



## Lessard-Sams Outdoor Heritage Council

Pine River Fish Passage Project 2020

Laws of Minnesota 2019 Final Report

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### General Information

**Date:** 07/19/2024

**Project Title:** Pine River Fish Passage Project 2020

**Funds Recommended:** \$1,246,000

**Legislative Citation:** ML 2019, 1st Sp. Session, Ch. 2, Art. 1, Sec. 2, subd. 5(k)

**Appropriation Language:** \$1,246,000 the first year is to the commissioner of natural resources for an agreement with the Crow Wing Soil and Water Conservation District to restore and enhance riverine habitat in the Pine River and provide fish passage by removing dams and modifying and installing structures.

### Manager Information

**Manager's Name:** Beth Hippert

**Title:**

**Organization:** Crow Wing Soil and Water Conservation District

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### Location Information

**County Location(s):** Crow Wing.

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

- Northern Forest

**Activity types:**

- Restore
- Enhance

**Priority resources addressed by activity:**

- Habitat

## Narrative

### Summary of Accomplishments

The Crow Wing Soil and Water Conservation District (SWCD) partnered with the Minnesota Department of Natural Resources (MN DNR), Crow Wing County (CWC), Technical Service Area VIII (TSA8), Big Pine Lake Association, the City of Crosslake, and the Crosslake Army Corps to construct five-rock riffle structures that added 40,000 square feet of key spawning habitat for walleye, smallmouth bass, shorthead, greater redhorse, and several minnow species plus restore access to the 15 lakes upstream.

### Process & Methods

In 2019, the CWC and Crow Wing SWCD established an agreement to spell out the working arrangement for this project. The CWC served as fiscal agent, and the SWCD as project and grant manager. In the Fall of 2019, the Crow Wing SWCD awarded the construction contract to the Minnesota Natives Landscape. The construction began in January 2020. The contractor installed sheet piling and box culverts to diverge the water so they could remove the old dam and start to work on the rock weir structures. As designed, the contractor installed five weirs across the Pine River. The rock riffle structure consists of a series of which includes five rock weirs placed 40 feet apart, each of which is 0.8 feet lower than the rock weir upstream and composed of 4-foot diameter footer boulders, 3-foot diameter weir boulders, varies sized rock less than 24" in diameter, and geotextile filter fabric. Low flow and fish passage are maintained with a 21-foot wide minimum, 1-foot-deep spillway along the centerline of the Pine River. The rock riffle structure was designed to maintain Big Pine Lake pool elevation between elevations and flow rates. The pool elevation of the 100-year flow rate of 3,110 cubic feet per second (cfs) was checked. A walkway along the west bank, just above the height of the weir boulders, provides increased floodplain and portage for paddlers. All five rock weirs were installed by April 2020. The engineer and contractor signed the final payout in the fall of 2020.

The SWCD partnered with CWC to add an area for equipment access adjacent to the stairs. The Crow Wing County Highway Department is responsible for removing bogs detached from Big Pine Lake and floating down, which can cause problems to the rock weir structures. This was installed in the fall of 2022.

The SWCD partnered with the MN DNR to develop plans for a more permanent walking area that would not cause erosion to the rock weirs and plant additional native plants along the walkway. The final installation of this project was established in June 2023. The SWCD also hired a contractor to help maintain the native vegetation until the vegetation is fully established.

#### Project Outreach/Communication:

The project started with a groundbreaking ceremony of the local government units and state, federal, and local partners. After the project's completion, the SWCD hosted several project tours of elected officials and county and state employees.

An interpretive sign showcasing the project's success and partnership was installed at the site in the summer of 2020.

The Crow Wing SWCD developed a YouTube video to showcase the project from start to finish. See the link below:

<https://www.youtube.com/watch?v=yQtw8eGtZKQ>

The Board of Water Soil Resources developed a snapshot story about the project:

<https://bwsr.state.mn.us/sites/default/files/2020-11/Snapshot%20Story%201%20November%202020%20TSA8%20Pine%20River%2>

## **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?**

This project increased fish migration for walleye and smallmouth bass by 12 miles. Fish from the Mississippi River can swim up to 15 additional lakes within the City of Crosslake Area including, O'Brien and Goodrich Lake. These rock weir structures increased habitat for the threatened pugnose shiner and four species of special concern — the least darter, greater redhorse, black sandshell mussel, and creek heel splitter mussel.

## **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.**

Increased spawning habitat and Pine Lake, listed as a Biologically Significant Lake for Outstanding Plant Community, is located one mile upstream, expanding on resources needed to reach that goal and increasing diversity and populations of state-listed fish species: horneyhead chub, a sensitive species, pugnose shiner a state threatened species, and least darter, a species of special concern. Stream health is also closely linked to land use changes. Forested lands cover 56% of this watershed (HUC 12). It has been well documented that stream health declines when cover dips below 50% (Verry. The Hydrology of Minor Watersheds. 2016). Along a mile-long corridor of this project area, forest cover is 100 percent, which will help rebuild stream health and recovery of all sensitive species. These ecologically diverse public-owned lands are sustainably managed for timber production (FSC and FSI certified). The woodland buffer provides near riparian habitat and shade for fish, game, wildlife, and tree-lined paddling corridors (2017 MN 97A.056). The adjacent land is also linked to more than 4000 acres (8 sq mi) of unbroken connections between woodlands, open prairies, and wetlands. Restoring fish passage maximizes the equity in these lands, expanding ecological health and functional benefits to protected riparian upland, wetland complexes, and shallow and deep lake systems.

## **Explain Partners, Supporters, & Opposition**

See a list of partners and roles:

CWC-Owner of the Dam and fiscal agent for the project. Responsible for long-term maintenance of the dam through the property assessment fee.

Big Pine Lake Association-communication to the lake association about the project. Individual properties are assessed yearly to maintain the dam.

MN DNR-access road to the project is School Trust Lands, Dam Safety approved the Design, Waters-approved permit to do the work, and fisheries helped with design oversight and communication with the DNR.

Crosslake Army Corps controls the water level from Crosslake, which affects the Pine River flowage.

The City of Crosslake allowed all the rocks to be hauled on their road.

TSA8-engineering and construction oversight of the project.

SWCD-project manager and grant manager

The SWCD developed this partnership in 2016-2017 throughout the project's planning stage.

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

This was an extremely complex project with all the federal and state partners. The permitting was challenging, as was working on the MN Dam Safety and Waters permits. We also had some challenges accessing the site through the School Trust Fund land. It was difficult to time the project with the Crosslake Army Corps Engineer's Dam. The construction started right before COVID-19 hit Minnesota. We were very fortunate that the project could keep progressing and finished in April 2020 before more COVID restrictions were added. The contractor did an excellent job with the construction. The public was so engaged in the project that we had difficulty keeping the public out of the construction area. We could not have done this project without our partners and community support. This is a great project, and the partners are very happy with the project outcomes.

### 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?

The CWC will continue to assess the Big Pine Residents for rock weir maintenance in perpetuity. The CWC is responsible for hiring a contractor to repair the rock weir or remove any bogs from the river. The CWC has a separate account. The funds go directly into maintaining the rock weir structure. The SWCD will advise the CWC of any needed fixes or remediation for the project.

### Actions to Maintain Project Outcomes

| Year | Source of Funds                     | Step 1       | Step 2                              | Step 3  |
|------|-------------------------------------|--------------|-------------------------------------|---|
| 2024 | SWCD One Year Project Inspection    | Inspect Site | Follow Up with CWC if needed repair | CWC will hire contractor if needed to fix the issue |
| 2029 | SWCD Five Year Project Inspection   | Inspect Site | Follow Up with CWC if needed repair | CWC will hire contractor if needed to fix the issue |
| 3031 | SWCD Nine Year Project Inspection   | Inspect Site | Follow up with CWC if needed repair | CWC will hire contractor if needed to fix the issue |
| 2025 | SWCD Second Year Project Inspection | Inspect Site | Follow up with CWC if needed repair | CWC will hire contractor if needed to fix the issue |

## Budget

### Totals

| Item                       | Requested          | AP Amount          | Spent              | Leverage        | Received Leverage | Leverage Source                         | Original Total     | Final Total        |
|----------------------------|--------------------|--------------------|--------------------|-----------------|-------------------|---|--------------------|--------------------|
| Personnel                  | \$70,000           | \$65,000           | \$58,000           | -               | -                 | -                                       | \$70,000           | \$58,000           |
| Contracts                  | \$1,123,000        | \$1,073,000        | \$1,070,700        | \$75,000        | \$75,000          | Big Pine Lake Subordinate District Fund | \$1,198,000        | \$1,145,700        |
| Fee Acquisition w/ PILT    | -                  | -                  | -                  | -               | -                 | -                                       | -                  | -                  |
| Fee Acquisition w/o PILT   | -                  | -                  | -                  | -               | -                 | -                                       | -                  | -                  |
| Easement Acquisition       | -                  | -                  | -                  | -               | -                 | -                                       | -                  | -                  |
| Easement Stewardship       | -                  | -                  | -                  | -               | -                 | -                                       | -                  | -                  |
| Travel                     | \$3,000            | \$8,000            | \$3,300            | -               | -                 | -                                       | \$3,000            | \$3,300            |
| Professional Services      | \$45,000           | \$95,000           | \$87,800           | -               | -                 | -                                       | \$45,000           | \$87,800           |
| Direct Support Services    | -                  | -                  | -                  | -               | -                 | -                                       | -                  | -                  |
| DNR Land Acquisition Costs | -                  | -                  | -                  | -               | -                 | -                                       | -                  | -                  |
| Capital Equipment          | -                  | -                  | -                  | -               | -                 | -                                       | -                  | -                  |
| Other Equipment/Tools      | -                  | -                  | -                  | -               | -                 | -                                       | -                  | -                  |
| Supplies/Materials         | \$5,000            | \$5,000            | \$3,700            | -               | -                 | -                                       | \$5,000            | \$3,700            |
| DNR IDP                    | -                  | -                  | -                  | -               | -                 | -                                       | -                  | -                  |
| <b>Grand Total</b>         | <b>\$1,246,000</b> | <b>\$1,246,000</b> | <b>\$1,223,500</b> | <b>\$75,000</b> | <b>\$75,000</b>   | <b>-</b>                                | <b>\$1,321,000</b> | <b>\$1,298,500</b> |

### Personnel

| Position              | Annual FTE | Years Working | Amount Spent | Leverage | Leverage Source | Total    |
|-----------------------|------------|---------------|--------------|----------|-----------------|----------|
| Project manager       | 0.5        | 4.0           | \$48,000     | -        | -               | \$48,000 |
| Fiscal administration | 0.1        | 4.0           | \$10,000     | -        | -               | \$10,000 |

### Explain any budget challenges or successes:

Overall, we stayed on track with the budgeting. We made a few amendments to move more funds toward the project costs, but overall, we stayed on budget and on track for the grant goals.

**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              | 1            | 1               | 1                | 1                   |
| 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               | 0           | 0              | 1            | 1               | 1                | 1                   |
| <b>Total</b>                             | <b>0</b>     | <b>0</b>        | <b>0</b>     | <b>0</b>        | <b>0</b>    | <b>0</b>       | <b>2</b>     | <b>2</b>        | <b>2</b>         | <b>2</b>            |

**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                                  | -            | -               | -            | -               | -           | -              | \$1,200,000        | \$1,178,200        | \$1,200,000        | \$1,178,200           |
| Protect in Fee with State PILT Liability | -            | -               | -            | -               | -           | -              | -                  | -                  | -                  | -                     |
| Protect in Fee w/o State PILT Liability  | -            | -               | -            | -               | -           | -              | -                  | -                  | -                  | -                     |
| Protect in Easement                      | -            | -               | -            | -               | -           | -              | -                  | -                  | -                  | -                     |
| Enhance                                  | -            | -               | -            | -               | -           | -              | \$46,000           | \$45,300           | \$46,000           | \$45,300              |
| <b>Total</b>                             | <b>-</b>     | <b>-</b>        | <b>-</b>     | <b>-</b>        | <b>-</b>    | <b>-</b>       | <b>\$1,246,000</b> | <b>\$1,223,500</b> | <b>\$1,246,000</b> | <b>\$1,223,500</b>    |

**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               | 1              | 1                 | 1          | 1             |
| 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                        | 0              | 0                 | 0            | 0               | 1              | 1                 | 1          | 1             |
| <b>Total</b>                             | <b>0</b>           | <b>0</b>              | <b>0</b>              | <b>0</b>                 | <b>0</b>       | <b>0</b>          | <b>0</b>     | <b>0</b>        | <b>2</b>       | <b>2</b>          | <b>2</b>   | <b>2</b>      |

## 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                                  | -                  | -                     | -                     | -                        | -              | -                 | -            | -               | \$1,200,000        | \$1,178,200        | \$1,200,000        | \$1,178,200        |
| Protect in Fee with State PILT Liability | -                  | -                     | -                     | -                        | -              | -                 | -            | -               | -                  | -                  | -                  | -                  |
| Protect in Fee w/o State PILT Liability  | -                  | -                     | -                     | -                        | -              | -                 | -            | -               | -                  | -                  | -                  | -                  |
| Protect in Easement                      | -                  | -                     | -                     | -                        | -              | -                 | -            | -               | -                  | -                  | -                  | -                  |
| Enhance                                  | -                  | -                     | -                     | -                        | -              | -                 | -            | -               | \$46,000           | \$45,300           | \$46,000           | \$45,300           |
| <b>Total</b>                             | -                  | -                     | -                     | -                        | -              | -                 | -            | -               | <b>\$1,246,000</b> | <b>\$1,223,500</b> | <b>\$1,246,000</b> | <b>\$1,223,500</b> |

## Target Lake/Stream/River Feet or Miles

12

## Explain the success/shortage of acre goals

The arch rock rifle structures allow fish to swim from the confluence of the Pine River and Mississippi River up past the old rock dam to 15 lakes. This connects 15 lakes to the Pine River and Mississippi River confluence. The rock rifle structure also connects fish to Big Pine Lake a Minnesota DNR Biologically Significant Lake for Outstanding Plant Community. We anticipate increased pugnose shiner and least darter habitat and spawning habitat along the rock riffles structures. The rock riffles also prevent wider channels and erosion on the Crow Wing County land.

## Outcomes

### Programs in the northern forest region:

- Healthy populations of endangered, threatened, and special concern species as well as more common species ~ *The MN DNR and MPCA do watershed-based fish assessments. We will utilize the data from the following IBI fish assessment to indicate the overall fish IBI score as our long-term measurable outcome.*

## Parcels

### Sign-up Criteria?

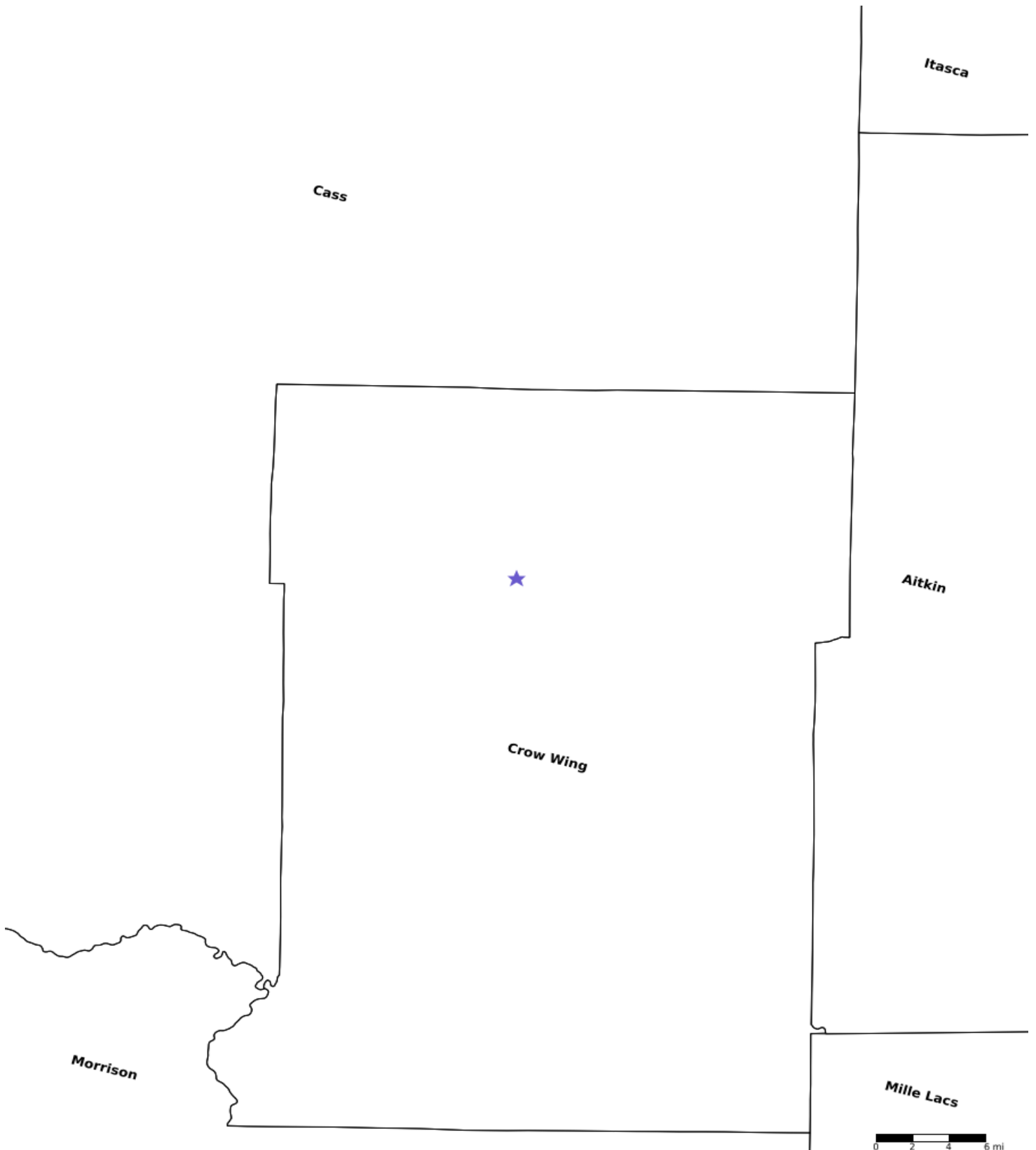
No

### Restore / Enhance Parcels

| Name                                 | County    | TRDS     | Acres | Est Cost    | Existing Protection | Description  |
|--------------------------------------|-----------|----------|-------|-------------|---------------------|--|
| Pine River Fish Passage Project 2020 | Crow Wing | 13727233 | 1     | \$1,321,000 | Yes                 | Restore fish passage to blocked aquatic corridor on the Pine River. Replace existing dam with 5 rock riffle structures and restore native vegetation above channel |



## Parcel Map



- Protect in Easement
- ▲ Protect in Fee with PILT
- Protect in Fee W/O PILT
- ★ Restore
- ✕ Enhance
- ✚ Other