



**Robbin's Slough Management Plan
Public Water No. 51-42 (51004200)
DRAFT – November 2025**

Prepared By:

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Send Comments To:

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General Lake Information

- County: Murray
- Location: T108, R40, Sections 21-23
- Size: 301 acres
 - Robbin's Slough is divided by 220th Ave/County Hwy. 38. Most of the basin is west of this highway, but a small portion is on the east side (Attachment A).
 - Special considerations: All acre and mile values in this plan were obtained using Minnesota Department of Natural Resources (DNR) data and Geographic Information System (GIS) software.
- Shoreline: 2 miles
- Access: The road right-of-way off 220th Ave/County Hwy. 38 or Shetek Wildlife Management Area (WMA) can be used as carry-in access for both portions of the basin. There is no formal public boat access (Attachment A).
- Watershed: Cottonwood River
 - Watershed Area: 2,946 acres (4.6 square miles)
 - Watershed to Lake Ratio: 10:1
 - Inlets: Plum Creek and a stream, which also is named Robbin's Slough, inlet into the basin (Attachment A).
 - Land Use: Restored prairie, recreation, and row-crop agriculture.
- Depth: The average depth is around 2.3 feet (ft.) at normal summer pool, with a maximum depth closer to 3.0 ft. The greatest depth ever recorded was approximately 3.8 ft. in 2022.
- Outlet: The outlet for Robbin's Slough is Plum Creek, which is located on the southeast side of the eastern portion of the basin (Attachment A). This creek flows northeast and eventually discharges into the Cottonwood River.
 - Run Out Elevation: 1458.61 ft.
 - Average Lake Bottom Elevation \approx 1457.62 ft.
 - Deepest Lake Bottom Elevation \approx 1455.79 ft.
- Ordinary High Water (OHW) Level: 1459.91 ft. (established in 2002)
 - Special consideration: All elevations listed in this management plan are in NAVD 88 datum.
 - To convert NAVD 88 to NGVD 29, subtract 0.61 ft.
- Water Level Readings: Water level readings have been taken very infrequently on Robbin's Slough. Only three readings have been recorded, which include 1458.98 ft. (2003), 1460.80 ft. (2019), and 1460.18 ft. (2022).

Water Quality

Water quality measurements (e.g., phosphorus, conductivity, chlorophyll-a) have only been taken occasionally on Robbin's Slough since 2012 (Figure 1). These measurements were taken by the DNR Section of Wildlife. The lowest total phosphorus value among all water samples ($n = 4$) was 0.02 milligrams per liter (2022; mg/L) and the highest value was 0.20 mg/L (2018), with the average being around 0.14 mg/L. The average total phosphorus value for the 2022 samples matched the established

Minnesota Pollution Control Agency (MPCA) total phosphorus impairment threshold (i.e., 0.09 mg/L; Western Corn Belt Plains area). The average Secchi disk reading in 2022 for Robbin’s Slough was slightly above the established MPCA Secchi disk reading impairment threshold (i.e., 2.3 ft.; Western Corn Belt Plains area; Figure 2). The highest average Secchi disk reading across all years ($n = 4$) also occurred in 2022 and was 2.6 ft. (Figure 2).

The impairment thresholds established by MPCA are eutrophication standards for shallow lake ecosystems. These standards have been created to help establish a balanced population of aquatic plants that supports a broad array of aquatic life uses and recreation (Class 2b & 2c water quality standards; Minnesota Rule [M.R.] Chapter 7050, 2002). Maintaining these standards promotes the establishment of native plants while minimizing dominance of non-native species and nuisance algal blooms. Managing total phosphorus concentrations below a range that promotes excessive algal growth is an important consideration of this plan. However, water transparency is the most significant threshold in relation to lake health and submersed aquatic plant abundance in southwest Minnesota. For that reason, water clarity will be considered the most important measure when contemplating managed water level drawdowns. Water transparency from historic aerial imagery and lake survey data is summarized for Robbin’s Slough in Figure 3.

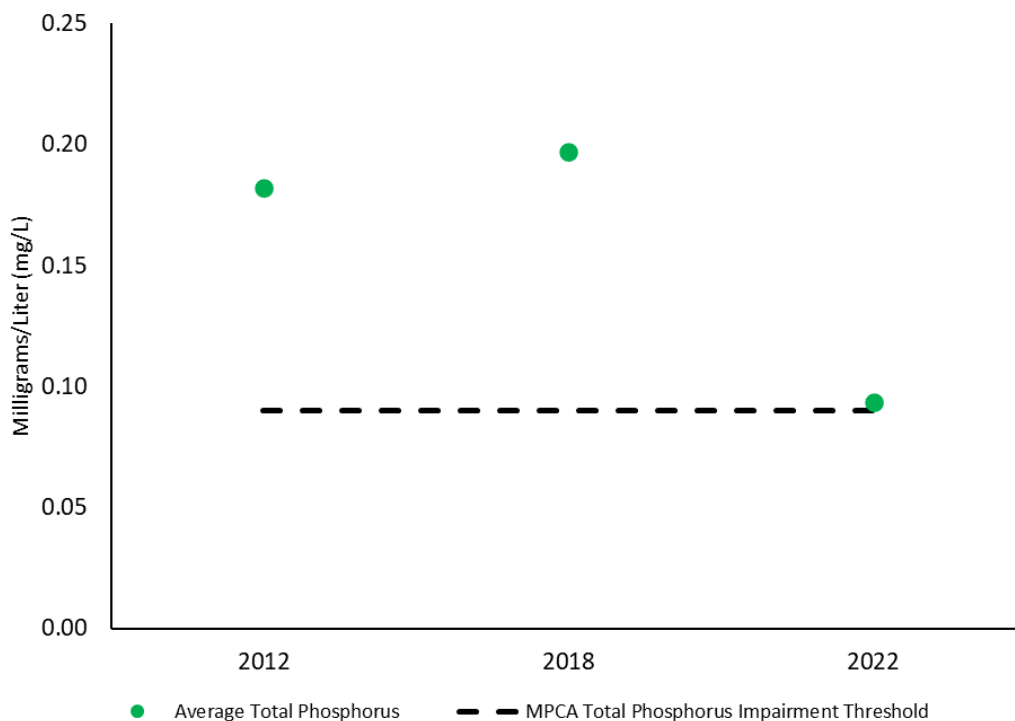


Figure 1. Average total phosphorus in water samples collected from Robbin’s Slough during 2012–2022.

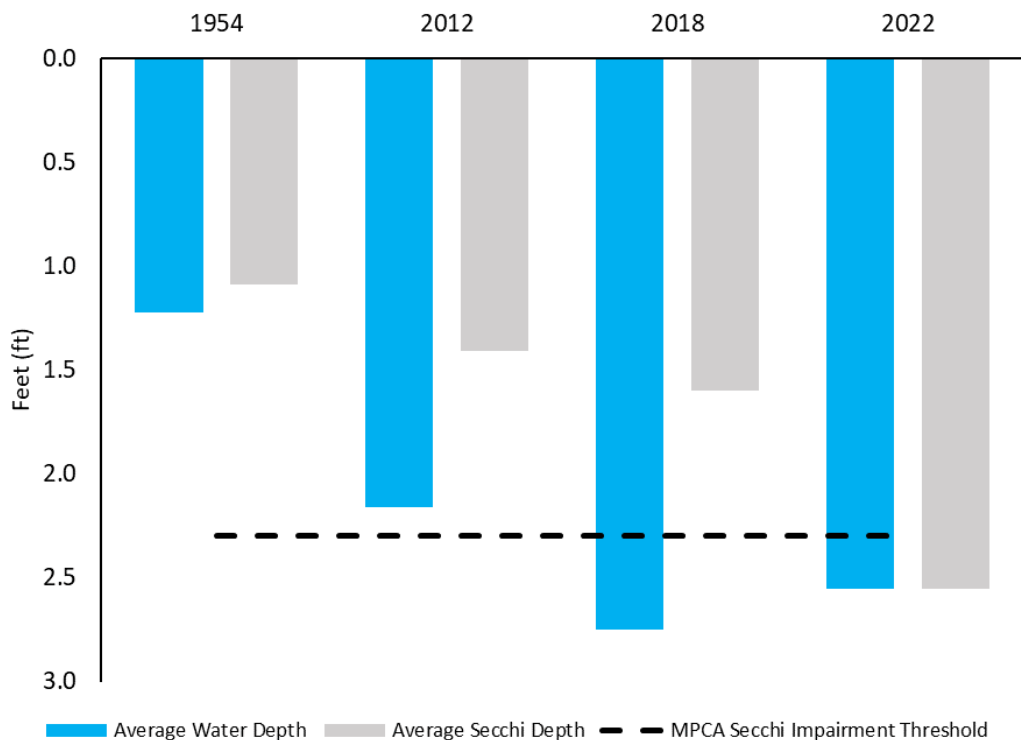


Figure 2. Average water depth and Secchi depth readings recorded during game lake surveys and wildlife lake surveys for Robbin’s Slough during 1954–2022.

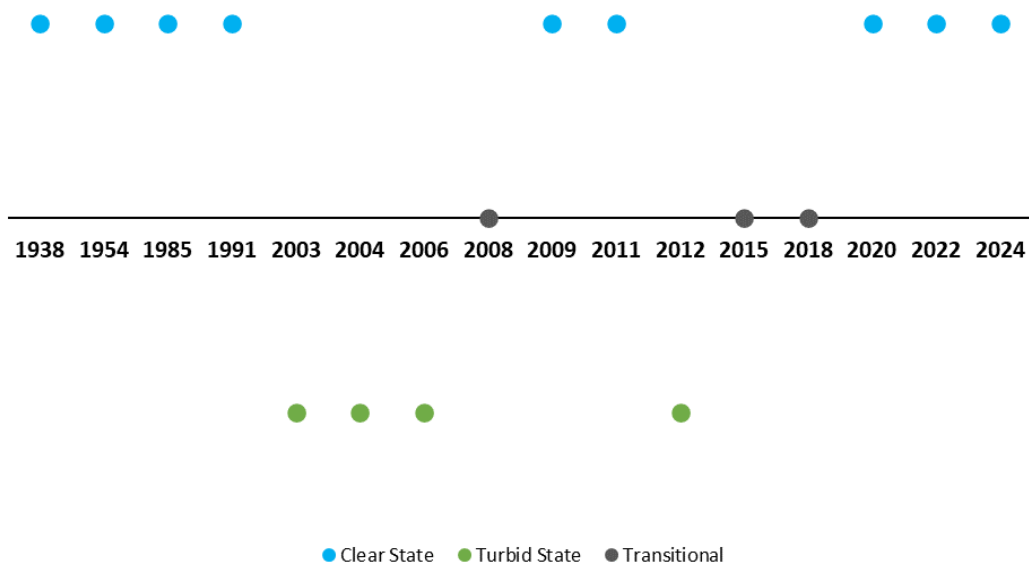


Figure 3. Historic water transparency states from aerial imagery and game/wildlife lake surveys for Robbins Slough during 1938–2024.

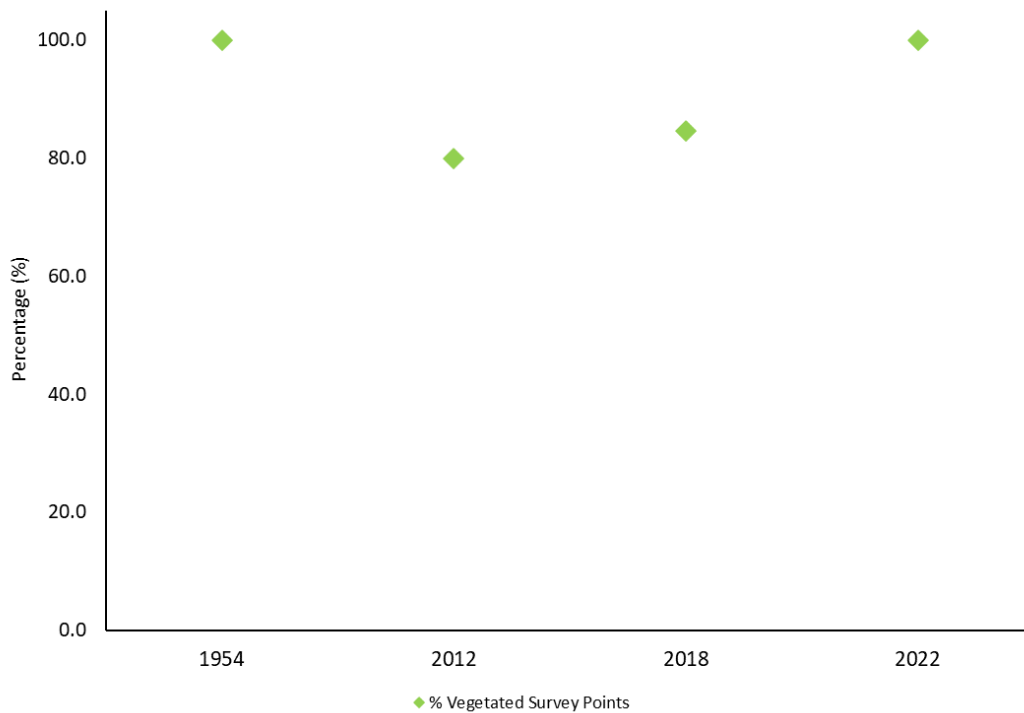


Figure 4. Percentage of survey points with submersed and/or emergent aquatic vegetation recorded during the game and wildlife lake surveys for Robbin’s Slough during 1954 to 2022.

Fish and Wildlife Habitat

Robbin’s Slough is located about 5.8 miles south of Tracy in Murray County, approximately 2.25 miles northeast of Lake Shetek. Other priority shallow lakes in this area include Round Lake, Lake Maria, and Clear Lake. Round Lake and Lake Maria are two of the four designated wildlife lakes (Minnesota Statute [M.S.] 97A.101) in Murray County. Clear Lake is designated under M.S. 103G.407 as a shallow lake to be managed for fish, wildlife, or other ecological purposes by the DNR. Most of Robbin’s Slough is within Shetek WMA (Attachment A), which is managed by the DNR Section of Wildlife. Plum Creek WMA, Lake Maria WMA, and Buffalo Lake WMA are nearby as well.

Robbin’s Slough provides important habitat resources for fish and wildlife, especially waterfowl and aquatic furbearers. The basin is considered a great waterfowl lake, and many locals have a high opinion of this slough for hunting. There are historical reports of heavy use of the basin in the fall and spring by migrating waterfowl. The slough also provides high quality brood rearing habitat for resident waterfowl during most years. There are historic accounts of many muskrats, beavers, and mink using the basin as well.

There has been 1 game lake survey and 3 wildlife lake surveys conducted on Robbin’s Slough since 1954. Across all surveys, the average lake depth ranged from 1.2 to 2.6 ft. (Figure 2). The percentage of vegetated survey points also has remained high across all surveys (Figure 4). The most dominant submersed vegetation species include sago pondweed, coontail, muskgrass species, and spiny naiad. Northern watermilfoil and small pondweed also were historically found in the basin. The most dominant

emergent vegetation species are narrowleaf and hybrid cattail. The lakewide species richness (S) for aquatic vegetation (i.e., submersed and emergent species) was highest in 1954 ($S = 13$) and was moderate ($S = 5$) in 2012, 2018, and 2022.

Wildlife Use

The wildlife use information for Robbin's Slough was collected during game and wildlife lake surveys. A variety of wildlife species have been observed throughout these surveys. Waterfowl observations included blue-winged teal, mallards, northern pintails, ruddy ducks, Canada geese, wood ducks, ring-necked ducks, and snow geese. Waterbirds observed consisted of coots, black-crowned night herons, black terns, red-necked grebes, white pelicans, double-crested cormorants, great blue herons, ring-billed gulls, great egrets, and trumpeter swans. Other wildlife observations have included red fox, beavers, raccoons, freshwater shrimp, bloodworms, snails, dragonflies, leopard frogs, mink, and muskrats.

Robbin's Slough has a long history of waterfowl hunting and aquatic furbearer trapping. Hundreds of ducks were found using the basin during the 1954 game lake survey. It also was reported that 50 – 70 waterfowl hunters used the area each year during the early 1950s. Robbin's Slough continues to be used by waterfowl hunters today. Historic accounts claim 500 – 1,000 muskrats were trapped per year in the late 1930s and early 1940s around Robbin's Slough. Trappers also successfully harvested mink and beavers from the basin in the mid-1950s. Muskrats and beavers are still present around Robbin's Slough, but their populations are much smaller than in the past.

Fishery

Robbin's Slough is not managed for fish by the DNR Section of Fisheries because it is considered too shallow to support game fish. Therefore, there have been no formal fish netting surveys conducted on the basin. The only information about fish assemblages in Robbin's Slough was collected during the game and wildlife lake surveys. Fish observations included black bullheads, green sunfish fingerlings, minnows, and bullhead fry.

Management Goals and Objectives

Goal: Optimize aquatic plant growth to improve water clarity and enhance wildlife habitat.

- **Objective 1: Establish and protect aquatic vegetation communities through active water level management.**
- **Objective 2: Improve shallow lake habitat conditions, along with water quality and clarity.**
- **Objective 3: Maintain habitat and water quality improvements.**

Proposed Management Actions to Achieve Objectives

Action 1: Obtain legal authority to temporarily lower water levels.

Collaborate with lakeshore property owners, stakeholder groups, and DNR personnel to obtain the legal authority (M.S. 97A.101) to conduct periodic, temporary water level drawdowns on Robbin's Slough.

Action 2: Install a water control structure and downstream fish barrier.

Collaborate with Ducks Unlimited to install a water control structure on the southeast side of Robbin's Slough and a velocity fish barrier downstream in Plum Creek. The natural outlet will remain the primary outlet for the basin and the water control structure will act as a secondary outlet for water level management purposes only. All infrastructure will be contained within Shetek WMA.

The water control structure will be a concrete box culvert with a sloped end section, trash guard, and one stop-log bay. Important elevations for this structure are as follows:

- Top of Structure: 1462.75 ft.
- Maximum Full Service Elevation: 1460.0 ft.
 - Special considerations: The top stop-log elevation will be 0.09 ft. higher than the established OHW level (i.e., 1459.91 ft.) to ensure that the structure acts as a secondary outlet.
- Invert of Structure: 1456.50 ft.
- Invert of Outlet Pipe: 1457.00 ft.

The fish barrier will be located downstream of Robbin's Slough, near an existing crossing in Plum Creek. The barrier will be a velocity fish barrier that consists of a 60 ft. reinforced concrete pipe that is 48 inches in diameter. Important elevations for this fish barrier are as follows:

- West Pipe Invert: 1456.20 ft.
- East Pipe Invert: 1454.20 ft.
- Slope of Pipe: 3.3%

It is estimated that it will take approximately 30-45 days to reach the target drawdown elevation using the water control structure. The target drawdown elevation will remove about 3 ft. of water from the basin, which will leave around 6-12 inches of water in the deeper portions of the basin. However, even if 6-12 inches of water remain in the lake, conditions should still allow for effective fish kills and sediment consolidation.

Action 3: Conduct periodic temporary drawdowns.

A drawdown is the temporary lowering of the water levels in a lake. Drawdowns are used to mimic natural low water periods because years with below average precipitation are occurring less frequently than in the past. Shallow lake ecosystems are adapted to periods of low water levels and often deteriorate during periods of high or stable water levels. Therefore, drawdowns are an effective tool for shallow lake management.

Drawdowns on shallow lake basins enhance the abundance and diversity of aquatic vegetation. Bottom sediments hold a large, viable seed bank from the aquatic plants that historically grew in a basin. However, many species of emergent and submersed aquatic vegetation require a period of drying before their seeds will germinate. This dry period is most easily achieved by conducting a managed

drawdown. Furthermore, drawdowns help consolidate bottom sediments and accelerate decomposition of organic material, which can provide a more stable substrate for aquatic plant growth. Drawdowns also are used to reduce and manage undesirable fish communities (e.g., black bullheads, fathead minnows) within a basin. These conditions (i.e., dense beds of aquatic vegetation and a reduced population of undesirable fish) help improve water quality and clarity, increase aquatic invertebrate abundance, and provide sufficient habitat resources for a variety of native wildlife species.

Important Legal Considerations: A managed drawdown is a temporary lowering of a lake's water level that would not last longer than two consecutive years under normal climatic conditions (M.R. 6115.0271). The DNR will return the water level in Robbin's Slough to a normal managed pool elevation following a managed drawdown (M.R. 6115.0221). Drawdowns would not be done at times that would cause any downstream flooding damage to private property and or roads.

If a managed drawdown appears feasible based on climatic conditions, the DNR will consider implementing either a winter drawdown or a growing season drawdown on Robbin's Slough to the maximum extent possible. It is anticipated that winter drawdowns would occur from mid-August through April of the following year and growing season drawdowns would take place mid-August into summer of the following year. However, a managed drawdown will be considered anytime Robbin's Slough has experienced two consecutive years a year with average or below average precipitation and at least one of the following drawdown triggers are met:

- Average summer Secchi disk reading from June-September falls below 1.50 ft.;
- Submersed aquatic plants cover less than 50% of the lake using present day systematic point sample stations;
- Undesirable fish are present at densities high enough to affect water quality and habitat conditions.

It should be noted that the timing of a managed drawdown will be adaptive and based on local land conditions. Water levels in Robbin's Slough also will be monitored regularly during a managed drawdown in case adjustments need to be made to the drawdown timeline. Factors such as precipitation patterns, vegetation response (i.e., both emergent and submersed aquatic vegetation), water level data, presence of undesirable fish in the basin, water clarity, sediment consolidation, and length of time since the previous drawdown will be used to evaluate the drawdown timeline and determine if a managed drawdown should extend into a second year. The DNR's drawdown timeline can be adjusted if weather patterns, ice conditions, management objectives, or water flows indicate the need. The primary purpose of a winter drawdown will be to promote a fish winterkill in the basin and the intention of a growing season drawdown will be to encourage the growth of aquatic vegetation. Prior to conducting a drawdown, the DNR Section of Wildlife will notify the DNR Area Hydrologist and other stakeholders, as necessary. Given the design, 1457.00 ft. (i.e., invert of the outlet pipe) is the lowest elevation that Robbin's Slough could be lowered to using the water control structure.

Desired outcomes of a managed drawdown are as follows:

- Average summer Secchi disk reading from June-September exceeds 2.3 ft.;

- Average summer total phosphorus and chlorophyll-a levels from June–September are below MPCA impairment thresholds for shallow lakes in southwest Minnesota (i.e., total phosphorus < 0.09 mg/L and chlorophyll-a < 0.03 mg/L);
- Aquatic plant diversity and lake wide plant species richness of more than 5;
- Submersed aquatic plants cover at least 80% of the lake using present day systematic point sample stations.

Important Consideration: If hybrid cattail becomes overly abundant because of drawdown conditions, the DNR can pursue necessary permits and consider available tools (e.g., mechanical removal, aerial herbicide applications) to help control it.

The primary intent of a managed drawdown is to expose lakebed and/or increase the likelihood of fish winterkill. However, DNR personnel should examine the existing habitat conditions, migration patterns, and the needs of game and nongame species as well to limit unintended adverse impacts when determining the drawdown timeline. For example, if pursuing a later season drawdown, the DNR should think about providing a shallow pool area as refuge for hibernating reptiles and amphibians. When refilling a basin after a drawdown, DNR personnel also should consider the impact that changing water levels might have on wildlife and the flow to downstream areas.

Action 4: Monitor water quality parameters, aquatic plants, and the fish community periodically to determine when additional management is necessary.

When conditions fall below the outlined thresholds, the previously proposed management actions will be considered and implemented. The DNR will conduct wildlife lake surveys periodically, using systematic point sampling methodology, to calculate aquatic plant distribution, diversity, and abundance for general monitoring purposes. Water quality parameters also will be monitored on a regular basis, using an approved water quality-sampling regime. In addition, the DNR will conduct both pre- and post-drawdown monitoring to determine drawdown success. A permanent water level gage will be installed on the outlet structure to monitor water levels during an attempted drawdown and outside the drawdown period (stipulated by M.R. 6115.0221).

Action 5: Collaborate with local partners to identify strategic watershed management opportunities and promote Best Management Practices in the watershed.

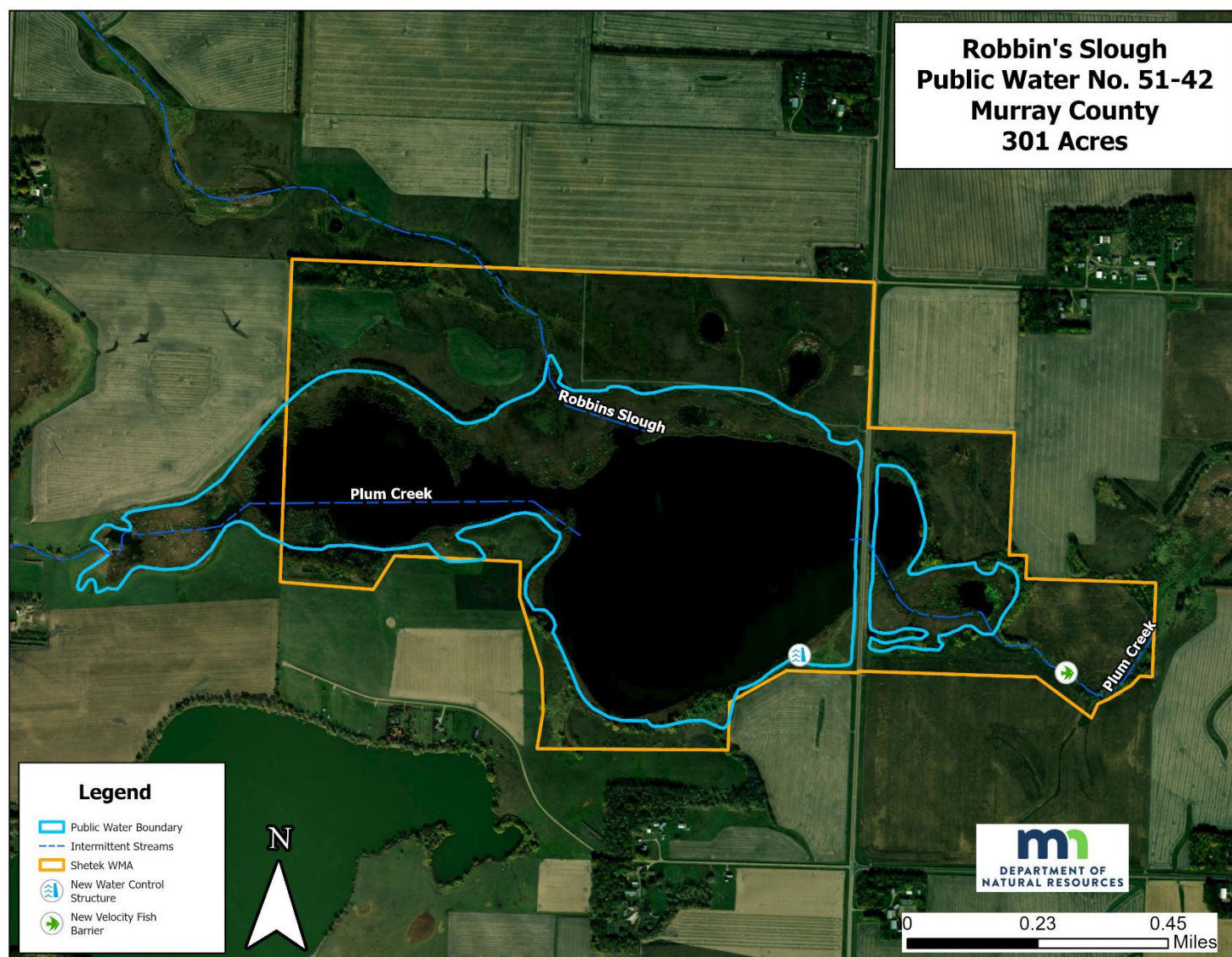
Conservation work within the watershed is an important tool in shallow lake management. The protection of existing habitats and restoration of critical areas within the watershed are vital to sustaining water quality and habitat conditions within the lake. Any improvements within Robbin's Slough (e.g., improved water quality, a reduction in undesirable fish, and enhanced wildlife habitat) and its watershed also should benefit other downstream areas. The DNR will continue to coordinate with local partners to target conservation programs and land stewardship improvements within the Robbin's Slough watershed.

Management Plan Revisions

The management plan for Robbin's Slough will be revisited as necessary to assess the effectiveness of the plan and determine if changes and/or updates are required. Modifications to this management plan will be made in cooperation with local partners and stakeholders. Any substantial changes to this plan will require additional public input.

Robbin's Slough (DOW# 51004200), Murray County
Management Plan
Signature/Approval Sheet

Signatures
<div><div>X</div><div>_____ Bill Schuna Area Wildlife Manager</div></div>
<div><div>X</div><div>_____ Joe Stangel Regional Wildlife Manager</div></div>
<div><div>X</div><div>_____ Dave Trauba Wildlife Section Manager</div></div>
<div><div>X</div><div>_____ Kelly Straka Division of Fish & Wildlife Director</div></div>



Attachment A. Map of Robbin's Slough illustrating the basin, wildlife management area, inlets, outlets, and location of the new water control structure and velocity fish barrier.