

Upper Mississippi River Restoration

**Brian Markert, Program
Manager**

**St. Louis District
2016/17 Overview**



**US Army Corps of Engineers
BUILDING STRONG®**





Completed Projects

15,602 Acres Restored, \$60m

- Batchtown \$21m
Sponsor: USFWS & IL DNR, 3280 Acres, UMR Miles 249-241 Calhoun County, IL
- Swan Lake \$16m
Sponsor: USFWS & IL DNR, 2900 Acres, ILR Miles 13-5 Calhoun County, IL
- Calhoun Point \$10m
Sponsor: IL DNR, 2135 Acres, UMR Miles 223-219, Calhoun County, IL
- Cuiver Island \$2m
Sponsor: MDC, 2180 Acres, UMR Miles 239-233 Lincoln and St. Charles County, MO
- Stump Lake \$6m
Sponsor: IL DNR, 2960 Acres, ILR Miles 13-7 Jersey County, IL
- Stag and Keaton Islands \$500k
Sponsor: MDC, 470 Acres, UMR Miles 249-247 Lincoln County, MO
- Pharrs Island \$2.8m
Sponsor: MDC, 525 Acres, UMR Miles 277-275 Pike County, MO
- Dresser Island \$2.9m
Sponsor: MDC, 940 Acres, UMR Miles 209-206 St. Charles County, MO
- Clarksville Refuge \$450k
Sponsor: 325 Acres, UMR Miles 277-274 Pike County, MO



FY 16 District Program

\$3.5m Budget

- USFWS Coordination \$110k
- Fact Sheet - Feasibility \$30k
 - ▶ Oakwood Bottoms – Fact Sheet developed and approved by MVD
- Feasibility Studies \$750k
 - ▶ Harlow & Open River Islands – Tentatively Selected Plans identified for Crains Island, Harlow Island, and Wilkinson Island
 - ▶ Piasa & Eagles Nest Islands – Alternatives developed, team is working towards identifying the Tentatively Selected Plan
 - ▶ Rip Rap Landing – Continued coordination on real estate concerns with NRCS, IL DNR, and MVD
- Projects in Plans & Specs Development \$1.9m
 - ▶ Ted Shanks – awarded construction package for debris shields on water control structures, designing river engineering solutions for Deadman Slough Enhancements
 - ▶ Clarence Cannon National Wildlife Refuge- completed two construction packages to be awarded in Sept 2016, designing pump station package to be awarded in 2nd Qtr FY 17
- Projects in Construction \$660k
 - ▶ Batchtown – completed project by closing out remaining punch-list items
 - ▶ Pools 25 & 26 – constructed last major component, reforestation remaining, close out FY 17
 - ▶ Ted Shanks- completed construction of 5 major water control structures and berm degradés, constructed water delivery channel, initiated construction of pump station
- Project Evaluation Reports, Baseline Monitoring, Habitat Evaluation \$150k



FY 17 District Program

\$3.5m Budget

- USFWS Coordination \$80k
- Pre-Feasibility \$30k
 - ▶ Oakwood Bottoms, IL - USFS
 - ▶ Other Open River Opportunities, IL, MO, FWS, T&E etc.
- Feasibility Studies \$600K
 - ▶ Harlow & Open River Islands – Draft Reports for Crain’s Island and Harlow Island
 - ▶ Piasa & Eagles Nest Islands – Draft Report
 - ▶ Rip Rap Landing – Continued coordination on real estate concerns with NRCS, IL DNR, and MVD
 - ▶ Delair – support project study - MVR lead
- Projects in Plans & Specs Development \$640k
 - ▶ Ted Shanks – designing river engineering solutions for Deadman Slough Enhancements
 - ▶ Clarence Cannon National Wildlife Refuge- finalize pump station construction package, ready for award
 - ▶ Exterior Berm Setback
- Projects in Construction \$2m
 - ▶ Pools 25 & 26 – develop O&M Manual and close out
 - ▶ Ted Shanks- complete construction of pump station, initiate reforestation, initiate O&M Manual
 - ▶ Clarence Cannon National Wildlife Refuge – fund task orders for the Gravity Drain Package and the South Unit Water Control package
- Project Evaluation Reports, Baseline Monitoring, Habitat Evaluation \$150k



Feasibility Studies



Rip Rap Landing

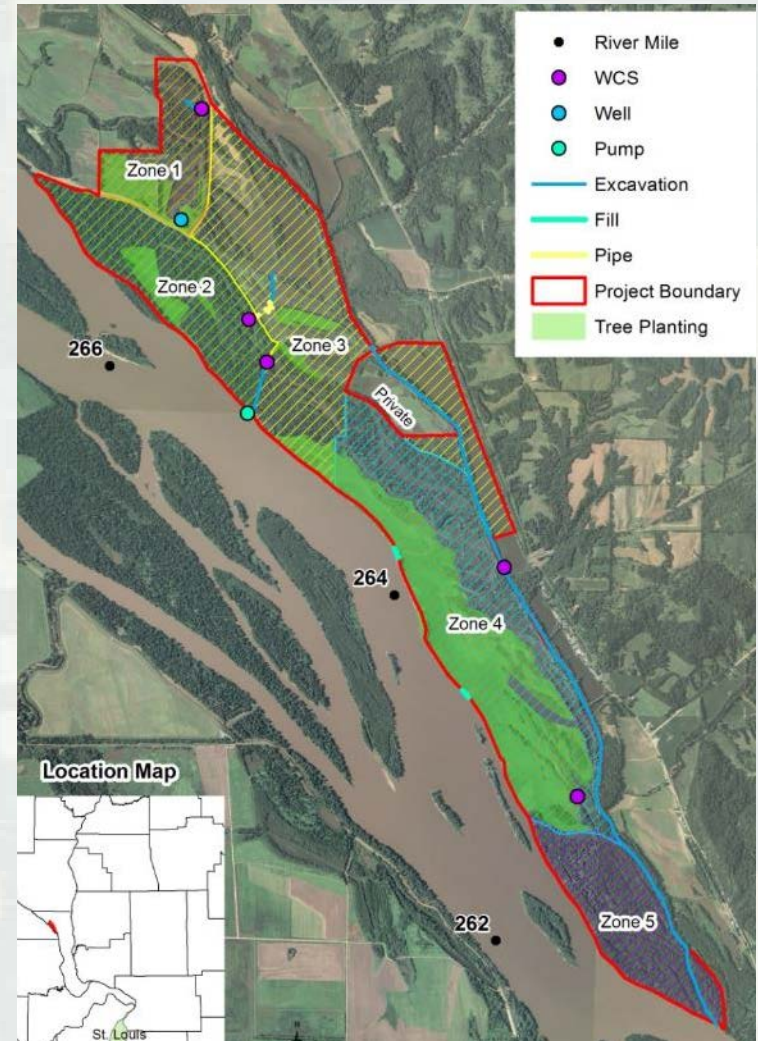
About the Site

- Sponsor: ILDNR
- Location: Pool 25, Mississippi River Miles 260.5-267, Calhoun County, IL
- 2,338 Acres (790 Acres WRP, 283 Acres GP Lands)
- Degrading hardwood forest
- Sny Creek runs through property
- Several moist soil management units
- Undersized and inadequate water control structures and pump
- Inefficient water delivery channels



Rip Rap Landing

- Issues:
 - Degraded Habitats
 - Sedimentation and nutrients
 - Altered Hydrology
 - Major Flooding
 - Floodplain connectivity and Levees
 - Invasive species
 - Lack of forest diversity and hard mast
 - Limited Infrastructure & sized too small for site needs
- Proposed Solutions:
 - Installation of water control structures
 - Installation of pump
 - Increase depth, diversity, and UMRs connection of Sny Creek
 - Reforestation



Rip Rap Landing

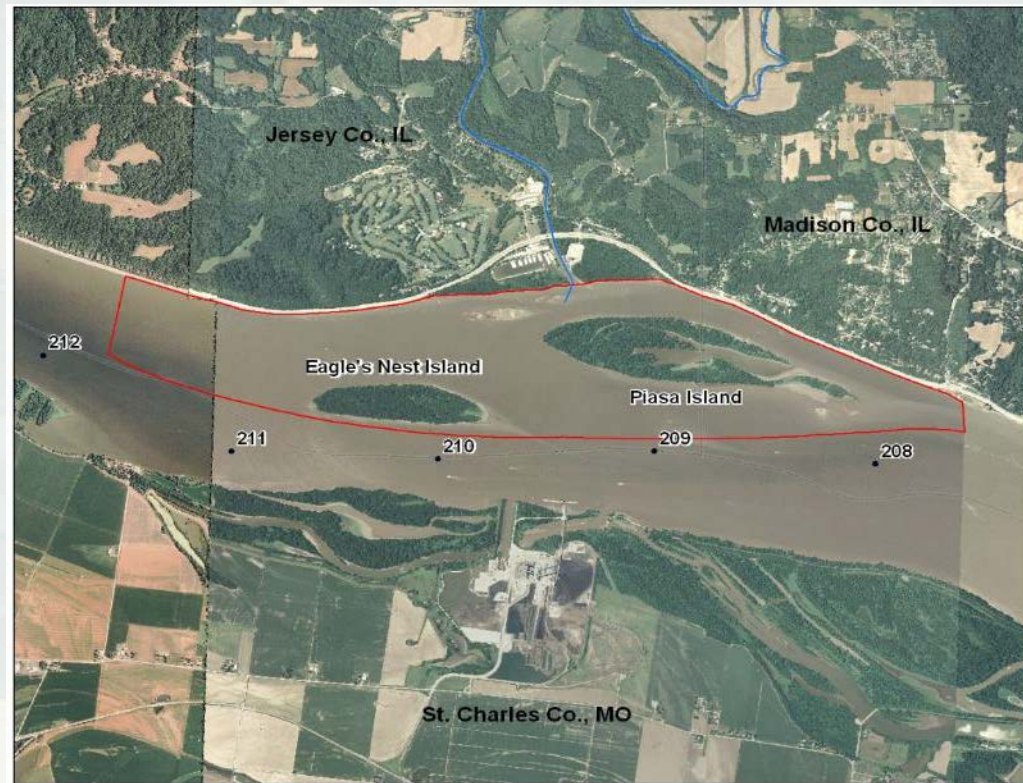
- Current Status – At MVD
- Need HQ from USACE and NRCS
- FY 17 – RE Memo, Appraisal, PPA



Piasa & Eagle's Nest Islands

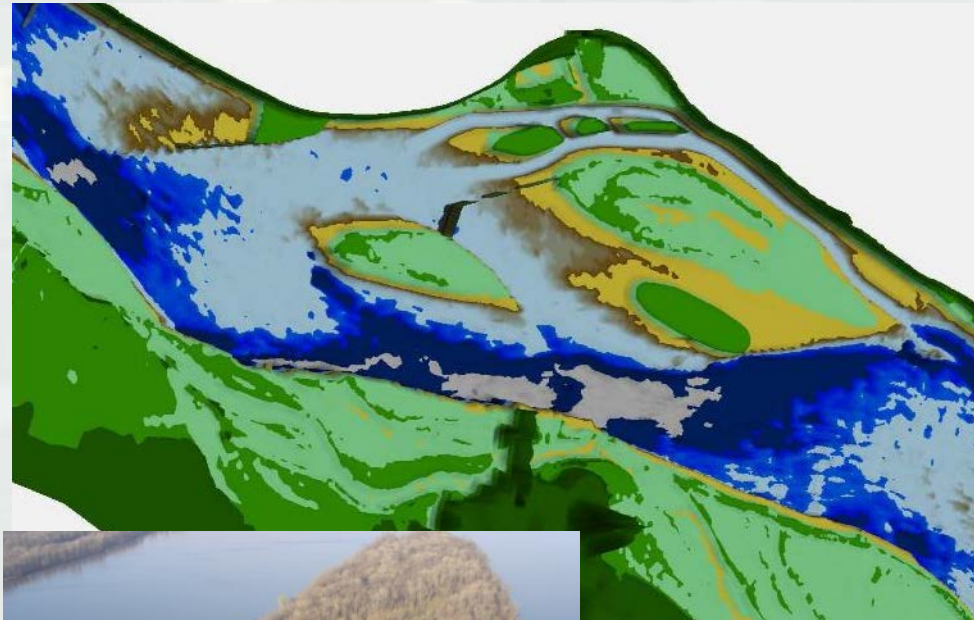
About the Site

- Sponsor: ILDNR
- Location: Mel Price Pool, Mississippi River Miles 208-211, Madison & Jersey Counties, IL
- 1350 Acres
- Side Channel, two islands, and one backwater
- Pooled riverine habitat
- Piasa Creek confluence
- Managed for migratory waterfowl hunting
- Prominent recreation area: boating, fishing, hunting



Piasa & Eagle's Nest Islands

- Issues:
 - Sedimentation accretion in side channel
 - Lack of depth and flow in side channel
 - Loss of island habitat
 - Loss of connection between backwater habitat and side channel
- Proposed Solutions:
 - Dredge side channel and backwater
 - Install river training structures
 - Build islands



Piasa & Eagle's Nest Islands

- FY 16
 - Numerical Model – developed alternatives
 - Performed Cost to Benefit Analysis
 - Tentatively Selected Plan Identified
- FY 17 Draft Report
- FY 18 Approved Report



Middle Mississippi, IL & MO

Challenges

- Limited sponsor owned lands
- Untested authority (Endangered Species)
- O & M costs in general
- O & M of river training structures
- Cost sharing
- LERRDS crediting 25 / 35%
- Navigational Servitude
- Other issues....Forest Service lands, WIK, NESP, Regulating Works...



Oakwood Bottoms

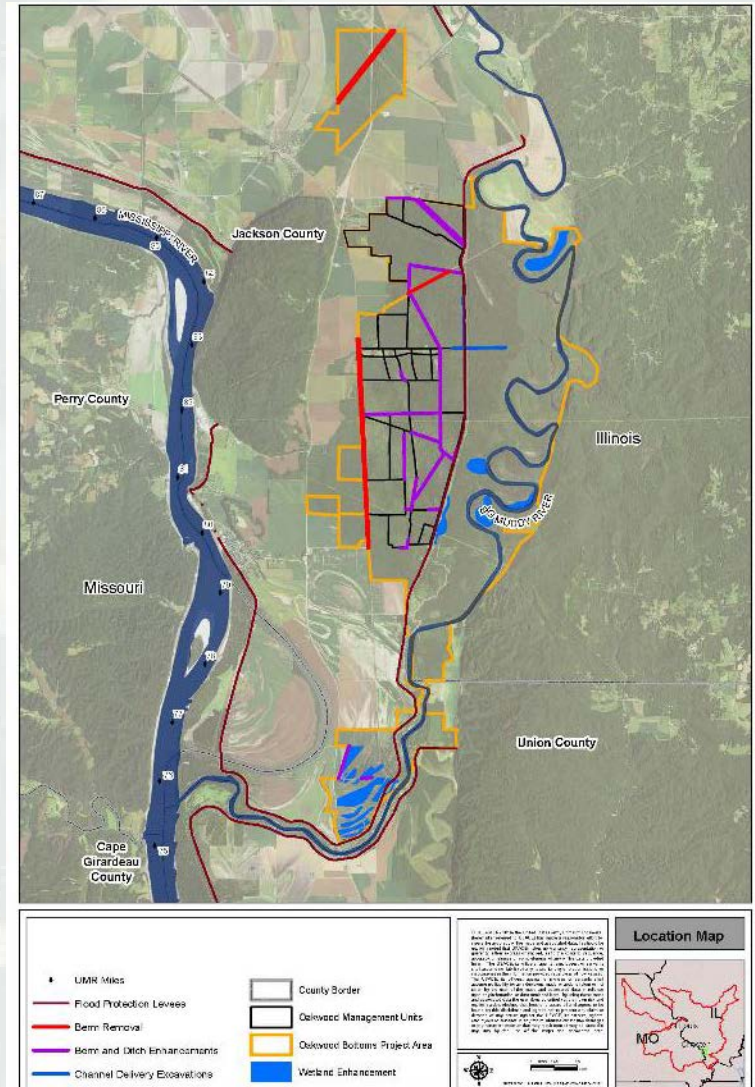
About the Site

- Sponsor: USFS
- Location: 13,500 Acres in the Middle Mississippi River Floodplain, River Miles 73-84, Jackson County, IL
- Important stopover, wintering, and breeding habitat for migratory wildlife
- One of the largest contiguous bottomland hardwood tracts with the MMR
- Wetland habitat
- 34 Management units
- Topographically consist of sloughs, oxbows, and berms and water delivery channels



Oakwood Bottoms

- Issues
 - Fragmented landscape (~34 units)
 - Modified Hydrology
 - Degraded forest community and habitat
 - Disconnected floodplain
 - Flood Protection Management Impacts
 - Inadequate water management capabilities
- Proposed Solutions (\$21m)
 - Replace undersized water control structures
 - Installation of pumps
 - Manipulation and optimization of existing berms and water delivery channels
 - Restoration of ridge and swale topography
 - Reforestation



Oakwood Bottoms

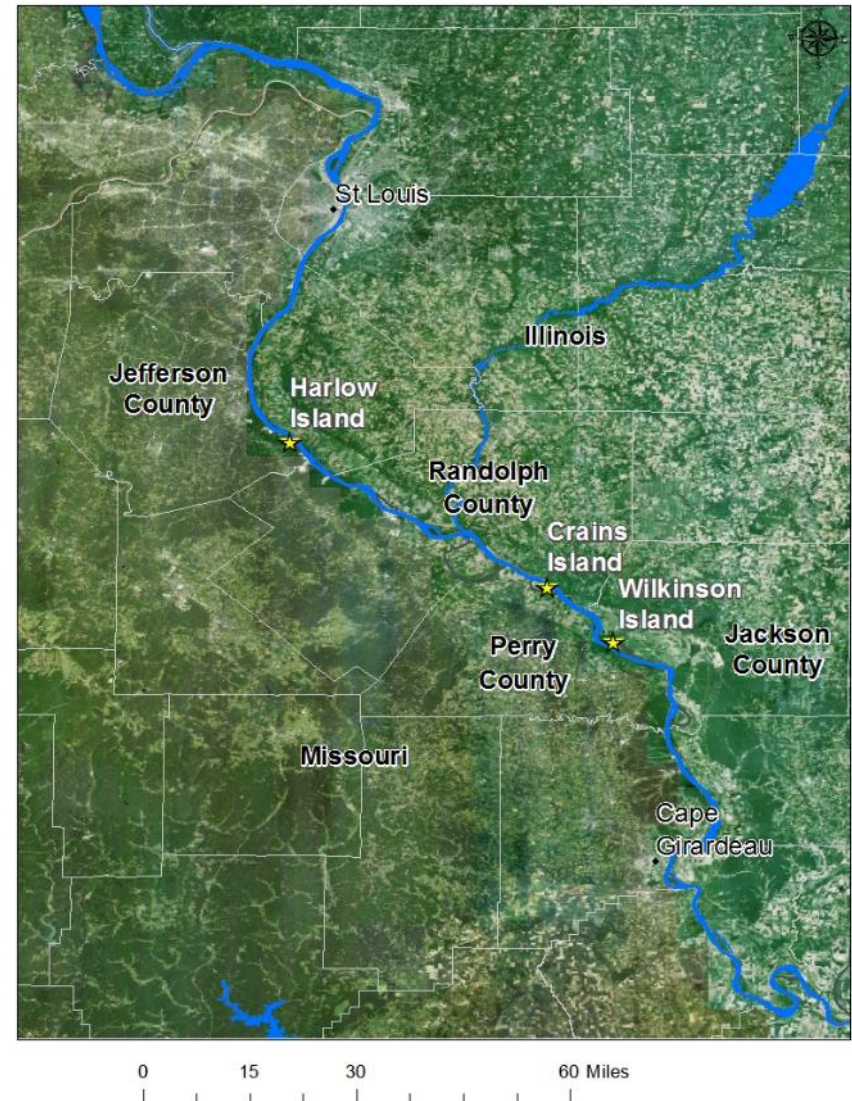
- Fact Sheet Approved 14 March 2016
- Feasibility Study Kick-off Fall 2016 (FY17)
- Feasibility Study Report Approved 2019



Harlow & Open River Islands

About the Site

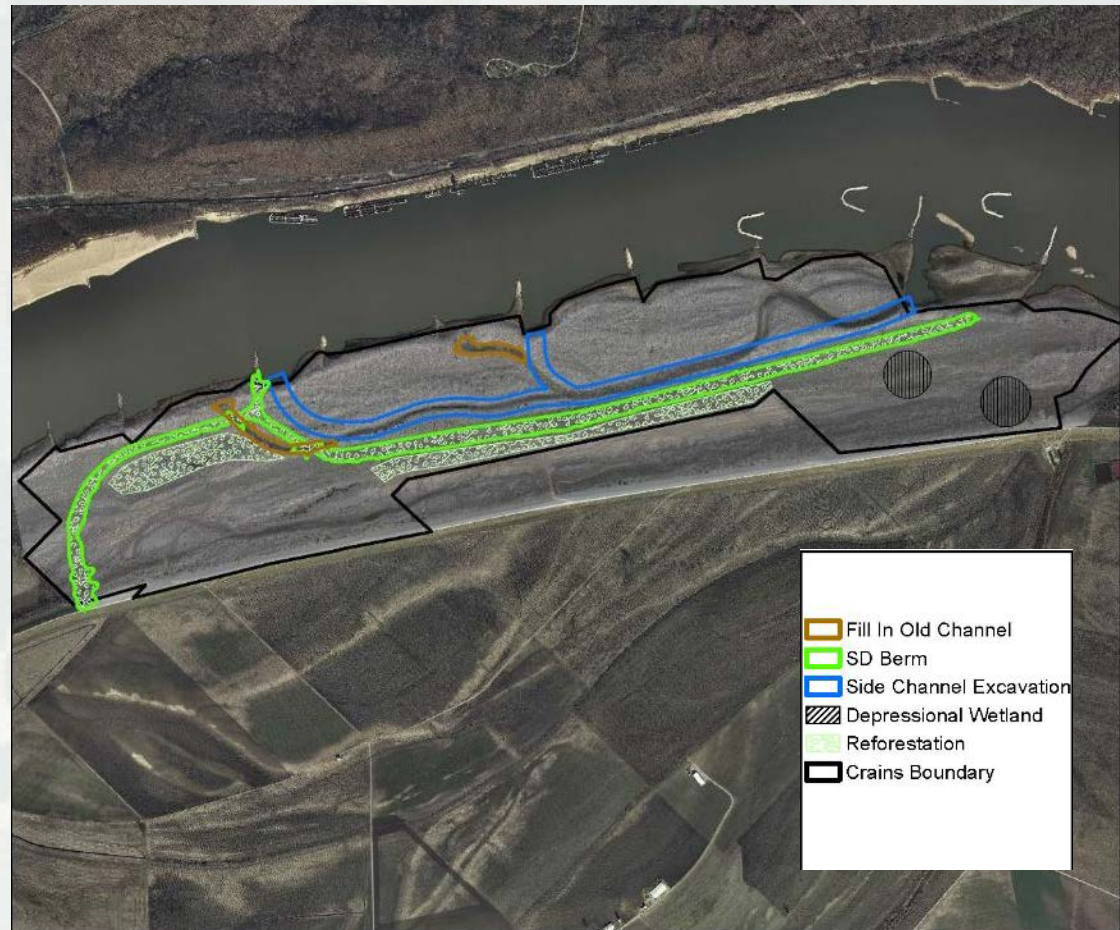
- Sponsor: USFWS
- Location: Middle Mississippi River, Illinois & Missouri
- 4,400 Acres, Three Islands (Harlow, Crains, Wilkinson)
- Formerly Agricultural lands
- Disconnected and restricted floodplain
- Successional forests of willows, cottonwood, and silver maple
- Disconnected side channel and back water habitats



Harlow & Open River Islands

Crains Island

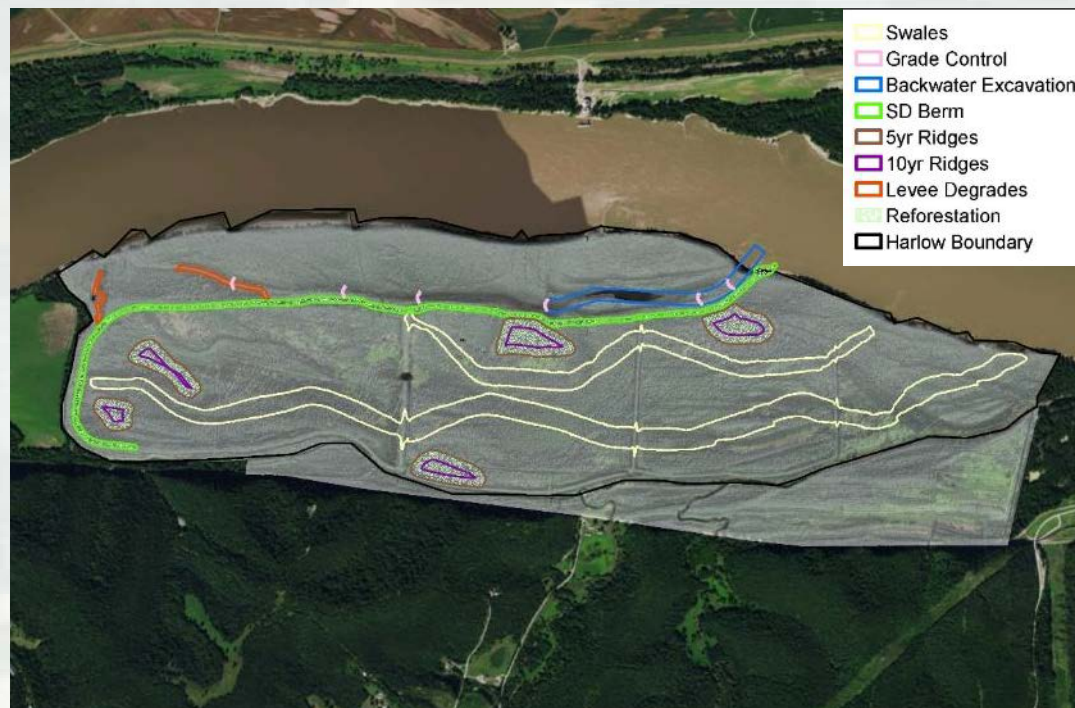
- Issues:
 - Disconnected Side Channel
 - Lack of Depth and Flow
 - Low diversity forest community and structure
- Proposed Solutions:
 - Dredging of side channel – widen and deepen
 - Beneficial use of dredge material – Sedimentation Deflection Berm
 - Reforestation
 - Build Depressional Wetlands



Harlow & Open River Islands

Harlow Island

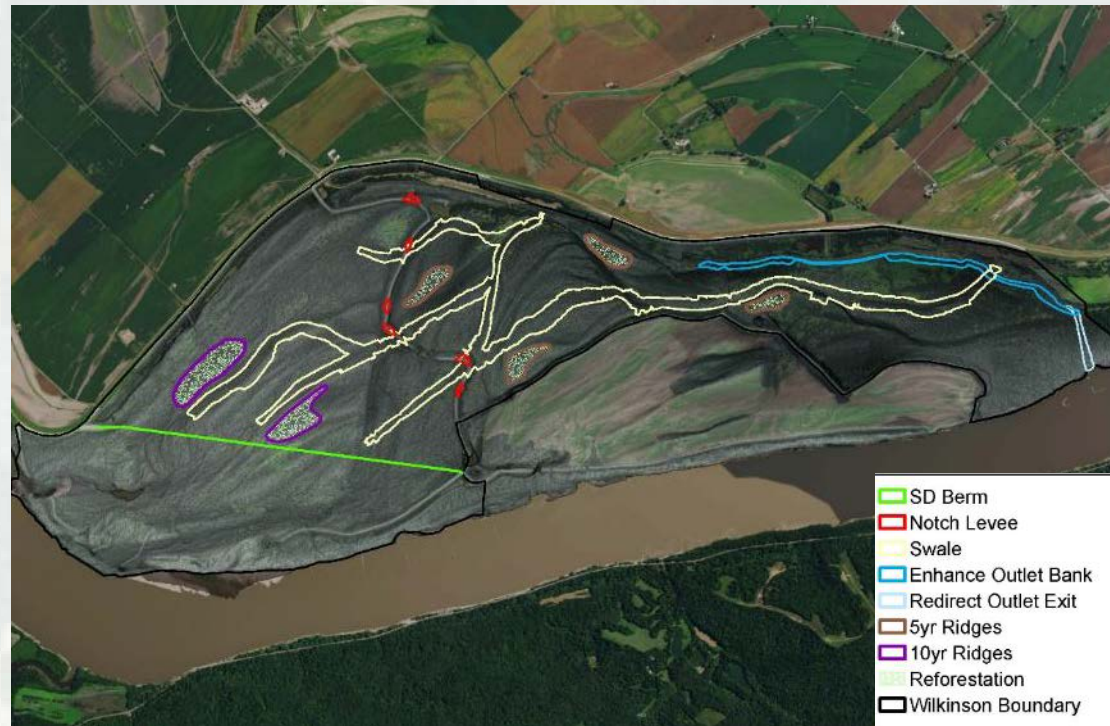
- Issues:
 - Lack of diversity in forest community and structure
 - Lack of topographical diversity
 - Disconnected backwater habitat
- Proposed Solutions:
 - Restore ridge and swale topography
 - Reforest
 - Remove restrictive ag. Levees
 - Reconnect backwater habitat
 - Build sedimentation deflection berm



Harlow & Open River Islands

Wilkinson Island

- Issues:
 - Lack of diversity in forest community and structure
 - Lack of topographical diversity
 - Disconnected back water habitat
- Proposed Solutions:
 - Restore ridge and swale topography
 - Reforest
 - Remove restrictive ag. Levees
 - Reconnect backwater habitat
 - Build sedimentation deflection berm



Harlow & Open River Islands



- FY 16
 - Developed Alternatives
 - Identified Tentatively Selected Plan (TSP)
 - Initiated Detail Design of TSP -Crains
- FY 17 Draft Reports -Crains, Harlow, Wilkinson
- FY 18 Final Reports- Crains, Harlow, Wilkinson
- FY 19 Plans & Specs – Crains

*All efforts are contingent upon Congressional Appropriation



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Projects in Design & Construction



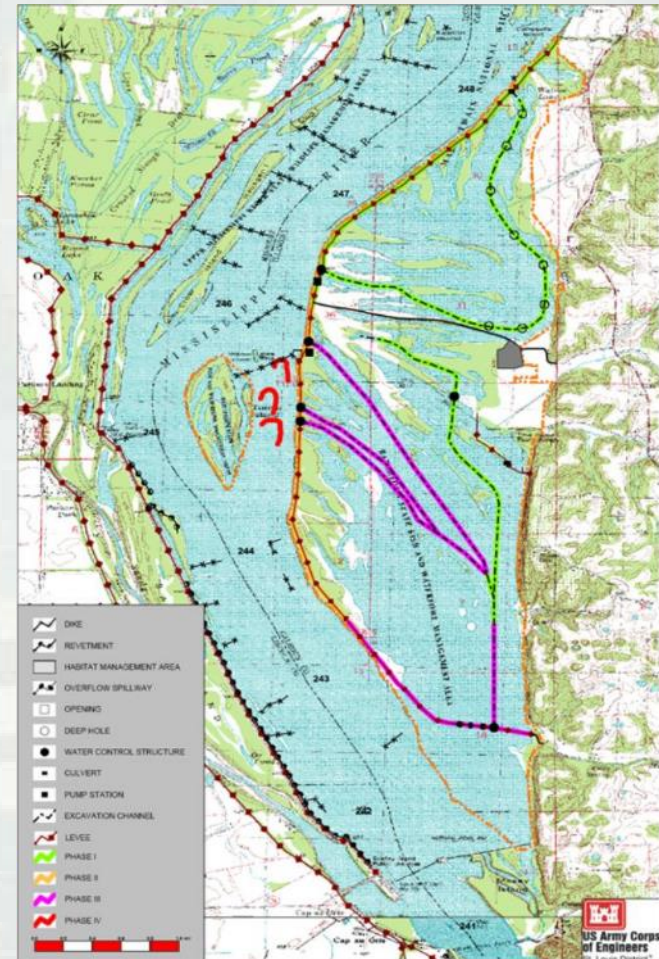
Batchtown

About the Site

- Sponsor: USFWS & ILDNR, Partnered with NRCS
- Location: 3327 Acres in Pool 25, Mississippi River Miles 242-248, Calhoun County, IL

Issues:

- High Rates of Sedimentation
- Fluctuating Water Levels
- Insufficient Overwintering Habitat
- Limited Water Control Capability
- Loss of Wetlands
- Degraded and Low Diversity Forest



Batchtown

Solutions

- Sedimentation Traps (NRCS)
- Interior Channel Excavation
- Sedimentation Deflection Berm
- New Water Control Structures
- River Training Structures
- Floating Pump Station
- Reforestation



Batchtown

- FY 16
 - Mechanical channel excavation
 - Obermeyer Gate Inspection
 - O&M Manual
 - Project Close-out



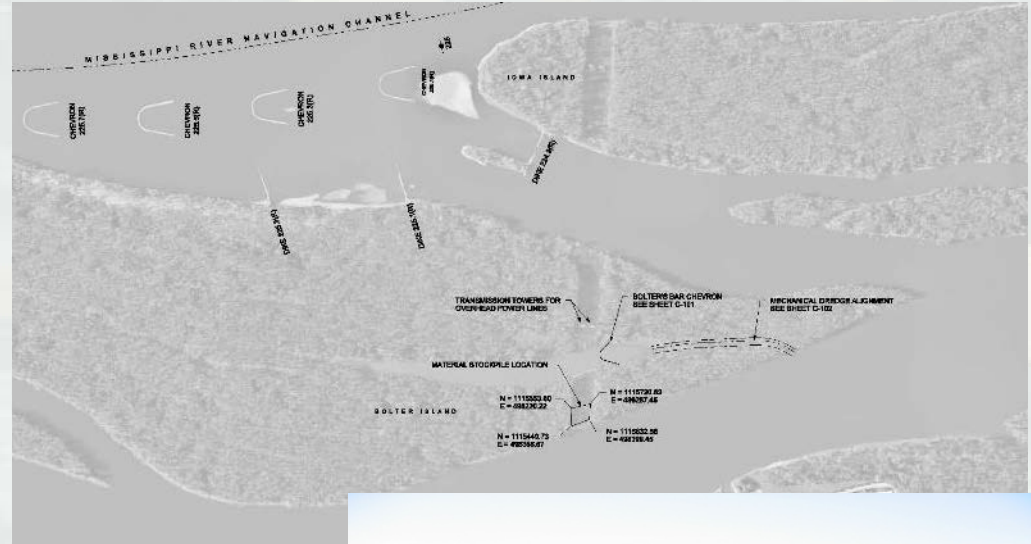
Pools 25 & 26 Islands

About the Site

- Sponsor: MDC
- Location: Westport Island Pool 25 & Dardenne Island Pool 26, Missouri
- 2026 Acres

Issues:

- Degraded hardmast forest
- Disconnected backwater habitat
- Sedimentation



Pools 25 & 26 Islands



Solutions

- Backwater reconnection
- Reforestation
- Overwintering habitat



Pools 25 & 26 Islands



FY 16

- Completed channel excavation
- Completed scouring Rock structure

FY 17

- O&M Manual
- Project Close-out



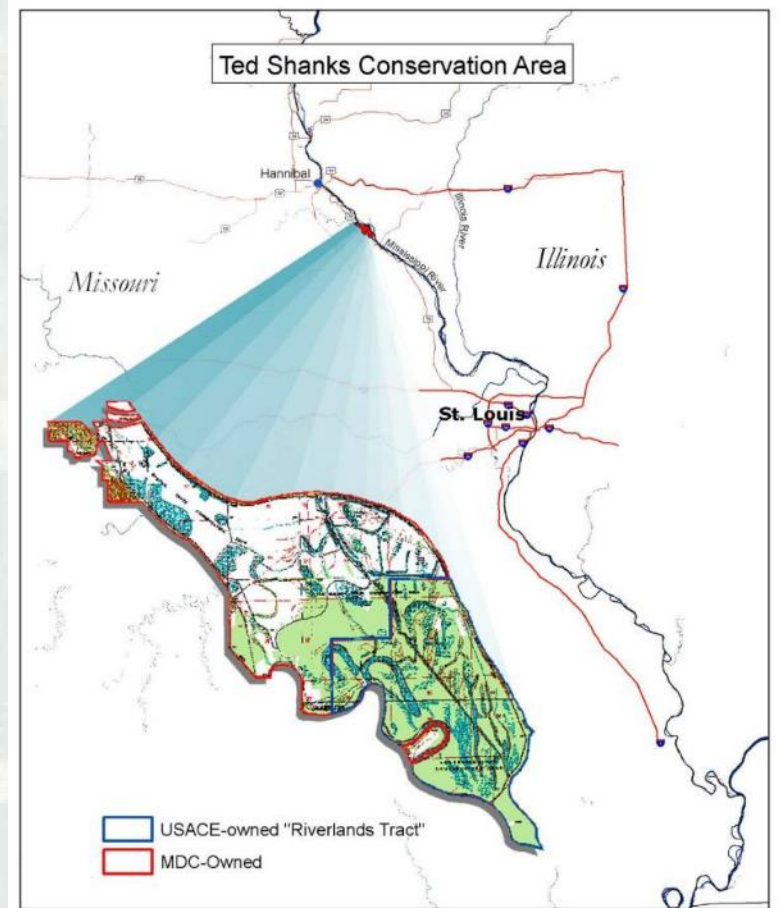
Ted Shanks CA

About the Site

- Sponsor: MDC
- Location: 2900 Acres in Pool 24, Mississippi River RM 284.5-288.5, Pike County, MO

Issues:

- Elevated ground water table
- Inability to manage water levels and drain water out - post flood ponding
- Forest decline, no regeneration, Habitat conversion to reed canary grass, invasive fish
- Loss of aquatic habitat diversity
- Sedimentation in Deadman's Slough



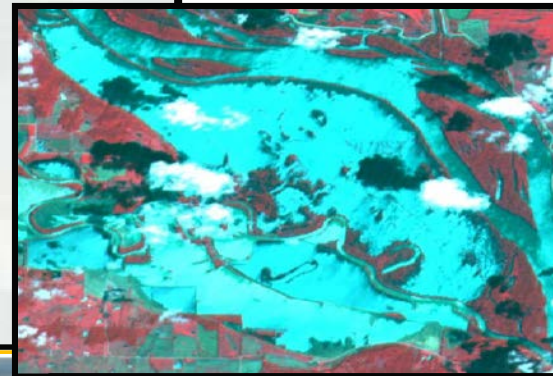
Ted Shanks CA

Solutions

- Improve water drainage, management, and supply
- Improve aquatic habitat
- Improve water drainage, management, and supply
- Increase in bottomland and floodplain forest
- Restore ecosystem functions by reconnecting the floodplain to the river through levee setbacks



Prior to 1993 flood



Inundating Floods



Tree mortality post flood



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Ted Shanks CA

FY 16

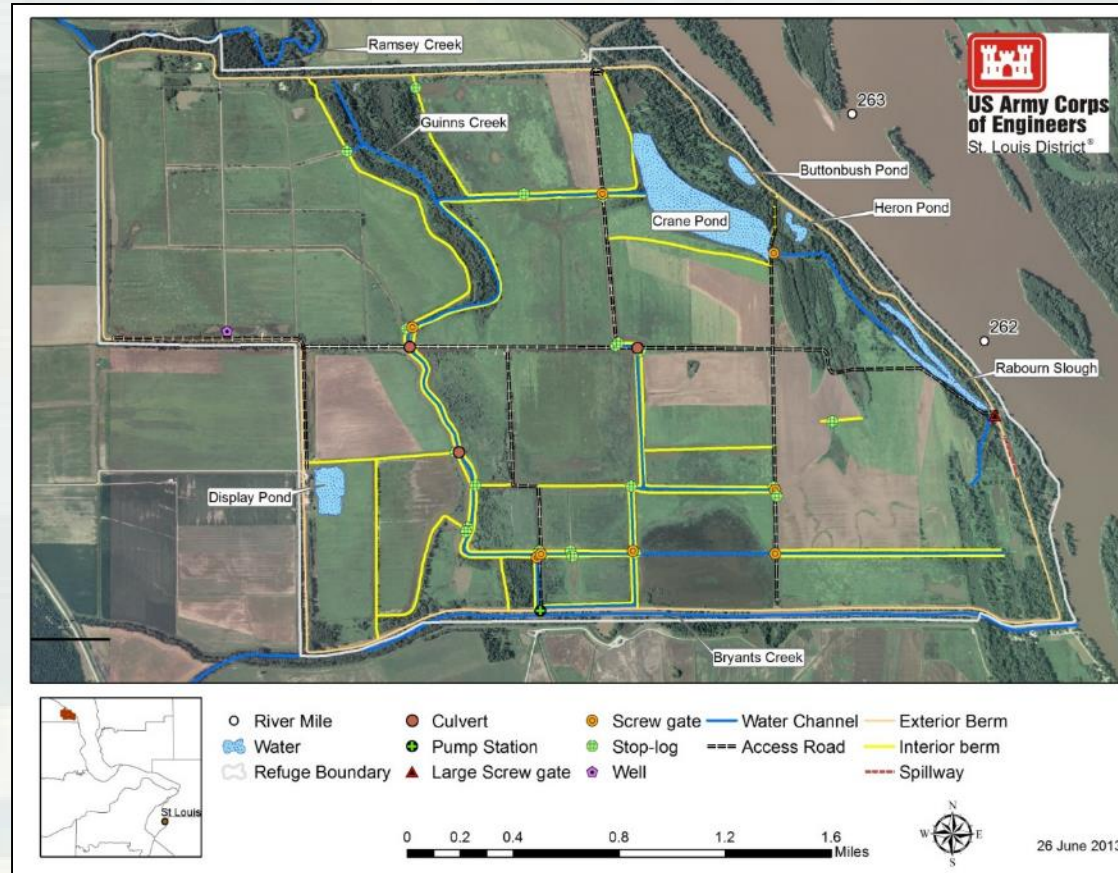
- Completed CW 2 Water control and interior berms
- Completed South Berm, and North Berm setback
- Completed SR1/ HL1
- Completed NS1, NS2, & DS1, CN1, CN3, and channel
- Pump Station Construction in Progress
- Deadman Slough in design
- O&M Manual



Clarence Cannon NWR, MO

About the Site

- Sponsor: USFWS
- Location: Mississippi River Pool 25, River Miles 261-263, Pike County, MO
- 3750 Acres
- 27 Moist-soil Management Units
- Bordered by Ramsey and Bryant's Creek with Guinns Creek within the refuge
- Formerly in Agricultural Production



Issues:

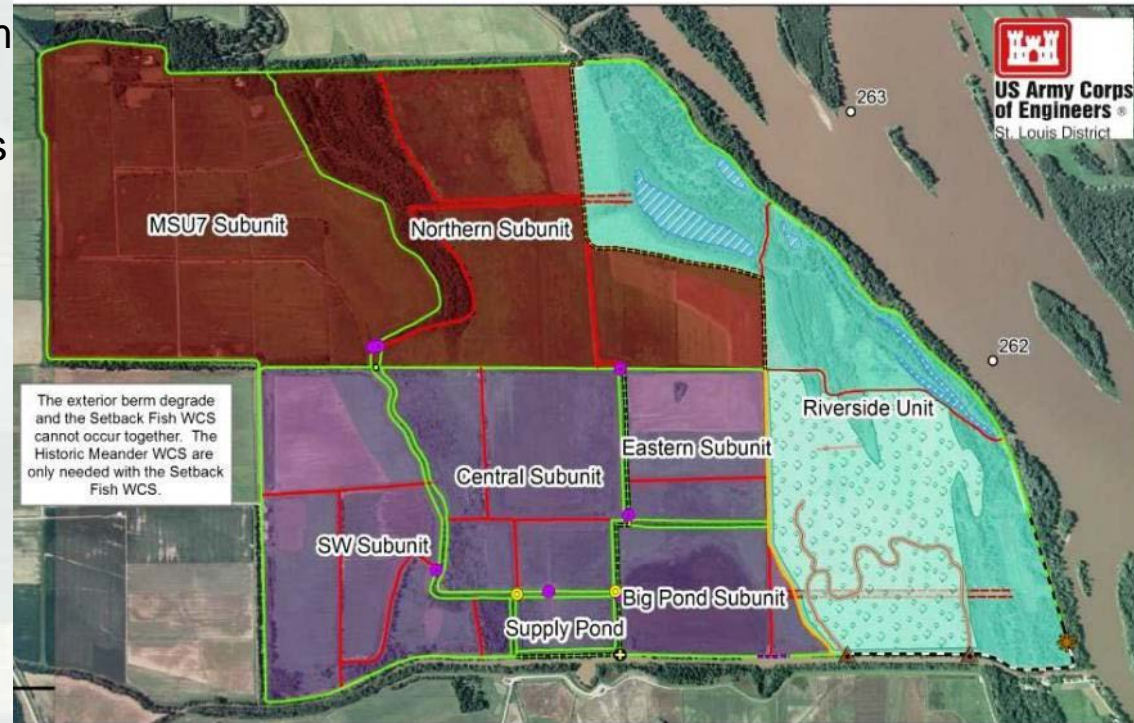
- Lack of floodplain connectivity
- Habitat fragmentation
- Loss of Floodplain topographic diversity and aquatic habitat
- Unnatural site water regime
- Loss of native wetland habitat (forested and emergent wetlands) and invasive species
- Undersized and inadequate water control structures



CCNWR

Solutions:

- Setback Berm with exterior berm degrade
- Restoration of historic meanders
- Riverside, North and South new interior management units
- Reforestation
- Pump Station



FY 16

- Plans & Specs: Gravity Drain, South Unit Water Control Structures (Award Sept 2016)



- Plans & Specs: Pump Station (Award 2nd Qtr 2017)



BUILDING STRONG®

Economic Related Activity

-91.1 million U.S. residents fished, hunted, or wildlife watched in 2011 and they spent \$145 billion on their activities (According to the National Survey of Hunting, Fishing, and Wildlife Associated Recreation – conducted every 5 years)

Our ecosystem restoration work helps conserve, maintain, and restore resource functions.



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