# Lessard-Sams Outdoor Heritage Council

Floodplain Forest Enhancement - Mississippi River, Phase 2

Laws of Minnesota 2016 Final Report

## General Information

**Date:** 08/14/2025

**Project Title:** Floodplain Forest Enhancement - Mississippi River, Phase 2

**Funds Recommended:** $412,000

**Legislative Citation:** ML 2016, Ch. 172, Art. 1, Sec. 2, Subd. 3(i)

**Appropriation Language:** $412,000 the second year is to the commissioner of natural resources for an agreement with the National Audubon Society to restore and enhance floodplain forest habitat for wildlife on public lands along the Mississippi River. A list of restorations and enhancements must be provided as part of the required accomplishment plan.

### Manager Information

**Manager's Name:** Jeffrey Butler
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### Location Information

**County Location(s):** Goodhue, Houston, Wabasha and Winona.

**Eco regions in which work will take place:**

Southeast Forest

**Activity types:**

Enhance

**Priority resources addressed by activity:**

Forest

# Narrative

## Summary of Accomplishments

Audubon successfully worked on enhancement projects within a diverse array of floodplain forest habitats. We completed work on 460 acres of floodplain forest land, which exceeds our original goal of 385 acres. Through phase two, tens of thousands of trees were planted, invasive species were managed, and quality trees were given more space to grow. Our partnerships with the US Fish and Wildlife and the US Army Corps of Engineers greatly increased our ability to produce deliverables through sharing resources, ideas, and best management practices. Outcomes varied by site, ranging from poor to excellent tree seedling survival.

## Process & Methods

Audubon's floodplain forest enhancement program was designed to help sustain and enhance floodplain forest along the Mississippi River and the lower ends of major tributaries. The existing forest is dominated by mature silver maple (Acer saccharinum) trees which are starting to die back and there are not enough young trees in the forest to replace them. The forest lacks young trees largely because of the regular flooding and the presence of reed canary grass (Phalaris arundinacea), an invasive grass that grows in thick mats and inhibits the germination and growth of tree seedlings. In addition to the loss of mature trees and the lack of young trees, forest diversity is also declining because of dutch elm disease and the emerald ash borer (Agrilus planipennis) which kill the older elm and ash that were once more common in these stands. These forests provide critical habitat for forest dependent birds but without active management they will continue to decline in quality and quantity over time.

Our program is focused on managing invasive species and regenerating a variety of tree and shrub species to improve bottomland forest habitat for birds. We prepared sites for planting or natural regeneration using herbicide, disking, or mowing. We planted bare root tree seedlings, cottonwood cuttings, or direct seeded trees including oaks and walnuts. We used tree tubes to protect trees from deer and voles; improved tree vigor and growth through selective thinning; and controlled weeds through herbicide treatments and mowing after planting. Our geographic scope included the Mississippi River from Hastings, MN to the Iowa border and the lower ends of major tributaries. Much of this land in SE Minnesota includes state forests, Wildlife Management Areas, or National Wildlife and Fish Refuge lands.
Our priorities were determined in cooperation with MN Department of Natural Resources, US Fish and Wildlife Service, and US Army Corps of Engineers. All projects were on public lands owned and managed by these agencies. Priorities were based on forest condition and threats, habitat needs, logistics, and access. Our goal was to manage invasive species long enough to establish young trees that will be the future forest canopy and maintain a diverse forest structure that benefits birds and other wildlife. Our objectives were designed to utilize a variety of enhancement tools, monitor the results, and apply that information to designing new projects.

A description of each project is provided below. For some sites additional work may be continued with Phase 3 and Phase 4 of our floodplain forest enhancement program.

Cannon River Bottoms / Collischan South (30 acres)
This project was postponed in 2016 due to high water. A contractor treated 30 acres with herbicide during late summer 2017, and then planted 5000 bare root (BR) silver maple seedlings and 2400 Root Production Method (RPM) seedlings of silver maple, Ohio buckeye, river birch, Kentucky coffee tree, tulip tree, black gum, and sycamore during fall 2017. The contractor planted an additional 4600 BR seedlings during spring 2018.

Reno Bottoms (60 acres)
At the north end of Reno Bottoms, a contractor girdled 162 trees and treated the cuts with herbicide. Patches of reed canary grass were treated with herbicide and re-seeded with Virginia and Canada wild rye. Hardwood trees

were planted to maintain existing quality forest. In November 2018 a contractor planted RPM 50 Swamp White Oak, 50 Kentucky Coffee Trees, and hand seeded 5 lbs. of button bush.

Richmond Island (10 acres)
At Richmond Island we reduced black locust density, and treated buckthorn and honeysuckle with herbicide in late 2017 and early 2018.

Root River (150 acres)
This project has multiple phases including herbicide treatments, site preparation, direct seeding, planting bare root seedlings, planting RPM trees, planting cottonwood cuttings, timber stand improvement and post treatment weed control.
In fall of 2018 we planted 200 swamp white oak bare root seedlings into mounds 1 ft. high and 2 ft. wide. We also planted 700 cottonwood cuttings, 550 swamp white oak RPM, an additional 1300 swamp white oak BR, 100 southern pin oak BR, and 50 bur oak BR. We also direct seeded 120 lbs. of swamp white oak acorns. In 2019 we planted 500 swamp white oak RPM trees. We also direct seeded silky dogwood, red dogwood, grey dogwood, nannyberry, and button bush. The Root River site will receive continued management in phase 3 and 4.

Wabasha Bottoms (100 acres)
We conducted a timber sale to enlarge gaps for tree planting. The harvest technique was used intentionally to create openings for tree planting and natural regeneration. In the fall of 2018, the openings were treated with herbicide. The gaps were planted with 2000 swamp white oak BR, 50 swamp white oak RPM, and 50 Kentucky coffee tree RPM. Unfortunately, spring flooding in 2019 killed the bare root seedlings and the Kentucky coffee trees. Within the southernmost harvested gaps, great silver maple regeneration was present, but did not persist.

Whalen (8 acres)
We completed multiple herbicide applications around trees planted in 2014 and 2015 to reduce competition with reed canary grass. We conducted site preparation for future plantings including mowing and disking. We collected cottonwood cuttings and planted 100 cottonwood spears. Unfortunately only 20% of the cottonwood planting survived, but the trees that did survive are 20 feet tall healthy Cottonwood. We speculated that our source population might not have been vigorous. By taking cuttings off the surviving cottonwood we hope to build a good source of strong trees thatwe can continue harvesting from in the future.

Whitewater DNR (16 acres)
We applied an herbicide treatment during the summer of 2016 but the fall of 2016 was too wet to do second herbicide treatment or to complete direct seeding. Herbicide was applied again during the summer/fall 2017. The area was direct seeded in spring 2018 with 6 bushels of Swamp white oak, 6 bushels bur oak, 3 bushel red oak, 3 bushel white oak, 3 bushels bitternut hickory, and 3 bushels of shagbark hickory.

## How did the program address habitats of significant value for wildlife species of greatest conservation need, threatened or endangered species, and/or list targeted species?

Floodplain forests are found in relatively narrow ribbons along river corridors and are therefore rare habitats compared to adjacent upland forests. They offer critical habitats and dispersal routes for wildlife. The Mississippi River, a critical migration corridor for birds, provides some of the most significant tracts of floodplain forest in the United States. In Minnesota, the Mississippi River and lower ends of tributaries include large areas of high biodiversity significance as identified by the Minnesota County Biological Survey. Studies by the US Geological Survey along the Upper Mississippi River have shown more species of songbirds use these floodplain forests than adjacent upland forests. This work is helping grow the floodplain forests of the future that will benefit many species of greatest conservation need, including obligate bottomland forest birds like the Prothonotary Warbler,

and numerous species that prefer large contiguous blocks of floodplain forest in migration and during the breeding season like Cerulean Warbler, and Red-shouldered Hawk. Our work will help ensure the long-term sustainability of floodplain forests along the Mississippi River.

## How did the program use science-based targeting that leveraged or expanded corridors and complexes, reduced fragmentation, or protected areas in the MN County Biological Survey.

The Upper Mississippi River Systemic Forest Stewardship plan prepared by the US Army Corps of Engineers and other partners in 2012 was used to guide restoration and enhancement strategies. This plan outlines the problem, urgency, and recommended actions to regenerate trees and sustain quality floodplain forest habitats. Through this grant our forestry program continued to enhance lands currently identified as floodplain forest by the Minnesota County Biological Survey while reducing current and future fragmentation threats.

## Explain Partners, Supporters, & Opposition

Major partners included the US Fish and Wildlife Service, US Army Corps of Engineers, Minnesota Department of Natural Resources, University of Minnesota, and University of Wisconsin – La Crosse. We are working together to conduct ongoing research and implement the Upper Mississippi River Systemic Forest Stewardship Plan which covers 300,000 acres along the Upper Mississippi River. The USFWS funds 50% of the salary for our full-time Forest Ecologist who is responsible for implementing these projects. In addition, the USFWS provides office space, vehicles and equipment, and in-kind staff time help to accomplish this work. The USACE and DNR provide guidance, management prescriptions, tree planting recommendations, and in-kind staff time to help plan and implement projects.

We are unaware of any opposition to these projects.

## Exceptional challenges, expectations, failures, opportunities, or unique aspects of program

The floodplain forests of the upper Mississippi river are very challenging places to manage due to unpredictable water levels, dense grass and forb competition, deer browse and limited access. We learned a great deal over the past phases of project work and have made strides in being able to better plan and implement effective projects. Our attempts to plant trees in mounds to mitigate the frequent flooding was unsuccessful but worth trying. We also learned that attempts to manage stands with timber sales are unlikely to be successful. We learned the value of utilizing management approaches that create bare soil conditions that allow for natural tree regeneration. Future projects will include efforts to replicate these conditions while native trees are dispersing seeds that, when achieved, allow for trees to naturally seed themselves into restoration sites.

## What other dedicated funds may collaborate with or contribute to this program?

N/A

## What is the plan to sustain and/or maintain this work after the Outdoor Heritage Funds are expended?

Project sites need to be monitored after trees are planted for evidence of weed competition and deer or rodent damage. In some cases follow up weed control or deer/mouse protection may be necessary. In other cases, flooding or other factors may cause a tree planting to fail and trees need to be replanted. Audubon is committed to monitoring these sites and addressing any issues that arise using funding from a variety of sources including private donors, foundations, and non-state grants.

Some maintenance is built into this OHF proposal for post treatment weed control in the latter years of the OHF appropriation. Funds from Floodplain Forest Enhancement - Mississippi River Phase 3 and Phase 4 may be used to

revisit these sites if further work is needed.  Minnesota DNR will complete follow-up maintenance on projects on state forest and lands and Wildlife Management Areas. When available, the US Fish and Wildlife Service and US Army Corps of Engineers will utilize staff and funding to maintain forestry management practices.

# Budget

## Totals

| Item | Requested | AP Amount | Spent | Leverage | Received Leverage | Leverage Source | Original Total | Final Total |
|---|---|---|---|---|---|---|---|---|
| Personnel | $89,000 | $89,000 | $89,200 | $86,000 | $86,000 | USFWS, private donors, foundation grants, private donors, foundation grants | $175,000 | - |
| Contracts | $164,000 | $229,300 | $229,300 | - | - | - | $164,000 | $229,300 |
| Fee Acquisition w/ PILT | - | - | - | - | - | - | - | - |
| Fee Acquisition w/o PILT | - | - | - | - | - | - | - | - |
| Easement Acquisition | - | - | - | - | - | - | - | - |
| Easement Stewardship | - | - | - | - | - | - | - | - |
| Travel | - | - | - | - | - | - | - | - |
| Professional Services | - | - | - | - | - | - | - | - |
| Direct Support Services | - | - | - | - | - | - | - | - |
| DNR Land Acquisition Costs | - | - | - | - | - | - | - | - |
| Capital Equipment | - | - | - | - | - | - | - | - |
| Other Equipment/Tools | - | - | - | - | - | - | - | - |
| Supplies/Materials | $159,000 | $93,700 | $36,100 | - | - | - | $159,000 | $36,100 |
| DNR IDP | - | - | - | - | - | - | - | - |
| **Grand Total** | **$412,000** | **$412,000** | **$354,600** | **$86,000** | **$86,000** | **-** | **$498,000** | **$440,600** |

## Personnel

| Position | Annual FTE | Years Working | Amount Spent | Leverage | Leverage Source | Total |
|---|---|---|---|---|---|---|
| Upper Miss River Program Manager - Audubon | 0.15 | 3.0 | $1,100 | $38,000 | private donors, foundation grants | $39,100 |
| Forest Ecologist - Audubon | 0.25 | 3.0 | $87,000 | $48,000 | USFWS, private donors, foundation grants | $135,000 |
| Administrative Assistant | 0.0 | 0.0 | $1,100 | - | - | $1,100 |

**Explain any budget challenges or successes:**

**Total Revenue:** $0

**Revenue Spent:** $0

**Revenue Balance:** $0

**Of the money disclosed above, what are the appropriate uses of the money:**

E. This is not applicable as there was no revenue generated.

# Output Tables

## Acres by Resource Type (Table 1)

| Type | Wetland (AP) | Wetland (Final) | Prairie (AP) | Prairie (Final) | Forest (AP) | Forest (Final) | Habitat (AP) | Habitat (Final) | Total Acres (AP) | Total Acres (Final) |
|---|---|---|---|---|---|---|---|---|---|---|
| Restore | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Protect in Fee with State PILT Liability | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Protect in Fee w/o State PILT Liability | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Protect in Easement | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Enhance | 0 | 0 | 0 | 0 | 385 | 460 | 0 | 0 | 385 | 460 |
| **Total** | **0** | **0** | **0** | **0** | **385** | **460** | **0** | **0** | **385** | **460** |

## Total Requested Funding by Resource Type (Table 2)

| Type | Wetland (AP) | Wetland (Final) | Prairie (AP) | Prairie (Final) | Forest (AP) | Forest (Final) | Habitat (AP) | Habitat (Final) | Total Funding (AP) | Total Funding (Final) |
|---|---|---|---|---|---|---|---|---|---|---|
| Restore | - | - | - | - | - | - | - | - | - | - |
| Protect in Fee with State PILT Liability | - | - | - | - | - | - | - | - | - | - |
| Protect in Fee w/o State PILT Liability | - | - | - | - | - | - | - | - | - | - |
| Protect in Easement | - | - | - | - | - | - | - | - | - | - |
| Enhance | - | - | - | - | $412,000 | $404,000 | - | - | $412,000 | $404,000 |
| **Total** | **-** | **-** | **-** | **-** | **$412,000** | **$404,000** | **-** | **-** | **$412,000** | **$404,000** |

## Acres within each Ecological Section (Table 3)

| Type | Metro / Urban (AP) | Metro / Urban (Final) | Forest / Prairie (AP) | Forest / Prairie (Final) | SE Forest (AP) | SE Forest (Final) | Prairie (AP) | Prairie (Final) | N. Forest (AP) | N. Forest (Final) | Total (AP) | Total (Final) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Restore | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Protect in Fee with State PILT Liability | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Protect in Fee w/o State PILT Liability | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Protect in Easement | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Enhance | 0 | 0 | 0 | 0 | 385 | 460 | 0 | 0 | 0 | 0 | 385 | 460 |
| **Total** | **0** | **0** | **0** | **0** | **385** | **460** | **0** | **0** | **0** | **0** | **385** | **460** |

## Total Requested Funding within each Ecological Section (Table 4)

| Type | Metro/ Urban (AP) | Metro/ Urban (Final) | Forest / Prairie (AP) | Forest / Prairie (Final) | SE Forest (AP) | SE Forest (Final) | Prairie (AP) | Prairie (Final) | N. Forest (AP) | N. Forest (Final) | Total (AP) | Total (Final) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Restore | - | - | - | - | - | - | - | - | - | - | - | - |
| Protect in Fee with State PILT Liability | - | - | - | - | - | - | - | - | - | - | - | - |
| Protect in Fee w/o State PILT Liability | - | - | - | - | - | - | - | - | - | - | - | - |
| Protect in Easement | - | - | - | - | - | - | - | - | - | - | - | - |
| Enhance | - | - | - | - | $412,000 | $404,000 | - | - | - | - | $412,000 | $404,000 |
| **Total** | **-** | **-** | **-** | **-** | **$412,000** | **$404,000** | **-** | **-** | **-** | **-** | **$412,000** | **$404,000** |

## Target Lake/Stream/River Feet or Miles

## Explain the success/shortage of acre goals

We were able to over deliver on acreage goals due mainly in part to our partnership with the US Fish and Wildlife as well as the Army Corp of Engineers. By utilizing our partners for on the ground conservation projects we were able to essentially achieve a $0 labor cost on some projects, particularly at Reno Bottoms.

# Outcomes

## Programs in southeast forest region:

Large corridors and complexes of biologically diverse wildlife habitat typical of the unglaciated region are restored and protected ~ *Using a variety of site preparation techniques, we direct seeded trees, planted bare root seedlings, and trees grown in a container. Once the seedlings and saplings have established themselves above the competing native and non-native vegetation, usually 5-10 years, a height of four to five feet, when the trees are considered big enough to make it (survive long enough to reach the canopy). Then the planting will be considered a success.Trees on the landscape are producing plenty of seed naturally, early successional species like willow, cottonwood, and river birch. We are working to better catch those seeds from nature.*

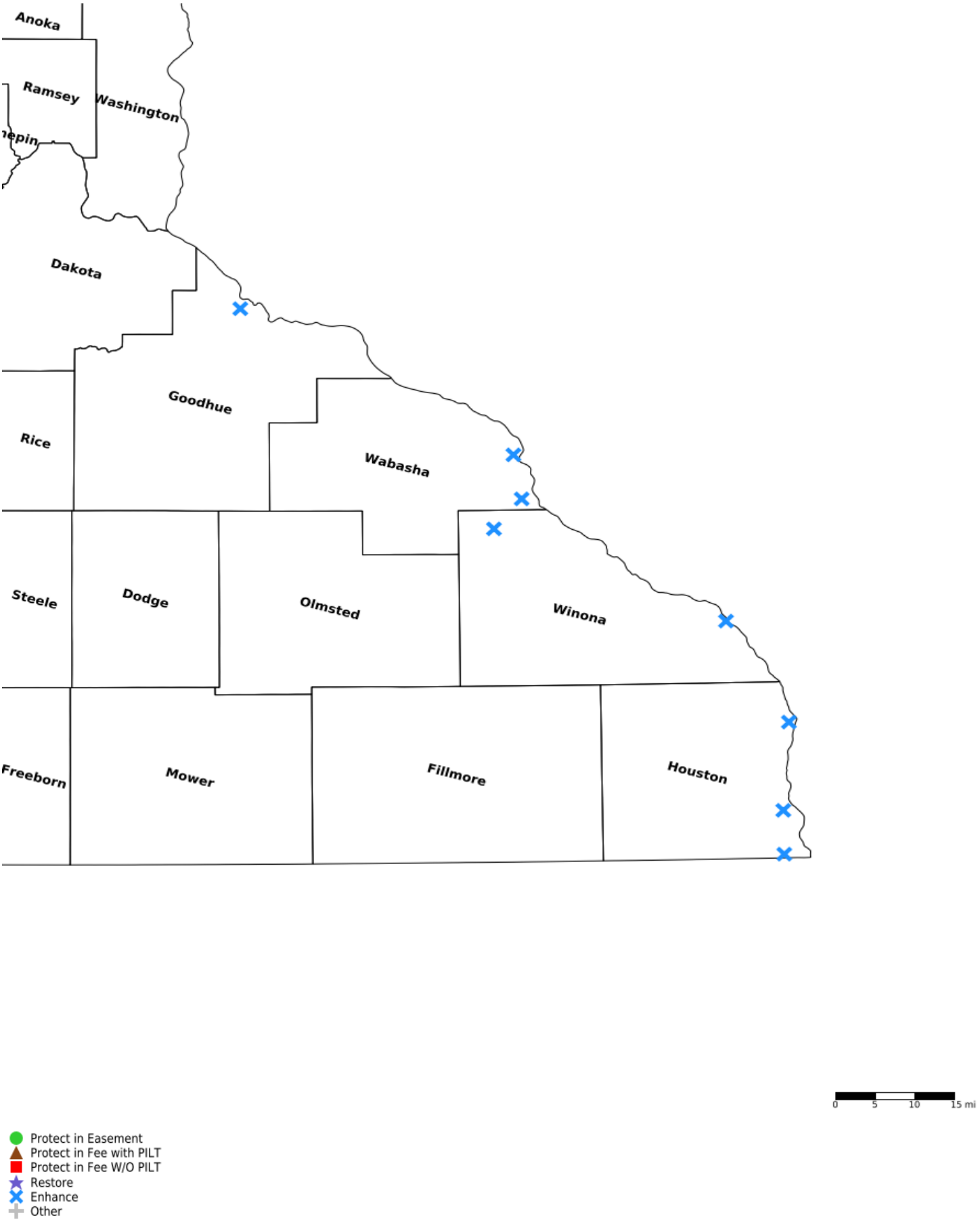
## Parcels

**Sign-up Criteria?**
No

### Restore / Enhance Parcels

| Name | County | TRDS | Acres | Est Cost | Existing Protection | Description |
|---|---|---|---|---|---|---|
| Cannon River Bottoms Collischan South | Goodhue | 11315216 | 22 | $55,900 | Yes | reed canary grass control and tree planting |
| Reno Bottoms | Houston | 10204235 | 60 | $3,000 | Yes | TSI, reed canary spot treatment, direct seeding |
| Richmond Island | Houston | 10605222 | 10 | $7,900 | Yes | reed canary grass control, timber stand improvement |
| Root River | Houston | 10404236 | 153 | $120,600 | Yes | 40 acres reed canary grass control and tree planting and 75 acres of TSI |
| Whalen Tract | Houston | 10104235 | 8 | $8,900 | Yes | reed canary grass control and tree planting |
| Wabasha Prairie Bottoms | Wabasha | 11009230 | 146 | $60,400 | Yes | timber stand improvement with buckthorn control |
| Whitewater River Delta | Wabasha | 10909229 | 45 | $31,400 | Yes | reed canary grass control and tree planting on 10 acres, timber stand improvement on 30 acre |
| Whitewater DNR | Winona | 10810214 | 16 | $34,900 | Yes | direct seeding |

# Parcel Map


Anoka
Ramsey
Washington
Dakota
Goodhue
Rice
Wabasha
Steele
Dodge
Olmsted
Winona
Freeborn
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Restore
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