Upper Mississippi River Restoration

Upper Mississippi River Restoration Program Coordinating Committee Quarterly Meeting

Agenda with
Background and Supporting Materials

May 21, 2025
Virtual

Upper Mississippi River Restoration

Quarterly Meeting
Virtual

Agenda
May 21, 2025

Time	Topic	Page	Presenter
8:00 a.m.	Call to Order and Introductions		Sabrina Chandler, *USFWS*
8:10	Approval of Minutes of February 26, 2024 Meeting	A1-10	
8:20	Regional Management and Partnership Collaboration		Marshall Plumley, *USACE*
	— Fiscal Report	B1	
	— HREP Selection		
	— UMRR Strategic Planning		
9:20	UMRR Future HREP Proposals		
	— Review Fact Sheets	C1-78	FWWG, FWIC, and RRAT Tech Chairs
	— Consideration of Endorsement		UMRR Coordinating Committee
10:00	Break		
10:15	Program Reports		
	— Habitat Rehabilitation and Enhancement Projects		
	• District Reports		Angela Deen, Marshall Plumley, and Brian Markert, *USACE*

Agenda, continued

Time	Topic	Page	Presenter
	— Long Term Resource Monitoring and Science		
	• USACE Update		Davi Michl, *USACE*
	• FY 2025 Second Quarter Highlights		Jeff Houser, *USGS*
	• Implementation Planning Update		
	• A-Team Report		Matt O'Hara, *Illinois DNR*
11:15	Other Business	D1-13	Sabrina Chandler, *USFWS*
	— Future Meeting Schedule		
11:30 a.m.	Adjourn		Sabrina Chandler, *USFWS*

Upper Mississippi River Restoration Program Quarterly Meetings

Attachment A

UMRR Coordinating Committee Draft Minutes

Draft Minutes of the
Upper Mississippi River Restoration Program
Coordinating Committee

February 26, 2025
Quarterly Meeting

Virtual

Kelly Keefe of the U.S. Army Corps of Engineers called the meeting to order at 8:00 a.m. on February 26, 2025. Other UMRR Coordinating Committee representatives present were Sabrina Chandler (USFWS), Jeff Houser (USGS), Dave Glover (Illinois DNR), Kirk Hansen (Iowa DNR), Liz Scherber (Minnesota DNR), Matt Vitello (Missouri DoC), and Vanessa Perry (Wisconsin DNR). A complete list of attendees follows these minutes.

Minutes of the November 20, 2024, Meeting

Matt Vitello moved, and Kirk Hansen seconded a motion to approve the draft minutes of the November 20, 2024, meeting. The motion carried unanimously.

Regional Management and Partnership Collaboration

Fiscal Report

Marshall Plumley reported that federal agencies are currently operating under a continuing resolution, which is set to expire March 14, 2025. Plumley anticipates a budget will be passed for the remainder of the year. In the interim, the Corps is advancing work based on a $55 million budget assumption for UMRR in FY 2025.

Through the Water Resource Development Act of 2024, Congress amended the UMRR authorizing language to increase the program's annual authorized appropriation for long term resource monitoring from $15 million to $25 million.

Plumley announced that UMRR executed 98.2 percent of its FY 2024 appropriation of $55 million as well as the funds carried over from FY 2023. Plumley acknowledged the contributions of all UMRR partners who are involved in the program's implementation, noting that UMRR is one of only a few Corps programs that executes at such a high level.

Program Efforts Schedule

The timeline for the Reno Bottoms Habitat Rehabilitation and Enhancement Project (HREP) in the St. Paul District has changed slightly, with the design initiation pushed back by one month. No changes for the Rock Island District were identified. In the St. Louis District, the Yorkinut Slough HREP design initiation has been postponed a few months.

HREP Selection

UMRR program partners continue to work through the process of evaluating potential project opportunities and selecting a suite of projects for implementation in FYs 2026 through 2030. River teams began drafting fact sheets for proposed projects in the fall of 2024 and are now evaluating and selecting fact sheets to recommend. The UMRR Coordinating Committee is anticipated to review and approve fact sheets by the third quarter of FY 2025 – i.e., April 2025 through June 2025. The fact sheets will be included in the May quarterly meeting packet, during which the Committee is scheduled to consider its endorsement of the suite of new projects.

Strategic Planning

Plumley reported that the program began a strategic planning process in late 2023. The planning team is finalizing the strategies and actions and preparing to initiate the public review phase. The process has slowed down to accommodate changes in federal administration guidance. In response to a question from Olivia Dorothy, Plumley stated that the public review process will likely be open for 30 to 45 days.

NESP Reach Planning

Plumley reported that the reach planning effort for the Navigation and Ecosystem Sustainability Program (NESP) began in January 2025. In response to questions regarding the relationship between UMRR and this effort, Plumley clarified that the reach objectives and priority restoration areas identified in reach planning will be program neutral and will rely on resources that UMRR has developed, including the 2022 Status and Trends Report and the second Habitat Needs Assessment. USACE is open to aligning the development of UMRR projects with NESP reach planning in the future, if possible.

HREP Monitoring

UMRBA is planning to send a request to the Coordinating Committee to identify representatives for an HREP monitoring and adaptive management task force. Plumley noted the need for a consistent approach for monitoring and adaptive management in the program, as work done in the HREP and Long Term Resource Monitoring (LTRM) elements have been further integrated over the last decade. Plumley highlighted the EMMA database as a tool that will help the program manage its monitoring activities. Kat McCain, from the Corps' Ecosystem Restoration Planning Center of Excellence, has agreed to assist in scoping this effort.

Design Handbook

The 2012 UMRR Environmental Design Handbook is being updated. The handbook includes lessons learned from decades of designing HREPs. Corps staff are internally reviewing the draft updated Handbook, after which it will go out to agency partners for review and then released to the public. Plumley commended Angela Deen's leadership in this effort, which has created a valuable and unique resource for restoration on a large river. In response to a request from Olivia Dorothy, Plumley stated that he will talk to the Corps review team about having NGO partners review the Handbook.

Coordinating Committee Availability Request

UMRBA is planning to coordinate the Coordinating Committee members' evaluation of out-year funding scenarios in April. The meeting will include discussion on federal guidance changes and staffing updates.

Future HREP Proposals

Fish and Wildlife Working Group (FWWG)

Ryan Hupfeld presented the Fish and Wildlife Work Group (FWWG) HREP fact sheet development and recommendation process. The group's task was to identify two or three potential HREPs of small to medium cost ($15 million-25 million) in the St Paul District. In January 2024, FWWG partners identified potential program-neutral projects. Hupfeld noted that the Army Corps ArcGIS Ecosystem Project Selection tool was extremely helpful during this stage of the process. The FWWG then narrowed their list down to 23 potential projects, including some projects suggested by non-traditional sponsors. Hupfeld noted that these non-traditional sponsors were a meaningful addition to the process. In March and April 2024, the FWWG filled out a spreadsheet detailing the indicators each of the 23 projects would address- e.g., water quality, plants, animals, construction considerations. The group then narrowed down the potential project list to fourteen and assembled fact sheet leads and teams for each of the potential projects. The Corps pulled together cost estimates for the fourteen fact sheets to ascertain if the potential projects met the small to medium cost requirement. After FWWG voting members ranked the fourteen potential projects, the scores were averaged, and the top three projects were identified for recommendation to the UMRR Coordinating Committee:

1. Wing Lake/Hunter's Point Backwaters, Pool 8. This project would address island fragmentation and a decline in forest habitat. Proposed features include island restoration, forest establishment, dredging, and shoreline stabilization.
2. Sny Magill – Methodist Lake, Pool 10. This project would address a decline in forest habitat, island fragmentation, and backwater sedimentation. Features would include island restoration and forest establishment.
3. Tempealeau National Wildlife Refuge, Phase 2, Pool 6. This project would address impaired water quality and harmful algal blooms. Features would include increased emergent and submergent aquatic vegetation and water control structures.

FWWG will recommend five project fact sheets to the Navigation and Ecosystem Sustainability Program (NESP). FWWG is planning to submit the four remaining fact sheets to the UMRR Coordinating Committee with the hope that they can be easily picked up with any additional funding. These secondary fact sheets are for Probst Lake, Lake Onalaska Inlets, Snyder Lake and Sandy Hook Slough, and Black Deer/Brice Prairie Channel.

In response to a question from Mark Ellis, Hupfeld stated that it would be helpful to have more guidance to distinguish project selection processes for UMRR and NESP.

Fish and Wildlife Interagency Committee (FWIC)

Lauren Larson presented the HREP fact sheet development and recommendation process for the FWIC. The FWIC's task was to identify six to ten potential HREPs of varying sizes and complexity in the Rock Island District. Larson noted that, while today's FWIC report details the process for the Mississippi River, a similar process is currently ongoing for the Illinois River. The group held an in-person workshop in November 2023 where one hundred potential projects were suggested. Like the FWWG, the FWIC developed a spreadsheet to demonstrate which indicators each potential project would address. Each voting member of the FWIC prioritized their top three proposed projects, narrowing the list down to nine projects. Then the group used a paired comparison worksheet to prioritize the implementation of these nine projects. The group recommended the following three projects be implemented in the near term:

1. Upper Pool 13, which was carried forward from the last project selection process in 2020.
2. Geneva and Hersey Islands, which was carried forward from the last project selection process in 2020.
3. Multi Pool Habitat Protection, which was carried forward from the last project selection process in 2020.

The group recommended the following three projects be implemented through FY 2030:

4. Turkey River Bottom, which was updated and carried forward from the last project selection process in 2020.
5. Odessa Floodplain Forest and Fox Pond Wetland, Pools 17 and 18
6. Lower Long Island and Shandrew Island, Pool 21.

The remaining three fact sheets required less immediate action.

In response to a question from Kelly Keefe, Larson reported that NGOs did attend the workshops early in the process and brought forward one potential project. While NGOs are not voting members of the river teams, a voting member can champion an NGO project. Vanessa Perry stated that after the last fact sheet process, she developed a summary of recommendations for future processes based off conversations with participants and community groups. One of Perry's main recommendations was to involve communities more, as the current process is very difficult for them to participate in. Olivia Dorothy commended Perry's work on summarizing the recommendations. Marshall Plumley noted that while the program was more intentional about engaging with NGOs and the public during this fact sheet process, there is still progress to be made. Plumley stated that a summary of recommendations for process improvements will be developed after this fact sheet process concludes.

River Resources Action Team (RRAT Tech)

Matt Vitello presented the RRAT Tech's HREP fact sheet development and recommendation process. Vitello noted that the RRAT Tech does include NGOs and community partners. In January 2024, the group held a workshop to develop potential projects, which was attended by several NGOs and external stakeholders. 63 potential projects were identified at the workshop; the group narrowed these down to 28 projects after considering sponsorship interest. The group then prioritized 12 potential HREPs and eight potential NESP projects.

After assessing existing fact sheet information, readiness, and logical groupings, the RRAT Tech ended up recommending four projects for UMRR:

1. Mason Island, Pool 26. This project would address degrading backwater habitat. Potential features include island creation, dikes, and dredging.
2. Spatterdock Slough, Pool 26. This project would address backwater sedimentation and loss of bathymetric diversity. Proposed features include island restoration, sediment deflection, and excavation.
3. Chouteau Island, open river. This project would increase aquatic diversity by improving the island's side channel and restore degraded forests. Proposed features include shoreline protection and backwater slough restoration.
4. Illinois Bayou, open river. This project would address degrading marsh, wetland, and forest habitat. Proposed features include water control structures and bank stabilization.

In response to a question from Sadie Neuman, Plumley explained that HREPs require a sponsor to take over the operations and maintenance of a project after it has been constructed. NGOs can be sponsors if they own, have rights to the land, or can secure those rights.

Plumley pointed out that this fact sheet selection process involved more Corps involvement in developing cost estimates for potential projects than in the 2020 effort. While Plumley acknowledged there were disadvantages, he noted that when making the case for future funding, it is advantageous to better understand the actual cost of a project.

In response to a question from Plumley, Larson reported that the Illinois River has developed a set of fact sheets for proposed projects with final drafts expected in mid-March 2025. Larson stated that the one fact sheet being developed for UMRR should be ready by the May quarterly meeting.

Strategic Planning Update

Since the last quarterly meeting in November, the strategic planning group met in person to organize the program's strategies and actions and to discuss a timeline for the actions. Currently, the strategic planning leadership team is refining those action timelines. While many actions are continuations of ongoing efforts, there are some adjustments to ongoing efforts as well as some new lines of effort. Marshall Plumley asked attendees to consider any ongoing efforts in their organization that might align with UMRR's actions. Plumley then gave examples of adjusting ongoing efforts, including creating a taskforce dedicated to HREP monitoring and ensuring HREPs fully integrate LTRM data and science. New lines of effort include identifying accessible pathways for new partner participation and identifying new opportunities for HREP monitoring. Vanessa Perry noted that Wisconsin is considering how to integrate LTRM and HREPs, particularly the intersection of communicating findings and community engagement work. Olivia Dorothy noted that NGO funding is often tied to responding to changing conditions, requiring staff to report how they are addressing that.

Plumley gave an overview of the timeline for the strategic plan review process. The strategic planning team is scheduled to review the draft strategic plan until March 17, 2025, after which the Communications and Outreach Team and Analysis Team will review, and finally the Coordinating Committee will be asked for input and concurrence. A public review will follow at a time yet to be decided.

Communications

Communications and Outreach Team

Marshall Plumley reported on the accomplishments and ongoing activities of the UMRR Communications and Outreach Team (COT). The COT has been reviewing the 2022 UMRR Report to Congress brochure and Plumley anticipates that they will support the strategic plan and preparations for the program's 40th anniversary in 2026.

Photo Contest Winners

On August 1, 2024, UMRR initiated a photo contest among UMRR partners to obtain visuals for use in UMRR's program materials and communications. Ninety submissions were received across five categories. Kacie Grupa won in the "Benefits of HREPs" and "Connecting People with Nature" categories. Alicia Carhart won in the "Cultural or Historic Features" and "LTRM- Monitoring in Action" categories. Ken Petersen won in the "Natural Features, Scenic Views, or Landscapes" category.

UMRR Brochure

Laura Talbert presented the finalized UMRR brochure. This communication product was created collaboratively by the partnership and will be used to advocate for UMRR. Kirsten Wallace reported on the positive feedback while using the brochure in recent Congressional visits. Kelly Keefe pointed out the importance of communication documents, noting that great programs can suffer if the public is not aware of the work they do.

Partner Activities

UMRR Coordinating Committee members and partners shared their respective UMRR-related communications or engagements over the last quarter that relate to UMRR, as follows:

- Marshall Plumley presented about UMRR at the Mississippi Valley Division's Industry Days in Memphis, Tennessee.

Program Reports

HREP Planning and Construction

Angela Deen, Julie Millhollin, and Jasen Brown reported on the progress in implementing UMRR HREPs, including the following milestones:

- The St. Louis District successfully installed interpretive signs at the Piasa and Eagles Nest Islands HREP.
- Bids for the Crains Island HREP in the St. Louis District are expected to come in mid-March 2025. Crains Island and Harlow Island will be the primary two construction projects for the St. Louis District in FY 2025.

- The St. Louis District River Resources Action Team fall 2025 partner river trip will travel from St. Louis to Hannibal.
- The Rock Island District completed construction on the Beaver Island HREP.
- The Rock Island District completed Stage 1 of the Steamboat Island HREP.
- The St. Paul District completed Stage 1 of the McGregor Lake HREP.
- The St. Paul District initiated planning on the new Bankline Stabilization HREP on the Minnesota River. This is an urgent project to address erosion and breaches that threaten the recently completed Bass Ponds HREP.

Long Term Resource Monitoring, Research, and Other Science

Fiscal Report

In FY 2025, the allocation for LTRM will increase to $14.45 million: $6.5 million for base monitoring, $2 million for analysis under base, and $5.95 million for science in support of restoration and management. This increase is in recognition of increasing base monitoring costs over the past several years.

Topobathy data acquisition is currently ongoing for the Lower Pool 13 pilot and the entire Illinois River and Open River Reach 2 on the Mississippi. These 12 task orders were awarded at the end of FY 24. The Pools 4 & 8 pilot study funded in FY 24 have submitted preliminary deliverables to a third-party contractor to finalize their QA/QC report, which is expected to be completed in a few weeks. It is estimated that the data will be processed and usable by August 2025. In total, it will be a three-year process from when the contract was awarded to when the results are finalized. In response to a question from Matt Mangan, Davi Michl clarified that sonar data is included in the topobathy acquisition. In response to a question from Kirk Hansen, Michl stated that collecting topobathy data on the entire system is dependent on funding levels but noted that the program has committed $1 million annually to the effort since 2023.

Quarterly Progress Report

Jeff Houser reported that the accomplishments of the first quarter of FY 2025 include the publication of the following two manuscripts that were supported by UMRR funding and the partnership infrastructure:

1) Phytoplankton assemblage dynamics in relation to environmental conditions in a riverine lake
2) Habitat suitability of reed canary grass in the floodplain forest understories

In addition, LTRM work was highlighted in a Milwaukee Journal Sentinel article titled “Good year, good ice, good while it lasts”. Houser noted that LTRM field staff have given several presentations at various conferences and meetings.

Houser gave an update on the Lower Pool 13 HREP associated research project (HARP). The objectives of the project are to pilot a radar wave monitoring system; evaluate the relationship between wind, waves, and turbidity; assess spatial patterns among wild celery, turbidity, velocity, and waves; and to evaluate the relationship between various substrates and mussels. Field staff deployed equipment to survey water

quality, depth, waves, and mussels in the 2024 field season. Plans for the 2025 field season include deploying radar and continuing to survey water quality.

Per the UMRR implementation planning recommendations, USGS and the broader LTRM partnership are focused on evaluating floodplain vegetation change across the Upper Mississippi River System and researching the lower trophic contribution – i.e., zooplankton and phytoplankton. Applications have been received for positions focused on geomorphic trends and lower trophic contribution information needs, but hiring is currently on hold.

Six positions were recently terminated at UMESC that will impact an estimated 28 products or milestones, including the Lower Pool 13 HARP. Kirk Hansen offered Iowa DNR's support on the HARP, which Marshall Plumley noted as an example of the exceptional partnership of UMRR.

A-Team Report

Matt O'Hara reported that the A-Team skipped their January meeting as there were no science proposals to be ranked. The next A-Team meeting is scheduled for April 2025, in conjunction with the Mississippi River Research Consortium, and FY 2024 science proposal updates will be given then.

Other Business

Future Meeting Schedule

- May 2025 in La Crosse, Wisconsin
  - UMRBA quarterly meeting – May 20
  - UMRR Coordinating Committee quarterly meeting – May 21
- August 2025 in Minneapolis, Minnesota
  - UMRBA quarterly meeting – August 5
  - UMRR Coordinating Committee quarterly meeting – August 6
- October 2025 in the Quad Cities
  - UMRBA quarterly meeting – October 28
  - UMRR Coordinating Committee quarterly meeting – October 29

Attendance List

UMRR Coordinating Committee Members

Kelly Keefe	U.S. Army Corps of Engineers
Sabrina Chandler	U.S. Fish and Wildlife Service, UMR Refuges
Jon Amberg	U.S. Geological Survey, UMESC
Dave Glover	Illinois Department of Natural Resources
Kirk Hansen	Iowa Department of Natural Resources
Liz Scherber	Minnesota Department of Natural Resources
Matt Vitello	Missouri Department of Conservation
Vanessa Perry	Wisconsin Department of Natural Resources

Others In Attendance

Brian Chewning	U.S. Army Corps of Engineers, MVD
Jim Cole	U.S. Army Corps of Engineers, MVD
LeeAnn Riggs	U.S. Army Corps of Engineers, MVD
Thatch Shepard	U.S. Army Corps of Engineers, MVD
Trevor Cyphers	U.S. Army Corps of Engineers, MVP
Angela Deen	U.S. Army Corps of Engineers, MVP
John Henderson	U.S. Army Corps of Engineers, MVP
Samantha Thompson	U.S. Army Corps of Engineers, MVP
Nathan Wallerstedt	U.S. Army Corps of Engineers, MVP
Marshall Plumley	U.S. Army Corps of Engineers, MVR
Leo Keller	U.S. Army Corps of Engineers, MVR
Davi Michl	U.S. Army Corps of Engineers, MVR
Julie Millhollin	U.S. Army Corps of Engineers, MVR
Jessie Dunton	U.S. Army Corps of Engineers, MVR
Steve Gustafson	U.S. Army Corps of Engineers, MVR
Nic Patterson	U.S. Army Corps of Engineers, MVR
Rachel Hawes	U.S. Army Corps of Engineers, MVR
Jasen Brown	U.S. Army Corps of Engineers, MVS
Lane Richter	U.S. Army Corps of Engineers, MVS
Milea Franklin-Webb	U.S. Army Corps of Engineers, MVS
Greg Kohler	U.S. Army Corps of Engineers, MVS
Kat McCain	U.S. Army Corps of Engineers, RPED North
Dane Boring	U.S. Environmental Protection Agency
Anna Hess	U.S. Environmental Protection Agency
David Pratt	U.S. Environmental Protection Agency
Diane Tancl	U.S. Environmental Protection Agency
Travis Black	U.S. Department of Transportation
Ed Britton	U.S. Fish and Wildlife Service, National Wildlife Refuge System
Kraig McPeek	U.S. Fish and Wildlife Service, Ecological Services
Matt Mangan	U.S. Fish and Wildlife Service, Ecological Services
Sara Schmuecker	U.S. Fish and Wildlife Service, Ecological Services
Jennifer Dieck	U.S. Geological Survey, UMESC
Jeff Houser	U.S. Geological Survey, UMESC
Jim Fischer	U.S. Geological Survey, UMESC
Danelle Larson	U.S. Geological Survey, UMESC

JC Nelson	U.S. Geological Survey, Midcontinent Region
John Seitz	Illinois Department of Natural Resources
Matt O'Hara	Illinois Department of Natural Resources
Nicole Vidales	Illinois Department of Natural Resources
Ryan Hupfeld	Iowa Department of Natural Resources
Adam Thiese	Iowa Department of Natural Resources
Melanie Marshall	Iowa Department of Natural Resources
Charmayne Anderson	Minnesota Department of Natural Resources
Neil Rude	Minnesota Department of Natural Resources
Nick Schlesser	Minnesota Department of Natural Resources
Sammi Boyd	Wisconsin Department of Natural Resources
Brian O'Neill	Burns and McDonnel
Olivia Dorothy	One Mississippi
Sararose LaGreca	America's Watershed Initiative
Brent Newman	Audubon
Alicia Vasto	Audubon
Lindsay Brice	Audubon
Anshu Singh	Corn Belt Ports
Fritz Funk	Funk Consulting
Barry Draskowski	Izaak Walton League
Doug Daigle	Louisiana State University
Christine Favilla	Sierra Club
Sarah Gatzke	The Nature Conservancy
Randy Smith	The Nature Conservancy
Rick Stoff	Stoff Communications
Kirsten Wallace	Upper Mississippi River Basin Association
Brian Stenquist	Upper Mississippi River Basin Association
Mark Ellis	Upper Mississippi River Basin Association
Henry Hansen	Upper Mississippi River Basin Association
Sam Hund	Upper Mississippi River Basin Association
Natalie Lenzen	Upper Mississippi River Basin Association
Sadie Neuman	Upper Mississippi River Basin Association
Ken Petersen	Upper Mississippi River Basin Association
Lauren Salvato	Upper Mississippi River Basin Association
Laura Talbert	Upper Mississippi River Basin Association
Josh Wolf	Upper Mississippi River Basin Association

Upper Mississippi River Restoration Program Quarterly Meetings

Attachment B

Regional Management and Partnership Collaboration

Habitat Rehabilitation and Enhancement Projects	FY 24 October 2023 - September 2024	FY 25 October 2024 - September 2025	FY 26 October 2025 - September 2026	FY 27 October 2026 - September 2027	FY 28 October 2027 - September 2028	FY 29 October 2028 - September 2029	FY 30 October 2029 - September 2030	FY 31 October 2030 - September 2031	FY 32 October 2031 - September 2032	FY 33 October 2032 - September 2033	FY 34 October 2033 - September 2034
St. Paul District											
McGregor Lake, WI											
Lower Pool 10 Islands, IA, Stage I, II, & III											
Reno Bottoms, MN/IA											
Lower Pool 4, Big Lake, WI Stage I											
Robinson Lake, MN											
Bank Stabilization, Minnesota River, MN											
TBD MVP											
Rock Island District											
Keithsburg Division, IL											
Steamboat Island, IA											
Beaver Island Stage I & II, IA											
Lower Pool 13, IA											
Green Island, IA											
Pool 12 Forestry, IL											
Quincy Bay, IL											
Lower Pool 13 Phase II, IA											
Pool 18 Forestry, IA											
Lower Pool 11, WI											
TBD MVR											
St. Louis District											
Clarence Cannon NWR, MO											
Piasa and Eagles Nest, IL											
Crains Islands, IL											
Harlow, MO											
Oakwood Bottoms, IL											
Yorkinut Slough, IL											
Swan Lake Flood Damage Rehabilitation, IL											
West Alton, MO Islands											
Gilead Slough, IL											
Reds Landing, IL											
Meredosia Island, IL											
TBD MVS											
HREP Feasibility Phase	Feasibility Completion = 5	Feasibility Completion = 0	Feasibility Completion = 5	Feasibility Completion = 1	Feasibility Completion = 2	Feasibility Completion = 3	Feasibility Completion = 0	Feasibility Completion = 0	Feasibility Completion = 0	Feasibility Completion = 0	Feasibility Completion = 0
HREP P&S Phase	Design Completion = 1	Design Completion = 2	Design Completion = 1	Design Completion = 7	Design Completion = 5	Design Completion = 1	Design Completion = 2	Design Completion = 2	Design Completion = 1	Design Completion = 0	Design Completion = 0
HREP Construction Phase	Construction Completion = 1	Construction Completion = 0	Construction Completion = 1	Construction Completion = 1	Construction Completion = 1	Construction Completion = 4	Construction Completion = 2	Construction Completion = 2	Construction Completion = 6	Construction Completion = 0	Construction Completion = 8
HREP M&AM/Sponsor O&M Phase(2)											

(2) Physical features are turned over to the sponsor at construction completion for Operation & Maintenance. Monitoring & Adaptive Management activities will begin (WRDA 2039; as amended) and per the Feasibility Report.

Upper Mississippi River Restoration Program
Quarterly Meetings

Attachment C

HREP Fact Sheet Proposals

Upper Mississippi River Restoration (UMRR) Program
Habitat Rehabilitation and Enhancement Project

Spatterdock Slough
Pool 26, Mississippi River, Missouri, USACE St. Louis District

Location:

The project is located in Pool 26 on the right descending bank of the Mississippi River between river miles 209 and 205 and the towns of West Alton, Missouri and Grafton, Illinois. The areas are included in certain lands acquired for the navigation project and were identified in a General Plan and made available to the Department of Interior and the State of Missouri, through a cooperative agreement. This area includes Brickhouse Slough and Spatterdock Lake totaling 2,210 acres and which are collectively managed as part of the Missouri Department of Conservation's (MDC) Upper Mississippi River State Conservation Area.

Existing resources

The area consists of remnant sloughs and degraded wetlands. Conditions are shallow throughout the backwater areas during normal pool levels, less than three feet deep, and the site is almost entirely dry when Pool 26 is tilted, leaving a mud flat consisting of fine substrate (mostly silt). The sloughs and wetlands experience some dewatering and have filled in with silt over time. Boat access to all the areas is limited to only portions of the year due to their shallowness.

The Upper Mississippi River System Habitat Needs Assessment (HNA) II (McCain, Schmueker, & De Jager, 2018)The HNA II summarized the desired future conditions in relation to high importance indicators for the Lower Impounded Mississippi River as: 1) improve gate management for native fish passage, 2) restore floodplain habitat and connectivity, 3) restore islands, 4) restore diversity of aquatic habitat types with desire for more lentic and backwater habitats, preferably shallow lotic areas and deep lentic areas, 5) restore aquatic vegetation in backwater areas, 6) restore floodplain forest diversity, including hard-mast, 7) enhance floodplain topographic diversity, 8) restore floodplain vegetation diversity in hand with diversifying floodplain inundation periods, 8) restore water level fluctuation to mimic pre-dam conditions, and 9) improve water clarity.

The existing forest communities in this area include uneven age maple-ash-elm and early successional maple-ash-elm forest at the lower elevation areas adjacent to the river, and mid-successional mixed forest at higher elevations. The higher elevation areas are high enough to support hard mast species such as oaks and hickories but is currently transitioning to maple-ash-elm forest.

Although aquatic vegetation was once found in numerous locations of Lower Pool 26, it is now limited to occasional immature plants of floating-leaf species (i.e. Nelumbo lutea) in areas directly connected to the river. Although aquatic vegetation is unlikely to be a major habitat cover type into the future within the project area, emergent vegetation still provides valuable resources for migratory waterfowl and fish.

HNA II identified a need for more depth diversity in both lotic and lentic habitats (McCain, Schmueker, & De Jager, 2018). Lotic-dependent species require flowing water habitats for one or more critical life stages. A diversity of depths and structures can be important in supporting spawning, nursery, juvenile, and adult stages for a range of species. Shallow lotic habitat availability and flow diversity are limited in Pool 26. This includes areas like shallowly flooded sandbars and island banks that can provide critical resources for small-bodied fishes and developing young.

Backwater areas have been found to provide critical habitat for fish in large-river systems during the winter due to flow breaks, shelter from barge activity (Garvey, 2003), and as temperature refugia (Raibley, 1997). These areas provide critical spawning and nursery habitat for a range of lentic-dependent (i.e. low-flow habitats) fish species. Backwater fish habitat quality is influenced by temperature, depth, cover, oxygen availability, and water velocity. Sediment deposition within backwaters of the study area has led to a reduction in backwater depth, connectivity, and winter suitability for the lentic fish community.

Problem identification

The existing habitat conditions, future habitat needs and proposed general actions required for habitat restoration on the Upper Mississippi River (UMR) are addressed in the HNA II. That report estimates that there is a need to create or restore 5,000 acres of isolated backwater habitat along the lower impounded reach of the Upper Mississippi River.

On a more site-specific level, sedimentation in the Brickhouse Slough, Spatterdock Lake and other off-channel areas, has led to a loss of desirable fisheries habitat, e.g. fish spawning and nursery areas and winter thermal refuges. During the spring when fish, especially centrarchid species such as largemouth bass, bluegill, green sunfish, and crappie, are seeking stable, off-channel spawning areas, the problem is exacerbated due to the tilting of Pool 26 which causes dramatic dewatering of some of the remnant sloughs as extra runoff is released through the Mel Price Dam. The area also has not supported submergent and/or emergent aquatic vegetation since prior to the Flood of 1993.

Climate change impacts include increased frequency and intensity of high water events and increased intensity of drought conditions leading to severe low water events.

• Backwater sedimentation can affect the overall habitat quality through poor water quality, shallow depths, and loss of connectivity. Loss of connectivity can also result in fish entrapment.

• Loss of bathymetric diversity decreases habitat function and availability for native riverine species.

• Loss of sandbars and islands reduce available habitat for aquatic and terrestrial species and accelerate bank and island erosion resulting from increased wind and wave action.

• Loss of topographic and hydrologic diversity reduces vegetative community diversity and wildlife resources (e.g. forage, invertebrate production, and nesting sites and resting sites).

Project Goals

The project, if implemented, would begin to meet the goals set forth in the HNA II report. The restoration and rehabilitation of these wetland and aquatic habitats would provide resting, feeding, nesting, breeding, and weather and predator-escape cover for many forms of migrating water birds and resident wetland wildlife. It will improve aquatic habitat for fishes and reptiles/amphibians, improve woody and herbaceous plant diversity, and improve water management capabilities.

By rehabilitating physical habitat, it is anticipated that desirable breeding, nesting, nursery, and deep water habitat would be available for a number of animals including fish, waterfowl, shorebirds, and mammals. It would improve water quality conditions that support aquatic plant growth, including Typha spp., Sagittaria spp., and Eleocharis spp.

Proposed Project Features

• Excavation: Excavate a 11,500 feet long pilot channel of the lower end of Brickhouse Slough to a depth of approximately 5 feet and a width of 20 feet, totaling 42,600 cubic yards. Excavate a channel to a depth of 5 feet and width of 20 feet in Spatterdock Lake.
• Island Building: The excavated material will be used to create an island by placing the material on an existing shallow area located along the west margin of Dresser Island.
•Sediment Deflection Dike: Deflects sediment away from the opening of the river and the backwater area to extend the life of the connection.
•Emergent Vegetation Management: May include creating conditions suitable to support desired emergent vegetation and plantings.

Implementation Considerations

It is assumed that dredged material can be used for the islands' construction or can be disposed of at a pre-determined site. Longevity of the deep water areas is contingent upon scouring and/or water diverting structures and the variety of flows that occur on lower Pool 26.

Placement of the islands and dikes may be impacted if there is a presence of mussels at that site.

Opportunities may include:

- Improve the resiliency of the habitats to potential climate change impacts;
- Support local community by improving nature based tourism and recreation opportunities;
- Enhance partnerships with organizations for monitoring and education;
- Use dredged material more effectively to benefit or create habitats;
- Improve water quality;
- Use innovative solutions to create sustainable habitat conditions; and,
- Reduce the quantity of invasive species.

Constraints and considerations may include:

- Avoid or minimize negative impacts to navigation and flood stages.
- Avoid or minimize negative impacts to current Pool 26 water level management activities.
- Avoid or minimize negative impacts to utilities within the proposed project area.

Environmental Considerations:

- Avoid and minimize impacts to Threatened & Endangered Species.
- Avoid and minimize impacts to cultural resources,
- Avoid and minimize negative impacts to Waters of the United States (WOTUS),

Cost Considerations:

- UMRR project cost limitations
- Sponsor Operation & Maintenance Capacity

Construction Considerations:

- Accessibility for construction (seasonal high and low water, closed areas, nesting/ roosting, etc.).
- Avoid or minimize impacts to existing hard mast resources.

Synergy with other efforts may include:
- Recent UMRR projects including Piasa and Eagles Nest Islands and West Alton Islands HREPs

Data needs may include:

- Bathymetric data
- LiDAR
- Mussel survey

Environmental Justice considerations:

These areas and surrounding communities meet certain EJ criteria. Consider formulation to benefit EJ communities including access and subsistence opportunities.

Sequencing requirements:

- To be determined specific needs by the PDT, consider placing any rock and containment areas first to contain excavated material.

Financial Data

The total estimated base year cost for this project is $5,00,000. All of the project features are on Corps owned GP lands. Accordingly, under the provisions of Section 906 (e) of WRDA 1986, as amended, the project's first costs are 100 percent Federal. Operation Maintenance, Repair, and Rehabilitation costs are the responsibility of the project's Sponsor.

Status of Project

Missouri Department of Conservation is a partnering agency on this proposed project.

Sponsorship

The study area is located on federally owned lands managed as part of the General Plan (GP) land agreement; therefore, pursuant to 1986 WRDA, Sections 906(e)(3), as amended, the project first costs are 100-percent federal funded. Included areas are part of the GP lands agreement between the USACE and the USFWS which was signed in 1961 as a result of the federal government acquiring lands as a part of building the dams. USFWS has a Cooperative Agreement for Management of USACE GP lands between the USFWS and MDC for all sites within the study area. Responsibility for the operation, maintenance, rehabilitation, replacement, and repair of any potential project would be the responsibility of MDC.

Point(s) of contact

- Brian Markert, Program Manager, St. Louis District, U.S. Army Corps of Engineers, 314-331-8455, brian.j.markert@usace.army.mil
- Matt Vitello, Missouri Department of Conservation, 573-522-4115 ext. 3191, matt.vitello@mdc.mo.gov

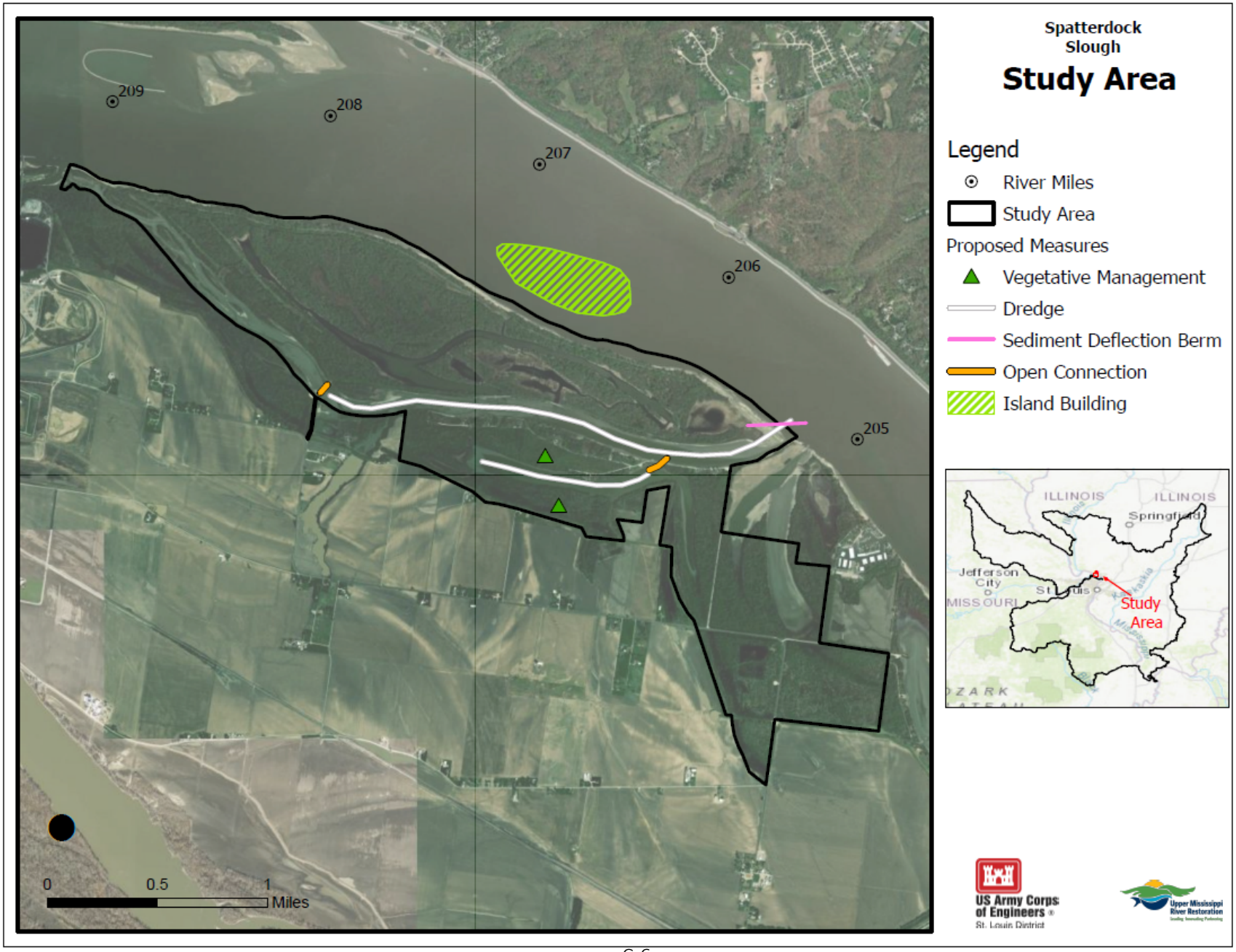
References

McCain, K., Schmueker, S., & De Jager, N. (2018). Habit Needs Assessment II for the Upper Mississippi River Restoration Program: Linking Science to Management Perspectives. U.S. Army Corps of Engineers, Rock Island, IL.

Attachments

Map of project area:

Upper Mississippi River Restoration (UMRR) Program
Habitat Rehabilitation and Enhancement Project



Upper Mississippi River Restoration (UMRR) Program
Habitat Rehabilitation and Enhancement Project

Mason Island
Pool 26, Mississippi River, Missouri, USACE St. Louis District

Location
The project is located in Pool 26 on the right descending bank of the Mississippi River between river miles 220.5 and 218 near the town of Grafton, Illinois. The areas were originally acquired for the nine foot navigation project and were identified in a General Plan and made available to the Department of Interior and the State of Missouri, through a cooperative agreement. The Mason Island Complex totals approximately 468 acres and are collectively managed as part of the Missouri Department of Conservation's (MDC) Upper Mississippi River State Conservation Area.

Existing resources
The area consists of side channels, isolated backwater wetlands, and degraded islands. Conditions are shallow throughout the backwater areas during normal pool levels, less than3 feet deep, and the site is almost entirely unwatered when Pool 26 is tilted, leaving a mud flat consisting of fine substrate (mostly silt). The backwater and wetlands experience some dewatering and have filled in with silt over time. The construction of Lock and Dam 26 also raised the water table in the area and permanently inundated many smaller islands in the area. These islands have degraded and eroded over time in part due to wind fetch and wave action.

The Upper Mississippi River System Habitat Needs Assessment (HNA) II (McCain, Schmueker, & De Jager, 2018)The HNA II summarized the desired future conditions in relation to high importance indicators for the Lower Impounded Mississippi River as: 1) improve gate management for native fish passage, 2) restore floodplain habitat and connectivity, 3) restore islands, 4) restore diversity of aquatic habitat types with desire for more lentic and backwater habitats, preferably shallow lotic areas and deep lentic areas, 5) restore aquatic vegetation in backwater areas, 6) restore floodplain forest diversity, including hard-mast, 7) enhance floodplain topographic diversity, 8) restore floodplain vegetation diversity in hand with diversifying floodplain inundation periods, 8) restore water level fluctuation to mimic pre-dam conditions, and 9) improve water clarity.

The existing forest communities in this area include uneven age maple-ash-elm and early successional maple-ash-elm forest at the lower elevation areas adjacent to the river, and mid-successional mixed forest at higher elevations. The higher elevation areas are high enough to support hard mast species such as oaks and hickories but is currently transitioning to maple-elm forest.

Although aquatic vegetation was once found in numerous locations of Lower Pool 26, it is now limited to occasional immature plants of floating-leaf species (i.e. Nelumbo lutea) in areas directly connected to the river. Although aquatic vegetation is unlikely to be a major habitat cover type into the future within the project area, emergent vegetation still provides valuable resources for migratory waterfowl and fish.

HNA II identified a need for more depth diversity in both lotic and lentic habitats (McCain, Schmueker, & De Jager, 2018). Lotic-dependent species require flowing water habitats for one or more critical life stages. A diversity of depths and structures can be important in supporting spawning, nursery, juvenile, and adult stages for a range of species. Shallow lotic habitat availability and flow diversity are limited in Pool 26. This includes areas like shallowly flooded sandbars and island banks that can provide critical resources for small-bodied fishes and developing young.

Backwater areas have been found to provide critical habitat for fish in large-river systems during the winter due to flow breaks, shelter from barge activity (Garvey, 2003), and as temperature refugia (Raibley, 1997). These areas provide critical spawning and nursery habitat for a range of lentic-dependent (i.e. low-flow habitats) fish species. Backwater fish habitat quality is influenced by temperature, depth, cover, oxygen availability, and water velocity. Sediment deposition within backwaters of the study area has led to a reduction in backwater depth, connectivity, and winter suitability for the lentic fish community.

Problem identification

The existing habitat conditions, future habitat needs and proposed general actions required for habitat restoration on the Upper Mississippi River (UMR) are addressed in the HNA II. That report estimates that there is a need to create or restore 5,000 acres of isolated backwater habitat along the lower impounded reach of the Upper Mississippi River.

On a more site-specific level, sedimentation in the Mason Island Complex, and other off-channel areas, has led to a loss of desirable fisheries habitat, e.g. fish spawning and nursery areas and winter thermal refuges. During the spring when fish, especially centrarchid species such as largemouth bass, bluegill, green sunfish, and crappie, are seeking stable, off-channel spawning areas, the problem is exacerbated due to the tilting of Pool 26 which causes dramatic dewatering of some of the remnant sloughs as extra runoff is released through the Mel Price Dam. The area also has not supported submergent and/or emergent aquatic vegetation since prior to the Flood of 1993.

Climate change impacts include increased frequency and intensity of high water events and increased intensity of drought conditions leading to severe low water events.

• Backwater sedimentation can affect the overall habitat quality through poor water quality, shallow depths, and loss of connectivity. Loss of connectivity can also result in fish entrapment.

• Loss of bathymetric diversity decreases habitat function and availability for native riverine species.

• Loss of sandbars and islands reduce available habitat for aquatic and terrestrial species and accelerate bank and island erosion resulting from increased wind and wave action.

• Loss of topographic and hydrologic diversity reduces vegetative community diversity and wildlife resources (e.g. forage, invertebrate production, and nesting sites and resting sites).

Project Goals

The project, if implemented, would begin to meet the goals set forth in the HNA II report. The restoration and rehabilitation of these wetland and aquatic habitats would provide resting, feeding, nesting, breeding, and weather and predator-escape cover for many forms of migrating water birds and resident wetland wildlife. It will improve aquatic habitat for fishes and reptiles/amphibians, improve woody and herbaceous plant diversity, and improve water management capabilities.

By rehabilitating physical habitat, it is anticipated that desirable breeding, nesting, nursery, and deep water habitat would be available for a number of animals including fish, waterfowl, shorebirds, and mammals. It would improve water quality conditions that support aquatic plant growth, including Typha spp., Sagittaria spp., and Eleocharis spp.

Proposed Project Features

Mason's Island

• Excavation: Connect the interior channels on Mason's Island to the river. Four scouring structures will be added to maintain channel diversity.
• Island Creation: Using excavated material to create islands and sandbars.
• Bullnose: Protection of the island from erosive actions from wind and waves.
• Woody Bundles: Create flow diversity and structure for aquatic species.
• Notching existing dikes: Create flow diversity for aquatic species
• Closure dikes: Create backwater areas for aquatic species

Implementation Considerations

It is assumed that dredged material can be used for the islands' construction or can be disposed of at a pre-determined site. Longevity of the deep water areas is contingent upon scouring and/or water diverting structures and the variety of flows that occur on lower Pool 26.

Opportunities may include:

- Improve the resiliency of the habitats to potential climate change impacts;
- Support local community by improving nature based tourism and recreation opportunities;
- Enhance partnerships with organizations for monitoring and education;
- Use dredged material more effectively to benefit or create habitats;
- Improve water quality;
- Use innovative solutions to create sustainable habitat conditions; and,
- Reduce the quantity of invasive species.

Constraints and considerations may include:

- Avoid or minimize negative impacts to navigation and flood stages.
- Avoid or minimize negative impacts to current Pool 26 water level management activities.
- Avoid or minimize negative impacts to utilities within the proposed project area.
- Minimize negative impacts to local marinas along the Illinois bankline.

Environmental Considerations:

- Avoid and minimize impacts to Threatened & Endangered Species.
- Avoid and minimize impacts to cultural resources,
- Avoid and minimize negative impacts to Waters of the United States (WOTUS),

Cost Considerations:

- UMRR project cost limitations
- Sponsor Operation & Maintenance Capacity

Construction Considerations:

- Accessibility for construction (seasonal high and low water, closed areas, nesting/ roosting, etc.).
- Avoid or minimize impacts to existing hard mast resources.

Synergy with other efforts may include:

- Recent UMRR projects including Piasa and Eagles Nest Islands and West Alton Islands

Data needs may include:

- Bathymetric data
- LiDAR
- Mussel survey

Environmental Justice considerations:

- These areas and surrounding communities meet certain EJ criteria. Consider formulation to benefit EJ communities including access and subsistence opportunities.

Sequencing requirements:

- To be determined specific needs by the PDT, consider placing any rock and containment areas first to contain excavated material.

Financial Data

The total estimated base year cost for this project is $6,000,000. All of the project features are on Corps owned GP lands. Accordingly, under the provisions of Section 906 (e) of WRDA 1986, as amended, the project's first costs are 100 percent Federal. Operation Maintenance, Repair, and Rehabilitation costs are the responsibility of the project's Sponsor.

Status of Project

— Current project phase/actions (NA)

Sponsorship

The study area is located on federally owned lands managed as part of the General Plan (GP) land agreement; therefore, pursuant to 1986 WRDA, Sections 906(e)(3), as amended, the project first costs are 100-percent federal funded. Included areas are part of the GP lands agreement between the USACE and the USFWS which was signed in 1961 as a result of the federal government acquiring lands as a part of building the dams. USFWS has a Cooperative Agreement for Management of USACE GP lands between the USFWS and MDC for all sites within the study area. Responsibility for the operation, maintenance, rehabilitation, replacement, and repair of any potential project would be the responsibility of MDC.

Point(s) of contact

- Brian Markert, Program Manager, St. Louis District, U.S. Army Corps of Engineers, 314-331-8455, brian.j.markert@usace.army.mil

- Matt Vitello, Missouri Department of Conservation, 573-522-4115 ext. 3191, matt.vitello@mdc.mo.gov

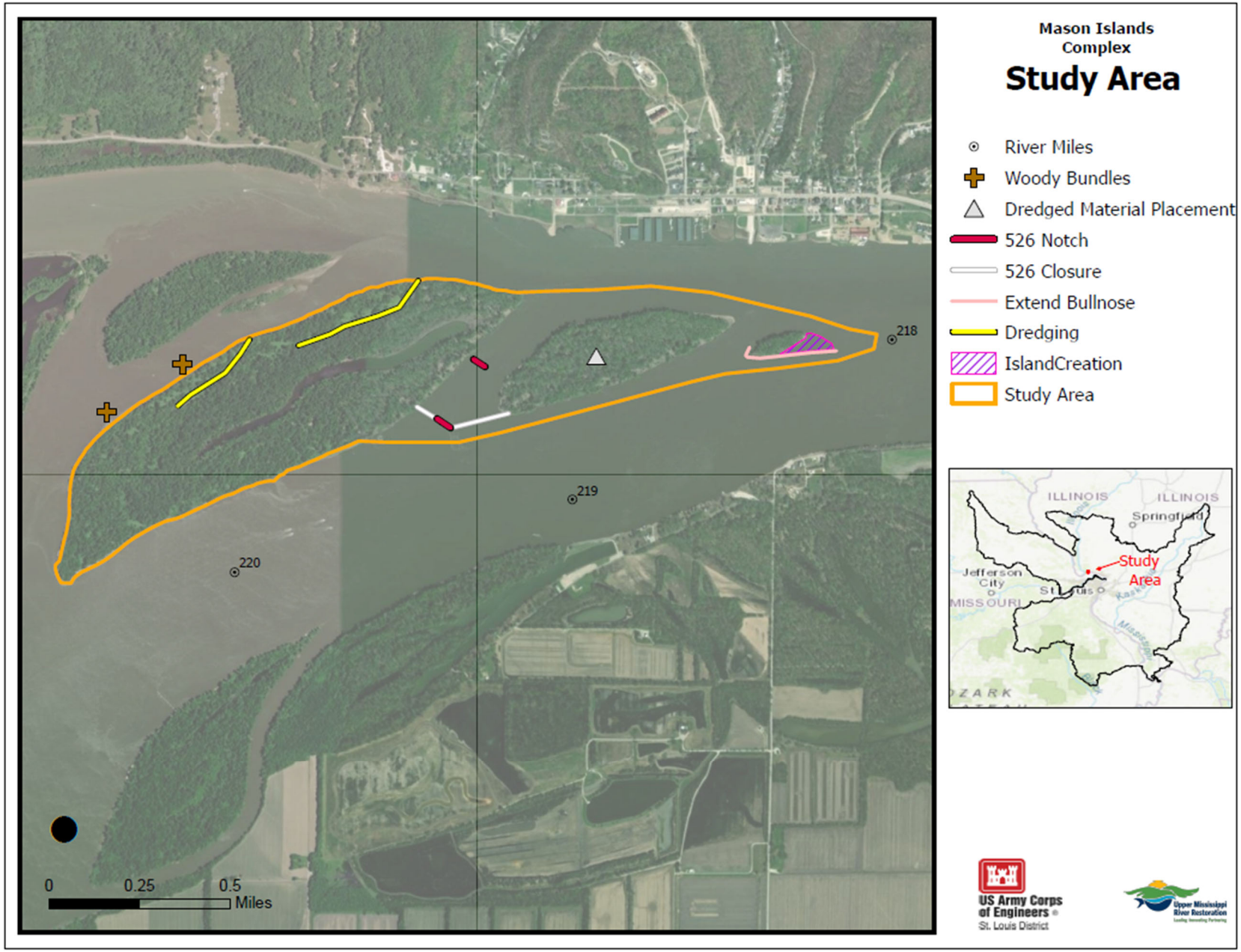
References

McCain, K., Schmueker, S., & De Jager, N. (2018). Habit Needs Assessment II for the Upper Mississippi River Restoration Program: Linking Science to Management Perspectives. U.S. Army Corps of Engineers, Rock Island, IL.

Attachments

— Examples: map of project area, color aerial photo of project area, etc.

Upper Mississippi River Restoration (UMRR) Program
Habitat Rehabilitation and Enhancement Project



Upper Mississippi River Restoration (UMRR) Program
Habitat Rehabilitation and Enhancement Project

Draft Fact Sheet
Illinois Bayou Habitat Rehabilitation and Enhancement Project
Mississippi and Cache Rivers, Alexander and Pulaski Counties, Illinois
USACE St. Louis District

Location

The proposed Upper Mississippi River Restoration (UMRR) Illinois Bayou Habitat Rehabilitation and Enhancement Project (HREP) is located on the Cache River which is a major tributary feeding into the Mississippi River. It runs from the connection at the Mississippi River (RM 13) up the Cache to RM 24. The area is approximately 15 miles north of Cairo, Illinois. The study area is located within Alexander and Pulaski Counties, Illinois on federally owned lands, managed by the US Fish & Wildlife Service (USFWS), within the St. Louis District. The proposed study area encompasses 7,127 acres of low elevation swamp, grassland ridges, scrub-shrub, remnant oxbows, sloughs, and forested wetland habitats across three separate sections (Upper – 1,271ac., Middle- 1,778ac., and Lower Cache- 4,078ac). The study area is located within Open River Reach 2 within the Open River Cluster as identified by the Habitat Needs Assessment II.

Existing resources

The study area lies within the heart of the internationally significant Mississippi Flyway. The mid-continental region of the flyway has become increasingly important in recent years due to the more northerly wintering populations of many migratory bird species, which is associated with the effects of global climate change.

The study area is defined by a ridge and swale topography with much of the area seasonally inundated with water. Historically, the area had a low bottomland hardwood forest complex with a mix of bottomland hardwood, early successional, and ephemeral wetlands. Today, the primary plant communities include swamp, scrub-shrub, forested wetland habitats, and agricultural units. Wildlife that uses the area include waterfowl, range of shorebirds, wading birds, and songbirds characteristic of early successional conditions, among other species. This decrease in habitat diversity and complexity has resulted in a decline in ecosystem structure and function.

The existing status of the HNA-II indicators is mixed. Floodplain function class diversity and floodplain vegetation diversity have existing conditions near defined desired condition but may merit actions to maintain or improve conditions. The connectivity – acres of natural area indicator have existing conditions that deviate from defined desired conditions and may merit action to improve conditions. The aquatic vegetation diversity indicator has existing conditions that deviate substantially from defined desired conditions and may merit actions to improve conditions.

Problem Identification

The quality and quantity of bottomland wetland habitats along the MMR floodplain have declined leading to negative impacts to floodplain and aquatic fish and wildlife that depend on these habitats to survive. The interagency Middle Mississippi River Partnership (MMRP) and the UMRR Program have identified the need to restore, enhance, and maintain existing wetland habitats within the floodplain of

the MMR, with a strong need identified to restore hydrologic function for sustained bottomland hardwood forest re-establishment.

Within the proposed study area, hydrological changes have resulted in reduced quality and quantity of emergent marsh, ephemeral wetlands, scrub-shrub, and bottomland hardwood forest. These wetland resources cannot be managed effectively, leading to decreased wetland function and a reduction wetland habitat quality and quantity. This has altered species composition in remaining wetlands and reduced total wetland surface area. The forest community in the study area is converting from areas with hard-mast seedlings to a community dominated by shade-tolerant, soft-mast (non-nut producing) trees. The factors influencing forest community changes include the absence of suitable water level management and other historic regimes such as prescribed burning.

Additionally, past and present watershed land use change has directly altered hydrology by raising water elevations and sedimentation rates compared to historic levels and through the loss of backwater depth and side channel bathymetric diversity in the study area. The sedimentation has resulted in a loss of connectivity and increased nutrient inputs. The altered hydrology has resulted in inadequate water supplies during critical life history stages for fish and aquatic vegetation. This has altered wildlife and plant communities in favor of species with broad environmental tolerances due to frequent disturbances and has led to an overall reduction in diversity (i.e. fish, mussels, and floodplain habitat).

Without action, the wetland communities will persist in a degraded state, unable to support the potential wildlife. Forest and herbaceous communities would continue to degrade. Natural regeneration of native forest would continue converting to a soft-mast tree dominated system. This would result in a low diversity forest community with a lower range of resources available for wildlife. The area would continue to be impacted by altered hydrology and inability to mimic the natural hydrograph. Overall, all wetland habitats would continue to degrade leading to reduced use by native resident and migratory wildlife.

Project Goals

Project goals include restoring the mosaic of habitats that historically occurred in this area, including ephemeral wetlands, scrub-shrub habitats, bottomland hardwood forest, and grassland ridges. The desired future condition would have improved hydrology, connectivity, water level management, and wetland functioning for an overall increase in ecosystem outputs, species diversity, and vegetative community health.

The goal of the Illinois Bayou HREP is to increase the quality and quantity of floodplain and wetland habitats within the study area for the benefit of resident and migratory wildlife species. The preliminary study objectives include, but not limited to:

1. Restore aquatic hydrological function, diversity and connectivity
2. Improve floodplain topographic diversity
3. Restore a wetland mosaic
4. Increase forest diversity, including bottomland hardwoods
5. Bank stabilization

This proposed HREP is aligned with USFWS management plans and objectives and supports the UMRR vision of healthier and more resilient UMRS. Additionally, the proposed HREP has the potential to increase the resiliency and thus reduce the operation and maintenance needed throughout the project

area. Likewise, HNA-II indicators would potentially be increased. Aquatic vegetation diversity and floodplain vegetation diversity will be increased by improving water management capabilities and improving hydrologic conditions as well as restoring agricultural fields to native vegetation. Floodplain topographic diversity will be improved by enhancing topographic features in the study area, thinning undesirable tree species, supplementing hard mast planting sites, restoring a more natural hydrologic regime, and increasing capabilities to implement other natural disturbances such as prescribed burning. Connectivity – acres of natural area would be improved through tree plantings and restoration of more natural hydrologic conditions that support diverse floodplain plant communities. There is could be opportunity for a larger, more resilient management area, with lower long term operation and maintenance at the Bellrose Unit (Upper Illinois Bayou).

Proposed Project Features

Project description (potential measures):

The following measures are potential solutions to the identified problems needed to meet the preliminary project objectives.

- Water control structures
- Berm modifications and additions
- Water supply including pumps or wells and associated features
- Tree planting and Timber Stand Improvement (TSI)
- Wetland planting
- Wetland excavation;
- Ridge and swale restoration;
- Bank stabilization;
- River training structures;

Initial Alternative Formulation Strategies:

- No action
- Maximize Ecosystem Benefits
- Maximize Floodplain Vegetation Diversity
- Maximize Floodplain Functional Class Diversity
- Minimize Long-term Operation and Maintenance

Implementation Considerations

— Opportunities and constraints
— Synergy with other efforts
— Known data needs
— Environmental Justice Considerations

— Sequencing requirements

The following data needs have been identified: mussel survey, hydraulic modeling, and bathymetric survey.

Financial Data

All Project lands are federally owned and managed by the USFWS and would be 100 percent federally funded under the provisions of Section 906 (e) of WRDA 1986, as amended. This cost estimate was developed using ROM estimates based on similar features from other projects and includes a 35 percent contingency. The USFWS is the Project Sponsor and would be responsible for operation, maintenance, repair, rehabilitation, and replacement (OMRR&R).

Upper Illinois Bayou:

The estimated Total Project Cost of the proposed project are $17M.

Middle Illinois Bayou:
The estimated Total Project Cost of the proposed project are $4M.

Lower Illinois Bayou:
The estimated Total Project Cost of the proposed project are $7M.

Status of Project

The proposed project area is identified as a priority by the Joint Venture Partnership (JVP) and portions of the area have been identified within the Middle Mississippi River Partnership (MMRP). USACE and the Illinois Department of Natural Resources are currently working on a comprehensive ecosystem restoration plan for this area under the Planning Assistance to States authority. The JVP consists of the following partners:

- US Fish and Wildlife Service
- Illinois Department of Natural Resources
- The Nature Conservancy
- Ducks Unlimited
- Natural Resource Conservation Service

Sponsorship

The USFWS (Region 3) is the sponsor for the project.

Point(s) of contact

Brian Markert, District Program Manager, St. Louis District, U.S. Army Corps of Engineers, 314-331-8455, Brian.J.Markert@usace.army.mil

Justin Sexton, Refuge Manager, US Fish and Wildlife Service, (618) 634-2231, justin_sexton@fws.gov

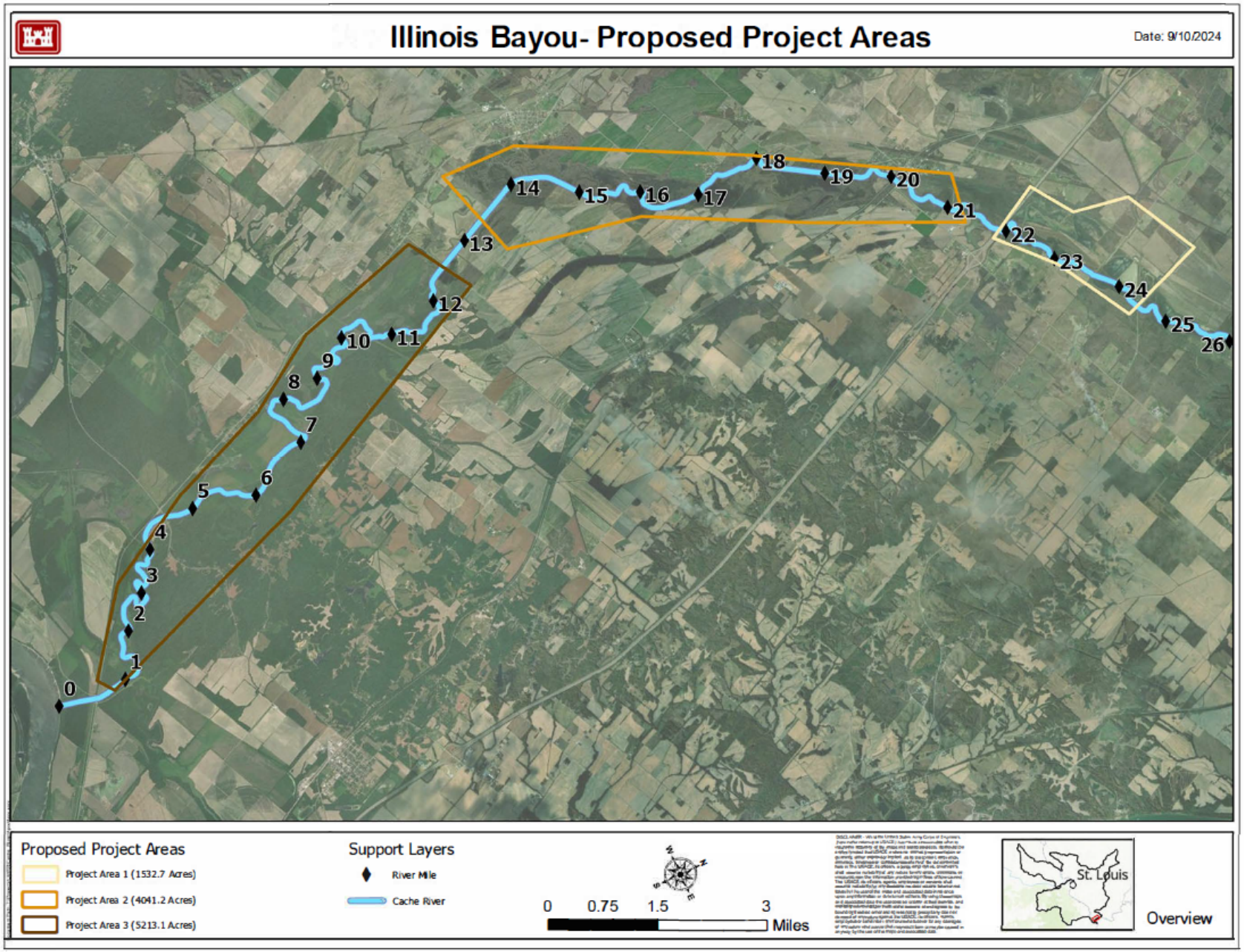
References

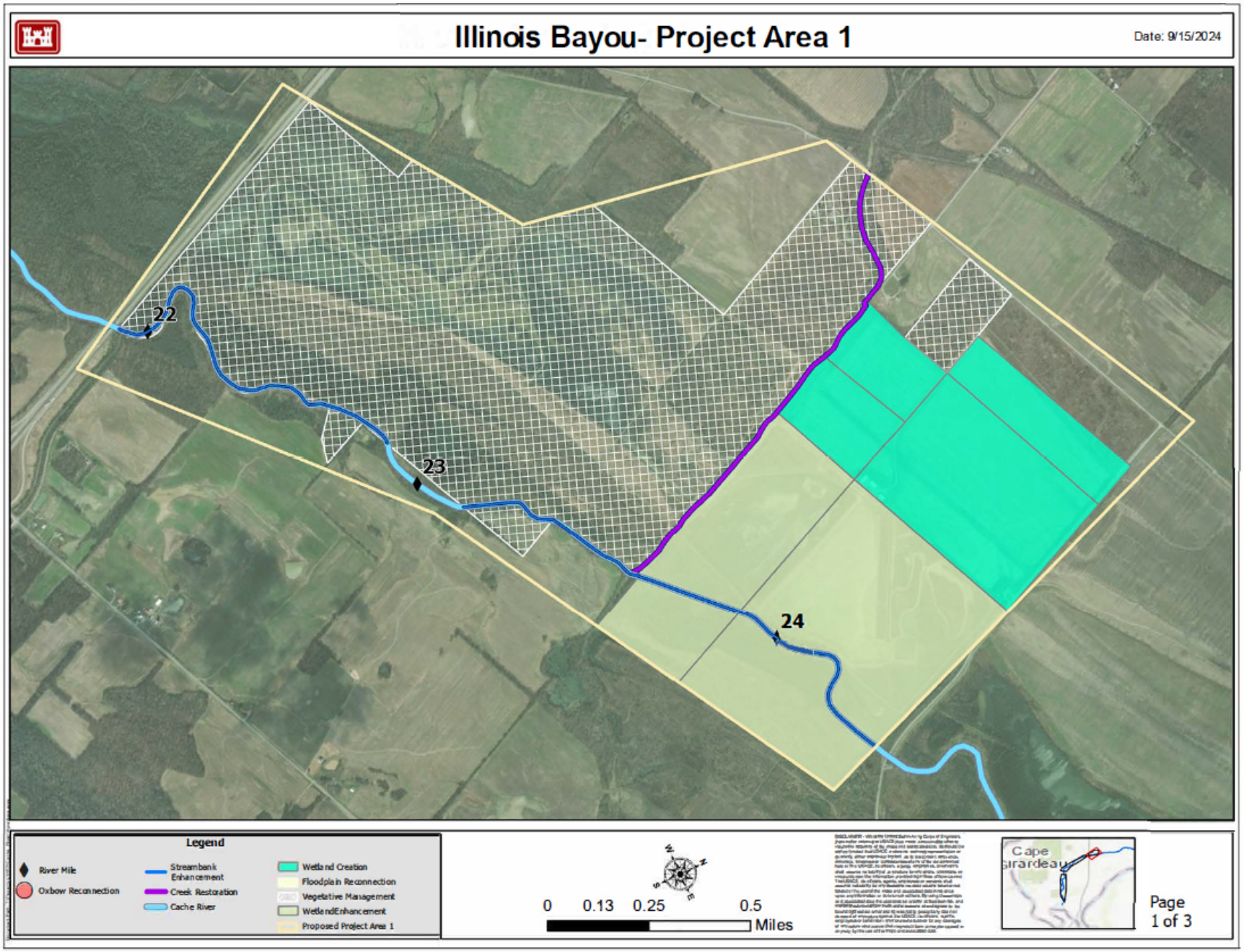
- Cache River PAS (Estimated completion 2026)
- McCain, K., Schmueker, S., & De Jager, N. (2018). Habit Needs Assessment II for the Upper Mississippi River Restoration Program: Linking Science to Management Perspectives. U.S. Army Corps of Engineers, Rock Island, IL.
- Reconnaissance Report for Alexander and Pulaski Counties, Illinois (Sept 1992)
- Middle Cache River Co- Management Strategy (April 2016)
- AFB Documents – Alexander and Pulaski Counties, Illinois (1998)

Attachments

- Maps of the project area.

Upper Mississippi River Restoration (UMRR) Program
Habitat Rehabilitation and Enhancement Project

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Legend
River Mile
Oxbow Reconnection
Streambank Enhancement
Creek Restoration
Cache River
Wetland Creation
Floodplain Reconnection
Vegetative Management
WetlandEnhancement
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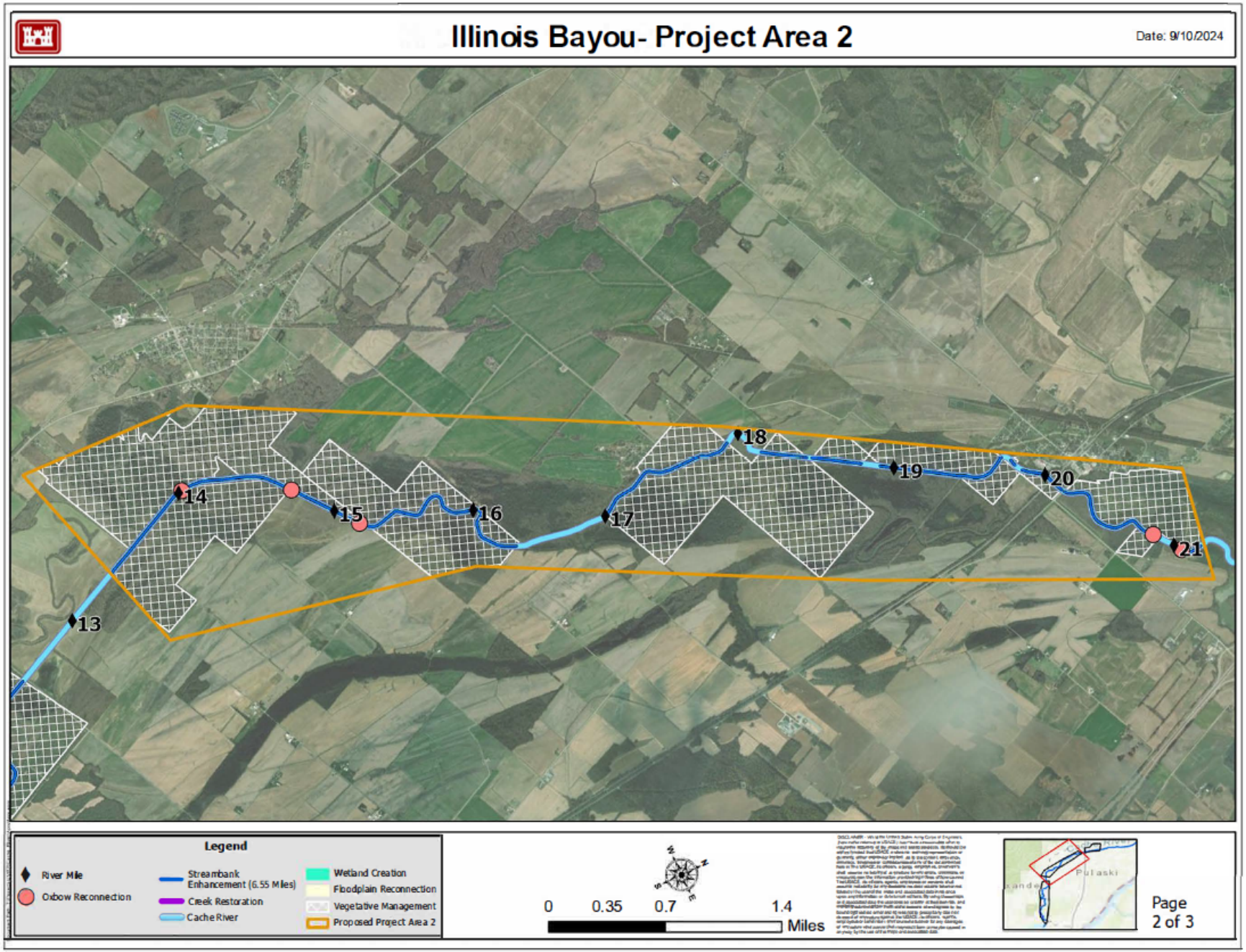
Miles
Cape Girardeau
Page 1 of 3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Legend
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Oxbow Reconnection
Streambank Enhancement (6.55 Miles)
Creek Restoration
Cache River
Wetland Creation
Floodplain Reconnection
Vegetative Management
Proposed Project Area 2
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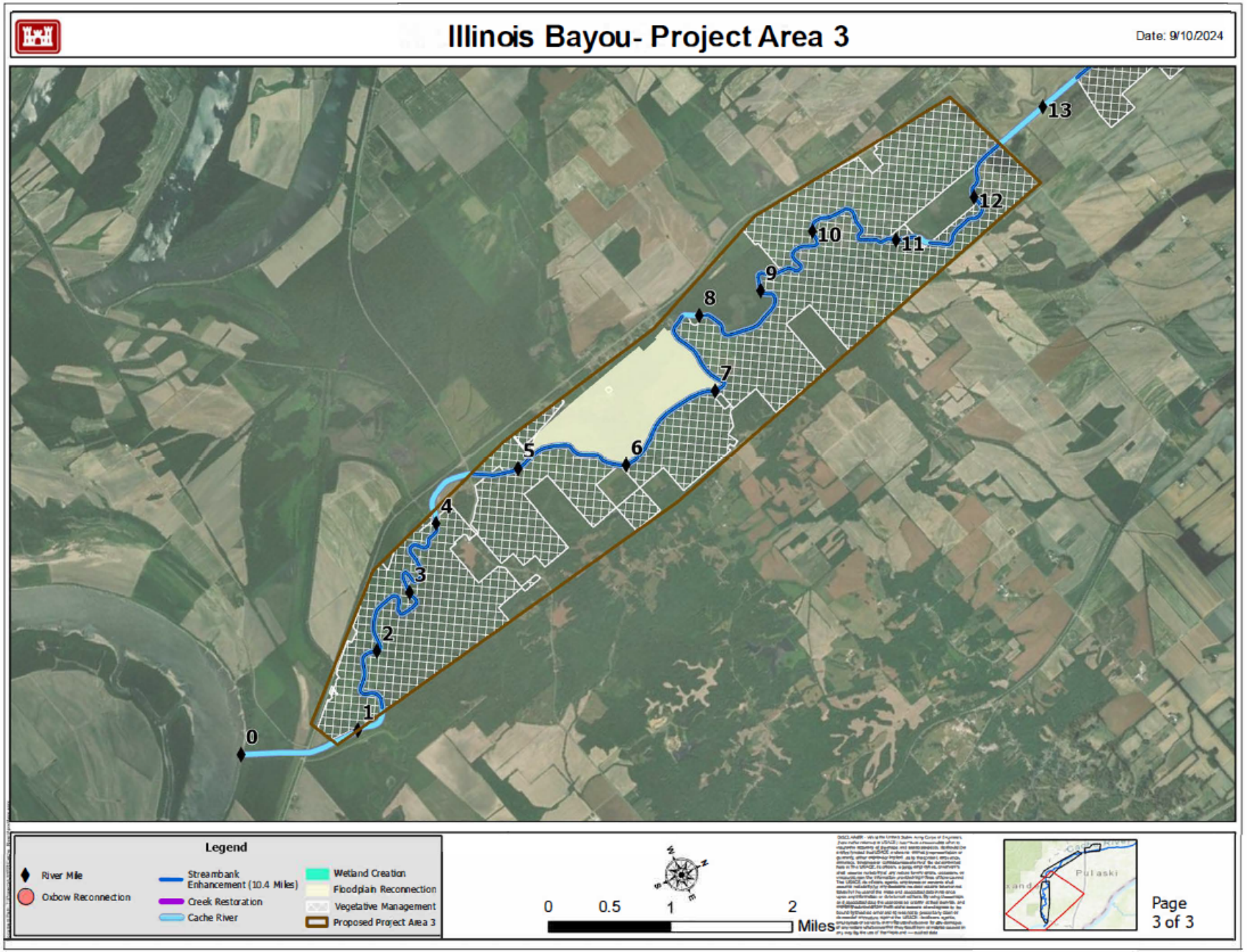
Pulaski
Page 2 of 3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Legend
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Streambank Enhancement (10.4 Miles)
Creek Restoration
Cache River
Wetland Creation
Floodplain Reconnection
Vegetative Management
Proposed Project Area 3
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Miles
Pulaski
Page 3 of 3

Upper Mississippi River Restoration (UMRR) Program
Habitat Rehabilitation and Enhancement Project

Chouteau Island Complex
Pool 26, Mississippi River, Illinois, USACE St. Louis District

Location

The project is located in Pool 27 on the left descending bank of the Mississippi River between river miles 189 and 183 and the towns of Bellefontaine, Missouri and Granite City, Illinois. The proposed project areas are owned by the state of Illinois and managed by the Illinois Department of Natural Resources (IDNR). Chouteau Island is a 5,000 acre complex of three islands including Gabaret and Mosenthein Islands. While commonly referred to as part of the collectively larger Chouteau Island, the proposed project areas are specifically named Gabaret and Mosenthein Islands. These two areas total approximately 3654 ac. The area is currently used primarily for agricultural use and wildlife resources.

Existing Resources

The Chouteau Island Complex incorporates 5,500-acres comprised of three islands, (Chouteau, Gabaret and Mosenthein) all located in Illinois (Madison County) just minutes north of downtown St. Louis/E. St. Louis. Following the great flood of 1993, all residences within the complex were acquired and the complex is currently primarily utilized for agriculture and wildlife habitat. The area consists of a blend of habitat types. The Gabaret Island parcel consists of idled row crop fields, bottomland forest, and a grassed levee around the parcel. Mosenthein Island is a bottomland forest located in the Mississippi River.

Problem Identification

The site currently consists of an array of land uses as described above. The northwestern and western most portion of the project site lies along the Mississippi River and is predominantly in agricultural usage, with bottomland forest lying in a narrow strip directly adjacent to the river. The lands in the southern and eastern portions of the site are primarily agricultural as well and contain depressions that hold water in the spring of the year. Chouteau slough runs from the northeastern to the southwestern part of the site. It contains water year round and appears to fluctuate seasonally with the river. The slough used to be a side channel of the Mississippi River but has since been disconnected by an agricultural levee that runs north and south, by a road, and by the Chain of Rocks Canal.

Project Goals

The Upper Mississippi River System Habitat Needs Assessment (HNA) II (McCain, Schmueker, & De Jager, 2018)The HNA II summarized the desired future conditions in relation to high importance indicators for the Lower Impounded Mississippi River as: 1) improve gate management for native fish passage, 2) restore floodplain habitat and connectivity, 3) restore islands, 4) restore diversity of aquatic habitat types with desire for more lentic and backwater habitats, preferably shallow lotic areas and deep lentic areas, 5) restore aquatic vegetation in backwater areas, 6) restore floodplain forest diversity, including hard-mast, 7) enhance floodplain topographic diversity, 8) restore floodplain vegetation diversity in hand with diversifying floodplain inundation periods, 8) restore water level fluctuation to mimic pre-dam conditions, and 9) improve water clarity.

HNA II identified a need for more depth diversity in both lotic and lentic habitats (McCain, Schmueker, & De Jager, 2018). Lotic-dependent species require flowing water habitats for one or more critical life stages. A diversity of depths and structures can be important in supporting spawning, nursery, juvenile, and adult stages for a range of species. Shallow lotic habitat availability and flow diversity are limited in Pool 26. This includes areas

like shallowly flooded sandbars and island banks that can provide critical resources for small-bodied fishes and developing young.

Backwater areas have been found to provide critical habitat for fish in large-river systems during the winter due to flow breaks, shelter from barge activity (Garvey, 2003), and as temperature refugia (Raibley, 1997). These areas provide critical spawning and nursery habitat for a range of lentic-dependent (i.e. low-flow habitats) fish species. Backwater fish habitat quality is influenced by temperature, depth, cover, oxygen availability, and water velocity. Sediment deposition within backwaters of the study area has led to a reduction in backwater depth, connectivity, and winter suitability for the lentic fish community.

Proposed Project Features

- Shoreline protection
- Side channel restoration
- Island Protection
- Island protection
- Wetland restoration
- Floodplain forest restoration
- Backwater slough restoration

Implementation Considerations

Sponsor has requested that USACE evaluate potential Lands, Easements, Right of Ways, Relocations, and Disposals (LERRDS) credit towards their cost share requirements during the feasibility study and design process.

Synergy with other efforts:

The St. Louis District Biological Opinion program has recently invested in data collection, both biological and physical, as well AdH model development for the side channel and main channel portions of the aquatic areas. Additional work being considered in the floodplain as part of this proposal would improve resiliency and be additive to these on-going efforts.

Opportunities may include:

- Improve the resiliency of the habitats to potential climate change impacts;
- Support local community by improving nature based tourism and recreation opportunities;
- Enhance partnerships with organizations for monitoring and education;
- Use dredged material more effectively to benefit or create habitats;
- Improve water quality;
- Use innovative solutions to create sustainable habitat conditions; and,
- Reduce the quantity of invasive species.

Constraints and considerations may include:

- Avoid or minimize negative impacts to navigation and flood stages.

Environmental Considerations:

- Avoid and minimize impacts to Threatened & Endangered Species.
- Avoid and minimize impacts to cultural resources,
- Avoid and minimize negative impacts to Waters of the United States (WOTUS),

Cost Considerations:

- UMRR project cost limitations
- Sponsor Operation & Maintenance Capacity

Construction Considerations:

- Accessibility for construction (seasonal high and low water, closed areas, nesting/ roosting, etc.).
- Avoid or minimize impacts to existing hard mast resources.

Financial Data

The total estimated base year cost for this project is $15,000,000. All of the project features are on Illinois state owned lands. Accordingly, under the provisions of Section 906 (e) of WRDA 1986, as amended, the project's total costs are cost shared at 65% Federal and 35% Non-Federal Sponsor. Operation Maintenance, Repair, and Rehabilitation costs are the responsibility of the project's Sponsor.

Status of Project

Current Project actions:
To date, through the cooperation of local, state, federal agencies, NGOs and foundations the acquisition of all of Mosenthein and Gabaret Islands. In addition, the City of Madison has been gifted 125 acres from Madison County as well as approximately 600 acres from private industry. The US Army Corps of Engineers, as part of their navigation authority on the island, own an additional 1,300 acres. This places a total of 4,270 of the 5,500 acres (78%) of the island complex in public ownership.

In 2002 the partnership completed a strategic planning process, which calls for 2,500 acres of habitat restoration, including grasslands, bottomland forests, wetlands and slough restoration.

Examples of Key Partners
- US Army Corps of Engineers
- National Park Service
- Illinois Department of Natural Resources
- City of Madison, Illinois
- Trust for Public Land
- Confluence Greenway
- Metro East Park & Recreation District
- Trailnet, Inc.
- Heartlands Conservancy
- Ducks Unlimited
- The Nature Conservancy
- Illinois Historic Preservation Agency

Sponsorship

The study area is located on state owned lands managed by Illinois Department of Natural Resources; therefore, pursuant to 1986 WRDA, Sections 906(e)(3), as amended, the project first costs are cost shared at 65% Federal and 35% Non-Federal Sponsor. Responsibility for the operation, maintenance, rehabilitation, replacement, and repair of any potential project would be the responsibility of IDNR.

Point(s) of contact

• Brian Markert, Program Manager, St. Louis District, U.S. Army Corps of Engineers, 314-331-8455, brian.j.markert@usace.army.mil

• Calvin Beckmann, Illinois Department of Natural Resources, Chief of State Parks, Calvin.Beckmann@Illinois.gov

• David Glover, Illinois Department of Natural Resources, Rivers and Streams Program Manager, 618-200-0214, dave.glover@illinois.gov

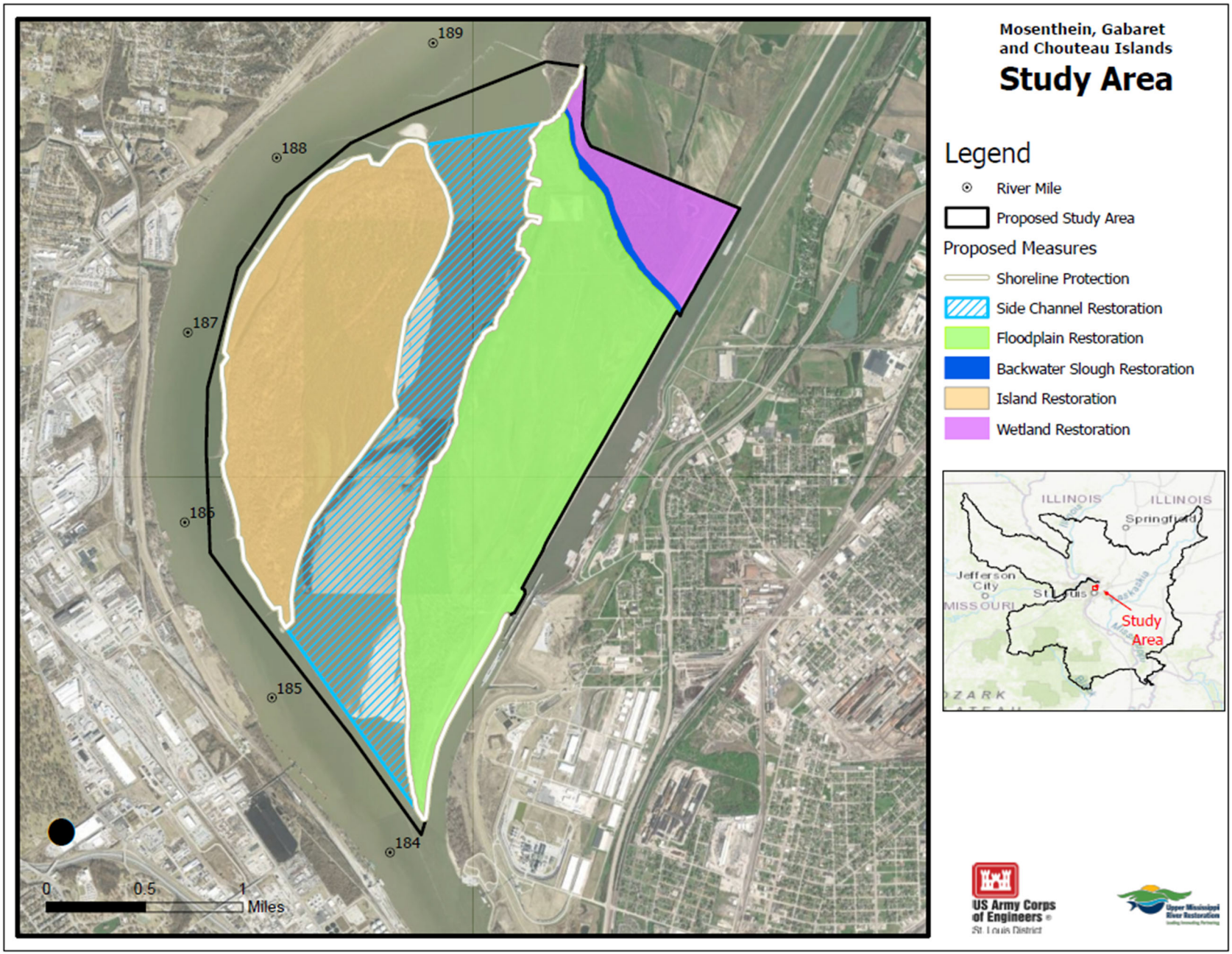
References

- Section 514: MO & Middle Mississippi Rivers Enhancement Project
- Section 206: Aquatic Ecosystem Restoration (October 2001)
- Chouteau Island Strategic Plan (2002)
- McCain, K., Schmueker, S., & De Jager, N. (2018). Habit Needs Assessment II for the Upper Mississippi River Restoration Program: Linking Science to Management Perspectives. U.S. Army Corps of Engineers, Rock Island, IL.

Attachments

— Map of project area:

Upper Mississippi River Restoration (UMRR) Program
Habitat Rehabilitation and Enhancement Project



TURKEY RIVER BOTTOMS DELTA AND BACKWATER COMPLEX
HABITAT REHABILITATION AND ENHANCEMENT PROJECT CLAYTON COUNTY, IOWA AND GRANT COUNTY, WISCONSIN UPPER MISSISSIPPI RIVER RESTORATION ENVIRONMENTAL MANAGEMENT PROGRAM ROCK ISLAND DISTRICT

FACT SHEET

I. LOCATION

The Turkey River Bottoms Delta and Backwater Complex (Turkey River Bottoms, Dead Lake, and Jack Oak Island) is located in Pool 11 at the confluence of the Turkey River and the Upper Mississippi River (UMR) between river miles (RM) 604 and 609, across the river from Cassville, Wisconsin. The project is located in Iowa and Wisconsin and is within the Upper Mississippi River National Wildlife and Fish Refuge (Figure 1).

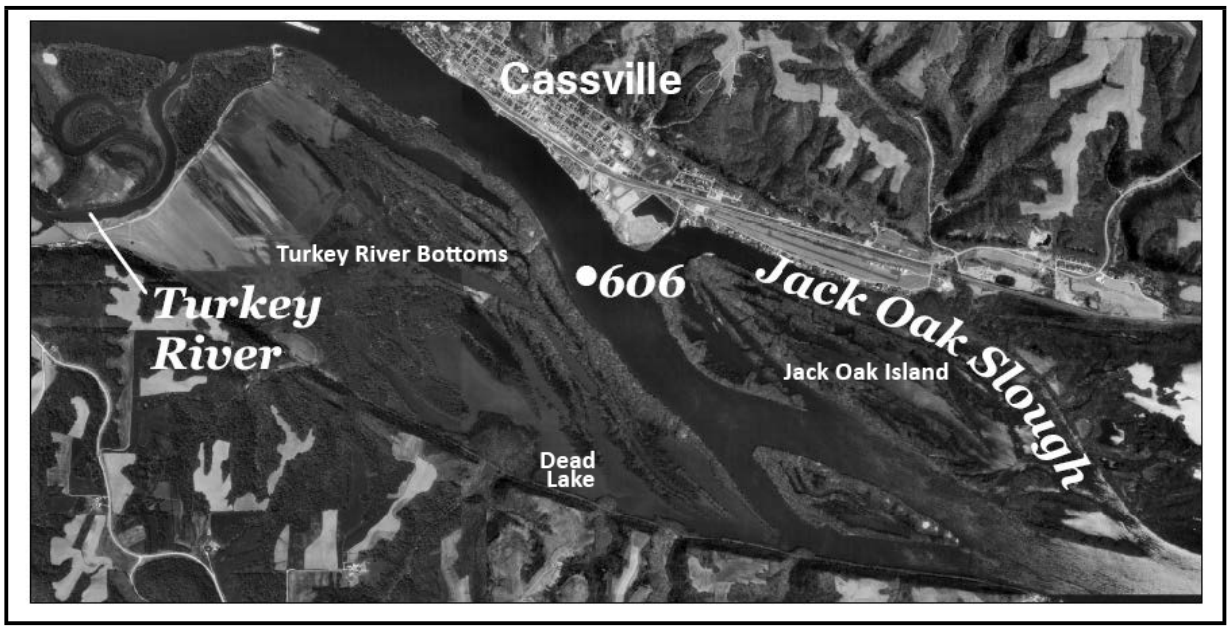


Figure 1. General Project Location

II. EXISTING RESOURCES

The project area includes the 2,800 acre delta of the Turkey River as well as backwater lakes, sloughs, flowing channels, and islands. Though degraded, this important delta backwater area supports a diverse population of wildlife including ducks, geese, swans, pelicans, eagles, and muskrats. Figure 2 shows existing habitat conditions; Figure 3 shows 2000 land cover and acreages.

III. PROBLEM IDENTIFICATION

Identified problems include lack of migratory bird habitat; loss of mast tree diversity; poor overwintering habitat; and poor nursery habitat for fish and wildlife.

The majority of Mississippi River tributary mouths and their associated delta formations have degraded habitat quality and a lack of habitat diversity due to various human actions. Historically, much of the Turkey River Delta area had been a mixture of wet prairie, bottomland forests and backwater complexes before a large portion was converted to agricultural uses.

Migratory breeding birds need a variety of floodplain habitats to nest, refuel and shelter along their migration route. Unfortunately, the current trajectory of the floodplain forest in this area is one of forest decline, reduced species diversity, loss of forest habitat area, lack of tree regeneration, and an increase of invasive species. Reed canary grass is also invading the forested islands, excluding tree-seedlings from establishment and recruitment. The forests could benefit from invasive species treatments, tree planting, bank stabilization and restoration, and thin-layer placement to raise elevations in certain areas to allow for higher elevation tree species diversity and resiliency. An emphasis on planting oak and hickory trees, where appropriate on higher ridges, is imperative as many mature oaks and hickories have been lost in the area after several years of high water and beaver damage.

Historically, the backwater complexes in the area such as Dead Lake and Jack Oak Island have been important overwintering fish habitat. However, fisheries problems with the backwater lakes in the area include too little depth to accommodate fish through winter ice-up and low oxygen levels in both winter and summer. Due to siltation, fish movement is restricted at the entrance to the lakes. Fish become trapped in isolated areas during high water and die when the water drops, and oxygen becomes depleted.

IV. PROJECT GOALS

Project goals are derived from the Environmental Pool Plans, Pools 11 through 22; the Habitat Needs Assessment; and Reach Planning efforts. These project goals are consistent with the systemic goals adopted by Environmental Management Program Coordinating Committee and the Navigation Environmental Coordination Committee in January of 2008.

Rehabilitation and Enhanced Quality Habitat for all Native and Desirable Plant, Animal and Fish Species

- restoration and enhancement of aquatic habitat for fish, invertebrates, aquatic and semi-aquatic mammals, reptiles, amphibians, waterfowl, shorebirds, etc.
- restore and enhance floodplain habitat for the variety of mammals, birds, reptiles, amphibians, etc.

V. PROPOSED PROJECT

The proposed project includes ~~development of a 300-acre moist soil unit (MSU) where a wetland once existed,~~ backwater dredging, forestry restoration and enhancement, and shoreline stabilization. In addition, habitat restoration in the Jack Oak Island backwater complex (RM 603 to 606) may also be included with this project, if it is justified by habitat needs and cost effectiveness (Figure 4).

Portions of Spring Lake, Dead Lake, Wood Duck Slough, Wachendorf Lake, and Long Lake, located on the Iowa side of the UMR at RM 606 will be dredged to provide fisheries overwintering habitat. The cuts will provide suitable overwintering habitat for fish by providing adequate depth, access to fresh flowing spring waters and shelter from the cold and current of the main channel. Anchored cedar tree bundles will be placed as fish habitat in the dredged areas to provide additional shelter. ~~Dredged material will be used to construct the MSU.~~

Forest restoration and enhancement could be accomplished by bank stabilization, elevating the existing ground elevations using dredged material, timber stand improvement and planting trees, shrubs, and herbaceous plants.

The above proposed features will protect, enhance, and restore quality wetland habitat for many native and desirable plant, wildlife, and fish species. Targeted animals include eagles, mussels, fish, turtles, migrating waterfowl, mammals, and shorebirds. Targeted plants include emergent vegetation such as arrowhead, bur reed, and bulrush; submersed vegetation such as wild celery and sago pondweed; and floodplain vegetation such as swamp white oak and button bush.

VI. IMPLEMENTATION CONSIDERATIONS

Material dredged from the backwaters could be used for topography enhancements, to provide sediment control, or to maintain, create, or enhance nearby islands.

There is a private land holding in the Turkey River project area. Jack Oak Island also contains a private holding. If these holdings are purchased, they would become part of the UMR National Wildlife and Fish Refuge and could be incorporated into this project. However, implementation of this project is not dependent on purchase of these additional lands and effective implementation of project objectives would be achievable on lands currently under the management of the Refuge.

The Higgins eye pearly mussel *(Lampsilis higginsi)* has been found at various locations in Pool 11. The project will be formulated to avoid adverse impacts to the Higgins eye and enhance habitat where possible. Archeological sites have been documented on portions of Jack Oak Island and Turkey River Bottoms.

VII. FINANCIAL DATA

All project lands are owned by the U.S. Army Corps of Engineers and the U.S. Fish and Wildlife Service (USFWS) and are managed as part of the UMR National Wildlife and Fish Refuge. This project would be completed in two phases. The estimated cost for general planning, design, and construction of Phase I is estimated at $38,800,000. Since this project is located on a National Wildlife Refuge, it is 100 percent federally funded. The USFWS is responsible for operation and maintenance costs.

VIII. STATUS OF PROJECT

The project was submitted to the Fish and Wildlife Interagency Committee on January 12, 2006 and accepted by the River Resources Coordinating Team on January 24, 2006 and reaffirmed in May 2010. Constraints have prevented implementation of this project in the past. However, elimination of measures related to these constraints provides would now allow implementation. This project was resubmitted to the Fish and Wildlife Interagency Committee (FWIC) in January 2025 and accepted by the River Resources Coordinating Team in April 2025 for consideration and endorsement to proceed with this previously approved fact sheet.

Partnering organizations include the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, the Iowa Department of Natural Resources, and the Wisconsin Department of Natural Resources.

IX. SPONSORSHIP

All project features will be within the boundary of the Refuge. The USFWS would be the Project Sponsor and will be responsible for O&M. Project partners include the USFWS, the US Army Corps of Engineers, and the states of Iowa and Wisconsin.

X. POINTS OF CONTACT

Kendra Pednault, USFWS, McGregor District Manager, 608-326-0515 (x112)
Ryan Hupfeld, IA DNR, Mississippi River Habitat Biologist, 563-770-6931

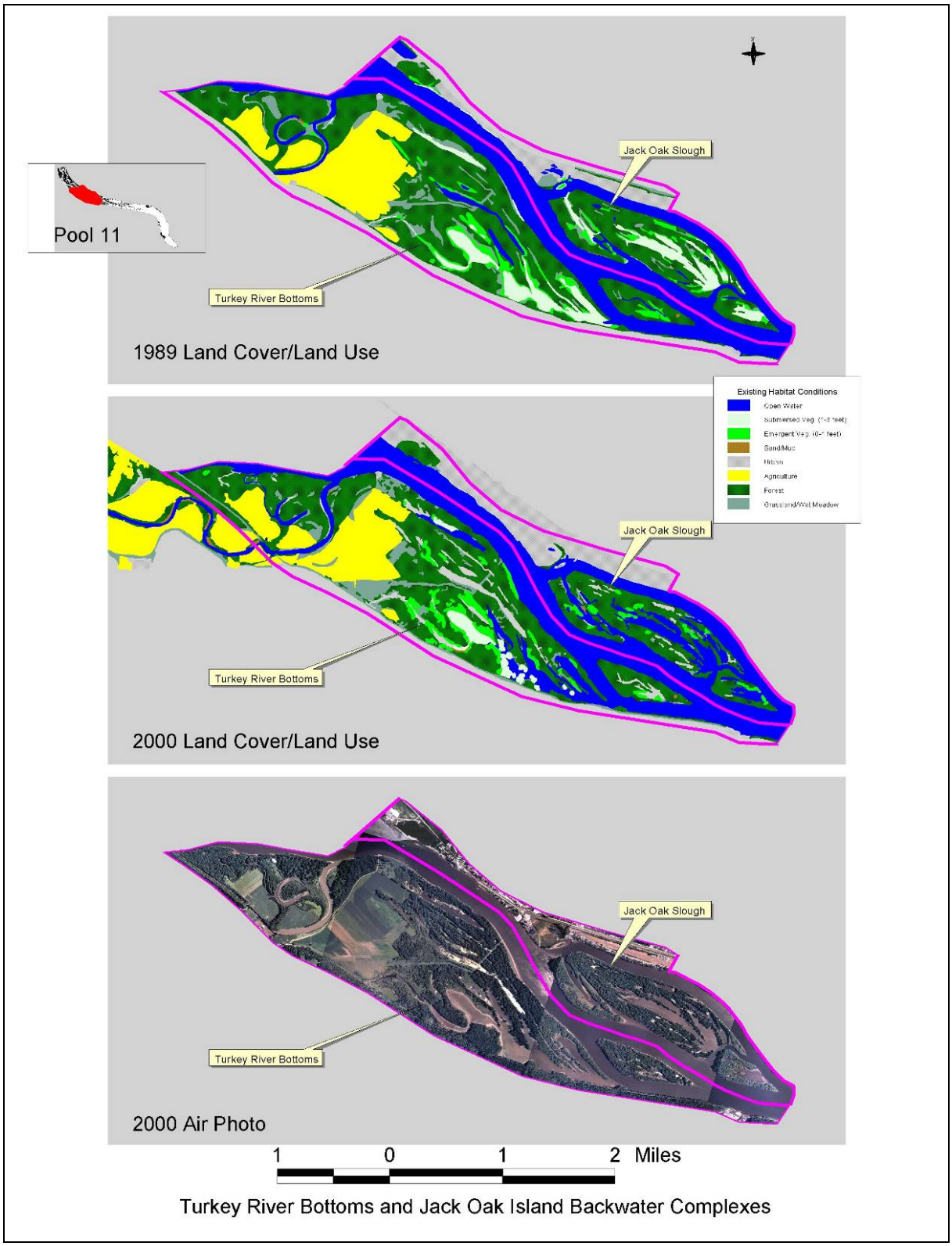


Figure 2. Existing Habitat Conditions

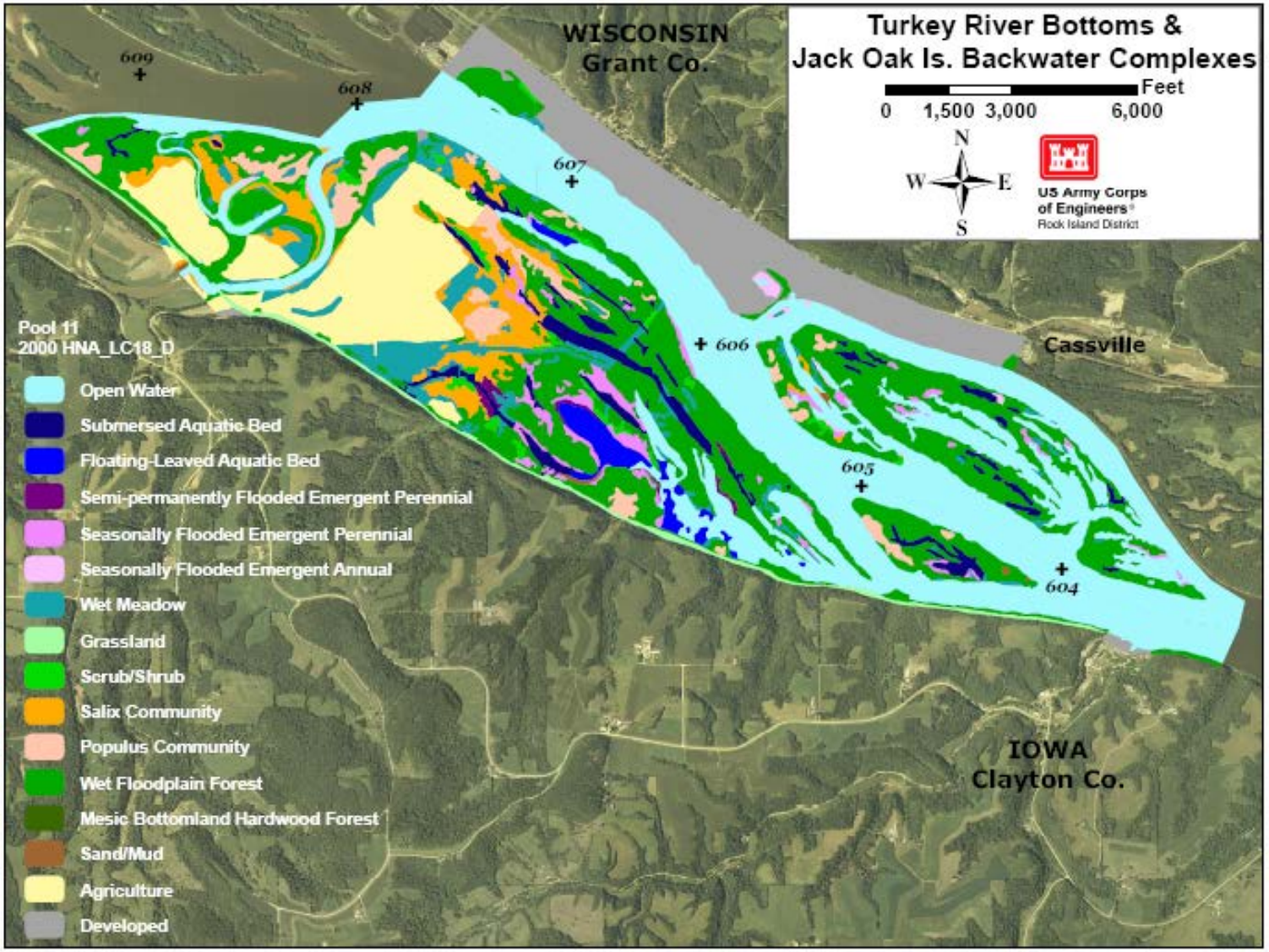


Figure 3. 2000 Land Cover Data

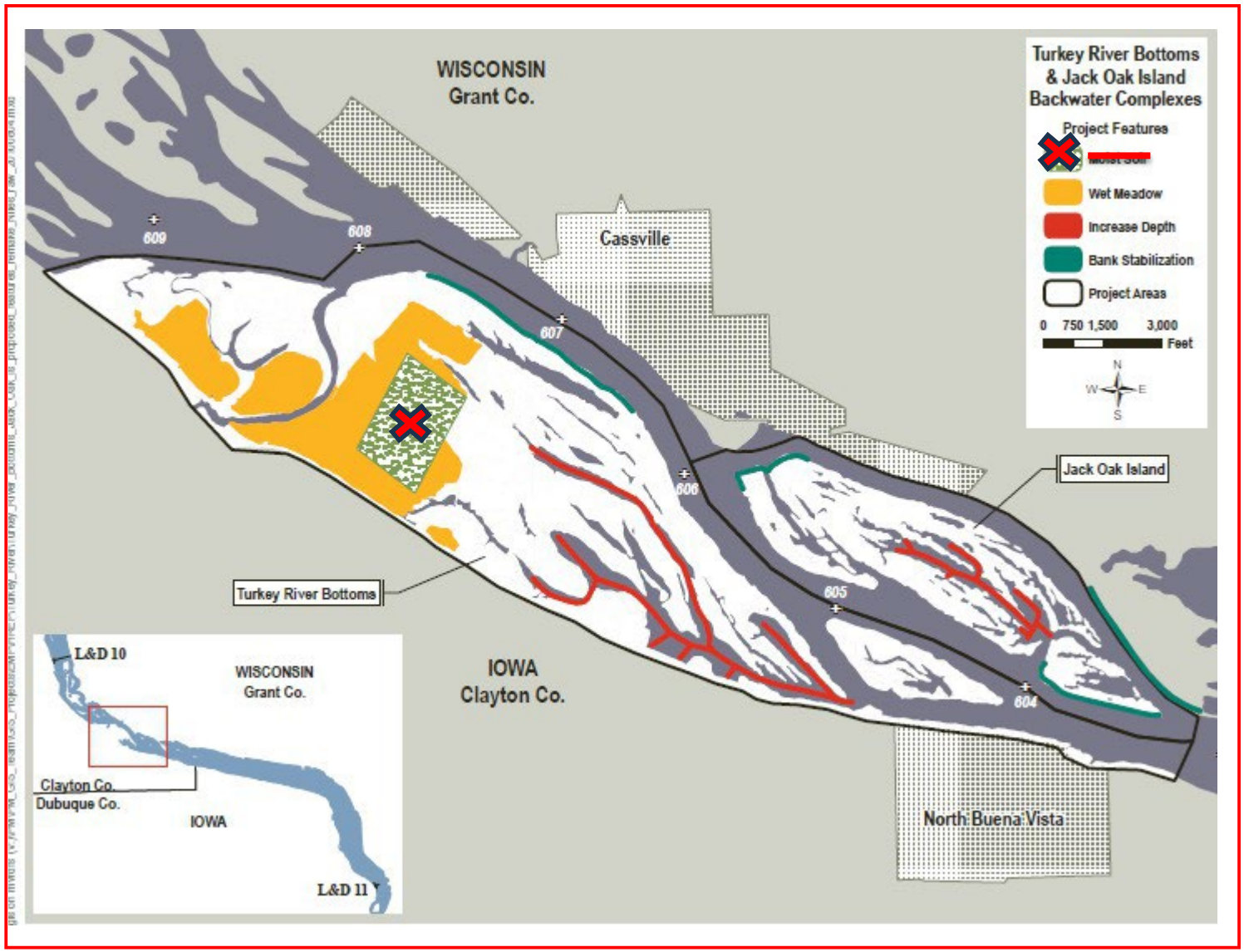


Figure 4. Proposed Project Features - Edits to Original Fact Sheet Project Feature Map

2025 Update: Upper Mississippi River National Wildlife Refuge is not willing to sponsor a project that includes moist soil management units due to changing conditions and needs in the project area, higher operations and maintenance costs, and workload priorities.

U.S. Fish & Wildlife Service

Potential HREP Project Features

Upper Mississippi River National Wildlife & Fish Refuge

Pool 11: Turkey River Bottoms - Jack Oak Island HREP

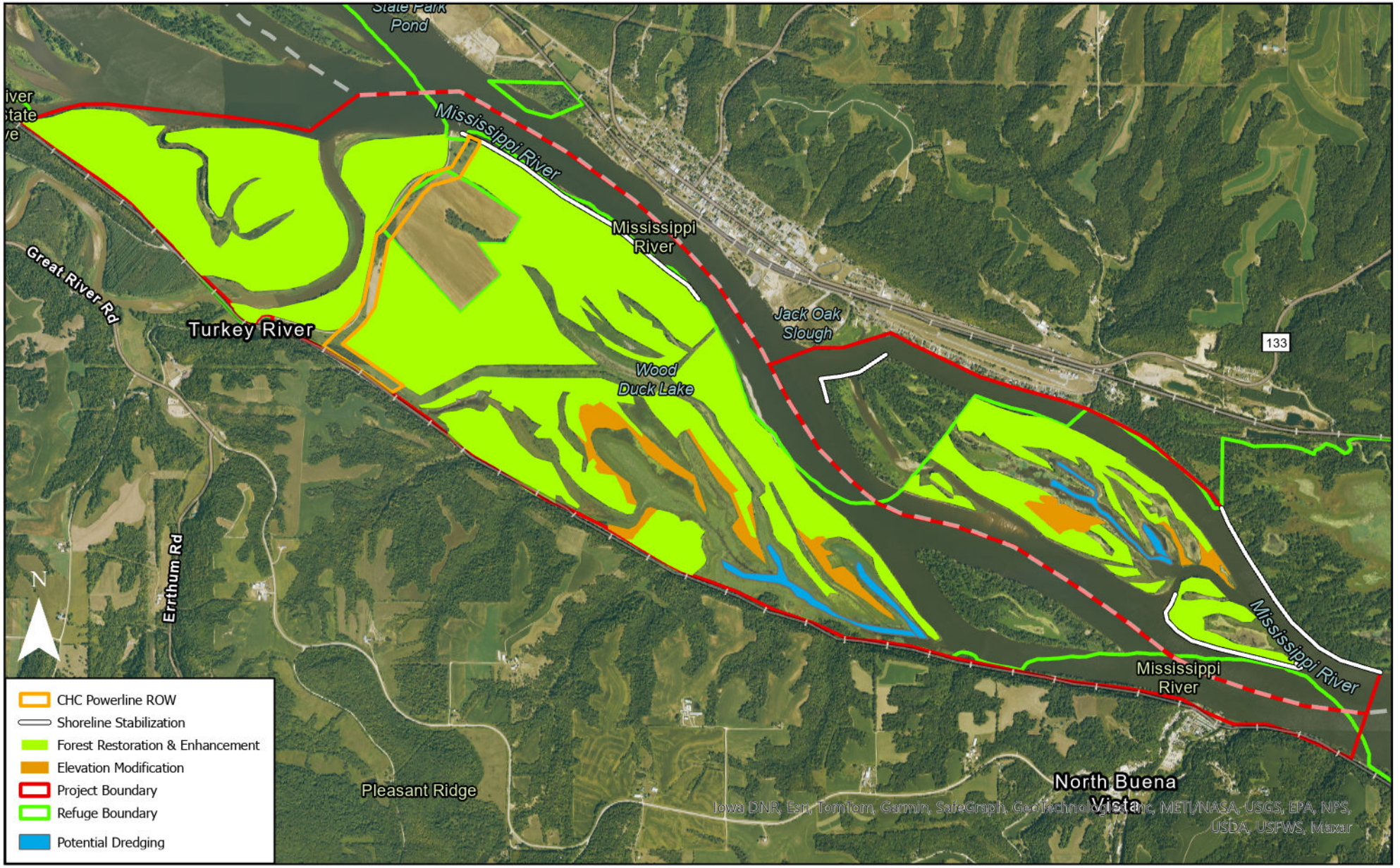


Figure 5. Proposed Project Features - 2024 Map Showing Proposed Features

Upper Mississippi River Restoration (UMRR) Program
Habitat Rehabilitation and Enhancement Project

Lower Long Island and Shandrew Island
Great River National Wildlife Refuge (NWR), Long Island Division
Pool 21, Mississippi River, Illinois,
Rock Island Corps District

Location

Long Island Division (formerly referred to as the Gardner Division) of Great River NWR, includes the Middle & Lower Long Island and Shandrew Island complex of lands within Reach 2 as described by the Upper Mississippi River Restoration Program- DOI & USGS (2018), of the Upper Mississippi River, RM 340.5 to 333.5, left descending bank, Pool 21.

The entire project is in Adams County, Illinois. The closest town is LaGrange, in Lewis County, Missouri, approximately one mile west of the project area.

The 5,491-acre division is owned in fee title by the United States Army Corps of Engineers (USACE) and made available for management to the United States Fish & Wildlife Service (FWS) as part of General Plan agreements.

Existing resources

The Long Island Division is an island complex within the Mississippi River, made up of a mix of higher elevation, former agriculture fields (pre-1995) which have reverted to even-aged, low diversity stands of trees; older-growth trees on higher ridges; floodplain forest; and backwater sloughs, side channels, and lakes.

Long Island is important for migratory waterfowl, neo-tropical bird migrants, and resident wildlife species (deer, turkey, small game). The floodplain forest composition contains some hard mast (pecan), soft mast, and vine species characteristic of unmanaged Mississippi River floodplain forests. Large trees with exfoliating bark provide suitable summer maternity roost habitat for several native bat species. Interior island sloughs contain limited emergent aquatic vegetation, shrub-swamp species, and standing snags that are utilized by cavity nesting neo-tropical birds and waterfowl. A nearby area identified on the Missouri side of the river harbors native mussel beds. Side channels and chutes are important to fisheries resources.

The study area is located within Pool 21 of the Lower Impounded Pools as identified by the Habitat Needs Assessment II (McCain et al, 2018). This project would seek to improve several of the diversity and redundancy indicators, including aquatic habitat diversity (i.e., Aquatic Functional Classes 1 & 2) and Floodplain Vegetation Diversity. The status of the HNA II Indicators pertinent to this study are in the “yellow” range, which means existing conditions are near defined desired condition, but may merit actions to maintain or improve conditions as identified by the river managers.

Problem identification

The diversity and overall quality of migratory bird, wildlife, and fish habitat in the Long Island Division has been reduced over the past several decades. USACE’s forestry monitoring on Long Island and Shandrew Island shows an overall lack of recruitment of diverse, hard mast tree species, and in some areas, significant mortality of large, canopy trees. Historic documents show that pre-agricultural vegetation cover was floodplain and bottomland forest. In fact, this tract of mature bottomland forest is the largest continuous acreage of its type on the river between Rock Island and Cairo, IL.

These changes are primarily due to increased flood frequency and duration, introduction and spread of invasive species, continued sediment disposition from flood events, and construction of river training structures that reduce flow through the backwater channels. The communities affected by these changes include floodplain and

bottomland forests, forested wetlands, shrub-swamp and herbaceous wetlands, migratory birds and waterfowl, native wildlife, and fisheries resources.

Without intervention, sediment deposition will continue within existing backwater sloughs, chutes, and side channels within the study area. With continued sedimentation, the waterfowl and fisheries habitat within the study area will continue to decline and may become unsuitable for desired species. The ability to manage for desired forest conditions will continue to be impacted by sediment deposition in areas of impounded forest (Figures 1 & 2), resulting in larger mortality zones, opening the door for invasive species to spread as well as continued overland scouring from Mississippi River flood events.

Project Goals

Project goals are derived from the Environmental Pool Plans and Reach Plans for Pools 11 through 22 and the second Habitat Needs Assessment (HNA-2), to improve conditions for fish and aquatic wildlife by increasing forest diversity and health throughout the project area.

The goals of the project include sediment removal in interior portions of Long Island. This will facilitate drainage of backwater sloughs and lakes after extreme, and even moderate flood water events which has caused extensive tree mortality. Further, by reducing invasive species in former ag field sites, combined with planting of a diverse mix of trees and forest stand improvement (thinning) where practical, habitat quality will increase. Finally, by increasing side channel and chute depth diversity on Shandrew Island, fisheries resources will benefit. The preliminary study objectives include, but not limited to:

1) Restore floodplain vegetation diversity and abundance to support migratory bird species, bats and other native wildlife
2) Restore bathymetric diversity in aquatic off-channel and channel areas (including side channels) to support fisheries resources and waterfowl species

The project will improve Floodplain Vegetation Diversity through invasive species treatment and restoration of forest diversity by planting of containerized trees across the study area. The project will also address Aquatic Functional Class 1 and 2 by restoring bathymetric diversity to backwater, chute, and side channel habitats. It will also help to improve Longitudinal Floodplain Connectivity – Natural Area by restoring/enhancing forested habitats on old agricultural fields. The project may also address Floodplain Functional Class Diversity depending on project design.

Reduced sedimentation will also help to improve conditions within the study area, allowing for greater vegetation diversity. Aquatic Functional Class 1 and 2 will be addressed by reducing sediment inputs and restoring bathymetric diversity to backwater, chute, and side channel habitats. This will improve drainage where needed.

Species and communities that would benefit from the project include floodplain and bottomland forests, shrub-swamp and emergent wetlands, migratory birds and waterfowl, native wildlife including bats, and fisheries resources.

This proposed HREP is aligned with USFWS habitat management plans and objectives and supports the UMRR vision of healthier and more resilient UMRS.

Proposed Project Features

- Plant a diverse mix of trees in old field habitat, canopy gaps and areas of large-tree mortality zones while conducting forest stand improvements through selective thinning.

- Enhance existing higher quality forested areas through selective thinning.
- Implement chemical and mechanical control of invasive/aggressive species in order to increase success of new tree planting.
- Construct hard points in selected areas to create depth diversity in backwaters and chutes
- Dredge interior channel areas to enhance flow and improve bathymetric diversity

Implementation Considerations

Opportunities exist to increase forest diversity and long-term forest health and to increase quality of public use (fishing & hunting). Constraints include Mississippi River levels & flooding impacts and invasive/aggressive species impacts (Japanese hops & stiltgrass, giant ragweed, reed canary grass).

This project aligns with the UMMR Habitat Needs Assessment II (2018) and the FWS-Great River NWR Habitat Management Plan (2012). Known data needs include updated bathymetry, ortho-referencing imagery, LiDAR, soils data, and forest inventory. There are no sequencing requirements identified at this time.

The Gardner Division HREP, completed in the early 2000s, included an emergent closure structure at the upstream end of O'Dell Chute (located at the lower end of Shandrew Island) in addition to 5000' of chute dredging. Armoring at the head of Shandrew Island and bank line stabilization was also completed. The current project proposal compliments and continues that work, in other portions of the island complex. This project is focused on restoring the floodplain forest and addressing connectivity issues that have arisen with the increase of major flood events. For example, many of the backwater areas are silting in. This causes water to impound and creates inundation zones that don't dry out for a very long time. Consequently, oxygen to the trees is cut off. By restoring the bathometric diversity in these areas, water can migrate off the site, as it historically has, following a major flood event. With this, we will be able thin out the much older forest stands and restore diverse tree species back into these areas. This will improve large areas within the forested islands and create high quality overwintering and migration habitat for many species.

Financial Data

All Project lands owned in fee title by the United States Army Corps of Engineers (USACE) and made available for management to the United States Fish & Wildlife Service (FWS) as part of General Plan agreements. The cost for the general planning, design, and construction of the proposed Project is estimated at $27 million and would be completed in one phase. Since this Project would be located on Federal lands, it would be 100 percent federally funded. The USFWS is the Project sponsor and would be responsible for future O&M costs.

Status of Project

This project was submitted to the Fish and Wildlife Interagency Committee (FWIC) in January 2025 and accepted by the River Resources Coordinating Team in April 2025. Partnering organizations are USACE and USFWS, with USFWS being the project sponsor.

Points of contact

- Tate Sattler- Forester, USACE, Rock Island District, Tate.W.Sattler@usace.army.mil
- Floyd Truetken- Project Leader, USFWS, Great River NWR, Floyd_Truetken@fws.gov

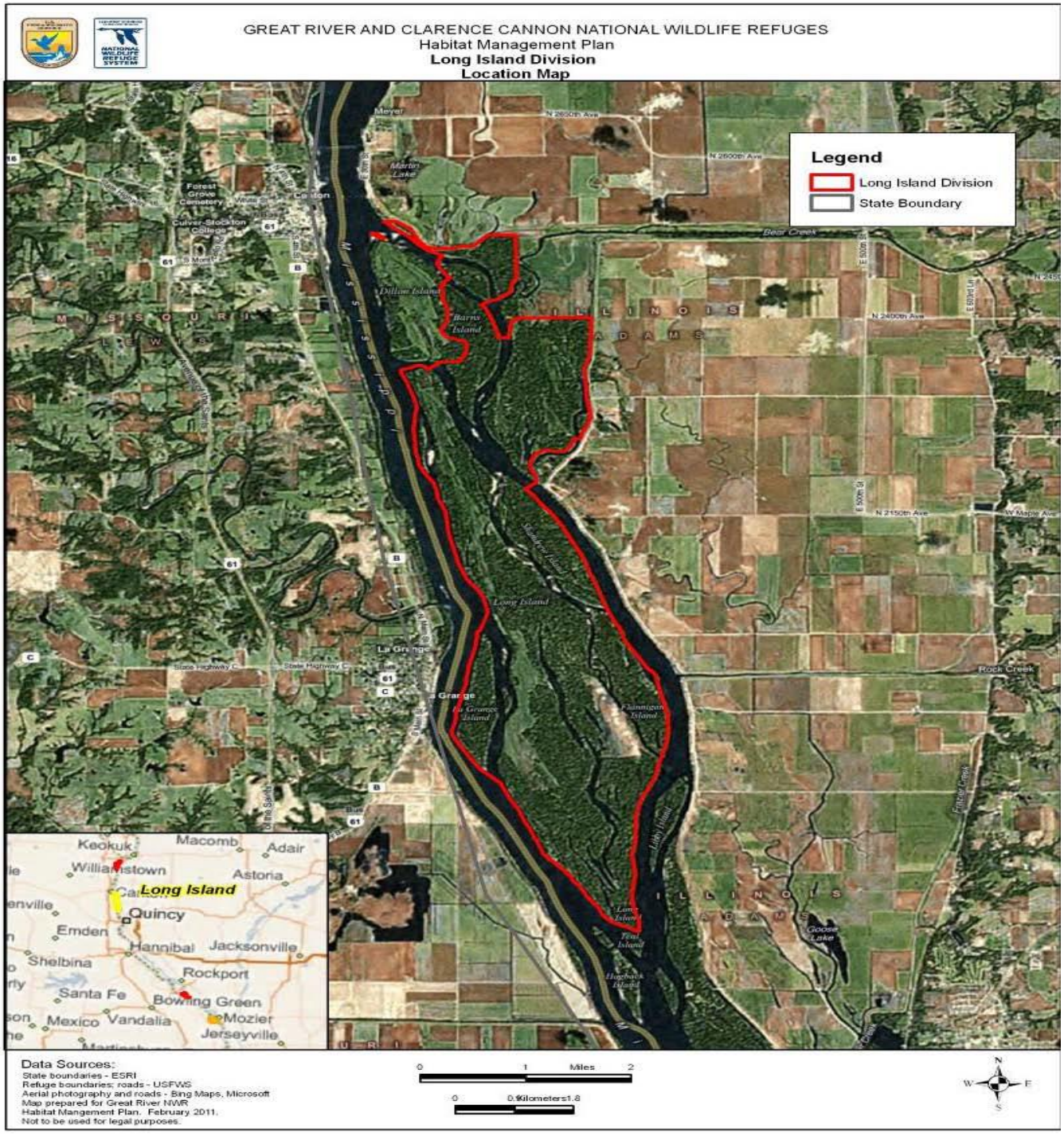


Figure 1: Project Area

Figure 2: 2009 Aerial Imagery- Long Island Division

Figure 3: 2022 Aerial Imagery- Long Island Division

Upper Mississippi River Restoration (UMRR) Program
Habitat Rehabilitation and Enhancement Project

Spring Lake Backwater Restoration
Pool 13, Mississippi River, Illinois
Rock Island District

Location

Spring Lake is a 3,600-acre backwater lake in Pool 13 that extends along the left descending bank at Mississippi River miles 536.2-532.0. Savanna is the nearest town located at River Mile 537.0. It is Army Corps of Engineers fee title land that is part of General Plan lands within the Savanna District, Upper Mississippi River National Wildlife and Fish Refuge (Refuge), U.S. Fish and Wildlife Service. Pool 13 is in Geomorphic Reach 4 (West Consultants 2000) and the Upper Impounded Floodplain Reach (Houser et al. 2022) of the Upper Mississippi River System.

Existing Resources

Spring Lake contains a 7-mile-long perimeter levee system that was initially constructed in the early 1900's for agricultural purposes. The levee repeatedly breached after construction of the lock and dam system and has been open to the Mississippi River since the 1960's when it was identified as an important backwater lake for many species of fish and wildlife. Spring Lake is a primary migration stopover area for tens of thousands of waterfowl and is a designated Sanctuary that prohibits all public access from October 1 until the end of duck hunting season and prohibits waterfowl hunting year-round.

The previous Spring Lake HREP was completed in 1999 and included perimeter levee improvements, upper lake dikes and stoplog structures, a pump station connecting the upper and lower lakes, and gatewells. The upper and lower lakes are separated by a cross dike. In the lower lake, the previous Spring Lake HREP (1999) also included a hemi-marsh (Sloane Marsh) with an electric pump and stoplog structure.

Spring Lake is divided into the upper lake (600 acres) and lower lake (3,000 acres). The lower lake is connected to the Mississippi River at its southernmost end. This Spring Lake Backwater Restoration HREP will focus on rehabilitation of the lower lake and protection of the lower lake from Mississippi River main channel flow. The original Spring Lake HREP (1999) included closing the levee breach and reconstruction of the entire perimeter levee, construction of three moist soil units with water control structures in the upper lake, and the addition of two pump stations. It did not include excavation of areas within the lower lake to create habitat diversity. It also did not include protection of the barrier islands that previously deflected main channel flows and reduced erosion to the lower lake levee. These islands have significantly eroded and no longer provide protection from main channel flows.

Lower Spring Lake is primarily a shallow (0.5-2 feet) backwater that has filled with sediment over many decades. The 1993 flood breached the perimeter levee and resulted in main channel flows into the lake until 1996. Though degraded, this important backwater complex still supports a diverse array of habitats for fish and wildlife such as ducks, geese, eagles, pelicans, muskrats, macroinvertebrates, amphibians, reptiles, invertebrates and fish populations. Spring Lake has a diverse aquatic vegetation community that provides food and habitat for many fish and wildlife species. Rooted floating leaf vegetation (American lotus) is dominant. Emergent

vegetation including coontail, curlyleaf pondweed, brittle naiad, elodea and arrowhead species are common. Non-rooted floating vegetation, wild celery, flowering rush, and purple loosestrife are present. The backwater fish assemblage is comprised of typical species, but size structure is reduced due to lack of deep backwater habitat. Despite this, Spring Lake provides important spawning and nursery habitat for many fish species that use the area.

Cluster analyses conducted during the Habitat Needs Assessment II effort (HNA-II) determined Pool 13 is within the Upper Impounded cluster of pools (McCain et al. 2018). The HNA-II considered the following indicators to deviate most from desired conditions in the Upper Impounded cluster of pools: Pool Flux Difference (Pool Flux), Floodplain Functional Class (FP Fxnal Class), Aquatic Functional Class 1 (AFC 1), Aquatic Functional Class 2 (AFC 2), % Time Gates Open (% Time), Floodplain Vegetation (FP Veg), Lateral Connectivity - Open Water (Open Water), and Longitudinal Connectivity - Natural Area (Nat Area).

Problem Identification

Decades of sedimentation within Spring Lake have resulted in a majority of the area being less than two feet deep. Additionally, there is very little bathymetric diversity and suitable year-round fish habitat, including during critical periods for survival (i.e., winter months). The 1993-1996 levee breach resulted in a large deposition of material that is now land. Invasive species including purple loosestrife and flowering rush are spreading throughout the lake. Barrier islands that were historically located along the main channel and protected the perimeter levee are no longer present due to erosion. Main channel flows are resulting in increased erosion on the perimeter levee section that is no longer protected by barrier islands. These issues are likely to continue, or even worsen, given the observed and predicted increases in flooding (both frequency and duration) on the Upper Mississippi River system.

Project Goals

The project goal is to maintain and create quality habitat for native and desirable plant, animal, and fish species within this important backwater lake, to protect the perimeter levee from erosion caused by direct main channel flow, and to improve the physical conditions of lotic habitats associated with the perimeter levee protection. This project would address the UMRR strategic planning goal of enhancing habitat for restoring and maintaining a healthier and more resilient Upper Mississippi River ecosystem (UMRR 2015). The Upper Mississippi River National Wildlife and Fish Refuge's Habitat Management Plan (USFWS 2019) identified several priority resources of concern that would benefit from this project: dabbling ducks, tundra swans, secretive marsh birds, limnophilic native mussels and fish, and fluvial-dependent native mussels and fish.

The following HNA-II indicators and associated desired conditions within the Upper Impounded Cluster addressed by the project include:

- **<u>Aquatic Functional Class (AFC) 1 and 2</u>: Improve quality, depth, and distribution of lentic habitat**
    - Dredge and remove excess sediment from backwater lakes to promote

bathymetric diversity and establish habitats suitable for migratory waterfowl, native mussel, and fish species.

- **<u>Aquatic Functional Class (AFC) 1 and 2</u>: Improve quality of lotic habitat**
  - Improvement of physical conditions within lotic habitats, more structured channels.
- **<u>Aquatic Vegetation Diversity</u>: Maintain and enhance aquatic vegetation diversity**
  - Utilize dredged material to create or expand upon island areas to promote aquatic vegetation growth and diversity.
- **<u>Total Suspended Solids (TSS)</u>: Reduce sedimentation**
  - Reduce wave-driven sediment resuspension.
  - Protect dredged areas from sediment inputs originating from the general north-south flow of water moving through the project area.

Proposed Project Features

This project's primary purpose is to maintain or improve lentic backwater habitat, including deep lentic and marsh within this important backwater lake and protect the lower lake perimeter levee and interior habitats from main channel flows. A diversity of habitat will be achieved by excavating bottom sediments to create areas of greater depth. Excavated material would be used to construct islands and other terrestrial features that will reduce wave-driven sediment resuspension and protect dredged areas from sediment inputs from the general north-south flow of water moving through the project area. Excavated material will also be used to construct a barrier along the main channel, where barrier islands were historically present, to prevent erosion of the perimeter levee. Collectively, these features would provide the environmental conditions necessary to achieve and maintain the desired future habitat conditions.

Project features could include habitat dredging to create and enhance lentic habitats, construction of islands and other terrestrial areas using dredged material, shoreline and levee protection using rock, lotic fish spawning and lotic mussel colonization habitat features. These could be split by problems addressed and objectives achieved into two, phased projects.

Implementation Considerations

Enhanced fisheries resources can provide greater shoreline fishing opportunities for low-income anglers.

Spring Lake was designated a Sanctuary by the refuge in 1957. With this designation, no public access is allowed from October 1 to the end of the Illinois duck season, and no migratory bird hunting is allowed at any time. The refuge, with support and cooperation of its state partners, maintained this designation in the refuge's Comprehensive Conservation Plan because it is one of the most important areas on the refuge for fall migrating dabbling ducks. The refuge will only accept sponsorship of this project if there is an assurance the project will not threaten the integrity of the Spring Lake Sanctuary designation or the high quality of the waterfowl habitat within Spring Lake. The prohibition of entry into the Spring Lake Sanctuary during October 1 to

the end of the Illinois duck season would also apply to any contractors doing work for an eventual HREP.

The project team will need to consider the locations and nesting activity of bald eagles, mussel resources and tree roosting bats that may affect the construction timing and locations of features. This proposed project would complement the previous Spring Lake HREP (1999) and provide synergy with other nearby HREPs such as Potters Marsh and Lower Pool 13.

Fisheries, aquatic vegetation, and water quality data can be provided in part by LTRM, but additional or supplemental data might be needed. Sediment borings, bathymetry, hydraulic modeling, and wind wave data will be needed.

The project should be designed to minimize operation and maintenance (O&M) for the sponsor; for example, it is unlikely that the Refuge would accept any maintenance dredging for access and habitat dredged areas, connectivity channels, or channel inlets.

Financial Data

All Project lands are federally-owned and are managed by the U.S. Fish and Wildlife Service as part of the Upper Mississippi River National Wildlife and Fish Refuge. This Project would be completed in two phases. The estimated cost for the general planning, design, and construction of Phase I is estimated at $38.8 million. Since this project is located on federal lands, it would be 100 percent federally funded. The USFWS is the Project sponsor and is responsible for operation and maintenance, and repair (O&M) costs.

Status of Project

This project was submitted to the Fish and Wildlife Interagency Committee (FWIC) in January 2025 and accepted by the River Resources Coordinating Team in April 2025. Fact sheet preparation by U.S. Fish and Wildlife Service, Iowa Department of Natural Resources and Illinois Department of Natural Resources.

Sponsorship

All project features will be within the boundary of the Refuge; therefore, the USFWS would be the Project Sponsor and will be responsible for O&M. Project partners include the USFWS, the US Army Corps of Engineers, and the states of Illinois and Iowa.

Points of Contact

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References

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Attachment Figure 1.

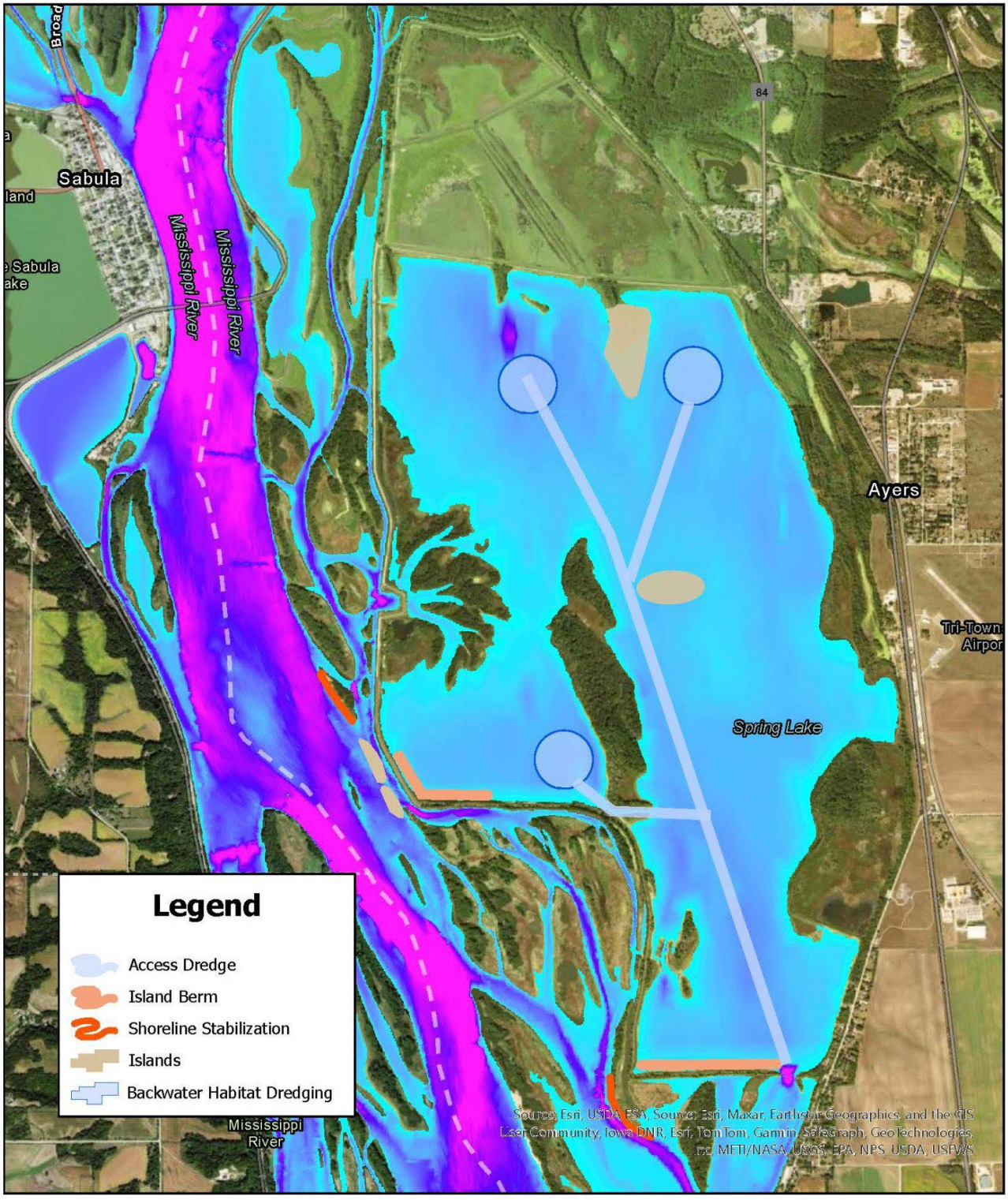

Figure 1. Proposed Project Features with Bathymetry

Attachment Figure 2.

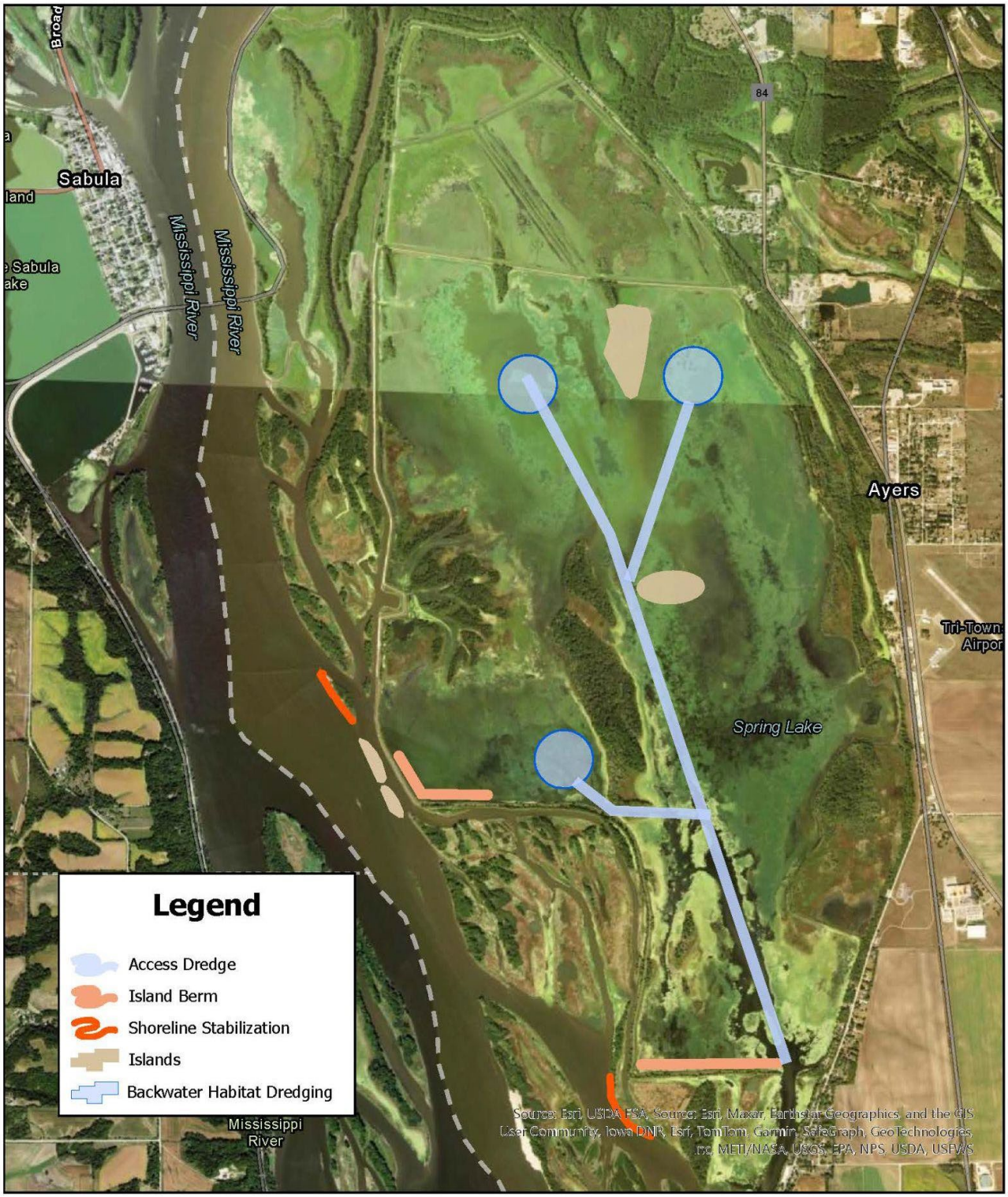

Figure 2. Proposed Project Features

Upper Mississippi River Restoration (UMRR) Program Habitat Rehabilitation and Enhancement Project (HREP)

Lower Pool 11 Submersed Aquatic Vegetation
Pool 11, Upper Mississippi River, Iowa and Wisconsin, Rock Island District

Location

The Lower Pool 11 submersed aquatic vegetation project (LP11 SAV) would be implemented in the impounded portion of Pool 11 between River Miles 586 and 593. This represents a portion of Lower Pool 11 upstream from Dam 11 at Dubuque, Iowa, roughly between John Deere Marsh and Potosi Point. Pool 11 is in Geomorphic Reach 4 (West Consultants 2000) and the Upper Impounded Floodplain Reach (Houser et al. 2022) of the Upper Mississippi River System. The majority of the LP11 SAV project is managed as part of the Upper Mississippi River National Wildlife and Fish Refuge.

Existing resources

The 4,500-acre LP11 SAV project area (Attachment Figure 1) is within a portion of Lower Pool 11 that can be characterized as a contiguous impounded aquatic area (De Jager et al. 2018), and the most prevalent land cover class within the project area is open water (Dieck et al. 2015). This area of Lower Pool 11 was historically important for waterfowl, particularly canvasback and lesser scaup, two species designated as priority resources of concern by the Upper Mississippi River National Wildlife and Fish Refuge (USFWS 2006, 2019). The historic importance of Lower Pool 11 for waterfowl was because of two factors: (1) The abundance of critical waterfowl food resources, fingernail clams and submersed aquatic vegetation (SAV), with wild celery being an especially important SAV species (USFWS 2006); and (2) the vast open riverscape due to a lack of islands and other terrestrial features. In recognition of the important waterfowl habitat in Lower Pool 11 and the need to ensure waterfowl could feed and rest there without disturbance during the fall migration, the refuge established a 4,000-acre No Open Water Hunting Area in 2007 that encompassed most of the area heavily used by waterfowl in Lower Pool 11 at that time and historically (Attachment Figure 1; USFWS 2006).

Pool 11 is within the Middle Impounded cluster of pools (McCain et al. 2018). The Fish and Wildlife Interagency Committee (FWIC) considered the following indicators to deviate most from desired conditions in the Middle Impounded cluster of pools: aquatic functional class 1 (AFC1), aquatic functional class 2 (AFC2), aquatic vegetation diversity (Aq Veg), and total suspended solids concentration (TSS). Within Pool 11 specifically, the FWIC determined the following indicators to deviate the most from desired conditions: AFC1, floodplain vegetation diversity (FP) and floodplain functional class diversity (FP Fxnal Class). The FWIC determined the Aq Veg and TSS indicators in Pool 11 were near desired condition but actions to improve conditions may be warranted.

The FWIC determined the most important indicator to address within the Middle Impounded cluster was aquatic vegetation diversity (see ranked order of importance on page 35 of McCain et al. 2018): "*Overall, the FWIC determined that the aquatic vegetation diversity indicator is in relative good shape for the Middle Impounded cluster, with submersed aquatic vegetation in most pools, but the current trend as observed by river managers is showing a decline in abundance and diversity. Therefore, the FWIC desires management actions to maintain the vegetation diversity. Although, in some instances, conversion of monotypic areas may not necessarily be the right thing to do*" (page 39 of McCain et al. 2018). Finally, one of the desired habitat conditions captured during discussions with the FWIC and highlighted in McCain et al. (2018) was: "*Maintain and enhance existing open water area for waterfowl habitat*" (page 41 of McCain et al. 2018). The preceding statement, though, should not be interpreted to mean that the FWIC desired to maintain and enhance existing open water land cover for waterfowl habitat. The intent of the FWIC in that statement would have been better stated as maintaining and enhancing open riverscape for waterfowl habitat.

Problem identification
Compared to historical conditions, waterfowl habitat quality in Lower Pool 11 has declined substantially. Fingernail clam abundance has declined precipitously across the Upper Mississippi River (Wilson et al. 1995) while submersed aquatic vegetation has declined within Lower Pool 11 (USFWS 2006).

Land cover data produced by the Long Term Resource Monitoring (LTRM) element of the Upper Mississippi River Restoration program was used to quantify changes in waterfowl habitat within the Lower Pool 11 SAV project area during the period 2000–2020. In 2000, there were 4,413 acres of open water and only 54 acres of SAV in the LP11 SAV project area (Attachment Figure 2). In 2010, there was 3,583 acres of open water and 887 acres of SAV (Attachment Figure 3). This represents a decrease of approximately 19% in acres of open water, and an increase of more than 1,000% in acres of SAV. Most (93%) of the additional acres of SAV in 2010 had formerly been open water in 2000. In 2020, there were 4,111 acres of open water, an approximately 15% increase from the 2010 acreage (Attachment Figure 4). Concurrently, the acres of SAV decreased from 887 acres in 2010 to 264 acres in 2020, an approximately 70% decrease in acreage of SAV. The increase in acreage of SAV within the project area from 2000 to 2010 points to the potential for the project area to support SAV. The decrease in acreage from 2010 to 2020 indicates a change in conditions that was detrimental to SAV. The LP11 SAV project would change conditions again, in a manner that benefits SAV in the project area, reversing the recent decline in acreage of SAV.

Lower Pool 8 and Lower Pool 13 are contiguous impounded areas, similar to Lower Pool 11 in terms of being broad expanses of open riverscape, which diving ducks need during fall migration. The three areas are not similar, however, in terms of relative abundance of SAV (data depicted in Attachment Figure 5). Annual LTRM monitoring of the impounded areas in Lower Pool 8 and Lower Pool 13 has shown relatively high frequency of occurrence of wild celery and other SAV species since at least 2006 (Attachment Figure 5). Contrasting with this, two years (2009 and 2014) of similar sampling in the LP11 SAV project area by the Wildlife and Vegetation Technical Section of the Upper Mississippi River Conservation Committee (UMRCC) showed relatively low frequency of occurrence of wild celery and other SAV species (Attachment Figure 5).

Submersed aquatic vegetation can be impaired by high levels of TSS (Delaney and Larson 2023). Suspended solids in the water column reduce the amount of light available to SAV and TSS levels in the spring. This might be critically important to SAV newly emerging from bottom substrates at the start of the growing season. Much of the LP11 SAV project area can be characterized as having relatively shallow depths that could be suitable for SAV (Attachment Figure 6). But in areas such as the LP11 SAV project area, bottom sediments are vulnerable to being resuspended in the water column by orbital wave velocities extending downward through the water column (see Attachment Figure 7).

The LP11 SAV project area is characterized by long wind fetch distances (Attachment Figure 8; Rohweder and Rogala 2020) which can result in larger wind-generated waves. The larger waves, in turn, can contribute to greater levels of shoreline erosion, and to orbital wave velocities extending farther down the water column leading to resuspension of sediment from bottom substrates (Rohweder et al. 2012). It is likely the larger waves generated by long wind fetch distances, and the influence of orbital wave velocities extending down to bottom substrates, play a substantial role in limiting the prevalence of SAV in the LP11 project area through their influence on TSS. It is also likely that water velocities in much of the LP11 SAV project area are too high for the establishment and persistence of SAV. Water velocity data for the project area is not currently available, but collection of detailed velocity data for the LP11 SAV project area is planned for spring 2025 in support of a UMRR-funded research project (Larson et al. - Submersed plant responses to physical forces of wind, waves, velocity, and shear stress).

Project Goals

The primary goal of the LP11 SAV project is to increase the acreage and relative abundance of SAV, particularly wild celery, within the project area. The three most important factors limiting SAV in this section of the river are TSS, flow velocity, and depth (Delaney and Larson 2023). There is great potential within the LP11 SAV project area to accomplish the goal of increased SAV acreage and relative abundance by directly addressing or capitalizing on the three limiting factors of TSS, flow velocity, and water depth. Potential secondary goals could include maintaining, enhancing, and creating quality habitat for lotic species of fish and mussels together with terrestrial habitat for floodplain forests/wetlands and their associated wildlife species (e.g., turtles, frogs, salamanders, birds, mammals, etc.).

1. The project would reduce TSS levels within the project area by reducing shoreline erosion and the resuspension of bottom sediments due to orbital wave velocities in shallow waters. This reduction in TSS would enhance the light environment for wild celery and other SAV.
2. Project features would be characterized by a downstream shadow zone where flow velocities are reduced to levels more suitable for the establishment and persistence of wild celery and other SAV. Optimal flow velocities for wild celery are <14.12 cubic feet per second and for all other SAV optimal flow velocities are <10.59 cubic feet per second (Larson et al. 2023).
3. Optimal depths for wild celery are between 3.28 and 4.92 feet, while for all other SAV optimal depths are between 1.31 and 2.29 feet (Larson et al. 2023). In the LP11 SAV project area, approximately 1,500 acres are characterized by optimal depths for wild celery and other SAV species (Rogala 2019). This points to the potential for increasing the prevalence of wild celery and other SAV if the other limiting factors of TSS and velocity are addressed.
4. The reduction in flow velocities by project features as well as established SAV beds will further contribute to suspended sediments dropping from the water column and depositing on the substrate, creating a positive feedback mechanism driving the creation of new areas (i.e., additional acres) with optimal depths for wild celery and other SAV species.

Reducing TSS would contribute to the goals identified within HNA-II to bring TSS in the Middle Impounded cluster, and in Pool 11, closer to desired conditions. Increasing the acreage and abundance of wild celery and other SAV would contribute to the goals identified within HNA-II to increase aquatic vegetation diversity in the Middle Impounded cluster and within Pool 11. This project would achieve the desired habitat condition to maintain and enhance open water (i.e., open riverscape) waterfowl habitat. Improving the quality of waterfowl habitat in Lower Pool 11 would contribute to the refuge's management objective of working with partners to protect and enhance habitat for two refuge priority resources of concern, canvasbacks and lesser scaup (USFWS 2019).

Proposed Project Features

Project features would consist of structures that are built to a top elevation at or slightly below the water surface (see Attachment Figure 9). These features would likely have a base of granular material, protected on the sides and top by rock to mitigate the erosive forces of water and ice. These and similar types of features have variously been constructed in other HREPS and called rock sills, rock-log structures, rock mounds, chevrons, and seed islands. Their top elevations would need to be at or slightly below the water surface so they do not represent vertical structures, either by themselves or with vegetation growing on them, that would cause diving ducks to avoid them or waterfowl hunters to utilize them for hunting (see Implementation Considerations below). The current Lower Pool 13 Phase I HREP is constructing features similar to what would be constructed in the LP11 SAV project, with the same reasoning behind the feature specification of being at or slightly below the water surface. Features constructed in the Pool 9 Islands HREP range from a top elevation approximately 1 foot above to slightly below the water surface, that do not grow terrestrial vegetation, and they protect and enhance SAV through their ability to modify wave energy and flow velocity (Attachment Figure 9). Additionally, in areas deemed appropriate given the constraints and considerations identified below, islands with an elevation above the water surface may be considered to help reduce wind fetch, diversify flows to improve lotic fish and mussel habitat, and provide terrestrial habitat to numerous species.

Project planning would require modelling to determine the optimal number, size, and configuration of project features to achieve meaningful reductions in the resuspension of bottom sediments due to wave orbital velocity within the project area, and meaningful reductions in flow velocities in shadow zones associated with the features. Similar modelling was done in the Lower Pool 13 Phase I HREP, Capoli Slough HREP, and Pool 8 Islands Phase III HREP.

Implementation Considerations
An important consideration would be to identify priority areas where features should not be constructed above the water surface at a height that would cause canvasbacks and other diving ducks to avoid those features. Diving ducks, particularly canvasbacks, need large, open bodies of water during fall migration, a period when they tend to avoid shorelines, islands, and even large beds of emergent aquatic vegetation (Devendorf 1985, Korschgen et al. 1988, Kroening et al 2019 [see Attachment Figure 10], USFWS unpublished aerial survey data). Additionally, project features should not grow terrestrial vegetation which would further lead to avoidance by diving ducks. Finally, project features should not create terrestrial land cover that could be utilized for waterfowl hunting – doing so would negate the refuge's management objective of maintaining Lower Pool 11 as an area where waterfowl can feed and rest without disturbance during the fall migration. An additional constraint would be the presence of federal and state listed mussels in the project area.

There may be an opportunity to utilize channel maintenance dredge material to construct some features. This project would complement and provide synergy with other completed and currently planned HREPs in Pool 11: Bertom McCartney Lakes (completed), Lower Pool 11 (planning), and Pool 11 Islands (i.e., Mud Lake and Sunfish Lake; completed). These projects play a role in reducing TSS levels in Pool 11, and their collective impact would be enhanced by this project. A similar collective enhancing effect would be realized for SAV, as well as fish and wildlife populations, in Pool 11. Known data needs include wind and wave modelling outputs, velocity modelling outputs, updated bathymetric surveys, sediment borings, and freshwater mussel surveys. To effectively address the SAV limiting factors of TSS, velocity, and depth in the project area, this project will be phased in a manner that results in sufficient project features being constructed in the project area.

Financial Data
Project lands are federally owned and/or managed by the USFWS Upper Mississippi River National Wildlife and Fish Refuge. This project would be completed in three phases. The estimated cost for general planning, design, and construction of Phase I is estimated at $38,800,000. The cost would be 100% federally funded. The USFWS would be responsible for operation and maintenance costs.

Status of Project
This project does not have any previously completed or ongoing phases or stages. This project would be adjacent to the Lower Pool 11 HREP, currently in planning. The upstream portion of the LP11 SAV project area boundary overlaps with the downstream portion of the Lower Pool 11 HREP boundary. Further discussions among partners, including the Rock Island District HREP manager, can determine which project would be most suitable for addressing the problems identified in this LP11 SAV fact sheet in the area of overlap. Partnership organizations include the U.S. Army Corps of Engineers, Wisconsin Department of Natural resources, Iowa Department of Natural Resources, and the U.S. Geological Survey.

Sponsorship
The U. S. Fish and Wildlife Service, Upper Mississippi River National Wildlife and Fish Refuge would be the sponsor.

Points of contact: see attachments.

References: see attachments.

Attachments – Points of contact and fact sheet team members

Points of Contact

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U.S. Army Corps of Engineers, Rock Island District. POC to be determined.

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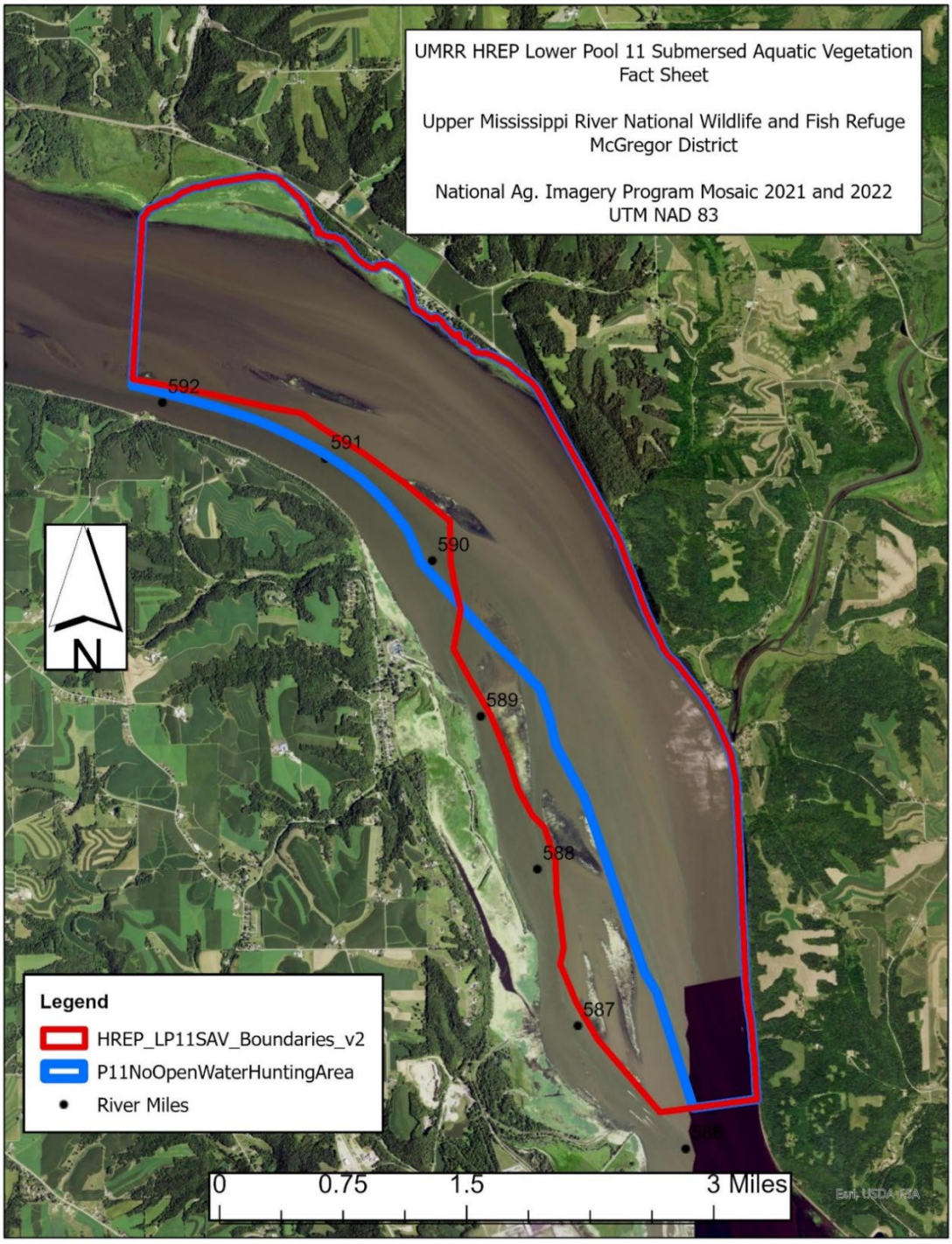
Jason Rohweder, USGS Upper Midwest Environmental Sciences Center

Jessica Westhoff, Wisconsin Department of Natural Resources

Steve Winter, USFWS Upper Mississippi River National Wildlife and Fish Refuge

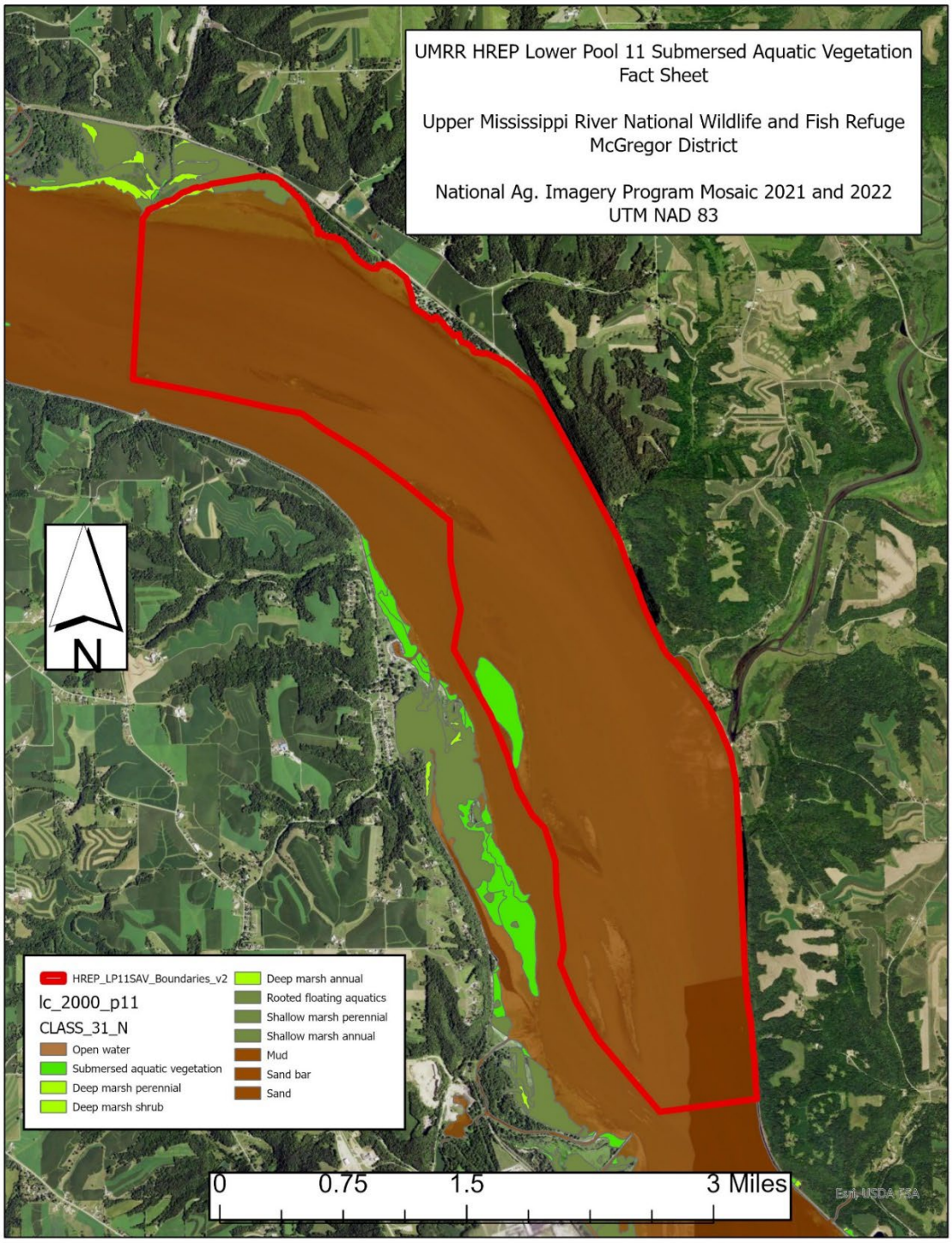
Attachments: Figures 1–10, References

Attachments - Figure 1



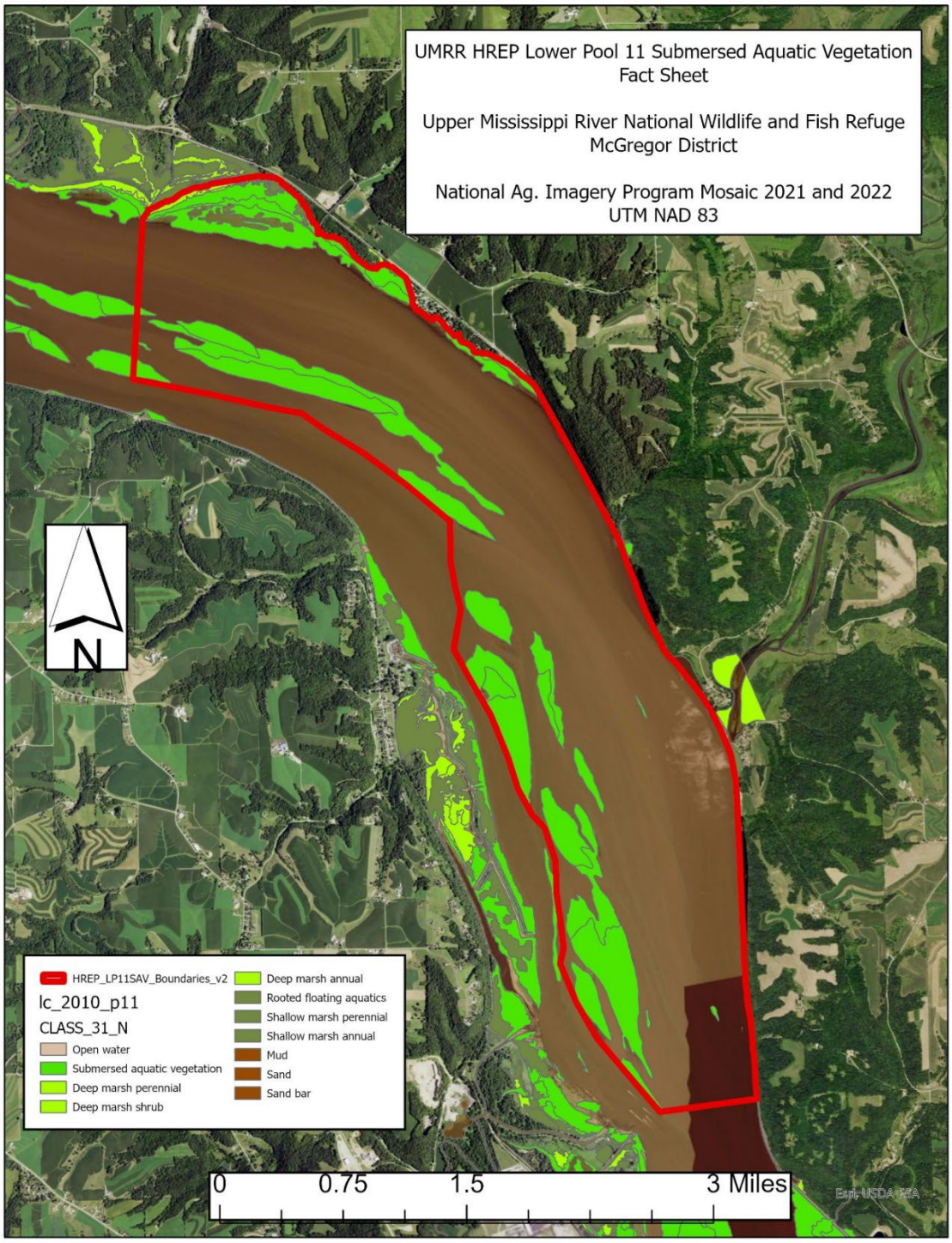
Attachment Figure 1. The Lower Pool 11 Submersed Aquatic Vegetation (LP11 SAV) project area boundary (red) and the Pool 11 No Open Water Hunting Area (blue). The western edges of the two boundaries don't overlap because the LP11 SAV boundary was drawn to exclude the main channel and other excessively deep areas but include areas that already have submersed aquatic vegetation. The dark color in the southeast portion of Pool 11 is due to an anomaly in the aerial imagery used for the basemap.

Attachments - Figure 2



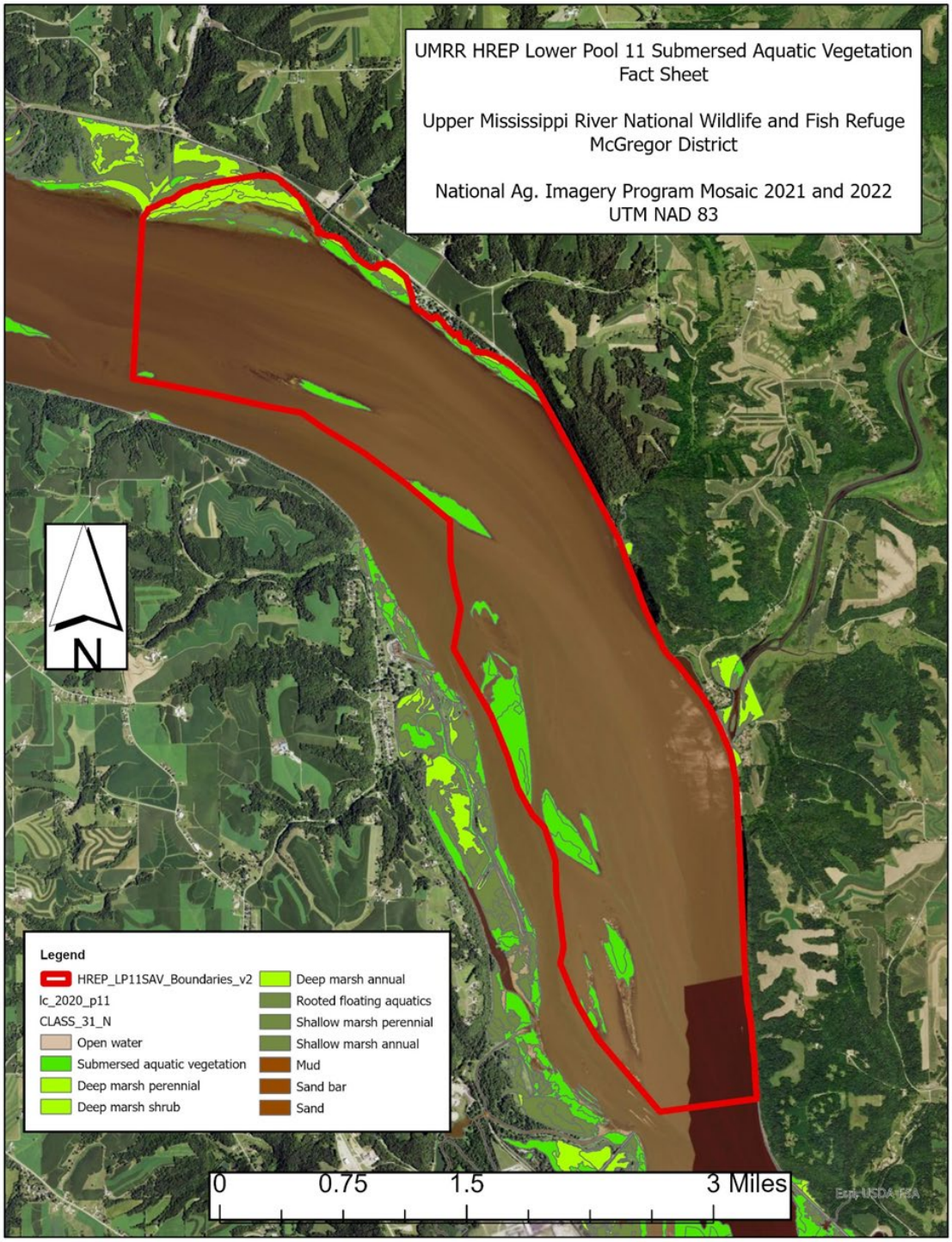
Attachment Figure 2. Land cover data from 2000 showing the scarcity of submersed aquatic vegetation within the LP11 SAV project area at that time. The dark color in the southeast portion of Pool 11 is due to an anomaly in the aerial imagery used for the basemap.

Attachments - Figure 3



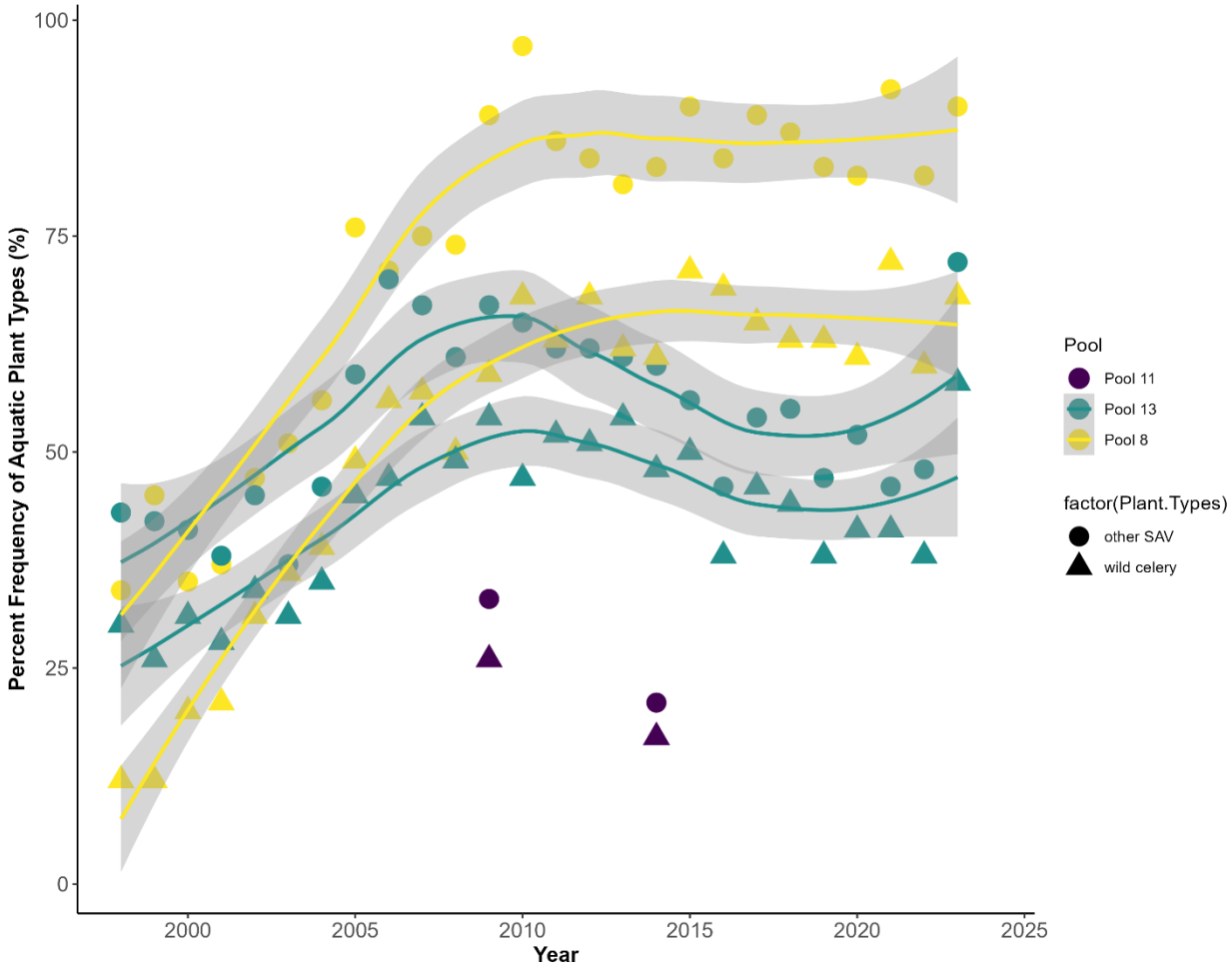
Attachment Figure 3. Land cover data from 2010 showing increased coverage of submersed aquatic vegetation within the LP11 SAV project area relative to 2000. The increase in acreage of SAV within the project area from 2000 to 2010 points to the potential for the project area to support SAV. The dark color in the southeast portion of Pool 11 is due to an anomaly in the aerial imagery used for the basemap.

Attachments - Figure 4



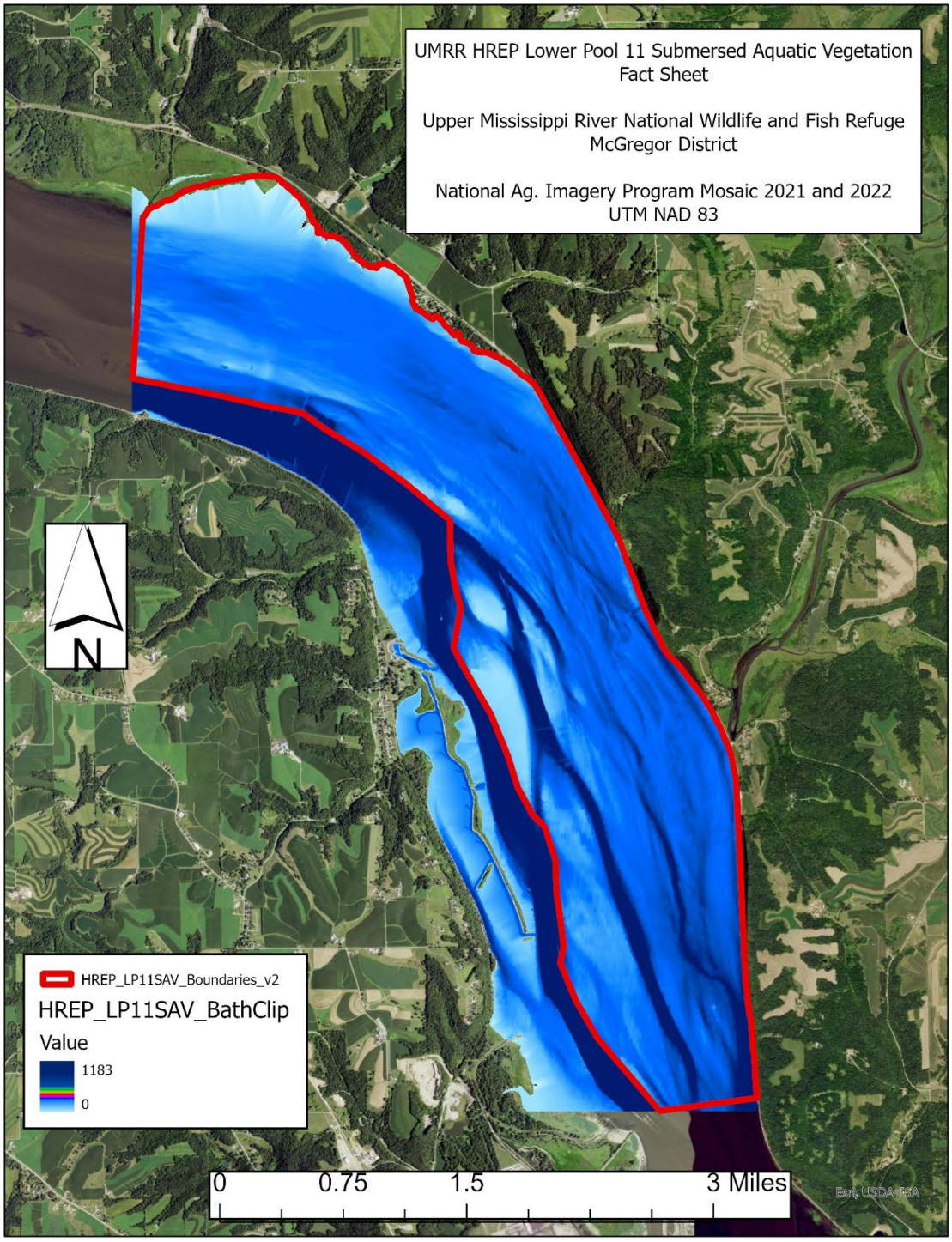
Attachment Figure 4. Land cover data from 2020 showing decreased coverage of submersed aquatic vegetation within the LP11 SAV project area relative to 2010. The decrease in acreage from 2010 to 2020 indicates a change in conditions that was detrimental to SAV. The LP11 SAV project would change conditions again, in a manner that benefits SAV in the project area, reversing the recent decline in acreage of SAV. The dark color in the southeast portion of Pool 11 is due to an anomaly in the aerial imagery used for the basemap.

Attachments - Figure 5



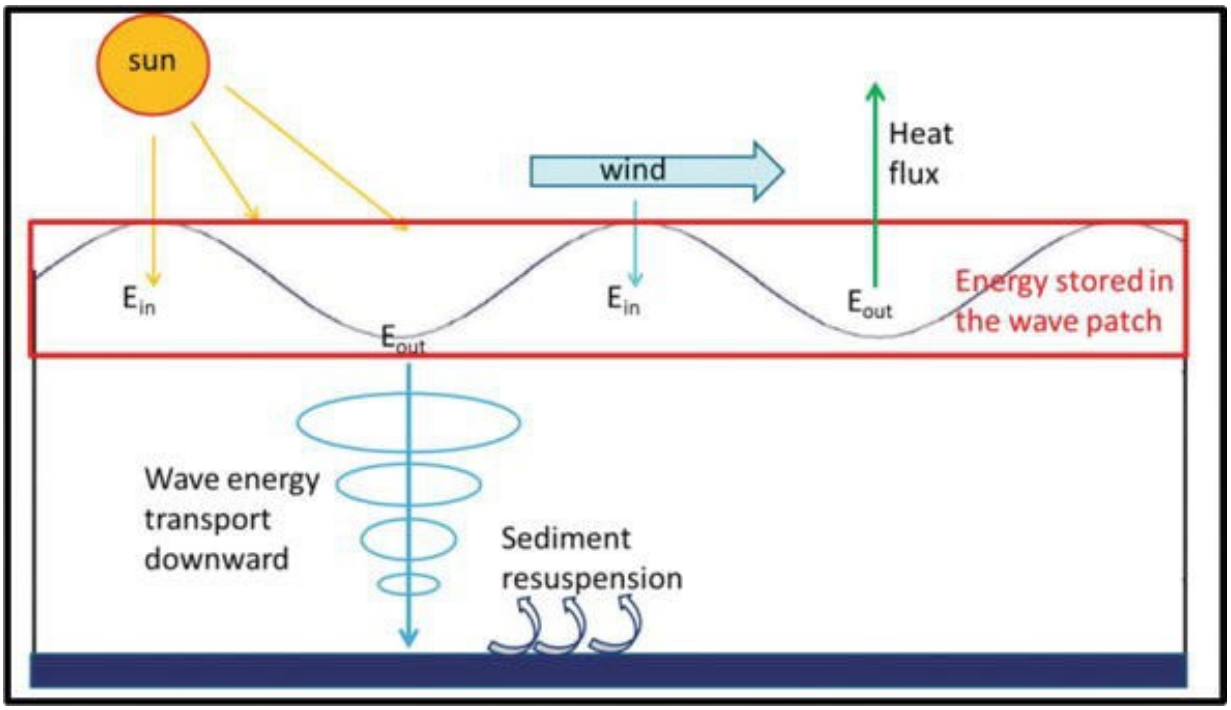
Attachment Figure 5. Time series from 1998–2023 that includes percent frequency of two aquatic plant types, wild celery and all other SAV species, in the impounded areas of each pool. Pools 8 and 13 have relatively high percent frequency (>50%) of all SAV since ~2006, but Pool 11 had relatively low percent frequency (<30%) during the UMRCC sampling years of 2009 and 2014. Pool 8 and Pool 13 annual data are from the LTRM (https://umesc.usgs.gov/data_library/vegetation/srs/veg_srs_1_query.shtml) and Pool 11 data is from the Wildlife and Vegetation Technical Section of the Upper Mississippi River Conservation Committee (https://www.umesc.usgs.gov/data_library/vegetation/umrcc/umrcc_veg_data).

Attachments - Figure 6



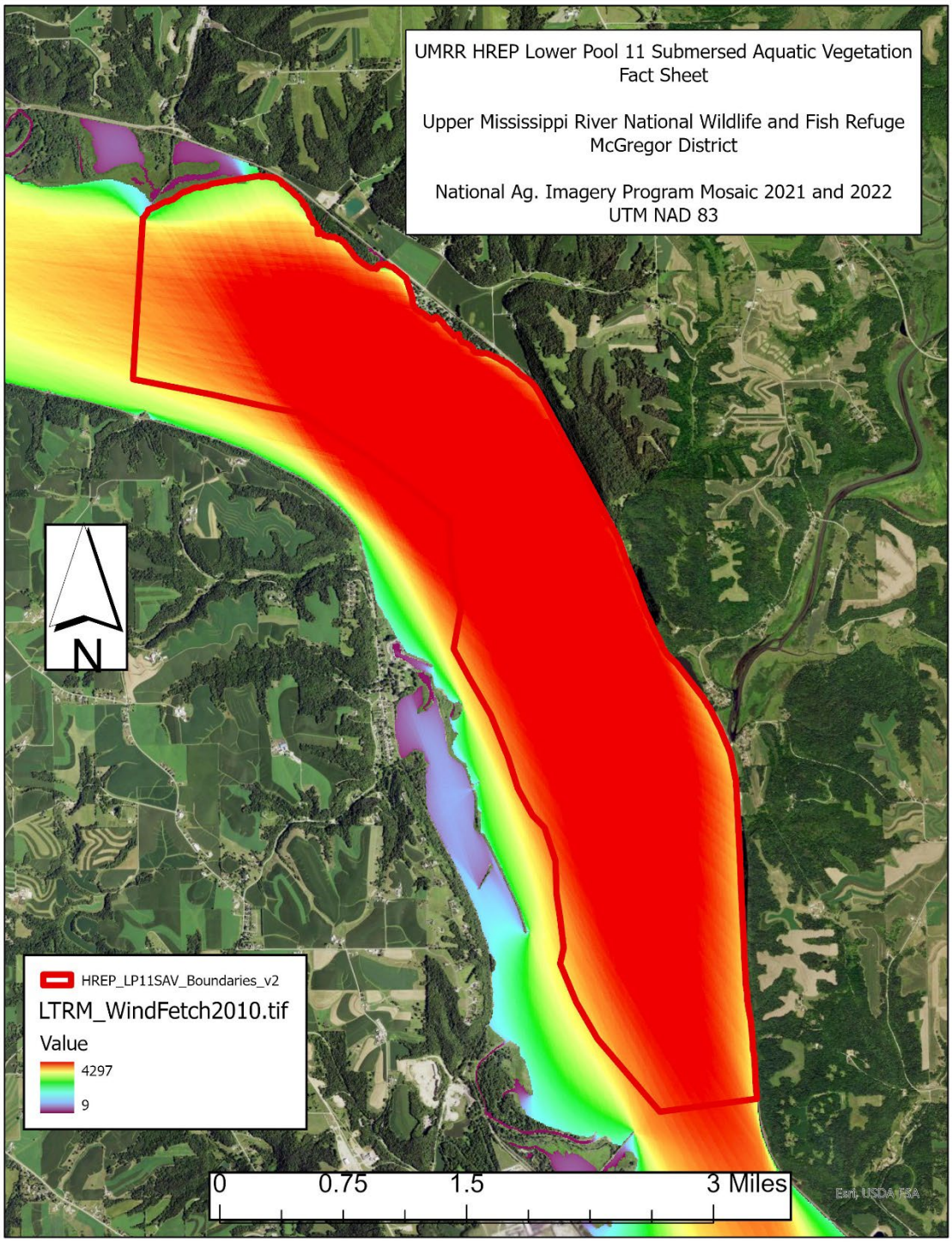
Attachment Figure 6. Water depths within the LP11 SAV project area.

Attachments - Figure 7.



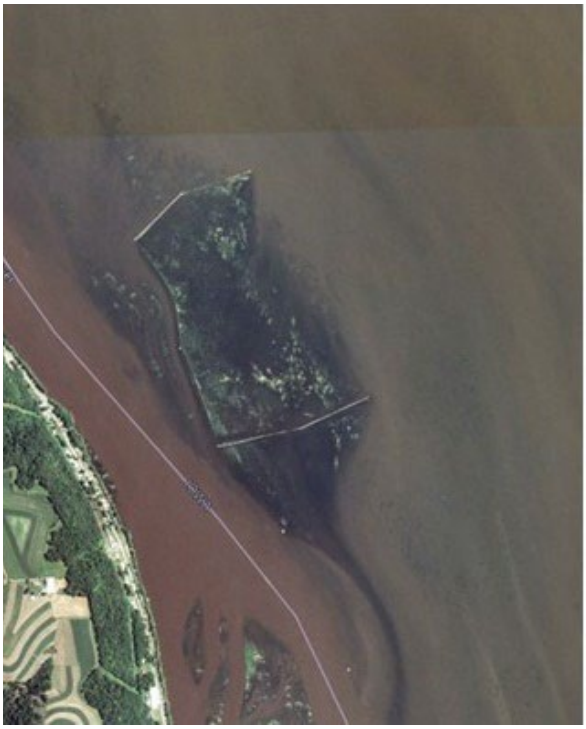
Attachment Figure 7. A depiction of orbital wave velocity resuspending bottom sediments. Figure is from Bostater et al. 2018 with the following figure caption: "*Conceptual model of energy stored in a measured or simulated wave patch and the downward transport of momentum to the bottom boundary layer that can cause resuspension and liquefaction of bottom mud and muck within the lutocline*".

Attachments - Figure 8.



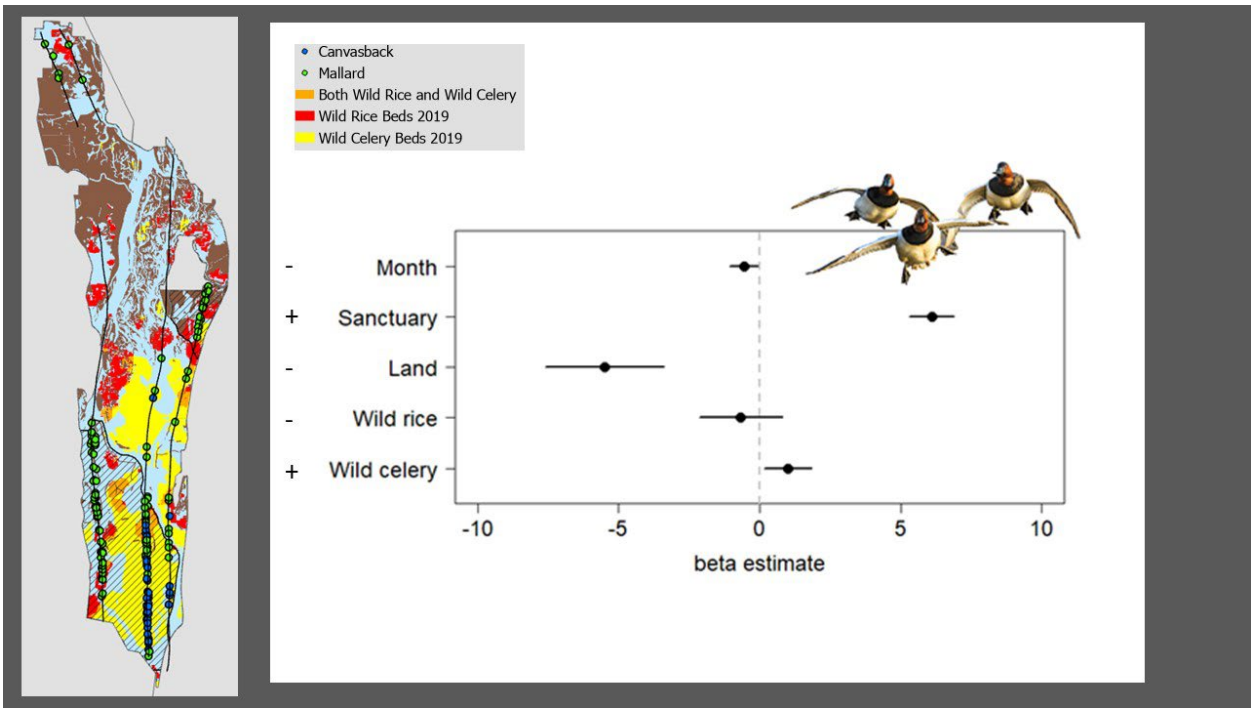
Attachment Figure 8. Weighted wind fetch modelling output for Lower Pool 11 and the LP11 SAV project area.

Attachments - Figure 9.



Attachment Figure 9. The upper image is of a low elevation portion of the Pool 9 Islands HREP (other portions of the HREP have higher elevations). The lower Google Earth images from 2005 and 2009 depict SAV that has developed in the shadow zone associated with the HREP structure due to reduced flow velocities, reduced TSS levels from resuspended sediments, and reduced TSS inputs from adjacent flows which have high levels of TSS.

Attachments - Figure 10.



Attachment Figure 10. Strong selection for areas closed to hunting and strong selection against areas near land by canvasbacks in Pool 8 of the Upper Mississippi River. There is also a selection for wild celery beds and a non-significant selection against wild rice beds. Data used in analyses included LTRM annual aquatic vegetation monitoring data and USFWS aerial waterfowl survey data. Figure is taken from Kroening et al. (2021).

Attachments - References

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Upper Mississippi River Restoration (UMRR) Program
Habitat Rehabilitation and Enhancement Project (HREP)

Odessa Floodplain Forest & Fox Pond Wetland
Upper Mississippi River, Pool 17 & 18
Rock Island District

Location

The Odessa Floodplain Forest and Fox Pond Wetland Habitat Rehabilitation and Enhancement Project (HREP) is located in Louisa County, Iowa, in the lower portion of Pool 17 and the upper portion of Pool 18 along the right descending bank of the Upper Mississippi River, beginning two miles upstream of New Boston, Illinois. The Odessa Floodplain Project will provide benefits for the entire 6,748 acre Odessa Complex (UMR RM 435 through 441, (Figure 1)) which includes the Odessa Wildlife Management Area (managed by the Iowa DNR) and Port Louisa National Wildlife Refuge (managed by the USFWS). All project lands are in Federal ownership.

Existing resources

The Project area includes interconnected backwaters, side channels, islands, mature bottomland forest, floodplain habitat, sloughs, moist-soil impoundments, and wetlands. Though degraded by repeated and prolonged major floods, the Project area still contains a sizeable and diverse floodplain forest (USACE forest inventory data) and supports a diverse population of wildlife including significant numbers of migratory waterfowl and shorebirds, warm water fish species, fur bearers, deer, swans, pelicans, eagles, wading birds, and various reptiles and amphibians. When river levels allow, approximately 3,000 acres of annual moist-soil vegetation can be established with proper water level management of the complex. Submerged aquatic vegetation is somewhat limited in the Project area due to repeated major flood events, total suspended solids (TSS), and herbivory by fish. The state-endangered copperbelly water snake is well documented within the project area along with the state-threatened diamondback water snake (Iowa DNR Natural Areas Inventory Database, unpublished data).

Pools 17 & 18 are part of the Lower Impounded Cluster of the Habitat Needs Assessment (HNA) II (McCain et al. 2018). The priority indicators for the Lower Impounded Cluster, as evaluated by the Fish and Wildlife Interagency Committee (FWIC), were determined to be: Lateral River Floodplain Connectivity, Aquatic Functional Classes 1 and 2, Floodplain Vegetation Diversity, Floodplain Functional Class Diversity, and Aquatic Vegetation Diversity.

Problem identification

Historically, the Project area contained similar habitat as what exists today, but included diverse floodplain forest, significant areas of scrub-shrub habitat, and robust aquatic vegetation. These habitats provide valuable resources for migratory birds, including waterfowl, shorebirds, wading birds, neotropical migrants, and numerous other species.

Repeated major flood events have caused a significant loss and degradation in forest, aquatic vegetation, wetlands, and associated communities. Without action, the Project area will continue to degrade and important habitat and ecological communities will be lost.

The Lake Odessa HREP enhanced the levee system at the complex along with the installation of several articulated concrete mat (ACM) spillways and water control structures. These features allowed for the controlled inflow of water during major flood events and have helped prevent costly levee breaks that were a common occurrence at the complex. However, as flood waters begin to recede below the height of the spillways, the capacity of the pre-HREP outlet structure (constructed in 1994) is not sufficient to remove flood water from the complex in a timely manner. Flood frequency, duration, and elevation have all increased since the Lake Odessa HREP was designed and constructed, exacerbating this capacity issue with the existing outlet

structure. Additionally, due to the significant loss of forest within the complex as a result of increased flooding, floating woody debris is now a persistent problem in the aftermath of major flood events. This debris accumulates and partially obstructs the outlet structure, further restricting the outflow of flood water.

Inundation days can have a significant effect on forest health and vegetation establishment. Notably, a 2020 forest inventory conducted at Odessa by USACE foresters showed that 1,337 forested acres were assessed as "Dead" a year after the 2019 flood. With the limited capacity of the existing outlet structure, there is a prolonged period of flooding in the complex following major flood events, even as the Mississippi recedes to normal levels; this has a lasting, adverse impact on the forest resource and vegetation community. An example from the summer of 2024 flood can be seen in Figures 2 & 3. During the same time period that the Mississippi River fell approximately 4 feet, the Lake Odessa water level only fell approximately 1.8 feet with the outlet structure fully opened.

As part of the operation plan of the previous Lake Odessa HREP project, the USACE operational plan requires the outlet structure to be opened prior to flood waters overtopping of the ACM spillways to sufficiently raise interior water levels and prevent erosion at the spillway toes. While it has been effective at preventing spillway erosion, the emergency opening of the outlet causes very heavy water flow into the narrow and meandering Burris Ditch, which has resulted in significant shoreline erosion and silt deposition. This deposition further hampers water level management at normal lake levels, and reduces the ability to fully draw-down the water level of the complex. This is the only outlet in the entire complex. With the increased sedimentation in the ditch, this restricts how fast the water gets out of the complex and off tree roots, significantly affecting forest health and vegetation establishment.

Siltation has also adversely impacted Fox Pond, a 300-acre wetland on the Louisa Division of Port Louisa NWR. This wetland serves as the primary outlet and water level management feature of the refuge's 900-acre moist soil management program. Although infrastructure exists to facilitate the conveyance of water, the ditches upstream and downstream of the pumping station have become occluded with silt and sediment hampering moist soil production efforts, reducing critical food sources for waterfowl during the Spring and Fall migrations, and adversely impacting the mission of this migratory bird refuge. Additionally, these water conveyance limitations exacerbate the decline of woodlands in the northern reaches of the Odessa Complex.

Project Goals

The intention of this project is to enhance, protect and restore quality floodplain forest and wetland habitat along the lower reaches of Pool 17 and upper Pool 18 of the UMR. Goals for this project were derived from multiple planning efforts aligning with several document guidelines including; UMR Systemic Forest Management Plan, the HNA II, and Reach Planning Efforts (Guyon et al. 2012, McCain et al. 2018). Project work will focus on restoring floodplain forest and aquatic vegetation by enhancing connectivity between backwater and main channel habitats. This will be achieved by more closely matching the rate of fall of the Mississippi River post-flood. Desired project outcomes are to maintain and protect existing quality habitat and to restore diverse and resilient ecosystems.

HNA-II indicators within the Lower Impounded Cluster and associated desired conditions that would be addressed include:

- **Floodplain Vegetation Diversity: Maintain and enhance floodplain vegetation**
    - Increase age, species, and structure diversity of the floodplain forest habitat within the Project area by reducing the number of inundation days via lowering water levels more quickly through an additional outlet structure.

- **Aquatic Vegetation Diversity: Maintain and enhance aquatic vegetation diversity**

- Restore emergent and submergent aquatic vegetation communities within the Project area with enhanced water level management.

- **Floodplain Functional Class Diversity: Restore floodplain vegetation diversity in conjunction with diversifying floodplain inundation periods**
  - Restore floodplain vegetation growth and survival by reducing the number of inundation days via lowering water levels more quickly through an additional outlet structure.
- **Total Suspended Solids Concentrations (TSS): Reduce sedimentation**
  - Reduce erosion, sediment transport and deposition in Burris Ditch.
  - Dredge interior channel areas to enhance flow and improve bathymetric diversity.

Proposed Project Features

The proposed Project includes the (1) construction of an auxiliary water control structure in the Odessa Levee at the end of Blackhawk Chute (RM 435.6); (2) the dredging of drainages associated with the Refuge's Fox Pond Pumping Station and areas impacting flow to the existing and proposed outlet structures of the Odessa Complex; and (3) utilizing the dredge spoil to augment topographic diversity to support restored and enhanced forest communities adversely-impacted by major flood events.

1. Located at the end of Blackhawk Chute (Figure 5), the auxiliary outlet structure would be a large sluice gate or tainter gate type of structure with a capacity to significantly enhance the outflow of flood waters from the Odessa complex to the Mississippi River. Ideally, the structure could increase the post-flood rate of fall to more closely match that of the river when used in conjunction with the existing outlet structure. A structure design that has the capability to pass most floating woody debris would increase the efficiency of flows leaving the Odessa complex and reduce long term maintenance costs of the new structure.

   Additionally, Blackhawk Chute is a more suitable site than the existing structure location at Burris Ditch when conducting emergency backfilling operations prior to spillways being overtopped. The inflow will disperse, unimpeded, into a much larger area thus mitigating the erosion and sedimentation issues that occur with the narrows and meanders of Burris ditch.

2. Through dredging in targeted areas, this project seeks to improve moist soil production and floodplain habitats by restoring a hydrograph that more closely aligns with natural processes. Balancing flood periods with enhanced drawdown capabilities will improve habitat across the Complex benefitting a myriad of wetland-dependent species while providing opportunities to increase the number of moist soil acres under active management.

   Further survey work is necessary to determine the optimal width and depth of the dredging operation(s). A 2016 proposal suggested dredge cuts measuring 12' wide and 4' deep (or less if a hard bottom is encountered). Also, to avoid impacts to cultural resources, additional investigation is required to identify suitable spoil placement sites. The five areas, with approximate distances, proposed for dredging include:
   (1) Main Fox Pond Ditch (upstream): 3700' (see figure 4)
   (2) Fox Pond Outlet Channel (downstream): 2200' (see figure 4)
   (3) Swarms Pond to Lake Channel: 3300' (see figure 4)
   (4) Blackhawk Chute: 550' (see Figure 5)
   (5) Burris Ditch: 3,700' (see figure 5)

3. Restore and enhance the Odessa Complex's forest community. We will improve existing diverse forested areas through selective thinning and underplanting a diverse mix of species along with re-establishment of forest cover in areas severely affected by tree mortality by planting a diverse mix of trees. Within the

high mortality zones, our goal is to prevent further die-off by restoring the natural ridge and swale topography of the Odessa Complex. Years of flooding and siltation have diminished this topographic diversity. To address this, we will strategically utilize dredged material to build up areas by no more than one to two feet, thus enhancing the overall topographic variation of the landscape, creating conditions that will enhance tree survival and encourage natural revegetation.

Implementation Considerations
There will be some closed-season restrictions within this project area annually during the fall, due to its location on both a National Wildlife Refuge and a popular public Wildlife Management Area. Land access to the portions of the project site is limited by weight and width restrictions at the current water control structure crossings and ACM spillways that will have to be bypassed to reach areas of the project site by land. During normal river flows, portions of the site can be reached by barge.

The proposed outlet structure site in the levee at Blackhawk Chute is a previously disturbed area that was also the location of a significant levee break in the 1950's. It is highly unlikely that there will be any impacts to cultural resources for project construction at this location. Proposed dredge areas will need to be surveyed for potential impacts.

Financial Data
All Project lands are federally-owned by the U.S. Army Corps of Engineers (USACE) and are managed by the U.S. Fish and Wildlife Service (USFWS) and the IA DNR as part of the General Plan lands agreement with the USFWS. The estimated cost for the general planning, design, and construction of the actions noted is estimated at $20,936,885. Since this project is located on federal lands, it is 100 percent federally funded. The USFWS is the federal project sponsor, and the Iowa DNR is the non-federal project sponsor and would be responsible for operation and maintenance (O&M) costs. Project features should require minimal operation and maintenance (O&M) costs.

Status of Project
This project was submitted to the Fish and Wildlife Interagency Committee (FWIC) in January 2025 and accepted by the River Resources Coordinating Team in April 2025.

Sponsorship
The USFWS is the federal sponsor. IA DNR is the non-Federal Sponsor.

Point(s) of contact
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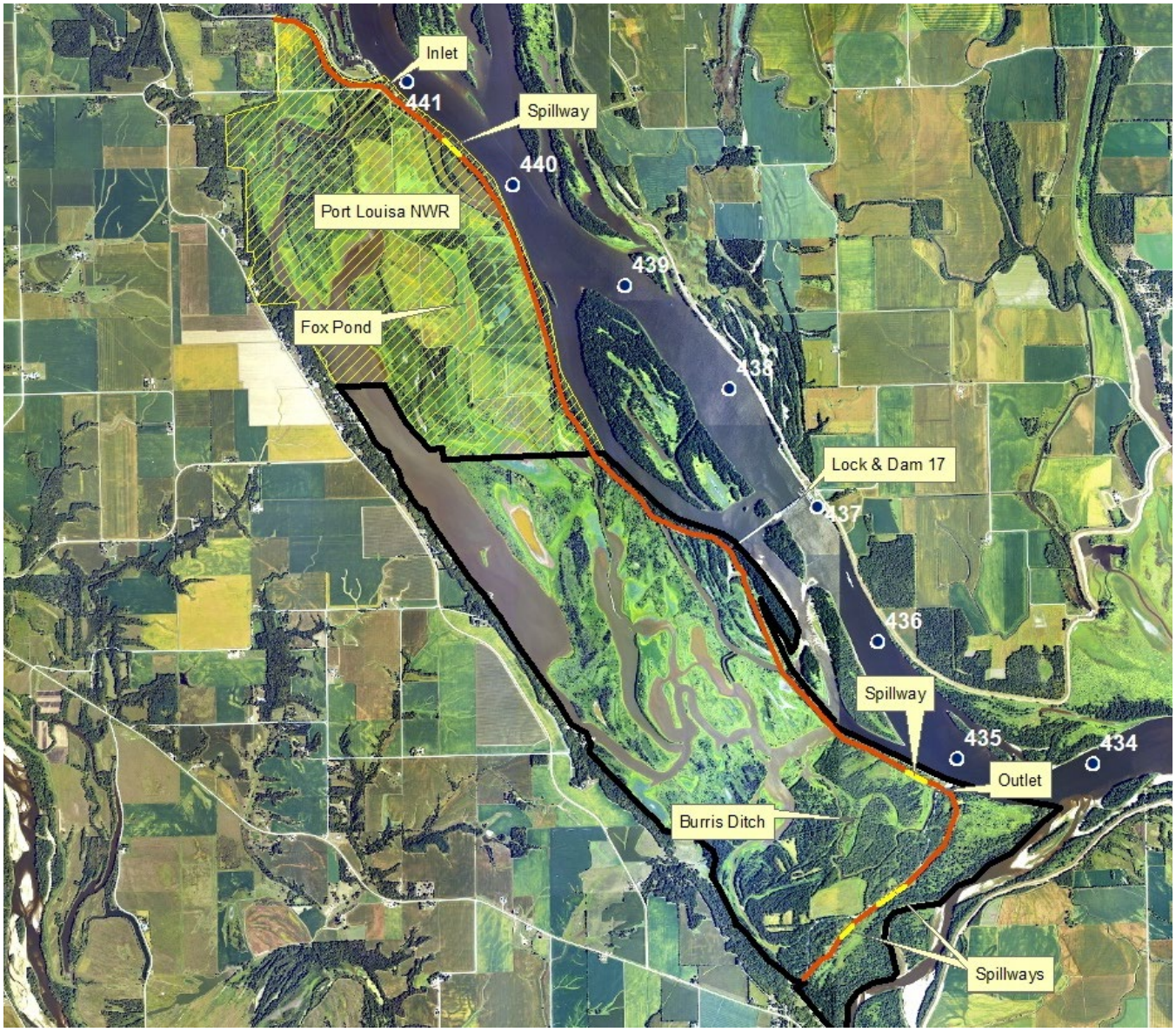

Figure 1: Project area

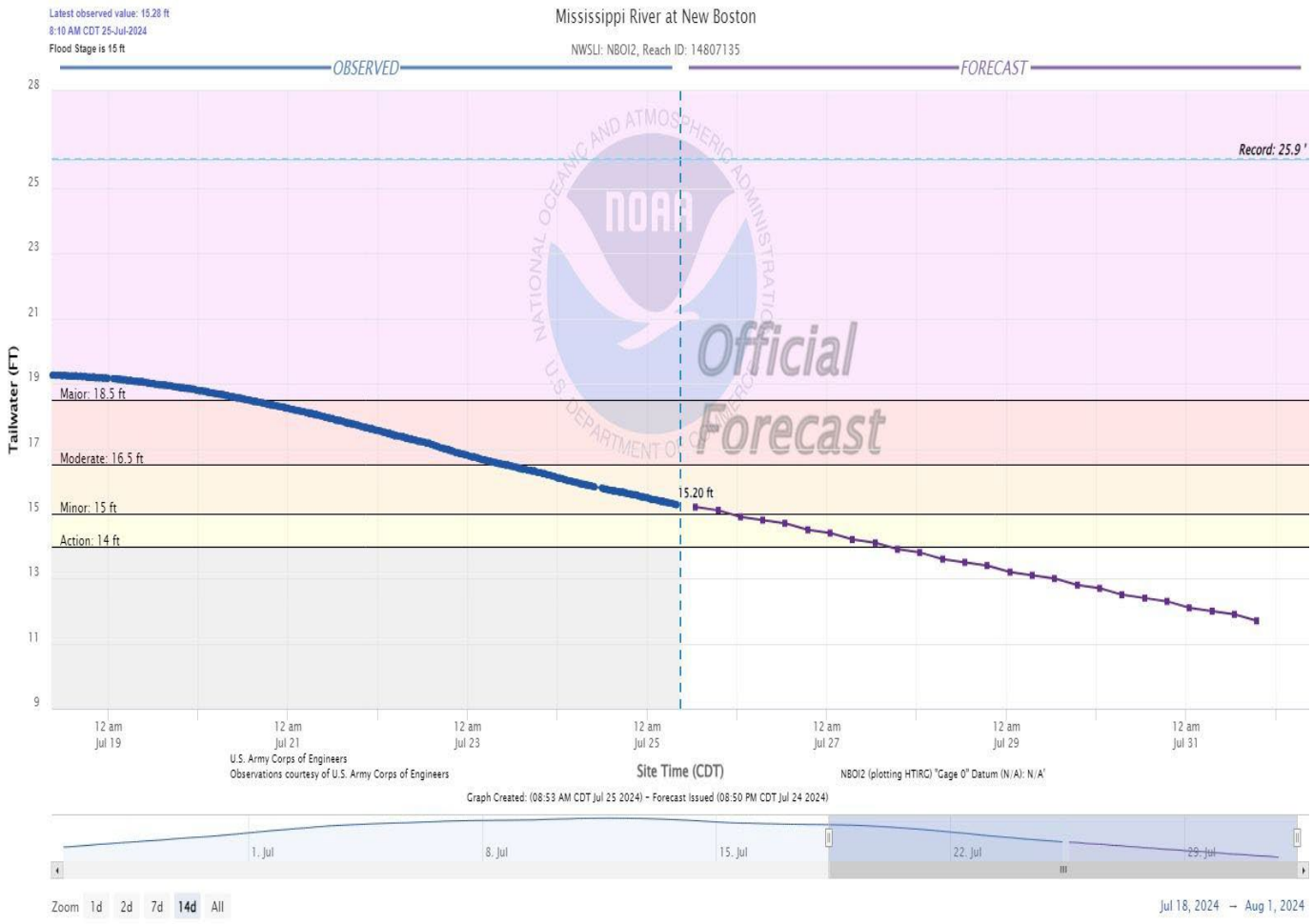

Figure 2: Mississippi River hydrograph following the summer 2024 flood crest (July 18-25, 2024)

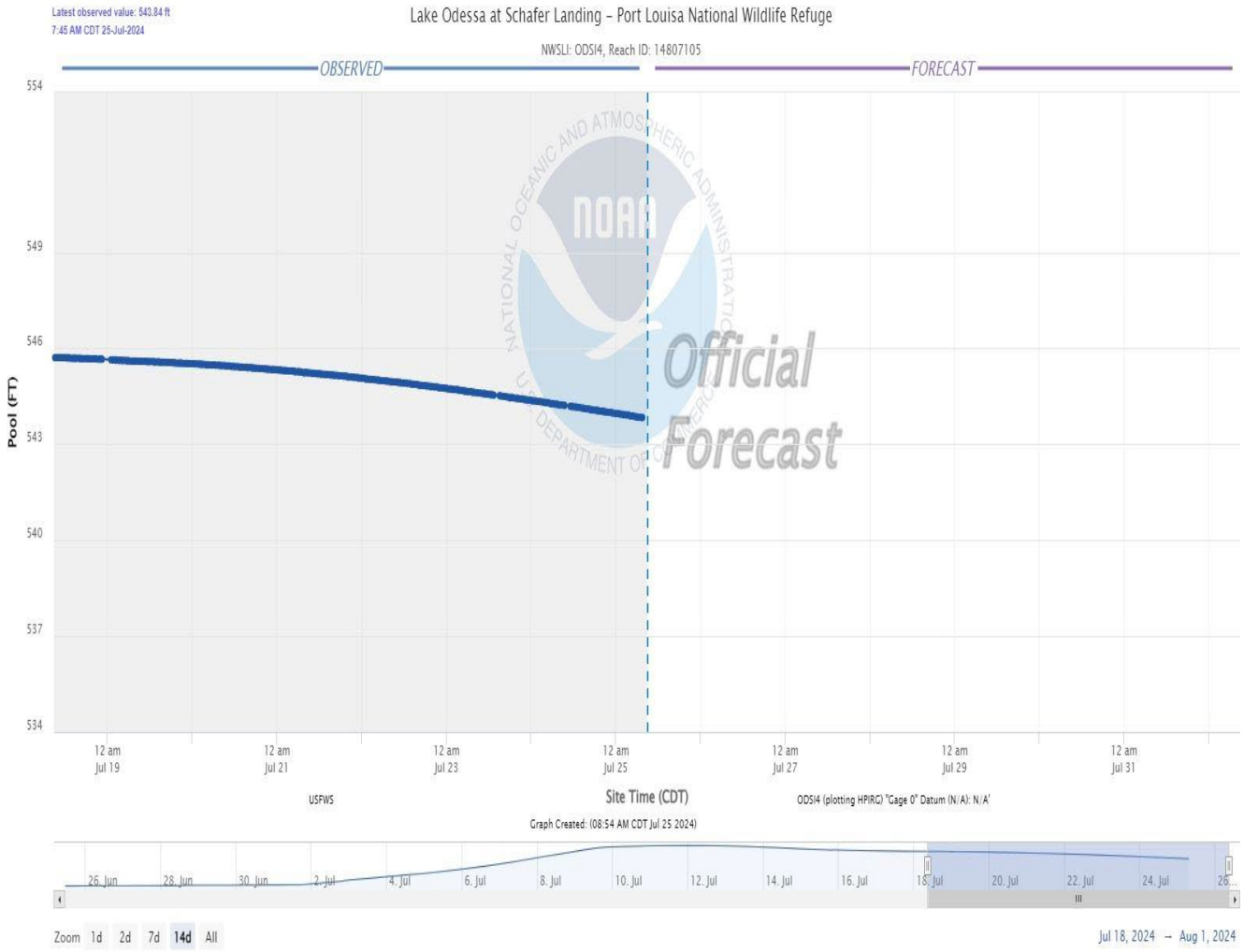

Figure 3: Lake Odessa hydrograph following the summer 2024 flood crest (July 18-25, 2024)

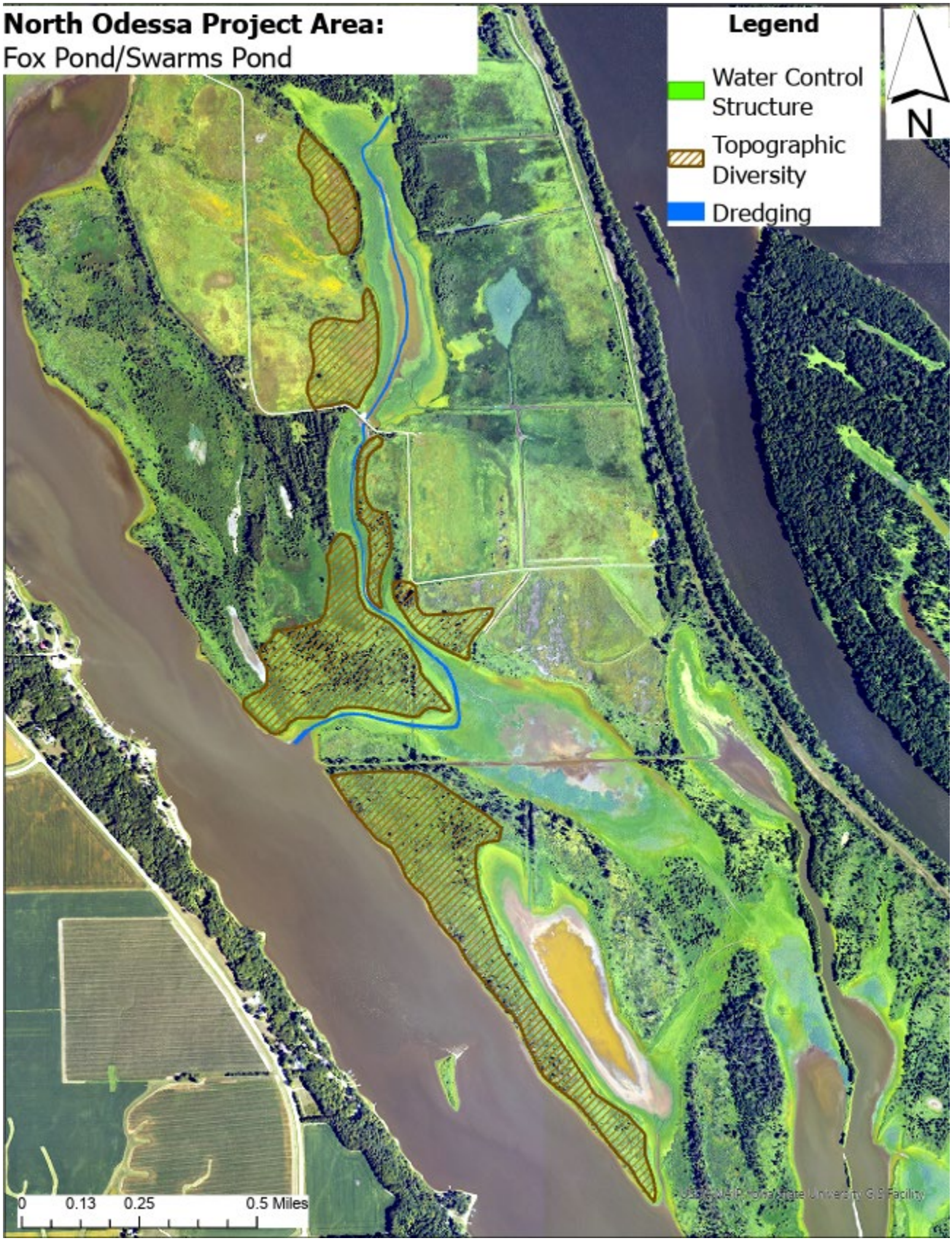

Figure 4: North Odessa Potential Project Features

Figure 5: South Odessa Potential Project Features

Upper Mississippi River Restoration (UMRR) Program
Habitat Rehabilitation and Enhancement Project

Nine Mile Island
Pool 12, Mississippi River, Iowa
Rock Island District

Location

The Nine Mile Island complex (complex) is located in Pool 12 of the Upper Mississippi River from RM 571.5 to 574.5. The approximately 840-acre island complex extends is part of the Upper Mississippi River National Wildlife and Fish Refuge (Refuge) in the state of Iowa. The complex is positioned between Shawondasse Slough and the main channel on the east (Iowa Side) bank of the Mississippi River. The closest communities to the project area are Massey, IA, located directly adjacent to the island complex to the west, and Dubuque, IA, located approximately seven miles upstream of the complex.

Existing Resources

The Nine Mile Island complex currently consists of forested islands, flowing channels, sloughs, isolated wetlands, and backwater lakes. Though degraded, this important backwater island complex still supports a diverse array of habitats for fish and wildlife such as ducks, geese, eagles, pelicans, muskrats, bats, amphibians, reptiles, invertebrates and healthy fish populations. While still supporting fish and wildlife populations, changes to the complex are happening that put the populations in this area at risk. A few of these changes include bank erosion, decline of a once-diverse forested habitat, loss of native plant species, increases in invasive species such as reed canary grass, and sedimentation into backwater lakes.

Problem Identification

Years of silt deposition have resulted in loss of area of quality deep water habitat and an overall degraded backwater complex. Multiple backwater lakes have sedimented in and no longer provide overwintering habitat to fish, and others have been disconnected from the main backwater lake providing conditions where oxygen will decrease throughout the winter and the fish cannot escape. Impoundment of the pool and permanently higher water tables have affected the health and resilience of floodplain habitat on islands and adjacent floodplain areas. These higher water tables are increasing the mortality of already stressed-out trees within the forest. With this degraded forest, invasive species such as reed canary grass continue to invade the forest interior and significantly contribute to the forest's inability to naturally regenerate. Additionally, continued bank erosion could lead to loss of island acreage and increase sedimentation into the side channel and backwater lakes. These issues are likely to continue, or even worsen, given the observed and predicted increases in flooding (both frequency and duration) on the Upper Mississippi River system.

Project Goals

The intent of this Project is to enhance, protect, and rehabilitate quality floodplain and backwater habitat within the Nine Mile Island complex. Goals for this Project were derived from multiple planning efforts and align with several document guidelines including; the Habitat Needs Assessment II (HNA-II) (McCain et al., 2018) and the UMR NWFR's Comprehensive Conservation Plan, and Habitat Management Plan (USFWS, 2019). Desired Project outcomes are to maintain and protect existing quality habitat and to rehabilitate areas to provide a diverse and resilient ecosystem. The specific project goals are as follows:

- **Protect/maintain/enhance the ecological health of floodplain forests to levels that are sustainable.**
  - Increase the structural complexity of forest communities.
  - Restore and maintain large contiguous patches of forest communities.
  - Increase species diversity within the forest community.
  - Increase topographic diversity of floodplain areas.
- **Maintain, enhance and create quality habitat for lentic species of fish and mussels, including overwintering fish habitat.**
  - Modify flow dynamics to reduce the amount of sediment entering lentic habitats and achieve optimal velocities for overwintering fish.
  - Create lentic habitats with a diversity of depths to meet the needs of game and non-game fish species, including species in greatest need of conservation.
  - Create structural diversity in lentic habitats with placement of large woody debris, rock reefs and mounds, and spawning substrates.
- **Maintain, enhance and create quality habitat for lotic fish and mussels.**
  - Protect shorelines to maintain structured channels and their physical characteristics.
  - When using rock to protect shorelines, utilize rock types that provide substrate suitable for spawning by lotic fishes and colonization by lotic mussels.

The following HNA-II indicators and associated desired conditions within the Upper Impounded Cluster addressed by the project include:

- **<u>Floodplain Functional Class Diversity</u>: Restore floodplain vegetation diversity in conjunction with diversifying floodplain inundation periods**
  - Promote topographic diversity within the project site and establish greater tree diversity to provide habitat for a variety of birds, mammals and invertebrates including tree roosting bats, migrant passerines and pollinators.
- **<u>Floodplain Vegetation Diversity</u>: Maintain and enhance floodplain vegetation**
  - Conduct regeneration underplantings to increase compositional diversity of native tree, shrub and plant species.
  - Conduct timber stand improvement throughout the project area to improve growing conditions for residual trees, foster tree recruitment, and increase structural complexity of the floodplain forest.

- Convert reed canary grass areas to early successional forest communities.

- **<u>Aquatic Functional Class (AFC) 1 and 2</u>: Improve quality, depth, and distribution of lentic and lotic habitat**
  - Dredge and remove excess sediment from backwater lakes to promote bathymetric diversity and establish habitats suitable for migratory waterfowl, native mussel, and fish species.
  - Improvement of physical conditions within lotic habitats, more structured channels.
- **<u>Aquatic Vegetation Diversity</u>: Maintain and enhance aquatic vegetation diversity**
  - Utilize dredged material to create or expand upon island areas to promote aquatic vegetation growth and diversity.
- **<u>Total Suspended Solids Concentrations (TSS)</u>: Reduce sedimentation**
  - Restore a more natural sediment transport and deposition pattern throughout the project area to try and decrease the amount of total suspended solids entering and staying within backwater lakes and side channels.

Proposed Project Features

Proposed Project features to address the habitat goals for the project could include the following (see Attachment 1, Figure 1):

- Forest enhancement activities such as hard mast and shrub underplanting, timber stand improvement, ridge and swale, and early successional plantings.
- Aquatic dredging and associated dredged material placement to increase topographic diversity, reduce invasive species, and increase forest diversity.
- Bankline stabilization/protection to reduce erosion and maintain bank integrity.

Collectively, these features would provide the environmental conditions necessary to achieve and maintain the desired future habitat conditions. Fine material from backwater dredging will be used for topographic diversity, floodplain forest diversity, invasive species reductions, all while providing quality deep water fish habitat. This project provides the opportunity to protect, enhance, and restore quality deep water fish habitat, lotic fish and mussel habitat, forest habitat, and wetland habitat for all native and desirable plant, wildlife, fish and mussel species. The following Refuge priority resources of concern (PROC; USFWS, 2019) would benefit from this project: Midwestern wooded swamps and floodplains, Cerulean warbler, Prothonotary warbler, Red-shouldered hawk, transient neotropical migrant passerines, tree-roosting bats, invertebrate pollinators, limnophilic native fish and mussels, and fluvial-dependent native fish and mussels.

Implementation Considerations

This will help tie together the Pool 12 Forestry HREP and Pool 12 Overwintering HREP that are currently in construction or have already been completed. Filling this gap in restoration

activities creates better landscape synergy for floodplain forest resilience and overwintering locations throughout Pool 12 of the Refuge.

The project team will need to consider the locations and nesting activity of bald eagles, mussel resources and tree roosting bats that may affect the construction timing and locations of features.

A portion of the Nine Mile Island complex has been designated a Slow, No Wake Area by the Refuge during the period of March 16 - October 31. During this period, no hovercraft or airboats are allowed and all other watercraft must abide by the slow, no wake regulation. The Refuge, with support and cooperation of its state partners, established this designation in the Refuge's Comprehensive Conservation Plan to provide river users with relatively secluded and quiet conditions for hunting, fishing, trapping, and wildlife observation. The Refuge will only accept sponsorship of this project if there is an assurance the project will not threaten the integrity of the Nine Mile Island Slow, No Wake designation, and the public's expectation of what that designation means.

The project should be designed to minimize operation and maintenance (O&M) for the sponsor; for example, it is unlikely that the Refuge would accept any maintenance dredging for access and habitat dredged areas, connectivity channels, or channel inlets.

Financial Data

All Project lands are federally-owned and are managed by the U.S. Fish and Wildlife Service as part of the Upper Mississippi River National Wildlife and Fish Refuge. The estimated cost for the proposed Project, depending on the features selected, is $34.5 million and would be 100 percent federally funded. The USFWS is the Project sponsor and is responsible for operation and maintenance, and repair (O&M) costs.

Status of Project

This project was submitted to the Fish and Wildlife Interagency Committee (FWIC) in January 2025 and accepted by the River Resources Coordinating Team in April 2025. Fact sheet preparation by U.S. Fish and Wildlife Service, Iowa Department of Natural Resources and Illinois Department of Natural Resources.

Sponsorship

All project features will be within the boundary of the Refuge, therefore, the USFWS would be the Project Sponsor and will be responsible for O&M.

Point(s) of Contact

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Rebekah Anderson, IL DNR, Mississippi River Fisheries Biologist, 630-538-5624, Rebekah.Anderson@illinois.gov

U. S. Army Corps of Engineers, Rock Island District, Rock Island, IL. POC to be determined.

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Attachment Figure 1.

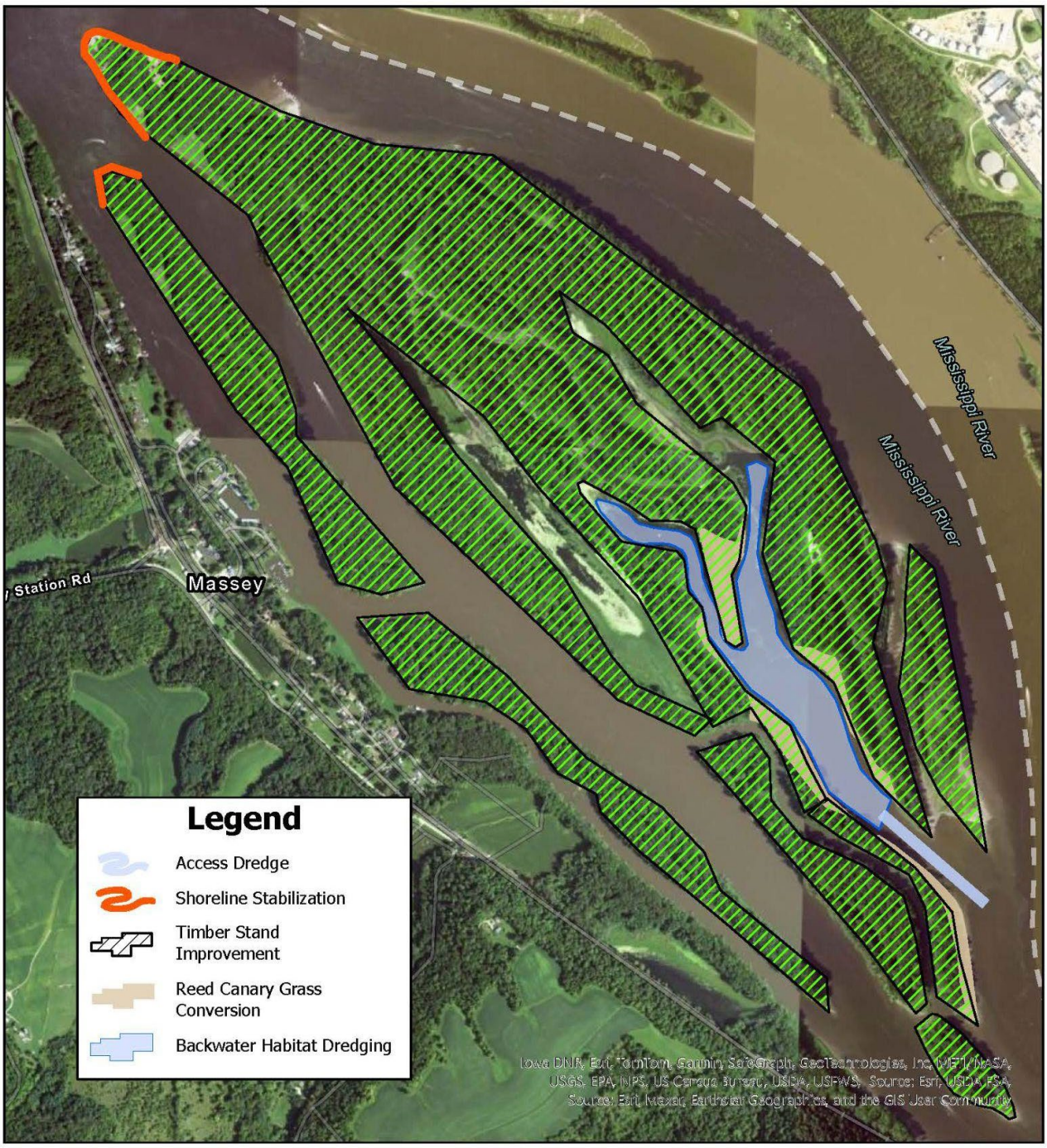

Figure 1. Proposed Project Features

Upper Mississippi River Restoration Program
Quarterly Meetings

Attachment D

Additional Items

Upper Mississippi River
Quarterly Meetings

Future Meeting Schedule

August 2025 — Minneapolis, Minnesota

August 5	UMRBA Quarterly Meeting
August 6	UMRR Coordinating Committee Quarterly Meeting

October 2025 — Quad Cities

October 28	UMRBA Quarterly Meeting
October 29	UMRR Coordinating Committee Quarterly Meeting

Acronyms Frequently Used on the Upper Mississippi River System

AAR	After Action Report
A&E	Architecture and Engineering
ACRCC	Asian Carp Regional Coordinating Committee
AFB	Alternative Formulation Briefing
AHAG	Aquatic Habitat Appraisal Guide
AHRI	American Heritage Rivers Initiative
AIS	Aquatic Invasive Species
ALC	American Lands Conservancy
ALDU	Aquatic Life Designated Use(s)
AM	Adaptive Management
ANS	Aquatic Nuisance Species
AP	Advisory Panel
APE	Additional Program Element
ARRA	American Recovery and Reinvestment Act
ASA(CW)	Assistant Secretary of the Army for Civil Works
A-Team	Analysis Team
ATR	Agency Technical Review
AWI	America's Watershed Initiative
AWO	American Waterways Operators
AWQMN	Ambient Water Quality Monitoring Network
BA	Biological Assessment
BATIC	Build America Transportation Investment Center
BCOES	Bid-ability, Constructability, Operability, Environmental, Sustainability
BCR	Benefit-Cost Ratio
BMPs	Best Management Practices
BO	Biological Opinion
CAP	Continuing Authorities Program
CAWS	Chicago Area Waterways System
CCC	Commodity Credit Corporation
CCP	Comprehensive Conservation Plan
CEICA	Cost Effectiveness Incremental Cost Analysis
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CFS	Cubic Feet Per Second
CG	Construction General
CIA	Computerized Inventory and Analysis
CMMP	Channel Maintenance Management Plan
COE	Corps of Engineers
COPT	Captain of the Port
CPUE	Catch Per Unit Effort
CRA	Continuing Resolution Authority
CREP	Conservation Reserve Enhancement Program
CRP	Conservation Reserve Program

CSP	Conservation Security Program
CUA	Cooperative Use Agreement
CWA	Clean Water Act
CY	Cubic Yards
DALS	Department of Agriculture and Land Stewardship
DED	Department of Economic Development
DEM	Digital Elevation Model
DET	District Ecological Team
DEWS	Drought Early Warning System
DMMP	Dredged Material Management Plan
DNR	Department of Natural Resources
DO	Dissolved Oxygen
DOA	Department of Agriculture
DOC	Department of Conservation
DOER	Dredging Operations and Environmental Research
DOT	Department of Transportation
DPR	Definite Project Report
DQC	District Quality Control/Quality Assurance
DSS	Decision Support System
EA	Environmental Assessment
ECC	Economics Coordinating Committee
EEC	Essential Ecosystem Characteristic
EIS	Environmental Impact Statement
EMAP	Environmental Monitoring and Assessment Program
EMAP-GRE	Environmental Monitoring and Assessment Program-Great Rivers Ecosystem
EMP	Environmental Management Program [Note: Former name of Upper Mississippi River Restoration Program.]
EMP-CC	Environmental Management Program Coordinating Committee
EO	Executive Order
EPA	Environmental Protection Agency
EPM	Environmental Pool Management
EPR	External Peer Review
EQIP	Environmental Quality Incentives Program
ER	Engineering Regulation
ERDC	Engineering Research & Development Center
ESA	Endangered Species Act
EWMN	Early Warning Monitoring Network
EWP	Emergency Watershed Protection Program
FACA	Federal Advisory Committee Act
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FDR	Flood Damage Reduction
FFS	Flow Frequency Study
FMG	Forest Management Geodatabase
FONSI	Finding of No Significant Impact
FRM	Flood Risk Management

FRST	Floodplain Restoration System Team
FSA	Farm Services Agency
FTE	Full Time Equivalent
FWCA	Fish & Wildlife Coordination Act
FWIC	Fish and Wildlife Interagency Committee
FWS	Fish and Wildlife Service
FWWG	Fish and Wildlife Work Group
FY	Fiscal Year
GAO	Government Accountability Office
GEIS	Generic Environmental Impact Statement
GI	General Investigations
GIS	Geographic Information System
GLC	Governors Liaison Committee
GLC	Great Lakes Commission
GLMRIS	Great Lakes and Mississippi River Interbasin Study
GPS	Global Positioning System
GREAT	Great River Environmental Action Team
GRP	Geographic Response Plan
H&H	Hydrology and Hydraulics
HAB	Harmful Algal Bloom
HEC-EFM	Hydrologic Engineering Center Ecosystems Function Model
HEC-RAS	Hydrologic Engineering Center River Analysis System
HEL	Highly Erodible Land
HEP	Habitat Evaluation Procedure
HNA	Habitat Needs Assessment
HPSF	HREP Planning and Sequencing Framework
HQUSACE	Headquarters, USACE
H.R.	House of Representatives
HREP	Habitat Rehabilitation and Enhancement Project
HSI	Habitat Suitability Index
HU	Habitat Unit
HUC	Hydrologic Unit Code
IBA	Important Bird Area
IBI	Index of Biological (Biotic) Integrity
IC	Incident Commander
ICS	Incident Command System
ICWP	Interstate Council on Water Policy
IDIQ	Indefinite Delivery/Indefinite Quantity
IEPR	Independent External Peer Review
IGE	Independent Government Estimate
IIA	Implementation Issues Assessment
IIFO	Illinois-Iowa Field Office (formerly RIFO - Rock Island Field Office)
ILP	Integrated License Process
IMTS	Inland Marine Transportation System
IPR	In-Progress Review
IRCC	Illinois River Coordinating Council

IRPT	Inland Rivers, Ports & Terminals
IRTC	Implementation Report to Congress
IRWG	Illinois River Work Group
ISA	Inland Sensitivity Atlas
IWR	Institute for Water Resources
IWRM	Integrated Water Resources Management
IWS	Integrated Water Science
IWTF	Inland Waterways Trust Fund
IWUB	Inland Waterways Users Board
IWW	Illinois Waterway
L&D	Lock(s) and Dam
LC/LU	Land Cover/Land Use
LDB	Left Descending Bank
LERRD	Lands, Easements, Rights-of-Way, Relocation of Utilities or Other Existing Structures, and Disposal Areas
LiDAR	Light Detection and Ranging
LMR	Lower Mississippi River
LMRCC	Lower Mississippi River Conservation Committee
LOI	Letter of Intent
LTRM	Long Term Resource Monitoring
M-35	Marine Highway 35
MAFC	Mid-America Freight Coalition
MARAD	U.S. Maritime Administration
MARC 2000	Midwest Area River Coalition 2000
MCAT	Mussel Community Assessment Tool
MICRA	Mississippi Interstate Cooperative Resource Association
MDM	Major subordinate command Decision Milestone
MIPR	Military Interdepartmental Purchase Request
MMR	Middle Mississippi River
MMRP	Middle Mississippi River Partnership
MNRG	Midwest Natural Resources Group
MOA	Memorandum of Agreement
MoRAST	Missouri River Association of States and Tribes
MOU	Memorandum of Understanding
MRAPS	Missouri River Authorized Purposes Study
MRBI	Mississippi River Basin (Healthy Watersheds) Initiative
MRC	Mississippi River Commission
MRCC	Mississippi River Connections Collaborative
MRCTI	Mississippi River Cities and Towns Initiative
MRRC	Mississippi River Research Consortium
MR&T	Mississippi River and Tributaries (project)
MSP	Minimum Sustainable Program
MVD	Mississippi Valley Division
MVP	St. Paul District
MVR	Rock Island District
MVS	St. Louis District

NAS	National Academies of Science
NAWQA	National Water Quality Assessment
NCP	National Contingency Plan
NIDIS	National Integrated Drought Information System (NOAA)
NEBA	Net Environmental Benefit Analysis
NECC	Navigation Environmental Coordination Committee
NED	National Economic Development
NEPA	National Environmental Policy Act
NESP	Navigation and Ecosystem Sustainability Program
NETS	Navigation Economic Technologies Program
NGO	Non-Governmental Organization
NGRREC	National Great Rivers Research and Education Center
NGWOS	Next Generation Water Observing System
NICC	Navigation Interests Coordinating Committee
NPDES	National Pollution Discharge Elimination System
NPS	Non-Point Source
NPS	National Park Service
NRC	National Research Council
NRCS	Natural Resources Conservation Service
NRDAR	Natural Resources Damage Assessment and Restoration
NRT	National Response Team
NSIP	National Streamflow Information Program
NWI	National Wetlands Inventory
NWR	National Wildlife Refuge
O&M	Operation and Maintenance
OHWM	Ordinary High Water Mark
OMB	Office of Management and Budget
OMRR&R	Operation, Maintenance, Repair, Rehabilitation, and Replacement
OPA	Oil Pollution Act of 1990
ORSANCO	Ohio River Valley Water Sanitation Commission
OSC	On-Scene Coordinator
OSE	Other Social Effects
OSIT	On Site Inspection Team
P3	Public-Private Partnerships
PA	Programmatic Agreement
PAS	Planning Assistance to States
P&G	Principles and Guidelines
P&R	Principles and Requirements
P&S	Plans and Specifications
P&S	Principles and Standards
PCA	Pollution Control Agency
PCA	Project Cooperation Agreement
PCX	Planning Center of Expertise
PDT	Project Delivery Team
PED	Preconstruction Engineering and Design
PgMP	Program Management Plan

PILT	Payments In Lieu of Taxes
PIR	Project Implementation Report
PL	Public Law
PMP	Project Management Plan
PORT	Public Outreach Team
PPA	Project Partnership Agreement
PPT	Program Planning Team
QA/QC	Quality Assurance/Quality Control
RCRA	Resource Conservation and Recovery Act
RCP	Regional Contingency Plan
RCPP	Regional Conservation Partnership Program
RDB	Right Descending Bank
RED	Regional Economic Development
RIFO	Rock Island Field Office (now IIFO - Illinois-Iowa Field Office)
RM	River Mile
RP	Responsible Party
RPEDN	Regional Planning and Environment Division North
RPT	Reach Planning Team
RRAT	River Resources Action Team
RRCT	River Resources Coordinating Team
RRF	River Resources Forum
RRT	Regional Response Team
RST	Regional Support Team
RTC	Report to Congress
S.	Senate
SAV	Submersed Aquatic Vegetation
SDWA	Safe Drinking Water Act
SEMA	State Emergency Management Agency
SET	System Ecological Team
SMART	Specific, Measurable, Attainable, Risk Informed, Timely
SONS	Spill of National Significance
SOW	Scope of Work
SRF	State Revolving Fund
SWCD	Soil and Water Conservation District
T&E	Threatened and Endangered
TEUs	twenty-foot equivalent units
TIGER	Transportation Investment Generating Economic Recovery
TLP	Traditional License Process
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
TSP	Tentatively selected plan
TSS	Total Suspended Solids
TVA	Tennessee Valley Authority
TWG	Technical Work Group
UMESC	Upper Midwest Environmental Sciences Center

UMIMRA	Upper Mississippi, Illinois, and Missouri Rivers Association
UMR	Upper Mississippi River
UMRBA	Upper Mississippi River Basin Association
UMRBC	Upper Mississippi River Basin Commission
UMRCC	Upper Mississippi River Conservation Committee
UMRCP	Upper Mississippi River Comprehensive Plan
UMR-IWW	Upper Mississippi River-Illinois Waterway
UMRNWFR	Upper Mississippi River National Wildlife and Fish Refuge
UMRR	Upper Mississippi River Restoration Program [Note: Formerly known as Environmental Management Program.]
UMRR CC	Upper Mississippi River Restoration Program Coordinating Committee
UMRS	Upper Mississippi River System
UMWA	Upper Mississippi Waterway Association
USACE	U.S. Army Corps of Engineers
USCG	U.S. Coast Guard
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VTC	Video Teleconference
WCI	Waterways Council, Inc.
WES	Waterways Experiment Station (replaced by ERDC)
WHAG	Wildlife Habitat Appraisal Guide
WHIP	Wildlife Habitat Incentives Program
WIIN	Water Infrastructure Improvements for the Nation Act
WLM	Water Level Management
WLMTF	Water Level Management Task Force
WQ	Water Quality
WQEC	Water Quality Executive Committee
WQTF	Water Quality Task Force
WQS	Water Quality Standard
WRDA	Water Resources Development Act
WRP	Wetlands Reserve Program
WRRDA	Water Resources Reform and Development Act

Upper Mississippi River Restoration Program Authorization

Section 1103 of the Water Resources Development Act of 1986 (P.L. 99-662) as amended by
Section 405 of the Water Resources Development Act of 1990 (P.L. 101-640),
Section 107 of the Water Resources Development Act of 1992 (P.L. 102-580),
Section 509 of the Water Resources Development Act of 1999 (P.L. 106-53),
Section 2 of the Water Resources Development Technical Corrections of 1999 (P.L. 106-109),
Section 3177 of the Water Resources Development Act of 2007 (P.L. 110-114),
Section 307 of the Water Resources Development Act of 2020 (P.L. 116-260), and
Section 8345 of the Water Resources Development Act of 2022 (P.L. 117-263).

Additional Cost Sharing Provisions

Section 906(e) of the Water Resources Development Act of 1986 (P.L. 99-662) as amended by
Section 221 of the Water Resources Development Act of 1999 (P.L. 106-53).

SEC. 1103. UPPER MISSISSIPPI RIVER PLAN.

(a)(1) This section may be cited as the "Upper Mississippi River Management Act of 1986".

(2) To ensure the coordinated development and enhancement of the Upper Mississippi River system, it is hereby declared to be the intent of Congress to recognize that system as a nationally significant ecosystem and a nationally significant commercial navigation system. Congress further recognizes that the system provides a diversity of opportunities and experiences. The system shall be administered and regulated in recognition of its several purposes.

(b) For purposes of this section --

(1) the terms "Upper Mississippi River system" and "system" mean those river reaches having commercial navigation channels on the Mississippi River main stem north of Cairo, Illinois; the Minnesota River, Minnesota; Black River, Wisconsin; Saint Croix River, Minnesota and Wisconsin; Illinois River and Waterway, Illinois; and Kaskaskia River, Illinois;

(2) the term "Master Plan" means the comprehensive master plan for the management of the Upper Mississippi River system, dated January 1, 1982, prepared by the Upper Mississippi River Basin Commission and submitted to Congress pursuant to Public Law 95-502;

(3) the term "GREAT I, GREAT II, and GRRM studies" means the studies entitled "GREAT Environmental Action Team--GREAT I--A Study of the Upper Mississippi River", dated September 1980, "GREAT River Environmental Action Team--GREAT II--A Study of the Upper Mississippi River", dated December 1980, and "GREAT River Resource Management Study", dated September 1982; and

(4) the term "Upper Mississippi River Basin Association" means an association of the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, formed for the purposes of cooperative effort and united assistance in the comprehensive planning for the use, protection, growth, and development of the Upper Mississippi River System.

(c)(1) Congress hereby approves the Master Plan as a guide for future water policy on the Upper Mississippi River system. Such approval shall not constitute authorization of any recommendation contained in the Master Plan.

(2) Section 101 of Public Law 95-502 is amended by striking out the last two sentences of subsection (b), striking out subsection (i), striking out the final sentence of subsection (j), and redesignating subsection "(j)" as subsection "(i)".

(d)(1) The consent of the Congress is hereby given to the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, or any two or more of such States, to enter into negotiations for agreements, not in conflict with any law of the United States, for cooperative effort and mutual assistance in the comprehensive planning for the use, protection, growth, and development of the Upper Mississippi River system, and to establish such agencies, joint or otherwise, or designate an existing multi-State entity, as they may deem desirable for making effective such

agreements. To the extent required by Article I, section 10 of the Constitution, such agreements shall become final only after ratification by an Act of Congress.

(2) The Secretary is authorized to enter into cooperative agreements with the Upper Mississippi River Basin Association or any other agency established under paragraph (1) of this subsection to promote and facilitate active State government participation in the river system management, development, and protection.

(3) For the purpose of ensuring the coordinated planning and implementation of programs authorized in subsections (e) and (h)(2) of this section, the Secretary shall enter into an interagency agreement with the Secretary of the Interior to provide for the direct participation of, and transfer of funds to, the Fish and Wildlife Service and any other agency or bureau of the Department of the Interior for the planning, design, implementation, and evaluation of such programs.

(4) The Upper Mississippi River Basin Association or any other agency established under paragraph (1) of this subsection is hereby designated by Congress as the caretaker of the master plan. Any changes to the master plan recommended by the Secretary shall be submitted to such association or agency for review. Such association or agency may make such comments with respect to such recommendations and offer other recommended changes to the master plan as such association or agency deems appropriate and shall transmit such comments and other recommended changes to the Secretary. The Secretary shall transmit such recommendations along with the comments and other recommended changes of such association or agency to the Congress for approval within 90 days of the receipt of such comments or recommended changes.

(e) Program Authority

(1) Authority

(A) In general. The Secretary, in consultation with the Secretary of the Interior and the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, may undertake, as identified in the master plan

(i) a program for the planning, construction, and evaluation of measures for fish and wildlife habitat rehabilitation and enhancement; and

(ii) implementation of a long-term resource monitoring, computerized data inventory and analysis, and applied research program, including research on water quality issues affecting the Mississippi River (including elevated nutrient levels) and the development of remediation strategies.

(B) Advisory committee. In carrying out subparagraph (A)(i), the Secretary shall establish an independent technical advisory committee to review projects, monitoring plans, and habitat and natural resource needs assessments.

(2) REPORTS. — Not later than December 31, 2004, and not later than December 31 of every sixth year thereafter, the Secretary, in consultation with the Secretary of the Interior and the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, shall submit to Congress a report that —

(A) contains an evaluation of the programs described in paragraph (1);

(B) describes the accomplishments of each of the programs;

(C) provides updates of a systemic habitat needs assessment; and

(D) identifies any needed adjustments in the authorization of the programs.

(3) For purposes of carrying out paragraph (1)(A)(i) of this subsection, there is authorized to be appropriated to the Secretary $75,000,000 for fiscal year 1999 and each fiscal year thereafter.

(4) For purposes of carrying out paragraph (1)(A)(ii) of this subsection, there is authorized to be appropriated to the Secretary $15,000,000 for fiscal year 1999 and each fiscal year thereafter.

(5) Authorization of appropriations.—There is authorized to be appropriated to carry out paragraph (1)(B) $350,000 for each of fiscal years 1999 through 2009.

(6) Transfer of amounts.—For fiscal year 1999 and each fiscal year thereafter, the Secretary, in consultation with the Secretary of the Interior and the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, may transfer not to exceed 20 percent of the amounts appropriated to carry out clause (i) or (ii) of paragraph (1)(A) to the amounts appropriated to carry out the other of those clauses.

(7)(A) Notwithstanding the provisions of subsection (a)(2) of this section, the costs of each project carried out pursuant to paragraph (1)(A)(i) of this subsection shall be allocated between the Secretary and the appropriate non-Federal sponsor in accordance with the provisions of section 906(e) of this Act; except that the costs of operation and maintenance of projects located on Federal lands or lands owned or operated by a State or local government shall be borne by the Federal, State, or local agency that is responsible for management activities for fish and wildlife on such lands and, in the case of any project requiring non-Federal cost sharing, the non-Federal share of the cost of the project shall be 35 percent.

(B) Notwithstanding the provisions of subsection (a)(2) of this section, the cost of implementing the activities authorized by paragraph (1)(A)(ii) of this subsection shall be allocated in accordance with the provisions of section 906 of this Act, as if such activity was required to mitigate losses to fish and wildlife.

(8) None of the funds appropriated pursuant to any authorization contained in this subsection shall be considered to be chargeable to navigation.

(f) (1) The Secretary, in consultation with any agency established under subsection (d)(1) of this section, is authorized to implement a program of recreational projects for the system substantially in accordance with the recommendations of the GREAT I, GREAT II, and GRRM studies and the master plan reports. In addition, the Secretary, in consultation with any such agency, shall, at Federal expense, conduct an assessment of the economic benefits generated by recreational activities in the system. The cost of each such project shall be allocated between the Secretary and the appropriate non-Federal sponsor in accordance with title I of this Act.

(2) For purposes of carrying out the program of recreational projects authorized in paragraph (1) of this subsection, there is authorized to be appropriated to the Secretary not to exceed $500,000 per fiscal year for each of the first 15 fiscal years beginning after the effective date of this section.

(g) The Secretary shall, in his budget request, identify those measures developed by the Secretary, in consultation with the Secretary of Transportation and any agency established under subsection (d)(1) of this section, to be undertaken to increase the capacity of specific locks throughout the system by employing nonstructural measures and making minor structural improvements.

(h)(1) The Secretary, in consultation with any agency established under subsection (d)(1) of this section, shall monitor traffic movements on the system for the purpose of verifying lock capacity, updating traffic projections, and refining the economic evaluation so as to verify the need for future capacity expansion of the system.

(2) Determination.

(A) In general. The Secretary in consultation with the Secretary of the Interior and the States of Illinois, Iowa, Minnesota, Missouri, and Wisconsin, shall determine the need for river rehabilitation and environmental enhancement and protection based on the condition of the environment, project developments, and projected environmental impacts from implementing any proposals resulting from recommendations made under subsection (g) and paragraph (1) of this subsection.

(B) Requirements. The Secretary shall

(i) complete the ongoing habitat needs assessment conducted under this paragraph not later than September 30, 2000; and

(ii) include in each report under subsection (e)(2) the most recent habitat needs assessment conducted under this paragraph.

(3) There is authorized to be appropriated to the Secretary such sums as may be necessary to carry out this subsection.

(i) (1) The Secretary shall, as he determines feasible, dispose of dredged material from the system pursuant to the recommendations of the GREAT I, GREAT II, and GRRM studies.

(2) The Secretary shall establish and request appropriate Federal funding for a program to facilitate productive uses of dredged material. The Secretary shall work with the States which have, within their boundaries, any part of the system to identify potential users of dredged material.

(j) The Secretary is authorized to provide for the engineering, design, and construction of a second lock at locks and dam 26, Mississippi River, Alton, Illinois and Missouri, at a total cost of $220,000,000, with a first Federal cost of $220,000,000. Such second lock shall be constructed at or in the vicinity of the location of the replacement lock authorized by section 102 of Public Law 95-502. Section 102 of this Act shall apply to the project authorized by this subsection.

SEC. 906(e). COST SHARING.

(e) In those cases when the Secretary, as part of any report to Congress, recommends activities to enhance fish and wildlife resources, the first costs of such enhancement shall be a Federal cost when--

(1) such enhancement provides benefits that are determined to be national, including benefits to species that are identified by the National Marine Fisheries Service as of national economic importance, species that are subject to treaties or international convention to which the United States is a party, and anadromous fish;

(2) such enhancement is designed to benefit species that have been listed as threatened or endangered by the Secretary of the Interior under the terms of the Endangered Species Act, as amended (16 U.S.C. 1531, et seq.), or

(3) such activities are located on lands managed as a national wildlife refuge.

When benefits of enhancement do not qualify under the preceding sentence, 25 percent of such first costs of enhancement shall be provided by non-Federal interests under a schedule of reimbursement determined by the Secretary. Not more than 80 percent of the non-Federal share of such first costs may be satisfied through in-kind contributions, including facilities, supplies, and services that are necessary to carry out the enhancement project. The non-Federal share of operation, maintenance, and rehabilitation of activities to enhance fish and wildlife resources shall be 25 percent.

EMP OPERATING APPROACH

2006 marks the 20th anniversary of the Environmental Management Program (EMP). During that time, the Program pioneered many new ideas to help deliver efficient and effective natural resource programs to the Upper Mississippi River System (UMRS). These included the creation of an effective partnership of five states, five federal agencies, and numerous NGOs; a network of six field stations monitoring the natural resources of the UMRS; and the administrative structure to encourage river managers to use both new and proven environmental restoration techniques.

EMP has a history of identifying and dealing with both natural resource and administrative challenges. The next several years represent new opportunities and challenges as Congress considers authorization of the Navigation and Environmental Sustainability Program (NESP), possible integration or merger of EMP with NESP, and changing standards for program management and execution.

We will continue to learn from both the history of EMP and experience of other programs. Charting a course for EMP over the next several years is important to the continued success of the Program. EMP will focus on the key elements of partnership, regional administration and coordination, LTRMP, and HREPs.

The fundamental focus of EMP will not change, however the way we deliver our services must change and adapt. This will include:

- further refinements in regional coordination and management,
- refinement of program goals and objectives,
- increased public outreach efforts,
- development and use of tools such as the regional HREP database and HREP Handbook,
- exploring new delivery mechanisms for contracting,
- continued refinement of the interface between LTRMP and the HREP program components, and
- scientific and management application of LTRMP information and data.

The focus of these efforts must benefit the resources of the UMRS through efficient and effective management.