



Lessard-Sams Outdoor Heritage Council

Laws of Minnesota 2019 Accomplishment Plan

General Information

Date: 10/19/2020

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

Abstract

The future of three state listed fish are at risk in 30 miles of the lower Pine River between Crosslake and the confluence of the Mississippi. IBI scores indicate a dam, in place since 1970, is affecting these populations. The dam blocks them from migrating to essential habitats and has degraded spawning substrate. Results of 2012 MPCA sampling on the river indicate these populations may be absent upstream of the dam. This project will reverse the affects and support fishery goals. It will reopen fish passage to interdependent communities in feeder streams and shallow and deep water habitats.

Design and Scope of Work

Two issues are at hand; one is the threat the rock dam structure has on the health and diversity of aquatic organisms and migratory fish in the Pine River, Big Pine Lake, and upstream waters; and second is the fragile condition of the dam structure. The proposed design solves both issues; reconnect up and downstream communities and remove the dam. A series of five rock riffle structures will be installed in 40 ft intervals along the stream channel at a slope and depth that will effectively restore connectivity and stability. The design is based off a natural channel design method pioneered by Dave Rosgen P.H., Ph.D. and successfully tested on 17 dam replacement projects by DNR Division of Ecological Resources Stream Habitat Program. Based on current research the effects of barriers on aquatic biodiversity and fish distributions up and downstream of dams are clear. A DNR study evaluating 32 barrier dams on mainstem or tributaries of Minnesota rivers showed on average, the number of species declined 41% (MNDNR Barrier Effects on Native Fishes of Minnesota. 2015). Furthermore, intolerant, stream-dependent, imperiled species were the most likely to be absent upstream of barriers. Findings of a 2012 Minnesota Pollution Control survey of the Pine indicated sensitive populations above the dam are declining. Although this reach passed the Fish Index of Biological Integrity, the score was low. Comparatively, the downstream reach scored good and supported a diverse fish community, including greater redhorse a sensitive species, and two rare species, the pugnose shiner a state threatened species, and the least darter, a species of special concern. Pugnose and least darter utilize habitat in slow moving streams and lakes. Habitat loss and degradation are the greatest threats to least darter populations (MNDNR). Big Pine Lake, located upstream of the rock dam is listed as a Biological Significant Lake for Outstanding Plant Community (MNDNR). Reconnecting this downstream stretch with upstream habitat in Big Pine Lake will open up spawning habitat for this species, as well as associated aquatic organisms and fish dependent on diverse aquatic plant communities. The dam is 48 years old and riddled with leaks despite regular maintenance. The design life of a typical dam is 50 years (Powers 2005). Dam failures are often precluded by seepages which increase and eventually cause the dam to fail. The effects would be devastating, drawing down over 400 acres of Big Pine Lake impacting acres of high quality vegetation and aquatic habitat. The low water levels would also affect fisheries, loon nesting, and recreational use of boats, canoes and kayaks. Construction of the five rock riffle structures will add 40,000 sq feet of key spawning habitat for walleye, smallmouth bass, shorthead, greater redhorse, and several minnow species plus restore access to upstream lake and stream habitats.

How does the plan address habitats that have significant value for wildlife species of greatest conservation need, and/or threatened or endangered species, and list targeted species?

Diversity in this reach is declining. A comparison of IBI scores for fish and mussels above and below the dam show upstream numbers are up to 40% lower than downstream of the dam. Similar differences in IBI scores were found for inverts. According to Aadland, MNDNR, the health and vigor of these sensitive species is at risk and will preclude further declines to the Pine River's physical and biological health and diversity. This project will increase IBI scores in the upstream reach by as much as 60% within a few years of restoration (Aadland. Barrier Effects on

Native Fishes of Minnesota. 2015). Increased spawning habitat and Pine Lake, listed as a Biologically Significant Lake for Outstanding Plant Community is located 1 miles upstream, expanding on resources needed to reach that goal and increasing diversity and populations of state listed fish species; hornyhead 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 begins to decline 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% which will help rebuild stream health and recovery of all sensitive species. These are ecologically diverse lands in public ownership sustainably managed for timber production (FSC and FSI certified). The woodland buffer provides near riparian habitat and shade for fish, game, and wildlife as well as 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, shallow, and deep lake systems.

Describe how the plan uses science-based targeting that leverages or expands corridors and complexes, reduces fragmentation or protects areas identified in the MN County Biological Survey:

Scores from a 2012 MPCA Index of Biological Integrity (IBI) survey were used to assess the site for aquatic health. A Minnesota Department of Natural (MNDNR) report on at risk fish species was used to evaluate habitat enhancement specifically for least darter, a state listed threatened species. Populations of this species on this reach are in decline which correlates to habitat loss and degradation. Several MNDNR studies (Aadland, MNDNR) regarding effects of barriers to native fish and restoration of fish passage as well peer reviewed studies (DS Nichols, ES Verry - Journal of Hydrology, 2001 - Elsevier) were also used.

Which two sections of the Minnesota Statewide Conservation and Preservation Plan are most applicable to this project?

- H3 Improve connectivity and access to recreation
- H6 Protect and restore critical in-water habitat of lakes and streams

Which two other plans are addressed in this program?

- Long Range Plan for Fisheries Management
- Outdoor Heritage Fund: A 25 Year Framework

Which LSOHC section priorities are addressed in this program?

Northern Forest

- Protect shoreland and restore or enhance critical habitat on wild rice lakes, shallow lakes, cold water lakes, streams and rivers, and spawning areas

Does this program include leveraged funding?

Yes

Explain the leverage:

\$75,000 in cash will be provided from a fund that assesses riparian landowners upstream of the project. The City of Crosslake has agreed to fund hauling-related road repairs estimated at \$350,000. Without this commitment project cost would be almost 1.6 million.

Per MS 97A.056, Subd. 24, Please explain whether the request is supplanting or is a substitution for any previous funding that was not from a legacy fund and was used for the same purpose.

This is a substitution for previous funding that fell short of needs due to permit delays and cost escalations.

How will you sustain and/or maintain this work after the Outdoor Heritage Funds are expended?

The Crow Wing County Highway Department will maintain the installed project features. This project will be monitored by the Crow Wing Soil and Water Conservation District to ensure it is functioning as designed, is stable and effective. Significant long-term maintenance costs are not expected because it follows natural channel design principles, which create habitat conditions that are self-sustaining (Aadland, DNR). However, dollars to fund maintenance will come from Big Pine Lake Subordinate Services District (SSD) fund administered by Crow Wing County Highway Dept. The SSD has been in place since 2010 for maintenance. Approximately 97 riparian landowners on Big Pine Lake are assessed \$200.00 annually per property.

Actions to Maintain Project Outcomes

Year	Source of Funds	Step 1	Step 2	Step 3
Annually	Big Pine Lake Subordinate District	Inspect rock riffle structure and vegetation establishment on shoreline and stream banks	Perform maintenance and repairs as needed	-
2022	MPCA	Fish, mussels, habitat, and macroinvert surveys	Report IBI scores	-

Activity Details

Requirements

If funded, this program will meet all applicable criteria set forth in MS 97A.056?

Yes

Will restoration and enhancement work follow best management practices including MS 84.973 Pollinator Habitat Program?

Yes

Is the restoration and enhancement activity on permanently protected land per 97A.056, Subd 13(f), tribal lands, and/or public waters per MS 103G.005, Subd. 15?

Yes

Where does the activity take place?

- County/Municipal
- Public Waters
- State Forests

Land Use

Will there be planting of any crop on OHF land purchased or restored in this program?

No

Timeline

Activity Name	Estimated Completion Date
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Begin Construction	October, 2019
Complete Construction	December, 2019
Project maintenance inspection	January 2020

Date of Final Report Submission: 02/01/2021

Budget

Budget reallocations up to 10% do not require an amendment to the Accomplishment Plan.

Totals

Item	Funding Request	Antic. Leverage	Leverage Source	Total
Personnel	\$65,000	-	-	\$65,000
Contracts	\$1,073,000	\$75,000	Big Pine Lake Subordinate District Fund	\$1,148,000
Fee Acquisition w/ PILT	-	-	-	-
Fee Acquisition w/o PILT	-	-	-	-
Easement Acquisition	-	-	-	-
Easement Stewardship	-	-	-	-
Travel	\$8,000	-	-	\$8,000
Professional Services	\$95,000	-	-	\$95,000
Direct Support Services	-	-	-	-
DNR Land Acquisition Costs	-	-	-	-
Capital Equipment	-	-	-	-
Other Equipment/Tools	-	-	-	-
Supplies/Materials	\$5,000	-	-	\$5,000
DNR IDP	-	-	-	-
Grand Total	\$1,246,000	\$75,000	-	\$1,321,000

Personnel

Position	Annual FTE	Years Working	Funding Request	Antic. Leverage	Leverage Source	Total
Fiscal administration	0.1	1.0	\$10,000	-	-	\$10,000
Project manager	0.5	1.0	\$55,000	-	-	\$55,000

Amount of Request: \$1,246,000

Amount of Leverage: \$75,000

Leverage as a percent of the Request: 6.02%

DSS + Personnel: \$65,000

As a % of the total request: 5.22%

Easement Stewardship: -

As a % of the Easement Acquisition: -

How will this program accommodate the reduced appropriation recommendation from the original proposed requested amount?

N/A

Describe and explain leverage source and confirmation of funds:

The source of the cash leverage comes from a Subordinate Services District (SSD) which assesses Big Pine Lake riparian owners \$200.00 each annually. The account balance will exceed \$75,000 before the project begins. See attached letter.

Contracts

What is included in the contracts line?

Contracts to install project as bid including any subcontractors. The project is defined in the bid documents.

Travel

Does the amount in the travel line include equipment/vehicle rental?

No

Explain the amount in the travel line outside of traditional travel costs of mileage, food, and lodging

none

I understand and agree that lodging, meals, and mileage must comply with the current MMB Commissioner

Plan:

No

Federal Funds

Do you anticipate federal funds as a match for this program?

No

Output Tables

Acres by Resource Type (Table 1)

Type	Wetland	Prairie	Forest	Habitat	Total Acres
Restore	0	0	0	1	1
Protect in Fee with State PILT Liability	0	0	0	0	0
Protect in Fee w/o State PILT Liability	0	0	0	0	0
Protect in Easement	0	0	0	0	0
Enhance	0	0	0	1	1
Total	0	0	0	2	2

Total Requested Funding by Resource Type (Table 2)

Type	Wetland	Prairie	Forest	Habitat	Total Funding
Restore	-	-	-	\$1,200,000	\$1,200,000
Protect in Fee with State PILT Liability	-	-	-	-	-
Protect in Fee w/o State PILT Liability	-	-	-	-	-
Protect in Easement	-	-	-	-	-
Enhance	-	-	-	\$46,000	\$46,000
Total	-	-	-	\$1,246,000	\$1,246,000

Acres within each Ecological Section (Table 3)

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	N. Forest	Total Acres
Restore	0	0	0	0	1	1
Protect in Fee with State PILT Liability	0	0	0	0	0	0
Protect in Fee w/o State PILT Liability	0	0	0	0	0	0
Protect in Easement	0	0	0	0	0	0
Enhance	0	0	0	0	1	1
Total	0	0	0	0	2	2

Total Requested Funding within each Ecological Section (Table 4)

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	N. Forest	Total Funding
Restore	-	-	-	-	\$1,200,000	\$1,200,000
Protect in Fee with State PILT Liability	-	-	-	-	-	-
Protect in Fee w/o State PILT Liability	-	-	-	-	-	-
Protect in Easement	-	-	-	-	-	-
Enhance	-	-	-	-	\$46,000	\$46,000
Total	-	-	-	-	\$1,246,000	\$1,246,000

Average Cost per Acre by Resource Type (Table 5)

Type	Wetland	Prairie	Forest	Habitat
Restore	-	-	-	\$1,200,000
Protect in Fee with State PILT Liability	-	-	-	-
Protect in Fee w/o State PILT Liability	-	-	-	-
Protect in Easement	-	-	-	-
Enhance	-	-	-	\$46,000

Average Cost per Acre by Ecological Section (Table 6)

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	N. Forest
Restore	-	-	-	-	\$1,200,000
Protect in Fee with State PILT Liability	-	-	-	-	-
Protect in Fee w/o State	-	-	-	-	-

PILT Liability					
Protect in Easement	-	-	-	-	-
Enhance	-	-	-	-	\$46,000

Target Lake/Stream/River Feet or Miles

12

Outcomes

Programs in the northern forest region:

- Healthy populations of endangered, threatened, and special concern species as well as more common species ~ *Horneyhead chub: species of greatest concern, Least Darter: special concern, Pugnose shiner:threatened* have been documented below the dam but not above. *These are species sensitive to turbidity, vegetation removal, and eutrophication. The area will be surveyed again by the MPCA in 2022; results will be used to measure project success.*

Parcels

For restoration and enhancement programs ONLY: Managers may add, delete, and substitute projects on this parcel list based upon need, readiness, cost, opportunity, and/or urgency so long as the substitute parcel/project forwards the constitutional objectives of this program in the Project Scope table of this accomplishment plan. The final accomplishment plan report will include the final parcel list.

Parcel Information

Sign-up Criteria?

No

Explain the process used to identify, prioritize, and select the parcels on your list:

Restore / Enhance Parcels

Name	County	TRDS	Acres	Est Cost	Existing Protection
Pine River Fish Passage Project 2020	Crow Wing	13727233	1	\$1,321,000	Yes



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

Parcel Map
Pine River Fish Passage Project 2020
(Data Generated From Parcel List)