertains to mussel relocation, monitoring, and propagation efforts, as soon as is practicable.

B. Endangered and Threatened Species. The Endangered Species Act consultation for the restructured UMRS Feasibility Study used a tiered Endangered Species Act consultation framework. The Tier I Biological Opinion (BO), *Biological Opinion of the Upper Mississippi River Illinois Waterway System Navigation Study,* was completed in August 2004. This BO evaluated the effects to listed species at the program or ecosystem level. All other aspects of this project (site-specific construction, mitigation, and ecosystem restoration) have been evaluated through this Tier II consultation with a Tier II Biological Assessment (BA) found in SEA appendix F.

The Illinois Department of Natural Resources (IDNR) and the Missouri Department of Conservation (MDOC) informed the District of the potential for the project to impact numerous species and sensitive resources. A mussel bed is located along Cottel Island at approximate RM 300.5L

containing Illinois-threatened and Missouri-imperiled black sandshell (*Ligumia recta*). This is an area currently designated as a fleeting area during new lock construction.

Other listed mussel species in the vicinity of Lock and Dam 22 are:

- Illinois-endangered, Missouri-rare, and federally-listed candidate species spectacle case (*Cumberlandia monodonta*);
- Illinois-threatened butterfly (*Ellipsaria lineolata*);
- Illinois-threatened and Missouri-endangered ebonyshell (*Fusconaia ebena*);
- federally-endangered and Illinois-endangered Higgins' eye pearly mussel (*Lampsilis higginsi*);
- federally-endangered, Illinois-endangered, and Missouri-endangered fat pocketbook (*Proptera capax*);
- federally-listed candidate species, Illinois-endangered, and Missouri-endangered sheepnose (*Plythobasus cyphyus*);
- Missouri-rare hickorynut (*Obovaria olivaria*);
- Missouri-rare wartyback (*Quadrula nodulata*); and
- Missouri-rare rock pocketbook (*Arcidens confragosus*).

Also mentioned is the State of Missouri mussel sanctuary along the right descending bank (RM 299.6 to 300.2) near the area currently identified as a staging area for new lock construction.

Effective August 9, 2007 the bald eagle was removed from the List of Threatened and Endangered Species due to recovery. The bald eagle continues to be protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act.

The Illinois- and Missouri-endangered lake sturgeon (*Acipenser fulvescens*) has been collected from the tailwaters of Lock and Dam 22 within the past year. Other fish species of concern include blue sucker (*Cycleptus elongatus*-Missouri rare); Mississippi silvery minnow (*Hybognathus nuchalis*-Missouri rare to uncommon); western sand darter (*Ammocrypta clara*-Missouri imperiled to rare); and paddlefish (*Polyodon spathula*-Missouri rare).

Two federally-endangered bat species have the potential to be impacted—Indiana bat (*Myotis sodalis*) and gray bat (*Myotis grisescens*).

One species of amphibian has been mentioned as having the potential to be impacted and was encountered in 2002 in the lock chamber. The Missouri "species of concern-status undetermined" applies to common mudpuppy (*Necturus maculosus*).

C. Cultural Resources. The prehistoric and historic resources are documented in the System Study in sections 1.6, 4.3.2.4, 5.2.9.5, 6.2.5.3, and appendix C. Lock and Dam 22 is part of the Upper Mississippi River Navigation Project, built between 1931-1948 which is comprised of 25 National Register historic districts within the Upper Mississippi River 9-Foot Navigation System, which are found between Minneapolis, Minnesota, and Winfield, Missouri. All of these historic districts have national significance under 36 Code of Federal Regulations (CFR) Part 60.4, National Register of Historic Places Criteria A (that are associated with events that have made a significant contribution to the broad patterns of our history) and C (embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or

that represent a significant and distinguishable entity whose components may lack individual distinction).

All of the historic districts have national significance under Criterion A in the areas of transportation, maritime history, commerce, conservation, military, economics, politics, and social history because they are components of the Upper Mississippi River 9-Foot Navigation Project. A large number of the historic districts are eligible under Criterion C in the area of engineering because they include the first or seminal developments in the technological history of American Waterway improvement and river navigation. The proposed new 1200-foot lock project will adversely affect the National Register of Historic Places eligibility of the Upper Mississippi River Navigation Project, 1931-1948 Lock and Dam No. 22 Historic District, located near Saverton, Ralls County, Missouri. Alterations to the original components of the dam, as a result of the new 1200-foot lock project will include destruction of the original components and fabric of the existing lock and dam facility. Alteration and destruction of the original elements are not in compliance with the Secretary of the Interior's *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings.*
By letters dated June 2, 2006 and October 25, 2006, the Corps coordinated the Lock and Dam 22 undertaking (appendix A) with the appropriate State Historic Preservation Officers, signatories of the Programmatic Agreement, Native American tribes, state and federal agencies, and other consulting parties. These parties were identified during the consultation and preparation of the *Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Study* (24 September 2004). Historic property concerns and compliance can be found in the System Study, including the development of a final consulting and interested parties list.

As a result of the coordination effort for the new lock and ancillary improvements in navigation efficiency, the Corps initiated the formation of the NESP Cultural Resources Stewardship and Mitigation Team to facilitate compliance and foster protection of cultural resources within the Upper Mississippi River. At the first NESP Cultural Resources Stewardship and Mitigation Team meeting on June 29, 2006, mitigation and recordation alternatives for the NESP three lock and dam site-specific projects (Upper Mississippi River Lock and Dam facilities 22 and 25 and Illinois Waterway La Grange Lock and Dam) were discussed with appropriate mitigation measures identified as: 1) producing and printing a complete Upper Mississippi River watershed educator's guide book, with a marketing plan for its distribution and/or sales, 2) completion of Historic American Engineering Record recordation for the Illinois Waterway, and 3) public outreach.

VII. ENVIRONMENTAL IMPACTS OF THE PREFERRED ALTERNATIVE

A. Created Resources. Lock and Dam 22, with associated buildings, storage yards, and other components, and the 9-foot navigation channel are created resources. The staging areas on lock property and the agricultural field along the right descending bank (RDB) downstream of the dam for construction equipment and materials are created resources. These areas are not environmentally sensitive. A riverward portion of the ag field/staging area is wetland and will be avoided. The staging area on lock property would be restored to maintained lawn following construction. The agricultural field would be converted to a dredged material placement site for the chronic dredge cut called Lock and Dam 22 Lower.

The three wingdams planned for shortening along the left descending bank (LDB) upstream of the dam are created resources. The emergent wingdam and the vane dike planned for construction will be a created resource. The impacts of these structures are described later in this section.

The stub dike planned for removal is a created resource and is described below. The public boat ramp downstream of the dam, adjacent to the lower approach wall is also a created resource. Its use would be prohibited until construction is complete.

B. Natural Resources

1. Footprint Impacts

- Loss of benthic and riparian habitat in and adjacent to the construction site, emergent wingdam, and vane dike
- Changes in the lock and/or dam structure that could alter tailwater velocities, current patterns, water depths or substrate composition
- Changes in lock approach patterns that could cause towboats to increase bank erosion or benthic disturbance
- Changes to terrestrial or shoreline areas due to bank excavation, borrow or staging area locations

2. Mussels. Freshwater mussels are currently the most imperiled aquatic resource in the Nation and in the UMRS.

a. Lock and Approach Wall Footprint. There is no known mussel resource in the location of the proposed new 1200-foot lock chamber or approach wall footprint (the auxiliary lock location). No significant impacts to mussel resources would occur from construction of the new lock chamber footprint.

b. Staging Area. The two staging areas will be used to deliver, modify, assemble, etc., construction materials and equipment prior to delivery to the construction site(s). One of the staging areas for equipment and construction materials is an agricultural field located on the Missouri side of the river, downstream of the dam located between approximate RMs 300.1 and 300.5. River access to the staging area is located in the upstream-most portion of the staging area at approximate RM 300.4. Bathymetry data collected in March 2007 revealed water depths at the access corridor to the staging area would be too shallow to allow safe ingress and egress of barges and tows. This is the result of the delta that has developed at the mouth of the no-name creek at the upstream end of the staging area. This access corridor would need to be dredged if the staging area is to be accessed by water. The dredged material (estimated 2500 cubic yards) would be placed at some remote portion of the staging area, probably along the southern or south eastern portion. Impacts to the staging area from dredged material placement have been addressed in a previous Environmental Assessment entitled, *Environmental Assessment, Material Placement Sites for Maintenance Dredging, Mississippi River Pools 22 and 24, Behind the Sny Levee, Pike County, Illinois and in Ralls County, Missouri*, dated September 2003. The maximum length for river access to the staging area is approximately 250 feet. The staging area, and most importantly, the river access area are a short distance upstream of a Missouri State mussel sanctuary located between approximate RMs 299.6 and 300.2. This area of the

river and sanctuary has a predominantly bedrock substrate, which has not prevented mussels from colonizing there, although mussel densities within the sanctuary are lowest there. Potential adverse impacts to the mussel community just riverward of the access area could occur when tows with barges access and depart, causing propwash to dislodge mussels from the substrate, or from direct contact with barge/tow hulls. Direct propeller contact could also impact the mussel resource. Brainstorming sessions with the District, USFWS, IDNR, and MDOC have revealed several potential alternative actions that could mitigate potential impacts to mussels. At this point, the most practicable measure would be to relocate the mussel resource within the access area prior to staging area use. The utilization of the bankline area adjacent to the staging area would be temporary as would the impacts to the mussel resource.

The staging area riverine access is located adjacent to the delta of no-name creek at approximate RM 300.4. The dredged delta sediment will be stockpiled and replaced in the original location following construction of the new lock, and after the first post-construction mussel dive survey is completed. The sand/gravel sediment of the delta is good habitat for mussels and fish. The removal of the delta sediments of no-name creek would not expose mussels that may be located downstream, to any increased risk of adverse impacts from hydraulic forces from navigation traffic, either upbound or downbound. The sediment of the area adjacent to the staging area, both within the access corridor and outside it, is predominantly large size particles (sand and gravel). The propwash of tows as they enter and exit the staging area access corridor should result in no significant impacts to mussels through re-suspension of sediment.

To help determine potential mussel impacts associated with ingress/egress of tows and barges to the staging area, a dive survey was employed. This dive survey was intended to identify and characterize the mussel community in the staging area access corridor to be impacted by activities related to the construction of the new 1200-foot lock. This access corridor is located at approximate RM 300.4R. The area in question was surveyed for mussels the summer of 2007. The field activities for the survey were performed August 9-10, 2007.

A total of 867 live mussels representing 17 species were collected in the study area. Most mussels were collected from an area just downstream of the proposed access corridor alignment. Density and catch-per-unit-area of mussels from samples collected within the access corridor ranged between 20 and 28 per square meter and 1.5 and 3.1 per minute, respectively. The survey area appears to harbor a somewhat diverse and stable mussel community with high abundances of dominant species and moderate species richness and evenness. Recruitment/reproduction was evident by the presence of young individuals. The number of species collected from this survey is similar to the number collected in previous surveys.

The results of the initial 2007 mussel survey identify a significant mussel resource present in the staging area access corridor, with mussel densities decreasing upstream of the corridor and increasing downstream. If it is determined that the staging area with riverine access is essential to successful and efficient new lock construction, mitigation planning for anticipated mussel impacts from river access to the staging area will begin, given the high quality of the mussel resource in the area, and the highly imperiled nature of freshwater mussels in North America. Mitigation would involve relocating the mussels to another nearby area suitable for mussels. Possible mussel relocation sites are Cottel Island; Blackbird Island at RM 292; just downstream of the proposed access corridor location; and the area of the proposed fish passage structure on the overflow section of Lock and Dam 22. These areas already

have known mussels present. Any mitigation will be completed before construction/utilization of the staging area begins. If it is determined that the staging area is not essential for new lock construction, another staging area will be identified and evaluated for impacts, thereby avoiding potential impacts to the mussel resource. If the proposed ag field staging is not utilized, no further mussel surveys in the area of the currently proposed staging area access corridor would be done.

If, for any reason the riverine access corridor to the ag field staging area is not utilized during new lock construction, none of the following actions would occur: dredging of the no-name creek delta sediments; mussel relocation; bathymetric surveys of the access corridor region; buoying the upstream and downstream limits of the corridor; or post construction mussel surveys.

c. Fleeting Area. The fleeting area will be used to moor barges for delivery to/from the construction site(s). The District's initial coordination letter for natural resources for this project (appendix A) shows a barge fleeting area during construction would be required along the riverside of Cottel Island. This initial fleeting area extends from approximate RM 300.0 to 301.1. The Illinois Natural Heritage Database contains several records of a mussel bed, including State listed species in the vicinity of the proposed fleeting area. This bed supports the State threatened black sandshell (*Ligumia recta*). Other listed mussel species found in the immediate vicinity of the lock and dam in the last several years include the Illinois endangered spectaclecase (*Cumberlandia monodonta*), the State threatened butterfly (*Ellipsaria lineolata*), and the State threatened ebonyshell (*Fusconia ebena*). The bed is approximately located at RM 300.2 to 300.6L.

The fleeting area along the riverside of Cottel Island has been revised to extend from approximate RM 300.6 to 301.1 to avoid this mussel bed. Additionally, the presence of two wingdams in the area of the mussel bed make fleeting there even less desirable. Bathymetry data collected March 2007 in the revised fleeting area shows deep water extending very close to shore, which reduces the potential for significant adverse impacts to mussels from fleeting activity.

d. Rock Work

i. Wingdam Shortening (LDB). To help determine potential mussel impacts associated with shortening the three wingdams along the LDB upstream of the dam, a dive survey was employed. This dive survey was intended to identify and characterize the mussel community in the upstream area to be impacted by activities related to the new 1200-foot lock. These three wingdams are located at approximate RMs 301.6, 301.9, and 302.2 and will be shortened 300, 200, and 100 feet, respectively. The field activities for the survey were performed from September 8-17, 2005. Mussels were collected along both RDB and LDB; however, the vast majority was collected from the RDB site (McClane 2007).

A total of 162 mussels (148 live) comprising 14 species, were collected within the LDB site. Overall catch-per-unit effort of timed searches was 0.56 individual collected per minute. Overall density of quadrat sampling was 0.15 individual per square meter. The mussel resource in this vicinity is a somewhat diverse but scattered community.

The typical method of shortening wingdams is to anchor a crane barge adjacent to the wingdam and have the bucket at the end of the crane "broom" off the desired amount of rock to the river bottom adjacent to the area. For this project the rock will be removed by the crane bucket, loaded on barges and recycled at other areas for other uses. The most likely use for the removed rock will be for the

emergent wingdam at 301.9R, the vane dike below the dam, or for use in constructing the NESP project of fish passage at Lock and Dam 22. Additional uses could be bank protection or to create submerged rock piles for fish habitat. Removing the rock would lead to reduced mussel impacts compared to typical wingdam shortening via brooming.

Shortening the three aforementioned wingdams would not result in significant impacts to the LDB mussel resource.

ii. Emergent Wingdam (RDB). The same mussel dive survey (McClane 2007) mentioned above concerning the wingdam shortening also surveyed the RDB upstream and downstream of the proposed location of the emergent wingdam at approximate RM 301.9R (figure SEA-3).

A total of 7,340 mussels (6,152 live) comprising 24 species were collected within the survey area along the RDB. Overall catch-per-unit-effort of the timed searches was 12.07 individuals collected per minute. Overall density of quadrat sampling was 9.2 individuals per square meter.

The mussels that are in the footprint of the emergent wingdam and are also in the area of densest unionid mussel concentrations as identified in the McClane report will be relocated the summer directly prior to the construction of the emergent wingdam. This area of impact is less than 0.5 acre. The area of relocation will be within the area of densest unionid mussel concentration, but upstream of the emergent wingdam footprint (see appendix G).

Altered hydraulics (in the form of increased current velocities) after wingdam construction should result in scour holes downstream of the wingdam (figure SEA-3). These holes may have an adverse impact by dislodging or washing established mussels away. The scour area that intersects with the densest part of the mussel bed is less than 0.25 acre. It is possible any impacted mussels could become established downstream, or the scour holes themselves could become colonized with mussels.

Sedimentation resulting from the construction of the emergent wingdam will be very gradual and occur in the near-shore area, both upstream and downstream of the intersection of the wingdam and the bankline. Total river bottom footprint impacted by increased sedimentation will be less than 0.1 acre.

The notch in the wingdam should reduce the potential adverse impacts to mussels from sedimentation. The notch is described in more detail in Section VII. B. 4, *Fish.*

All the rock work associated with this project has been designed to ensure safe and efficient ingress and egress to the lock. Relocation of the impacted mussels is an acceptable trade-off for improving commercial navigation efficiency.

All aspects of the emergent wingdam and the potential to impact mussels have been coordinated with appropriate State and Federal natural resource agencies.

iii. Stub Dike (RDB). The stub dike located at approximate RM 301.6R will be removed to improve lockages for upbound and downbound tows (figure SEA-2). The mussel dive survey (McClane 2007) did not include the stub dike. The downstream-most transect was located

about 100 yards upstream of the stub dike. A total of 65 mussels were recovered in the downstream-most transect search with all of them being collected in the last/riverward 33 feet. Densities of mussels collected increased along each transect in the upstream direction until approximately 0.5 mile upstream of the stub dike. For this project the rock will be removed by the crane bucket, loaded on barges and recycled at other areas for other uses.

iv. Vane Dike. The vane dike proposed for construction is located at approximate RM 300.7R. It will be constructed slightly riverward of the end of the new 800-foot guardwall and will be 256 feet long (bottom length), at a 10 degree angle from the guardwall (figure SEA-4). The vane dike would help counter the outdraft effects for upbound and downbound tows. There is no known mussel resource in this location. Construction of the vane dike should have no significant impact on the mussel community.

3. Birds. No measurable negative impact to any population of birds, migratory or non-migratory would result from this project.

Migratory Waterfowl. Migratory or resident waterfowl should not be significantly impacted from this action. Avoidance during construction will be temporary. Those waterfowl that would use the staging area of the agricultural field would be impacted but would find feeding areas in the nearby agricultural fields.

Wading and Shore Birds. Wading birds and shore birds should not be significantly impacted since the new lock is being constructed in the auxiliary lock position; the wing dam and stub dike work would take place in water deeper than this category of birds frequents; and only a small portion of the bankline area adjacent to the most upstream portion of the staging area on the RDB would be used for riverine access.

Game Birds. Game birds should only be impacted from the utilization of the staging area, currently an agricultural field along the RDB downstream of the Lock and Dam. Crop fields are common in the vicinity, and given the mobility of game birds such as pheasants, turkey, and quail, other suitable nearby crop fields should off-set game bird avoidance of the staging area.

Neotropical Migrants. Neotropical migrants should not be significantly impacted since the bottomland hardwoods (BLH) on the RDB upstream of the lock are no longer being considered as a staging area. There may be some disruption in the vicinity of the RDB downstream staging area during construction.

4. Fish. Detailed Habitat Evaluation Procedure (HEP) results for all the sites evaluated are found in the *Environmental Report 7, Interim Report For The Upper* Mississippi *River-Illinois Waterway System Navigation Study, Site Specific Habitat Assessment*, September 1998 (Green Report), and can be made available upon request. This report also is available on the NESP website at http://www2.mvr.usace.army.mil/UMRS/NESP/Documents/env7.pdf.

Downstream of the proposed new lock location, an area of main channel border habitat of approximately 6.8 acres would be altered by decreased velocity and increased turbidity but would not result in an area loss. This results in the overall loss of 25.77 Average Annual Habitat Units (AAHUs) using the HEP to estimate impacts. Some of the contributing impacts to this are gains for walleye

winter habitat (12.49 AAHUs) and channel catfish (4.36 AAHUs), and losses/adverse impacts for paddlefish spawning habitat (-18.82 AAHUs) and lake sturgeon (-12.57 AAHUs). An additional 6.19 AAHUs are lost due to the effect of the lock footprint on approximately 11 acres. Contributing to this are adverse impacts to walleye winter habitat (-3.14 AAHUs) and lake sturgeon (-2.51 AAHUs). Fisheries monitoring undertaken in the tailwaters at Lock and Dam 22 from July 2005 to May 2006 revealed few fish in the vicinity of the proposed lower guardwall and vane dike area (Corps 2005; Department of the Interior, U.S. Fish and Wildlife Service 2006). The construction of the new lock and its component parts should not have a significant impact on the tailwater fishery.

The Green Report analyzed the fisheries impact to the RDB upstream of the dam in the area of what then was going to be an emergent wingdam field and would have impacted 73 acres of MCB habitat from sediment accretion. The Green Report further documents that 73 acres of impacted habitat would have resulted in a loss of 284 AAHUs. Species with the largest AAHU losses would have been paddlefish spawning habitat, emerald shiner, and walleye winter habitat. Complete results of the findings in the Green Report can be found in appendix D of that report. We now know that due to the physical modeling efforts, no wing dike field will be constructed. Instead, one emergent wingdam will be constructed at RM 300.9R. Since this new lock project component (emergent wingdam) did not change in nature but only in quantity/amount, the fisheries impact assessment made in the Green Report will be used to compare the MCB fisheries impact from direct and indirect impacts from construction of one emergent wingdam. The emergent wingdam was designed with a notch constructed in it. The notch will be 40 feet wide and begin 50-feet from shore. The advantages of the notch are that sediment accretion, both upstream and downstream of the wingdam will be reduced, depth diversity will be added/increased, and dissolved oxygen will be increased. The footprint representing the total sediment accretion associated with the emergent wingdam will be less than 0.1 acre throughout the 50-year life of the project (figure SEA-3). This accretion will be very gradual and would not result in the conversion of water to land. The Green Report assumed a dike field that would impact over 70 acres of main channel border habitat.

The potential exists for impacts to overwintering fisheries habitat associated with numerous deep holes near the LDB wingdams and the RDB stub dike upstream of the dam (figure SEA-2). It is expected that the three scour holes present at the ends of the three LDB wingdams to be shortened, upstream of the dam, will migrate landward, with no loss of deep water habitat value. There will be a scour hole/plunge pool created downstream of the notch in the emergent wingdam mentioned earlier. This deep hole will mitigate some of the potential fisheries impacts from removal of the stub dike and/or shortening of three wingdams.

The seven deep holes associated with the three LDB wingdams and the RDB stub dike were sampled by electrofishing on March 22-23, 2007. Although limited, this survey helps to provide at least some insight into potential fish use of these scour holes as overwintering habitat (figure SEA-2). A total of 94 fish from six species were captured. Freshwater drum (*Aplodinotus grunniens*) made up 61 percent of the total; channel catfish (*Ictalurus punctatus*) made up 24 percent of the total; and remaining 15 percent were from four species (blue catfish-*Ictalurus furcatus*; river carpsucker-*Carpiodes carpio*; silver carp-*Hypothalmichthyes molitrix*; and smallmouth buffalo-*Ictiobus bubalus*).

No fish were recovered from the deep hole associated with the RDB stub dike. The deep hole associated with the tip of each of the three LDB wingdams, from upstream to downstream, captured 0, 0, and 4 fish, respectively. The deep hole associated with the middle/landward portion of each of the

three LDB wingdams, from upstream to downstream, captured 26, 27, and 37 fish, respectively. These surveys have been coordinated with State and Federal natural resource agencies and the conclusions stated in this section are based, at least in part, on these fish surveys.

A supportive/companion acoustic fish survey was conducted on the same deep holes upstream of Lock and Dam 22 on March 29, 2007. The purpose of this survey was identical to the electrofishing survey, namely to determine the use of existing deep holes by riverine fishes. Generally speaking, the acoustic survey results were similar to the electrofishing results. Highest fish abundance was detected in the deep holes associated with the middle/landward sections of each wingdam.

Fish surveys indicate that the proposed project will have few affects on the fish population in the vicinity of Lock and Dam 22. Hydroacoustic surveys of the tailwater in June 2006 indicated that most fish aggregated away from the proposed new lock, in the area below the spillway and between the main channel and Cottel Island on the Illinois side during the early migration period (USACE 2006). Three electrofishing surveys of the proposed new lock area conducted in the Spring and Fall showed that the fish assemblage was primarily of common riverine species with the exception of two lake sturgeon which were captured in April and May 2006 (USFWS 2006). This survey was conducted in July and November 2005, and April and May 2006. The proposed lock area does not have the depth or current velocity found in other parts of the tailwater, therefore is less attractive to fish.

5. Bottomland Hardwoods. Concerning BLH forest, the Green Report assumed that two BLH areas, one upstream and one downstream of the dam would be impacted and utilized as staging areas. It was assumed that construction would involve the clearing of approximately 22 acres and would equate to a loss of 48.90 AAHUs in total. The upstream area is approximately 12 areas and would lose 32.66 AAHUs. As specific project details have become refined, neither BLH site will be cleared for use as staging areas.

As design features of this project have progressed, it has been concluded that approximately 0.75 acre of the upstream BLH area will require clearing to tie in the emergent wingdam at 301.9R into high ground. This will prevent water at high flows from going around the wingdam on the land side that would continue to contribute to outdraft problems for tows entering and exiting the lock. This BLH is a typical, mature and diverse floodplain forest. The HEP analysis estimates that this clearing would result in the loss of 2.04 AAHUs. Earth from the excavation may be used to cover the riprap upon completion. This should help lessen the habitat loss and promote natural vegetation on the mounded earth. The BLH forest habitat losses will be replaced by planting suitable trees in the downstream staging area (see appendix G). The downstream BLH forest area evaluated in the Green Report will not be utilized.

6. Mammals. Small and large mammals that may utilize the staging area along the RDB, currently an agricultural field, would be impacted during construction. Given the rural nature of the area, this impact should not be significant. No other impacts to terrestrial mammals are anticipated. Aquatic mammals such as beaver, muskrat, and mink should not be significantly impacted, and would avoid the project area during construction.

7. Amphibians. The direct impacts to amphibians are difficult to determine. Through coordination for this project, the MDOC informed the District that several common mudpuppies (*Necturus maculosus*) were found in the main lock chamber in 2002 when the lock was down for

repairs. They may be present in the auxiliary lock chamber and may be encountered during new lock construction. If, during the dewatered portion of the new 1200-foot lock construction, any mudpuppies are encountered they will be captured and relocated to nearby suitable habitat. The upstream RDB, in the vicinity of the mussel bed at approximate RM 302.0 to 302.5 seems to be suitable habitat for relocating mudpuppies.

The following table depicts anticipated impacts expressed in the Green Report (1998) compared to the current anticipated impacts in the Lock and Dam 22 site specific analysis.

Table SEA-3. Green Report vs Site-Specific Impacts

	Green Report	Site Specific
Bottomland Hardwoods (Acres Impacted)	22	0.75
Bottomland Hardwoods (AAHU Impacts)	-48.90	-2.04
Main Channel Border(AAHU)		
Upstream	-284.42	0
Downstream	-31.96	-31.96
Main Channel Border (Acres)		
Upstream	73	0.07
Downstream	6.8	6.8

C. Cultural Resources. The District conducted an archival search for historic properties following the *Policy and Procedures for the Conduct of Underwater Historic Resource Surveys for Maintenance Dredging and Corps Activities* (DGL-89-01, March 1989). The District queried the most updated Illinois and Missouri Geographic Information Systems site file database and reviewed the following reports) for standing, buried, or submerged historic properties potentially affected by this project:

- *An Investigation of the Submerged Historic Properties in the Upper Mississippi River and Illinois Waterway,* dated October 1997 (Contract Number DACW25-93-D-0-012, Order No. 27) (Custer and Custer 1997)
- *The Historic Properties Management Plan for the Mississippi River, Pools 11 Through 22 Rock Island District, Corps of Engineers,* dated August 1995 (Contract No. DACW25-92-D-008, Work Order No. 0005) (Benn, et al. 1995), and
- *Historic Properties Potential & Geomorphological Assessment at Locks and Dams 11-22, 24, and 25, Upper Mississippi River System, Illinois, Iowa, Missouri, and Wisconsin,* dated September 1997 (Contract Number DACW25-92-D-0008, Order No. 0026) (Benn and Anderson 1997).

Along with the National Register of Historic Places-eligible Lock and Dam No. 22 Historic District, two previously reported or recorded sites—23RA132 and 23RA863—are located in an agricultural field proposed for new 1200-foot lock project dredged material placement and equipment staging.

By letters dated June 2, 2006 and October 25, 2006, the District coordinated the Lock and Dam 22 undertaking (appendix A) with the appropriate State Historic Preservation Officer, signatories of the Programmatic Agreement (this report, section IX), Native American tribes, State and Federal agencies, and other consulting parties. The historic properties cultural resources potentially impacted by the proposed new 1200-foot lock project are archeological and architectural/engineering.

1. Archeological Impacts. Archeological investigations have been conducted in those staging areas deemed to have potential for surface or buried archeological properties as part of the Rock Island District Dredged Material Management Plan. The 61.3-acre Site 8 was surveyed for historic properties (Benn and Bond 2005). Two archaeological sites (23RA132 and 23RA863) were located and determined by the Corps [see Corps letter dated June 14, 2005, to the Missouri State Historic Preservation Office (MSHPO)] to require further testing as the sites were potentially eligible for listing on the National Register of Historic Places (NRHP). In a letter dated June 22, 2005, the MSHPO concurred with this District determination (appendix A, MSHPO Log#004-RA-06).

Phase II testing by Benn and Hajic (2006) found portions of both sites eligible for inclusion in the NRHP. In a letter to the MSHPO dated June 22, 2006, the District proposed preservation in place for 23RA132 and 23RA863 and the placement of dredged material over the sites. The MSHPO responded in a letter dated July 5, 2006 (appendix A), that, "…the placement of dredge spoil will have no adverse effect on the portions of these sites that retain the potential to yield information important to prehistory." In a coordination letter dated August 31, 2006, the District found that placement of "…up to 20 feet or more of dredged material over sites 23RA132 and 23RA863…" would have "…no adverse effect…" on historic properties based on "…preservation in place without disturbance of any intact archaeological deposits..." Two responses to this letter were received; neither had any objection to the determination but both cite requirements of the Native American Graves Protection and Repatriation Act in the event human remains or associated cultural objects were discovered. These letters were from the Choctaw Nation of Oklahoma dated September 19, 2006 and from the Sac and Fox Nation of the Missouri in Kansas and Nebraska, dated September 21, 2006 (appendix A).

Based upon MSHPO concurrence for a No Adverse Effect determination, dredged material may be placed anywhere in the 61.3-acre Site 8, although dredged material placement, or any other activity, may not result in soil disturbance below a depth of 1-foot (30.48 centimeters) as a part of a site preservation plan in those areas of archeological deposits which are potentially eligible for nomination to the NRHP. Any proposed soil disturbance below this 1-foot depth (whether related to dredged material placement or to any other activity) will require additional historic properties coordination and data recovery prior to undertaking the disturbance. This restriction on depth of soil disturbance will continue as part of the new 1200-foot lock project and proposed dredged material placement or staging effectively precludes use of those areas for equipment/material access and/or staging areas without further coordination and data recovery. All historic properties coordination for Site 8 is complete with only the restrictions as noted here regarding the depth of soil disturbance.

2. Architectural and Engineering Impacts. By letter dated November 3, 2006, MSHPO commented on the District's June 2, 2006 and October 25, 2006 correspondence concerning the determination of Adverse Effect and proposed mitigation measures (appendix A). The MSHPO concurred with the District that the proposed Lock and Dam 22 project will have an Adverse Effect. The MSHPO wrote that, "We also concur with the proposed mitigation to include the production and printing of a complete Upper Mississippi River watershed educator's guide book, with a marketing

plan for its distribution and/or sales." The MSHPO also recommended completion of the nomination of the system to the NRHP. The Rock Island and St. Louis Districts completed and forwarded the HRHP multiple property nominations forms for the Upper Mississippi River 9-Foot Navigation System (which includes Lock and Dam 22 historic District) to the National Park Service, Washington, D.C. in March 2004. Following negotiations in early May 2007, the Upper Mississippi River 9-Foot Navigation System was retroactively listed on the NRHP on March 11, 2004; to achieve much-deserved international attention so that the Corps' contribution to the nation's engineering history is ensured for our significant waterways. On November 28, 2006, the District received a stamped concurrence of the October 25, 2006 District correspondence from the Deputy, State Historic Preservation Officer Illinois Historic Preservation Agency (appendix A). The described mitigation (production, printing, and marketing of an educator's guidebook) shall be planned but not implemented until construction authorization.

D. Air Quality. Minor, temporary increases in airborne particulates are anticipated to occur as a result of mobilization and use of construction equipment. Disturbances to nearby residents during workdays would be minimal, and no air quality standard violations are anticipated.

E. Water Quality. Temporary increases in turbidity may occur during construction of the new lock and removal and shortening of the wingdams. Sediment excavation, placement of fill material and operation of floating-plant equipment may contribute to temporary turbidity. Also, erosion of land-based construction sites may result in turbidity. Turbidity levels are expected to return to pre-construction levels after construction is complete. No long-term impacts to water quality are anticipated. No violation to any State of Missouri or Illinois water quality standard is anticipated.

F. Hazardous, Toxic, and Radioactive Waste (HTRW). See SEA appendix B, section 2.D., and SEA section VIII. E.

G. Cumulative Impacts. The cumulative effects analysis (CEA) for past, present and reasonably foreseeable actions on the UMRS was presented in the *Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Study*, dated September 2004, and is hereby incorporated by reference. As such, cumulative effects are only briefly discussed here. Generally, the CEA identifies that river regulation, sedimentation and floodplain development have contributed to the gradual decline in the UMRS ecosystem health and quality, and continue to be primary stressors on that system. Environmental management and restoration efforts have not prevented system-wide habitat degradation in the past and increased efforts to improve aquatic habitats, vegetation succession and forest health are required to sustain ecosystem values. The CEA identified that true sustainability can only be met through the integration of upland and mainstem resource objectives and management actions, with integrated planning being a prerequisite to optimizing national benefits through efficient and effective adaptive river management. Implementation of ecosystem restoration features will contribute to offsetting adverse cumulative effects, including the ongoing effects associated with operation and maintenance of the navigation project.

Chapters 8, sections 8.1 through 8.7, pages 247-350; and 9 sections 9.1 through 9.5, pages 351-386 of the System Study provide legally required disclosure and documentation concerning the direct,

indirect, and cumulative environmental impacts attributable to the proposed actions. Chapter 9 sections 9.1 through 9.5, pages 351-386 of the System Study deals specifically with cumulative effects/impacts.

The System Study was developed from numerous reports. One report is the Upper Mississippi River and Illinois Waterway Cumulative Effects Study dated June 2000. This report provided an overview of the geomorphic (Volume I) and ecological (Volume II) effects as measured by the responses of biota to changes that have occurred since impoundment on the UMRS and predicts changes until the year 2050. The Cumulative Effects Study (Volume I and Volume II) is available to the public in the reports link of the NESP website at http://www2.mvr.usace.army.mil/UMRS/NESP/. A second report is a report by the U.S. Geological Survey entitled Ecological Status and Trends of the Upper Mississippi River System 1998, which used data from the Long Term Resources Monitoring Program to describe the ecological condition of the UMRS (see paragraph XVII, *References Cited*).

The associated actions at Lock and Dam 22 include the creation of a new 1200-foot lock in the existing auxiliary lock area, the removal of the tips of three wing dams on the Illinois side of the channel, the construction on a vane dike near the downstream approach wall, and the construction of one wing dam on the Missouri side of the channel. Mooring cells may be constructed above and below the dam on the Missouri side of the channel and switchboats will be operated above and below the new lock chamber. A fish passage structure will be constructed adjacent to the storage yard on the Illinois side of the dam. The habitats affected most by these projects include main channel and the main channel border. The biotic communities most at risk from these projects include fish and mussels.

All of these projects were designed with the aid of a 120:1 physical model and a numeric hydraulic model (Adaptive Hydraulic Model) to predict the location and intensity of river flows due to the construction of these projects. These model findings were compared to hydroacoustic fish surveys and mussel location data and the projects were adjusted to reduce the negative effects on both navigation and the biotic community. Cumulatively these projects will reduce the amount of time required to lock through the dam for commercial navigation and the fish passageway will increase the number of fish that can pass the dam during migrations.

The negative effects of increased navigation on the system will be mitigated through the implementation of the plan identified in chapter 10, Adaptive Mitigation and appendix A of the System Study. This plan includes site specific mitigation for construction impacts at Lock and Dam 22 and mitigation for the effects of increased traffic throughout the UMRS on accelerated bank erosion, backwater and secondary channel loss, plant loss, fish entrainment mortality and historic property destruction.

VIII. SOCIAL AND ECONOMIC EFFECTS OF THE PREFERRED ALTERNATIVE

A. Community and Regional Growth. No significant impacts to the growth of the community or region would be realized as a direct result of the proposed alternative. However, the existence of a cost-effective, efficient transportation system provided by the Upper Mississippi River locks and dams has provided stimulus for growth of river communities and the entire Midwest region. The proposed project would improve navigation efficiency and help provide a safe, reliable, efficient and sustainable

navigation system, and would improve transportation savings by reducing average delay time and costs to tows.

B. Community Cohesion. Overall, no major impacts on community cohesion would be expected. Construction of the proposed new lock would not result in permanent changes to the population of the community, segment or separate parts of the community, change income distribution, or significantly alter the quality of life. Feedback from residents in the immediate project area has indicated general support for this improvement to the navigation system.

C. Displacement of People. No residential relocations would be required for the proposed construction of the new lock facility.

D. Public Facilities and Services. The proposed new lock would positively impact public facilities and services by improving the safety of this public facility. The existing 600-foot lock was opened in 1938 and will remain in place and become an auxiliary lock chamber. Recreation traffic will primarily use this lock once the new 1200-foot lock is completed.

The roads accessing the construction site and staging area would be assessed prior to the beginning of construction in order to ensure the load bearing characteristics of the road and any bridges or culverts are adequate for use by heavy equipment. Highway 79 would likely be the main road used for moving equipment and materials between the construction site and the staging area. At this early design phase, the precise impacts of construction are not known. The specifics of how many extra trucks would be using this road during construction are not available at this time; however, this major highway already carries a large volume of truck and vehicle traffic.

The influx of construction jobs would only be temporary and, as a result, the need for additional housing, utilities or other public facilities would not be anticipated.

It is anticipated that the boat ramp located just below the downstream approach to Lock 22 would need to be closed during construction. This is a Corps of Engineers boat ramp that is available to the public. During this time, the most convenient recreational river access would be available at a public boat ramp approximately 3 miles upstream. It is expected that the ramp near the Lock would return to recreational use following project completion.

E. Life, Health and Safety. The proposed project would upgrade and update the lock facility and all components and features of the lock, substantially improving the stability, reliability and safety of the facility. The new lock would be safer for commercial users since double locking is eliminated, and safer for recreational users as this would remove them from the dangers of locking through when a commercial tow is also in the lock chamber. The creation of traffic congestion from construction vehicles and the increased risk of vehicular accidents are safety concerns that would need to be considered prior to the start of construction and then monitored once construction is underway. Access for school buses and emergency vehicles must also be maintained.

A Phase I Environmental Site Assessment (ESA) was conducted to investigate the risk of Hazardous, Toxic, and Radioactive Waste (HTRW) regarding the 1200-foot new lock project. The ESA revealed

a potential for recognized environmental conditions. The scope of work for the project was not completed at the time the HTRW report was conducted (July 2006). Therefore, potential risks identified in the report must be analyzed at each project stage (feasibility, plans and specifications and construction) to ensure that the concerns are addressed. Further testing (Phase II ESA) may be required if certain construction activities occur.

F. Property Values and Tax Revenues. The proposed construction activities would be expected to create a temporary positive increase in local income and revenue; however, it is not expected to have a significant direct impact on property values or resulting tax revenues. The lock construction project would need additional staging and construction lands, and would seek to use existing Federal lands before seeking other locations. If any additional land is needed, it is anticipated to be on a temporary basis. The proposed project would not result in the conversion of any prime, unique, or State or locally important farmland to nonagricultural uses. Any long-term impacts on property values and tax revenues would be related to community and regional growth.

G. Business and Industrial Growth. An increase in business and industrial activity would occur during the construction process. A portion of the increase would be attributable to the purchase of materials and supplies for the construction of the lock. The remaining increase would result from purchases made by construction workers. No long-term impacts are anticipated in the project vicinity.

Advanced notification of the lock closure for construction would minimize impacts to the navigation industry. During some portions of the construction cycle, commercial and recreational traffic could still navigate the river.

H. Labor Force and Employment. The proposed lock construction alternative would take approximately 6-9 years to complete. There would be short-term positive impacts from an increase in area employment and local income during that time. An estimate of the average number of workers that would be employed for construction cannot be determined at this time; however the workers would likely be hired through labor unions at Saverton, Missouri and other nearby communities within a reasonable commuting distance of the project site.

Long-term impacts to employment or the labor force in the Saverton area would be related to business and industrial growth resulting from the indirect positive impacts of improved efficiency of the Upper Mississippi River navigation system as a whole.

I. Farm Displacement. No farms would be displaced by the proposed construction activity at the lock. The staging area would impact approximately 61 acres of agricultural land. Following project completion this staging area would later be used for dredged material placement.

J. Noise. The project area consists of a few residential properties located about 0.5 mile downstream of the lock, and the town of Saverton is approximately 1.5 miles upstream of the construction site. No sensitive receptors are nearby. The currently-identified downstream staging area is about 400 feet from one residential property. Heavy machinery would temporarily increase noise levels during project construction and some low-level blasting may be used for the rock excavation and concrete

demolition. Noise from the periodic blasting of concrete could be diminished by appropriate means, such as the use of blast mats. If this work would take place during the winter months, people are indoors and the sound would be less audible or disturbing.

It is unlikely that the increased noise levels would be a major disturbance to users of the Park 'n Fish public use area located on the Illinois side of the river directly across from the construction site.

The proposed improvements would help commercial tows move more quickly through the lock. Noise impacts from any increase in traffic would be mitigated by eliminating the breaking and making of tows, which is a relatively noisy operation at the locks. The project would result in less waiting of tows near the lock, which should reduce noise at the existing waiting areas.

K. Aesthetic Values. The aesthetic appeal of any type of construction activity is low; however impacts would be minimized based on the rural setting of this proposed project. The staging area on lock property would be restored to maintained lawn following construction. The agricultural field would be converted to a dredged material placement site for the chronic dredge cut called Lock and Dam 22 Lower.

IX. COMPLIANCE WITH ENVIRONMENTAL QUALITY STATUTES

A. Endangered Species Act of 1973, as amended. The proposed action has been coordinated with the U.S. Fish and Wildlife Service (USFWS), Missouri Department of Natural Resources (MDNR), the MDOC, the IDNR, and other interested conservation groups. The Districts initial coordination letters in appendix A show the organizations and individuals contacted. The tier II biological assessment can be found in appendix F. If implemented, the project, as proposed, would be in full compliance.

B. National Historic Preservation Act of 1966, as amended through 2000 (NHPA). To afford protection to known and unknown significant historic properties (including the *Upper Mississippi River Navigation Project, 1931-1948*) resulting from the implementation of the NESP navigation improvements, the signatories drafted and executed the ***PROGRAMMATIC AGREEMENT*** *Among the U.S. Army Corps of Engineers Mississippi Valley Division, St. Paul District, Rock Island District, and St. Louis District, U.S. Fish and Wildlife Service, Illinois, Iowa, Minnesota, Missouri, and Wisconsin State Historic Preservation Officers, and Advisory Council on Historic Preservation, Regarding Implementation of the Upper Mississippi River-Illinois Waterway System Navigation Feasibility Study* (PA). As regulated by 36 CFR Part 800.8(c)(1) of the NHPA, the draft PA was made available within the draft System Study, as promulgated under the National Environmental Policy Act, for review and comment by the State Historic Preservation Officers, the Advisory Council on Historic Preservation, Native American Indian Tribes, and other interested parties. The executed PA was provided to all signatories to this agreement, included in documentation of the PEIS Record of Decision, and will be included in any subsequent NESP or NEPA document that addresses potential effects to historic properties (appendix E).

This proposed new 1200-foot lock has been coordinated with the signatories of the PA and the tribes and other consulting parties which desired to be placed on the distribution list for any documents

associated with, or generated by, the study, proposal, and/or implementation of the UMR-IWW System Navigation Feasibility Study related projects. This coordination and consultation was conducted during the UMR-IWW System Navigation Feasibility Study, during the review period of the *Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Study* (System Study, 24 September 2004), and by District letters dated June 2, 2006 and October 25, 2006, which included a description of the new 1200-foot lock project and potential adverse effects.

The System Study also documented systemic and site-specific compliance with:

Native American Trust Responsibilities
National Historic Preservation Act of 1966, as amended (16 U.S.C. 470 et seq.).
Archaeological Resources Protection Act, as amended (16 U.S.C. 470aa et seq.)
Abandoned Shipwreck Act of 1987 (43 U.S.C. 2101-2106)
American Indian Religious Freedom Act of 1978 (42 U.S.C. 1996)
Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001 et seq)
Antiquities Act (16 U.S.C. 431 et seq.)
Indian Sacred Sites (Executive Order 13007)
Consultation and Coordination with Indian Tribal Governments (Executive Order 13175)

In compliance with the NHPA and executed PA, if any construction activities and ancillary actions result in the discovery of, or potentially affect, significant or undocumented historic properties, the District shall discontinue the undertaking and resume coordination with the appropriate SHPOs, tribes, agencies, and other consulting parties to identify the significance of the historic property and determine potential effects. All consulting parties must be aware that the specific locations of historic and archaeological properties are subject to protection through nondisclosure under Section 304 of the National Historic Preservation Act. All maps subject to public review/access shall not contain any information on archeological sites. This information is not to be released in order to protect the resources at the sites.

The District is concerned about impacts to those traditional cultural properties and sacred sites recognized by Native Americans, tribes, ethnic and religious organizations, communities, and other groups as potentially affected by the new 1200-foot lock project. Presently, the District is unaware of any traditional cultural properties or sacred sites within this reach of the UMRS. Those on the preliminary Consulting Parties List [this list included approximately 70 Native American Indian Tribes (Tribes)], Tribal Historic Preservation Officers (THPOs), and other Native Americans for the PEIS were asked to please notify the District, of any concerns about or potential effects to, traditional cultural properties. To facilitate tribal coordination, the District requested that those on the preliminary Consulting Parties List refer to the National Park Service, NRHP Bulletin 38, *Guidelines for Evaluating and Documenting Traditional Cultural Properties;* consulting parties were provided with a Traditional Cultural Property and Sacred Site Form for submittal to the District. Traditional Cultural Property location and ancillary information may not be disclosed to the public pursuant to Section 304 of the NHPA and the District will secure this information from the general public.

If human remains, funerary objects, sacred objects, or objects of cultural patrimony are encountered or collected, the District will comply with all provisions outlined in the appropriate State acts, statutes, guidance, provisions, etc., and any decisions regarding the treatment of human remains will be made

recognizing the rights of lineal descendants, Tribes, and other Native American Indians and under consultation with the SHPO/THPO(s) and the other consulting parties, designated Tribal Coordinator, and/or other appropriate legal authority for future and expedient disposition or curation. When finds of human remains, funerary objects, sacred objects, or objects of cultural patrimony are encountered or collected from Federal lands or federally recognized tribal lands, the District will coordinate with the appropriate federally recognized Native American Tribes, pursuant to the Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. § 3001 *et seq*.) and its implementing regulations (43 CFR Part 10).

C. Federal Water Project Recreation Act. It is anticipated at this time that the existing boat ramp will be fully functional for public use after lock construction is complete. Use of the boat ramp will be prohibited during construction. If implemented, the project, as proposed, would be in full compliance.

D. Fish and Wildlife Coordination Act. Project plans have been coordinated with the USFWS, the MDNR, MDOC and the IDNR. Coordination responses can be found in appendix A. If implemented, the project, as proposed, would be in full compliance. The draft Coordination Act Report can be found in appendix C.

E. Wild and Scenic Rivers Act of 1968, as amended. The UMRS within the District is not listed in the National Rivers Inventory (NRI). The NRI is used to identify rivers that may be designated by Congress to be component rivers in the National Wild and Scenic Rivers Systems. If implemented, the project, as proposed, would be in full compliance.

F. Executive Order 11988 (Flood Plain Management). Implementation of the preferred alternative would avoid, to the extent possible, long- and short-term adverse impacts associated with the occupancy and modification of the base floodplain and avoids direct and indirect support of development or growth (construction of structures and/or facilities, habitable or otherwise) in the base floodplain wherever there is a practicable alternative. Therefore, the project, as proposed, would be in full compliance.

G. Executive Order 11990 (Protection of Wetlands). The project, as proposed would not impact wetlands. The wetland area within the ag filed staging area would not be impacted by staging activities or dredged material placement. If implemented, the project, as proposed, would be in full compliance.

H. Executive Order 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations). This executive order (EO) requires the fair treatment and meaningful involvement of all people regardless of race color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies. Fair treatment means that no group of people, including a racial, ethnic, or a socioeconomic group should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of Federal, State, local, and tribal programs and policies. Meaningful involvement means that:

1) potentially affected community residents have an appropriate opportunity to participate in decision making about a proposed activity that could affect their environment and/or health;
2) the public's contribution can influence the regulatory agency's decision;
3) the concerns of all participants involved will be considered in the decision making process; and
4) the decision makers seek out and facilitate the involvement of those potentially affected.

The District has complied with the provisions of the EO through public meetings, newsletters, coordination and the NEPA review process. No concerns regarding this Executive Order surfaced during this process.

I. Executive Order 13186 (Responsibilities of Federal Agencies to Protect Migratory Birds). Implementation of the preferred alternative, to the extent appropriate and practicable, would promote the conservation of migratory birds. This project is not likely to have a measurable negative impact on migratory bird populations. This project would be in full compliance.

J. Clean Water Act (Sections 401 and 404), as amended. The use of lock construction materials would not require the imposition of any controls to ensure that receiving water maintains compliance with water quality standards. Land based staging areas will be controlled by employing traditional erosion prevention techniques. Certification under Section 401 of this Act from Missouri and Illinois would be received before construction of this project would begin. No significant adverse impacts to water quality would result.

K. Clean Air Act, as amended. It is not anticipated that the proposed navigation efficiency improvement project would result in either short- or long-term violations to air quality standards. It is not anticipated that the outdoor atmosphere would be exposed to contaminants/pollutants in such quantities and of such duration as may be or tend to be injurious to human, plant, or property, or which unreasonably interferes with the comfortable enjoyment of life, or property, or the conduct of business. If implemented, the proposed project would be in full compliance.

L. Farmland Protection Policy Act of 1981. The proposed project would not result in the conversion of any prime, unique, or State or locally important farmland to nonagricultural uses. If implemented, the project, as proposed, would be in full compliance.

M. National Environmental Policy Act of 1969, as amended. Following the public review period for this SEA, the signing of the Finding of No Significant Impact (FONSI) would constitute NEPA compliance.

N. National Economic Development (NED) Plan. The NED Plan is the plan which best satisfies the Federal planning objectives of increasing the nation's output of goods and services and produces the most improvement to the national economic efficiency. The proposed project would be consistent with the NED objective. If implemented, the project, as proposed, would be in full compliance.

O. Migratory Bird Treaty Act of 1918, as amended. The purpose of this Act is to protect birds that have common migration patterns between the United States and Canada, Mexico, Japan, and Russia. It regulates the take and harvest of migratory birds. The USFWS will be provided this SEA for review and will work with the District for compliance with this Act.

P. Bald and Golden Eagle Protection Act of 1940. This law provides for the protection of the bald eagle (the national emblem) and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession and commerce of such birds, including eagle parts, eggs, and nests. An active nest of the previously federally-threatened bald eagle (*Haliaeetus leucocephalus*) is located near the lower tip of Taylor Island at approximate RM 299.0R. Since the preparation of this SEA the bald eagle has been de-listed from the List of Threatened and Endangered Species due to recovery. The bald eagle will continue to be protected by the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. This project would be in full compliance.

X. ENVIRONMENTAL IMPACTS OF NON-PREFERRED ALTERNATIVE

A. No Federal Action. Refer to System Study chapter 7.1., sections on Objectives E1 (page 222), E2 (page 227), and E3 (page 227).

B. Small Scale Measures. Refer to System Study chapter 7.1., sections on Objectives E1 (page 222), E2 (page 227), and E3 (page 227).

XI. PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

A. Boat Ramp. The existing boat ramp along the RDB near the end of the lower guidewall of the existing lock will be closed during the approximate 6-9 year construction period, with the actual length of construction dependant on funding. Following construction, the ramp will be re-opened for public use, provided utilization of the new 1200-foot lock does not decrease public safety.

B. Traffic. Some increase in truck/equipment traffic is inevitable during the construction period. Traffic should increase over existing levels from the staging areas to the lock and dam area of construction. At this time, a precise estimate of the increase is not possible.

C. Benthos. Given the nature of this navigation improvement project, it is unavoidable that some existing substrate will be altered. With project construction, lock/approach wall concrete will replace the current sediment and substrate community in new lock location 3 (auxiliary lock location).

New rockwork (emergent wingdam and vane dike) will cause the current sand, sand/gravel substrate to be replaced with riprap.

Wingdam shortening on the LDB and removal of the stub dike on the RDB will cause the current riprap substrate and benthic community to change to a sand/gravel substrate and associated benthic community will colonize the area.

D. Mussels. Impacts to mussels on the RDB, upstream of the dam, due to the construction of the emergent wingdam are unavoidable. Prior to construction, mussel relocation to another part of the same mussel bed should mitigate impacts (see appendix G). Due to the potential adverse impacts to mussels in the staging area access corridor at RM 300.4R, relocation using proven relocation guidelines (Dunn 1999) should mitigate impacts.

E. Bottomland Hardwoods. Impacts to approximately 0.75 acre of bottomland hardwoods from construction of the terrestrial portion of the emergent wingdam are unavoidable. Mitigation should lessen habitat loss (see appendix G).

F. Noise. Heavy machinery would temporarily increase noise levels during project construction and some low-level blasting may be used for the rock excavation and concrete demolition. Noise from the periodic blasting of concrete could be diminished by appropriate means, such as the use of blast mats.

G. Aesthetics. The aesthetic appeal of any type of construction activity is low; however impacts would be minimized based on the rural setting of this proposed project. The staging area on lock property would be restored to maintained lawn following construction. The agricultural field would be converted to a dredged material placement site for the chronic dredge cut called Lock and Dam 22 Lower.

H. Exhaust Fumes. The increase in exhaust fumes from tows, truck traffic, heavy machinery, etc. during new lock construction is unavoidable. This impact will not be permanent and will not be of such quantities and of such duration as may be or tend to be injurious to human, plant, or property, or which unreasonably interferes with the comfortable enjoyment of life, or property, or the conduct of business.

I. Wildlife. Local wildlife has become accustomed to some level of disturbance due to the proximity to the lock and navigation channel, recreational boat ramp, and nearby houses. Temporary avoidance of the project area by wildlife will cause only short-term and minor impacts to area wildlife and fish resources.

J. Upper Mississippi River Navigation Project, 1931-1948, Lock and Dam No. 22 Historic District. The project as proposed will not be in compliance with the Secretary of the Interior's *Standards for Rehabilitation and Guidelines for Rehabilitating Historic Buildings*, since destruction, modification, and alteration of the original contributing components, designs, elements, and attributes will occur within the Lock and Dam No. 22 Historic District. Thus, the distinguishing original qualities or character of Lock and Dam 22 facility will adversely affect the Lock and Dam No. 22 Historic District.

XII. RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

The local short-term impacts of the proposed action and the use of resources for it are consistent with the maintenance and enhancement of long-term productivity for the local area, region, and nation. Creation of the project would support growth and development of employment and population in the region. The proposed project would streamline activities that would occur regardless of project implementation and would support short-term and long-term goals by improving speed, efficiency, capacity, and safety through Lock and Dam 22.

The level of development anticipated provides the basis for improved delivery of services and goods throughout the Upper Mississippi River System. As population grows and demand for food and other natural resources increases, the new lock would be beneficial for the needs of the local area, region, and country. Additionally, it will benefit the local area as congestion and shipping times throughout the region are reduced.

XIII. ANY IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES IF THE PROPOSED ACTION SHOULD BE IMPLEMENTED

The proposed action would require the expenditure of human and fiscal resources and the potential modification of natural resources. Construction would require the expenditure of materials that are generally not retrievable. Considerable amounts of fossil fuels, labor, and construction materials such as cement, aggregate, iron, and gravel would be expended and large amounts of labor and natural resources would be necessary in the fabrication and preparation of construction materials. However, although these materials are generally not retrievable, they are not in short supply and their use would not have an adverse effect upon continued availability of these resources. In addition, construction would also require large, one-time investment of Federal funds that are not retrievable.

The commitment of these resources is based on the concept that residents both within the project area, as well as the region and nationally, would benefit by improvements in the quality of the overall regional transportation system. The facilities would improve the navigation efficiency along a substantial reach of the Upper Mississippi River. The facilities should provide a positive influence on the economy of the local area, region, and nation and the livelihood of its citizens.

No irreversible or irretrievable commitment has occurred which would have the effect of foreclosing the formulation or implementation of any reasonable and prudent alternative. No commitment of resources has occurred that would prejudice the selection of any alternative before making a final decision on this project.

XIV. RELATIONSHIP OF THE PROPOSED PROJECT TO LAND-USE PLANS

Implementation of the preferred alternative would not result in any significant changes to the project area. It is not anticipated that the preferred alternative would contribute negatively to cumulative impacts on land use and infrastructure. Most impacts would be minor and short term and would result in little to no negative addition to cumulative impacts. There are no foreseeable long-term additions to

cumulative impacts. Upon project completion, the area would return to a semblance of its former self, with the increased capability of facilitating navigation.

The project is consistent with current land use. The lock location and wingdams for navigation, and the staging areas and dredged material placement sites are areas currently included in the District's long-term dredging program.

XV. CONCLUSIONS

The anticipated natural resource impacts for this project are significantly less than was assumed in earlier planning stages (e.g. ENV Report 7, "Green Report"). This was accomplished by selecting low impact staging areas and dredged material placement sites, avoiding sensitive habitats/resources, and the elimination of the proposed upstream wingdam field. Recycling the rock removed from the RDB stub dike and the three LDB wingdams to be utilized in another NESP project (fish passage at Lock and Dam 22) lowers costs and reduces impacts in the area of the wingdams/stub dike.

XVI. COORDINATION

Two public outreach activities were conducted to inform the public about the proposed projects at Lock and Dam 22 – one in May 2005 and one in May 2006.

The first public outreach activity for Lock and Dam 22 was a public meeting on May 10, 2005, in Saverton, Missouri. The purpose of the meeting was to discuss potential plans for and obtain public input on two projects: 1) construction of a new 1200-foot lock and 2) fish passage. A similar meeting pertaining to Lock and Dam 25 was held the following day on May 11, 2005.

The May 10th and May 11th meetings were announced jointly and were the first public meetings held since the Corps of Engineers received funding from Congress to begin the pre-construction, engineering, and design (PED) work on some 33 initial projects on the UMRS. These meetings also were part of the NEPA scoping process.

The meetings were announced in several ways. "Head's up" public meeting information was emailed to congressional aides. A flyer was mailed to congressional representatives; federal, state, county, and local representatives; and businesses, groups, and persons in the Lock 22 and Lock 25 areas (approximately 500 persons) and was emailed to persons on the Navigation Environmental Coordination Committee/Economics Coordinating Committee mailing list. A news release was emailed to nearly 100 media outlets. The April 2005 study newsletter, which contained information about the meetings, was mailed to a readership of over 10,600 persons. In addition, the newsletter and meeting announcement flyer were posted on the study's website at http://www2.mvr.usace.army.mil/umr-iwwsns/.

Approximately 45 persons attended the Lock 22 meeting. The meeting began with an informal open house, followed by a formal presentation, and then a question and answer/comment period. Among the questions asked were: Will the lock project have any impact or lessening of flooding, especially in the Saverton area? Will the fish passage alternatives reduce flood heights by widening the floodplain; lower frequency of flood heights? Will recreation be considered with the fish passage project? Will

there be an opportunity for interpretive areas in the fish passage areas? You're spending a lot on fish, but what about improving the boat ramp? Could the auxiliary lock be used for recreational boats? Will there be mitigation with the new construction? Does channel modification include wing dam construction? What type of gates will be used on the new lock? There is concern about the Asian carp (Asian carp are above and below Lock 22). Is the Corps checking other methodologies?

Nineteen persons returned comment sheets. The majority of those persons agreed that attending the public meeting provided an opportunity to gain information and a better understanding of the new Lock 22 and Fish Passage projects and was worth their time.

Among the comments offered were the desire for continued fishing and recreation opportunities at the lock; maintaining and improving the boat ramp; and adding an upstream boat ramp. There was concern about the increasing Asian carp population. If the new lock projects go forward, there was caution to maintain the roads and bridges during and after the project. If the future suggests that tows will exceed 1200 feet, a suggestion was that it might be appropriate to develop associated mooring cells at the same time as the lock or fish passage projects. Also, when planning and designing the new lock and approach wall, the future should be looked at far enough so when the barges increase, there's not the same problem. One respondent advised basing decisions on the best science; another asked that the public be kept informed and given the opportunity to voice opinions. Two other comments were that once the fish passage structure is constructed, people should be aware of this positive environmental project completed by the Corps; and the fish passage should not impact the navigation area of the project.

The second public outreach activity for Lock and Dam 22 was a public meeting to discuss the status of the potential plans for the design and construction of a new 1200-foot lock and the design and construction of a fish passage structure at Lock and Dam 22 was held on May 9, 2006 in Saverton, Missouri. The objective of the public meeting was to update the public on the activities that have occurred on both projects since the May 2005 public meeting and to gather the attendees' comments.

A flyer, dated April 2006 and announcing the meeting, was mailed to nearly 500 addresses including congressional interests; Federal, State, and local governmental agencies; businesses, environmental organizations, media, and the general public. The District, Public Affairs Office also sent a news release to over 60 area television and radio stations and newspapers. The flyer also was posted on the study's website at http://www2.mvr.usace.army.mil/NESP/.

Thirty-eight members of the public attended the public meeting. The meeting format included presentations on the status of both projects, followed by a question and answer session. After the presentations, meeting attendees were invited to ask questions which included: Will the current 600-foot lock remain operational during construction for small water crafts? Are the potential 1200-foot lock locations based on traffic? Will there be a visitor's center at the new lock? Where would a staging area during construction be? Was a study done on how to improve the ramp so people can fish off of it? How close would a spillway ladder get to the fish? Would the fish passage affect the backwaters? Where will the fish ladder go?

Thirteen comment sheets were returned. The majority of those persons felt that attending the public meeting provided an opportunity to gain information and a better understanding of the new Lock 22 and Fish Passage projects and was worth their time.

Comments included requests to: consider a visitor center; be sure the fish ladder allows hydropower in accordance with a 1983 Rock Island study; and to monitor public activity at the lock at night. Respondents commented on the current condition of the existing boat ramp and asked that a temporary ramp be built during construction. Some suggested alternate locations for a boat ramp. Children's safety during construction was a concern. Some commented that Highway E is narrow and in bad condition now and are concerned about the condition during/after construction. One respondent was not in favor of extending the lock, however supported a fish ladder.

The Rock Island District has complied with the provisions of EO 12898 (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations) through: April 2005 newsletter and May 2005 and May 2006 public meeting flyer; May 2005 and May 2006 public meetings, which generated many comments from the attendees; coordination; and the NEPA review process. No concerns regarding EO 12898 surfaced during this process.

A public meeting to provide a further update on the Lock and Dam 22 New Lock and Fish Passage projects is tentatively planned for summer 2008.

Coordination for the project has been and will be maintained with the following State and Federal agencies and other interested publics:

U.S. Fish and Wildlife Service
U.S. Environmental Protection Agency, Region 5
U.S. Environmental Protection Agency, Region 7
U.S. Department of Agriculture
U.S. Geological Survey
U.S. Department of Transportation
U.S. Department of the Interior, National Park Service
U.S. Department of the Interior, Regionally Historic Preservation Officer
U.S. Department of the Interior, National Park Service, Midwest Region
U.S. Army Engineer Division, Mississippi Valley Division
U.S. Army Engineer District, St. Paul
U.S. Army Engineer District, St. Louis
U.S. Army Engineer District, Chicago
National Park Service, Midwest Region
Effigy Mounds national Monument
Advisory Council on Historic Preservation
Illinois Department of Natural Resources
Illinois Department of Transportation
Illinois Environmental Protection Agency
Illinois Historic Preservation Agency
Illinois State Museum
Iowa Department of Natural Resources
Iowa Department of Ag and Land Stewardship
Iowa Historic Preservation Agency
Minnesota Department of Natural Resources
Minnesota Department of Transportation

Minnesota Historical Society
Minnesota Marine Art Museum
Missouri Department of Conservation
Missouri Department of Natural Resources
Missouri Department of Natural Resources, Office of Historical Preservation
Missouri Department of Transportation
Wisconsin Department of Natural Resources
State Historical Society of Wisconsin
ISM Dickson Mounds Museum
Menominee Indian Tribe of Wisconsin
Citizen Potawatomi Nation
Delaware Tribe of Western Oklahoma
Sac and Fox Tribe of the Mississippi in Iowa
Chocktaw Nation of Oklahoma
Dubuque Historical Society & Mississippi River Museum & Aquarium
National Audubon Society
Sierra Club, Midwest Office
The Nature Conservancy
Izaak Walton League, Midwest Office
Upper Mississippi, Illinois & Missouri Rivers Association
Upper Mississippi River Basin Association
National Grain & Feed Association
National Corn Growers Association
MARC 2000
Mississippi River Basin Alliance
Mississippi River Citizen Commission
Southern Illinois University
American Waterways Operators
Camp Oko Tipi
Bear Creek Archeology, Incorporated

Appendix D includes the distribution list for this SEA.

During the coordination efforts for this project, numerous letters from the District were sent to various agencies, at various times. These initial letters often contained attachments that were sent in previous letters. In an effort to eliminate redundancies, the District omitted that information (e.g. maps, information papers, PA) in appendix A when that information occurs elsewhere in this SEA, either elsewhere in appendix A or in the SEA.

The body of the SEA and appendices has addressed the questions and concerns expressed in the following early coordination letters.

The IDNR, Office of Realty and Environmental Planning responded by letter dated April 12, 2006. This office provided the District with requested information on sensitive resources in the vicinity of Lock and Dam 22 that may be impacted by the proposed new lock project. The letter references the following:

1) an identified mussel bed supporting state-threatened black sandshell near the flank of Cottel Island at RM 300.5L (the vicinity where the District is currently proposing fleeting during construction);
2) other listed mussel species in the Lock and Dam vicinity such as state-endangered spectacle case, and state-threatened butterfly and ebonyshell;
3) federally-endangered Higgins eye pearly mussel 0.5 mile downstream of the Lock and Dam in the 1990s;
4) a federally-threatened active bald eagle nest near the tip of Taylor Island at RM 299.0;
5) state-endangered lake sturgeon has been collected from the tailwaters within the last year; and
6) the Missouri State mussel sanctuary along the right descending bank downstream of the Lock and Dam.

The U.S. Environmental Protection Agency, Region VII, NEPA Reviewer, Environmental Services Division responded by letter dated April 13, 2006. Their main environmental and human health concerns include wetlands, water quality, and cumulative floodplain impacts. They suggest the project area may have potential for neighborhoods that are minority and/or low income and should be duly considered with respect to disproportionate impacts under Environmental Justice Executive Order 12898. They recommend that the SEA also address any project related impacts or improvements to water quality in the UMRS or its tributaries and are currently listed on the Missouri or Illinois 303(d) list as impaired water bodies. They request the SEA evaluate the cumulative impacts for potential increased flooding risk both upstream and downstream during high storm events.

The United Stated Department of the Interior, Fish and Wildlife Service, Rock Island Field Office responded by letter dated May 3, 2006. Because the project plan described in the District's coordination letter differed from the design evaluated by the USFWS and the Corps in *Environmental Report 7 – Site Specific Habitat Assessment*, September 1998, the HEP analysis should be updated. This update would allow us to re-evaluate site-specific construction impacts of the revised plan and reassess mitigation needs. Because the lock improvements/navigation efficiency design alternatives and the Fish Passage project are so closely situated, the District should consider integrating the two projects into one Environmental Assessment. For the new 1200-foot lock project, a Tier II BA must now be conducted, as indicated in the Programmatic Biological Opinion, since site-specific Section 7 Consultation was not completed. This Tier II BA would evaluate potential impacts to the federally-endangered species of Indiana bat (*Myotis sodalis*), gray bat (*Myotis grisescens*), and fat pocketbook (*Proptera capax*); federally-threatened bald eagle (*Haliaeetus leucocephalus*); and federally-listed candidate species spectaclecase mussel (*Cumberlandia monodonta*), and sheepnose mussel (*Plythobasus cyphyus*).

The USFWS is concerned that the staging on the right descending bank at approximate RM 300.2 could impact the Missouri Department of Conservation mussel sanctuary. It is concerned that docking or runoff at the staging area could impact the mussel community. It suggests that docking of barges and work boat movement at the downstream end of the staging area (adjacent to the upstream boundary of the sanctuary) may need to be flexible enough to avoid this area of the staging area. The USFWS expresses the need for a mussel survey of the entire construction zone may be necessary to assess impacts of the current new 1200-foot lock proposal. Any dredging needed to operate and

maintain the navigation channel to the new lock, upstream of the dam needs to be assessed in regard to mussels. Impacts to bottomland hardwoods and mussels also need to be evaluated at the fleeting areas along Cottel Island.

The Missouri Department of Conservation responded by letter dated May 15, 2006. A diverse/important mussel bed/mussel sanctuary exists in the area of the proposed downstream staging area. They believe that additional surveys are warranted. The species of concern are:

sheepnose (state endangered);
fat pocketbook (state endangered);
spectaclecase (state rare);
ebony shell (*Fusconaia ebena*) (state endangered);
hickorynut (*Obovaria olivaria*) (state rare);
wartyback (*Quadrula nodulata*) (state rare);
black sandshell (*Ligumia recta*) (state imperiled); and
rock pocketbook (*Arcidens confragosus*) (state rare).

Several common mudpuppies (*Necturus maculosus*) (Missouri species of concern-status undetermined) were found in 2002 in the lock during repairs.

The MDOC also requests that any mudpuppies encountered during dewatering during lock construction be salvaged and relocated. Fish species of concern include:

lake sturgeon (*Acipenser fulvescens*) (state endangered);
blue sucker (*Cycleptus elongatus*) (state rare);
Mississippi silvery minnow (*Hybognathus nuchalis*) (state rare to uncommon);
western sand darter (*Ammocrypta clara*) (state imperiled to rare); and
paddlefish (*Polyodon spathula*) (state rare).

In addition, the MDOC questions how new lock construction, including access and barge fleeting, would impact the Robert H. Thompson Conservation Area at RM 300.5R. They also request that the District notify them if project construction impacts the Edward Anderson Conservation Area at RM 299.3R. Finally, they express concern that the boat ramp below the lock would be closed during and following construction. If so, they request the District consider providing alternative access in that part of the river.

The Illinois Historic Preservation Agency responded by letter dated October 27, 2006. They concur with the District's adverse effect determination.

The Missouri Department of Natural Resources responded by letter dated July 11, 2006. Relative to the use of the Lock 22 NESP, the Missouri Department of Natural Resources concurred that the two archeological properties are eligible for inclusion to the National Register of Historic Places and will have No Adverse Effect as a result of the use of the Lock 22 NESP staging area.

The Missouri Department of Natural Resources responded by letter dated July 1, 2005. Relative to the use of the Lock 22 NESP staging area, the Missouri Department of Natural Resources suggested an avoidance plan for two potentially significant archeological sites.

The Missouri Department of Natural Resources responded by letter dated November 3, 2006. The Department concurred with the Adverse Effect determination on the historic fabric of Lock and Dam 22. They also concurred with the proposed mitigation to include the production and printing of a complete Upper Mississippi River watershed educator's guidebook.

The Illinois Historic Preservation Agency responded by stamping "CONCUR, By' Anne E. Haaker, Deputy State Historic Preservation Officer, Date: November 28, 2006" on the District letter dated October 25, 2006. The District letter focused on an Adverse Effect determination for the NESP project and 1) producing and printing a complete Upper Mississippi River watershed educator's guidebook, with a marketing plan for its distribution and/or sales; and 2) completion of Historic American Engineering Record (HAER) recordation for the Illinois Waterway.

The Sac and Fox Nation of Missouri in Kansas and Nebraska responded to the use of the Lock 22 NESP staging area by letter dated September 22, 2006. The Sac and Fox of Missouri in Kansas and Nebraska have no objections.

The Choctaw Nation of Oklahoma responded by letter dated September 25, 2006. The Choctaw nation of Oklahoma stated that the Lock 22 NESP staging area is out of their area of interest.

XVII. REFERENCES CITED

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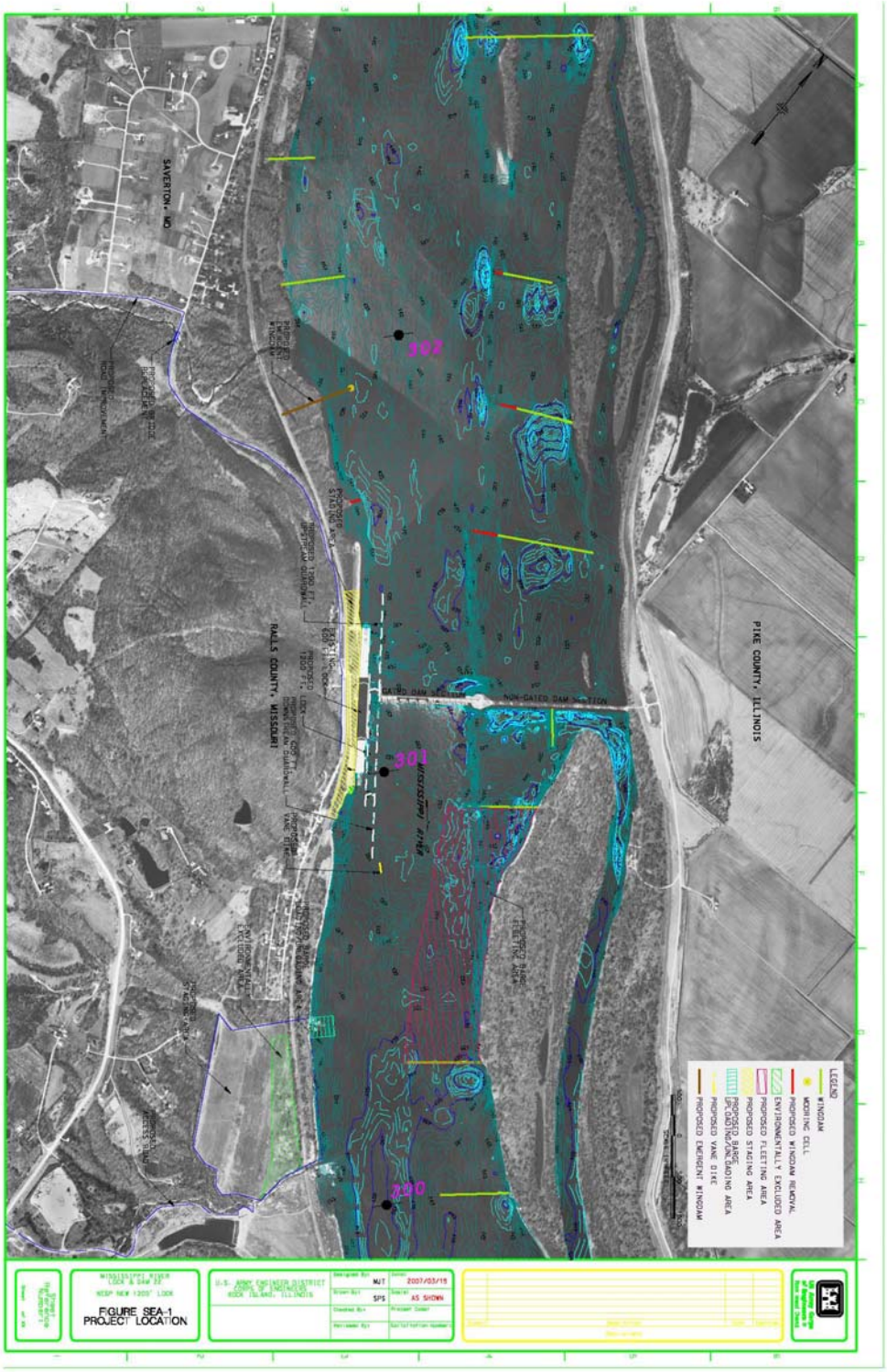

Figure SEA-1. Project Location

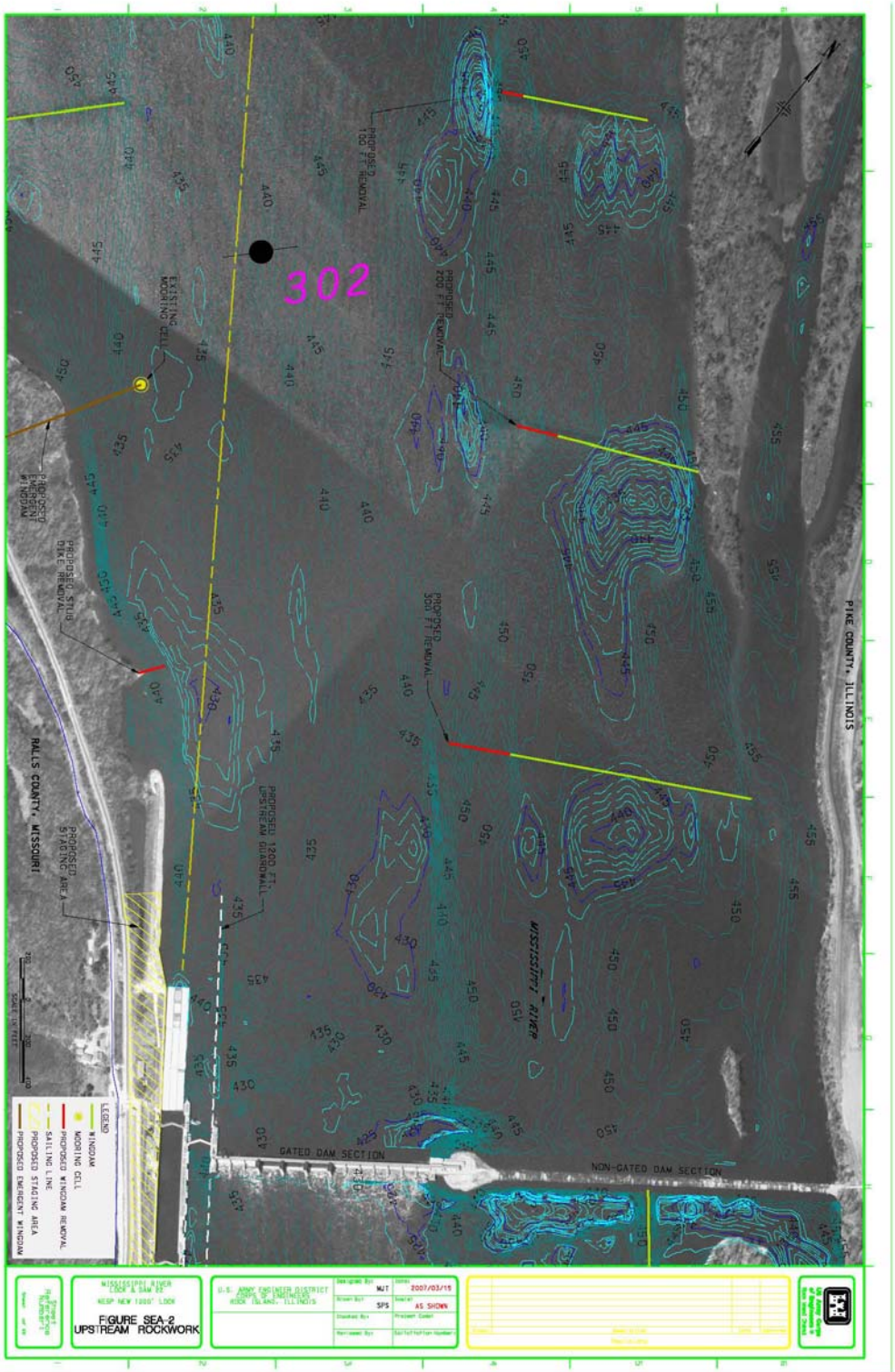

Figure SEA-2. Upstream Rockwork

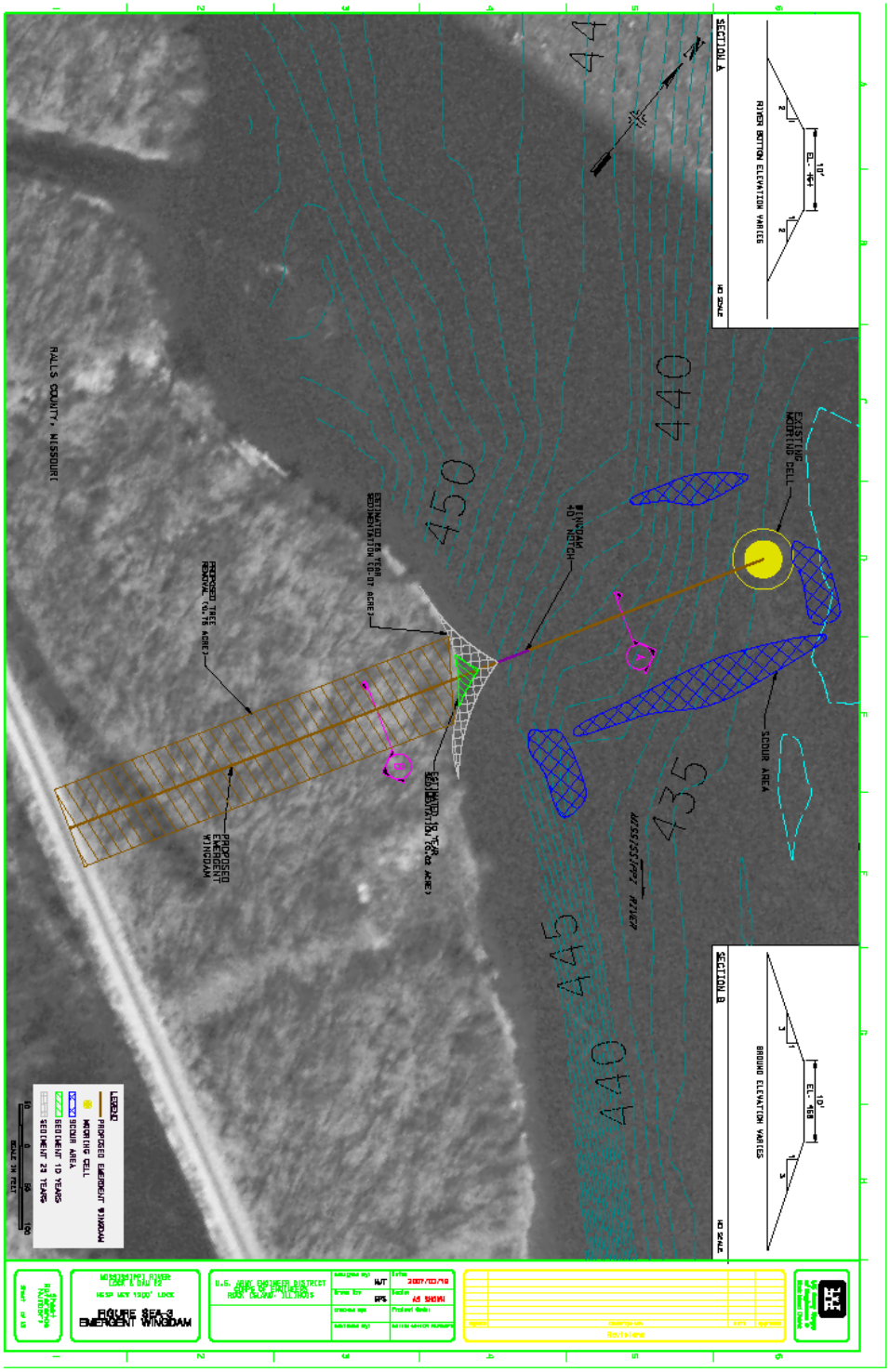

Figure SEA-3. Emergent Wingdam

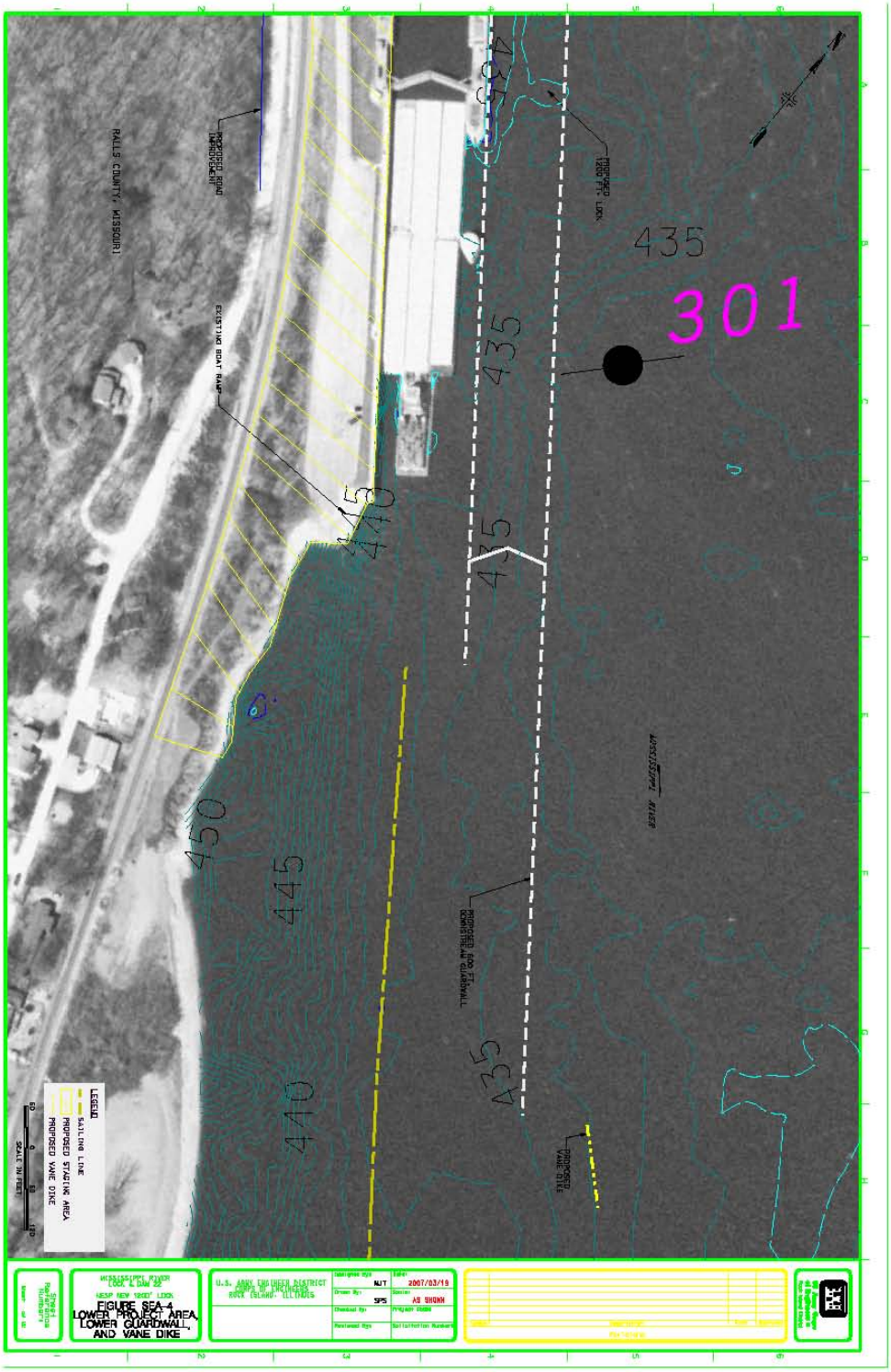

Figure SEA-4. Lower Project Area, Lower Guardwall and Vane Dike

Figure SEA-5. Downstream Staging Area

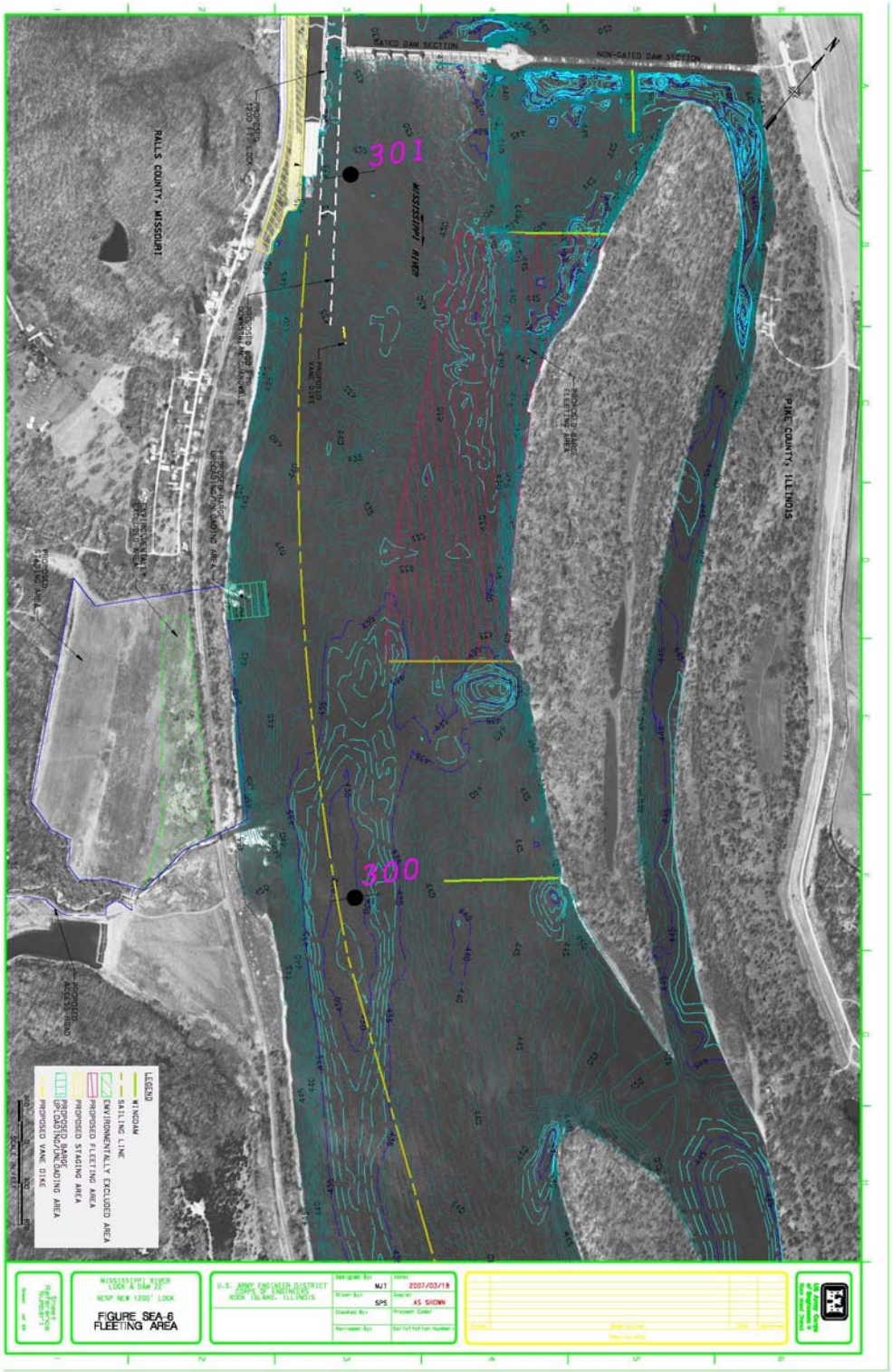

Figure SEA-6 Fleeting Area

ACRONYMS

AAHU	Average Annualized Habitat Units
BA	Biological Assessment
BLH	Bottomland Hardwoods
BO	Biological Opinion
CEA	Cumulative Effects Analysis
CFR	Code of Federal Regulations
Corps	U.S. Army Corps of Engineers
District	U.S. Army Corps of Engineers, Rock Island District
EO	Executive Order
ESA	Environmental Site Assessment
FONSI	Finding of No Significant Impact
HEP	Habitat Evaluation Procedure
HTRW	Hazardous, Toxic, and Radioactive Waste
IDNR	Illinois Department of Natural Resources
L or LDB	Left Descending Bank
MCB	Main Channel Border
MDNR	Missouri Department of Natural Resources
MDOC	Missouri Department of Conservation
MSHPO	Missouri State Historic Preservation Office
NEPA	National Environmental Policy Act
NESP	Navigation and Ecosystem Sustainability Program
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
NRI	National Rivers Inventory
PA	Programmatic Agreement
PCB	Polychlorobiphenyls
PED	Pre-construction, Engineering, and Design
PEIS	Programmatic Environmental Impact Statement
R or RDB	Right Descending Bank
RM	River Mile
ROD	Record of Decision
SEA	Supplemental Environmental Assessment
THPO	Tribal Historic Preservation Office
UMR-IWW	Upper Mississippi River-Illinois Waterway
UMRS	Upper Mississippi River System
USFWS	U.S. Fish and Wildlife Service

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

NEW 1200-FOOT LOCK
UPPER MISSISSIPPI RIVER

LOCK AND DAM 22
RIVER MILE 301.2

SAVERTON, MISSOURI

DRAFT

FINDING OF NO SIGNIFICANT IMPACT

This Supplemental Environmental Assessment (SEA) is tiered from an umbrella or programmatic environmental impact statement (PEIS) entitled *Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Feasibility Study*. This site-specific SEA incorporates information by reference or summary from the PEIS as well as discusses site-specific information of the proposed action.

I have reviewed the information in this SEA, along with data obtained from Federal and state agencies having jurisdiction by law or special expertise, and from the interested public. I find that constructing a new 1200-foot lock at Lock and Dam 22, near Saverton, Missouri would not significantly affect the quality of the human environment. Therefore, it is my determination that an Environmental Impact Statement is not required. This determination will be reevaluated if warranted by later developments.

This Finding of No Significant Impact is based on the following factors:

A. The project would have only minor and short-term impacts on fish and wildlife resources and on water quality.

B. The proposed project would improve navigation efficiency and contribute to a safe, reliable, efficient, and sustainable navigation system over the 50-year planning horizon. The program includes improvements to include small-scale structural and nonstructural measures that will provide transportation savings by reducing average delays to tows.

C. No significant adverse social, economic, environmental, or cultural impacts are anticipated as a result of the proposed action.

D. Implementation of the project, as proposed, would not result in increased costs or prices for consumers, individual industries, Federal, state, or local governmental agencies, nor would it impair in any way the ability of the United States to compete with foreign-based enterprises in domestic or export markets.

E. To afford protection to known and unknown significant historic properties (including the *Upper Mississippi River Navigation Project, 1931-1948*) resulting from the implementation of the NESP navigation improvements promulgated under Section 106 of the National Historic Preservation act of 1966, as amended, and its implementing regulations 36 CFR Part 800: "Protection of Historic Properties", the signatories executed the ***PROGRAMMATIC AGREEMENT*** *Among the U.S. Army Corps of Engineers Mississippi Valley Division, St. Paul District, Rock Island District, and St. Louis District, U.S. Fish and Wildlife Service, Illinois, Iowa, Minnesota, Missouri, and Wisconsin State Historic Preservation Officers, and Advisory Council on Historic Preservation, Regarding Implementation of the Upper Mississippi River-Illinois Waterway System Navigation Feasibility Study*.

_____ _____

Date

Robert A. Sinkler
Colonel, U.S. Army
District Engineer

NEW 1200-FOOT LOCK
UPPER MISSISSIPPI RIVER

LOCK AND DAM 22
RIVER MILE 301.2

SAVERTON, MISSOURI

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

APPENDIX A

PERTINENT CORRESPONDENCE

McGuire/rmt/5709

March 15, 2006

Planning, Programs and
Project Management Division

SEE DISTRIBUTION LIST

In September 2004, the U.S. Army Corps of Engineers (Corps) released the *Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Study* (PEIS). The PEIS described an integrated plan for modifications and operations changes to the Upper Mississippi River and Illinois Waterway for navigation efficiency and ecosystem restoration over a 50-year planning horizon. The PEIS discussed the programmatic actions and the associated beneficial and adverse effects. The PEIS also discussed cumulative effects associated with past, present and potential future actions within the river and associated floodplain.

The U.S. Army Corps of Engineers, Rock Island District is preparing two Supplemental Environmental Assessments (SEA) at Lock and Dam 22, near Saverton, Missouri. One is for construction of a new 1200-foot lock on the Upper Mississippi River at Lock and Dam 22; the other is for construction of a fish passage structure at Lock and Dam 22 (enclosure 1). Fact sheets for the two proposed projects are included as enclosures 2 and 3. These SEAs will be tiered from the above referenced PEIS. The PEIS addressed the wide array of proposed actions from a general, programmatic perspective. These SEAs and corresponding Findings of No Significant Impact tier from the PEIS because these projects have unique project features and site-specific characteristics (e.g., footprint area, topography and hydraulic conditions, associated biota, etc.) that were not addressed in the PEIS.

At this time, we are requesting your comments regarding any significant resources that might be impacted by the proposed actions. Federal and/or State listed threatened or endangered species are of particular concern. Also we request your assistance in identifying any additional existing significant resources that may be impacted, such as wetlands, prime farmlands, eagle nests, conflicts with known land-use plans, floodplain issues, etc.

Construction activities from these projects would directly affect the footprints for the new lock and fish passage structure and some of the surrounding area. Associated actions include the construction of upper and lower guidewalls, reconfiguration of wingdams on both sides of the river above the dam, development of staging areas for construction equipment, creation of new dredge cuts and dredged material placement sites, fleeting areas, and mooring facilities around the dam (enclosure 1). There would be increased road usage associated with construction activity. Also, an upgrade of the Hascall Creek Bridge (a.k.a. Lick Creek and Malaruni Creek) on State Road E may be required to enable road access of construction vehicles into the project area.

-2-

Please provide your comments/concerns regarding these two proposals within 30 days of the date of this letter. A timely review of this information and a written response will be greatly appreciated. Should you have any questions regarding this proposal, please contact either Mr. Mark Cornish (fish passage) or Mr. Lonn McGuire (1200-foot lock) of our Economic and Environmental Analysis Branch, telephone 309/794-5385 and 309/794-5709, respectively. Written responses may be sent to our address above, ATTN: Planning, Programs and Project Management Division (Mark Cornish or Lonn McGuire).

Sincerely,

ORIGINAL SIGNED BY

Gary L. Loss
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Enclosures

CF (all w/encls):
Dist File (PM-M)
PM-A (Barr)
PM-A (Cornish)
PM-A (McGuire)
PM-A (Deiss)
PM-A (Jackson)
PM-A (Simmons)
PM-M (Spitzack)
PM-M (Whitney)
ED-DM (Tarpey)
ED-DN (Anderson, H.)
ED-DN (Mitvalsky)
OD-M (Gretten)
OD-MV (McCann)
OD-T (Brenner)
OC
RE-F (Fiscus)

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US Army Corps
of Engineers
Rock Island District

Information Paper

I1. Lock 22 New 1200-ft Lock

Upper Mississippi River System - Navigation and Ecosystem Sustainability Program

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Location/Description

The program area comprises the Upper Mississippi River System, as defined by Congress in the Water Resources Development Act of 1986 (WRDA 1986), which includes the Upper Mississippi River from Minneapolis, Minnesota, to Cairo, Illinois; the Illinois Waterway from Chicago to Grafton, Illinois; and navigable portions of the Minnesota, St. Croix, Black and Kaskaskia Rivers. This multi-use resource supports an extensive navigation system (made up of 1200 miles of 9 foot channel and 37 lock and dam sites), a diverse ecosystem (2.7 million acres of habitat supporting hundreds of fish and wildlife species), floodplain agriculture, recreation and tourism. Based on the recommendation of the recently completed UMR-IWW System Navigation Feasibility Study that examined system needs over the next 50 years, the Navigation and Ecosystem Sustainability Program (NESP) was implemented to achieve the dual purposes of UMRS ecosystem restoration and navigation improvements. The Lock 22 – New 1200 ft Lock is one of 8 initial NESP navigation efficiency component projects being implemented under this new UMRS program.

The proposed new lock will be a 1200-foot, rock founded, lock constructed in the downstream direction in the auxiliary miter gate bay. The new lock will have an upstream, ported guardwall and will be approximate 1200 feet long. The downstream approach wall will be designed to block flow through the wall. The length and location will be determined during the initial design work. The existing 600-foot lock will remains in place and will become auxiliary lock chamber. Recreation traffic will primarily use this lock once the new 1200' lock is completed. The new lock will be safer for users since doubled locking is eliminated.

Total construction cost of the new lock, channel work, relocations and site specific environmental mitigation is estimated at $185,000,000 (2004 price level). This cost will be shared equally (50/50) between the Inland Waterway Trust Fund (IWTF) and Federal Govt.

The engineering and design of Lock 22 proceeds in parallel with continued economic study and implementation of small scale navigation efficiency measure. The results of the continued study could impact the implementation schedule of Lock 22.

Problem Statement

The majority of the Upper Mississippi River locks were designed and constructed in the 1930's and the lock chambers are 600-ft long. The 600-ft lock chamber cause significant average delays to navigation. Tows larger than 600-ft must break in half for two separate lockages. The new lock will be 1200 feet long and will significantly reduce delays and increase safety.

Current Status

In FY05, the preconstruction engineering and design (PED) phase for the new lock and approach walls was initiated. This phase is scheduled to take approximately three years to complete. To date, the study team has accomplished significant work, including lock wall concept determination, approach wall concept determination, hydraulic physical and numeric modeling, geotechnical/foundation study, and environmental assessment. The PED work will be documented in a Design Documentation Report (DDR). In FY08, the project will proceed into the production of multiple sets of plans and specifications, and construction contracts. The construction is estimated to start in FY09 and take about eight years. It is estimated that the entire lock project will require thirteen years design and build, assuming sufficient funding.

Authority

Pending new authority, our current activities supporting UMRS navigation and ecosystem improvements are performed under authority provided by Section 216 of the Flood Control Act of 1970 (Public Law 91-611).

For additional Program information please visit our website: http://www2.mvr.usace.army.mil/umr-iwwsns

P.O. Box 2004, Rock Island, IL 61204-2004

US Army Corps
of Engineers
Rock Island District

Information Paper

P2. Fish Passage – L&D 22

Upper Mississippi River System - Navigation and Ecosystem Sustainability Program

Contacts

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Location/Description

The program area comprises the Upper Mississippi River System, as defined by Congress in the Water Resources Development Act of 1986 (WRDA 1986), which includes the Upper Mississippi River from Minneapolis, Minnesota, to Cairo, Illinois; the Illinois Waterway from Chicago to Grafton, Illinois; and navigable portions of the Minnesota, St. Croix, Black and Kaskaskia Rivers. This multi-use resource supports an extensive navigation system (made up of 1200 miles of 9 foot channel and 37 lock and dam sites), a diverse ecosystem (2.7 million acres of habitat supporting hundreds of fish and wildlife species), floodplain agriculture, recreation and tourism. Based on the recommendation of the recently completed UMR-IWW System Navigation Feasibility Study that examined system needs over the next 50 years, the Navigation and Ecosystem Sustainability Program (NESP) was implemented to achieve the dual purposes of UMRS ecosystem restoration and navigation improvements. Fish Passage at Lock and Dam 22 is one of 23 initial NESP ecological component projects being implemented under this new UMRS program.

Lock and Dam 22 is located at River Mile (RM) 301.2 on the UMR near Saverton, Missouri, between Ralls County, Missouri, and Pike County, Illinois. The average lift at Lock and Dam 22 is approximately 11 feet. The project area is located in Congressional District 9 in Missouri and District 17 in Illinois.

The objective of this plan is to restore longitudinal connectivity at Lock and Dam 22 for a wide range of migratory warmwater fish species. This project proposes the non-structural manipulation of dam gates and the construction of a fish passage structure at Lock and Dam 22 to enable the passage of fish. If successful, this project will increase access to upstream habitats which should result in an increase in the size and distribution of native migratory fish populations. Because the Lock and Dam 22 fish passage project is among the first of this kind on the UMR, another general goal is learn from this project through monitoring and evaluation and apply this knowledge to future fish passage projects.

The three components of monitoring and evaluation are 1) to gain information needed for project planning and design (pre-project monitoring), 2) to determine if the project objectives are met (project performance monitoring) and 3) to apply lessons learned to subsequent fish passage projects (adaptive management). Project performance indicators are derived from the quantitative project objectives and serve as the focus of monitoring effort.

Problem Statement

Lock and Dam 22 blocks the upstream movement of fish most of the time. This dam as well as other navigation dams reduces longitudinal connectivity to aquatic and floodplain habitats which contributes to the degradation of the river ecosystem. This contributes to the following ecological issues:

- Impeded migration routes
- Reduced access to habitat
- Reduced geographic range of migratory fish species
- Reduced population size of migratory fish species
- Reduced population size and distribution of mussels

Current Status

In an effort that started in FY 2005 that continues to date, the multi-agency Study Team has progressed through the planning process. Tasks accomplished include assessing information needs, implementing baseline monitoring, and identifying potential non-structural and structural restoration measures for the Lock & Dam 22 project area. FY06 initiatives concentrate on refining the alternative development and evaluation process that results in a recommended implementation plan. FY06 work will be captured in a Draft Project Implementation Report (PIR) and a 2006 Monitoring Report. If funding allows, final drafts of the PIR and 2006 Monitoring Report will be completed in FY07.

Authority

Pending new authority, our current activities supporting UMRS navigation and ecosystem improvements are performed under authority provided by Section 216 of the Flood Control Act of 1970 (Public Law 91-611).

For additional Program information please visit our website: http://www2.mvr.usace.army.mil/umr-iwwsns

DEISS/rmt/5185

June 2, 2006

Planning, Programs and
Project Management Division (1105-2-10a)(11-2-240a)

SEE DISTRIBUTION LIST:

In September 2004, the U.S. Army Corps of Engineers (Corps) distributed the *Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Study* (PEIS) dated 24 September 2004. The PEIS described an integrated plan for modifications and operations changes to the Upper Mississippi River and Illinois Waterway for navigation efficiency and ecosystem restoration over a 50-year planning horizon (Enclosure 1). The PEIS discussed the programmatic actions and the associated beneficial and adverse effects to address navigation efficiency and ecosystem restoration needs. Historic property concerns and compliance can be found throughout the PEIS report. This correspondence addresses site specific concerns for proposed construction effort at the Upper Mississippi River Locks and Dams 22 and 25 facilities, and at the Illinois Waterway La Grange Lock and Dam. By copy of this letter, those on the distribution list are invited to participate in furthering our coordination effort through the Navigation Ecosystem Sustainability Program Cultural Resource Stewardship Team Meeting and Mitigation Workshop on June 29, 2006, in La Crosse, Wisconsin.

The Rock Island and St. Louis Districts are preparing Supplemental Environmental Assessments (SEA) for Upper Mississippi River Lock and Dam 22 (Saverton, Missouri) and Lock and Dam 25 (Winfield, Missouri). The construction of new 1200-foot-long locks are proposed on the Upper Mississippi River at Lock and Dam 22 (Enclosures 2 and 3) and Lock and Dam 25 (Enclosures 4 and 5). A fish passage structure is also proposed for Lock and Dam 22 (Enclosures 6 and 7). These SEAs will be tiered from the above referenced PEIS. The PEIS addressed the wide array of proposed actions from a general, programmatic perspective. These SEAs and corresponding Findings of No Significant Impact (FONSI) tier from the PEIS because these projects have unique project features and site-specific characteristics (e.g., footprint area, topography and hydraulic conditions, associated biota, historic properties, etc.) that were not addressed in the PEIS. Also, the Rock Island District is initiating a SEA for a proposed 1200-foot lock at the Illinois Waterway La Grange Lock and Dam (La Grange, Illinois). Due to the preliminary nature of the La Grange proposal no Project Area maps or Information Papers are available.

Construction activities from these new lock and fish passage structure projects would directly affect the existing facility footprints, existing lock and dam structures, and surrounding lands. Associated actions may include the construction of upper and lower guidewalls, reconfiguration of wingdams, approach dredging and land modifications, development of staging areas for construction equipment, creation of new dredge cuts and dredged material placement sites, fleeting areas, and mooring facilities around the dams (Enclosures 2 through 7). There would be increased road usage associated with construction and dredging activities, ground disturbances, and limited channel modifications.

-2-

To afford protection to known and unknown significant historic properties resulting from the implementation of the proposed construction projects in Illinois and Missouri, the Corps proposes to use the *Programmatic Agreement Among the U.S. Army Corps of Engineers Mississippi Valley Division, St. Paul District, Rock Island District, and St. Louis District, Illinois, Iowa, Minnesota, Missouri, and Wisconsin State Historic Preservation Officers, and Advisory Council on Historic Preservation, Regarding Implementation of the Upper Mississippi River - Illinois Waterway System Navigation Study and Ecosystem Restoration for Ongoing Effects of Navigation From the Upper Mississippi River - Illinois Waterway System Navigation Study* (PA) (Enclosure 8; also in Appendix C of the PEIS). The PA will be included in the SEAs to document Corps compliance and to afford protection to undocumented historic properties, as well as those significant elements eligible for inclusion on the National Register of Historic Places, such as the **Illinois Waterway Navigation System, 1808-1951** and the **Upper Mississippi River Navigation Project, 1931-1948** (Enclosure 9).

Promulgated under Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR Part 800: "Protection of Historic Properties," the Corps is required to consult with interested parties and assess the effects on significant historic properties. The Corps has been coordinating with the American Indian Tribes (Tribes); various interested parties; the Illinois, Iowa, Minnesota, Missouri, and Wisconsin State Historic Preservation Offices; other State and Federal agencies, and the Advisory Council on Historic Preservation (ACHP) relative to the projects and programs proposed in the PEIS. To facilitate this coordination effort, the Corps assembled a draft "**Interested Parties List**", consisting of 9,000+ addresses, including over 70 tribes. This list was fully coordinated with the 9,000+ parties inviting them into the consulting process. The list was finalized and consists of four Tribes, the signatories of the PA, and appropriate State and Federal agencies (see Distribution List).

The Corps requests consultation and have provided the Area of Potential Effect in accordance with 36 CFR Part 800.16(d) of the National Historic Preservation Act. At this time, we are requesting your comments regarding significant cultural resources and/or historic properties that might be impacted by the proposed actions and any treatment and/or mitigation alternatives. It is the opinion of the Corps that data recovery or recordation as appropriate for the site specific and systemic or system-wide affects be addressed under PA stipulation II(d) on Public Documentation (i.e., pamphlets, films, books, and other public and scholarly research on history and significance).

Presently, the Corps shall conduct archeological investigations for those areas with potential for intact materials and sites. Coordination of these activities will proceed under consultation with the appropriate State Historic Preservation Officer(s). Mitigation, recordation, or minimization for consideration of No Adverse Effect actions or undertakings will require further coordination. As part of this consultation effort, the Corps requests the attendance of tribes, SHPOs, and any other interested parties to the Navigation Ecosystem and Sustainability Program (NESP) Cultural Resources Stewardship and Mitigation Meeting from 8:00 a.m. - 4:00 p.m., June 29, 2006, at the Mississippi River Conference Room, Holiday Inn in La Crosse, Wisconsin (Enclosure 10). This meeting will discuss mitigation and recordation alternatives for the NESP.

-3-

Please provide your comments and/or concerns regarding the proposed construction effort at the Upper Mississippi River Locks and Dams 22 and 25 facilities and at the Illinois Waterway La Grange Lock and Dam within 60 days of the date of this letter. A timely review of this information and a written response will be greatly appreciated. Should you have any questions regarding our proposals, please contact Archeologist Ron Deiss of our Economic and Environmental Analysis Branch, telephone 309/794-5185. Written responses may be sent to our address above, ATTN: Planning, Programs and Project Management Division (Attn: Ron Deiss).

Sincerely,

ORIGINAL SIGNED BY

Gary L. Loss, P.E.
Chief, Planning, Programs and
Project Management Division

Enclosures

CF (all w/encls):
Dist File (PM-M)
PM-A (Barr)
PM-A (Coyle)
PM-A (Cornish)
PM-A (McGuire)
PM-A (Deiss)
PM-A (Jackson)
PM-A (Simmons)
PM-M (Spitzack)
PM-M (Whitney)
EC-DM (Tarpey)

-4-

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-5-

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-6-

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Delaware Tribe of Western Oklahoma
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Anadarko, OK 73005

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Historic Preservation Officer
Sac and Fox Tribe
of the Mississippi in Iowa
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Tama, IA 52339-9629

DESCRIPTION OF THE STUDY AREA

The study area encompassed by the Upper Mississippi River-Illinois Waterway (UMR-IWW) System Feasibility Study comprises the Upper Mississippi River and Illinois Waterway and lies within portions of Illinois, Iowa, Minnesota, Missouri, and Wisconsin (see attached map). The Upper Mississippi River extends from the confluence with the Ohio River, River Mile 0.0, to Upper St. Anthony Falls Lock in Minneapolis-St. Paul, Minnesota, River Mile 854.0. The Illinois Waterway extends from its confluence with the Mississippi River at Grafton, Illinois, River Mile 0.0, to T. J. O'Brien Lock in Chicago, Illinois, River Mile 327.0. The Upper Mississippi River-Illinois Waterway navigation system contains 1,200 miles of 9-foot-deep channels, 37 lock and dam sites, and thousands of channel training structures. The system is commonly broken into four broad regions including the Upper Impounded Reach (Navigation Pools 1-13), Lower Impounded Reach (Pools 14-26), Middle Mississippi River (Lock and Dam 26 to the mouth of the Ohio River), and the Illinois Waterway.

The Upper Mississippi River - Illinois Waterway ecosystem includes the river reaches described above, as well as the floodplain habitats that are critically important to large river floodplain ecosystems. The ecosystem under study includes the Upper Mississippi River and Illinois Waterway main stem floodplains, confluences of the major tributaries, and the navigational reaches of the St. Croix, Black, Minnesota, and Kaskaskia Rivers. The total acreage of the river-floodplain system exceeds 2.5 million acres of aquatic, wetland, forest, grassland, and agricultural habitats. The Mississippi Flyway is used by more than 40 percent of the migratory waterfowl traversing the United States. These Trust Species and the Threatened and Endangered Species in the region are the focus of considerable Federal wildlife management activities. In the middle and southern portions of the basin, the habitat provided by the mainstem rivers represents the most important and abundant habitat in the region for many species.

The total Illinois Waterway and Mississippi River Navigation System contains 37 lock and dam sites (43 locks), over 650 manufacturing facilities, terminals, and docks, and provides valuable habitat and recreational opportunities. The system provides the following:

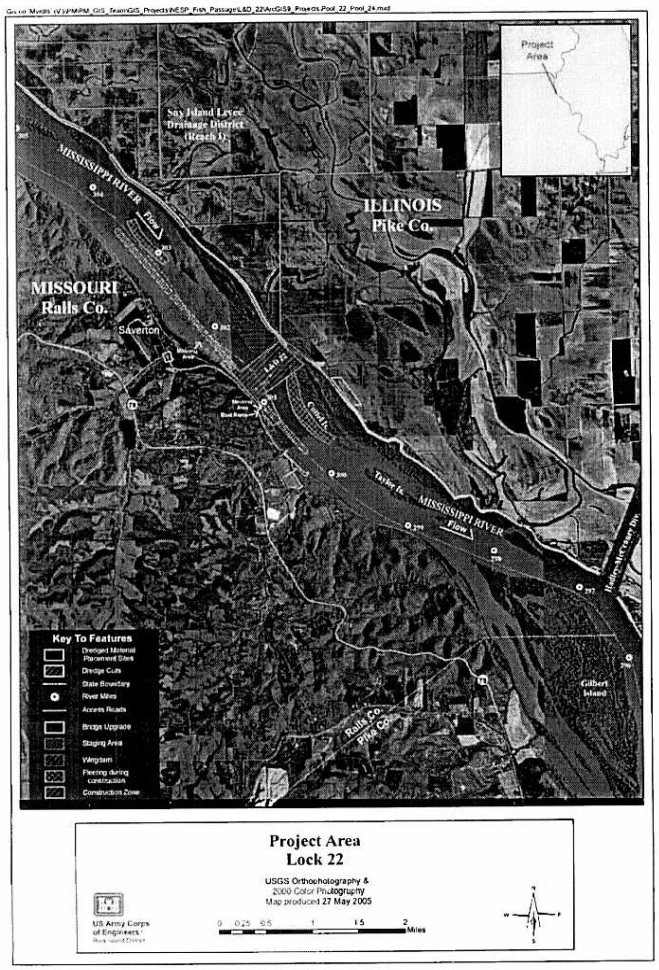
1. A means for shippers to transport millions of tons of commodities within the study area – 122 million tons on the Mississippi River and 44 million tons on the Illinois Waterway in 2000;
2. Food and habitat for at least 485 species of birds, mammals, amphibians, reptiles, and fish (including 10 federally endangered or threatened species and 100 state listed species);
3. Almost 285,000 acres of National Wildlife and Fish Refuge;
4. Water supply for 22 communities and many farmers and industries;
5. A multi-use recreational resource providing more than 11 million recreational visits each year; and,
6. Cultural evidence of our Nation's past.

The UMR-IWW System Feasibility Study final recommendation includes a program of incremental implementation and comprehensive adaptive management to achieve the dual purpose of ensuring a sustainable natural ecosystem and navigation system. With congressional appropriations for Preconstruction, Engineering and Design (PED) beginning in February 2005, the study team adopted a working title of UMRS Navigation and Ecosystem Sustainability Program (NESP) to distinguish PED efforts from the Feasibility Study.

ENCL 1,

Upper Mississippi River Navigation and Illinois Waterway System Facility Locations

ENCL 1 2.


Project Area
Say Island Levee Drainage District (Reach 1)
MISSISSIPPI RIVER
Flow
ILLINOIS
Pike Co.
MISSOURI
Ralls Co.
Saverton
Taylor Is.
MISSISSIPPI RIVER
Flow
Gilbert Island
Ralls Co.
Pike Co.
Key To Features
Dredged Material Placement Sites
Dredge Cuts
State Boundary
River Miles
Access Roads
Bridge Upgrade
Staging Area
Wingdam
Fleeting during construction
Construction Zone
Project Area
Lock 22
USGS Orthochotography &
2000 Color Photography
Map produced 27 May 2005
US Army Corps of Engineers
0 0.25 0.5 1 1.5 2 Miles

1222 Spruce Street, St. Louis, MO 63103-2818

US Army Corps
of Engineers
St. Louis District

Information Paper

I2. Lock 25 New 1200-ft Lock

Upper Mississippi River System - Navigation and Ecosystem Sustainability Program

Contacts

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Location/Description

The program area comprises the Upper Mississippi River System, as defined by Congress in the Water Resources Development Act of 1986 (WRDA 1986), which includes the Upper Mississippi River from Minneapolis, Minnesota, to Cairo, Illinois; the Illinois Waterway from Chicago to Grafton, Illinois; and navigable portions of the Minnesota, St. Croix, Black and Kaskaskia Rivers. This multi-use resource supports an extensive navigation system (made up of 1200 miles of 9 foot channel and 37 lock and dam sites), a diverse ecosystem (2.7 million acres of habitat supporting hundreds of fish and wildlife species), floodplain agriculture, recreation and tourism. Based on the recommendation of the recently completed UMR-IWW System Navigation Feasibility Study that examined system needs over the next 50 years, the Navigation and Ecosystem Sustainability Program (NESP) was implemented to achieve the dual purposes of UMRS ecosystem restoration and navigation improvements. The Lock 25 – New 1200 ft Lock is one of 8 initial NESP navigation efficiency component projects being implemented under this new UMRS program.

Lock and Dam 25 is located in Calhoun County, Illinois, and Lincoln County, Missouri, at approximately Mile 241.1 on the Upper Mississippi River above the mouth of the Ohio River near Winfield, Missouri. Proposed project features include construction of new 1200-foot, pile founded, lock in the auxiliary miter gate bay, and construction of an upstream, ported guardwall totaling 1200 feet, and a downstream approach wall with minimum length 600 feet. The existing 600-foot lock remains in place and will become auxiliary lock chamber to be used primarily by recreation traffic. The project also includes associated channel work, relocations and site specific environmental mitigation and is estimated at $272,000,000(2005 price level). This cost will be shared equally (50/50) between Federal Construction General (CG) funds and the Inland Waterway Trust Fund (IWTF).

Problem Statement

The majority of the Upper Mississippi River locks were designed and constructed in the 1930's and the lock chambers are 600-ft long. The 600-ft lock chamber cause significant average delays to navigation. Tows larger than 600-ft must break in half for two separate lockages. The new lock will be 1200 feet long and will significantly reduce delays and increase safety.

Current Status

In FY05, the preconstruction engineering and design (PED) phase for the new lock and guidewalls was initiated. This phase is scheduled to take approximately three years to complete. To date, the study team has initiated and accomplished significant work, including lock wall concept determination, approach wall concept determination, hydraulic physical and numeric modeling, geotechnical/foundation study, and environmental assessment. The PED work will be documented in a Design Documentation Report (DDR). In approximately FY08, the project will proceed into the production of multiple sets of plans and specifications, and construction contracts. The construction is estimated to start in FY09 and take about eight years. It is estimated that the entire lock project will require thirteen years design and build, assuming sufficient funding.

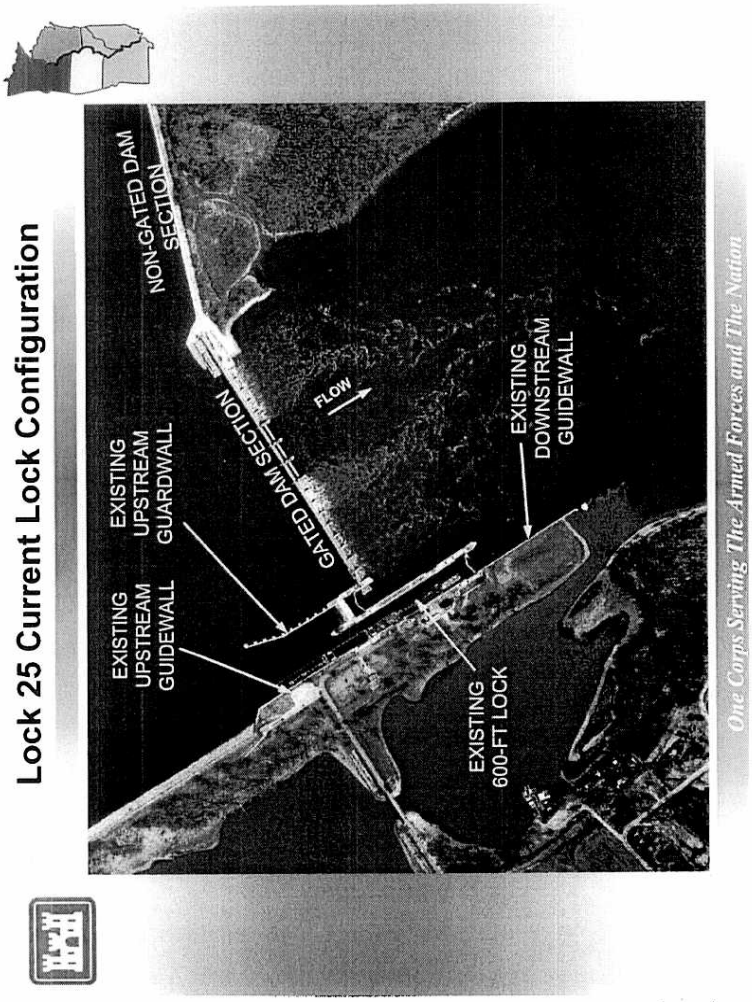
Authority

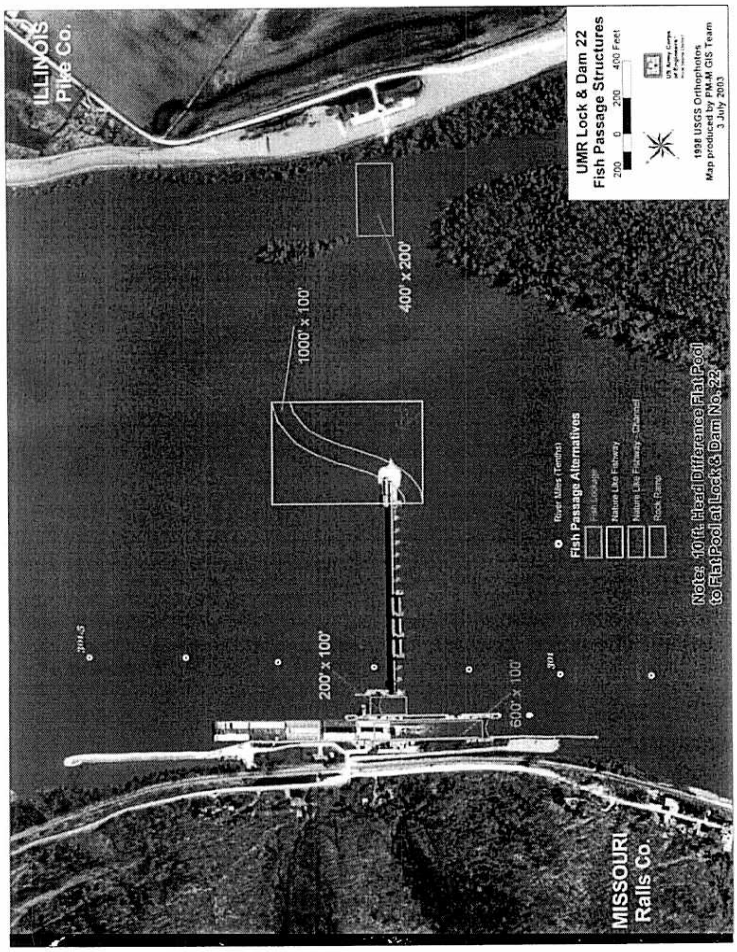
Pending new authority, current activities supporting UMRS navigation and ecosystem improvements are performed under authority provided by Section 216 of the Flood Control Act of 1970 (Public Law 91-611).

Fiscal (FY05-07)

Estimated Federal Cost	$9,601,537
Allocation through FY 2005	$1,726,537
Allocation for FY 2006	$1,875,000
Expected Capability for FY 2007	$6,000,000

For additional Program information please visit our website: http://www2.mvr.usace.army.mil/umr-iwwsns


Lock 25 Current Lock Configuration
EXISTING UPSTREAM GUIDEWALL
EXISTING UPSTREAM GUARDWALL
GATED DAM SECTION
NON-GATED DAM SECTION
FLOW
EXISTING 600-FT LOCK
EXISTING DOWNSTREAM GUIDEWALL
One Corps Serving The Armed Forces and The Nation


ILLINOIS
Pike Co.
MISSOURI
Ralls Co.
200' x 100'
1000' x 100'
400' x 200'
600' x 100'
Fish Passage Alternatives
Fish Lockage
Natural Lake Fishway
Natural Lake Fishway - Channel
Rock Ramp
Note: 10 ft. Head Difference Flat Pool to Flat Pool at Lock & Dam No. 22
UMR Lock & Dam 22
Fish Passage Structures
200 0 200 400 Feet
1998 USGS Orthophotos
Map produced by FM-M GIS Team
3 July 2003

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October 4, 2006

Planning, Programs and Project
Management Division (1105-2-10a))

SEE DISTRIBUTION LIST:

The U.S. Army Corps of Engineers has been coordinating with various federal and state agencies, American Indian tribes, and other consulting parties concerning mitigation for site specific concerns for proposed construction effort at the Upper Mississippi River Lock and Dams 22 and 25 and at the Illinois Waterway La Grange Lock and Dam. Specifically, comment is requested from the Illinois, Iowa, Minnesota, Missouri, and Wisconsin State Historic Preservation Officers, due to the nature of effects to the three National Register of Historic Places historic districts **Upper Mississippi River Navigation Project, 1931-1948,** Lock and Dam 22; **Upper Mississippi River Navigation Project, 1931-1948,** Lock and Dam 25; and **Illinois Waterway Navigation Facilities,** LaGrange Lock and Dam. By copy of this letter, all listed on the Distribution List are invited to participate in furthering our coordination effort in compliance with the National Historic Preservation Act and its implementing regulations. Concerns for the proposed construction effort and mitigation were discussed at the Navigation Ecosystem Sustainability Program Cultural Resource Stewardship Team Meeting and Mitigation workshop on 29 June 2006, at La Crosse, Wisconsin.

The Rock Island and St. Louis Districts are preparing Supplemental Environmental Assessments (SEA) for the proposed construction of new 1200 foot locks on the Upper Mississippi River at Lock and Dam 22 (Saverton, Missouri) and Lock and Dam 25 (Winfield, Missouri) and Illinois Waterway La Grange Lock and Dam (La Grange, Illinois). A fish passage structure is also proposed for Lock and Dam 22. These SEAs will be tiered from the *Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Study* (PEIS, 24 September 2004, previously provided to those on this Distribution List). These SEAs and corresponding Findings of No Significant Impact (FONSI) tier from the PEIS because these projects have unique project features and site-specific characteristics (e.g., footprint area, topography and hydraulic conditions, associated biota, historic properties, etc.) that were not addressed in the PEIS.

To afford protection to known and unknown significant historic properties resulting from the implementation of the proposed construction projects in Illinois and Missouri, the Corps proposes to use the *Programmatic Agreement Among the U.S. Army Corps of Engineers Mississippi Valley Division, St. Paul District, Rock Island District, and St. Louis District, Illinois, Iowa, Minnesota, Missouri, and Wisconsin State Historic Preservation Officers, and*

-2-

Advisory Council on Historic Preservation, Regarding Implementation of the Upper Mississippi River - Illinois Waterway System Navigation Study and Ecosystem Restoration for Ongoing Effects of Navigation From the Upper Mississippi River - Illinois Waterway System Navigation Study (PA located in Appendix C of the PEIS, see Fact Sheet, Enclosure 1). The PA will be included in the SEAs to document Corps compliance and to afford protection to undocumented historic properties, as well as those significant elements of the National Register of Historic Places eligible **Illinois Waterway Navigation Facilities,** and the **Upper Mississippi River Navigation Project, 1931-1948**.

The Corps requested consultation and have provided the Area of Potential Affect in accordance with 36 CFR Part 800.16(d) of the National Historic Preservation Act in correspondence by letter dated June 2, 2006. No responses were received during this initial consulting period. Therefore, it is the opinion of the Corps that data recovery or recordation is appropriate for the site specific and systemic or system-wide affects be addressed under PA stipulation II(d) on Public Documentation (i.e., pamphlets, films, books, and other public and scholarly research on history and significance). The Corps shall conduct archeological investigations for those areas with potential for intact materials and sites. Coordination of these activities will proceed under consultation with the appropriate State Historic Preservation Officer(s).

Mitigation, recordation, or minimization for consideration of No Averse Effect actions or undertakings will require further coordination. It is the opinion of the Corps that an Adverse Effect will occur due to the construction of new 1200 foot locks proposed on the Upper Mississippi River at Lock and Dams 22 and 25 and at the Illinois Waterway La Grange Lock and Dam. Additional, an Adverse Effect determination is made for the fish passage structure proposed for Lock and Dam 22. Mitigation for the Adverse Effects was discussed at the Navigation Ecosystem Sustainability Program Cultural Resources Stewardship and Mitigation Meeting on 29 June 2006 at the Mississippi River Conference Room, Holiday Inn in La Crosse, Wisconsin.

As a result of the La Crosse meeting on 29 June 2006, mitigation and recordation alternatives for the Navigation Ecosystem Sustainability Program (NESP) three lock and dam site-specific projects were discussed and a preliminary agreement was made on the following: 1) producing and printing a complete Upper Mississippi River watershed educator's guide book, with a marketing plan for its distribution and/or sales, and 2) completion of Historic American Engineering Record (HAER) recordation for the Illinois Waterway. These two mitigation objectives only reflect those NESP site specific projects discussed herein.

-3-

Please provide your comments and/or concerns regarding the proposed construction effort, The Adverse Effect determination, and recommendations for mitigation, at the Upper Mississippi River Lock and Dam facilities 22 and 25, and at the Illinois Waterway facility La Grange Lock and Dam, within 30 days of the date of this letter. A timely review of this information and a written response will be greatly appreciated. Should you have any questions regarding our proposals, please contact Archeologist, Ron Deiss of our Economic and Environmental Analysis Branch, telephone 309/794-5185. Written responses may be sent to our address above, ATTN: Planning, Programs, and Project Management Division (Ron Deiss).

Sincerely,

ORIGINAL SIGNED BY
Dorene A. Gollman for

Kenneth A, Barr.
Chief, Environmental and
Economic Analysis Branch

Enclosure

MFR: Typical coordination with the SHPO and consulting parties on the proposed NEPS site-specific projects with recommendations for appropriate mitigation.

CF (all w/encls):
Dist File (PM-M)
PM-A (Barr)
PM-A (Cornish)
PM-A (McGuire)
PM-A (Deiss) **P:\NESP\Mississippi\Lock 22\NESP 11 P2 Coor Letter2.doc**
PM-A (Jackson)
PM-A (Simmons)
PM-A (Coyle)
PM-M (Spitzack)
PM-M (Whitney)
ED-DM (Tarpey)

Illinois Department of
Natural Resources
One Natural Resources Way • Springfield, Illinois 62702-1271
http://dnr.state.il.us

Rod R. Blagojevich, Governor
Sam Flood, Acting Director

April 12, 2006

Mr. Gary L. Loss
Chief, Planning, Programs and Project Management
Rock Island District, Corps of Engineers
Clock Tower Building, P.O. Box 2004
Rock Island, Illinois 61204-2004

PM-A

Dear Mr. Loss:

Reference is made to your letter of March 15, 2006 concerning the proposal by the Rock Island District to prepare two Supplemental Environmental Assessments (SEAs) for Lock and Dam 22, near Saverton, Missouri. One SEA is for the construction of a new 1200-foot lock and the other for construction of a fish passage structure. Your letter requests information concerning any significant resources that might be affected by the proposed actions, particularly state or federally listed threatened and endangered species.

The Illinois Natural Heritage Database contains several records of state listed species, primarily freshwater mussels, in the vicinity of Lock and Dam 22. An identified mussel bed supporting the state threatened black sandshell (*Ligumia recta*) is located along the flank of Cottel Island at approximate river mile 300.5L in an area identified in the attachments to your letter as "fleeting during construction." Other listed mussel species found in the immediate vicinity of the lock and dam in the last several years include the Illinois endangered spectaclecase (*Cumberlandia monodonta*), the threatened butterfly (*Ellipsaria lineolata*), and the threatened ebonyshell (*Fusconaia ebena*).

A freshly-dead specimen of the federally endangered Higgins eye pearly mussel (*Lampsilis higginsii*) was collected by staff of the Corps of Engineers' Waterway Experiment Station approximately one-half mile downstream from the lock and dam in the late 1990s. In addition, an active bald eagle (*Haliaeetus leucocephalus*) nest is located near the lower tip of Taylor Island approximately two miles below the lock and dam at river mile 299.0. The state endangered lake sturgeon (*Acipenser fulvescens*) has been collected from the tailwater of the lock and dam within the past year. Finally, the right descending portion of Pool 24 downstream from the lock and dam is protected as a mussel sanctuary by the State of Missouri.

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Mr. Gary L. Loss
April 12, 2006
Page Two

The Department looks forward to reviewing the Supplemental Environmental Assessments and to continued coordination with the Rock Island District and the other agencies involved in review of the Lock and Dam 22 modifications. Please contact me at 217-785-4863 if we can provide further information or be of any other assistance.

Sincerely,

Robert W. Schanzle
Permit Program Manager
Office of Realty and Environmental Planning

RWS:rs

cc: IDNR/ORC (Stuewe, Atwood, Walsh, Corgiat)
IDNR/OWR (Diedrichsen)
IEPA (Yurdin)
USFWS (Clevenstine, Collins)

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VII
901 NORTH 5TH STREET
KANSAS CITY, KANSAS 66101

13 APR 2006

Mark Cornish
Planning, Programs and Project Management Division
U.S. Army Corps of Engineers, Rock Island District
P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Mr. Cornish:

RE: Lock and Dam 22 – New Lock and Fish Passage Structure, Saverton, Missouri

This letter responds to your March 15, 2006, correspondence regarding the development of two Supplemental Environmental Assessments (SEA) for construction of a new lock and a fish passage structure at Lock and Dam 22, near Saverton, Missouri. Thank you for including the Environmental Protection Agency (EPA) in your scoping process for review of these projects

Our main environmental and human health concerns with any major river project include wetlands, water quality, and cumulative floodplain impacts. This project area may also have potential for neighborhoods that are minority and/or low income and should be duly considered with respect to disproportionate impacts under the Environmental Justice (EJ) Executive Order (E.O. 12898).

We recommend that the SEA also address any project related impacts or improvements to the water quality in the Mississippi River or any of its tributaries that are currently listed on the Missouri or Illinois 303(d) list as impaired water bodies.

We also recommend evaluating cumulative impacts for potential increased flooding risk to neighboring properties both upstream and downstream during high storm events. This analysis should include impacts as a result of this project along with other past, present and reasonably foreseeable actions which were considered in the Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Study.

RECYCLE

Thank you again for including us in your scoping efforts for this project. We look forward to reviewing the draft Environmental Assessments when they are released for public review. If you have any questions regarding this letter or if you need any additional information, please call me at 913-551-7975.

Sincerely,

Joseph Cottingham for

Kimberly O. Johnson, P.E.
NEPA Reviewer
Environmental Services Division

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Rock Island Field Office
4469 48th Avenue Court
Rock Island, Illinois 61201
Phone: (309) 793-5800 Fax: (309) 793-5804

IN REPLY REFER TO
FWS/RIFO

May 3, 2006

U.S. Army Corps of Engineers
Rock Island District
ATTN: Mr. Ken Barr, Planning
Clock Tower Building, P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Mr. Barr:

The Rock Island Field Office (RIFO) has considered your March 15, 2006 letter requesting fish and wildlife information regarding proposed site-specific navigation improvements at Mississippi River Lock and Dam 22 (L/D 22) near Saverton, Missouri. Navigation improvements at L/D 22 near Saverton, Missouri were first assessed by the U.S. Fish and Wildlife Service (Service) in its Draft Fish and Wildlife Coordination Act Report (FWCAR) which was included in the Programmatic Environmental Impact Statement for the Upper Mississippi River – Illinois Waterway System Navigation Feasibility Study (September 24, 2004). The project area plan included with your recent letter differs from the design evaluated by the Service and by the Corps in *Environmental Report No. 7 – Site Specific Habitat Assessment* (September 1998). In coordination with the Service, the COE should update the Habitat Evaluation Procedure (HEP) analysis. Updating the HEP analysis will allow us to re-evaluate site-specific construction impacts of the revised site plan and reassess mitigation needs.

As you know, planning and design for a fish passage structure is underway for a location near the eastern end of the L/D 22 dam storage yard. Any navigation efficiency design alternatives being considered should be coordinated with the Fish Passage Project Delivery Team (PDT) in order to avoid any conflicts. Because the fish passage project and the lock improvements are so closely situated, and may have some common construction issues/elements, the Corps should consider integrating the Environmental Assessments (EA) into one document.

Endangered Species

The 2004 Feasibility Study included a Programmatic Consultation that acknowledged potential impacts at L/D 22 to the federally endangered Indiana bat (*Myotis sodalis*), gray bat (*Myotis grisescens*), bald eagle (*Haliaeetus leucocephalus*), and fat pocketbook mussel (*Proptera capax*). However, a site-specific Section 7 Consultation was not completed. As indicated in the Programmatic Biological Opinion (BO), a tier 2 biological assessment must now be conducted for proposed navigation improvements at L/D 22. Since the programmatic BO was completed, the spectaclecase mussel (*Cumberlandia monodonta*) and sheepnose mussel (*Plythobasus cyphyus*) have been added to the list of candidate species.

Site-Specific Comments

Staging area – The revised site plan indicates that the construction staging area has been relocated to the shoreline downstream of the proposed lock extension (approximately R.M. 300.2). This location is immediately adjacent to a Missouri Department of Conservation mussel sanctuary (R.M 299.0 to 300.6). This mussel bed is unusual in that the mussels are situated on a bedrock substrate and may be easily disturbed. Aside from controlling run-off from the staging area, its use as a docking location for work barges is a concern. The downstream boundary of the proposed staging area is immediately adjacent to the upstream end of the mussel bed. It may be necessary to restrict barges and work boats from crossing this boundary. A preliminary mussel survey was also conducted by QST Environmental in 1997 to determine the presence of native mussels in the proposed channel alignment and lock extension. However, it did not survey the entire construction zone or include any diving needed to assess mussel bed quality. An updated mussel survey for the entire construction zone is necessary to assess the impacts of the revised plan.

Wing dikes – The revised site plan indicates that additional wingdams will be constructed on the Illinois shoreline immediately upstream of the dam. The potential impact of these structures on the function of any fish passage structure should be evaluated.

Channel improvement – Channel improvements are indicated for the reach between the upstream lock and approximately R.M. 303.5. The significance of this dredging on the mussels located along the Missouri channel border must be evaluated, along with possible impacts to bottomland hardwoods adjacent to the levee placement sites. The dredged material placement site now appears to be the Sny levee.

Construction fleeting at Cottel Island and the island at R.M. 303.0 – The revised plan indicates that the shoreline of these locations will be used to fleet construction equipment. Impacts to any adjacent bottomland hardwoods and mussel bed should be evaluated.

This letter provides comments under the authority of and in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.); and the

Endangered Species Act of 1973, as amended. Please contact Mr. Jon Duyvejonck regarding any questions.

Sincerely,

Richard C. Nelson
Field Supervisor

cc: IDNR (Atwood)
Missouri DOC (Sternberg)
Missouri DOC (Moore)
Carterville FRO (Simmonds)
Mark Twain NWR Complex (Steinbach)

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)

JOHN D. HOSKINS, Director

May 15, 2006

U.S. Army Corps of Engineers – Rock Island District
ATTN: Planning, Programs and Project
Management Division (Mr. Mark Cornish/Mr. Lonn McGuire)
Clock Tower Building
P. O. Box 2004
Rock Island, Illinois 61204-2004

Dear Mr. Cornish and Mr. McGuire:

RE: Information Request Regarding Projects at Lock and Dam 22

This response pertains to your March 15, 2006, request for information regarding significant natural resources and other concerns in the vicinity of Lock and Dam 22, specifically as they relate to the fish passage and lock extension projects proposed for this location. Missouri Department of Conservation (Department) staff reviewed this request and offer the following comments.

1. A diverse mussel bed containing numerous freshwater mussel species of conservation concern exists in the area of the proposed downstream staging area. The Department has identified this as a mussel sanctuary in order to minimize disturbance to these mussel resources. We agree with the concerns for these resources stated by the U.S. Fish and Wildlife Service's response of May 3, 2006, and believe additional surveys are warranted to assess impacts of the proposed lock and dam plan. Freshwater mussel species in the vicinity include: sheepnose mussel (*Plethobasus cyphyus*; state Endangered, federal Candidate); spectaclecase (*Cumberlandia monodonta*; state Rare – S3, federal Candidate); fat pocketbook (*Potamilus capax*; state Endangered, federal Endangered); ebonyshell (*Fusconaia ebena*; state Endangered); hickorynut (*Obovaria olivaria*; state Rare – S3); wartyback (*Quadrula nodulata*; state Rare – S3); black sandshell (*Ligumia recta*; state Imperiled – S2); and rock pocketbook (*Arcidens confragosus*; state Rare – S3).

2. Several common mudpuppies (*Necturus maculosus*) were found in 2002 in the lock during repairs. This species is listed as a species of conservation concern in Missouri and is ranked as Status Undetermined due to lack of sufficient information to rank. However, it is believed that the species has declined due to loss of habitat. We would request salvaging and relocating live specimens during lock construction when the site is dewatered, as is often done with fish.

COMMISSION

STEPHEN C. BRADFORD Cape Girardeau | CHIP McGEEHAN Marshfield | CYNTHIA METCALFE St. Louis | LOWELL MOHLER Jefferson City

Mr. Mark Cornish
Mr. Lonn McGuire
Page 2
May 15, 2006

3. Several fish species of conservation concern are known from this reach. The fish passage project should serve to benefit many of these species. Fish with a special conservation designation in the vicinity include: lake sturgeon (*Acipenser fulvescens*; state Endangered); blue sucker (*Cycleptus elongatus*; state Rare – S3); Mississippi silvery minnow (*Hybognathus nuchalis*; state Rare to Uncommon – S3S4); western sand darter (*Ammocrypta clara*; state Imperiled to Rare – S2S3); and paddlefish (*Polyodon spathula*; state Rare).

4. The Department owns the Robert H. Thompson Conservation Area which is located along the descending right bank at approximate river mile 300.5. This 11.4 acre site provides fishing access to the Mississippi River and receives a decent amount of usage. How would construction affect this site, including access and barge fleeting? The Department also owns the Edward Anderson Conservation Area which is located on the right descending bank beginning at approximate river mile 299.3. The project map from September 16, 2005, does not indicate construction activities near this conservation area. If the plan changes and there may be impacts adjacent to this area, please notify us for further discussion.

5. We also have concerns with regards to accessing the river in this area. The river below the dam is a popular fishing spot. The U.S. Army Corps of Engineers currently operates a boat ramp at approximate river mile 301. Will this ramp be closed during construction and following construction? If yes, we would request consideration of providing alternative access in this part of the river.

Thank you for the opportunity to provide additional input to the planning process. If you have questions regarding the freshwater mussels or fisheries in the area, please contact Mr. Travis Moore at 573-248-2530, or by e-mail at Travis.Moore@mdc.mo.gov. For questions regarding other aspects of this response and NEPA coordination, please contact me at 573-522-4115, extension 3372, or by e-mail at Janet.Sternburg@mdc.mo.gov.

Sincerely,

JANET E. STERNBURG
POLICY COORDINATOR

JES:sg

c: Jon Duyvejonck, U.S. Fish and Wildlife Service
Butch Atwood, Illinois Department of Natural Resources
Travis Moore, Missouri Department of Conservation

STATE OF MISSOURI

Matt Blunt, Governor • Doyle Childers, Director

DEPARTMENT OF NATURAL RESOURCES

www.dnr.mo.gov

Rec'd in FM-A
JUL 01 2005

June 22, 2005

Kenneth A. Barr, Chief
Economic & Environmental Analysis Branch
Corps of Engineers, Rock Island District
Clock Tower Building, P.O. Box 2004
Rock Island, Illinois 61204-2004

Re: Lock 22 Upper & Lower DMMP Alternative 3, Site 8 (COE) Ralls County, Missouri

Dear Mr. Barr:

Thank you for submitting information on the above referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-665, as amended) and the Advisory Council on Historic Preservation's regulation 36 CFR Part 800, which require identification and evaluation of cultural resources.

We have reviewed the April 2005 draft report entitled *Phase I Archeological Survey and Geomorphological evaluation for Historic Properties, UMR Pool 24, River Mile 300, Lock 22, Upper and Lower DMMP Alternative 3, Site 8, Ralls County, Missouri* by David W. Benn, Bear Creek Archeology, Inc. Based on this review, it is evident that a thorough and adequate cultural resources survey has been conducted. Please bear in mind, however, that consultants are required to conduct research at the Missouri State Historic Preservation Office. You may contact the Inventory Manager, Kerry Nichols, at 573/751-7861 or kerry.nichols@dnr.mo.gov. We concur with your recommendation that archaeological sites 23RA132 and 23RA863 may be *eligible for inclusion in the National* Register of Historic Places.

If at all possible, the proposed project should be designed to avoid 23RA132 and 23RA863. Plans detailing the redesign of the project should be submitted to this office in order to document the successful avoidance of these site. If avoidance is not feasible, subsurface testing should be conducted in order to determine if these sites are eligible for inclusion in the National Register of Historic Places. The results of the evaluation should be submitted to the State Historic Preservation Office in accordance with the Council's regulations. Pending completion of this process, no actions should be taken that would foreclose consideration of alternatives to avoid or satisfactorily mitigate any adverse effects to historic properties.

If you have any questions, please write Judith Deel at State Historic Preservation Office, P.O. Box 176, Jefferson City, Missouri 65102 or call 573/751-7862. Please be sure to include the SHPO Log Number (005-RA-05) on all future correspondence or inquiries relating to this project.

Sincerely,

STATE HISTORIC PRESERVATION OFFICE

Mark A. Miles
Director and Deputy State
Historic Preservation Officer

MAM:jd

c Ron Pulcher, COE/RI

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STATE OF MISSOURI

Matt Blunt, Governor • Doyle Childers, Director

DEPARTMENT OF NATURAL RESOURCES

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July 5, 2006

Rec'd in P.M.-A
JUL 11 2006

Kenneth A. Barr, Chief
Corps of Engineers, Rock Island District
Clock Tower Building – P.O. Box 2004
Rock Island, Illinois 61204-2004

Re: Phase II Testing, 23RA132 & 23RA863 (COE) Ralls County, Missouri

Dear Mr. Barr:

Thank you for submitting information on the above referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.L. 89-665, as amended) and the Advisory Council on Historic Preservation's regulation 36 CFR Part 800, which requires identification and evaluation of cultural resources.

We have reviewed the May 2006 report entitled *Geomorphological Investigations and Phase II Testing at Archeological Sites 23RA132 and 23RA863, Ralls County, Missouri* by Bear Creek Archeology, Inc.. Based on this review it is evident that a thorough and adequate cultural resources survey has been conducted of the project area. We concur with the investigator's recommendation that 23RA132 and 23RA863 are eligible for inclusion in the National Register of Historic Places. We also concur that the placement of dredge spoil will have **no adverse effect** on the portions of these sites that retain the potential to yield information important to prehistory. Therefore, we have no objection to the initiation of project activities.

Please be advised that, should project plans change, information documenting the revisions should be submitted to this office for further review. In the event that cultural materials are encountered during project activities, all construction should be halted, and this office notified as soon as possible in order to determine the appropriate course of action.

If you have any questions, please write Judith Deel at State Historic Preservation Office, P.O. Box 176, Jefferson City, Missouri 65102 or call 573/751-7862. Please be sure to include the SHPO Log Number **(004-RA-06)** on all future correspondence or inquiries relating to this project.

Sincerely,

STATE HISTORIC PRESERVATION OFFICE

Mark A. Miles
Director and Deputy
State Historic Preservation Officer

MAM:jd

c Mark Schenkleburg, FAA
Regina Meyer, MOARNG
Robert Reed, Springfield
Neal Lopinot, CAR

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CHOCTAW NATION OF OKLAHOMA
Cultural Resources
P.O. Drawer 1210 • Durant, OK 74702-1210
1-580-924-8280 • 1-800-522-6170 • Fax: 580-920-3102

Rec'd in PM-A
SEP 25 2006

September 19, 2006

Kenneth A. Barr
Department of the Army
Rock Island District, Corps of Engineers
P.O. Box 2004
Rock Island, Illinois 61204-2004

Dear Kenneth A. Barr:

We have reviewed the following proposed project as to its effect regarding religious and/or cultural significance to historic properties that may be affected by an undertaking of the projects area of potential effect.

Entity Requesting Service: UMR Pool 24, River Mile 300, Lock 22, Upper and Lower DMMP Alternative 3, Site 8

Site Location: Section 28, Township 56 North, Range 3 West

County: Ralls County, Missouri

Comments: After further review of the above mentioned project (s), it has come to our attention that the project is out of our area of interest. However, should construction expose buried archaeological or building materials such as chipped stone, tools, pottery, bone, historic crockery, glass or metal items, this office should be contacted immediately @ 1-800-522-6170 ext. 2137.

Sincerely,

Terry D. Cole
Tribal Historic Preservation Officer
Choctaw Nation of Oklahoma

By: Caren A. Johnson
Caren A. Johnson
Administrative Assistant

CAJ: cp

Sac and Fox Nation of Missouri in Kansas and Nebraska

305 North Main Street • Reserve, Kansas 66434
Phone (785) 742-7471 • Fax (785) 742-3785

Rec'd in PM-A
SEP 22 2006

September 21, 2006

Department of the Army
Corps of Engineers
Rock Island District
ATTN: Ron Pulcher
Clock Tower Building-Post Office Box 2004
Rock Island Illinois 61204-2004

Dear Mr. Pulcher:

Thank you for your letter, which is in compliance with Section 106 of the National Historic Preservation Act, and Section 110.

Project: Sites 23RA132 and 23RA863

The Sac and Fox Nation of Missouri in Kansas and Nebraska NAGPRA department have determined the above project as:

No objections. However, if human skeletal remains and/or any objects falling under NAGPRA are uncovered during construction, please stop immediately and notify NAGPRA representative, Johnathan L. Buffalo, at the address below.

There are two other bands of Sac and Fox that also need to be contacted, the Sac and Fox Nation of Oklahoma and the Sac and Fox of the Mississippi in Iowa.

Johnathan Buffalo, NAGPRA Representative
Sac and Fox of the Mississippi in Iowa
349 Meskwaki Rd.
Tama, IA 52339-9629

Sandra Massey, NAGPRA Representative
Sac and Fox Nation of Oklahoma
Rt. 2, Box 246
Stroud, OK 74079

If you have any questions, please contact me at the number or address above.

Sincerely,

Deanne Bahr
Sac and Fox Nation of Missouri in Kansas and Nebraska
NAGPRA Contact Representative

CF
PM DIST FILE
PM-A Pulcher

STATE OF MISSOURI Matt Blunt, Governor • Doyle Childers, Director

DEPARTMENT OF NATURAL RESOURCES

www.dnr.mo.gov

November 3, 2006

Kenneth A. Barr, Chief
Corps of Engineers, Rock Island District
Clock Tower Building – P.O. Box 2004
Rock Island, Illinois 61204-2004

Re: Upper Mississippi River Lock & Dams 22 & 25 (COE) Ralls & Lincoln Counties, Missouri

Dear Mr. Barr:

Thank you for submitting information on the above referenced project for our review pursuant to Section 106 of the National Historic Preservation Act (P.O. 89-665, as amended and the Advisory Council on Historic Preservation's regulation 36 CFR Part 800, which require identification and evaluation of cultural resources.

We have reviewed the information provided concerning the proposed construction of 1200 foot locks at Lock and Dams 22 and 25 and a fish passage structure at Lock and Dam 22. We concur with your determination the proposed project will have an **adverse effect** on the historic fabric of the Lock and Dams 22 and 25, which are contributing properties to the Upper Mississippi River Navigation Project, 1931-1948, a historic district determined eligible for inclusion in the National Register of Historic Places.

We also concur with the proposed mitigation to include the production and printing of a complete Upper Mississippi River watershed educator's guide book, with a marketing plan for its distribution and/or sales. The completion of the nomination of the system to the National Register should provide sufficient documentation of the history and physical appearance of the Lock and Dams prior to the new construction.

If you have any questions, please write Judith Deel at State Historic Preservation Office, P.O. Box 176, Jefferson City, Missouri 65102 or call 573/751-7862. Please be sure to include the SHPO Log Number **(001-RA-06)** on all future correspondence or inquiries relating to this project.

Sincerely,

STATE HISTORIC PRESERVATION OFFICE

Mark A. Miles
Director and Deputy
State Historic Preservation Officer

MAM:d

c: Ron Deiss, COE/RI

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DEPARTMENT OF THE ARMY
ROCK ISLAND DISTRICT, CORPS OF ENGINEERS
CLOCK TOWER BUILDING - P.O. BOX 2004
ROCK ISLAND, ILLINOIS 61204-2004

REPLY TO ATTENTION OF

http://www.mvr.usace.army.mil

October 25, 2006

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Preservation Services

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Planning, Programs and Project
Management Division

SEE DISTRIBUTION LIST:

The U.S. Army Corps of Engineers has been coordinating with various federal and state agencies, American Indian tribes, and other consulting parties concerning mitigation for site specific concerns for proposed construction effort at the Upper Mississippi River Lock and Dams 22 and 25 and at the Illinois Waterway La Grange Lock and Dam. Specifically, comment is requested from the Illinois, Iowa, Minnesota, Missouri, and Wisconsin State Historic Preservation Officers, due to the nature of effects to the three National Register of Historic Places historic districts **Upper Mississippi River Navigation Project, 1931-1948,** Lock and Dam 22; **Upper Mississippi River Navigation Project, 1931-1948,** Lock and Dam 25; and **Illinois Waterway Navigation Facilities,** LaGrange Lock and Dam. By copy of this letter, all listed on the Distribution List are invited to participate in furthering our coordination effort in compliance with the National Historic Preservation Act and its implementing regulations. Concerns for the proposed construction effort and mitigation were discussed at the Navigation Ecosystem Sustainability Program Cultural Resource Stewardship Team Meeting and Mitigation workshop on 29 June 2006, at La Crosse, Wisconsin.

The Rock Island and St. Louis Districts are preparing Supplemental Environmental Assessments (SEA) for the proposed construction of new 1200 foot locks on the Upper Mississippi River at Lock and Dam 22 (Saverton, Missouri) and Lock and Dam 25 (Winfield, Missouri) and Illinois Waterway La Grange Lock and Dam (La Grange, Illinois). A fish passage structure is also proposed for Lock and Dam 22. These SEAs will be tiered from the *Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Study* (PEIS, 24 September 2004, previously provided to those on this Distribution List). These SEAs and corresponding Findings of No Significant Impact (FONSI) tier from the PEIS because these projects have unique project features and site-specific characteristics (e.g., footprint area, topography and hydraulic conditions, associated biota, historic properties, etc.) that were not addressed in the PEIS.

To afford protection to known and unknown significant historic properties resulting from the implementation of the proposed construction projects in Illinois and Missouri, the Corps proposes to use the *Programmatic Agreement Among the U.S. Army Corps of Engineers Mississippi Valley Division, St. Paul District, Rock Island District, and St. Louis District, Illinois, Iowa, Minnesota, Missouri, and Wisconsin State Historic Preservation Officers, and*

Advisory Council on Historic Preservation, Regarding Implementation of the Upper Mississippi River - Illinois Waterway System Navigation Study and Ecosystem Restoration for Ongoing Effects of Navigation From the Upper Mississippi River - Illinois Waterway System Navigation Study (PA located in Appendix C of the PEIS, see Fact Sheet, Enclosure 1). The PA will be included in the SEAs to document Corps compliance and to afford protection to undocumented historic properties, as well as those significant elements of the National Register of Historic Places eligible **Illinois Waterway Navigation Facilities,** and the **Upper Mississippi River Navigation Project, 1931-1948.**

The Corps requested consultation and have provided the Area of Potential Affect in accordance with 36 CFR Part 800.16(d) of the National Historic Preservation Act in correspondence by letter dated June 2, 2006. No responses were received during this initial consulting period. Therefore, it is the opinion of the Corps that data recovery or recordation is appropriate for the site specific and systemic or system-wide affects be addressed under PA stipulation II(d) on Public Documentation (i.e., pamphlets, films, books, and other public and scholarly research on history and significance). The Corps shall conduct archeological investigations for those areas with potential for intact materials and sites. Coordination of these activities will proceed under consultation with the appropriate State Historic Preservation Officer(s).

Mitigation, recordation, or minimization for consideration of No Averse Effect actions or undertakings will require further coordination. It is the opinion of the Corps that an Adverse Effect will occur due to the construction of new 1200 foot locks proposed on the Upper Mississippi River at Lock and Dams 22 and 25 and at the Illinois Waterway La Grange Lock and Dam. Additional, an Adverse Effect determination is made for the fish passage structure proposed for Lock and Dam 22. Mitigation for the Adverse Effects was discussed at the Navigation Ecosystem Sustainability Program Cultural Resources Stewardship and Mitigation Meeting on 29 June 2006 at the Mississippi River Conference Room, Holiday Inn in La Crosse, Wisconsin.

As a result of the La Crosse meeting on 29 June 2006, mitigation and recordation alternatives for the Navigation Ecosystem Sustainability Program (NESP) three lock and dam site-specific projects were discussed and a preliminary agreement was made on the following: 1) producing and printing a complete Upper Mississippi River watershed educator's guide book, with a marketing plan for its distribution and/or sales, and 2) completion of Historic American Engineering Record (HAER) recordation for the Illinois Waterway. These two mitigation objectives only reflect those NESP site specific projects discussed herein.

Please provide your comments and/or concerns regarding the proposed construction effort, The Adverse Effect determination, and recommendations for mitigation, at the Upper Mississippi River Lock and Dam facilities 22 and 25, and at the Illinois Waterway facility La Grange Lock and Dam, within 30 days of the date of this letter. A timely review of this information and a written response will be greatly appreciated. Should you have any questions regarding our proposals, please contact Archeologist, Ron Deiss of our Economic and Environmental Analysis Branch, telephone 309/794-5185. Written responses may be sent to our address above, ATTN: Planning, Programs, and Project Management Division (Ron Deiss).

Sincerely,

Dorene A. Bollman

for: Kenneth A. Barr
Chief, Environmental and
Economic Analysis Branch

Enclosure

CONCUR

By: Anne E. Haaker
Deputy State Historic Preservation Officer

Date: SJH 11/28/06

TOTAL P.04

NEW 1200-FOOT LOCK
UPPER MISSISSIPPI RIVER

LOCK AND DAM 22
RIVER MILE 301.2

SAVERTON, MISSOURI

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

APPENDIX B

CLEAN WATER ACT, SECTION 404(b)(1) EVALUATION

NEW 1200-FOOT LOCK
UPPER MISSISSIPPI RIVER

LOCK AND DAM 22
RIVER MILE 301.2

SAVERTON, MISSOURI

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

APPENDIX B

CLEAN WATER ACT
SECTION 404(b)(1) EVALUATION

SECTION 1: PROJECT DESCRIPTION SEA-B-1

A. Location and Description.....SEA-B-1
B. Authority and Purpose/Objectives SEA-B-1
C. General Description of Dredged/Fill Material.....SEA-B-1
D. Description of the Proposed Placement Sites SEA-B-2
E. Description of the Proposed Placement Methods SEA-B-2

SECTION 2: FACTUAL DETERMINATIONS.....SEA-B-2

A. Physical Substrate Determinations SEA-B-2
B. Water Circulation and Fluctuation.....SEA-B-3
C. Suspended Particulate/Turbidity Determinations SEA-B-4
D. Contaminant Determinations.....SEA-B-5
E. Aquatic Ecosystem and Organism Determinations.....SEA-B-6
F. Proposed Placement Site Determinations SEA-B-7
G. Determination of Cumulative Effects on the Aquatic Ecosystem SEA-B-7
H. Determination of Secondary Effects on the Aquatic Ecosystem.....SEA-B-8
I. References Cited SEA-B-8

SECTION 3: FINDINGS OF COMPLIANCE OR NONCOMPLIANCE SEA-B-10
WITH THE RESTRICTIONS ON PLACEMENT

NEW 1200-FOOT LOCK
UPPER MISSISSIPPI RIVER

LOCK AND DAM 22
RIVER MILE 301.2

SAVERTON, MISSOURI

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

APPENDIX B

CLEAN WATER ACT
SECTION 404(b)(1) EVALUATION

SECTION 1: PROJECT DESCRIPTION

A. LOCATION and DESCRIPTION

Described earlier (see SEA section IV, *Project Description*).

B. AUTHORITY AND PURPOSE/OBJECTIVES

For project authority see SEA section III. For Purpose/Objectives reference System Study chapters 1 and 4.

C. GENERAL DESCRIPTION OF DREDGED/FILL MATERIAL

Fill (construction) materials for the new lock and guidewalls and guardwalls would consist of physically stable and chemically non-contaminating material such as corrosion-resistant steel and concrete. Construction would be bound by the requirements and conditions set forth in *Guide Specification, Civil Works Construction for Environmental Protection*, CW-1430, July 1978, Section 7.3.

Fill materials for all riprap (emergent wingdam and vane dike) would consist of 400-pound top size riprap. The Rock Island District 400-pound standard gradation would be used. Placement would be controlled with a bucket or clam shell to minimize environmental disturbances during construction.

The 2500 cubic yards of delta sediments of no-name creek, dredged prior to utilization of the riverine access corridor to the ag field staging area, will be returned to their original delta location following completion of construction. These sediments are sand and gravel.

D. DESCRIPTION OF THE PROPOSED PLACEMENT SITES

The dredged material from any excavation for the construction of the new lock would be deposited in any of the identified placement sites previously described and evaluated in the District report, *DREDGED MATERIAL MANAGEMENT PLAN FOR DREDGED MATERIAL PLACEMENT, UPPER MISSISSIPPI RIVER MILES 300.3-303.4, POOLS 22 AND 24, SITE PLAN FOR THE LOCK AND DAM 22 UPPER AND LOWER APPROACH DREDGE CUTS,* dated September 2001. The sites are agricultural fields behind a levee, left descending bank. The sediments from this new lock construction project that would require dredging would not be placed in the waters of the United States.

The construction materials used for lock construction would be placed in the waters of the United States at proposed new lock location 3, the current location of the auxiliary lock.

The placement sites for riprap for the emergent wingdam and the vane dike are predominantly sand and some gravel.

The sediments from the delta of no-name creek, dredged and stored on the adjacent ag field staging area will be re-deposited in the original delta location at approximate RM 300.4.

E. DESCRIPTION OF THE PROPOSED PLACEMENT METHODS

Any excavation of dredged material as part the construction of the new lock project would be done mechanically, then transported by barge and deposited/off-loaded in the placement sites. Wingdam shortening in Pool 22 would consist of removing rock material vertically to minimize any disturbances. This material would be deposited/off-loaded in the placement sites, to be used for any of several purposes, including but not limited to a NESP ecosystem restoration project (fish passage structure at Lock and Dam 22), for the emergent wingdam for this 1200-foot new lock project, bankline erosion protection, and fisheries habitat creation. Emergent wingdam and vane dike construction would be done mechanically, as would re-deposition of the delta sediments from no-name creek.

SECTION 2: FACTUAL DETERMINATIONS

A. PHYSICAL SUBSTRATE DETERMINATIONS

1. **Substrate Elevation.** Flat Pool at Lock and Dam 22 lower (tailwaters) is 449.0 and upper Flat Pool is 459.5 Mean Sea Level 1912. Elevation of the new lock floor and the vane dike will be at approximately 430-435; and the substrate of the emergent wingdam ranges in elevation from 459 at the bankline to 430 at the mooring cell.

2. **Substrate Type.** **New Lock.** The new lock would be founded on bedrock.

   Emergent Wingdam. Sediment sampling as part of the mussel dive survey (McClane 2007) confirms the substrate in the vicinity of the proposed emergent wingdam is primarily sand and gravel mixes with sand dominating the channel side of the area.

Vane Dike. The substrate composition in this area is comprised of sand, coarse sand, and gravel.

No-name Creek Delta. Substrate composition of the no-name creek delta is sand and gravel.

3. **Dredged/Fill Material Movement.** No movement of the concrete for lock construction, rock from wingdam and vane dike construction, or the re-deposited delta sediments should occur.

4. **Actions Taken to Minimize Impacts.** Riprap material removed (wingdam shortening or stub dike removal) would not be raked down and spread out due to the quantities of material and potential impacts. Instead, riprap material would be removed vertically to minimize impacts to mussels and would be transported and used in constructing a fish passage structure at Lock and Dam 22, for emergent wingdam construction, or for other purposes. Physical and numerical models were used in the design of the new lock, guidewalls, guardwalls, etc., to minimize impacts in the pool and in the tailwater (see section I).

B. WATER CIRCULATION AND FLUCTUATION

1. **Water.** The rock, concrete, steel, etc., for the lock construction; riprap materials; and delta sediments would be basically inert material that would have little effect on water chemistry. Water clarity, odor, taste, pH, temperature, and dissolved gas levels would not change. The nature of all fill materials would not cause any significant changes in nutrient levels. The construction of the new lock should not impair the aquatic ecosystem's capability to sustain life, or reduce the suitability of the Mississippi River for populations of aquatic organisms, and for human consumption, recreation, and aesthetics.

2. **Current Patterns and Water Circulation.** The construction of a new 1200-foot lock chamber with corresponding approach walls would result in changes to current patterns and water circulation. These changes would be localized in nature and would not produce large-scale changes in river velocities or bathymetry. Hydraulic analysis has been performed for a variety of project alternatives. Details of model results are given in the appropriate physical and numerical model study reports.

   Current patterns and water circulation for the emergent wingdam will decrease velocities downstream of the wingdam. Decreasing velocities increases the tendency for accretion in this area. Substrate changes would be gradual, and would accumulate sands and silts on top of mainly course sand material. Accretion would not produce land growth because the area is very deep (20+ feet) and the emergent wingdam still overtops with a frequency of approximately the 5-year flood. Periodic overtopping will increase velocities and remove sands and silts from the area. Scour pockets would be localized immediately downstream of the toe of the wingdam. The emergent wingdam will contain a notch to provide through-flow and dissolved oxygen downstream of the wingdam and will counteract the tendency for deposition in the area. The notch has been tested in a physical model and its geometry is 40-feet wide at the crest, crest is 5-feet below flat pool, 2h:1v sideslopes, and 75-feet top width at elevation 464-feet (crest elevation of the emergent wingdam). The center of the notch is located 70-feet from the shoreline (begins 50-feet from shore). Current patterns upstream of the emergent wingdam will

change from along the near shore/bankline to towards the main channel. Velocities will remain relatively the same and localized scour may occur immediately upstream of the toe of the wingdam. Velocities in the main channel will remain relatively the same due to the proposed shortening of the left bank wingdams which opens up a conveyance area that would be lost by the presence of the emergent wingdam.

Current patterns and water circulation for the vane dike will remain relatively the same with or without the vane dike. Turbulence will tend to cause localized scour pockets at the toe of the vane dike. These pockets will tend to fill in during periods of lower river flows.

Current patters and water circulation after the no-name creek delta sediments are re-deposited in their original delta location should return to normal pre-construction conditions quickly.

3. **Normal Water Level Fluctuation.** Construction of the new lock and all accompanying features of the lock would not alter normal water level fluctuations in the area, or cause prolonged periods of inundation, exaggerated extremes of high and low water, alter erosion or sedimentation rates, aggravate water temperature extremes, or upset the nutrient and dissolved oxygen balance of the aquatic ecosystem. Therefore, this project should not alter or destroy communities and populations of aquatic animals and vegetation, induce populations of nuisance organisms, reduce food supplies, or restrict movement of aquatic animals.

4. **Actions Taken to Minimize Impacts.** Physical and numerical hydraulic models were used in the design of the new lock, guidewalls, guardwalls, etc. to minimize impacts in the pool and in the tailwater. Construction sequencing will be planned in order to minimize impacts during construction.

   The notch planned for the emergent wingdam should help to reduce the likelihood of sediment accretion upstream and downstream of the wingdam.

   Returning the delta sediments, (originally dredged and stored on the ag field staging area to allow adequate depths for safe ingress/egress of tows/barges) should help to minimize impacts by returning the site to preconstruction conditions quickly. Relocation of all the mussels in the staging area riverine access corridor prior to construction minimizes impacts.

C. SUSPENDED PARTICULATE/TURBIDITY DETERMINATIONS

1. Effects on Physical and Chemical Properties of the Water Column. The construction of a new 1200-foot lock with its accompanying features should not change the kinds and concentrations of suspended particulate/turbidity in the construction area, after construction is complete. During construction temporary turbidity impacts will be experienced due to excavation, placement of construction material and movement of equipment. Impacts should be localized and limited to physical changes to the water column. No significant chemical impacts are anticipated. The deposition of any/all lock construction materials should not cause any violation of applicable water quality standard, or lead to loss of environmental values. It is estimated that construction time for this project is 6-9 years.

2. Effects on Biota. Deposition of the construction materials for the new lock and accompanying rock structures in the waters of the United States should not cause significant reductions in levels of light penetration that could lower photosynthesis and plant growth. Sight dependant species should not suffer reduced feeding ability, growth rates, or resistance to disease.

3. Actions Taken to Minimize Impacts. Constructing a new lock founded on bedrock should minimize impacts to the water column from suspended sediment, thereby minimizing turbidity. Land-based staging areas will be protected from excessive erosion by using traditional erosion prevention techniques.

D. CONTAMINANT DETERMINATIONS

A Phase I Environmental Site Assessment (ESA) was conducted to investigate the risk of Hazardous, Toxic, and Radioactive Waste (HTRW) regarding the NESP 1200-foot new lock project and the fish passage projects. The ESA revealed a potential for recognized environmental conditions. The scope of work for the project was not completed at the time the HTRW report was conducted (July 2006). Therefore, potential risks identified in the report must be analyzed at each project stage (feasibility, plans and specifications and construction) to ensure that these concerns are addressed. Further testing (Phase II ESA) may be required if certain construction activities occur.

The HTRW report revealed the potential for contaminated soil, surfaces coated with lead-based paint, or the presence of asbestos and polychlorobiphenyls (PCBs). The most likely places of contamination include the mechanical and electrical systems, soil in areas where lead based paint removal activities may have occurred, and the Highway E Bridge.

- Based on the historical use of Lock and Dam 22 and potential past practices which may have occurred between the 1930s to date, there is a potential that soil on site may be contaminated with various hazardous constituents. Therefore, any soil to be excavated must be tested for hazardous constituents prior to the commencement of construction. If hazardous constituents are detected, the appropriate construction, transportation and disposal techniques should be employed.
- Electrical equipment at times contains asbestos and/or lead coatings. Any electrical equipment to be removed must be analyzed to determine if these HTRW concerns exist. If hazardous or toxic constituents are detected, the appropriate construction, transportation and disposal techniques should be employed.
- Structures coated with paint at Lock and Dam 22 (including guard rails, fencing, gates, valves, etc.) have a history of being coated with lead based paint. If these structures are to be demolished, appropriate construction techniques should be employed to ensure the appropriate transportation and disposal techniques are used.
- Hydraulic fluid may contain PCBs. If equipment containing hydraulic fluid is to be removed, further analysis is required to determine if this equipment is contaminated with or contains PCBs.
- The Highway E Bridge, located on the Missouri side of the project, may require work to allow construction equipment access to the project site. If this occurs, the bridge and underlying soil

should be tested for lead based paint. Construction techniques should be employed as appropriate if lead contamination is detected.

- If additional land is to be acquired (easements, fee title, right of way, etc.), American Society of Testing Manuals guidance requires a 50-year title search of these properties.
- The HTRW report did not address any changes to wing dams located throughout the river. If modifications to these structures are required, additional HTRW analysis will be required.
- Once a more defined scope of work and project footprint is identified, the report shall be updated to incorporate changes and address potential issues associated with construction activities.

Further HTRW assessment is recommended when the scope of the project and project footprint have been finalized. If any recognized environmental conditions are identified during the feasibility, plans and specifications, or construction phases of the project, the guidance in ER 1165-2-132 shall be followed and the Environmental Engineering Branch of the Rock Island District must be notified immediately to reassess the project area.

E. AQUATIC ECOSYSTEM AND ORGANISM DETERMINATIONS

1. **Effects on Plankton and Nekton.** Planktonic organisms may be impacted as a result of current pattern and water velocity changes. The overall planktonic community structure will remain the same, as downstream drift is not affected.

   Nektonic or free swimming organisms should not be significantly impacted as they will avoid the project area during construction.

2. **Effects on Benthos.** Currently the auxiliary lock floor is fine sediment that has accreted there. Following construction of the new 1200-foot lock there, the lock floor will cover the benthic community that currently resides there.

   Benthic organisms at the sites of the emergent wingdam and the vane dike will be altered from a community that thrives in sand/silt substrate to one that thrives in rock habitat.

   Benthic organisms, (except mussels) at the delta of no-name creek will be lost after dredging and placement on the staging area. The benthos should recolonize quickly following dredging. Mussels in the delta sediments and throughout the riverine access corridor to the staging area will be relocated prior to construction.

3. **Effects on Aquatic Food Web.** The proposed action should not cause or establish the proliferation of any undesirable competitive or invasive species that may usurp resident species. If any such proliferation should occur, it should not be caused solely by the proposed action. No significant reduction or elimination of any food chain organism should occur either for the short- or long-term.

   Mussels that occupy the footprint of the emergent wingdam on the RDB will be relocated prior to construction, as would the mussels currently occupying the staging area access corridor.

The dredged or fill material for this project (rock, concrete, and sand/gravel) are uncontaminated, not carriers of contaminants and should not cause adverse impacts to any life stage of food chain organisms.

4. **Effects on Special Aquatic Sites.** The proposed project would not impact wetlands, sanctuaries or refuges, mud flats, vegetated shallows, or riffle and pool complexes**.** The project area contains no areas recognized as significantly influencing or positively contributing to the general overall environmental health or vitality of the entire ecosystem of the region.

5. **Threatened and Endangered Species.** Please refer to SEA section VI. B., and SEA appendices C, *Coordination Act Report* and F, *Tier II Biological Assessment*.

6. **Other Wildlife.** Please refer to SEA section VII. B.

7. **Actions Taken to Minimize Impacts.** Removing the rock from the wing dams, rather than raking them off to adjacent areas should minimize potential impacts to mussels. Depositing any/all dredged material necessary for new lock construction to upland placement sites should minimize impacts to wetland/aquatic organisms.

F. PROPOSED PLACEMENT SITE DETERMINATIONS

1. **Mixing Zone Determinations.** A mixing zone is a limited volume of water serving as a zone of initial dilution in the immediate vicinity of a discharge point where receiving water quality may not meet water quality standards or other requirements otherwise applicable to the receiving water. This would allow for a zone of dilution before compliance with relevant water quality standards is met. The mixing zone should be considered as a place where wastes and water mix and not as a place where effluents are treated. The large assimilation capacity of the Mississippi River in the vicinity of Lock and Dam 22 would provide an adequate mixing zone for any sediment related contaminants that may be present. No violation of any water quality standard resulting from dredged or fill material connected with this project is anticipated.

2. **Determination of Compliance with Applicable Water Quality Standards.** No State violations to any Missouri or Illinois water quality standard should occur. State certification under Section 401 of the Clean Water Act would be obtained before any construction activities begin.

3. **Potential Effects on Human-Use Characteristics.** Implementation of this project would have no significant effect either directly, indirectly, or cumulatively on municipal or private water supplies; commercial or recreational fishery; parks; national or historic monuments; wilderness areas; or other similar preserves.

G. DETERMINATION OF CUMULATIVE EFFECTS ON THE AQUATIC ECOSYSTEM

Cumulative effects are the total effect, including both direct and secondary (indirect) effects, on a given resource, ecosystem, and human community of all actions, no matter who (Federal, non-Federal, or private) has taken the actions.

Chapters 8, sections 8.1 through 8.7, pages 247-350; and 9 sections 9.1 through 9.5, pages 351-386 of the System Study provide legally required disclosure and documentation concerning the direct, indirect, and cumulative environmental impacts attributable to the proposed actions. Chapter 9 sections 9.1 through 9.5, pages 351 to 386 of the System Study deals specifically with cumulative effects/impacts.

The System Study was developed from numerous reports. One report is *Upper Mississippi River and Illinois Waterway Cumulative Effects Study* dated June 2000. This report provided an overview of the geomorphic (Volume I) and ecological (Volume II) effects as measured by the responses of biota to changes that have occurred since impoundment on the UMRS and predicts changes until the year 2050. A second report is *Ecological Status and Trends of the Upper Mississippi River System 1998*, which used data from the Long Term Resources Monitoring Program to describe the ecological condition of the UMRS. Copies of these documents are available to the public at http://www2.mvr.usace.army.mil/UMRS/NESP/.

An additional project under the System Study that is in various stages of the planning process in the Lock and Dam 22 vicinity is a fish passage structure through the dam. This project will have a separate SEA prepared and circulated for public and natural resource agency review when completed. Implementation of this project should result in improvements in ecosystem functioning (fish passage) while causing no significant adverse environmental impacts.

H. DETERMINATION OF SECONDARY EFFECTS ON THE AQUATIC ECOSYSTEM

See section 2, B. 2, and figure SEA-3 for a description of the secondary impacts resulting from construction of the lock and lock approach walls, the vane dike, and the emergent wingdam, (namely post project sedimentation changes that could result from changes in water velocities and current patterns).

I. REFERENCES CITED

U.S. Army Corps of Engineers
2006 *Large Scale Measures of Reducing Traffic Congestion: Hydraulic Impacts of New Lock Construction, Interim Report.*

U.S. Army Corps of Engineers
1997 *Navigation Conditions at Lock and Dam 22, Mississippi River: Hydraulic Model Investigation.* Prepared by the U.S. Army Corps of Engineers, Waterways Experiment Station, TR CHL-97-27, Wooley.

U.S. Army Corps of Engineers
2000 *Navigation at the Approach to Lock and Dam 22, Upper Mississippi River: Hydraulic Micro Mode Investigation.* Prepared by the U.S. Army Corps of Engineers, Rock Island District, Gambucci and Kirkeeng.

U.S. Army Corps of Engineers
2006 *Numerical Model Calibration and Base Conditions Report, Hydraulic Study of Lock and Dam 22.* Prepared by the U.S. Army Corps of Engineers, Rock Island District, Gambucci and Xia.

U.S. Army Corps of Engineers
2006 *Activation, Validation, and Base Condition Documentation of L&D 22, 1:120 Scale navigation Model.* Prepared by the U.S. Army Corps of Engineer Research and Development Center, Coastal and Hydraulics Laboratory, McCollum.

U.S. Army Corps of Engineers
2006 *Numerical Model Tailwater Alternatives Report, Hydraulic Study of Lock and Dam 22.* Prepared by the U.S. Army Corps of Engineers, Rock Island District, Gambucci and Xia.

U.S. Army Corps of Engineers
2006 *Barge Impact Study, Upper and Lower Guard Wall, LD22 1:120 Model.* Prepared by the U.S. Army Engineer Research and Development Center, Coastal and Hydraulics Laboratory, McCollum.

NEW 1200-FOOT LOCK
UPPER MISSISSIPPI RIVER

LOCK AND DAM 22
RIVER MILE 301.2

SAVERTON, MISSOURI

SECTION 3

FINDINGS OF COMPLIANCE OR NONCOMPLIANCE WITH THE RESTRICTIONS ON PLACEMENT

A. No significant adaptations of the 404(b)(1) Guidelines were made relative to this evaluation.

B. Alternatives which were considered for the proposed action are:

1. No Action
2. Small Scale Measures
3. New Lock.

C. Section 401 Water Quality Certification from the States of Missouri and Illinois would be received before project construction would begin.

D. The project, as proposed, would not cause concentrations of hazardous substances or other regulated contaminants in the waters of the United States to exceed applicable or relevant and appropriate limits.

E. No significant adverse impacts to State or federally listed endangered or threatened species are anticipated from this project.

F. No municipal or private water supplies would be affected. There would be no adverse impacts to recreational or commercial fishing. No significant adverse changes to the ecology of the Mississippi River system would result from this action.

G. No contamination of the river is anticipated. The project would cause only minimal and short-term adverse environmental impacts.

H. No other practicable alternative has been identified that would address the project goals and objectives better than the preferred alternative. The proposed action would not significantly impact water quality. The proposed action is in compliance with Section 404(b)(1) of the Clean Water Act, as amended.

_____ _____

Date

Robert A. Sinkler
Colonel, U.S. Army
District Engineer

NEW 1200-FOOT LOCK
UPPER MISSISSIPPI RIVER

LOCK AND DAM 22
RIVER MILE 301.2

SAVERTON, MISSOURI

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

APPENDIX C

COORDINATION ACT REPORT

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Rock Island Field Office
1511 47th Avenue
Moline, Illinois 61265
Phone: (309) 757-5800 Fax: (309) 757-5807

IN REPLY REFER TO:
FWS/RIFO

June 21, 2007

Colonel Robert A. Sinkler
District Engineer
ATTN: Mr. Ken Barr
U.S. Army Corps of Engineers
Rock Island District
Clock Tower Building, P.O. box 2004
Rock Island, Illinois 61204-2004

Dear Colonel Sinkler:

This letter serves as the Draft Rock Island Field Office (RIFO) Fish and Wildlife Coordination Act Report (FWCAR) regarding proposed navigation improvements at Upper Mississippi River (UMR) Lock Dam (L/D) 22 located near Saverton, Missouri. This project is included in the Corps of Engineers September 2004 Final Integrated Feasibility Report and Programmatic Environmental Impact Statement (PEIS) for the Upper Mississippi River (UMR) and Illinois Waterway System Navigation Study. The report recommended a multitude of measures for improving the UMR Nine-foot Channel Navigation System as well as the UMR ecosystem. The PEIS assessed the systemic and cumulative impacts associated with the proposed ecosystem and navigation improvement measures. During PEIS preparation, only preliminary design information was available for specific projects. Thus, a tiered approach to project approval and evaluation was adopted. For measures subject to the National Environmental Policy Act (NEPA), a subsequent Tier II Environmental Assessment (EA) will be prepared prior to construction. This letter serves as our Tier II Fish and Wildlife Coordination Act Report for Lock and Dam 22 navigation site-specific improvements.

I. Description and Need For Project

In the late 1980s, commercial navigation traffic data and Midwest grain shipping forecasts indicated that the current system of 29 lock and dams on the Upper Mississippi River System (UMRS) might reach capacity sometime after the year 2000. The Corps of Engineers completed a reconnaissance study in 1992 and then launched a feasibility study to examine the need for expanded navigation capacity. The Final Feasibility Report completed in 2004 recommended the immediate implementation of mooring cell(s) and a 1,200 foot long lock at L/D 22 located near Saverton, Missouri. Expanding lock capacity at L/D 22 is just one component of a plan to increase system-wide navigation capacity. Due to the uncertainty of the economic benefits of the proposed project, the project will be re-evaluated at the completion of design and prior to construction.

The recommended navigation improvements at L/D 22 include: 1) lengthening the existing auxiliary lock chamber (location 3) to 1,200 feet, and extending guardrails (1,200 ft. upstream and 600 ft.downstream); 2) re-configuring wing dams upstream of the existing locks; and 3) establishing a staging area on the Missouri shoreline near the mouth of Fool's Creek and a fleeting area along the channel side of Cottel Island.

The navigation improvements evaluated in Environmental Report 7[1] differ from those currently proposed. Most notably: a) the proposed staging area in the bottomland hardwoods on the right bank above the upstream lock approach has been relocated to a designated/approved dredged material placement site downstream of the lock; b) the construction of five emergent dikes upstream of the lock has been modified. The recommended dike work now consists of removing the stub dike on the right bank immediately upstream of the lock, constructing one new emergent dike (with notch) located at the upstream mooring cell, shortening three existing dikes on the left bank, and construction of a new vane dike adjacent to the downstream guardrail; c) the channel re-alignment has been eliminated; and d) the shoreline along the upstream end of Cottel Island will be used for fleeting barges.

II. Affected Environment and Resources

Habitats potentially affected by the proposed improvements include the main channel, main channel border, and bottomland forest. The L/D tailwaters support a commercial and recreational fishery. A boat ramp near the downstream lock wall is used by recreational and commercial fishermen. There is also a fishing access on the Illinois side of the dam. Recent fishery surveys have been conducted by the Missouri Department of Conservation (DOC), U.S. Fish and Wildlife Service (Service), and the Corps of Engineers (Corps). Electro-fishing and hoop net surveys conducted by the Service's Carterville Fishery Resource Office in 2005 and 2006 documented 20 species including catfish, sturgeon, white bass, gizzard shad, Asian carp, paddlefish, and walleye. Tailwaters located near the eastern end of the dam attract more fish than near the locks. In a separate study, the Corps is investigating the feasibility of a fish passage structure in the dam overflow section.

Significant mussel concentrations are present along the Missouri and Illinois shorelines, both upstream and downstream of the dam. Downstream of the lock along the Missouri shoreline is a designated Missouri DOC mussel sanctuary. The spatial extent and quality of any mussels upstream of Fool's Creek, and adjacent to the proposed construction staging area, needs to be documented. The Corps intends to conduct a survey in 2007 to assess the significance of any mussel assemblages that might be present in this area.

III. Project Impacts, Recommendations, and Conclusions

Lock Extension - Construction impacts of the lock extension and new guardrails that were previously documented in ENV Report 7 are still generally accurate. The interagency habitat assessment team (HAT) agreed that conducting a new habitat assessment was unnecessary. The recommended location for the 1,200 foot lock extension is location 3 (auxiliary lock gate bay). ENV Report 7 indicated that there would be a net gain of eight main channel border acres. Relocation of the construction staging area to the dredged material placement site has almost eliminated impacts to bottomland hardwoods. A negligible amount of bottomland hardwoods between the upstream landwall and the railroad tracks may be degraded during lock construction.

[1] US Army Corps of Engineers. Interim Report for the Upper Mississippi River – Illinois Waterway System Navigation Study. *Site Specific Habitat Assessment* (September 1998). ENV Report 7. 262 p.

Wing dike alteration – The construction plan evaluated in ENV Report 7 assessed the impacts of five proposed emergent dikes. The revised plan proposes to shorten the three wing dikes on the left descending bank immediately upstream of the dam spillway, remove the stub dike just upstream of the lock, and construct an emergent dike between the Missouri shoreline and the mooring cell just upstream of the lock river mile (RM) 302.0). Approximately 0.75 acres of bottomland hardwoods will be removed for construction of the emergent dike.

A recent mussel survey[2] performed for the Corps by McClane Environmental Services documented a mussel bed which is extremely patchy in terms of diversity and density. It is located along the right descending bank near the proposed emergent dike. Transect LD22-RDB-T05 and transect LD22-RDB-T04 which were immediately upstream and downstream of the proposed emergent dike averaged about one mussel per square meter. The 15 minute timed search which was conducted from Transect LD22-RDB-T05 documented ten species of 78 live mussels. Random quadrat samples documented densities ranging from 0 to 45 mussels per square meter. The Service recommends that all mussels encountered in the footprint of the proposed emergent dike and a minimum of two meters upstream and downstream be relocated outside of the impact area. Documentation relative to the number and species of mussels relocated and the relocation site should be provided to the Service upon completion of the work.

Resource managers have expressed concern for potential sedimentation effects on nearby mussels if the emergent dike is constructed. Emergent dikes frequently accumulate sediment downstream of the intersection of the shoreline and dike, thus degrading its habitat value. In order to reduce sedimentation, the wing dike will include a notch (5 ft. deep x 35 ft. wide) to provide flow at most river stages.

Cottel Island fleeting – The Corps proposes to use the Cottel Island shoreline to fleet barges during construction. The Illinois Natural Heritage Database documents a significant assemblage of mussels along the shoreline from approximately RM 300.2 to 300.6. Any impacts will likely be insignificant and temporary if the barges are moored off shore and upstream of RM 300.6. The Service recommends that the construction contract require that construction barges use off-shore mooring devices.

Construction Staging – The Corps proposes to use an already approved channel maintenance dredged material disposal site for a construction staging area including a temporary landing for construction barges. The site is located along the Missouri shoreline at approximately RM 300.3. Potential impacts to the riparian zone are a concern. The proposed barge access lies within a Missouri DOC mussel sanctuary. A significant mussel assemblage within this sanctuary is located immediately adjacent to the proposed staging area. A 2003 survey by the Missouri DOC documented 15 mussel species and estimated densities as high as 80 per square meter. There were no Federal or state endangered species found. It is our understanding that the Corps intends to contract for a mussel survey adjacent to the staging area this field season. If the survey reflects an assemblage quality similar to the adjacent bed, the Service recommends that mitigation measures be developed in consultation with Federal and state biologists.

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[2] McClane Environmental Services. *Evaluation of the Impacts to the Unioinid Mussel Community within the area of Impact due to construction of Lock and Dam 22 Lock extension of the Upper Mississippi River Lock 22 New 1,200 foot lock project.* Prepared for U.S. Army Corps of Engineers, Rock Island District, Contract DACW25-D-0005. January 2007.

Mitigation – ENV Report 7 predicted mitigation would be required for bottomland hardwoods, main channel border, and mussel habitats. Design changes have eliminated impacts to main channel border habitat and all but 0.75 acres of bottomland hardwoods. The loss of 0.75 acres bottomland hardwoods will be mitigated by the planting of 2.25 acres of hard and soft mast trees in the downstream staging area. Impacts to mussels located within the emergent wing dam footprint will be mitigated by the relocation of individual mussels to nearby areas within the same bed. Relocation should follow recommended guidelines to minimize handling mortality[3]. The Corps will also conduct post-project monitoring to assess the effectiveness of the notch on minimizing sedimentation and impacts to mussels. Any plans to mitigate mussel impacts near the staging area barge landing will be addressed following the results of the pending mussel survey.

IV. Federally Endangered and Threatened Species

In August 2004, the Service completed a Biological Opinion (BO) for the Upper Mississippi-Illinois Waterway System Navigation Feasibility Study. That BO is a programmatic (Tier 1) consultation that addresses the systemic impacts of the recommended plan identified in the Corps' April 29, 2004 Feasibility Study and Environmental Impact Statement. Under a tiered consultation framework, a Tier II consultation with Tier II Biological Opinion will be conducted whenever the proposed project will result in unavoidable adverse effects to threatened and endangered species. The Tier II procedure, provided per the August 2004 Final Biological Opinion for the Upper Mississippi River-Illinois Waterway System Navigation Feasibility Study, is as follows.

> As individual projects are proposed under the recommended plan, the Corps shall provide, for any action that may affect listed species, project-specific information to the Service that: (1) describes the proposed action and the specific area to be affected; (2) identifies the species that may be affected; (3) describes the manner in which the proposed action may affect listed species, and the anticipated effects; (4) specifies whether the anticipated effects from the proposed project are similar to those anticipated in the programmatic BO; (5) estimates a cumulative total of take that has occurred thus far under the Tier I BO; and (6) describes additional effects, if any, not considered in the Tier I consultation. If it is determined that the proposed project may affect listed species, the Corps will provide this information in a Tier II Biological Assessment to document anticipated effects of the subject action.
>
> The Service will review the information provided by the Corps for each proposed project. If it is determined during this review that a proposed project is not likely to adversely affect listed species, the Service will complete its documentation with a standard concurrence letter that the proposed project is not likely to adversely affect listed species or designated critical habitat. If it is determined that the action is likely to adversely affect listed species or designated critical habitat and these effects are commensurate with those contemplated in the programmatic BO, then the Service will complete a Tier II BO with a project-specific incidental take statement within the annual allotted programmatic incidental take, and project specific Reasonable and Prudent Measures and Terms and Conditions, if appropriate.

[3] Heidi L. Dunn, Bernard Sietman, and Daniel E. Kelner. 1999. *Evaluation of recent Unionid (Bivalvia) relocations and suggestions for future relocations and reintroductions*. Proceedings of the First Freshwater Mollusc Conservation Society Symposium. Pages 169-183.

Colonel Robert A. Sinkler 5

ENV Report 7 indicated that there were four federally listed species that could potentially occur in the vicinity of L/D 22. These were the Indiana bat, bald eagle, fat pocketbook mussel, and the gray bat. Since that initial consultation, the bald eagle's status has been changed to threatened, and the spectacle case mussel (*Cumberlandia monodonta*) has been listed as a candidate species. Considering that the fat pocketbook mussel has not been found in recent surveys, habitats for the gray bat and Indiana bat are not present in the affected project area, and construction activities will have negligible effects on any wintering bald eagles, the proposed project is not likely to adversely affect any federally listed endangered species. This precludes the need for Tier II Consultation on this project. Should the project be modified or new information indicate endangered species may be affected, consultation should be re-initiated.

Should you have any questions regarding this report please, contact Mr. Jon Duyvejonck (telephone 309/757-5800, extension 207). These comments are provided under the authority of and in accordance with the provisions of the Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.; 48 Stat. 401), as amended; and the Endangered Species Act of 1973, as amended.

Sincerely,

Richard C. Nelson
Field Supervisor

cc: ILDNR (Schanzle, Atwood)
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United States Department of the Interior

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IN REPLY REFER TO:
FWS/RIFO

March 14, 2008

U.S. Army Corps of Engineers
Rock Island District
ATTN: Mr. Ken Barr, Planning
Clock Tower Building, P.O. Box 2004
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Dear ~~Mr. Barr~~: Ken

The Army Corps of Engineers is proposing to expand the navigation capacity of Lock and Dam 22 near Saverton, Missouri by means of several small-scale and large-scale improvements. The proposed project is part of an Upper Mississippi River system-wide navigation improvement plan that was evaluated in the Final Integrated Feasibility Report and Programmatic Environmental Impact Statement (PEIS) for Upper Mississippi and Illinois Waterway System Navigation Feasibility Study completed in September 2004. The cumulative and system-wide effects of the proposed improvements were assessed in that PEIS. In addition, an assessment of site-specific impacts associated with the proposed Lock and Dam 22 project design was also completed and documented in Environmental Report No. 7[1] (ENV 7).

Planning and design for the Lock and Dam 22 navigation improvements resumed in March 2006 when the Rock Island Corps of Engineers notified the Service that they were preparing a Supplemental Environmental Assessment (SEA) for the project. The proposed design differs from the PEIS. Changes consist of: 1) re-location of the construction staging area, 2) construction of wing dams on the Illinois shoreline, 3) navigation channel improvements, 4) a fleeting area near Cottel Island, and 5) elimination of the channel re-alignment. The Service provided recommendations and comments regarding evaluation of the revised design in a letter dated May 3, 2006. Foremost among these concerns were the potential effects of relocating the construction staging area that encroaches on a Missouri Department of Conservation (DOC) mussel sanctuary.

[1] US Army Engineers. Interim Report for the Upper Mississippi River – Illinois Waterway System Navigation Study. Site specific Habitat Assessment (September 1998). ENV Report 7. 262 p.

In June 2007, the Service provided the District with a Draft Fish and Wildlife Coordination Act Report (DFWCAR) for the proposed navigation improvements at Lock and Dam 22. The DFWCAR also concurred with a determination that "...the proposed project is not likely to adversely affect any federally listed endangered species." Most of the natural resource impact issues had been resolved with the exception of a location for the construction staging area.

Four possible construction staging areas for lock improvements were investigated: 1) an agricultural field near the town of Saverton, 2) a parcel of bottomland forest immediately upstream of the lock and dam, 3) an agricultural field downstream of the lock with river access at River Mile 300.4 through a Missouri DOC mussel sanctuary, and 4) the same location as number 3 above, but with road access to the lock. Other locations were considered, but none met the necessary requirements.

Impacts to fish and wildlife resources at Sites 1 and 2 were documented in ENV 7. Impacts to Sites 3 and 4 were not formally assessed, but were discussed and coordinated among the State and Federal agencies. After reviewing four staging area alternatives, the Corps has recommended site 3 as its preferred location. The Service does not support Site 3 because of likely impacts to the mussel sanctuary, but may agree to its use given adequate mitigation. This letter provides our recommendations for developing a mitigation plan which should be incorporated into the plans and specifications for the project.

Proposed Action - In order to gain barge access to the staging area, approximately 0.93 acre of a mussel bed (out of a total 48.6 acres) may be dredged. The Corps proposes to stockpile the dredged material in the construction staging area for possible restoration use. The preferred access location at the mouth of No Name Creek (See enclosure 1 which was modified from the Corps' draft Environmental Assessment) will be used as a barge landing during the construction of improvements to Lock and Dam 22. Construction may occur over a period of approximately 5-10 years beginning as early as 2009.

The affected area (indicated in enclosure 1) is part of a Missouri DOC mussel sanctuary. Recent surveys by Ecological Specialists, Inc. documented seventeen species and found densities as high as 96 mussels per square meter (40.6 per square meter average). While no Missouri state endangered species was identified in recent surveys, three species recognized as Missouri Species of Conservation Concern were found during sampling. No federally endangered or threatened species were collected. Evidence of recruitment, and the paucity of zebra mussels in the community, offer further proof of its significance. Based on the recent mussel survey, there may be as many as 86, 250 mussels in the 0.93 acre impact zone.

Probable impacts – Dredging and barge landings are likely to preclude any re-colonization of the impact zone for several years. Although difficult to quantify, there will be an increased risk to aquatic organisms from potential hazardous materials spills

from equipment and machinery used in the staging area. Barge traffic could also deter fish, which serve as mussel hosts, from frequenting the shoreline.

The Corps has proposed relocating mussels from the affected area. When conducted properly, this can greatly minimize mussel mortality. Re-location actions, however, typically cannot salvage smaller juvenile mussels. These smaller individuals will likely be lost during dredging and/or use.

Mussel beds frequently host a productive and diverse invertebrate community which provides important habitat for many species of spawning and feeding fish. In particular, old shells provide substrate for aquatic insects and other organisms that provide a primary food source for several fish species. This food source and spawning habitat will be eliminated for several years.

Recommendations

A mitigation and monitoring plan should be developed in coordination with the agency biologists. This letter is not a mitigation plan, but rather the Service's recommendations for preparing such a plan. Given the potentially long construction time-frame, the mitigation plan should be flexible (e.g. adaptive management) enough to fit uncertain future conditions at the site. The Service recommends that the following actions be taken to minimize and compensate for impacts likely to occur from the project:

1. The Service recommends that all mussels within the 0.93 impact zone be re-located to a nearby location deemed suitable by the Missouri DOC and us. Re-location should follow guidelines described in Dunn, Sietman, and Kelner (1999)[2] in order to minimize mortality. Monitoring the survival of the re-located individuals by means of a mark and recapture study should be included as part of the mitigation plan. If practicable, potential re-location sites should include the planned fish passageway in the Lock and Dam 22 overflow spillway. Prior to implementation, a mussel re-location plan should be coordinated with the Missouri DOC, Illinois DOC, and the Service.

2. Restore the original substrate condition – Dredging and use of the site is likely to eliminate both the bottom contour and particle size composition. Following construction, the site should be restored to its pre-construction contours and particle size distribution. Some locations within the site are known to be bedrock. It may not be possible, or desirable to restore exposed bedrock following construction.

3. Propagation and recolonization – It is highly likely that little or no mussel recruitment will occur in the impact zone during the construction period. In order to compensate for this loss of mussels, and those killed during dredging, re-colonization should be enhanced with mussel propagation. Mussel propagation

[2] Dunn, Heidi L., Bernard E. Sietman, Daniel E. Kelner. 1999. Evaluation of recent Unionid (Bivalvia) relocations and suggestions for future relocations and reintroductions. Proceedings of the First Freshwater Mollusk Conservation Society Symposium. Pp. 169-183.

has been used successfully for several species. The timing, number, and species selection should be developed in consultation with the Service and agency biologists. Normally, propagation efforts should begin three years in advance of the re-introduction date in order that mussels achieve a minimum size to ensure survival.

4. Monitoring – The status of the impact area and adjacent mussel community should be monitored periodically during construction and afterward. Given the uncertainties associated with use of the site, some re-colonization and substrate restoration could happen naturally. There is limited information available concerning the site's geomorphology and effects of bed load discharges from "No Name Creek" on the mussel sanctuary. Monitoring geomorphologic changes, in combination with mussel species composition over a period time, could be important in determining the optimum mitigation design.

5. As part of the overall Navigation and Ecosystem Sustainability Program (NESP), the Service recommends that a mussel assessment team be established to conduct mussel assessment and mitigation activities for NESP projects. This could include site assessments, system and project performance monitoring, and mitigation services such as mussel relocation. Such a team could provide timely services to all NESP activities, consistent data collection, and likely a cost-savings compared to private contractors.

6. Following post-construction surveys, agency biologists should be consulted to assess the current status of the mussel community and appropriate mitigation actions to fit that current condition. A detailed mitigation and monitoring plan should be developed in consultation with the natural resource agency biologists as soon as possible.

7. Actions to minimize adverse effects - The impact zone boundary should be marked with buoys to help assure that barges stay within it. All project "Plans and Specifications" should include a requirement that barges and boats stay within that boundary. Frequent barge activity could increase the risk of zebra mussel infestation in the sanctuary. All barges using the area should be free of zebra mussels.

8. The railroad crossing and the barge landing should be as far upstream as possible to minimize the impact footprint on the mussel bed.

9. Coordination with agencies – Close coordination with agency biologists will be a necessary prior to, during, and after construction. Agency biologists' input will be critical to success, especially during relocation, mitigation planning, and mussel propagation. Well in advance of construction, agency biologists should meet with the Corps to draft a mussel mitigation plan following the above recommendations.

Mr. Ken Barr 5

This letter provides comments under the authority of and in accordance with provisions of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.); and the Endangered Species Act of 1973, as amended. Questions regarding this letter should be directed to Mr. Jon Duyvejonck (telephone 309/757-5800, ext. 207).

Sincerely,

Richard C. Nelson
Field Supervisor

Enclosure.

cc: Carterville FRO (Simmonds)
Mark Twain NWR Complex (Steinbach)
ILDNR (Atwood, Schanzle)
Missouri DOC (Sternburg, Moore)

NEW 1200-FOOT LOCK
UPPER MISSISSIPPI RIVER

LOCK AND DAM 22
RIVER MILE 301.2

SAVERTON, MISSOURI

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

APPENDIX D

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SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

APPENDIX E

PROGRAMMATIC MEMORANDUM OF AGREEMENT

PROGRAMMATIC AGREEMENT

Among the
U.S. Army Corps of Engineers Mississippi Valley Division,
St. Paul District, Rock Island District, and St. Louis District,
the U.S. Fish and Wildlife Service,
the Illinois, Iowa, Minnesota, Missouri, and Wisconsin State Historic Preservation Officers,
and the Advisory Council on Historic Preservation,
Regarding Implementation of the Upper Mississippi River-Illinois Waterway
System Navigation Feasibility Study

WHEREAS, the Mississippi Valley Division, and St. Paul, Rock Island, and St. Louis Districts, aforementioned all of the U.S. Army Corps of Engineers (hereafter, Corps), have determined, by the Upper Mississippi River - Illinois Waterway System Navigation Feasibility Study (Navigation Study), that the Illinois Waterway and the Upper Mississippi River exhibit delays in commercial navigation, and have proposed measures to reduce these delays, which may have great economic benefits to the Nation; and

WHEREAS, the alternative plans proposed by the Navigation Study to decrease tow/barge lockage time may include 600-foot lock extensions, 1,200-foot guidewall extensions with powered kevels, and mooring cells/buoys; as described in the public document, "Upper Mississippi River - Illinois Waterway System Navigation Study, Environmental Impact Statement," finalized by the Corps in the year 2004; and

WHEREAS, the site-specific details implemented for each lock and dam for the Navigation Study have not been finalized, and may change or be modified, because economical, operational, engineering, and environmental studies are ongoing; and

WHEREAS, the site-specific details implemented as environmental objectives of ecosystem sustainability alternatives and measures for the Navigation Study have not been fully finalized, and may change or be modified, because economical, operational, engineering, and environmental studies are ongoing; and

WHEREAS, the Corps has determined that implementation of any one or combination of the alternative plan(s), and other required changes or modifications necessary to construct these alternative plans may have adverse effects on cultural resources historic properties listed on, or eligible for listing on, the National Register of Historic Places (National Register), such properties hereafter referred to as "historic properties," and has consulted with the Advisory Council on Historic Preservation (Council), the U.S. Fish and Wildlife Service (FWS), and the Illinois, Iowa, Minnesota, Missouri, and Wisconsin State Historic Preservation Officers (SHPOs) pursuant to Section 800.14(b) of the regulations (36 CFR Part 800) implementing Section 106 of the National Historic Preservation Act (16 U.S.C. 470[f]), and Section 110(f) of the same Act (16 U.S.C. 470h-2[f]); and

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WHEREAS, pursuant to Sections 800.3 and 800.8 of the Council's regulations, and to meet the Corps' responsibilities under the National Environmental Policy Act of 1969, the Corps has contacted 70 Native American Indian Tribes (Tribes), Tribal Historic Preservation Officers (THPOs), and other Native Americans (**Tribal Distribution List**) that may have an interest in the effects of this project on historic properties, and the ongoing effort of the Corps to identify traditional cultural properties or sacred sites which may be potentially affected by this undertaking.

WHEREAS, pursuant to Section 800.3 and 800.8 of the Council's regulations, and to meet the Corps' responsibilities under the National Environmental Policy Act of 1969, the Corps has developed an **Interested Party List** which includes the **Tribal Distribution List** developed in consultation with the SHPOs/THPOs, Tribes, and other parties that may have an interest in the effects of this undertaking on historic properties [Those on the **Interested Party List** will be provided with study newsletters, public meeting announcements, special releases, and notifications of the availability of report(s), including all draft agreement documentation, as stipulated by 36 CFR Part 800.14(b)(ii) of the National Historic Preservation Act. Comments received by the Corps will be distributed to the consulting parties to this Agreement and taken into account in finalizing plans for the undertaking]; and

WHEREAS, the Corps has provided scholarly evidence of stewardship in the recordation, protection, and management of historic properties along the Upper Mississippi River and Illinois Waterway System through systemic research and studies which have been finalized and approved, then placed in the permanent files of the Corps and appropriate SHPO(s) as evidence of compliance promulgated under Section 106 of the National Historic Preservation Act, as amended, and its implementing regulation 36 CFR Part 800: "Protection of Historic Properties," [These studies include: (1) archeological studies (management of documented and undocumented historic properties), (2) architectural and engineering studies (buildings, structures, and objects associated with Multiple Property National Register Districts), (3) erosion studies (priority to areas impacted by commercial navigation), (4) land form sediment assemblage studies (geomorphology), (5) site-specific studies (lock and dam potential effects and effects to archeology sites), and (6) submerged historic property study (historic shipwrecks and other underwater or previously inundated historic properties]; and

WHEREAS, the Corps has determined that the Navigation Study may affect historic properties, including the National Register-eligible Multiple Property Districts **Upper Mississippi River Navigation Project, 1931-1948** and **Illinois Waterway Navigation Facilities**;

NOW, THEREFORE, the Corps, the Council, the FWS, and the SHPOs agree that the site-specific details implemented for each lock and dam for the Navigation Study and ancillary undertakings shall be implemented in accordance with the following stipulations to satisfy the Corps' Section 106 and 110 responsibilities for all individual and cumulative actions:

I. IDENTIFICATION AND EVALUATION OF HISTORIC PROPERTIES

The Corps will ensure that the following measures are implemented:

A. The Corps will take appropriate measures necessary to discover, preserve, and avoid historic properties, burials, cemeteries, or sites likely to contain human skeletal remains/artifacts and objects associated with interments or religious activities, and provide this information, studies, and/or reports to the appropriate consulting parties. Under consultation with the appropriate SHPO(s)/THPO(s), the Corps will describe and define the Area of Potential Effect (hereafter referred to as the APE) in accordance with the definition contained in 36 CFR Part 800.16(d). The APE may be modified upon consultation with the appropriate SHPO(s)/THPO(s) through avoidance documented through the implementation surveys and testing of cultural and traditional resources, recordation of historic properties, documentary research, conducting research, and data collection, and/or other necessary avenues of investigation.

B. Unless recent and modern ground surface disturbances and/or historic use can be documented by the Corps that historic properties will not be adversely affected, in consultation with the appropriate SHPO/ THPO, the FWS, and/or other consulting parties determines that there is a likelihood that historic properties will be adversely affected, the Corps will then conduct a cultural and traditional resource (intensive and/or extensive reconnaissance) survey in the following:

1. All new and expanded dredged material placement sites or construction staging areas;

2. Areas of bank erosion that have been prioritized in management reports and environmental documents, which have previously received concurrence in consultation with the appropriate SHPOs;

3. Areas with the documented potential for containing submerged historic properties (e.g. shipwrecks, inundated archeological sites, water controlling structures, and etc.); and,

4. All other areas indirectly and directly affected by construction, use, maintenance, and operation during the implementation of the measures, alternatives, or any ancillary construction proposed by the Navigation Study, ecosystem restoration, or associated mitigation.

C. The Corps will ensure that all reconnaissance surveys and subsurface testing are conducted in a manner consistent with the Secretary of the Interior's Standards and Guidelines for Identification and Evaluation (48 FR 44720-23) and that they take into account the National Park Service publication The Archaeological Survey: Methods and Uses (1978) and any extant or most recent version of state or Tribal guidelines for historic properties reconnaissance surveys/reports, related guidance, etc. The reconnaissance surveys and subsurface testing will be implemented by the Corps and coordinated with the FWS, the appropriate SHPO(s)/ THPO(s), and/or any other consulting parties.

D. In consultation with the appropriate SHPO, and as appropriate, the FWS and THPO(s), the Corps will evaluate the historic significance of all cultural and traditional resources within their appropriate contexts and determine their eligibility for listing in the National Register by applying the National Register criteria (36 CFR Part 60.4). The following stipulation shall apply concerning the National Register evaluations of historic properties.

1. Consultation concerning the National Register-eligible Multiple Property Districts **Upper Mississippi River Navigation Project, 1931-1948** and **Illinois Waterway Navigation Facilities** will be with the appropriate SHPO of the state in which the Control Station at each lock and dam facility multiple property district is located.

2. For those properties that the Corps, the FWS, and the appropriate SHPO(s)/THPO(s) agree are not eligible for inclusion in the National Register, no further investigations will be required, and the project may proceed in those areas.

3. If the survey results in the identification of properties that the Corps, the FWS, and the appropriate SHPO(s)/THPO(s) agree are eligible for inclusion on the National Register, the Corps shall treat such properties in accordance with Part II below.

4. If the Corps, the FWS, and the appropriate SHPO(s)/THPO(s) do not agree on National Register eligibility, or if the Council or the National Park Service so request, the Corps will request a formal determination of eligibility from the Keeper of the National Register, National Park Service, whose determination shall be final.

5. To facilitate tribal coordination and identify traditional cultural properties, the Corps has provided all parties on the **Tribal Distribution List** with the National Register Bulletin 38, *"Guidelines for Evaluating and Documenting Traditional Cultural Properties."* Relative to the treatment of historic properties, the Corps will continue to provide the appropriate Tribe(s) and the THPO(s) information related to treatment or avoidance measures proposed by the Corps. Consideration of comments received by the Corps can be considered by the signatories to be measures to assist the Corps in meeting its responsibilities under the National Historic Preservation Act of 1966, as amended (Public Law 89-665), and the regulations of the Advisory Council on Historic Preservation "Regulations for the Protection of Historic and Cultural Properties" (36 CFR, Part 800).

II. MANAGEMENT OF HISTORIC PROPERTIES

Those individual historic properties, and multiple property districts that are listed on the National Register of Historic Places, or that the Corps, the FWS, and the appropriate SHPO(s)/THPO(s) agree are eligible for nomination to the National Register, or that the Keeper has determined are eligible for inclusion on the National Register, will be treated by the Corps in the following manner:

A. Management of above-ground historic structures (historic Corps locks and dams, associated buildings, structures and other such properties): The Corps shall provide the following information to the appropriate SHPO of the state in which the Control Station at each lock and dam facility is located on:

1) the modifications planned for the historic components of the locks and dams, associated buildings, structures and other associated properties, and

2) its determination whether such modifications will affect the historic components of the locks and dams, associated buildings, structures and other associated properties, and

3) proposed treatment or mitigation measures the Corps believes may avoid, reduce, or mitigate any such adverse effects.

B. SHPO Review: The appropriate SHPO shall review the information provided by the Corps pursuant to Stipulation IIA of this Agreement and within 30 days of receipt of adequate information shall provide the Corps with its opinion whether the proposed treatment or mitigation measures are adequate to address the adverse effects. Any disagreements shall be handled in accordance with Stipulation VI of this Agreement.

C. FWS Activities: FWS shall follow the standard Section 106 process as set forth in the Advisory Council on Historic Preservation's regulations at 36 CFR Part 800 for all its undertakings identified in this Agreement.

D. Public documentation: In consultation with the SHPOs and THPOs, the Corps Districts will work together to produce and promote pamphlets, films, books, and other public and scholarly research on the history and significance of the Upper Mississippi River/Illinois Waterway, and the waterway systems facilities, and controlling works.

E. Treatment of below-ground historic archaeological properties:

1. As it carries out its activities under this Agreement, the Corps' first priority shall be to avoid where practicable archaeological properties that have been determined to be eligible for inclusion to the National Register, and preserve them in place.

2. If the Corps determines, in consultation with the FWS and appropriate SHPO(s)/THPO(s) (and any Indian tribes that may not have a THPO) that an archaeological property cannot be avoided and will be adversely affected, it shall consult further to determine appropriate treatment. Treatments may include, but are not limited to, various levels of data recovery, recordation, public interpretative and educational documentation, and active protection measures.

3. If data recovery or recordation is the agreed upon treatment, the Corps will consult with the FWS and the appropriate SHPO(s)/THPO(s) (and any other Indian tribes that may not have a THPO) to develop a data recovery plan to address adverse effects. The data recovery plan shall be consistent with the Secretary of the Interior's Standards and Guidelines for Archaeological Documentation (48 FR 44734-37) and take into account the Council's publication, Treatment of Archaeological Properties (Advisory Council on Historic Preservation, 1980) and appropriate SHPO(s)/THPO(s) guidance. It will specify, at a minimum, the following:

a. The property, properties, or portions of properties where the treatment plan is to be carried out;

b. The research questions to be addressed, with an explanation of research relevance and importance;

c. The methods to be used, with an explanation of methodological relevance to the research questions;

d. Proposed methods of disseminating results of the work to the interested public, Tribes, and professional archaeological community, and,

e. A proposed schedule for the submission of progress reports to the FWS and the appropriate SHPO(s)/THPO(s).

4. The Corps will submit the data recovery plan to the FWS and appropriate SHPO(s)/THPO(s) (and any Indian tribes that may not have a THPO) for 30 days' review and comment. The Corps will take into account their comments, and will ensure that the data recovery plan is implemented. The FWS, the appropriate SHPO(s)/THPO(s), and Tribes may monitor this implementation.

5. The Corps will ensure that the data recovery plan is carried out by or under the direct supervision of an archaeologist(s), historian(s), architectural historian(s) and/or other appropriate cultural resource specialist that meets, at minimum, the Secretary of the Interior's Professional Qualifications Standards (48 FR 44738-9).

6. The Corps will ensure that adequate provisions, including personnel, time, funding, and laboratory space are available for the analysis and professional, permanent, curation of recovered materials from historic properties.

7. The Corps will develop and implement an adequate program in consultation with the FWS and the appropriate SHPO(s)/THPO(s) to secure archaeological historic properties from vandalism during data recovery.

III. TREATMENT OF HUMAN REMAINS, FUNERARY OBJECTS, SACRED OBJECTS, OR OBJECTS OF CULTURAL PATRIMONY, AND CURATED ITEMS

A. When human remains, funerary objects, sacred objects, or objects of cultural patrimony are encountered or collected, the Corps, if not inconsistent with Federal law or regulation, will comply with all provisions outlined in the appropriate state acts, statutes, guidance, provisions, etc., and any decisions regarding the treatment of human remains will be made recognizing the rights of lineal descendants, Tribes, and other Native American Indians and under consultation with the FWS, the SHPO(s)/THPO(s), designated Tribal Coordinator, and/or other appropriate legal authority for future and expedient disposition or curation. When human remains, funerary objects, sacred objects, or objects of cultural patrimony are encountered or collected from Federal lands or federally recognized tribal lands, the Corps will coordinate with the appropriate federally recognized Native Americans, as promulgated by the Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. § 3001 *et seq.*).

B. Collected artifacts, samples, and other physical objects will be returned to the landowner, unless the landowner waives rights to the United States Government. In consultation with the FWS and the appropriate SHPO(s)/THPO(s), the Corps will ensure that all artifacts, samples, and other physical objects donated or obtained from lands of the United States Government, with related and associated research materials and records resulting from the implementation of this Agreement, are curated at a repositories within their respective States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin in accordance with 36 CFR Part 79.

IV. REPORTS

The Corps will ensure that all final reports and supporting documentation resulting from the actions pursuant to this Agreement will be provided in a format acceptable to the appropriate SHPO(s)/THPO(s). The Corps will ensure that all such reports are responsive to contemporary standards, and to the Department of the Interior's Format Standards for Final Reports of Data Recovery (42 FR 5377-79). Precise locations of historic properties may be provided only in a separate appendix if it appears that the release of this data could jeopardize historic properties. Locations of traditional cultural properties or sacred sites, consisting of architectural, landscapes, objects, or surface or buried archaeological sites, identified in coordination with Tribes and THPO(s), will be considered to be sensitive information and to the extent allowed by Federal law the Corps will not make this information available to the public. The Corps will make available the reports and associated data to the extent allowed by Federal law for publication and public dissemination, minus precise aforementioned locational and sensitive information.

V. PROVISION FOR POST-REVIEW DISCOVERIES

In accordance with 36 CFR Section 800.13, if previously undetected or undocumented cultural or traditional resources are discovered during project activities, the Corps will cease, or cause to stop, any activity having an effect and consult with the FWS, the appropriate SHPO(s)/THPO(s) to determine if additional investigation is required. If further archaeological investigations are warranted or required, any treatment plan will be performed by the Corps in accordance with Part II - TREATMENT OF HISTORIC PROPERTIES, Part III - TREATMENT OF HUMAN REMAINS, FUNERARY OBJECTS, SACRED OBJECTS, OR OBJECTS OF CULTURAL PATRIMONY, AND CURATED ITEMS, Part IV - REPORTS, and Part V - PROVISION FOR POST-REVIEW DISCOVERIES, all of this Agreement. If the Corps, the FWS, the appropriate SHPO(s)/THPO(s), and any state authority with legal jurisdiction over the discovery determine that further investigation is not necessary or warranted, activities may resume with no further action required. Any disagreement between the Corps, the FWS, and the appropriate SHPO(s)/THPO(s) concerning the need for further investigations will be handled pursuant to Part VI - DISPUTE RESOLUTION of this Agreement.

VI. DISPUTE RESOLUTION

Should the FWS, the appropriate SHPO(s)/THPO(s) or the Council object within 30 days to any plans or actions provided for review pursuant to this Agreement, the Corps will consult with the objecting party to resolve the objection. If the Corps determines that the disagreement cannot be resolved, the Corps will request further comment from the Council in accordance with the applicable provisions of 36 CFR Part 800.7. The Corps, in accordance with 36 CFR Part 800.7(c)(4), will take any Council comment provided in response into account, with reference only to the subject of the dispute. The Corps' responsibility to carry out all actions under this Agreement that are not the subjects of the dispute will remain unchanged.

VII. TERMINATION

Any of the signatories to this Agreement may request a reconsideration of its terms or revoke the relevant portions of this Agreement upon written notification to the other signatories, by providing 30 days' notice to the other signatories, provided that these signatories will consult during the period prior to termination to seek agreement on amendments or other actions that would avoid termination. This agreement shall be null and void if its terms are not carried out by January 20, 2012, unless the signatories agree in writing to an extension for carrying out its terms. In the advent of termination, the Corps will comply with 36 CFR Parts 800.3 through 800.7 with regard to individual undertakings covered by this Agreement.

VIII. AMENDMENTS

Any signatories to this Agreement may request that it be amended, whereupon the other signatories parties will consult in accordance with 36 CFR Part 800.13 to consider such amendment. Amendments to this agreement shall be adopted upon written consensus of the signatories and shall be incorporated as an appendix to the original agreement.

IX. REPORTING AND PERIODIC REVIEW

The Corps will provide the FWS and the SHPO(s)/THPO(s) with evidence of compliance with this Agreement in site-specific reports pursuant to the National Environment Policy Act, promulgated under implementing regulations on tiering of environmental documents, specifically 40 CFR Part 1502.20 and Part 1508.28. These documentations shall contain this Agreement and the title of all final reports generated by this Agreement with the name of the project, historic properties identified, determinations of effect, avoidance procedures, level of investigation(s) and/or mitigation(s) conducted with titles of all project reports related to such investigation(s) and/or mitigation(s) which have been completed. This documentation will be provided to the FWS, appropriate SHPO(s)/THPO(s), any interested and consulting parties, and those on the **Interested Party List**, and they will be notified of the availability of report(s), including all draft agreement documentation, as stipulated by 36 CFR Part 800.14(b)(ii) of the National Historic Preservation Act. Based upon the review and coordinating process, the Corps, the FWS, the SHPO(s)/ THPO(s), and the Council can determine whether the Agreement shall continue in force, be amended, or terminated. On January 20, 2012, the Corps will provide the FWS and the SHPO(s)/THPO(s) a review report of the overall Navigation Study to determine this Agreement's effectiveness, accuracy, and economy.

X. EXECUTION AND IMPLEMENTATION

A. Nothing in this Agreement is intended to prevent the Corps from consulting more frequently with the FWS, the appropriate SHPO(s)/THPO(s), the Council, or other consulting parties concerning any questions that may arise or on the progress of any actions falling under or executed by this Agreement. Any resulting modifications to this Agreement will be coordinated in accordance with Section 800.5(e)(5).

B. The undersigned concur that the Corps has satisfied its Section 106 responsibilities for all individual undertakings through this Agreement regarding the implementation of the alternative plans for reducing delays to commercial navigation implemented as a result of the Navigation Study.

XI. FISCAL LAW REQUIREMENT

The Undertaking, including stipulations of this Agreement, is subject to provisions of the Antideficiency Act (31 U.S.C. § 1341). The unavailability of funds shall not relieve the Corps from its obligation to perform those Section 106 responsibilities set forth in the programmatic agreement.

XII. SIGNATORIES TO PROGRAMMATIC AGREEMENT
Among the
U.S. Army Corps of Engineers Mississippi Valley Division,
St. Paul District, Rock Island District, and St. Louis District,
Illinois, Iowa, Minnesota, Missouri, and Wisconsin State Historic Preservation Officers,
and Advisory Council on Historic Preservation,
Regarding Implementation of the Upper Mississippi River-Illinois Waterway
System Navigation Feasibility Study

A. **MISSISSIPPI VALLEY DIVISION, U.S. ARMY CORPS OF ENGINEERS:**

BY: Robert Crear Date: 31 Aug 04
Division Engineer
U. S. Army Corps of Engineers
Mississippi Valley Division

B. **ST. PAUL DISTRICT, U.S. ARMY CORPS OF ENGINEERS:**

BY: Michael Offerring Date: 26 Aug 04
District Engineer
U. S. Army Corps of Engineers
St. Paul District

C. **ROCK ISLAND DISTRICT, U.S. ARMY CORPS OF ENGINEERS:**

BY: Duane P. Gapinski Date: 23 AUG 04
District Engineer
U. S. Army Corps of Engineers
Rock Island District

D. **ST. LOUIS DISTRICT, U.S. ARMY CORPS OF ENGINEERS:**

BY: C. Kevin Williams Date: 27 Aug 04
District Engineer
U. S. Army Corps of Engineers
St. Louis District

E. U.S. FISH AND WILDLIFE SERVICE:

Ralph Thorson Date: AUG 25 2004
Regional Director
Region 3

F. ILLINOIS STATE HISTORIC PRESERVATION OFFICER:

BY: Date: Sept. 9, 2004
Illinois Deputy State Historic Preservation Officer
Illinois Historic Preservation Agency

G. IOWA STATE HISTORIC PRESERVATION OFFICER:

Date: August 24, 2004
Iowa Deputy State Historic Preservation Officer
State Historical Society of Iowa

H. MINNESOTA STATE HISTORIC PRESERVATION OFFICER:

BY: Nancy M. Archabal Date: 8/30/04
Minnesota State Historic Preservation Officer
Minnesota Historical Society

I. MISSOURI STATE HISTORIC PRESERVATION OFFICER:

BY: Date: 09/10/04
Missouri Deputy State Historic Preservation Officer
Department of Natural Resources

J. WISCONSIN STATE HISTORIC PRESERVATION OFFICER:

Date: 9/8/04
Wisconsin State Historic Preservation Officer
State Historical Society

K. ADVISORY COUNCIL ON HISTORIC PRESERVATION:

BY: _____ **Date:** 9/15/04

Executive Director
Advisory Council on Historic Preservation

ENCLOSURE 2: DESCRIPTION OF THE STUDY AREA

The study area encompassed by the Upper Mississippi River-Illinois Waterway (UMR-IWW) System Feasibility Study comprises the Upper Mississippi River and Illinois Waterway and lies within portions of Illinois, Iowa, Minnesota, Missouri, and Wisconsin (see attached map). The Upper Mississippi River extends from the confluence with the Ohio River, River Mile 0.0, to Upper St. Anthony Falls Lock in Minneapolis-St. Paul, Minnesota, River Mile 854.0. The Illinois Waterway extends from its confluence with the Mississippi River at Grafton, Illinois, River Mile 0.0, to T. J. O'Brien Lock in Chicago, Illinois, River Mile 327.0. The Upper Mississippi River-Illinois Waterway navigation system contains 1,200 miles of 9-foot-deep channels, 37 lock and dam sites, and thousands of channel training structures. The system is commonly broken into four broad regions including the Upper Impounded Reach (Navigation Pools 1-13), Lower Impounded Reach (Pools 14-26), Middle Mississippi River (Lock and Dam 26 to the mouth of the Ohio River), and the Illinois Waterway.

The Upper Mississippi River - Illinois Waterway ecosystem includes the river reaches described above, as well as the floodplain habitats that are critically important to large river floodplain ecosystems. The ecosystem under study includes the Upper Mississippi River and Illinois Waterway main stem floodplains, confluences of the major tributaries, and the navigational reaches of the St. Croix, Black, Minnesota, and Kaskaskia Rivers. The total acreage of the river-floodplain system exceeds 2.5 million acres of aquatic, wetland, forest, grassland, and agricultural habitats. The Mississippi Flyway is used by more than 40 percent of the migratory waterfowl traversing the United States. These Trust Species and the Threatened and Endangered Species in the region are the focus of considerable Federal wildlife management activities. In the middle and southern portions of the basin, the habitat provided by the mainstem rivers represents the most important and abundant habitat in the region for many species.

The total Illinois Waterway and Mississippi River Navigation System contains 37 lock and dam sites (43 locks), over 650 manufacturing facilities, terminals, and docks, and provides valuable habitat and recreational opportunities. The system provides the following:

1. A means for shippers to transport millions of tons of commodities within the study area – 122 million tons on the Mississippi River and 44 million tons on the Illinois Waterway in 2000;
2. Food and habitat for at least 485 species of birds, mammals, amphibians, reptiles, and fish (including 10 federally endangered or threatened species and 100 state listed species);
3. Almost 285,000 acres of National Wildlife and Fish Refuge;
4. Water supply for 22 communities and many farmers and industries;
5. A multi-use recreational resource providing more than 11 million recreational visits each year; and,
6. Cultural evidence of our Nation's past.

The (PA) entitled: **PROGRAMMATIC AGREEMENT** Among the U.S. Army Corps of Engineers Mississippi Valley Division, St. Paul District, Rock Island District, and St. Louis District, U.S. Fish and Wildlife Service, the Illinois, Iowa, Minnesota, Missouri, and Wisconsin State Historic Preservation Officers, and the Advisory Council on Historic Preservation, Regarding Implementation of the Upper Mississippi River-Illinois Waterway System Navigation Feasibility Study meets the requirements of Section 106 of the National Historic Preservation act of 1966, as amended, and its implementing regulations 36 CFR Part 800: "Protection of Historic Properties," and is appropriate to address potential concerns to any significant historic properties potentially affected by the UMR-IWW Feasibility Study.
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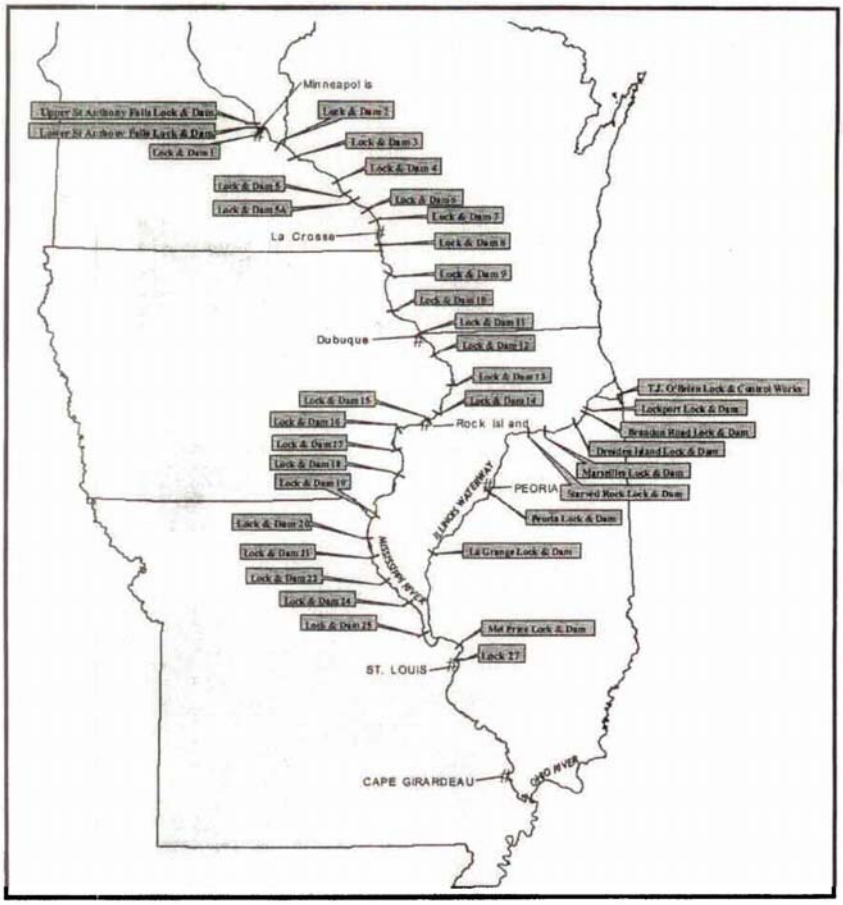
Encl 2



Upper Mississippi River Navigation and Illinois Waterway System Facility Locations

Background and Statement of Significance:
Historic Resources of the Illinois Waterway Navigation System, 1808-1951 and the Upper Mississippi River Navigation Project, 1931-1948
and the
PROGRAMMATIC AGREEMENT
Among the U.S. Army Corps of Engineers Mississippi Valley Division, St. Paul District, Rock Island District, and St. Louis District, U.S. Fish and Wildlife Service, Illinois, Iowa, Minnesota, Missouri, and Wisconsin State Historic Preservation Officers, and Advisory Council on Historic Preservation, Regarding Implementation of the Upper Mississippi River-Illinois Waterway System Navigation Feasibility Study

Rock Island District, U.S. Army Corps of Engineers
Clock Tower Building – P.O. Box 2004
Rock Island, Illinois 61204-2004

For over 1000 years, the Upper Mississippi and Illinois Rivers were important waterways for transportation and trade by the Native American tribes that settled nearby. During the colonial period, French and British used these natural routes to conduct trade with these tribes for pelts, lead ore, and goods. With the introduction of steamboat traffic in the early 19th century a new era of commercial navigation which increased with pioneer settlement throughout the Upper Midwest. Before the Civil War commercial river traffic was dangerous due to rapid currents, obstructions, and fluctuating water, resulting in great loss of cargo and life. Grain and lead ore were shipped downriver while supplies for the growing towns and cites along the river valleys were the recipients of this river commence.

An impetus to river improvement came during the drought of 1864. This was the lowest water level ever recorded on the Upper Mississippi River (UMR), stranding even the lightest draft boats and halting river commerce. The low water became the record level against which future Corps improvements were measured. Reference to the existing the depth of navigation channels can be literally translated as being above the low water of 1864.

The Civil War and increased westward settlement provided a military and economic justification for viable river transportation. Congress recognized that river improvements would unite the country by stimulating commerce between the North and South. As an adjunct to unification, railroad expansion and opposition to high railroad shipping costs played a role in the authorization of river improvements nation-wide. The Corps was immediately put to work by Congress improving major inland waterways under authority of the Rivers and Harbors Act of June 23, 1866. Blasting and snagging the main channel for steamboat traffic improved many inland waterways.

Permanent Congressional funding of Corps in the Midwest was authorized under the Rivers and Harbors Act of June 18, 1878. On the UMR the Corps was directed to construct and maintain a 690-mile-long channel with a minimum depth of 4½ feet above the record low water

Encl 9

level of 1864, between the Falls of St. Anthony near Minneapolis, Minnesota, to the mouth of the Illinois River near Grafton, Illinois. Other than Federal dredging on the Illinois River, improvements focused maintaining the Illinois and Michigan Canal for the growing metropolis of Chicago, Illinois. By 1865, Chicago convinced the Illinois General Assembly to reverse the flow of the Chicago River, sending the urban and industrial sewage down the river into the canal, and eventually into the Illinois and Mississippi Rivers.

During the initial period of river improvements, logging became the foremost industry on the UMR. The old growth pine forests of Minnesota and Wisconsin supplied the lumber necessary for building the Midwest. Great log rafts, acres in size, were floated down the St. Croix, Minnesota, Chippewa, and Wisconsin Rivers into the UMR. While lumber provided the construction materials for housing, St. Louis and New Orleans were the final destination for industrial supplies, commercial products and agricultural commodities.

As the waterways improved, the hills and valleys of the Upper Midwest were stripped of timber for lumber, lath, shingles, and millwork, the land becoming pasture and farm fields. Meanwhile, the extensive prairies of the Midwest were settled, drained, and plowed for row crops or used for pasture. Enormous amounts of grain and livestock were moved by rail. In the larger towns and cites, hydroelectric power and coal fired steam engines turned the gears of commerce. The use of the inland waterways waned and river commerce suffered greatly from railroad development and expansionism. The Corps' began construction of Illinois and Mississippi Canal in the 1890's as an extension of the Illinois and Michigan Canal to increase river traffic through northern Illinois from the Great Lakes to the UMR. This plan was a dismal failure as both canals were too small for commercial traffic, which tended toward the larger Illinois River channel.

In an attempt to accommodate larger boats with deeper drafts, Congress authorized the UMR 6-foot navigation channel in 1907. The 6-foot channel was a continuation of many of the practices carried out on the 4 ½-foot channel, but with increased dredging and wing dam height. Despite these improvement commercial traffic was incommensurate with the work effort. Industry, manufacturers, and other long-haul shippers preferred the railroads, due to speed, dependability, simplicity, and the fact that the largest industrial centers were located in the Great Lakes and eastern regions. By 1900, the Chicago Chip and Sanitary Canal was constructed providing a deep draft channel connecting the Great Lakes and Chicago to the Gulf, through the IWW and UMR, which provided commercially viable system.

In the 1920's and the 1930's towboats and barges were developed to move bulk cargo. In an attempt to promote the commerce of barge traffic and stimulate the economy of the Midwest during the Great Depression, Congress authorized the UNR and IWW 9-foot channel projects in the Rivers and Harbors Act of 1930. The Corps proposed a slack water navigation system, comprised of fixed dams with large "Ohio River standard" locks that would accept multiple barges pushed by towboats. The IWW and UMR 9-foot channel project formed the Upper Mississippi River System, which remains as one of the most important and largest projects of the nation's inland waterway system.

At UMR Lock 19, in October 1978 the **Keokuk Lock, Dam, and Powerhouse Historic District** was listed on the National Register of Historic Places (NRHP). This district was listed as a result of major modifications to the Corps dry dock, determined to be a significant resource. A Federal property is listed on the NRHP with support from the National Park Service, which formerly lists the property or a number of similar propertied, designated as a district. The National Park Service is assigned the task of maintaining the NRHP list. The National Park Service formally determined the UMR Locks and Dams 3 through 10 eligible to the NRHP on February 25, 1986.

As a result of the major rehabilitation program on the UMR and IWW, the Corps contracted with the National Park Service to complete Historic American Engineering Record (HAER). This documentation records the most significant engineering and architectural history for posterity. The Library of Congress accepted the UMR HAER in November 1988. In 1992, the National Park Service and the Corps published the results of the HAER documentation as Gateways to Commerce, which includes history, setting, and the significance of the Corps' 9-Foot Channel Project on the Upper Mississippi River.

Adjacent to the IWW, the **Illinois and Michigan Canal** was designated as a National Historic Landmark in January 1964 and listed on the NRHP in October 1966. The **Hennepin Canal** (Illinois and Mississippi Canal) was listed on the NRHP on May 22, 1978. The **Illinois and Michigan Canal** was designated the **Illinois and Michigan Heritage Canal Corridor** in 1984. T. J. O'Brien Lock, the Chicago Sanitary and Ship Canal, Lockport Lock, Brandon Road Lock and Dam, Dresden Island Lock and Dam, Marseilles Lock, Dam, and Canal, and Starved Rock Lock and Dam are within the canal corridor boundaries. In July 1993, portions of the IWW were determined eligible for listing as the Multiple Property **Chicago to Grafton, Illinois, Navigable Water Link, 1839-1945**.

In 1998 in support of the Upper Mississippi River System Navigation Study, the St. Louis and Rock Island Districts completed the NRHP forms for the UMR and IWW. The **Upper Mississippi River 9-Foot Navigation Project 1931-1948** was completed in 2000. The nomination recognizes 25 multiple property historic districts and defines architectural and engineering significance. The NRHP form for the **Chicago to Grafton, Illinois, Navigable Water Link, 1839-1945** has been drafted and identifies 8 historic districts. The forms also evaluates each District's contribution to patterns of transportation, maritime history, engineering, commerce, conservation, military, politics, economics, labor, and social history during the periods of significances.

To fulfill the requirements of the certification procedure, the Rock Island District of the U.S. Army Corps of Engineers forwards both NRHP nomination forms for the **Illinois Waterway Navigation Facilities** and the **Upper Mississippi River Navigation Project, 1931-1948** to the Corps Headquarters in Washington, D.C. for certification by the Deputy Historic Preservation Officer (DHPO). Upon certification by the DHPO, the NRHP nomination forms were formerly submitted to the National Park Service Keeper of the National Register of Historic Places for evaluation and potential certification for listing in July 2002. If the UMR and IWW are listed on the NRHP, they will achieve much deserved international attention. Corps' contribution to the nation's engineering history will be ensured for our significant waterways.

To afford protection to known and unknown significant historic properties within the designated **Upper Mississippi River Navigation Project, 1931-1948** and **Illinois Waterway Navigation Facilities** resulting from the implementation of the NAV Study navigation improvements, the Corps proposed execution of the ***PROGRAMMATIC AGREEMENT*** *Among the U.S. Army Corps of Engineers Mississippi Valley Division, St. Paul District, Rock Island District, and St. Louis District, U.S. Fish and Wildlife Service, Illinois, Iowa, Minnesota, Missouri, and Wisconsin State Historic Preservation Officers, and Advisory Council on Historic Preservation, Regarding Implementation of the Upper Mississippi River-Illinois Waterway System Navigation Feasibility Study*. As regulated by in 36 CFR Part 800.8(c)(1), the draft PA was made available within the NAV. Study DEIS, as promulgated under the National Environmental Policy Act for review and comment by the State Historic Preservation Officers, the Advisory Council on Historic Preservation, Native American Indian Tribes, and other interested parties. The executed PA was be provided to all signatories to this agreement, included in documentation of the distributed the *Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Study* (PEIS, 24 September 2004), and will be included in any subsequent Navigation Study documentation that addresses potential effects to historic properties.

END

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NEW 1200-FOOT LOCK
UPPER MISSISSIPPI RIVER

LOCK AND DAM 22
RIVER MILE 301.2

SAVERTON, MISSOURI

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

APPENDIX F

TIER II BIOLOGICAL ASSESSMENT

NEW 1200-FOOT LOCK
UPPER MISSISSIPPI RIVER

LOCK AND DAM 22
RIVER MILE 301.2

SAVERTON, MISSOURI

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

APPENDIX F

TIER II BIOLOGICAL ASSESSMENT

INTRODUCTION

As part of the conditions expressed in the *Final Integrated Feasibility Report and Programmatic Environmental Impact Statement for the UMR-IWW System Navigation Feasibility Study* (System Study), 24 September 2004, Appendix Env-D, Biological Assessment of Upper Mississippi River-Illinois Waterway System Navigation Study, April 2004, this Tier II/site specific Biological Assessment (BA) is being prepared. This BA will assess potential impacts to the four federally-listed species that may be present in the project area for the site specific new 1200-foot lock at Lock and Dam 22. These four species are listed below.

The new 1200-foot lock at Lock and Dam 22 is one of eight initial NESP navigation efficiency component projects being implemented under this new Upper Mississippi River System program. The proposed new lock will be a 1200-foot, rock founded lock constructed in the downstream direction in the auxiliary miter gate bay. The new lock will have an upstream, ported guardwall and will be approximately 1200 feet long. The downstream approach wall will be designed to block flow through the wall. The length and location will be determined during the initial design work. The existing 600-foot lock was opened in 1938 and will remain in place and become an auxiliary lock chamber. Recreation traffic will primarily use this lock once the new 1200-foot lock is completed. The new lock will be safer for users since double locking is eliminated. This is the preferred alternative for this project. Refer to System Study Chapter 6, sections 6.1.2.2., 6.1.4.2., and 6.1.5.; and Chapter 14, sections 14.2., 14.2.3; and 14.6.

Bald Eagle (*Haliaeetus leucocephalus*)

Now present throughout most of the United States, the bald eagle was first listed as a federally-endangered species (32 *Federal Register* 4001, March 11, 1967). On July 12, 1995, (60 FR 36000) the bald eagle was reclassified as threatened in all 48 conterminous states. On July 6, 1999 (64 FR 36454) the U.S. Fish and Wildlife Service (USFWS) proposed to delist the bald eagle in the 48 conterminous states; that proposal remains pending. The bald eagle is also found in Alaska and Canada, where it is not at risk and not protected under the Endangered Species Act; further, it is found in small numbers in Northern Mexico.

Bald eagles use the tailwater area at Lock and Dam 22 for feeding in the winter and use nearby bottomland hardwoods (BLH) for wintertime perching and night roosts. There is an active bald eagle nest along the right descending bank (RDB) at approximate River Mile (RM) 299.0. Approximately 0.75 acre of BLH will be impacted for this project (emergent wingdam tie-in to high ground upstream of the dam). Feeding in the remainder of the tailwaters during the winter should continue. The nesting eagles should not be significantly impacted since the nest location regularly sees commercial and recreational boat traffic as a result of its proximity to the navigation channel approach to the existing lock. The nest site is also near agricultural fields. This nesting pair of bald eagles appears accustomed to disturbance. Potential bald eagle habitat will not be affected by this project.

It is the U.S. Army Corps of Engineers, Rock Island District's (District) opinion that the proposed new lock project will not affect bald eagles or their critical habitat.

Indiana Bat (*Myotis sodalis*)

The Indiana bat is a federally-listed, endangered mammal species (32 *Federal Register* 4001, March 11, 1967) that has been found throughout much of the eastern United States (27 states). The Indiana bat was one of the first species listed as endangered by the USFWS; the total population of this species (determined by censusing hibernating bats) had declined 28 percent from 1960 to 1975. As of February 1991, there were approximately 500,000 Indiana bats worldwide; the number is now estimated at 300,000. Indiana bats winter in caves or mines then migrate north in summer and use dead or living large trees, mainly along streams, with exfoliating bark as roost/maternity trees. Indiana bats eat a variety of flying insects found along streams, rivers, lakes and in upland areas. Loss of forested habitat, particularly stands of large, mature trees, can affect bat populations. Indian bats may be present in the project vicinity.

There is a BLH area at approximate RM 301.5 to 302.0 along the RDB that was initially evaluated as a staging area for this project but has since been eliminated as a project feature. This BLH has suitable trees for use as Indiana bat maternity roosts. Approximately 0.75 acre of BLH will be cleared for the placement of rock to tie-in the emergent wingdam at RM 301.9R into high ground.

It is the District's opinion that the proposed new lock will not affect Indiana bats or their critical habitat.

Gray Bat (*Myotis grisescens*)

The gray bat is a federally-listed, endangered mammal species (Federal Register, April 28, 1976) throughout its range in the eastern and central United States. It is found from eastern Kansas and Oklahoma to western Virginia south to northwestern Florida. As of 1987, the gray bat was estimated to have declined by up to 75 percent from its original population, mainly due to destruction by vandals and disturbances by spelunkers. They utilize suitable caves both winter and summer. Summer caves are usually located less than 1 mile from a river or reservoir. They forage over nearby areas over large streams or reservoirs. Gray bats may be present in the project vicinity.

There are no known summer roosting caves or winter hibernation caves in the project vicinity. Given the large size of the Upper Mississippi River, foraging over the river should not be affected by staging, fleeting or construction activities.

Plans for the proposed 1200-foot lock project do not utilize any potential suitable gray bat summer or winter habitat. It is the District's opinion that the proposed new lock will not affect gray bats or their critical habitat.

Fat Pocketbook Mussel (*Proptera capax*)

The fat pocketbook mussel prefers sand, mud, and fine gravel substrates of large rivers. Today, the fat pocketbook is found only in the lower Wabash and Ohio Rivers, and in the lower Cumberland River. It is unlikely that fat pocketbook mussels are present in the project vicinity. Mussel surveys in 1997 (brail) and 2005 (diving) in the project vicinity failed to collect any federally-listed threatened or endangered mussels.

Along the RDB at approximate RM 299.0 to 300.6 is a Missouri Department of Conservation mussel sanctuary. It is unknown when the last live specimen was found there, but none have been found at least since 1993, and possibly much earlier. A dead shell was recovered in 2003. This may be evidence that the project vicinity is within the historic range of the fat pocketbook.

It is the District's opinion that the proposed new lock will not affect fat pocketbook mussels or their critical habitat.

NEW 1200-FOOT LOCK
UPPER MISSISSIPPI RIVER

LOCK AND DAM 22
RIVER MILE 301.2

SAVERTON, MISSOURI

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

APPENDIX G

MITIGATION PLAN

NEW 1200-FOOT LOCK
UPPER MISSISSIPPI RIVER

LOCK AND DAM 22
RIVER MILE 301.2

SAVERTON, MISSOURI

SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT

APPENDIX G

MITIGATION PLAN

A. BACKGROUND

The mitigation plan proposed for this project was developed through an interagency planning team comprised of representatives from the U.S. Army Corps of Engineers, Rock Island District (District); U.S. Fish and Wildlife Service; Illinois Department of Natural Resources; and the Missouri Department of Conservation. It follows Corps Policy Guidance for Section 404 Mitigation for Operations and Maintenance Activities, which is on file at the District. This policy Guidance is based on applicable environmental and planning regulations, legislative acts, executive orders and agreements. The District will carry out the mitigation and inform the state and Federal natural resource agencies of status/progress.

Because of unavoidable impacts to natural resources resulting from the construction of an emergent wingdam at approximate river mile (RM) 301.9 right descending bank (RDB), and the utilization of the riverine access corridor to the staging area (RM) 300.4, in support of NESP, this Mitigation Plan is being prepared. The emergent wingdam was designed, modeled and tested to improve navigation efficiency at Lock and Dam 22. Two natural resource components are impacted: bottomland hardwoods (BLH) and mussels (figures SEA-3 and SEA-5 of the main report).

B. GOALS/OBJECTIVES

- recoup fish and/or wildlife habitat values and functions of unavoidable losses (impacts) due to project implementation
- establish a practicable plan, including site locations, mitigation techniques, timing, etc, that optimizes chances for success
- monitor and coordinate project plans to maximize consensus with Federal and state collaborating agencies

C. IMPACTS

C.1 Bottomland Hardwoods. The area of impact is a riparian bottomland hardwoods (BLH) community located between the railroad tracks and the Mississippi River at approximately 301.9. The BLH is a mature community comprised of species typical for this habitat type, dominated by cottonwood, silver maple, and green ash of various ages. An area of approximately 0.75 acre would need to be cleared of

all vegetation to excavate a receiving ditch for the land portion of the riprap. This clearing and excavation would occur from the riverbank to the railroad tracks. This would prevent water at high flows from going around the wingdam on the land side that would continue to contribute to outdraft problems for tows entering and exiting the lock. The location of the emergent wingdam makes impact avoidance impossible. Because of the high quality of the BLH habitat to be impacted, a mitigation ratio of 3:1 should adequately replace, inkind, the wildlife functional value lost from clearing. Using the results of the habitat analysis from the Green Report 1998 for this BLH impact area, the current site specific analysis of this SEA predicts a loss of 2.04 average annualized habitat units from the clearing of the 0.75 acre.

The mitigation site selected to plant trees is the riverward portion of the downstream staging area for this project (figure SEA-5 of the main report). It is currently an agricultural field located between approximate RMs 300.0 and 300.4. The site is flat with an elevation of approximately 469 feet (mean sea level 1912 datum). This elevation equates to a 4 percent (25 year flood) annual chance to be flooded. The site was inundated in 1973, 1993, and 2001 and close to being inundated in 1951, 1965, and 1969. The soil type for this mitigation area is Belknap silt loam. Belknap silt loam is a hydric soil and is suited to trees according to the soil survey of Ralls County, Missouri. The planting area would be that area marked as environmentally excluded area, or wetland (green crosshatched) in figure SEA-5 of the main report.

BLH Mitigation. The impact area where the 0.75 acre of BLH would be cleared would be allowed to revegetate naturally after the riprap is placed without subsequent clearing.

Planting Scheme. The planting scheme for the mitigation site will be an equal mix of northern pecan (*Carya illinoensis*), bur oak (*Quercus macrocarpa*), pin oak (*Quercus palustris*), swamp white oak (*Quercus bicolor*), sycamore (*Platanus occidentalis*), hackberry (*Celtis occidentails*), and persimmon (*Diospyros virginiana*) would be planted. Balled and burlapped or root propagation method (RPM) trees of a minimum 0.5 inch caliper and 3 to 6 feet tall shall be planted. The trees should be local seed stock, from a bottomland source within 100 miles. Trees shall be planted with spacing of 20 feet by 20 feet. This would result in approximately 109 trees per acre over the 2.25 acres, for a total of 245 trees being planted. Trees would be planted in either the spring or fall.

The 2.25 acre BLH mitigation site would be monitored for five growing seasons following the initial planting. The initial monitoring survey should be done after one full growing season. Any/all dead trees from the initial planting would be replaced; after two growing seasons any dead trees would be replaced so that the replacement would achieve 80 percent of the initial tree planting; after three growing seasons dead trees would be replaced to achieve at least 70 percent of initial planting; after four growing seasons dead trees would be planted to achieve at least 60 percent initial planting; and after five growing seasons dead trees would be replaced to achieve at least 50 percent of the initial planting. Replacement trees would be of the same species as those that die to the extent practicable. Volunteer seeded trees that have begun to grow on the site should not be removed, but should be considered contributing to the success of mitigation of the site.

Maintenance would be accomplished by mowing and/or herbicide control of herbaceous weed competition as site conditions determine, (i.e. if silver maple or cottonwood trees are the prevailing ground cover in the planting site, they should not be eradicated). If non-woody weeds are competing adversely with the planted trees, control measures should be initiated. Maintenance would end after the fifth growing season.

C.2. Mussels

C.2.a. Emergent Wingdam. The area of the proposed emergent wingdam (RM 301.9R), including upstream and downstream, was surveyed for mussels in September 2006 (McClane 2007). The right descending bankline area upstream of the dam harbors a significant, diverse, and healthy mussel population. The proposed emergent wingdam would cause adverse impacts to mussels through direct mortality from burial during construction.

The aquatic portion of the proposed emergent wingdam is 396 feet long (120 meters) by 85 feet wide (26 meters) (figure SEA-3 of the main report). The emergent wingdam location falls between two mussel transects from the 2006 survey (LD22-RDB-T04 and LD22-RDB-T05). Transect 04 had 13 species found of which dead shells only were found for three species. Transect 04 had 109 live individuals and 58 dead individuals. Transect 05 had 16 species found, of which dead shells only were found for four species. Transect 05 had 236 live shells and 121 dead shells. The District will be responsible for relocating all the mussels along the emergent wingdam alignment. The area of impact is 30 meters wide by 120 meters long and equals approximately 0.87 acre. The area of impact is comprised of the 26 meter wide wingdam footprint plus 2 meters upstream and 2 meters downstream of the toes of the wingdam. The substrate in the emergent wingdam alignment, between transects 04 and 05, is primarily sand and gravel mixes with sand dominating as you travel channelward.

	Transect 04	**Transect 05**
Threeridge	X	X
Pimpleback	X	X
Butterfly	X	X
Mapleleaf	X	X
Plain Pocketbook	X	X
Threehorn Wartyback	X	X
Hickorynut	X	X
Fawnsfoot	X	
Yellow Sandshell	X (dead only)	X
Washboard	X	X
Pink Papershell	X (dead only)	
Monkeyface	X	X (dead only)
Ebonyshell	X (dead only)	X (dead only)
Wabash Pigtoe		X
Black Sandshell		X
Wartyback		X
Deertoe		X (dead only)
Pink Heelsplitter		X (dead only)

The 2006 survey also included three 0.25 square meter quadrat samples collected on a very similar alignment to the emergent wingdam (Q07, Q08, and Q09). These three quadrats are identified as being within the area of densest mussel concentration. The number of living mussels collected from quadrats Q07, Q08, and Q09 is 1, 3, and 0, respectively.

C.2.b. Emergent Wingdam Mussel Mitigation. It is proposed that mussels that are within the 30 meter wide by 120 meter long wingdam impact area would be collected by diver. These individuals would be collected, identified, measured, and returned to the same mussel bed. The relocation area would be upstream of the collection area but downstream of the location of mussel survey transect LD22-RDB-T12 as identified in the 2007 McClane report. The relocation area would be within the boundary of the densest mussel concentration between transects 05 and 12 (approximate RM 302.0 and 302.5 RDB). Substrates in the relocation area are primarily sand with silt, with scattered areas of firm mud and some areas of gravel.

Relocation would adhere to guidelines for mussel relocation (Dunn 1999). Specific guidelines are:

- use field personnel familiar with mussels
- select a relocation area with stable substrate and a similar mussel community that is near the collection area
- keep the mussels moist or in water and minimize out-of-water time
- avoid extreme temperatures, particularly extreme differences between water and air temperature
- avoid overcrowding of mussels

Following these guidelines should reduce stress to the mussels. Relocation would take place between May 1 and October 15 directly preceding the onset of construction. No post-relocation monitoring would be undertaken.

Because of the emergent wingdams potential to impact existing current patterns and water circulation, dive surveys would be performed at some of the dive transects that were surveyed in the McClane Report, 2007. Mussel dive surveys would be performed at Transects 1, 2, 3, 4, 5, and 6. Also, timed searches would be done in the vicinity of the anticipated scour hole downstream of the wingdam notch. These efforts would take place 1, 3, and 5 summers following completion of wingdam construction.

C.2.c. Staging Area Access Corridor. The area of the proposed staging area access corridor is located along the Missouri side of the river at approximate RM 300.4 and was surveyed for mussels in August 2007. This portion of the shoreline harbors a significant, diverse, and healthy mussel population. Ingress and egress of tows and barges to the staging area is likely to cause adverse impacts to mussels through direct contact with barge hulls and from disturbance from propeller propwash. Also, dredging of the delta of no-name creek would be necessary to provide adequate depth for tows/barges.

The aquatic access corridor is approximately 75 meters wide and would extend perpendicular to the bank approximately 100 meters. Depth of the access corridor ranged from 0 near shore to 3 meters at

the channel end. Substrate goes from sand and gravel near shore to bedrock in the channelward half of the corridor. Mussel densities within the access corridor decrease in the upstream direction, with very few mussels found over 50 meters from shore. Mussel densities for the quadrat/quantitative samples within the access corridor ranged from 0 to 52 per square meter for 12 quadrats. From the quadrats within the access corridor 364 live individuals representing 11 species were collected.

C.2.d. Staging Area Access Corridor Mussel Mitigation . The staging area access corridor will be located as far upstream as is practicable to minimize impacts to mussels. This location is at approximate RM 300.4.

Prior to utilization of the access corridor, mussels within the corridor from shore to 50 meters from shore would be collected by diver and relocated to a suitable location(s). These individuals would be collected, identified, measured, and cleaned of zebra mussels prior to relocation. Possible mussel relocation sites are Cottel Island, Blackbird Island at RM 292, the Lock and Dam 22 fish passage structure, and just downstream of the proposed access corridor location.

The approximately 2500 cubic yards of dredged sediments from the delta of no-name creek that would be stockpiled on the staging area prior to utilization of the access corridor would be re-deposited at the mouth of the creek when new lock construction is complete, and after the first post-construction mussel dive survey is complete. These sediments will be replaced/confined to the footprint of the original delta location where it was removed. This should return suitable mussel substrate to the area and return water velocities and circulation patterns to pre-construction conditions.

The access corridor will have marker buoys placed on the upstream and downstream boundaries. Construction tows/barges will be required to stay within these buoys to avoid potential impacts to mussels in the adjacent community.

Working barges utilizing the access corridor will not be required to ensure zebra mussel free vessels any more than any other commercial or recreational vessel.

Three years following the on-set of construction (utilization of the access corridor), a bathymetric survey of the near shore area (between RM 300.2 and 300.5) will be performed to help determine if geomorphological changes are taking place that may be caused by the project. If significant changes to the substrate are occurring that are reasonably attributable to the utilization of the access corridor, mussel dive surveys will be considered to help determine the extent of potential adverse impacts.

Post-construction mussel dive surveys would be undertaken when the use of the staging area access corridor is no longer necessary. The same transects and quadrats that were surveyed in 2007 would be repeated. Information from this survey would be provided to appropriate State and Federal natural resource agencies. Consultation with the resource agencies would utilize adaptive management to evaluate new data and decide whether existing mitigation and monitoring efforts need to be altered. Post-construction mussel surveys could be performed in the first sampling season after the completion of construction, 2, 5, and 10 years after construction completion. Five years following completion of construction (following the third post-construction mussel dive survey) the District would consider using propagated mussels to augment natural recolonization. If the three post-construction survey data indicate that natural recolonization is inadequate, propagated mussels of various ages, species, and at various rates could aid in recolonization. The need for using propagated mussels will be evaluated

after 5 years post-construction. Appropriate state and Federal natural resource agencies will be provided with all data from all surveys and will be consulted on necessary future actions.

Relocation would adhere to guidelines for mussel relocation (Dunn 1999). Specific guidelines are:

- use field personnel familiar with mussels
- select a relocation area with stable substrate and a similar mussel community that is near the collection area
- keep the mussels moist or in water and minimize out-of-water time
- avoid extreme temperatures, particularly extreme differences between water and air temperature
- avoid overcrowding of mussels

Following these guidelines should reduce stress to the mussels. Relocation would take place between May 1 and October 15 directly preceding the onset of construction.

A detailed relocation plan with specific relocation sites, post construction monitoring schedules, mussel collection design, and potential use of propagation mussels will be coordinated with all appropriate state and Federal natural resource agencies prior to relocation.

The District would be responsible for notifying the state and Federal natural resource agencies of the status of this mussel relocation effort. Appropriate state and Federal natural resource agencies will be consulted in the development of a specific, detailed mitigation plan, identifying relocation sites, post-project monitoring regimes, and the potential to use propagation to augment natural post-project colonization of the access corridor.