



Lessard-Sams Outdoor Heritage Council

Lake Alice - Fergus Falls

Laws of Minnesota 2024 Accomplishment Plan

General Information

Date: 08/01/2024

Project Title: Lake Alice - Fergus Falls

Funds Recommended: \$500,000

Legislative Citation: ML 2024, Ch. 106, Art. 1, Sec. 2, Subd. 4(i)

Appropriation Language: \$500,000 the second year is to the commissioner of natural resources for an agreement with the city of Fergus Falls to enhance Lake Alice in Fergus Falls.

Manager Information

Manager's Name: Klara Beck

Title: Community Development Manager

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Location Information

County Location(s): Otter Tail.

Eco regions in which work will take place:

- Prairie

Activity types:

- Enhance

Priority resources addressed by activity:

- Wetlands

Narrative

Abstract

Prior to urban development, Lake Alice in Fergus Falls supported a diverse array of vegetation and wildlife. Presently, stormwater enters the lake at the heart of the city through two major storm sewers, resulting in excessive phosphorus, sediment loading, cyanobacteria, and fecal coliform in receiving waters. This project, to be performed by the City of Fergus Falls in FY25, will remove the primary source of phosphorus and total suspended solids through the addition of sediment traps and updated catch basins in the stormwater system flow.

Design and Scope of Work

Problem:

Lake Alice is a 39 acre prairie pothole lake in the heart of Fergus Falls. Prior to urban development, Lake Alice supported a diverse array of vegetation and wildlife. Presently, a significant storm water system flow is discharged into the lake, carrying runoff from the upstream residential area that carries sediment which includes significant amount of phosphorus. A report by the City of Fergus Falls and MPCA identified excessive phosphorus, sediment loading, cyanobacteria, and fecal coliform in receiving waters as water quality concerns. As an extreme case of hypereutrophy, Lake Alice offers relatively little in terms of beneficial uses or ecosystem services. Stakeholder awareness of the degradation of the lake ecosystem continues to draw attention to remediation of the lake's degraded condition, but true understanding of the lake's unique role in the watershed is lacking amongst the public. An education campaign accompanying remediation attempts is due. A goal of altering the contemporary trophic state and attendant elimination of harmful algal blooms and odors associated with decaying plant material may be accomplished by achieving a condition of mesotrophy in Lake Alice that supports aquatic and wetland plant communities similar in abundance and diversity to those of other prairie pothole lakes in the region.

Scope:

This project, an initial phase of a larger remediation and education project, will remove the primary source of phosphorus and total suspended solids before stormwater enters the lake through two major storm sewers. This phase is critical to the overall remediation project as it eliminates the primary source of pollutants entering the lake so subsequent clean up efforts can be effective in the long term. The City of Fergus Falls will construct two sediment traps "upstream" of Lake Alice in the storm water system flow in order to collect sediment from the two major storm sewer inputs that discharge into the lake. Each sediment trap will consist of a 6 ft by 10 ft by 60 ft precast concrete box culvert. The trap has a series of baffles that slow down the flow of water and allow the sediment to settle out. The sediment can then be removed from the trap and disposed of. The City is also seeking funding through this project to replace three storm inlets with catch basins containing sumps and porous baffles for capturing sediments. The catch basins replaced will be connected to smaller storm sewers which discharge to Lake Alice as a smaller, less expensive sediment collection option.

Priority/ Urgency:

Having failed to meet one or more water quality standards, Lake Alice was finally placed on the TMDL List under Section 303d of the Clean Water Act in 2022 and is predicted to meet its TMDL by 2025. The Section 303(d) list also acts as a "trigger", signaling the need for immediate management actions to address water quality impairments and making this project a high priority to begin to remediate the damage caused by the discharge of sediment into Lake Alice in order to meet federal requirements.

Explain how the plan addresses habitat protection, restoration, and/or enhancement for fish, game & wildlife, including threatened or endangered species conservation

Prairie pothole lakes are home to a variety of wildlife, including waterfowl, fish, amphibians, and reptiles. They are also important for water storage and provide habitat for migratory birds. The goal of this project is habitat restoration through improvements to water quality. Water quality degradation leading to lost beneficial use and impaired ecosystem services in Lake Alice relates almost exclusively to manifestations of cultural eutrophication, i.e. excessive inputs of phosphorus. This project is therefore focused on making incremental progress toward meaningful and achievable nutrient load reduction milestones to support aquatic and wetland plant communities similar in abundance and diversity to those of other prairie pothole lakes in the region.

The report entitled, “Stormwater Particles Sampling Literature Review” by Greg DeGroot, Pete Weiss, Ph.D., PE. St. Anthony Falls Laboratory University of Minnesota June 2008 was used to identify the anticipated effects of sediment traps in total suspended solids and total phosphorus removal. Approximately 70% total phosphorus is bound to particles less than 125 micron diameter. Page 25 of the report references a 2006 report by Zanders that found the 36% of particles in storm sewer are less than 125 micron in diameter. Based on these values at 80% removal efficiency, a sediment trap removes 51% total suspended solids removal and 24% total phosphorus it receives.

Previous water samples taken during the Resource Investigation showed an average total phosphorus concentration of 341 µg/L in the stormwater entering Lake Alice.

The amount of total suspended solids removed by grit chamber traps is based on Stoke’s Law and the amount of total phosphorus removed is based on typical percentages of phosphorus bound to the size of particles removed. Estimated removal efficiency for total suspended solids for sediment traps is 51%, estimated removal efficiency for total phosphorus is 24%.

The percent of the Lake Alice watershed, excluding the basin, treated by these sediment traps is 79.4%. Based on the areas treated and the treatment efficiencies the following annual load reductions are anticipated - total suspended solids: 11.2 tons from the sediment traps and total phosphorus: 62 lbs.

What are the elements of this plan that are critical from a timing perspective?

Lake Alice was placed on the TMDL (total maximum amount of a pollutant a body of water can receive without violating water quality standards) List under Section 303d of the Clean Water Act in 2022 and is predicted to meet its TMDL by 2025. The Section 303(d) list acts as a “trigger”, signaling the need for the City to enact management actions to address water quality impairments through mitigation and seek solutions for compensatory restoration.

Describe how the plan expands habitat corridors or complexes and/or addresses habitat fragmentation:

Wetlands in the prairie pothole region are traditionally home to a diverse range of species, including fish, amphibians, reptiles, small mammals, and birds. Prairie pothole wetlands are well-known as prime nesting and migratory habitat for waterfowl, with over 115 species of breeding or migrating waterbirds dependent on prairie pothole wetlands during their life cycle. The urbanization that has taken place around Lake Alice began in the late 1800s, greatly affecting the lake’s ecosystem and separating the habitat from its surrounding systems. Stormwater has been discharged directly into the prairie pothole lake without any water quality control mechanisms for over 100 years, disturbing the natural habitat over time, including the growth of aquatic/ wetland plant communities. Without intervention, water quality in Lake Alice will continue to degrade, contributing negatively toward the overall health of the broader watershed and connections for wildlife between other patches of ecosystem

contained within the urban area. The mitigation techniques proposed in this project will result in progress toward nutrient load reduction, reducing phosphorus and total suspended solids from the water to better support the aquatic and wetland plant communities that fish, amphibians, reptiles, small mammals, and migratory birds rely on.

Which top 2 Conservation Plans referenced in MS97A.056, subd. 3a are most applicable to this project?

- Managing Minnesota's Shallow Lakes for Waterfowl and Wildlife
- U.S. Prairie Pothole Joint Venture Plan

Explain how this plan will uniquely address habitat resilience to climate change and its anticipated effects on game, fish & wildlife species utilizing the protected or restored/enhanced habitat this proposal targets.

Pursuant to the EPA, higher temperatures thru climate change results in greater frequency and intensity of severe storms that could harm water quality in Minnesota's lakes and rivers. Severe storms increase the amount of pollutants, such as phosphorus, that run off from land to water, so the risk of algal blooms will be greater if storms become more severe.

Climate change also leads to warmer water causing more algal blooms, which can be unsightly, harm fish, and degrade water quality.

The Lake Alice watershed is urbanized and no natural lake outfall exists, severe weather will only compound water quality impacts to Lake Alice. The proposed grit chamber will dissipate rainfall runoff energy and reduce nutrient load, reducing phosphorus and total suspended solids from the water to better support the aquatic and wetland plant communities that fish, amphibians, reptiles, small mammals, and migratory birds rely on.

Which LSOHC section priorities are addressed in this program?

Prairie

- Protect, restore, and enhance shallow lakes

Outcomes

Programs in prairie region:

- Protected, restored, and enhanced shallow lakes and wetlands ~ *Water quality analysis has shown phosphorus contents in Lake Alice to be in excess of 1,000 µg/l (micrograms per liter). it is advisable to begin with elimination of stormwater inputs followed by attention to legacy sediment deposits as a phased course of remediation to restore the wetland. An appropriate expectation for water quality in Lake Alice is to equal that of similar, regional systems that will result in progress toward nutrient load reduction, reducing phosphorus and total suspended solids from the water to better support the aquatic and wetland plant communities that fish, amphibians, reptiles, small*

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 or substituting any previous funding for this purpose.

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

As part of the city's stormwater infrastructure, the cleaning and maintenance of the grit chambers and catch basins will be included in city operations indefinitely. This is considered a first phase of a larger remediation project and the city will continue to work toward obtaining funding to complete the larger project restoring the ecosystem and creating projections for that ecosystem in the future.

Actions to Maintain Project Outcomes

Year	Source of Funds	Step 1	Step 2	Step 3
Annually	City of Fergus Falls Stormwater/ General Operations Budget	Remove sediment buildup in grit chambers and catch basins with City-owned vacuum truck.	-	-

Provide an assessment of how your program celebrates cultural diversity or reaches diverse communities in Minnesota, including reaching low- and moderate-income households:

Lake Alice has long been a popular attraction in the center of Fergus Falls. The Lake is fully surrounded by city park and available to all to enjoy. Completing this project and restoring the lake to its former state helps maintain a valuable asset to all the residents of Fergus Falls. The lake is used by walkers, runners, and bikers of all ages, cultural backgrounds, and incomes. By including interpretation and education in the budget for this project, residents and visitors to Fergus Falls may learn how the city's mitigation tactics aim to restore habitat and support the health of the Otter Tail River watershed.

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?

- 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

Will insecticides or fungicides (including neonicotinoid and fungicide treated seed) be used within any activities of this program either in the process of restoration or use as food plots?

No

Timeline

Activity Name	Estimated Completion Date
Construction	June 2025
Construction Bids	April 2025
Design & Engineering	September 2024

Date of Final Report Submission: 10/24/2025

Availability of Appropriation: Subd. 7.

Availability of Appropriation

(a) 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. Money 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.

(b) Money appropriated in this section is available as follows:

- (1) money appropriated for acquiring real property is available until June 30, 2028;
- (2) money appropriated for restoring and enhancing land acquired with an appropriation in this section is available for four years after the acquisition date with a maximum end date of June 30, 2032;
- (3) money appropriated for restoring or enhancing other land is available until June 30, 2029;
- (4) notwithstanding clauses (1) to (3), money appropriated for a project that receives at least 15 percent of its funding from federal funds is available until a date sufficient to match 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; and
- (5) money appropriated for other projects is available until the end of the fiscal year in which it is appropriated.

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	\$500,000	\$131,000	City Storm Water Enterprise Fund	\$631,000
Fee Acquisition w/ PILT	-	-	-	-
Fee Acquisition w/o PILT	-	-	-	-
Easement Acquisition	-	-	-	-
Easement Stewardship	-	-	-	-
Travel	-	-	-	-
Professional Services	-	\$55,000	City Storm Water Enterprise Fund	\$55,000
Direct Support Services	-	-	-	-
DNR Land Acquisition Costs	-	-	-	-
Capital Equipment	-	-	-	-
Other Equipment/Tools	-	-	-	-
Supplies/Materials	-	-	-	-
DNR IDP	-	-	-	-
Grand Total	\$500,000	\$186,000	-	\$686,000

Amount of Request: \$500,000

Amount of Leverage: \$186,000

Leverage as a percent of the Request: 37.2%

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?

The City of Fergus Falls intends to supplement local funds from the City's Storm Water Enterprise Funds to complete this project.

Detail leverage sources and confirmation of funds:

The City has an established Storm Water Enterprise Funds by Ordinance. Currently \$181,000 is budgeted in the City's annual Capital Improvement Plan funded thru this enterprise fund.

Does this project have the ability to be scalable?

Yes

If the project received 50% of the requested funding

Describe how the scaling would affect acres/activities and if not proportionately reduced, why?

The number of grit chambers and catch basins would be reduced.

Describe how personnel and DSS expenses would be adjusted and if not proportionately reduced, why?

N/A

Contracts

What is included in the contracts line?

Estimated amount of the construction contract procured thru competitive bidding. This amount consists of the Furnish & Installation (F&I) by a licensed contractor to install the 10'x6' box culvert grit chamber with surface restoration(s). This amount also includes F&I "sumped" stormwater catch basins within the upstream watershed.

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
Protect in Fee with State PILT Liability	-	-	-	-	-
Protect in Fee w/o State PILT Liability	-	-	-	-	-
Protect in Easement	-	-	-	-	-
Enhance	39	-	-	-	39
Total	39	-	-	-	39

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	\$500,000	-	-	-	\$500,000
Total	\$500,000	-	-	-	\$500,000

Acres within each Ecological Section (Table 3)

Type	Metro/Urban	Forest/Prairie	SE Forest	Prairie	N. Forest	Total Acres
Restore	-	-	-	0	-	0
Protect in Fee with State PILT Liability	-	-	-	-	-	-
Protect in Fee w/o State PILT Liability	-	-	-	-	-	-
Protect in Easement	-	-	-	-	-	-
Enhance	-	-	-	39	-	39
Total	-	-	-	39	-	39

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	-	-	-	\$500,000	-	\$500,000
Total	-	-	-	\$500,000	-	\$500,000

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	\$12,820	-	-	-

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	-	-	-	\$12,820	-

Target Lake/Stream/River Feet or Miles

Lake Alice, 39 Acres

Parcels

Parcel Information

Sign-up Criteria?

[Yes - Sign up criteria is attached](#)

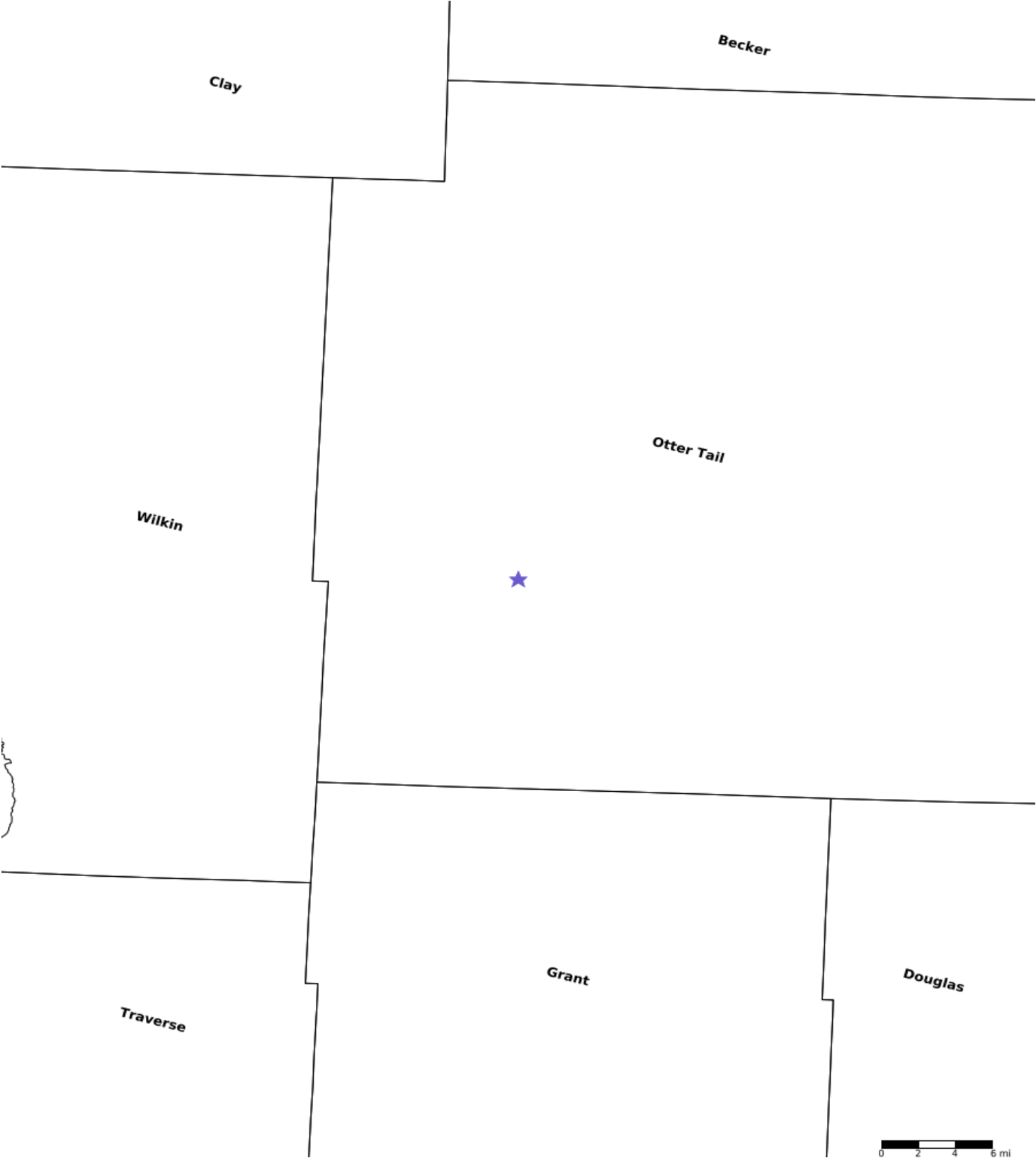
Explain the process used to identify, prioritize, and select the parcels on your list:

The proposed location was selected to reduce overall project costs and any land acquisition. The proposed grit chamber and catch basins installations would be constructed "in line" with the existing storm sewer network to mitigate any need to realign the existing storm sewer piping. This specific location is also the longest Time of Concentration (TC) point for stormwater runoff from the watershed hence an optimal location to treat prior to discharging into Lake Alice. All improvements would be constructed on City owned property.

Restore / Enhance Parcels

Name	County	TRDS	Acres	Est Cost	Existing Protection	Description
71-003-99-1819-000	Otter Tail	13343234	2	\$340,500	-	Grit chamber(s) and catch basin(s)
71-002-99-0747-001	Otter Tail	13343234	2	\$340,500	-	Grit chamber(s) and catch basin(s)

Parcel Map



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