# Lessard-Sams Outdoor Heritage Council

Knife River Habitat Rehabilitation-Phase V

Laws of Minnesota 2020 Accomplishment Plan

## General Information

**Date:** 07/25/2024

**Project Title:** Knife River Habitat Rehabilitation-Phase V

**Funds Recommended:** $700,000

**Legislative Citation:** ML 2020, Ch. 104, Art. 1, Sec. 2, subd 5(l)

**Appropriation Language:** $700,000 the second year is to the commissioner of natural resources for an agreement with Zeitgeist, a nonprofit corporation, in cooperation with the Lake Superior Steelhead Association, to restore and enhance trout habitat in the Knife River watershed. A list of proposed enhancements must be provided as part of the required accomplishment plan.

### Manager Information

**Manager's Name:** Tony Cuneo and Kevin J.Bovee
**Title:** Ex. Director and Project Manager
**Organization:** Zeitgeist (ZG) and Lake Superior Steelhead Association (LSSA)
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**City:** Duluth, MN 55816
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**Office Number:** 218-336-1410
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**Fax Number:**
**Website:** www.steelheaders.org

### Location Information

**County Location(s):** Lake and St. Louis.

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

- Northern Forest

**Activity types:**

- Enhance

**Priority resources addressed by activity:**

- Wetlands
- Forest
- Habitat

# Narrative

## Abstract

Eroding streambanks in the Knife River Watershed have degraded trout habitat and resulted in a total maximum daily load (TMDL) exceedance for turbidity. The LSSA proposes to rehabilitate instream habitat to increase trout spawning and rearing. Natural Channel Design construction techniques will be utilized to create a self-sustaining project that enhances instream habitat, improves channel stability, facilitates sediment transportation, stabilizes eroding streambanks, creates riparian wetlands and replant riparian trees/pollinator shrubs. This project will only be performed on public land or private land within a DNR easement. For more project information, please visit our website: www.steelheaders.org/projects.

## Design and Scope of Work

Problem Addressed:

The Minnesota Pollution Control Agency (MPCA) performed a water quality study from 1986-1996 on the Knife River. This water quality study determined that the Knife River exceeded the TMDL for turbidity. The MPCA conducted a follow-up study in 2008 to determine the sources of this turbidity. This study determined that the sources of the TMDL turbidity exceedance was primarily due to erosion from streambanks and stream bluffs. The LSSA assessed these identified erosion areas in the watershed (see illustration) to determine if the habitat remained suitable for trout. The LSSA found that summertime streamflow and water temperatures were sufficient for trout growth, but instream habitat was degraded from sediment deposition.

The LSSA and DNR have concluded that adult trout spawning and juvenile trout rearing habitat could be significantly improved by rehabilitating this stream reach. This project will provide an added secondary benefit to water quality by reducing sediment discharge. By stabilizing these banks this project will be contributing to reducing the Knife River's elevated Turbidity levels.

Scope of Work:

- Restore the stream channel's shape, dimension and profile.
- Enhance instream trout habitat strategically positioning large woody debris, rock vanes and "J" hooks into the channel.
- Restore large woody debris back into the watershed.

- Create new floodplains wetlands.
- Remove flood debris/sediment from floodplain wetlands.
- Reconnect the river channel to the floodplain.
- Raise the groundwater table.
- Stabilize streambanks.
- Rehabilitate the riparian overhead tree canopy.
- Monitor water temperature and stream assessment.

How Priorities Were Set:

The MPCA identified erosion areas within the Knife River Watershed and determined sections of Reach 4 contributed to the overall TMDL exceedance for Turbidity. The LSSA also conducted a series of stream assessments to identify adequate streamflow and cool water temperatures to support trout growth. Biological data was collected to determine the quality of in-stream trout habitat. This data was combined and ranked to prioritize restoration areas that provide the best benefit to aquatic life and water quality in the Knife River Watershed.

Another major consideration in the prioritization of this stream reach is its upstream location. Our restoration goal is to utilize a top-down approach, so major upstream erosion does not re-impact the restoration project and floodwaters can be retained to minimize existing downstream impacts. So, this top/down approach not only rehabilitates a degraded upstream reach but also minimizes downstream impacts.

Urgency and Opportunity of the Project:

The upper section of Reach 4 is scheduled for construction during the summer of 2019 and the middle section of Reach 4 was awarded last year (2108) and construction is anticipated to begin the fall of 2019. This Lower Reach 4 project will restore the remaining 4,000+ linear feet of Reach 4. If this project is funded, construction will begin in the fall of 2020.

Stakeholder Involvement:

The LSSA has collaborated with Jeff Tillma, DNR Stream Specialist and Deserae Hendrickson, DNR Fisheries Supervisor for the past three years on the Reach 4 restoration project and have implemented several of the DNR's project recommendations.

## 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?

The Knife River is a designated trout stream. The trout stream designation is provided to watersheds that have a cold-water resource. Cold-water streams are designated for protection because of their value to fish and wildlife and their relatively scares nature in Minnesota. The Knife River is even more unique than all other cold-water trout resources in Minnesota because this watershed has an anadromous fishery and does not have a barrier falls. The Knife River is the only watershed in Minnesota that combines these two features. Of the 60 + tributaries that connect to Lake Superior with populations of anadromous trout, only the Knife River does not have a barrier waterfall that limits upstream migration of steelhead, coaster brook trout or brown trout.

The Knife River also has another unique feature; according to DNR genetics researcher Charles Kruger, the Knife River has a genetically distinct strain of trout. Not only are these trout genetically distinct from other North Shore watersheds, but Knife River trout are genetically distinct within its own watershed. This means that trout produced in the Main Knife River are genetically different and distinct from trout produced within its tributaries of: Stanley Creek, McCarthy Creek, Main West Branch, Little West Branch, Captain Jacobson and Little Knife River.

This proposal addresses rehabilitating instream habitat to enhance and protect the uniqueness of the Knife River trout population. This project will provide, enhance and protect instream habitats that are critical to trout spawning, rearing and staging prior to migrating to Lake Superior.

This project is even more critical with the closing of the French River Hatchery and also because the Knife River is no longer stocked. Trout stocking has been discontinued in the Knife River to protect the unique genetics of over 100 years and with the closure of the French River Hatchery the safety net is gone. So essentially, the Knife River is its own natural fish hatchery that must be protected and enhanced to continue to produce trout that have evolved unique genetic qualities and traits since the late 1800s.

## 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:

The upper Main Knife River Watershed is a geomorphically stable stream from Mile 23 (headwaters) downstream to Mile 16. At Mile 16, the stream starts to show signs of instability. This can be observed by the down cutting of the channel, eroding streambanks, sediment deposition in the channel and the streambed jumping channel and cutting across its banks. The LSSA has also determined that Mile 16 (Reach 4) is the top section where most of the

steelhead spawning occurs in the Main Knife River. Because of this instability and sediment deposition, critical spawning and rearing habitat has become impaired from erosion.

The LSSA's restoration priorities have always featured a top/down restoration approach. This approach extends the habitat corridor and reduces downstream sediment deposition by creating:

- Improved trout spawning success: When trout spawn they discharge their eggs into the gravel. When sediment deposits accumulate after high spring flood events, these eggs or newly hatched trout become covered by settling silts and suffocate larval trout. By stabilizing these upstream banks sediment discharge is greatly reduced, which generally increases trout production.

- Enhanced trout rearing habitat: Juvenile trout need deep pools, undercut banks and woody debris overhangs rearing habitat. By replacing these lost habitat features, juvenile trout can rear until age 2, which is their natural emigration age to Lake Superior.

- Newly constructed floodplain: NCD restoration projects reconnect the stream channel to the floodplains, which allows floodwaters to crest the bank and dissipate the current's energy. Floodwaters also becomes trapped and stored in associated floodplain wetlands. This results in a lower velocity of floodwater and less volume that discharges downstream. This reduction of floodwater velocity and volume minimizes downstream erosion and habitat degradation.

- Reduction in downstream sediment load: By stabilizing upstream eroding banks, hundreds of tons of sediment will no longer discharge into the stream channel each year. This discharged material will no longer fill downstream pools and runs that are critical to rearing trout.

Our Reach 4 project will protect ~16.00 miles of downstream stream habitat and stabilize over a mile of slumping streambanks.

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

- H5 Restore land, wetlands and wetland-associated watersheds
- 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
- Other : Knife River Implementation Plan for Turbidity-Total Maximum Daily Load (TMDL).

## 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

## Outcomes

### Programs in the northern forest region:

- Healthy populations of endangered, threatened, and special concern species as well as more common species ~ *By funding this project, anadromous trout (steelhead, coaster brook trout and brown trout) and resident stream trout (brook trout) populations should increase. This project will also provide habitat to invertebrates, amphibians, reptiles, birds and mammals. This project also will replant the riparian zone of the river with native, old growth tree species and various native pollinator shrubs and native flower species. These multiple specie plantings will establish a varied and lush riparian canopy benefitting the entire watershed and neighboring areas.*

### Does this program include leveraged funding?

Yes

### Explain the leverage:

The LSSA has used our charitable gaming funds to perform over $500,000 for Knife River restoration work prior to the Legacy Amendment being passed. This funding donated money to the DNR for the Knife River fish traps, population assessments and creel census on the Knife River, stream access stairs and walking platforms to reduce bank erosion, signs to highlight regulation changes, in stream restoration, trees, tree planting materials and labor and stocking of fish.

We continued to use our gaming funds to supplement our first two phases of this LSOHC grant. The LSSA has spent approximately $60,000 to fund grant work on private, non-easement property design on the second falls restoration project and creation of an educational/promotional video on our Grant Funded Projects. The LSSA has also spent approximately $20,000 on beaver flights, dam removal and beaver trapping in the watershed.

Finally, the LSSA has provided a large in-kind volunteer effort. This in-kind donation has amounted to over $60,000 for equipment use and rental, volunteer labor, meals, travel and other expenses. The LSSA anticipates contributing up to $50,000 to this project (Phase V Lower Reach 4) in the form of payments and in-kind donations.

### 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 request is not supplanting nor a substitution for any previous funding.

### Non-OHF Appropriations

| Year | Source | Amount |
|---|---|---|
| Fy 2012 | Great Lakes Commission (GLRI funded)-Hawk Hill Road Project | $293,000 |
| Fy 2012 | Clean Water Fund-Copperhead Road Project | $212,000 |

| | | |
|---|---|---|
| Fy 2015 | LCMR-Buckthorn Control/Removal | $54,000 |
| Fy 2015 | MNDNR-Buckthorn Removal | $12,800 |
| Fy 2017 | Clean Water Fund-Buckthorn Removal | $144,000 |
| Fy 2018 | Federal Coastal Grant - LSSA PH III Entire Reach 4 Project; Design and Permitting | $50,000 |

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

A critical component of this project is to insure beaver do not impact areas that have been rehabilitated. To insure that the LSOHC projects are maintained after project completion, annual helicopter flights are conducted to insure beavers do not re-colonize the project areas. These beaver flights are conducted in late autumn by the DNR as they have been previously for over 15 years. If dams or beaver activity is noted in the annual flight, the DNR will contract with Federal trappers to remove the beavers and notch their dams. The estimated cost of the flight, beaver removal and dam notching throughout the entire Knife River watershed is approximately $15,000. If the DNR loses funding for this project, the TMDL implementation plan has budgeted $35,000 annually for this task. Included in this budget is beaver flights, trapping, dam notching and supplemental tree planting. LSSA volunteers and local residents will continue walking these reaches monitoring rehabilitated streambanks, instream features, fish spawning activity and riparian plantings. If the project improves spawning habitat and spawning success, increased fish populations should occur and angler satisfaction will improve, possibly resulting in more license sales.

## Actions to Maintain Project Outcomes

| Year | Source of Funds | Step 1 | Step 2 | Step 3 |
|---|---|---|---|---|
| July 1, 2020 - June 30, 2021 | MNDNR | Beaver Flights | Beaver Trapping | N/A |
| July 1, 2020 - June 30, 2021 | LSSA | Beaver Flights | Beaver Trapping | Tree Planting |
| July 1, 2021 - June 30, 2022 | MNDNR | Beaver Flights | Beaver Trapping | N/A |
| July 1, 2021 - June 30, 2022 | LSSA | Beaver Flights | Beaver Trapping | Tree Planting |
| July 1, 2022 - June 30, 2023 | MNDNR | Beaver Flights | Beaver Trapping | N/A |
| July 1, 2022 - June 30, 2023 | LSSA | Beaver Flights | Beaver Trapping | Tree Planting |
| July 1, 2023 - June 30, 2024 | MNDNR | Beaver Flights | Beaver Trapping | N/A |
| July 1, 2023 - June 30, 2024 | LSSA | Beaver Flights | Beaver Trapping | Tree Planting |

# 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 or on lands to be acquired in this program?**
Yes

**Where does the activity take place?**

- Permanently Protected Conservation Easements
- Public Waters

## Land Use

**Will there be planting of any crop on OHF land purchased or restored in this program, either by the proposer or the end owner of the property, outside of the initial restoration of the land?**
No

## Timeline

| Activity Name | Estimated Completion Date |
|---|---|
| Design, Build, Restoration and Construction Activities | July 1, 2020 - June 30, 2023 |
| Tree/Pollinator/Riparian Zone Planting | July 1, 2020 - June 30, 2023 |
| As-built Survey as required by MNDNR | July 1, 2021 - June 30, 2024 |

**Date of Final Report Submission:** 11/01/2025

**Availability of Appropriation:** Subd. 7. Availability of Appropriation

Money appropriated in this section may not be spent on activities unless they are directly related to and necessary for a specific appropriation and are specified in the accomplishment plan approved by the Lessard-Sams Outdoor Heritage Council. Money appropriated in this section must not be spent on indirect costs or other institutional overhead charges that are not directly related to and necessary for a specific appropriation. Unless otherwise provided, the amounts in this section are available until June 30, 2023. For acquisition of real property, the amounts in this section are available until June 30, 2024, if a binding agreement with a landowner or purchase agreement is entered into by June 30, 2023, and closed no later than June 30, 2024. Funds for restoration or enhancement are available until June 30, 2025, or five years after acquisition, whichever is later, in order to complete initial restoration or enhancement work. If a project receives at least 15 percent of its funding from federal funds, the time of the appropriation may be extended to equal the availability of federal funding to a maximum of six years if the federal funding was confirmed and included in the original approved draft accomplishment plan. Funds appropriated for fee title acquisition of land may be used to restore, enhance, and provide for public use of the land acquired with the appropriation. Public-use facilities must have a minimal impact on habitat in acquired lands.

# Budget

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

## Totals

| Item | Funding Request | Leverage | Leverage Source | Total |
|---|---|---|---|---|
| Personnel | - | - | - | - |
| Contracts | $547,500 | $1,200 | Privte Source: LSSA | $548,700 |
| Fee Acquisition w/ PILT | - | - | - | - |
| Fee Acquisition w/o PILT | - | - | - | - |
| Easement Acquisition | - | - | - | - |
| Easement Stewardship | - | - | - | - |
| Travel | - | $3,200 | Private Source: ZG and LSSA | $3,200 |
| Professional Services | $127,500 | $4,500 | Private Source: ZG and LSSA | $132,000 |
| Direct Support Services | - | - | - | - |
| DNR Land Acquisition Costs | - | - | - | - |
| Capital Equipment | - | - | - | - |
| Other Equipment/Tools | - | $4,000 | Private Source: LSSA | $4,000 |
| Supplies/Materials | $25,000 | - | - | $25,000 |
| DNR IDP | - | $65,000 | MN DNR | $65,000 |
| **Grand Total** | **$700,000** | **$77,900** | **-** | **$777,900** |

## Personnel

| Position | Annual FTE | Years Working | Funding Request | Leverage | Leverage Source | Total |
|---|---|---|---|---|---|---|
| Fiscal Lead | 0.6 | 4.0 | - | - | - | - |
| Project Management | 0.6 | 4.0 | - | - | - | - |

**Amount of Request:** $700,000
**Amount of Leverage:** $77,900
**Leverage as a percent of the Request:** 11.13%
**DSS + Personnel:** -
**As a % of the total request:** 0.0%
**Easement Stewardship:** -
**As a % of the Easement Acquisition:** -

**How will this program accommodate the reduced appropriation recommendation from the original proposed requested amount?**
We will perform rehabilitation efforts on fewer linear feet of stream than originally proposed under the original Accomplishment Plan. We also can salvage and reuse large woody debris from project logjams to help reduce material costs.

**Describe and explain leverage source and confirmation of funds:**
LSSA's charitable gaming, general fund and in-kind donations: allocated by LSSA Board approval. ZG's in-kind

donations. ZG funds allocated by ZG Board approval. Other KR leverage estimated at $ 100,000: MNDNR weir operation, ongoing creel census, field time/easement work. This project will be 100% shovel ready upon approval.

## Contracts

**What is included in the contracts line?**

Contracts includes cost of subcontractor (once awarded) to complete the project as outlined in the RFP (to be determined) and also for use of CCM, NRRI (or other similar groups) to perform miscellaneous field work on the project. This work will be outside the RFP parameters.

## 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 | 0 | 0 |
| 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 | 300 | 0 | 300 |
| **Total** | **0** | **0** | **300** | **0** | **300** |

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

| Type | Wetland | Prairie | Forest | Habitat | Total Funding |
|---|---|---|---|---|---|
| Restore | - | - | - | - | - |
| Protect in Fee with State PILT Liability | - | - | - | - | - |
| Protect in Fee w/o State PILT Liability | - | - | - | - | - |
| Protect in Easement | - | - | - | - | - |
| Enhance | - | - | $700,000 | - | $700,000 |
| **Total** | **-** | **-** | **$700,000** | **-** | **$700,000** |

## Acres within each Ecological Section (Table 3)

| Type | Metro/Urban | Forest/Prairie | SE Forest | Prairie | N. Forest | Total Acres |
|---|---|---|---|---|---|---|
| Restore | 0 | 0 | 0 | 0 | 0 | 0 |
| 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 | 300 | 300 |
| **Total** | **0** | **0** | **0** | **0** | **300** | **300** |

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

| Type | Metro/Urban | Forest/Prairie | SE Forest | Prairie | N. Forest | Total Funding |
|---|---|---|---|---|---|---|
| Restore | - | - | - | - | - | - |
| Protect in Fee with State PILT Liability | - | - | - | - | - | - |
| Protect in Fee w/o State PILT Liability | - | - | - | - | - | - |
| Protect in Easement | - | - | - | - | - | - |
| Enhance | - | - | - | - | $700,000 | $700,000 |
| **Total** | **-** | **-** | **-** | **-** | **$700,000** | **$700,000** |

## Average Cost per Acre by Resource Type (Table 5)

| Type | Wetland | Prairie | Forest | Habitat |
|---|---|---|---|---|
| Restore | - | - | - | - |
| Protect in Fee with State PILT Liability | - | - | - | - |
| Protect in Fee w/o State PILT Liability | - | - | - | - |
| Protect in Easement | - | - | - | - |
| Enhance | - | - | $2,333 | - |

## Average Cost per Acre by Ecological Section (Table 6)

| Type | Metro/Urban | Forest/Prairie | SE Forest | Prairie | N. Forest |
|---|---|---|---|---|---|
| Restore | - | - | - | - | - |
| Protect in Fee with State PILT Liability | - | - | - | - | - |

| | | | | | |
|---|---|---|---|---|---|
| Protect in Fee w/o State PILT Liability | - | - | - | - | - |
| Protect in Easement | - | - | - | - | - |
| Enhance | - | - | - | - | $2,333 |

## Target Lake/Stream/River Feet or Miles

Approximately 16 linear miles of stream.

# Parcels

## Parcel Information

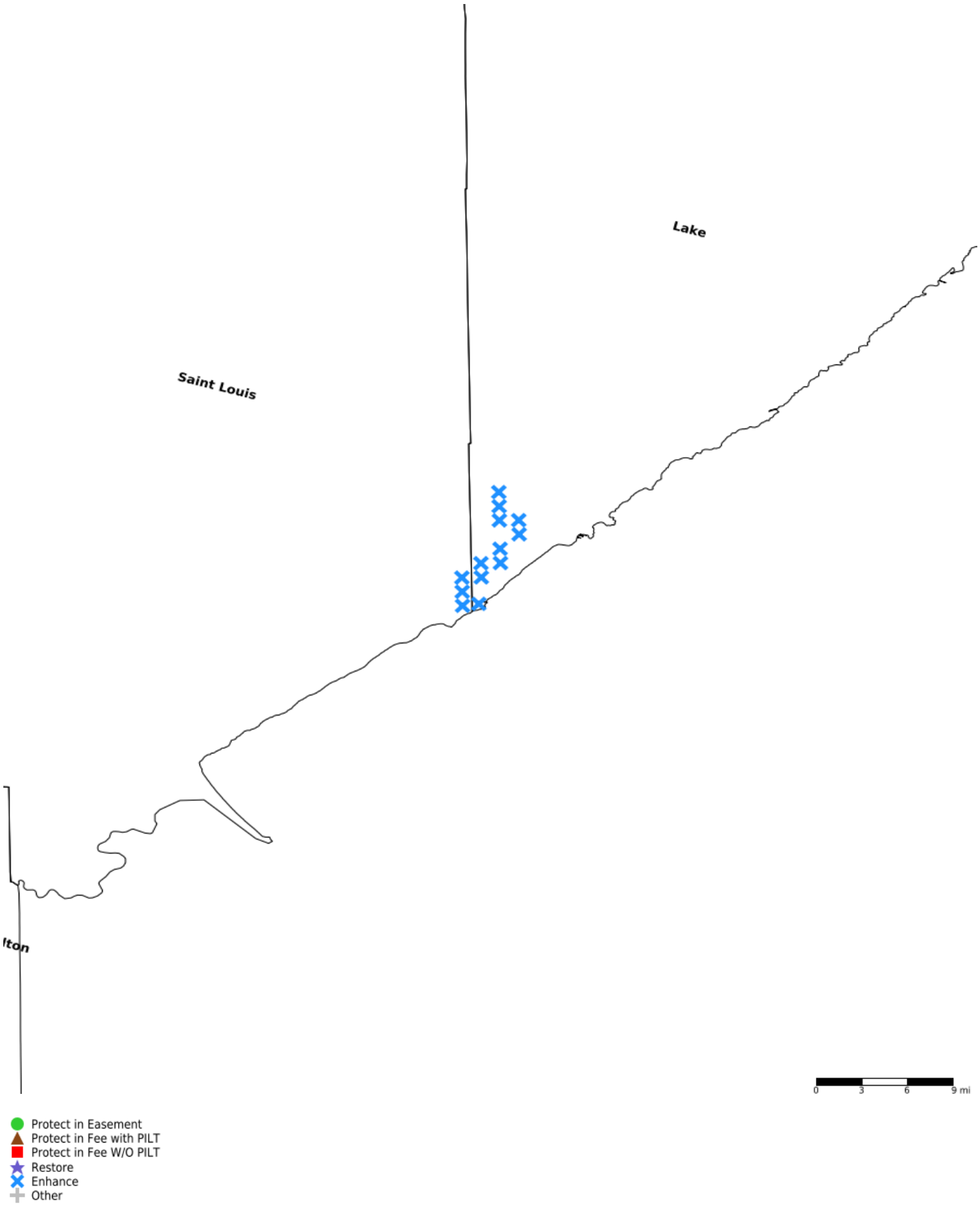
**Sign-up Criteria?**
No

**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 | Description |
|---|---|---|---|---|---|---|
| Knife River | Lake | 05311232 | 0 | $0 | Yes | Riparian Zone |
| Knife River | Lake | 05311233 | 0 | $0 | Yes | Riparian Zone |
| Knife River | Lake | 05211208 | 0 | $0 | Yes | Riparian Zone |
| Knife River | Lake | 05211204 | 0 | $0 | Yes | Riparian Zone |
| Knife River | Lake | 05211219 | 0 | $0 | Yes | Riparian Zone |
| Knife River | Lake | 05311229 | 0 | $0 | Yes | Riparian Zone |
| Knife River | Lake | 05311220 | 0 | $0 | Yes | Riparian Zone |
| Knife River | Lake | 05211231 | 0 | $0 | Yes | Riparian Zone |
| Knife River | Lake | 05211217 | 0 | $0 | Yes | Riparian Zone |
| Knife River | Lake | 05211218 | 0 | $0 | Yes | Riparian Zone |
| Knife River | St. Louis | 05212224 | 0 | $0 | Yes | Riparian Zone |
| Knife River | St. Louis | 05212225 | 0 | $0 | Yes | Riparian Zone |
| Knife River | St. Louis | 05212236 | 0 | $0 | Yes | Riparian Zone |

# Parcel Map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