Father Hennepin Bluff Park Natural Resources Management Plan

Prepared for:

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St. Paul, Minnesota

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF IMAGES

EXECUTIVE SUMMARY

This Natural Resource Management Plan (NRMP) presents the site analysis and recommended land use activities for the 6-acre Father Hennepin Bluff Park Lower Trail area in Minneapolis, Minnesota. This document was drafted by Friends of the Mississippi River (FMR) in 2023-24 and is based on an assessment of site characteristics including natural resource and community access priorities, issues, and corrective actions. These actions reflect community values regarding Father Hennepin Bluff Park's unique features. The park has been undergoing restoration efforts through the Father Hennepin Bluff Stewards group, in partnership with the Minneapolis Park and Recreation Board, for many years. The stewards group identified a need to solicit professional guidance and feedback on restoration efforts volunteers could take to further enhance and improve their efforts. The NRMP provides a framework for those goals including recommended habitat restoration activities volunteers can perform, timing of the tasks, and long-term management considerations.

The purpose of this management plan is to:

- Identify the existing ecological conditions of the park.
- Identify best management practices to maximize wildlife values, retain and improve water quality, and increase native plant community diversity.
- Encourage sustainable use of the park by visitors.
- Support ongoing community engagement in restoring the park, including identifying funding sources to implement this management plan.

Specific ecological and cultural goals for this property are to:

- Maximize coverage and diversity of native plant species and minimize non-native, invasive species.
- Provide connectivity with other natural areas in the landscape and along the river corridor.
- Enhance viewsheds and safety through removing invasive vegetation.
- Maintain and manage the property for water quality through erosion control and stabilization of riverbanks, and by controlling runoff and nutrient loading.
- Create a model for responsible public land stewardship.
- Utilize this park to guide surface water management activities on adjacent land in a manner that protects and fosters natural community establishment.
- Utilize this park to enhance and expand the ecological functions of the area.

BACKGROUND

FATHER HENNEPIN BLUFF PARK LOCATION AND CONTEXT

Father Hennepin Bluff Park is located South of SE Main Street and is sandwiched between St. Anthony Falls Laboratory to the North and the Stone Arch Bridge to the South. The park is owned by the Minneapolis Park and Recreation Board (MPRB). The park is approximately 8 acres, with 2 acres of programmed park area on top of the bluff and 6 acres of natural park area including the bluff, Hennepin Island, Williams Island, and river floodplain. This plan provides guidance for volunteers managing the natural area and does not include the programmed park area. The natural area of the park contains wooden steps leading down to the floodplain, paved and dirt walking paths, and four bridges connecting the islands.

Figure 1: Father Hennepin Bluff Park Location

Map showing Minneapolis parks and bike paths in area surrounding the park.

Father Hennepin Bluff Park is within an identified natural resource corridor due to its protected status as a park, connectivity with natural/semi-natural areas, and proximity to the Mississippi River. It is within the 72-mile Mississippi National River and Recreation Area (MNRRA), a unit of the National Park Service, and the state-designated Mississippi River Corridor Critical Area. While highly altered due to human disturbances, it is also upstream of MPRB property (south of Interstate 94) classified by the Minnesota Department of Natural Resources (MNDNR) to be sites of biodiversity significance.

This area is identified within the MPRB's Central Mississippi Riverfront Regional Park Master Plan as the Father Hennepin Bluffs Park + Hennepin Island Study Area. Domination of the shoreline by invasive plants is identified as an issue, and the need for restoration is identified as an opportunity. Eroding soils are also noted as a concern.

PROJECT PARTNERS AND FUNDING

A variety of organizations have a stake in the management of Father Hennepin Bluff Park, either as direct partners or interested parties. The MPRB is the landowner of the site and is a current partner in the restoration, providing long-term goals and guidance, as well as volunteer event support. The Marcy-Holmes Neighborhood Association (MHNA) has also provided funding and support for the development of the Natural Resources Management Plan (NRMP). MHNA Father Hennepin Bluff Stewards group has been and will continue to be an important volunteer program that engages park users in plan implementation. MHNA applies for a Volunteer Service Agreement with MPRB annually to conduct habitat care days. More information about the MHNA Father Hennepin Bluff Stewards group is included in the "Community Engagement" section below. Historically, habitat care work has been organized through meetings and conversation between MPRB and MHNA. Both parties identified a need for a wholistic plan to guide long-term restoration activities on the site, beyond what either party could provide internally.

The Mississippi Watershed Management Organization (MWMO), through their funding of this management plan, has been a key partner in helping ensure future restoration of the natural areas at the site. MWMO will be a valuable partner moving forward and has additional grant programs that could help fund specific restoration tasks above and beyond the capacity of volunteers. MHNA hired Friends of the Mississippi River (FMR) to conduct ecological surveys and write the plan.

With the site's location in the corridor of the Mississippi National River and Recreation Area (MNRRA), and the National Park Service has an interest in restoration of this natural area. Native-led organizations including Owámniyomni Okhódayapi and Wakaŋ Tipi Awaŋyaŋkapi have an interest in lands with traditional cultural significance such as East Owámniyomni. Other interested parties include the St. Anthony Falls Heritage Board and various environmental organizations that work on environmental issues along the river, including groups like FMR, Mississippi Park Connection and the Great River Coalition.

Once implementation of the NRMP begins, MHNA and MPRB can and should continue to pursue funding implementation tasks, including from sources such as Hennepin County (Healthy Tree Canopy Grants, Good Steward Grant, and Opportunity Grants), state grants (Conservation Partners Legacy Grant), and the MWMO (Community Grants and Action Grants) to continue restoration at the site. Although MHNA is unable to apply for implementation grants on their own accord under the current stewardship agreement with MPRB, MPRB could apply for implementation grants and FMR is available to support this process as needed. See "Park Restoration Beyond Current Management Plan" section.

COMMUNITY ENGAGEMENT

Restoration of natural areas is never done in a vacuum. We recognize that humans are an integral part of the ecosystem, and that humans will continue to influence our natural habitat through both direct and indirect means. As such, it is important to the success of restoration to engage and involve the local community. This should happen both before restoration starts, as well as throughout the restoration process. Community support prior to restoration is important for getting the project off the ground and for making sure that the project fulfills the goals and desires that the community has for the space. Providing opportunities for people to be involved in restoration processes builds a connection that teaches people the intrinsic value of these lands and inspires their interest in long-term stewardship. Building a community of volunteers from the surrounding area creates a sense of responsibility to care for and steward this special place and encourages people to take a more active role in protecting the resources in their community. Like restoration, developing an active and involved volunteer base takes time.

Father Hennepin Park Stewards are well-positioned in this area and have a robust volunteer program at the site. For example, in 2023 alone, 126 volunteers contributed 565 hours across 14 habitat care events. As this management plan is intended to be implemented by volunteers, we solicited community feedback during this planning process to ensure recommendations align with community goals and motivation.

Community engagement, especially with volunteers, the surrounding neighborhood, and park users, is an integral part of the planning process. Community engagement for this plan took many forms, from direct email outreach, to social media and newsletter posts, to an online survey and public input meeting. What follows is a summary of that engagement and its impact on the management planning effort.

COMMUNITY ENGAGEMENT DATA

- Social media and email communications advertising the community meeting and online survey:
  - MHNA e-newsletter
  - MHNA website

    - Mill City Times
    - River Current
    - St. Anthony Falls Heritage Board email list (100+ recipients)
    - FMR social media (1391 impressions)
    - Personal emails (800+ recipients)
- Communications promoting the Father Hennepin Bluff stewards group
    - Site signage (100s daily)
- One public community engagement event at the Pillsbury A Mill on April 16, 2024 (21 participants)

PARTNER ENGAGEMENT

- Minneapolis Park & Recreation Board (MPRB) Engagement Process
    - MPRB agreed that a volunteer-centric plan could help guide MHNA restoration activities and wrote letters of support for grants
    - FMR coordinated with MPRB Parks and Natural Resources staff to gather input on the implementation of NRMP activities
    - MPRB staff reviewed, provided input, and approved draft and final NRMP
- Mississippi Park Connection agreed to provide plant material to support volunteer work
- MWMO Engagement
    - FMR and MHNA invited MWMO staff to workdays and the community engagement meeting.
    - MWMO staff reviewed the draft management plan

Image 1: Community Volunteers After Habitat Care Day
Image of volunteers after hauling brush during a 2023 work day. Photo courtesy of Father Hennepin Bluff Stewards group.

OPPORTUNITIES IDENTIFIED THROUGH COMMUNITY ENGAGEMENT PROCESS

The community engagement process highlighted several opportunities for improving both the restoration implementation as well as user experience of the park. Feedback from both the in-person community meeting and the online survey results is summarized below:

Question: What volunteer actions would you be excited to participate in? Respondents were encouraged to check multiple boxes or provide multiple answers (11 respondents total).

- Seeding & planting (8 votes)
- Invasive species removal / weed pulling (5 votes)
- Maintaining plantings (watering, weeding, tending) (4 votes)
- Installing erosion control (erosion bars, wattles) (4 votes)
- Educational discussions / nature walks (2 votes)
- Trash cleanup (1 votes)

To address this community feedback, nearly all of these options as volunteer events are included annually in the 10-year task table. Volunteers will be able to engage in restoration work through trash cleanups, invasive species removal, watering, weeding, installing and maintaining erosion bars, seeding, and planting at least once per year. The suggestion to

include nature walks or educational discussions was not included in the restoration plan, but would be a great addition to programmed offerings at the site, especially when considering new ways to engage community members. MHNA could work with MPRB, MWMO, or FMR to host education events including focusing on topics such as prairie plants, invasive species, and water quality.

Question: What challenges to natural resource management do you see in the park? Respondents were encouraged to check multiple boxes or provide multiple answers (12 respondents total).

- Volunteer capacity (6 votes)
- Invasive species management (6 votes)
- Water quality/quantity issues (5 votes)
- Trail use (4 votes)
- Soil quality (2 votes)
- Impact of this site on the regional ecology, impact of other places on this site (2 votes)
- Accessibility (1 vote)

These challenges are valid and are important to consider in planning efforts. The content of this NRMP addresses invasive species management issues and soil quality. There are methods and resources within this document that guide volunteers on management techniques. Improving soil quality and managing erosion is a key consideration in nearly all management units, described in more detail below.

Some of these challenges will need broader coordination or reliance on partners to be addressed. Volunteer capacity is an important factor in ensuring the contents of this plan are implemented. The Father Hennepin Park Stewards group currently has a leadership circle of 5 dedicated volunteer leaders who split the work of leading habitat care events. Events are open to everyone, and there are more than 500 people on the contact list. However, recruitment for individual care events can be an issue. FMR and MPRB have helped MHNA lay the groundwork for addressing this issue, participating in meetings and idea generation for other organizations and groups that can engage in the restoration effort. For example, in addition to FMR, Mississippi Park Connection was identified as an organization that can assist with connecting corporate volunteer groups to this site. DeLaSalle High School and the University of Minnesota also have classroom and volunteer programs that could provide repeat volunteers. Moving forward, MHNA can continue to partner with FMR and local indigenous-led organizations to drive recruitment for large events that have low attendance sign-ups. MHNA could also consider partnering with businesses and organizations within the neighborhood to assist with funding and participating in specific stewardship events. Additionally, MHNA should explore grant opportunities that provide funding for contractors as a back-up in case volunteer capacity is lower than expected, and volunteers are not able to enact the management plan.

Broader coordination with MPRB, the City of Minneapolis, and the Minnesota Department of Natural Resources is needed to address the remaining issues. Several respondents mentioned water quality or quantity issues, including stagnant water and future plans for returning flow through the east channel. As there are wetland and spring areas on this site, there will be some level of stagnant water no matter what. This is an important resource for wildlife. Returning water to the east falls is identified as an opportunity in the Central Mississippi Riverfront Regional Park Master Plan, with an estimated price tag of $1.5 million. However, it is unclear when this project might be pushed forward. MHNA should look out for MPRB Capital Improvement Project scheduling updates and stay in contact with MPRB staff and their elected officials for anticipated project implementation timelines. Trail use was also a consistent concern. There were several suggestions for building a trail etiquette sign; pushing MPRB to invest in staircase, bridge, and trail maintenance; and sharing information with the public about positive ways to use the trails that will not trample restoration areas.

Finally, it is important to recognize that this is one site within the larger MPRB and riverfront system. Work toward increasing accessibility and infrastructural improvements is guided by the Central Mississippi Riverfront Regional Park Master Plan, adopted in 2016.

Two additional questions related to restoration goals for specific management units were posed to community members. Feedback results are discussed in those specific sections. One broader topic about signage within the park emerged from those discussions. More than half of the respondents (10 of 18) voiced the need for some level of interpretive signage within the park. Although there was concern about sign maintenance and signs disappearing, most folks wanted at least one large interpretive sign located at the park entrance describing some of the native plants and ecology of the park. Smaller signs in each unit with photos of flowers could also be considered. MPRB or MWMO could install more permanent educational signage about the benefits of prairie plants to water quality, or how native and non-native species differ in their effects on water and other ecological processes. The need for permanent informative and interpretive signage was strongly emphasized in feedback from the community meeting and online survey results, as well as in the report on Indigenous community feedback (see below and Appendix A). The site's ecology, history, and present uses should be considered when designing future signage for the site.

INDIGENOUS COMMUNITY–SPECIFIC ENGAGEMENT

We know that frequent park users, Marcy Holmes volunteers, and people who live in the neighborhood are not the only people who engage with and steward the site. Many Indigenous people, especially Dakota people, have stewarded the site since long before European colonization. As such, part of the goal of this planning process was to incorporate feedback and perspectives on the site's natural resources from the Dakota community. Originally, we hoped that this might take the form of a survey inviting feedback on specific plant species and restoration practices that might best honor the site's history and cultural

importance while still providing habitat and other ecological benefits. However, without a specific contact or group to lead this feedback process, the partnership worked with Full Circle Design and Planning to assist in engagement with the Indigenous community. Full Circle proposed and led directed outreach within the Dakota community, engaging Indigenous elders, educators, and community leaders. This took the form of informal conversations, facilitated conversations, an onsite tour, and additional follow-up conversations.

Some of the recurring themes of the conversations included observations of the existing conditions of the site, including the arrival and entry experience, lack of interpretive and cultural elements, landscape, vegetation, and issues with existing site infrastructure. Overall, feedback was less about specific species or actions and rather a focus on a more holistic approach to the site, including a focus on:

- Relational aspects of native planting.
- The concept of a 'plant doula' – that is, how some plants clean and heal the land, in preparation for the next generation of plants. This creates space and opportunity for other plants, including plants that provide food and medicine for both wildlife and people, to survive.
- Plant harvesting – both the importance of it and the logistical difficulties at this site due to terrain, degradation, and environmental factors such as cleanliness and soil pollution. Feedback about whether these environmental factors could affect the plants such that they could potentially be harmful was given. Also, guarding against overharvesting and making sure it's done respectfully, paired with offerings.

Based on feedback gathered from the Dakota community, as this plan is implemented, we recommend the following actions:

- Volunteers, MHNA, and MPRB should explore a relationship with Owámniyomni Okhódayapi and a potential co-management agreement to improve outcomes on both sides of the river. This could be especially important for conversations about restoring water flow in the east channel.
- Explore and pursue opportunities for Indigenous youth involvement and increased capacity for Dakota people in caring for this site. Organizations for the volunteer stewards group to build connections with include Migizi, Nawayee Center School, and Minneapolis Public Schools cultural programs.
- Establish a 'culture walk' that includes interpretation about Indigenous plants and their traditional uses (while keeping traditional spiritual meaning private) to build knowledge and allow site visitors to understand the habitats and landscape of East Owámniyomni better.
    - Additionally, volunteer leaders could attend culture walks led by indigenous community members at other locations along the river corridor to learn more about traditional

methods and practices. The Hennepin History Museum organizes events like this that are free and open to the public, with registration required.

- Prevent future engagement fatigue of Indigenous community members by increasing the cultural competency of all partners and by using feedback from past plans to guide future planning efforts.

RESTORATION GOALS

The priority of this restoration is to create diverse, healthy habitats that support wildlife and overall ecosystem health. Healthy ecosystems support a variety of wildlife and provide several ecosystem services, including water retention and filtration. To achieve this goal, restoration aims to improve the diversity, composition, and structure of the plant communities throughout the site. Often, restoration focuses on restoring plant communities to better reflect what would have been present prior to European colonization of the site. Given the level of extreme human disturbance, both at Father Hennepin Bluff Park and to Mississippi River hydrology, pre-colonization plant communities are not necessarily the goal for this site. Target restoration plant communities reflect what is possible and desired by community members given the current soil conditions, hydrology, topography, existing plant communities, and community engagement feedback. Thoughtful restoration of degraded areas to these targets will improve ecological functions that current healthy communities provide, including:

1) habitat for a diversity of wildlife species,
2) erosion control,
3) development and enrichment of soils,
4) nutrient and water cycling,
5) carbon storage,
6) filtration of nutrients, sediment, and pollutants,
7) park aesthetics – sightlines, safety, blooms, connection to the river
8) local temperature moderation.

These goals are strongly supported by the community with the majority of survey respondents highly prioritizing the planting of native plants and especially those plants that will support pollinators. Moreover, the site's location along the Mississippi River – one of the world's most important migration corridors – necessitates that restoration focus on providing plant resources that support migrating birds and other wildlife.

HISTORIC AND CURRENT PLANT COMMUNITIES

Historically, prior to European colonization and industrialization, this site was an oak savanna (Figure 3). The landscape was dominated by grasses and wildflowers, with scattered oak trees. Fires maintained this plant community, limiting the growth of trees and invigorating the growth of grasses.

The industrial revolution and urban development practices dramatically altered the topography, hydrology, and vegetation in this park. Topsoil was stripped, lumber and flour mill infrastructure and power plants were built, tunnels were excavated, water courses were altered, and discarded rubble from surrounding development was dumped alongside the river. The legacy of industrialization is still apparent in the park today – cement structures jut out of the ground, topsoil is thin, and nearly all vegetation has been established in the last 40-50 years, after the area was designated a city and regional park.

The Minnesota Land Cover Classification System from the Department of Natural Resources (DNR) classifies this site into 3 land cover types. The predominant land cover type is altered/non-native deciduous woodland. This is an accurate high-level description of the forested tree canopy in the park. The second land cover type is short grasses and mixed trees with over 50% impervious cover. This refers to the area near the spillway, where remnant blocks of cement are scattered and nearly all of the vegetation is short. The third land cover type is fast moving linear open water habitat. Most of the area designated in this category is mischaracterized. As the river constantly shifts, it can be hard to accurately define “land” vs. “water”, especially in a cursory analysis of aerial images.

Volunteer stewards in partnership with the MHNA and MPRB have been removing invasive species, planting shrubs, and watering within the park for over 20 years, with year-round stewardship starting in 2019. Significant improvements have been made at removing large buckthorn and honeysuckle in most areas that are accessible by volunteers. The group hosts around a dozen volunteer care days each year, running from April – November. This natural resources management plan in large part was developed to make their efforts more strategic, targeted, and with an eye toward long term establishment and maintenance.

For this planning effort, the site was divided into 10 distinct management units. The unit boundaries were delineated based on current plant community surveys, topography, hydrology, and accessibility for volunteers to implement restoration. Management recommendations are developed for each unit with the overall objectives for the site focused on protecting and restoring high-quality habitat by removing invasive plant species and providing pollinator, bird, and wildlife habitat that is also aesthetically pleasing.

Historic Native Plant Communities

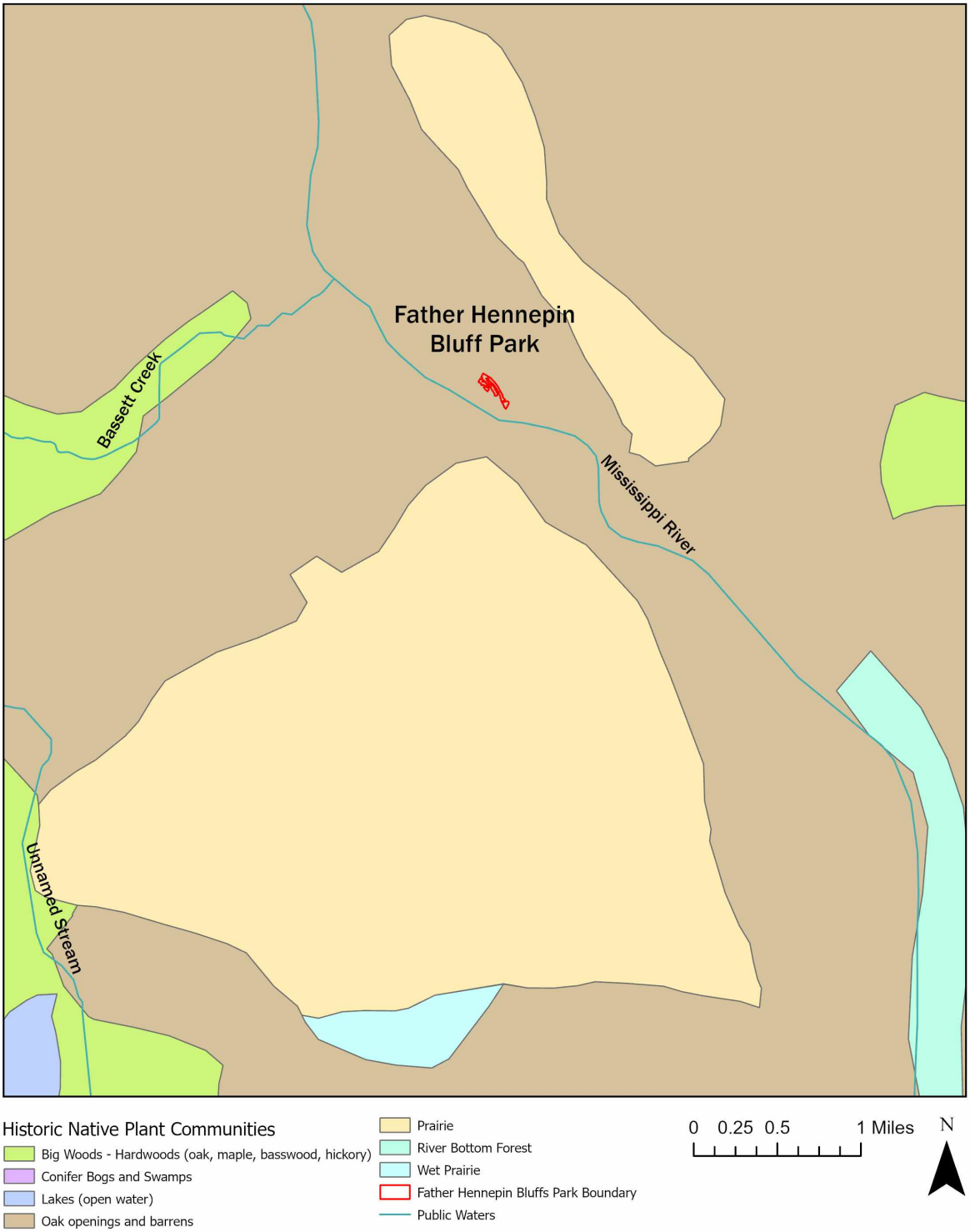

Figure 2: Historic Plant Communities Pre-European Colonization

Data from the Marschner's Map shows vegetation communities at one snapshot in time, approximately 1840's.

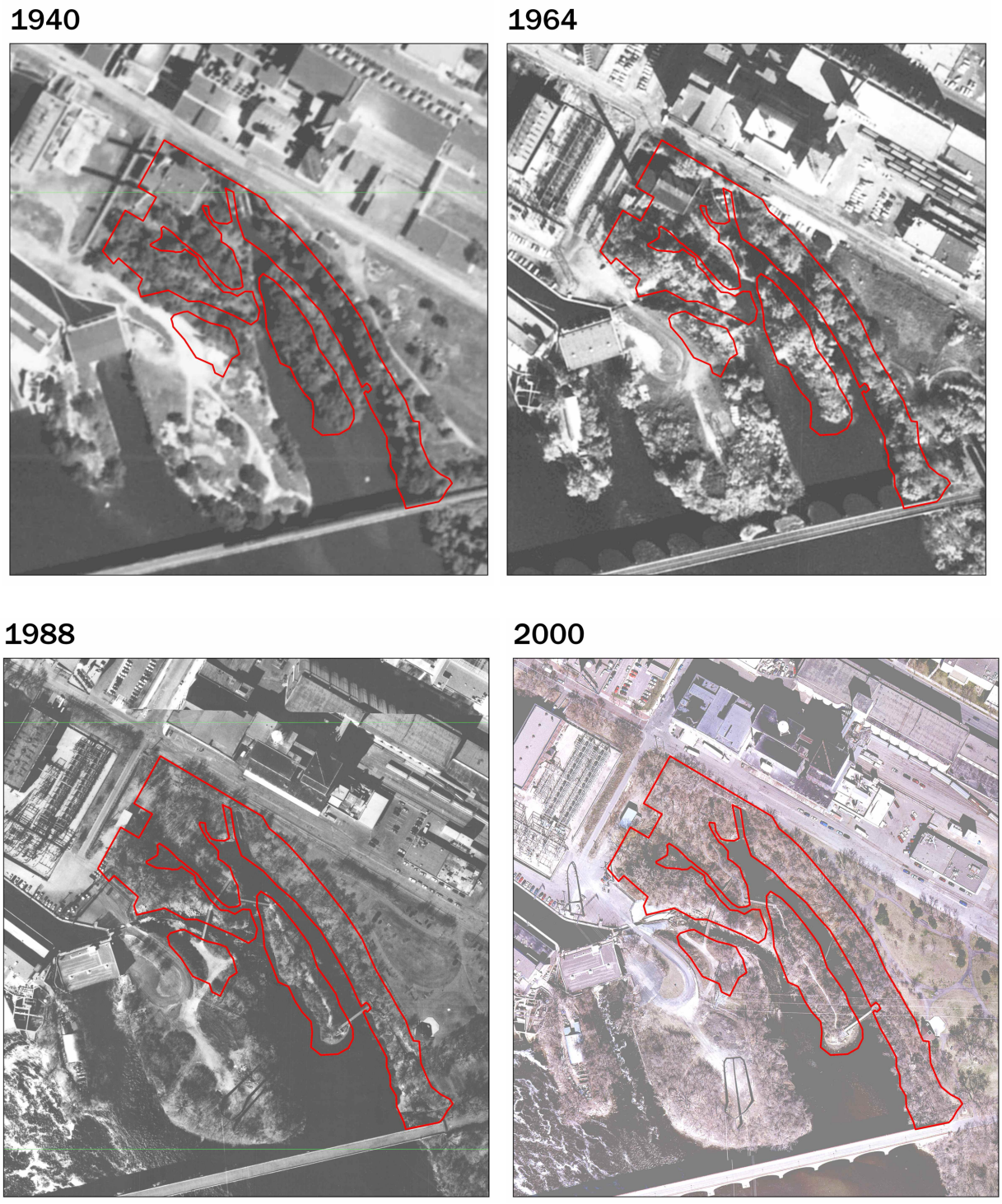

Figure 3: Historic Aerial Photos
Images from 1940, 1964, 1988, and 2000 with the current park boundary overlaid to show change in land cover over time.

Figure 4: Current Plant Communities Within Father Hennepin Bluff Park

Map showing Minnesota Land Cover Classification System (MLCCS) data which categorized land use at one point in time during the early 2000's. The boundary of the park is constantly changing depending on water level.

MANAGEMENT UNITS AND RECOMMENDATIONS

OVERVIEW

A natural resources inventory and assessment was conducted by FMR ecologists during the fall of 2023 and spring of 2024 to determine existing plant and wildlife communities, identify opportunities for restoration, and develop guidance for long-term public use. Father Hennepin Bluffs Park consists of seven primary vegetation cover types: oak forest, terrace forest, floodplain forest, dry savanna, dry prairie, mesic prairie, and seepage meadow. These cover types occur in ten distinct units across the park.

Each unit description includes a recommended plant community which can be used to guide restoration, based on the Minnesota DNR Native Plant Communities. Links to Minnesota DNR fact sheets, which provide descriptions of each native plant community recommended for the park can be found in Appendix C – Restoration Planting and Seeding Species Lists.

A note on language use throughout the document: Species present on site are described as native, non-native, and invasive. **Native species** are species that evolved in the state of Minnesota, have existed here for tens of thousands of years, and therefore have a deep ecological connection and relationship with this place and other native species. **Non-native species** are species that originated elsewhere. Non-native does not connote that the species is "bad" or a problem. The term **invasive species** refers to a behavioral trait of the species, where it has the potential to cause ecological harm at the site. This could include increasing erosion, outcompeting other species that are important for pollinators, birds, and wildlife, or by creating monocultures that affect viewsheds and park aesthetics. Both native and non-native species can be invasive.

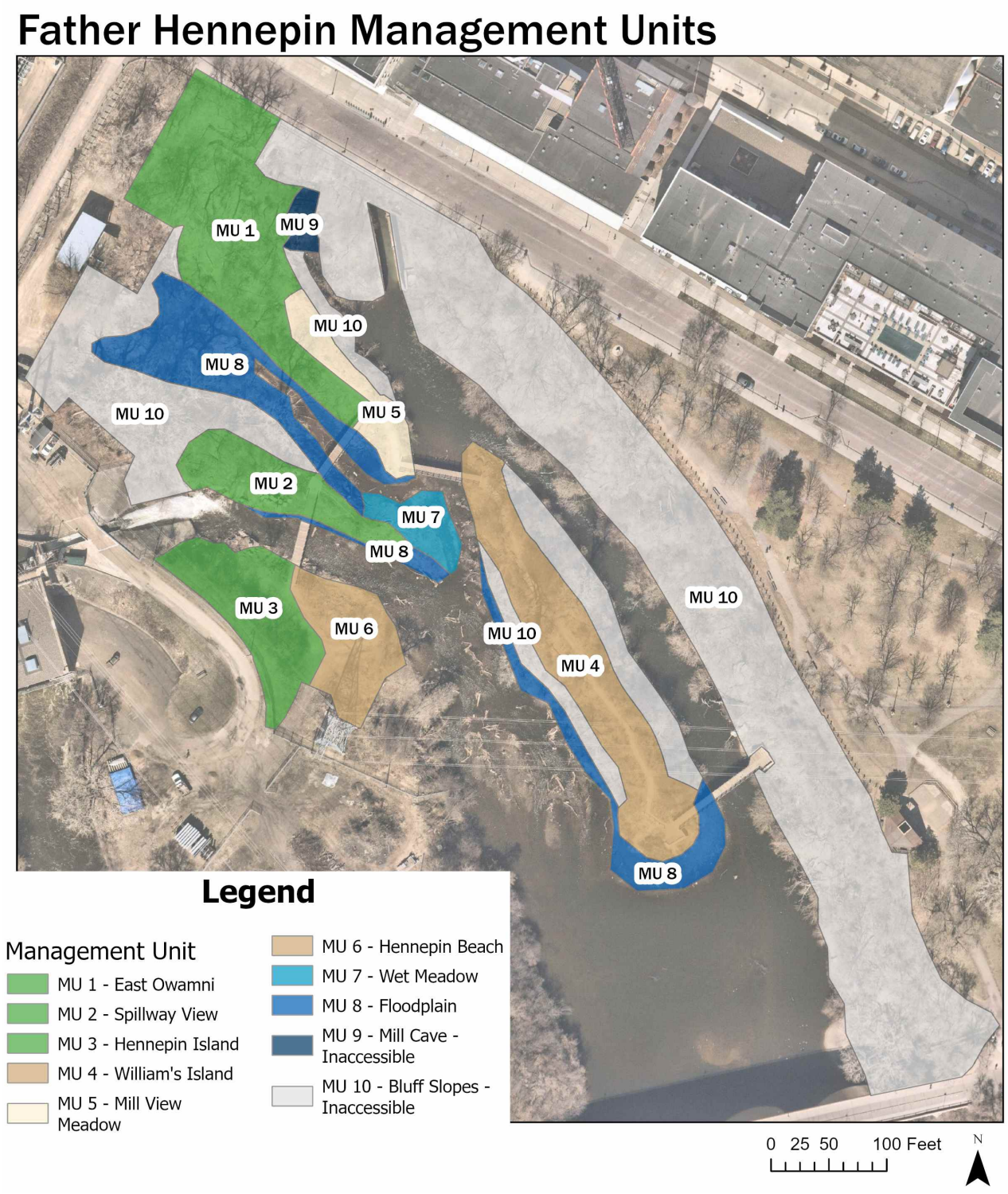

Figure 5: Management Unit Map

This map shows the 10 management units described below. Colors are associated with target plant community types, including forest (green), prairie (tan), savanna (brown), wetland (2 shades of blue), and areas inaccessible by volunteers (gray).

MANAGEMENT UNIT 1: EAST OWAMNI

CURRENT STATE

Image 2: Management Unit 1, East Owamni

Management Unit 1 (East Owamni) is located at the park entrance in the northeast corner of the site and extends south of the trail to the bridge overlooking East Owamni, where the falls once flowed. This 0.52-acre unit is sloped, extending from the top of the bluff and dropping 55 feet in elevation. Significant volunteer work has been done in this unit, including removing invasive shrubs and herbaceous plants, creating wattles for erosion control, seeding, planting, and installing fencing to protect plantings. Additionally, this unit is a study site in the state-wide Cover It Up research project, a UMN research study focused on ecological restoration in buckthorn-infested areas.

Overall, this unit has relatively low species diversity and relatively low presence of invasive species. There are 42 species present in the unit, of which 22 are native, 8 are non-native, and 12 are invasive. Native species including cottonwood and boxelder dominate the canopy and subcanopy. The shrub layer predominantly consists of chokecherry, but invasive shrubs including common buckthorn, honeysuckle, Siberian elm, black locust, and white mulberry persist at low levels. White snakeroot is the dominant plant in the herbaceous layer. There are scattered groupings of invasive plants including absinthe wormwood, common burdock, garlic mustard, hoary alyssum, and sweet clover, but overall cover of these invasive species is low. The species composition in this unit does not resemble any historic native plant community in Minnesota. However, consistent and dedicated volunteer effort in this unit has

drastically reduced cover of invasive species. Efforts to re-introduce additional native species diversity will increase habitat value over time.

TARGET NATIVE PLANT COMMUNITY

Southern Mesic Oak-Basswood Forest (MHs37)
Southern Terrace Forest (FFs59)

MANAGEMENT ACTIONS SUMMARY

Key management actions to continue and increase in this unit include:

- Continued invasive species monitoring and removal, focused on buckthorn, honeysuckle, white mulberry, Siberian elm, black locust, garlic mustard, absinthe wormwood, burdock, and sweet clover.
- Seeding to decrease erosion and increase species diversity. Suggested species to include are zigzag goldenrod, Virginia waterleaf, early-meadow rue, Clayton's sweet cicely, wild geranium, wood anemone, Canada mayflower, *Carex rosea*, *Carex blanda*, bottlebrush grass, and nodding fescue. Volunteers can reference Appendix C for specific species suggestions.
- Plants that are culturally relevant to the Dakota-community to consider planting in this unit include serviceberry or juneberry, chokecherry, wild ginger, and lady fern in lower-lying areas (Thompson, 2024).
- Tree and shrub planting, watering, and protection to increase species diversity. Suggested species to include are basswood, northern red oak, bur oak, white oak, sugar maple, ironwood, and chokecherry.

MANAGEMENT UNIT 2: SPILLWAY VIEW

CURRENT STATE

Management Unit 2 (Spillway View) is 0.18-acres large and spans the ridge between East Owamni and the Spillway. It intersects the two bridges that lead to Hennepin Island from East Owamni. The eastern half of this unit is accessible using a narrow footpath to reach Mill-Stone Arch View. The western half of this unit was once accessible using a narrow footpath at the bridge level. However, extreme erosion and scouring at the concrete structure connecting the two bridges has prevented access of the western half of this trail. Volunteers have created a safer access trail heading east and circling under the bridge towards the spillway, allowing visitors to get closer to the spillway waterfall. Volunteers removed buckthorn in this unit and used the material for wattles and prevention measure dissuading people from traversing highly eroded areas.

This unit has extremely low species diversity and contains large, seed producing buckthorn. 12 species were found in this unit. The dominant species are chokecherry, buckthorn, staghorn sumac, green ash saplings, and honeysuckle which occupy the shrub layer. The soil is bare in the understory and the tree canopy is limited to less than 25% cover by cottonwoods.

TARGET NATIVE PLANT COMMUNITY

Southern Mesic Oak-Basswood Forest (MHs37)
Southern Terrace Forest (FFs59)

MANAGEMENT ACTIONS SUMMARY

Key management actions to continue and increase in this unit include:

- Critical period cutting of buckthorn – a new management technique for the park (Appendix D)
- Continued invasive species monitoring and removal, focused on honeysuckle, burdock, and sweet clover.
- Installation of erosion bars on steep, unvegetated slopes. Utilize large buckthorn trunks. Consider removing most old wattles in favor of more-effective erosion bars. Compost wattles in MPRB compost area.
- Seeding to decrease erosion and increase species diversity. Focus on shade-tolerant grasses and rapidly establishing woodland forbs, including bottlebrush grass, Virginia wild rye, silky wild rye, Canada wild rye, little bluestem, wild geranium, zig-zag goldenrod, early meadow-rue, and wild golden glow. Volunteers can reference Appendix C for specific species suggestions.
- Plants that are culturally relevant to the Dakota-community to consider planting in this unit include serviceberry or juneberry, chokecherry, wild ginger, and lady fern in lower-lying areas (Thompson, 2024).

MANAGEMENT UNIT 3: HENNEPIN ISLAND

CURRENT STATE

Image 3: Management Unit 3, Hennepin Island

Management Unit 3 (Hennepin Island) comprises the wooded area on Hennepin Island south of the spillway and north of the river access point (Hennepin Beach), covering 0.23-acres. This unit is owned by Xcel Energy but is maintained by Father Hennepin Park Stewards through an agreement with MRPB. Historically, Stewards have referred to the entire area on Hennepin Island as Hennepin Beach. This NRMP delineates two separate units based on tree canopy cover. This management unit is forested. Portions of this unit are steep, especially from the access road south to the fence. The area near the spillway has large concrete remnants scattered on the edge of the waterway with plants growing between them. Volunteers have removed invasive plants in this area in the past. Progress has not been as significant as the East Owamni unit.

This unit has relatively low species diversity and large, seed producing buckthorn and honeysuckle dominate the shrub and subcanopy layers. There are some native species present including boxelder, staghorn sumac, cottonwood and catalpa. Catalpa is a climate-adapted tree species, expected to thrive in our river floodplains under current climate change scenarios. The herbaceous layer is dominated by invasive species including butter and eggs, soapwort, spotted knapweed, and sweet clover.

TARGET NATIVE PLANT COMMUNITY

Southern Mesic Oak-Basswood Forest (MHs37)
Southern Terrace Forest (FFs59)

MANAGEMENT ACTIONS SUMMARY

Key management actions to continue and increase in this unit include:

- Critical period cutting of buckthorn – a new management technique for the park (Appendix D)
- Invasive species management of honeysuckle, soapwort, butter and eggs, spotted knapweed, and sweet clover
- Careful thinning of staghorn sumac to increase light availability to the soil. This can be done by cutting a few stems of sumac at a time and seeing how the clone responds. The goal is to increase light availability without removing the sumac clone entirely.
- Seeding to decrease erosion and increase species diversity. Focus on shade-tolerant, rapidly establishing species, including bottlebrush grass, Virginia wild rye, silky wild rye, Canada wild rye, *Carex blanda*, *Carex rosea*, *Carex grayi*, jewelweed, Virginia waterleaf, wild golden glow, woodland phlox, and Virginia knotweed. Volunteers can reference Appendix C for specific seed mix suggestions.
- Plants that are culturally relevant to the Dakota-community to consider planting in this unit include serviceberry or juneberry, chokecherry, wild ginger, and lady fern in lower-lying areas (Thompson, 2024).

MANAGEMENT UNIT 4: WILLIAMS ISLAND

CURRENT STATE

Image 4: Management Unit 4, Williams Island

Management Unit 4 (Williams Island) comprises all volunteer accessible area on Williams Island (approximately 0.41-acres), east of Mill View Meadow. There is a dirt path bisecting the unit along the ridge of the island. Slopes on either side are steep, but become nearly un-traversable nearest the water's edge, particularly on the north side. Topsoil is extremely thin in this unit and soil erosion is a major concern. The vegetation in this unit is almost entirely invasive species including buckthorn, honeysuckle, sweet clover and spotted knapweed. There is one large cottonwood tree and a few catalpa seedlings, but the tree canopy in this unit is largely absent. Chokecherry and staghorn sumac are filling in areas where buckthorn and honeysuckle are being managed.

The community was asked to provide feedback about the ecological trajectory of this unit. The significant amount of invasive species removal will create a somewhat clean slate to start from. People were asked to choose between targeting prairie to improve pollinator habitat or forest for continuity with the rest of the park. Of the 21 respondents, 13 chose prairie, 5 chose forest, and 3 thought either or a combination of both could be a good option. Based on this feedback, the target plant community is prairie, with some planting of trees allowed to create a savanna aesthetic. Community members liked the idea of an open understory where grasses and wildflowers could provide slope stabilization and habitat for pollinators. All native trees and saplings that are present in the unit should be protected. After initial removal

of invasive species and establishment of grassy understory, a few more trees could be planted to slowly increase the tree canopy to roughly 25% over time.

Volunteers and Conservation Corps of Minnesota and Iowa crews have made significant progress removing invasive shrubs. However, there is still much to be done in this unit. The main priority here is installation of erosion bars along the slopes using buckthorn trunks that were previously removed. There are several large piles of invasive woody material that has been left to decompose along the trail edges. Although allowing material to decompose on site is an important tenant of traditional ecological knowledge, the volume of material left decomposing poses a challenge to reestablishing any vegetation. Most brush piles left in this unit are hung up in living invasive shrubs further down slope, rather than being in contact with the ground. It is recommended that most of this material gets removed from the unit and composted at the MPRB compost area off-site, where it has a better chance to fully decompose. Small piles that are fully in contact with the ground can remain.

After erosion bars are installed and most brush is removed, this unit should undergo seeding, planting, and removal of herbaceous invasive species.

TARGET NATIVE PLANT COMMUNITY

Southern Dry Prairie (UPs13)
Southern Dry Savanna (UPs14)

MANAGEMENT ACTIONS SUMMARY

Key management actions to continue and increase in this unit include:

- Critical period cutting of buckthorn – a new management technique for the park (Appendix D).
- Removal of brush piles and re-positioning a limited number of brush piles so woody material is in contact with the soil.
- Invasive species management of honeysuckle, spotted knapweed, and sweet clover.
- Seeding to decrease erosion and increase species diversity. Focus on rapidly establishing species including side-oats grama, little bluestem, big bluestem, Canada wild rye, *Carex brevior*, *Carex vulpinoidea*, anise hyssop, common milkweed, partridge pea, purple prairie clover, early sunflower, wild bergamot, yellow coneflower, smooth blue aster, hoary vervain, and golden alexanders. Additionally, seed can be collected from Mill View Meadow and scattered on Hennepin Island.
- Planting plugs to increase diversity is encouraged! Prior to committing to receiving free plugs from MPRB, volunteers can use the Minnesota Wildflowers website as a resource for ensuring the species provided thrive in dry, sunny conditions. Volunteers can also reference Appendix C. Avoid selecting plants that do well along shores or in moist environments for this unit.

- Plants that are culturally relevant to the Dakota-community to consider planting in this unit include nodding wild onion, Pennsylvania sedge, prairie smoke, golden alexanders, purple prairie clover, and prairie dropseed (Thompson, 2024).

MANAGEMENT UNIT 5: MILL VIEW MEADOW

CURRENT STATE

Image 5: Management Unit 5, Mill View Meadow

Management Unit 5 (Mill View Meadow) is a 0.11-acre prairie and is located along the main trail before reaching the bridges to the spillway and Williams Island. The unit was aptly named by volunteers because of the view of Pillsbury A Mill to the northeast. Mill View Meadow is relatively flat compared to other units throughout the park before steeply sloping north to the drainageway near Mill Cave. Volunteers have significantly transformed this unit through woody and herbaceous invasive species removal, plug planting, and watering. It is easiest to tend because it is one of the most accessible units.

There were 47 species identified in this unit. Of those, 28 are native, 7 are nonnative, 11 are invasive, and 1 is unknown. The species in this unit are a mix of prairie and woodland plants, likely because of the transition this unit has experienced over time. Flowering prairie plants such as lanceleaf coreopsis, blazingstars, bergamot, and cup plant provide habitat resources for pollinators. Woodland shrubs in this unit including chokecherry, elderberry, and nannyberry also provide pollinator resources. There are several invasive species that will need continued management including sweet clover, burdock, St. John's wort, buckthorn, honeysuckle, and white mulberry.

The community was asked to provide feedback on the overall planting aesthetic of this unit. There were two options: planting individuals of the same species in clusters and mulching around them to achieve a demonstration garden aesthetic vs. planting individuals of the same species intermixed with one other to achieve a mosaic aesthetic typical of a prairie restoration. Of the 18 people who responded, 15 chose a mosaic aesthetic typical of a prairie restoration and 3 chose a demonstration garden aesthetic. As such, the recommendation is to continue planting individual plants intermixed with one another. Mulching around plants in the first and second year of growth could be useful for water retention and help with long-term survival.

TARGET NATIVE PLANT COMMUNITY

Southern Dry Prairie (UPs13)

MANAGEMENT ACTIONS SUMMARY

Key management actions to continue and increase in this unit include:

- Critical period cutting of buckthorn – a new management technique for the park (Appendix D).
- Invasive species management of 11 species, listed in Appendix B– Vegetation Survey Data.
- Seeding to decrease erosion and increase species diversity. Focus on rapidly establishing species including side-oats grama, little bluestem, big bluestem, Canada wild rye, *Carex brevior*, *Carex vulpinoidea*, anise hyssop, common milkweed, partridge pea, purple prairie clover, early sunflower, wild bergamot, yellow coneflower, smooth blue aster, hoary vervain, and golden alexanders. Additionally, seed can be collected from Mill View Meadow and scattered on Hennepin Island.
- Planting plugs to increase diversity is encouraged! Prior to committing to receiving free plugs from MPRB, volunteers can use the Minnesota Wildflowers website as a resource for ensuring the species provided thrive in dry, sunny conditions. Volunteers can also reference Appendix C. Avoid selecting plants that do well along shores or in moist environments for this unit.
- Plants that are culturally relevant to the Dakota-community to consider planting in this unit include nodding wild onion, Pennsylvania sedge, prairie smoke, golden alexanders, purple prairie clover, and prairie dropseed (Thompson, 2024).

MANAGEMENT UNIT 6: HENNEPIN BEACH

CURRENT STATE

Image 6: Management Unit 6, Hennepin Beach

Management Unit 6 (Hennepin Beach) is the small, 0.17-acre area on Hennepin Island with limited tree cover where park visitors can directly interact with the river. A gravel access road runs through this unit, and the soil is extremely thin, with extensive rubble close to the river's edge. In contrast to the Hennepin Island unit, this area is more open with less woody cover. At its southern edge, willow and cottonwood trees create a shaded gathering place. The open area allows for beautiful views of the rest of the park. Volunteers have done work managing spotted knapweed and other herbaceous invasive species in this unit, but it has not been a significant priority compared to other units throughout the park.

This unit has very low species diversity and high abundance and cover of invasive species. Native species including New England aster, evening primrose, and vervain provide some pollinator resources despite covering less than 1% of the unit area. Invasive species including spotted knapweed, soapwort, butter and eggs, Canada thistle, hoary alyssum, and sweet clover are common. Despite the significant presence of invasive species, this unit holds immense potential to be high-quality pollinator habitat because it has full sun exposure.

TARGET NATIVE PLANT COMMUNITY

Southern mesic savanna (UPs24) is the target plant community for this unit. Water levels fluctuate drastically in this unit, so species on the mesic-wet moisture tolerance spectrum should be considered. The nature of this plant community will allow for continued views of the park and open access to the river.

MANAGEMENT ACTIONS SUMMARY

Key management actions to continue and increase in this unit include:

- Invasive species seed reduction techniques to reduce weed-seed bank over time. Specifically, focus on spotted knapweed, soapwort, butter and eggs, Canada thistle, and sweet clover.
- Seeding to increase competition and species diversity. Focus on mesic-wet tolerant species including Indian grass, big bluestem, prairie cordgrass, blue joint grass, sawtooth sunflower, white sage, smooth blue aster, eastern panicled aster, prairie blazing star, prairie phlox, gray headed coneflower, tall meadow-rue, Virginia mountain mint, and golden alexanders.
- Strategic plug planting to increase competition and species diversity. A similar species list can be used. Consider planting in groupings instead of sporadically throughout the unit to increase chance of survival. Mulching around plugs to increase survival rate is encouraged.
- Plants that are culturally relevant to the Dakota-community to consider planting in this unit include nodding wild onion, Pennsylvania sedge, prairie smoke, golden alexanders, purple prairie clover, and prairie dropseed (Thompson, 2024).
- Volunteers can reference Appendix C for more species suggestions.
- Targeted watering of plugs as needed for 1-2 growing seasons after planting.

MANAGEMENT UNIT 7: WET MEADOW

CURRENT STATE

Image 7: Management Unit 7, Wet Meadow

Management Unit 7 (Wet Meadow) is a small, 0.07-acre marshy area located in the floodplain between the three main bridges on site. Looking down at this unit from the bridge connecting Mill View Meadow to Williams Island is an unparalleled view of native species diversity and multiple colors of blooms at any given time. This unit has organic soil and is highly influenced by fluctuating water levels of the river and groundwater seeping from East Owamni. In dry years, it is accessible with regular calf-height water proof boots. In wet years, waders may be required to access this unit. Volunteers have done some plug planting and invasive species removal in this unit over time.

The wet meadow unit is one of the best habitat resources currently on this site. It has good native species diversity, including pollinator-supporting plants like swamp milkweed, cup plant, common boneset, joe pye weed, and sneezeweed. There are several native wetland plants including dark green and soft stem bulrushes. There is invasive purple loosestrife present in the unit, but the purple loosestrife beetle, a biocontrol agent, does a good job eating the plants to keep them in check.

TARGET NATIVE PLANT COMMUNITY

Because of human impacts to hydrology in this unit, there is not a perfect match for a target native plant community. Southern seepage meadow/carr (WMs83) is a reasonable starting point, although not all species in this community may be suitable for a flowing river floodplain.

MANAGEMENT ACTIONS SUMMARY

Key management actions to continue and increase in this unit include:

- Invasive species management to ensure common buckthorn does not encroach into this unit.
- Monitoring of reed canary grass when unit is accessible. If population expands, react by planting plugs in groups near the edges of the reed canary grass patch to combat spread.
- Strategic plug planting to increase floral resources, blooming, and aesthetic views. Focus on wetland and floodplain species such as joe pye weed, marsh bellflower, swamp milkweed, marsh marigold, giant sunflower, red-stemmed aster, and jewelweed.
- Volunteers can reference Appendix C for more species suggestions.

MANAGEMENT UNIT 8: FLOODPLAIN

CURRENT STATE

Image 8: Management Unit 8, Floodplain

Management Unit 8 (Floodplain) refers to the moderately accessible shoreline areas throughout the park (approximately 0.46 acres). This includes the perimeter of Williams Island, the land north and south of the spillway, and the land surrounding the seepage area beneath East Owamni. All of these areas are impacted by fluctuating water levels of the Mississippi River. Some areas in this unit are accessible by land when water levels are low, but some areas are only accessible by water. Often, the areas only accessible by water are steeply sloped, where it would be unsafe for volunteers to traverse down slope into the floodplain from the top. Invasive species management including buckthorn removal has occurred in accessible areas.

The diversity and habitat quality in this unit is mixed. In some areas, such as the floodplain surrounding the wet meadow management unit (MU7), the diversity is relatively high. Red osier dogwood, staghorn sumac, highbush cranberry, and false indigo are scattered throughout the floodplain along the trail. This area is largely accessible and has been the target of volunteer invasive species removal efforts. Other areas including the floodplain surrounding Williams Island and adjacent to the spillway are dominated by buckthorn, largely due to their inaccessibility. One common thread throughout all floodplain areas is the lack of

stable ground cover and erosion-prone soils. Establishment of denser native vegetation after invasive species removal will help hold soil in place.

TARGET NATIVE PLANT COMMUNITY

Southern Floodplain Forest (FFs68)
Southern seepage meadow/carr (WMs83)

MANAGEMENT ACTIONS SUMMARY

Key management actions to continue and increase in this unit include:

- Critical period cutting of buckthorn, both by land and by water (Appendix D).
- In areas of lower flow, such as near East Owamni, native plug planting to increase herbaceous diversity and establish deep root systems. Some suggested species include joe pye weed, marsh bellflower, swamp milkweed, marsh marigold, giant sunflower, red-stemmed aster, boneset, jewelweed, mad dog skullcap, and southern blue flag iris.
- After buckthorn removal in areas of higher flow, live-stake planting of native shrubs including pussy willow, slender willow, bebb's willow, and red-osier dogwood could be considered.
- Volunteers can reference Appendix C for more species suggestions.

MANAGEMENT UNIT 9: MILL CAVE

CURRENT STATE

Image 9: Management Unit 9, Mill Cave

Management Unit 9 (Mill Cave) refers to the small backwater area located near the boarded-up Mill Cave entrance. This 0.03-acre unit is largely inaccessible by volunteers and broad management is not advised. However, it has a unique plant community that is worth noting. Consecutive droughts in 2022 and 2023 lowered the water level in this unit, allowing for wetland and floodplain herbaceous plants to establish. It is surprisingly diverse, supporting native species including fringed willowherb, jewelweed, nodding beggarstick, Pennsylvania smartweed, and rice cut grass. There are pockets of invasive species found throughout the park including common buckthorn, white mulberry, and burdock, but they do not exceed 5% cover of the unit. One of the most exciting discoveries in this unit was the smooth cliff break fern growing on the limestone sidewall of the unit.

TARGET NATIVE PLANT COMMUNITY

N/A

MANAGEMENT ACTIONS SUMMARY

No key management actions are recommended for this unit due to safety of volunteers. If a minimum amount of management is desired, critical period cutting of buckthorn is a good long-term maintenance strategy to prevent seed production and proliferation at the site.

MANAGEMENT UNIT 10: BLUFF SLOPES

CURRENT STATE

Image 10: Management Unit 10, Bluff Slopes

Management Unit 10 (Bluff Slopes) includes areas of the park located on steep bluff slopes that are largely inaccessible to volunteers (approximately 2.53 acres). The sloped area from Main Street down the bluff to the east channel around Williams Island is in this unit, as well as the sloped area directly surrounding East Owamni and the spillway, southeast of Xcel energy property. Additionally, either side of Williams Island (MU4) has areas that are steep and inaccessible to volunteers that are included in this unit.

The tree canopy in these areas is comprised of early-successional, disturbance-tolerant species including boxelder, hackberry, and American elm. These same species are largely regenerating in the subcanopy, with the addition of climate-adapted catalpa. Invasive species including buckthorn, Tartarian honeysuckle and Siberian elm dominate the shrub layer, covering up to 50% of the area. Some native plants including jewelweed and moonseed exist in the understory at low rates, particularly near groundwater seeps. Vines are the dominant understory species overall, with riverbank grape and Virginia creeper consistently growing over top of shrub and subcanopy trees.

The inaccessibility and dominance of seed-producing invasive species poses a threat to volunteer restoration efforts. These areas are directly adjacent to areas where volunteers

have done and will do extensive removal, and there's a risk of continual seed movement from inaccessible to accessible areas.

TARGET NATIVE PLANT COMMUNITY

Southern Mesic Oak-Basswood Forest (MHs37)
Southern Terrace Forest (FFs59)

MANAGEMENT ACTIONS SUMMARY

No key management actions are recommended for this unit due to safety of volunteers. However, the following options could be explored if contracted labor could be hired, in coordination with MPRB. This is further discussed in the "Park Restoration Beyond Current Management Plan" section below.

- Removal of invasive woody plants including buckthorn, honeysuckle, and Siberian elm.
- Removal of invasive herbaceous plants including spotted knapweed.
- Revegetation after removal by seeding/planting and protecting with biodegradable erosion control mats.

RESTORATION ACTIVITY PRIORITIZATION

The process of ecological restoration can be disheartening. It can take many years to establish robust native plant communities on highly degraded sites. Often, it is advisable to prioritize by starting on small, defined areas first, rather than starting in all units and potentially sacrificing follow-up steps. This section contains a map (Figure 7) of target native plant communities for each unit and a table prioritizing which units to start first. Prioritization is based on invasive species establishment, volunteer accessibility, potential for erosion, and potential to increase habitat quality.

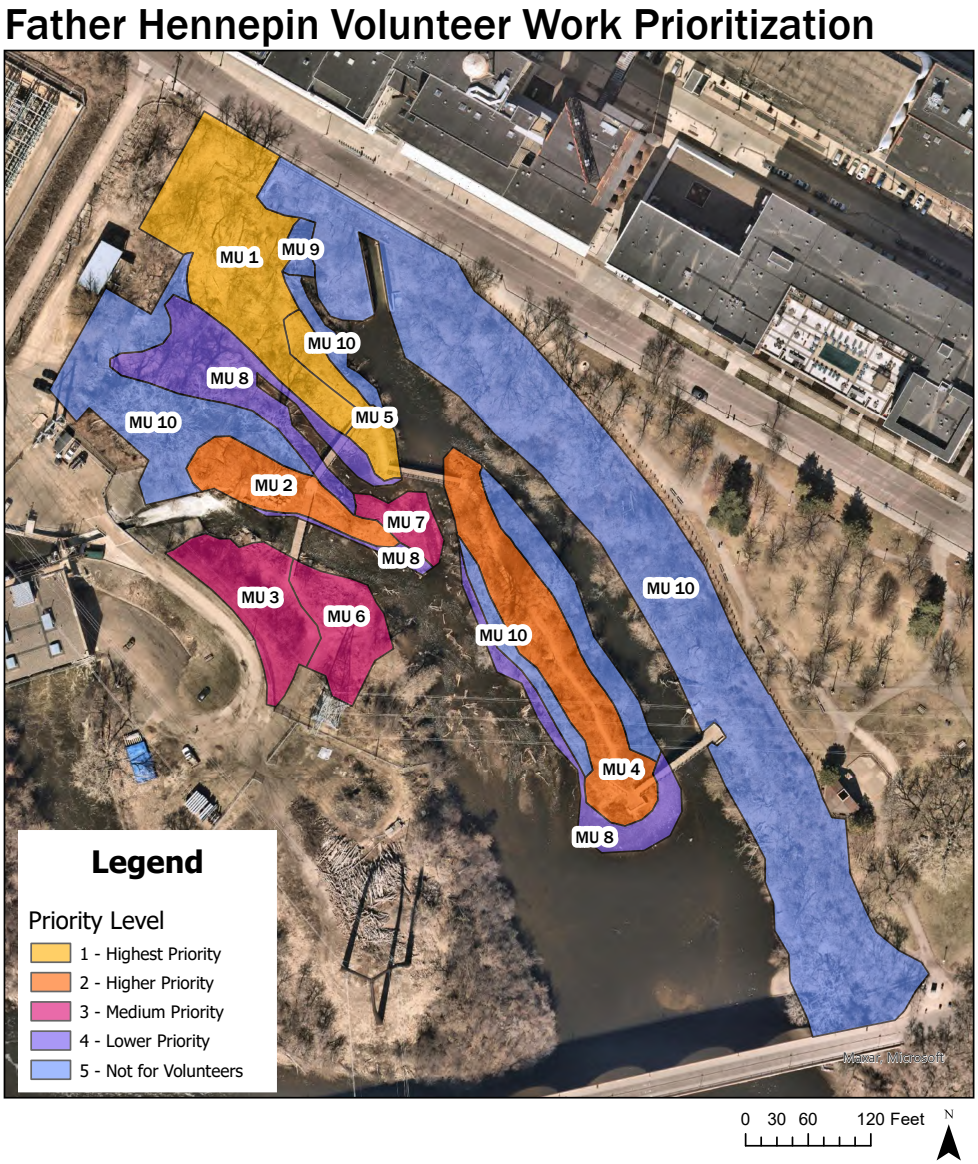

Figure 6: Volunteer Work Prioritization Map

This map shows where volunteers should prioritize working first (level 1) to last (level 5).

Table 1: Volunteer Work Area Prioritization Table by Unit

A summary table describing each management unit (name and number), size of each management unit (acres and square feet), target plant community, and priority level for volunteer management. Cells are color coded based on priority, where yellow is Priority 1 units, orange is Priority 2 units, pink is Priority 3 units, purple is Priority 4 units, and blue is Priority 5 units. Use this table in conjunction with the prioritization map and task tables for an annual guide of where work should occur.

UNIT	UNIT NAME	SIZE (ACRES)	SIZE (SQUARE FEET)	TARGET PLANT COMMUNITY	PRIORITY LEVEL
MU1	East Owamni	0.52	22,807	Mesic Oak-Basswood Forest, Terrace Forest	1
MU2	Spillway View	0.18	7,803	Mesic Oak-Basswood Forest, Terrace Forest	2
MU3	Hennepin Island	0.23	10,083	Mesic Oak-Basswood Forest, Terrace Forest	3
MU4	Williams Island	0.41	18,067	Dry Prairie, Dry Savanna	2
MU5	Mill View Meadow	0.11	4,598	Dry Prairie	1
MU6	Hennepin Beach	0.17	7,608	Mesic Prairie, Mesic Savanna	3
MU7	Wet Meadow	0.07	3,249	Seepage Meadow / Carr	3
MU8	Floodplain	0.46	20,138	Floodplain Forest, Seepage Meadow / Carr	4
MU9	Mill Cave	0.03	1,311	N/A	5
MU10	Bluff Slopes	2.53	110,423	Mesic Oak-Basswood Forest, Terrace Forest	5

RESTORATION IMPLEMENTATION AND MPRB COORDINATION

The Father Hennepin Bluffs Stewards and MPRB intend to hold annual coordination meetings in January or February of each year. FMR may participate in meetings to assist in the implementation process. During these meetings, annual restoration progress can be discussed, any necessary changes to future tasks or schedules can be made, and the MHNA and MPRB can coordinate necessary permits and support of volunteer activities.

A general timeframe to guide volunteer restoration activities is shown in Tables 2-11 below. Volunteer leaders should use this timeline when annually reviewing the workplan with MPRB for the Volunteer Services Agreement. Each year is similarly structured and focused on hosting the same type of events annually. The biggest difference year to year is that the location changes based on prioritization of each management unit. If work outlined in this table seems beyond current volunteer capacities, starting in new units can be delayed until capacity is increased. Ensuring that current work units make it through the whole restoration trajectory before starting new units is encouraged because those areas will be more resistant to re-invasion over time. Use the timeline as a guideline, but do not get discouraged if it needs to be adjusted or updated to reflect volunteer capacity.

Prior to leading volunteer work days, leaders are encouraged to attend culture plant walks led by indigenous people at other sites along the river. There are free events through the Hennepin History Museum at sites like Crosby Farm Park. Leaders are encouraged to bring knowledge learned at those events to habitat care days at Father Hennepin Bluff Park. At the beginning of a habitat care day, leaders can remind volunteers that plants, animals, other species, humans, and the environment are all interconnected. We all rely on each other. Leaders can encourage volunteers to think about this interrelatedness of all organisms while caring for this important site.

Volunteer leaders should follow the general timeline to the best of their abilities when implementing this work. The MPRB care calendar (Appendix E) provides specific methodology guidelines for how to manage target species listed in the task table. For example, if the task table lists managing Canada thistle, follow Appendix E for specific recommendations on how to do that effectively in the given season that the task is listed. The task table is intended to help prioritize resources and achieve long-term success.

Some tasks have costs associated with them. These costs are estimates and should be used for budgeting purposes when applying to future grants. They can also be used when planning the yearly calendar with MPRB to ask for plant materials such as trees, shrubs, plugs, and seeds, as well as mulch and tree protection. It is critically important to add native diversity back to areas where invasive species have been removed to prevent further invasion. Soil quality is a significant issue on the site, so natural hardwood mulch should be used during every planting event.

There are some units where management by volunteers is not advised because of inaccessible slopes. Any contracted services must be hired through the Minneapolis Park and Recreation Board per the policies laid out in MHNA's Volunteer Services Agreement. To perform work in these areas, see the "Park Restoration Beyond Current Management Plan" section for more detail.

Coordination and approval by MPRB is required. Tree and shrub planting must be completed under an MPRB permit for tree planting. The application for this permit requires submittal of a landscape plan for each planting area showing species, quantities, and intended locations. A permit for spring and fall planting activities within one calendar year is necessary. The MPRB contact for this permit is:

James Shaffer (or Natural Resources Supervisor)
jshaffer@minneapolisparks.org/ (612) 313-7723

Removal of invasive woody material with the expectation of removal by MPRB Forestry will require similar coordination and approval resulting in a Forestry work permit. MPRB requires submittal of a map with the work area circled and a timeline of work stated. MPRB will accept or amend the proposal and provide direction on how and where to pile debris to be removed by MPRB Forestry. One request per two-week increments of work is acceptable. The MPRB contact for this permit is:

Craig Pinkalla (or Forestry Supervisor)
cpinkalla@minneapolisparks.org / (612) 499-9233

10-YEAR VOLUNTEER RESTORATION TASK TABLES

Task tables for the next 10 years of volunteer restoration activities. Cells are color coded based on priority, where yellow is Priority 1 units, orange is Priority 2 units, pink is Priority 3 units, and purple is Priority 4 units. Priority 5 units are not included in volunteer management. Cells that are not color coded are not associated with a specific management unit, but can be flexible based on the needs of the site as determined by volunteer leaders.

Each task table should be used at the beginning of the year when planning out the habitat care calendar in coordination with MPRB. The format is similar year to year. It prioritizes following through once tasks in new areas are started. As referenced above, this timeline can be flexible depending on volunteer engagement and progress.

Table 2: 2025 Volunteer Activity Task Table

2025					
SEASON	**UNIT**	**ACTIVITY**	**ACRES**	**EVENT TYPE**	**COST EST.**
Winter	East Owamni, Mill View Meadow	Seed open areas after woody removal - broadcast seed with native grass only mix or simple pollinator mix (woodland or dry prairie).	0.63	Small group	$150
Spring when ground is soft	All units, as needed	Install erosion bars using left over buckthorn trunks on site. Compost all remaining branches off-site. Start installing on Williams Island, and extend into other areas from there.	0.5	Large event or small groups	$0.50/yard waste bag
Spring: April	All units, as needed	Trash clean up	1	Large event or small groups	$0.50/trash bag
Spring: April - May	East Owamni, Mill View Meadow	Pull and bag biennial invasive species: garlic mustard and burdock.	0.63	Small groups	$0.50/yard waste bag
June	Williams Island	Critical period cutting touch 1: cut >1” buckthorn "high" - leave stump ~3-4 feet tall, remove all leaves.	0.41	Large event or small groups	$0.50/yard waste bag
Summer: June - August	East Owamni, Mill View Meadow	Tend planted shrubs (water, weed, place double shredded hardwood mulch)	0.63	Small group	$100
Summer: June - August	East Owamni, Mill View Meadow	Pull and bag biennial and perennial invasive species: spotted knapweed, sweet clover, soapwort, Canada thistle, butter and eggs.	0.63	Small groups	$0.50/yard waste bag
August	Williams Island	Critical period cutting touch 2: strip all re-growth from tall buckthorn stumps.	0.41	Small groups	$0.50/yard waste bag

Fall: September	East Owamni, Mill View Meadow	Plant wildflowers, grasses, and sedges in woodland (Unit 1) OR prairie (Unit 5) to increase diversity. Only plant as many as volunteers can commit to watering for 1 year.	0.63	Large event	$200
Fall: October	East Owamni, Mill View Meadow	Clip invasive woody re-sprouts, pull seedlings, bag for composing off site	0.63	Small groups	$0.50/yard waste bag

Table 3: 2026 Volunteer Activity Task Table

2026					
SEASON	**UNIT**	**ACTIVITY**	**ACRES**	**EVENT TYPE**	**COST EST.**
Winter	Williams Island	Seed open areas after woody removal - broadcast seed with native grass only mix.	0.41	Small group	$150
Early Spring	Mill View Meadow	Ask MPRB to consider a prescribed burn in this unit. Timing can be up to MPRB discretion. Not a volunteer task.	0.11	MPRB	N/A
Spring when ground is soft	All units, as needed	Install erosion bars using left over buckthorn trunks on site. Compost all remaining branches off-site. Finish installation on Williams Island, pivot to Spillway View.	0.5	Large event or small groups	$0.50/yard waste bag
Spring: April	All units, as needed	Trash clean up	1	Large event or small groups	$0.50/trash bag
Spring: April - May	East Owamni, Mill View Meadow	Pull and bag biennial invasive species: garlic mustard and burdock.	0.63	Small groups	$0.50/yard waste bag
June	Williams Island	Critical period cutting touch 3: strip all re-growth from tall buckthorn stumps.	0.41	Small groups	$0.50/yard waste bag
Summer: June - August	East Owamni, Mill View Meadow	Tend planted shrubs, wildflowers, grasses, and sedges (water, weed, place double shredded hardwood mulch)	0.63	Small groups	$100
Summer: June - August	East Owamni, Mill View Meadow	Pull and bag biennial and perennial invasive species: spotted knapweed, sweet clover, soapwort, Canada thistle, butter and eggs	0.63	Small groups	$0.50/yard waste bag

August	Williams Island	Critical period cutting touch 4: strip all re-growth from buckthorn. At this point, stump may be easily tipped over and removed.	0.41	Small groups	$0.50/yard waste bag
Fall: September	East Owamni, Mill View Meadow	Plant wildflowers, grasses, and sedges in woodland (Unit 1) OR prairie (Unit 5) to increase diversity. Only plant as many as you can commit to watering for 1 year. Consider planting in 1 cluster for ease of watering and to out-compete weeds.	0.63	Large event	$200
Fall: October	East Owamni, Mill View Meadow	Clip invasive woody re-sprouts, pull seedlings, bag for composing off site	0.63	Small groups	$0.50/yard waste bag

Table 4: 2027 Volunteer Activity Task Table

2027					
SEASON	**UNIT**	**ACTIVITY**	**ACRES**	**EVENT TYPE**	**COST EST.**
Winter	Williams Island	Seed open areas after woody removal - broadcast seed with native grass only mix.	0.41	Small group	$150
Spring when ground is soft	All units, as needed	Install / repair erosion bars using left over buckthorn trunks on site. Williams Island, Spillway View, East Owamni	0.5	Large event or small groups	$0.50/yard waste bag
Spring: April	All units, as needed	Trash clean up	1	Large event or small groups	$0.50/trash bag
Spring: April - May	East Owamni, Mill View Meadow as needed, Williams Island	Pull and bag biennial invasive species: garlic mustard and burdock.	1.04	Small groups	$0.50/yard waste bag
Spring: May	East Owamni, Mill View Meadow	Plant wildflower, grasses and sedges in woodland (Unit 1) OR prairie (Unit 5) to increase diversity. Only plant as many as you can commit to watering for 1 year.	0.52	Large event	$200
June	Spillway View	Critical period cutting touch 1: cut >1" buckthorn "high" - leave stump ~3-4 feet tall, remove all leaves.	0.18	Large event or small groups	$0.50/yard waste bag
Summer: June - August	East Owamni, Mill View Meadow	Tend planted wildflowers, grasses, and sedges (water, weed, place double shredded hardwood mulch).	0.63	Small groups	$100
Summer: June - August	East Owamni, Mill View Meadow as needed, Williams Island	Pull and bag biennial and perennial invasive species: spotted knapweed, sweet clover, soapwort, Canada thistle, butter and eggs	1.04	Small groups	$0.50/yard waste bag
August	Spillway View	Critical period cutting touch 2: strip all re-growth from tall buckthorn stumps.	0.18	Small groups	$0.50/yard waste bag

Fall: September	Williams Island	Plant wildflowers, grasses, and sedges in woody removal areas to increase diversity. Only plant as many as you can commit to watering for 1 year. Consider planting in 1 cluster for ease of watering and to out-compete weeds.	0.41	Large event	$200
Fall: late Sept / October	Mill View Meadow	Prairie seed collection - save seeds for winter sowing, or spread after first snow	0.11	Small group	$0.50/seed collection bag
Fall: October	East Owamni, Mill View Meadow as needed, Williams Island	Clip invasive woody re-sprouts, pull seedlings, bag for composing off site	1.04	Small groups	$0.50/yard waste bag

Table 5: 2028 Volunteer Activity Task Table

2028					
SEASON	**UNIT**	**ACTIVITY**	**ACRES**	**EVENT TYPE**	**COST EST.**
Winter	East Owamni, Mill View Meadow	Enhancement seeding in open areas to increase species diversity - broadcast seed with pollinator mix (woodland or dry prairie) or hand collected seed.	0.63	Small group	$250
Winter	Spillway View	Seed open areas after woody removal - broadcast seed with native grass only mix.	0.18	Small group	$50
Spring	All units, as needed	Install / repair erosion bars using left over buckthorn trunks on site.	0.5	Large event or small groups	$0
Spring: April	All units, as needed	Trash clean up	1	Large event or small groups	$0.50/trash bag
Spring: April - May	Williams Island is priority, East Owamni, Mill View Meadow if needed	Pull and bag biennial invasive species: garlic mustard and burdock.	1.04	Small groups	$0.50/yard waste bag
June	Spillway View	Critical period cutting touch 3: strip all re-growth from tall buckthorn stumps.	0.18	Small groups	$0.50/yard waste bag
Summer: June - August	Williams Island	Tend planted wildflowers, grasses, and sedges (water, weed, place double shredded hardwood mulch)	0.41	Small groups	$100
Summer: June - August	Williams Island is priority, East Owamni, Mill View Meadow if needed	Pull and bag biennial and perennial invasive species: spotted knapweed, sweet clover, soapwort, Canada thistle, butter and eggs	1.04	Small groups	$0.50/yard waste bag
August	Spillway View	Critical period cutting touch 4: strip all re-growth from buckthorn. At this point, stump may be easily tipped over and removed.	0.18	Small groups	$0.50/yard waste bag

Fall: September	Williams Island	Plant wildflowers, grasses, and sedges in woody removal areas to increase diversity. Only plant as many as you can commit to watering for 1 year. Consider planting in 1 cluster for ease of watering and to out-compete weeds.	0.41	Large event	$250
Fall: October	Williams Island	Clip invasive woody re-sprouts, pull seedlings, bag for composing off site	0.41	Small groups	$0.50/yard waste bag

Table 6: 2029 Volunteer Activity Task Table

2029					
SEASON	**UNIT**	**ACTIVITY**	**ACRES**	**EVENT TYPE**	**COST EST.**
Winter	Williams Island	Enhancement seeding in open areas to increase species diversity - broadcast seed with pollinator mix (dry prairie) or hand collected seed.	0.41	Small group	$200
Winter	Spillway View	Seed open areas after woody removal - broadcast seed with native grass only mix.	0.18	Small group	$50
Early Spring	Mill View Meadow	Ask MPRB to consider a prescribed burn in this unit. Timing can be up to MPRB discretion. Not a volunteer task.	0.11	MPRB	N/A
Spring when ground is soft	All units, as needed	Install / repair erosion bars using left over buckthorn trunks on site.	0.5	Large event or small groups	$0
Spring: April	All units, as needed	Trash clean up	1	Large event or small groups	$0.50/trash bag
Spring: April - May	Williams Island, Spillway View	Pull and bag biennial invasive species: garlic mustard and burdock.	0.59	Small groups	$0.50/yard waste bag
June	Hennepin Island, Hennepin Beach, Wet Meadow	Critical period cutting touch 1: cut >1” buckthorn "high" - leave stump ~3-4 feet tall, remove all leaves.	0.47	Large event or small groups	$0.50/yard waste bag
Summer: June - August	Williams Island	Tend planted shrubs (water, weed, place double shredded hardwood mulch)	0.41	Small groups	$100
Summer: June - August	Williams Island, Spillway View are priority units, East Owamni or Mill View Meadow if needed	Pull and bag biennial and perennial invasive species: spotted knapweed, sweet clover, soapwort, Canada thistle, butter and eggs.	1.22	Small groups	$0.50/yard waste bag

August	Hennepin Island, Hennepin Beach, Wet Meadow	Critical period cutting touch 2: strip all re-growth from tall buckthorn stumps.	0.47	Small groups	$0.50/yard waste bag
Fall: September	Spillway View	Plant shrubs, wildflowers, grasses, and sedges in woody removal areas to increase diversity. Only plant as many as you can commit to watering for 1 year.	0.18	Large event	$200
Fall: October	Spillway View	Clip invasive woody re-sprouts, pull seedlings, bag for composing off site	0.18	Small group	$0.50/yard waste bag

Table 7: 2030 Volunteer Activity Task Table

2030					
SEASON	**UNIT**	**ACTIVITY**	**ACRES**	**EVENT TYPE**	**COST EST.**
Winter	Williams Island	Enhancement seeding in open areas to increase species diversity - broadcast seed with pollinator mix (dry prairie) or hand collected seed.	0.41	Small group	$200
Winter	Hennepin Island, Hennepin Beach, Wet Meadow	Seed open areas after woody removal - broadcast seed with native grass only mix.	0.47	Small group	$100
Spring when ground is soft	All units, as needed	Install / repair erosion bars using left over buckthorn trunks on site.	0.5	Large event or small groups	$0.00
Spring: April	All units, as needed	Trash clean up	1	Large event or small groups	$0.50/trash bag
Spring: April - May	Williams Island, Spillway View are priority units, East Owamni or Mill View Meadow if needed	Pull and bag biennial invasive species: garlic mustard and burdock.	1.22	Small groups	$0.50/yard waste bag
June	Hennepin Island, Hennepin Beach, Wet Meadow	Critical period cutting touch 3: strip all re-growth from tall buckthorn stumps.	0.47	Small groups	$0.50/yard waste bag
Summer: June - August	Spillway View	Tend planted shrubs (water, weed, place double shredded hardwood mulch)	0.18	Small groups	$100
Summer: June - August	Williams Island, Spillway View are priority units, East Owamni or Mill View Meadow if needed	Pull and bag biennial and perennial invasive species: spotted knapweed, sweet clover, soapwort, Canada thistle, butter and eggs.	1.22	Small groups	$0.50/yard waste bag
August	Hennepin Island, Hennepin Beach, Wet Meadow	Critical period cutting touch 4: strip all re-growth of buckthorn. At this point, stump may be easily tipped over and removed.	0.47	Small groups	$0.50/yard waste bag

Fall: September	Choose either East Owamni, Mill View Meadow, Williams Island, or Spillway View based on need and plant availability	Plant shrubs, wildflowers, grasses, and sedges in woody removal areas to increase diversity. Only plant as many as you can commit to watering for 1 year.	0.63	Large event	$300
Fall: October	Williams Island, Spillway View, Hennepin Island, Hennepin Beach, Wet Meadow	Clip invasive woody re-sprouts, pull seedlings, bag for composing off site	1.06	Small groups	$0.50/yard waste bag

Table 8: 2031 Volunteer Activity Task Table

2031					
SEASON	**UNIT**	**ACTIVITY**	**ACRES**	**EVENT TYPE**	**COST EST.**
Winter	Spillway View	Enhancement seeding in open areas to increase species diversity - broadcast seed with woodland pollinator mix.	0.18	Small group	$150
Winter	Hennepin Island, Hennepin Beach, Wet Meadow	Seed open areas after woody removal - broadcast seed with native grass only mix.	0.47	Small group	$100
Early Spring	Williams Island	Ask MPRB to consider a prescribed burn in this unit. Timing can be up to MPRB discretion. Not a volunteer task.	0.41	MPRB	N/A
Spring when ground is soft	All units, as needed	Install / repair erosion bars using left over buckthorn trunks on site.	0.5	Large event or small groups	$0
Spring: April	All units, as needed	Trash clean up	1	Large event or small groups	$0.50/trash bag
Spring: April - May	Hennepin Island, Hennepin Beach, Wet Meadow, elsewhere as needed	Pull and bag biennial invasive species: garlic mustard and burdock.	0.47	Small groups	$0.50/yard waste bag
June	Floodplain, all other accessible areas with large BT	Critical period cutting touch 1: cut >1” buckthorn "high" - leave stump ~3-4 feet tall, remove all leaves.	0.46	Large event or small groups	$0.50/yard waste bag
Summer: June - August	Location of 2030 planting event	Tend planted shrubs (water, weed, place double shredded hardwood mulch)	0.63	Small groups	$100
Summer: June - August	Hennepin Island, Hennepin Beach, Wet Meadow, elsewhere as needed	Pull and bag biennial and perennial invasive species: spotted knapweed, sweet clover, soapwort, Canada thistle, butter and eggs.	0.47	Small groups	$0.50/yard waste bag

August	Floodplain, all other accessible areas with large BT	Critical period cutting touch 2: strip all re-growth from tall buckthorn stumps.	0.46	Small groups	$0.50/yard waste bag
Fall: September	Hennepin Island, Hennepin Beach, Wet Meadow	Plant shrubs, wildflowers, grasses, and sedges in woody removal areas to increase diversity. Only plant as many as you can commit to watering for 1 year.	0.47	Large event	$200
Fall: October	Hennepin Island, Hennepin Beach, Wet Meadow, elsewhere as needed	Clip invasive woody re-sprouts, pull seedlings, bag for composing off site	0.47	Small groups	$0.50/yard waste bag

Table 9: 2032 Volunteer Activity Task Table

2032					
SEASON	**UNIT**	**ACTIVITY**	**ACRES**	**EVENT TYPE**	**COST EST.**
Winter	Hennepin Island, Hennepin Beach, Wet Meadow	Enhancement seeding in open areas to increase species diversity - broadcast seed with woodland pollinator mix.	0.47	Small group	$300
Spring when ground is soft	All units, as needed	Install / repair erosion bars using left over buckthorn trunks on site.	0.5	Large event or small groups	$0
Spring: April	All units, as needed	Trash clean up	1	Large event or small groups	$0.50/trash bag
Spring: April - May	Hennepin Island, Hennepin Beach, Wet Meadow, elsewhere as needed	Pull and bag biennial invasive species: garlic mustard and burdock.	0.47	Small groups	$0.50/yard waste bag
June	Floodplain, all other accessible areas with large BT	Critical period cutting touch 3: strip all re-growth from tall buckthorn stumps	0.46	Small groups	$0.50/yard waste bag
Summer: June - August	Hennepin Island, Hennepin Beach, Wet Meadow	Tend planted shrubs (water, weed, place double shredded hardwood mulch)	0.47	Small groups	$100
Summer: June - August	Hennepin Island, Hennepin Beach, Wet Meadow, elsewhere as needed	Pull and bag biennial and perennial invasive species: spotted knapweed, sweet clover, soapwort, Canada thistle, butter and eggs.	0.47	Small groups	$0.50/yard waste bag
August	Floodplain, all other accessible areas with large BT	Critical period cutting touch 4: strip all re-growth of buckthorn. At this point, stump may be easily tipped over and removed.	0.46	Small groups	$0.50/yard waste bag
Fall: September	Chose planting area based on need and available species	Plant shrubs, wildflowers, grasses, and sedges in woody removal areas to increase diversity. Only plant as many as you can commit to watering for 1 year.	0.5	Large event	$250

Fall: October	Hennepin Island, Hennepin Beach, Wet Meadow, elsewhere as needed	Clip invasive woody re-sprouts, pull seedlings, bag for composing off site	0.47	Small groups	$0.50/yard waste bag

Table 10: 2033 Volunteer Activity Task Table

2033					
SEASON	**UNIT**	**ACTIVITY**	**ACRES**	**EVENT TYPE**	**COST EST.**
Spring when ground is soft	All units, as needed	Install / repair erosion bars using left over buckthorn trunks on site.	0.5	Large event or small groups	$0
Spring: April	All units, as needed	Trash clean up	1	Large event or small groups	$0.50/trash bag
Spring: April - May	All units, as needed	Pull and bag biennial invasive species: garlic mustard and burdock.	1	Small groups	$0.50/yard waste bag
Summer: June - August	Planting area from 2032	Tend planted shrubs (water, weed, place double shredded hardwood mulch)	0.5	Small groups	$100
Summer: June - August	All units, as needed	Pull and bag biennial and perennial invasive species: spotted knapweed, sweet clover, soapwort, Canada thistle, butter and eggs.	1	Small groups	$0.50/yard waste bag
Fall: September	Chose planting area based on need and available species	Plant shrubs, wildflowers, grasses, and sedges in areas where increased diversity is needed. Only plant as many as you can commit to watering for 1 year.	0.5	Large event	$250
Fall: October	All units, as needed	Clip invasive woody re-sprouts, pull seedlings, bag for composing off site	1	Small groups	$0.50/yard waste bag

Table 11: 2034 Volunteer Activity Task Table

2034					
SEASON	**UNIT**	**ACTIVITY**	**ACRES**	**EVENT TYPE**	**COST EST.**
Spring when ground is soft	All units, as needed	Install / repair erosion bars using left over buckthorn trunks on site.	0.5	Large event or small groups	$0
Spring: April	All units, as needed	Trash clean up	1	Large event or small groups	$0.50/trash bag
Spring: April - May	All units, as needed	Pull and bag biennial invasive species: garlic mustard and burdock.	1	Small groups	$0.50/yard waste bag
Summer: June - August	Planting area from 2033	Tend planted shrubs (water, weed, place double shredded hardwood mulch)	0.5	Small groups	$100
Summer: June - August	All units, as needed	Pull and bag biennial and perennial invasive species: spotted knapweed, sweet clover, soapwort, Canada thistle, butter and eggs.	1	Small groups	$0.50/yard waste bag
Fall: September	Chose planting area based on need and available species	Plant shrubs, wildflowers, grasses, and sedges in areas where increased diversity is needed. Only plant as many as you can commit to watering for 1 year.	0.5	Large event	$250
Fall: October	All units, as needed	Clip invasive woody re-sprouts, pull seedlings, bag for composing off site	1	Small groups	$0.50/yard waste bag

LONG-TERM MANAGEMENT

Restored areas will need to be regularly monitored to identify ecological issues, such as erosion and sedimentation, invasive species, and disease. Early detection of concerns enables quick, low-effort responses to address them before significant problems evolve.

Once the primary restoration tasks are completed, the restoration process converts to an adaptive management phase. Long-term management for all units is an important piece of maintaining the habitat over time. It is difficult to predict specifically how these areas will change over time, so being flexible and responding to needs as they arise is important. Without continued monitoring and management, these areas will likely degrade rapidly, and efforts will be undone in 5-10 years. Three critical long-term management actions are described below.

SEEDING AND PLANTING (ALL UNITS, AS NEEDED)

Over time, it is likely that some areas may benefit from seeding and planting to maintain ground cover or increase species diversity. The sloped areas of the park are prone to erosion and may require occasional reseeding along trail edges and slopes. Additionally, as the tree canopy changes, it may be necessary to seed with a seed mix adapted to updated light conditions. Planting trees, shrubs, and plugs can be a faster way to increase diversity and respond to changing light conditions in units with tree canopy.

INVASIVE SPECIES MONITORING AND MANAGEMENT (ALL UNITS)

Both herbaceous and woody invasive species are a continued threat to the ecosystem health of these restored areas. Seeds from invasive species are constantly being transported by wind, water, and wildlife, so there is not a way to mitigate this threat. The best long-term strategy to prevent invasive species establishment is to regularly monitor the area so that any presence of invasive plants can be caught early. It is relatively easy to manage a small population in the first or second year after arrival. If left to proliferate, invasive species can rapidly expand and have much larger ecological and monetary impacts over time.

PRESCRIBED BURNING (MILL VIEW MEADOW, WILLIAMS ISLAND, HENNEPIN BEACH)

The prairie native plant communities recommended for Mill View Meadow, Williams Island, and Hennepin Beach are dependent upon regular prescribed fire. Prescribed burns are an essential tool for managing woody encroachment and controlling invasive species. Additionally, burns stimulate grass and herbaceous growth in the understory by warming the soil and encouraging early growth and regeneration of these plants. Prairie burns should be conducted every 2-3 years. Savanna burns can be conducted every 3-4 years, depending on fuel accumulation. Planning to burn one unit annually is a good way to allow refugia for pollinators.

Table 12: Long-Term Management Needs

UNIT NAME	LONG-TERM MGMT TASK	FREQUENCY	COST RANGE
All Units	Seeding	As needed	Seed cost: $300 - $1,000 per acre.
All Units	Planting	As needed	Plant material cost: $3 - $25 per plant. Mulch cost: $1 - $5 per plant.
Prairie and Savanna Units	Prescribed burning	Every 2-3 years. One unit should be burned annually	MPRB task, not for volunteers.
All Units	Invasive species monitoring	3x annually	Volunteer-led
All Units	Invasive species spot-management	As needed	Volunteer-led

VOLUNTEER ECOLOGICAL MONITORING

Monitoring is a great way to engage volunteer stewards at the site. The Father Hennepin Bluffs Stewards group should engage in monitoring and record-keeping to track the status and outcomes of restoration. Work plans, completed tasks, and site notes can be kept in the shared Father Hennepin Park Stewards Google Drive so that leaders can keep track of changes and issues that need to be addressed. Data should be shared with MPRB staff to assist in regional invasive plant tracking efforts.

Monitoring animal and plant communities is also helpful for evaluating the results of the restoration. A comparison of bird populations before and after restoration, for example, would be a valuable tool for quantifying positive impacts on the land. Trail cameras can also provide information on wildlife using the property. This is another area where community members should be involved in the process, and tie-ins with programs like Monitoring Avian Productivity and Survivorship (MAPS), the Minnesota Bee Atlas, and eMammal would provide great community science opportunities.

PARK RESTORATION BEYOND CURRENT MANAGEMENT PLAN

This NRMP is intended to guide *volunteer-led* restoration activities at Father Hennepin Bluff Park. Based on restoration outcomes, undertaking additional activities may be desired to further advance restoration, and these activities may be outside the capabilities of volunteers. Pursuit of more advanced restoration performed by MPRB, or a qualified contractor, would require separate coordination with MPRB beyond the current MHNA-MPRB Stewardship Agreement. Any contracted services must be hired through the Minneapolis Park and Recreation Board per the policies laid out in MHNA's Volunteer Services Agreement. If work of this type is pursued, FMR is willing to foster MHNA-MPRB communication to explore activities not within the scope of this NRMP.

The table below contemplates work that might be considered by MHNA and MPRB in future phases of restoration. The inclusion of this information is intended for reference only and does not suggest a granting of permission by MPRB for this work to proceed. There is also a reference list of ecological restoration contractors included in Appendix F.

Table 13: Restoration tasks for contracted labor, beyond current volunteer management plan efforts

SEASON	UNITS	ACTIVITY	ACRES	COST/ACRE
Early spring or late fall	Prescribed burning	Every 2-3 years. One unit should be burned annually	0.7	$4,000
Fall	MU9, MU10	Invasive woody removal. Cut, stump treat, haul material off-site.	2.6	$3,500
Fall	MU9, MU10	Seeding and installing erosion control mat in woody removal areas	2.6	$5,000
Fall	MU9, MU10	Follow-up treatment of invasive woody plants. Up to 2 years of follow up treatment needed.	2.6	$2,500

OTHER CONSIDERATIONS

BEAVER, DEER AND RABBITS

High population densities of beaver, deer, and rabbit are a problem for native vegetation, especially in forested areas. All three species browse native tree seedlings and saplings, preventing the regeneration of tree species. Beavers specifically have cut down mature trees in the park. They preferentially cut down green ash and boxelder trees and saplings. The green ash that survive this repeated cutting are converted into understory shrubs rather than canopy trees. Deer and rabbits can put serious pressure on rare wildflowers, which they may preferentially seek out and consume. Given the site's highly urban location, use of the site by deer is rare, though possible. Protection of trees and shrubs when planting is necessary to prevent beaver and rabbit browse early in life. Overplanting of trees may be one strategy to minimize the effects of beaver over time.

TREE DISEASE

DUTCH ELM DISEASE AND EMERALD ASH BORER

There are some elms and green ash trees growing at Father Hennepin Bluff Park. These trees are not only ecologically valuable but are also at high risk of attack by tree pests. Elms are susceptible to Dutch Elm Disease and ash are susceptible to Emerald Ash Borer. These tree pests have caused widespread mortality of elms and ash throughout the eastern United States and specifically in Minnesota.

Dutch Elm disease is a fungal infection caused by the fungus *Ceratocystis ulmi*, which is native to Asia, and is spread by both native and non-native bark beetles (family: Curculionidae). Once the fungus is introduced onto a tree, the tree reacts by sealing its own xylem tissues (conduits of water and nutrients) to prevent further spread. This effectively prevents water and nutrients from reaching the upper branches, causing gradual die-off as more and more of the xylem is sealed. Symptoms include a yellowing and browning of leaves spreading from the outer crown toward the trunk. Dutch elm disease was first recorded in Minnesota near Monticello in 1961 and has since spread throughout the state. Minnesota relied heavily on American elms (*Ulmus americana*) as shade trees on streets, with about 140 million in the state at the time of the outbreak. The disease is now present in all Minnesota counties, though elms remain an important component of many Minnesota forests.

Emerald ash borer (EAB) is a wood-boring beetle from Asia that was first identified in the United States in the summer of 2002. Likely transported from Asia to Michigan in ash wood used for pallets and other shipping materials, the beetle has now been confirmed in 36 states and the District of Columbia, including Minnesota. The beetle works by depositing larvae under the bark of the tree; these larvae then feed on the wood, eventually disrupting enough of the phloem to prevent the transport of nutrients throughout the tree. While Minnesota's cold weather can stymie the of the extent of the beetle, it continues to spread.

Unless viable control or treatment options are developed, the elms and ash at the park are at risk of dying soon. When large trees die, a pronounced effect is seen on the vegetation and the river. These trees act to shade the water and provide habitat and improve water quality for fish and other species. When large trees die, they open the canopy and create gaps, which in turn releases understory formerly suppressed by the shade from such trees. If desirable species like native forbs, grasses, sedges, and shrubs exist in the understory, the canopy gap will lead to an increase in bank stability and diversity. In the case of this property, these canopy gaps should be actively managed with seeding and planting to ensure that native vegetation persists. Climate-adapted shrubs and trees can also be planted to support the stability of the native plant community.

OAK WILT AND BUR OAK BLIGHT

Oak wilt is an increasingly common tree disease caused by the fungus *Ceratocystis fagacearum*. While the disease is present in many eastern US states, it is most prevalent in the Midwestern US. Within Minnesota, it is an issue of serious concern in and around the seven-county metro area. Oak wilt affects all of Minnesota's most common oak species (red oak [*Quercus rubra*], pin oak [*Q. ellipsoidalis*], bur oak [*Q. macrocarpa*], and white oak [*Q. alba*]), though it does not affect these species equally. Red and pin oak are the most susceptible species, with infected individuals wilting in six weeks or less. Bur and white oaks may take years to wilt completely and may only do so one branch at a time. The fungus can be transported from tree to tree by sap beetles, but most commonly spreads through root grafts. The beetles are attracted to the fungal mats created when mature oaks die from oak wilt, and to wounds on uninfected oaks, providing a convenient pathway of spread for the fungus. Oaks commonly form root grafts between individuals, allowing direct transfer of the fungus from infected to healthy individuals.

Father Hennepin Bluff Park has some scattered bur oaks along MU10, or the inaccessible main street slope. Although an outbreak of oak wilt may not affect the current tree canopy drastically, it could affect future oak plantings. If oak wilt is found at this site, pivot to planting more climate-adapted tree species, found on the University of Minnesota – Extension website.

Bur oak blight (BOB) may be a more serious threat to the oaks on the property. BOB affects only bur oaks and is most injurious to upland individuals in savanna remnants. Caused by a species of fungus in the *Tubaki* genus, BOB causes lesions and discoloration of the veins on the underside of the leaves, eventually causing large portions of the leaf to die. In many cases, severe infections will cause tree death, though individual susceptibility to the disease varies. The fungus can overwinter on leaf petioles that remain attached to trees and is primarily spread by rain droplets moving spores throughout the tree. Early results suggest that inoculation of trees with fungicide may help slow or stop the spread of the disease within individual trees. At Father Hennepin Bluffs Park, monitoring existing oaks for symptoms will

be an important first step; moreover, if oaks are planted in the future, it may be beneficial to avoid planting the variety *Q. macrocarpa var. oliviformis*, which has shown the most severe susceptibility to BOB.

EROSION CONTROL

There is very little, if any, topsoil in most areas of Father Hennepin Bluff Park. Most of the soil is comprised of gravel or fill from industrial construction. As such, it can be challenging to grow desirable plants in this soil, as well as keep the soil in place. It is erosion-prone and the steep slopes throughout the park and the lack of deep-rooted plant cover all contribute to areas of significant erosion. Several gullies and small ravines are present within the slope units, and sloughing is occurring in several locations.

Bare soil resulting from the effects of invasive plants and earthworms also leads to splash erosion. While frequent, this does not result in much sediment transport in the units. In all units, there is some sheet erosion, evidenced by sediment accumulation behind trees or at the base of portions of the steeper slopes. This is a chronic phenomenon that can also be attributed to the lack of fine-rooted vegetation on these slopes. A denser vegetation layer throughout these units would act to break the impact of raindrops and dissipate the energy of stormwater running on these slopes, but in some cases larger interventions will be required.

All units should be seeded with native forb and graminoid (grass and sedge) mixes once removal of non-native shrubs is complete. Installing natural wood erosion bars in areas where erosion (sheet and rill) is progressing is recommended. This is a relatively simple volunteer task that can be accomplished by placing poles of cut buckthorn perpendicular to the slope and anchored between two trees. In areas where erosion is present, but tree cover is lacking, bars can be anchored by pounding wood stakes into the slope. These stakes can be purchased at hardwood stores or crafted from additional cut vegetation. In areas where erosion is worsening, erosion blankets, grass strips, seeding and other means may be necessary to further control erosion. These should be purchased and installed with supervision by MPRB staff or subcontractors.

The prevention of further erosion is highly prioritized by the community based on gathered feedback. Simple erosion control methods such as staking small bundles of cut buckthorn on slopes, as well as more intensive approaches including blanketing and seeding are favored.

REFERENCES

Thompson, Dana, lineal descendant of Sisseton Wahpeton and Mdewakanton Dakota. List and descriptions of Dakota relationships with plants. Permission given in personal communication to use this information in restoration planning. August 6, 2024. Note: Much of this info is publicly available via the Minneapolis Park & Recreation Board in "Plants of Owamniyuomni: A Dakota Language Audio Tour."

APPENDIX A: INDIGENOUS ENGAGEMENT REPORT FROM FULL CIRCLE PLANNING AND DESIGN

Report for

FATHER HENNEPIN BLUFFS PARK / EAST OWAMNIYOMNI - INDIGENOUS ENGAGEMENT FOR NRMP

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June 7, 2024

Presented to
MARCY HOLMES NEIGHBORHOOD ASSOCIATION

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Introduction

The Marcy-Holmes Neighborhood Association, in collaboration with Friends of the Mississippi River hired Full Circle Indigenous Planning and Design to engage with Indigenous community members to inform site stewardship at Father Hennepin Bluffs / East Owamniyomi. At sites along the Minnesota and Mississippi Rivers, Full Circle has engaged with Indigenous community members over several years related to cultural sites. Through this work, comparable projects at the Mississippi River Learning Center, Wakan Tipi, and Oheyawahi have created common themes for stewardship and a process for Indigenous-centered planning and engagement.

This project brings previous learning and engagement related to traditional Indigenous land stewardship forward to this site-specific, riverside location. Additionally, the project sought input from Indigenous community members about plant communities and interpretation about traditional uses for and relationships with native plants in this location.

A common challenge with community engagement is “engagement fatigue” and lack of capacity among knowledgeable individuals related to specific topics. To address this challenge, the project team contacted many individuals and organizations and built on previous outreach to apply lessons learned to this specific site. Nonetheless, this report represents limited new input and ongoing relationship building and organizational staffing is recommended.

Project Background

The Marcy-Holmes Neighborhood Association (MHNA), in collaboration with Friends of the Mississippi River (FMR) is developing a volunteer-centric Natural Resource Management Plan (NRMP) for 6.09 acres of riverside natural area at Father Hennepin Bluffs / East Owamniyomni. The project area includes Hennepin Island, Williams Island, and Lucy Wilder Morris Park, which is the secluded bluff and riverine area between the Stone Arch Bridge and the East Falls, and the University Steam Plant. FMR will develop a goal-based NRMP that outlines strategies for invasive species control and plant community restoration. As part of the project, FMR and MHNA developed a community engagement plan, including engagement with Indigenous community members, for the plan implementation phase. A goal of the engagement plan is to keep residents involved in ongoing stewardship of the park. The project has the support of the landowner, the Minneapolis Parks & Recreation Board (MPRB).

Engagement with Indigenous Community Members

Overall, MHNA, FMR, and MPRB sought input and guidance from Indigenous community members to:

1. learn more deeply about this place;
2. develop site-appropriate guidance for restoration practices to be included in the final restoration plan;
3. provide guidance about what to share and how to act in ways respectful of Indigenous values and culture (for community-led restoration events, general public engagement, and community volunteers); and
4. set the groundwork ongoing relationships with Indigenous community members for shared stewardship of this nature sanctuary in the long term.

The consultant team sought to engage Indigenous elders, educators, and community leaders. Throughout the project process, informal conversations bolstered an onsite tour and resultant conversations. It was important to include these voices to gain the perspective and insight of Dakota people living near the site and connected with other sites in the region.

Outreach and Activities

FMR, through in-person presentations and online surveys, gathered community input and developed refined requests related to Indigenous traditional knowledge. The specific areas of inquiry were: naming of management units, inclusion of certain plants known to have cultural significance or use, acknowledgment of plants and their cultural use or ties, and management techniques.

Full Circle led Indigenous engagement activities including onsite discussions, online meetings, and one-on-one conversations. During facilitated conversations, participants talked about the meaning of East Owamniyomni and the Mississippi River to Indigenous communities, both historically and today. Conversations continued to include observations of the existing conditions of the site including the arrival and entry experience, lack of interpretive and cultural elements, landscape, vegetation, and existing site infrastructure. Participants reviewed the provided materials, plant lists, management unit maps, and specific questions provided by FMR.

Outcomes

Based on Full Circle-facilitated conversations with Indigenous community members, the following are offered for consideration for site planning and restoration that would align with respectful use, preservation, and enhancement of both the Indigenous and non-Indigenous visitor experience of the site.

Interconnected

In determining the restoration of plant communities in different parts of the park, consider the relational aspects of plants for one another, other species, and health of the land.

A “plant doula” can play a crucial role in the sequence of plantings to clean and heal the land and prepare it for the next generation of plants. Additionally, some plants depend on others for physical support, nutrients, or shade. Certain plants provide food and medicine for other species, including people, therefore making sure the land is healthy is essential for habitats that support a variety of plants and animals.

Indigenous community members discussed the layers of habitat—the cross-section from bluff to river—and the different plant communities that thrive in different locations and in relation to each other. The group noted that this side of the river is more naturalized than the other side of the river, which has a harder edge. Discussion continued related to fostering a relationship with Owámniyomni Okhódayapi as that organization’s landscape and design strategies, and potential co-management agreement, could influence East Owamniyomni.

Seasonality and harvesting of plants was of special consideration, notably access, appropriate gathering and offering, and health of the land and plants. Access to some parts of the site were challenging due to steep inclines and uneven terrain. Participants talked about leaving an offering when traditional plants are gathered and limiting how much is harvested to ensure that plants remain healthy and thriving.

Vision for the Future

Capacity building among Indigenous youth and community members as well as the organizations that manage natural spaces in Dakota Homelands cannot be overemphasized.

Providing interpretation about Indigenous plants and their traditional uses, while keeping traditional spiritual meaning private, was discussed by participants as a way to build knowledge and allow site visitors to understand the habitats and landscape of East Owamniyomni better. Because of its urban setting and proximity to residential buildings and neighborhoods, interpretation and education are especially relevant for building connections between people and the natural world. For example, a “culture walk” through the park could provide seasonal knowledge and potentially change throughout the year.

For MPRB, the landowner, and FMR, the volunteer-centric natural resources management plan author, ongoing cultural competency and professional development for staff would help to ease the burden of “engagement fatigue” among Indigenous community members by providing plans informed by previous engagement and traditional practices and knowledge from a range of traditional knowledge keepers.

Incorporating Indigenous traditional land management practices, interpreting traditional relationships, connections, and uses of native plants, and fostering healthy habitats could provide a model for other places, especially riverside locations.

APPENDIX B: VEGETATION SURVEY DATA

Vegetation survey data is organized by size class (canopy, subcanopy, shrub, sapling, seeding, herbaceous, vine). Native, nonnative, or invasive status is listed. The number system within each unit represents cover of each individual species throughout the entire unit. 0-0.5 = species is present, but rare (cover <1%); 1 = cover is 1 – 5%, 2 = cover is 5 – 25%, 3 = cover is 25 – 50%, 4= cover is 50 – 75%, 5 = cover is >75%. Values can total more than 100 for each class/unit because individual species are considered.

Table 14: Vegetation Survey Data for Units 1-5

Common Name	Scientific Name	Status	Unit 1 East Owamni	Unit 2, 3 Spillway View, Hennepin Island	Unit 4 Williams Island	Unit 5 Mill View Meadow
Canopy (> 15 feet tall)						
American elm	*Ulmus americana*	**N**				
Boxelder	*Acer negundo*	**N**	2	1		
Bur oak	*Quercus macrocarpa*	**N**				
Catalpa	*Catalpa speciosa*	**N**			0.5	
Cottonwood	*Populus deltoides*	**N**	3	2	1	
Green ash	*Fraxinus pennsylvanica*	**N**	1		0.5	
Hackberry	*Celtis occidentalis*	**N**	1			
Silver maple	*Acer saccharinum*	**N**	0.5			
Willow sp.	*Salix sp.*	**N**	1			
Subcanopy (10 - 15 feet tall)						
American elm	*Ulmus americana*	**N**				
Black locust	*Robinia pseudoacacia*	**I**	2			
Boxelder	*Acer negundo*	**N**	4	2	1	
Catalpa	*Catalpa speciosa*	**N**				
Chokecherry	*Prunus virginiana*	**N**	0.5			

Common buckthorn	*Rhamnus cathartica*	**I**		4		
Green ash	*Fraxinus pennsylvanica*	**N**	1			
Hackberry	*Celtis occidentalis*	**N**				
Staghorn sumac	*Rhus typhina*	**N**				
Shrub (<10 feet tall, bushy)						
American elm	*Ulmus americana*	**N**	0.5			
American hazelnut	*Corylus americana*	**N**	0.5			
Black locust	*Robinia pseudoacacia*	**I**	2			
Boxelder	*Acer negundo*	**N**	2		2	1
Catalpa	*Catalpa speciosa*	**N**				
Chokecherry	*Prunus virginiana*	**N**	3	4	2	2
Common buckthorn	*Rhamnus cathartica*	**I**	1	3	5	2
Common elderberry	*Sambucus canadensis*	**N**				0.5
Cottonwood	*Populus deltoides*	**N**				
Currant, unknown	*Ribes spp.*	**N**	0.5			
Eastern red cedar	*Juniperus virginiana*	**N**			0.5	
Fragrant sumac	*Rhus aromatica*	**NN**	0.5			
Green ash	*Fraxinus pennsylvanica*	**N**	1		0.5	1
High bush cranberry	*Viburnum opulus var. americanum*	**N**	0.5			
Leadplant	*Amorpha canescens*	**N**	2			
Missouri gooseberry	*Ribes missouriense*	**N**				
Nannyberry	*Viburnum lentago*	**N**				0.5
Red osier dogwood	*Cornus sericea*	**N**	1		0.5	0.5
Siberian elm	*Ulmus pumila*	**I**	0.5			
Silver maple	*Acer saccharinum*	**N**	0.5			
Staghorn sumac	*Rhus typhina*	**N**	2		2	
Tatarian honeysuckle	*Lonicera tatarica*	**I**	1	2	3	2

White mulberry	*Morus alba*	**I**	0.5		0.5	1
Wild plum	*Prunus americana*	**N**			0.5	
Willow, unknown	*Salix spp.*	**N**	0.5		0.5	
Sapling (<10 feet tall, single stem)						
Boxelder	*Acer negundo*	**N**	0.5			
Catalpa	*Catalpa speciosa*	**N**	1			
Common buckthorn	*Rhamnus cathartica*	**I**	2			
Currant, unknown	*Ribes sp.*	**N**	0.5			
White mulberry	*Morus alba*	**I**	0.5			
Seedling (<3 feet tall)						
Chokecherry	*Prunus virginiana*	**N**				1
Common buckthorn	*Rhamnus cathartica*	**I**				2
Cottonwood	*Populus deltoides*	**N**				
Green ash	*Fraxinus pennsylvanica*	**N**				1
Green ash	*Fraxinus pennsylvanica*	**N**				
Hackberry	*Celtis occidentalis*	**N**			P	1
Silver maple	*Acer saccharinum*	**N**				
Herbaceous						
Absinthe wormwood	*Artemisia absinthium*	**I**	0.5			
American elm	*Ulmus americana*	**N**				
Anise hyssop	*Agastache foeniculum*	**N**				0.5
Awl aster	*Symphyotrichum pilosum*	**N**				0.5
Bergamot	*Monarda fistulosa*	**N**	0.5			1
Black nightshade	*Solanum ptychanthum*	**N**	1		1	
Blazingstar sp.	*Liatris sp.*	**N**				0.5
Blue vervain	*Verbena hastata*	**N**				
Butter and Eggs	*Linaria vulgaris*	**I**				
Calico aster	*Symphyotrichum lateriflorum*	**N**				

Canada goldenrod	*Solidago canadensis*	**I**	2	1	2	3
Canada thistle	*Cirsium canadense*	**I**				0.5
Canadian horseweed	*Conyza canadensis*	**N**	0.5		0.5	
Catnip	*Nepeta cataria*	**NN**	0.5		0.5	0.5
Cattail	*Typha sp.*	**N**				
Chokecherry	*Prunus virginiana*	**N**	2			
Clearweed	*Pilea pumila*	**N**				
Cocklebur	*Xanthium strumarium*	**NN**				
Common boneset	*Eupatorium perfoliatum*	**N**	0.5			
Common burdock	*Arctium minus*	**I**	2	0.5	1	2
Common dandelion	*Taraxacum officinale*	**NN**	0.5			0.5
Common plantain	*Plantago major*	**NN**				
Common ragweed	*Ambrosia artemisiifolia*	**NN**	0.5			0.5
Common St. John's wort	*Hypericum perforatum*	**I**				1
Common yarrow	*Achillea millefolium*	**N**				0.5
Cup plant	*Silphium perfoliatum*	**N**				1
Curly dock	*Rumex crispus*	**I**				0.5
Cutleaf coneflower	*Rudbeckia laciniata*	**N**				1
Dark green bulrush	*Scirpus atrovirens*	**N**	1			
Deadly nightshade	*Solanum dulcamara*	**NN**	0.5			0.5
Devil's beggarstick	*Bidens frondosa*	**N**				
Dock, unknown	*Rumex sp.*	**NN**				
Early sunflower	*Heliopsis helianthoides*	**N**			0.5	
Evening primrose	*Oenothera biennis*	**N**	0.5		0.5	0.5
False indigo	*Amorpha fruticosa*	**N**				
False solomon's seal	*Maianthemum racemosum*	**N**		0.5		
Fern smooth cliff brake	*Pellaea glabella*	**N**				
Figwort sp.	*Scrophularia sp.*	**N**				

Fringed willowherb	*Epilobium ciliantum*	**N**				
Garlic mustard	*Alliaria petiolata*	**I**	1			
Germander	*Teucrium canadense*	**N**				0.5
Goldenrod, unknown	*Solidago sp.*	**N**				
Grass, unknown						
Heath aster	*Symphyotrichum ericoides*	**N**			0.5	
Hoary alyssum	*Berteroa incana*	**I**	0.5		0.5	2
Jewelweed	*Impatiens capensis*	**N**	1		1	
Joe pye weed	*Eutrochium maculatum*	**N**				
Lamb's quarters	*Chenopodium album*	**NN**	0.5			
Lanceleaf coreopsis	*Coreopsis lanceolata*	**N**				0.5
Little bluestem	*Schizachyrium scoparium*	**N**			0.5	0.5
Maple leaved goosefoot	*Chenopodium simplex*	**N**	0.5		0.5	
Moonseed	*Menispermum canadense*	**N**	0.5			
Motherwort	*Leonurus cardiaca*	**NN**	2			0.5
Mullein	*Verbascum thapsus*	**NN**	0.5		0.5	0.5
Mustard, unknown	*Barbarea sp.*					
New England aster	*Symphyotrichum novae-angliae*	**N**				
Nodding beggarstick	*Bidens cernua*	**N**				
Northern bugleweed	*Lycopus uniflorus*	**N**				
Nutsedge, unknown						
Panicled aster	*Symphyotrichum lanceolatum*	**N**			0.5	
Pennsylvania smartweed	*Persicaria pennsylvannia*	**N**				
Poison ivy	*Toxicodendron radicans*	**N**			1	
Purple loosestrife	*Lythrum salicaria*	**I**	1			
Purple-leaf willowherb	*Epilobium coloratum*	**N**				
Reed canary grass	*Phalaris arundinacea*	**I**	1			
Rice cut grass	*Leersia oryzoides*	**N**				

Riverbank grape	*Vitis riparia*	**N**				1
Sedge, unknown 1	*Carex spp.*	**N**			1	
Sedge, unknown 2	*Carex spp.*					
Sedge, unknown 3	*Carex spp. Ovales group*	**N**				0.5
Shaggy soldier	*Galinsoga quadriradiata*	**N**				
Side oats grama	*Bouteloua curpendula*	**N**			0.5	
Sneezeweed	*Helenium autumnale*	**N**	0.5			
Soapwort	*Saponaria officinalis*	**I**			0.5	
Soft stem bulrush	*Schoenoplectus tabernaemontani*	**N**				
Spotted horsemint	*Monarda punctata*	**N**				0.5
Spotted knapweed	*Centaurea stoebe*	**I**			0.5	0.5
Starry false solomon's seal	*Maianthemum stellatum*	**N**			1	1
Swamp milkweed	*Asclepias incarnata*	**N**			0.5	
Sweet clover, unknown	*Melilotus spp.*	**I**	1	1		
Sweet clover, white	*Melilotus alba*	**I**			2	2
Tall hedge mustard	*Sisymbrium loeselii*	**NN**			0.5	
Unknown Mint						0.5
Vervain, unknown	*Verbena spp.*	**N**	0.5			
Vervain, white	*Verbena urticifolia*	**N**	0.5		0.5	1
Virginia stickseed	*Hackelia virginiana*	**N**	0.5			
Water buttercup	*Ranunculus flabellaris*	**N**				
White campion	*Silene latifolia*	**NN**				0.5
White snakeroot	*Ageratina altissima*	**N**	4	2	1	1
Wild Four O'Clock	*Mirabilis nyctaginea*	**N**	0.5			
Yellow coneflower	*Ratibida pinnata*	**N**			0.5	0.5
Yellow foxtail	*Setaria pumila*	**NN**	0.5			1
Yellow nutsedge	*Cyperus esculentus*	**I**				

Yellow wood sorrel	*Oxalis stricta*	**N**	0.5			0.5
Vine						
Boston ivy	*Parthenocissus tricuspidata*	**I**	0.5			
Riverbank grape	*Vitis riparia*	**N**	2	3		
Virginia creeper	*Parthenocissus quinquefolia*	**N**	2	1		

Table 15: Vegetation Survey Data for Units 6-10

Common Name	**Scientific Name**	**Status**	**Unit 6 Hennepin Beach**	**Unit 7 Wet Meadow**	**Unit 8 Floodplain**	**Unit 9 Mill Cave**	**Unit 10 Bluff Slopes**
Canopy (> 15 feet tall)							
American elm	*Ulmus americana*	**N**					2
Boxelder	*Acer negundo*	**N**					3
Bur oak	*Quercus macrocarpa*	**N**					1
Catalpa	*Catalpa speciosa*	**N**					
Cottonwood	*Populus deltoides*	**N**					
Green ash	*Fraxinus pennsylvanica*	**N**					
Hackberry	*Celtis occidentalis*	**N**					3
Silver maple	*Acer saccharinum*	**N**					1
Willow sp.	*Salix sp.*	**N**					
Subcanopy (10 - 15 feet tall)							
American elm	*Ulmus americana*	**N**					2
Black locust	*Robinia pseudoacacia*	**I**					
Boxelder	*Acer negundo*	**N**	2				3
Catalpa	*Catalpa speciosa*	**N**					1
Chokecherry	*Prunus virginiana*	**N**					
Common buckthorn	*Rhamnus cathartica*	**I**	2				2
Green ash	*Fraxinus pennsylvanica*	**N**					

Hackberry	*Celtis occidentalis*	**N**					2
Staghorn sumac	*Rhus typhina*	**N**	2				
Shrub (<10 feet tall, bushy)							
American elm	*Ulmus americana*	**N**					
American hazelnut	*Corylus americana*	**N**					
Black locust	*Robinia pseudoacacia*	**I**					
Boxelder	*Acer negundo*	**N**					2
Catalpa	*Catalpa speciosa*	**N**	0.5				
Chokecherry	*Prunus virginiana*	**N**	1		P		1
Common buckthorn	*Rhamnus cathartica*	**I**	3	0.5	P	1	3
Common elderberry	*Sambucus canadensis*	**N**					
Cottonwood	*Populus deltoides*	**N**	0.5				
Currant, unknown	*Ribes spp.*	**N**					
Eastern red cedar	*Juniperus virginiana*	**N**					
Fragrant sumac	*Rhus aromatica*	**NN**					
Green ash	*Fraxinus pennsylvanica*	**N**	2				2
High bush cranberry	*Viburnum opulus var. americanum*	**N**					
Leadplant	*Amorpha canescens*	**N**		2			
Missouri gooseberry	*Ribes missouriense*	**N**	0.5				0.5
Nannyberry	*Viburnum lentago*	**N**					
Red osier dogwood	*Cornus sericea*	**N**		1			
Siberian elm	*Ulmus pumila*	**I**					0.5
Silver maple	*Acer saccharinum*	**N**					
Staghorn sumac	*Rhus typhina*	**N**	2		P		
Tatarian honeysuckle	*Lonicera tatarica*	**I**	2		P		2
White mulberry	*Morus alba*	**I**				1	
Wild plum	*Prunus americana*	**N**					

Willow, unknown	*Salix spp.*	**N**					
Sapling (<10 feet tall, single stem)							
Boxelder	*Acer negundo*	**N**					
Catalpa	*Catalpa speciosa*	**N**					
Common buckthorn	*Rhamnus cathartica*	**I**					
Currant, unknown	*Ribes sp.*	**N**					
White mulberry	*Morus alba*	**I**			P		
Seedling (<3 feet tall)							
Chokecherry	*Prunus virginiana*	**N**					
Common buckthorn	*Rhamnus cathartica*	**I**			P	0.5	
Cottonwood	*Populus deltoides*	**N**			P		
Green ash	*Fraxinus pennsylvanica*	**N**					
Green ash	*Fraxinus pennsylvanica*	**N**				0.5	
Hackberry	*Celtis occidentalis*	**N**				0.5	
Silver maple	*Acer saccharinum*	**N**				0.5	
Herbaceous							
Absinthe wormwood	*Artemisia absinthium*	**I**	0.5				
American elm	*Ulmus americana*	**N**			P		
Anise hyssop	*Agastache foeniculum*	**N**					
Awl aster	*Symphyotrichum pilosum*	**N**					
Bergamot	*Monarda fistulosa*	**N**					
Black nightshade	*Solanum ptychanthum*	**N**				0.5	
Blazingstar sp.	*Liatris sp.*	**N**					
Blue vervain	*Verbena hastata*	**N**			P		
Butter and Eggs	*Linaria vulgaris*	**I**	1				
Calico aster	*Symphyotrichum lateriflorum*	**N**		1			
Canada goldenrod	*Solidago canadensis*	**I**	2	2			1
Canada thistle	*Cirsium canadense*	**I**	0.5				

Canadian horseweed	*Conyza canadensis*	**N**					
Catnip	*Nepeta cataria*	**NN**	0.5				0.5
Cattail	*Typha sp.*	**N**		0.5			
Chokecherry	*Prunus virginiana*	**N**			P		
Clearweed	*Pilea pumila*	**N**		1		1	
Cocklebur	*Xanthium strumarium*	**NN**	0.5	2			
Common boneset	*Eupatorium perfoliatum*	**N**		1			
Common burdock	*Arctium minus*	**I**	0.5			1	0.5
Common dandelion	*Taraxacum officinale*	**NN**			P		0.5
Common plantain	*Plantago major*	**NN**				1	
Common ragweed	*Ambrosia artemisiifolia*	**NN**					
Common St. John's wort	*Hypericum perforatum*	**I**					
Common yarrow	*Achillea millefolium*	**N**					
Cup plant	*Silphium perfoliatum*	**N**		0.5			
Curly dock	*Rumex crispus*	**I**					
Cutleaf coneflower	*Rudbeckia laciniata*	**N**					
Dark green bulrush	*Scirpus atrovirens*	**N**		0.5			
Deadly nightshade	*Solanum dulcamara*	**NN**	1			1	0.5
Devil's beggarstick	*Bidens frondosa*	**N**			P	0.5	
Dock, unknown	*Rumex sp.*	**NN**					0.5
Early sunflower	*Heliopsis helianthoides*	**N**					
Evening primrose	*Oenothera biennis*	**N**	0.5		P		
False indigo	*Amorpha fruticosa*	**N**			P		
False solomon's seal	*Maianthemum racemosum*	**N**					
Fern smooth cliff brake	*Pellaea glabella*	**N**				0.5	
Figwort sp.	*Scrophularia sp.*	**N**	0.5				
Fringed willowherb	*Epilobium ciliantum*	**N**				1	
Garlic mustard	*Alliaria petiolata*	**I**					

Germander	*Teucrium canadense*	**N**					
Goldenrod, unknown	*Solidago sp.*	**N**				0.5	
Grass, unknown				5			
Heath aster	*Symphyotrichum ericoides*	**N**					
Hoary alyssum	*Berteroa incana*	**I**	2				
Jewelweed	*Impatiens capensis*	**N**		1		1	2
Joe pye weed	*Eutrochium maculatum*	**N**	0.5	0.5	P		
Lamb's quarters	*Chenopodium album*	**NN**					0.5
Lanceleaf coreopsis	*Coreopsis lanceolata*	**N**					
Little bluestem	*Schizachyrium scoparium*	**N**					
Maple leaved goosefoot	*Chenopodium simplex*	**N**					
Moonseed	*Menispermum canadense*	**N**					0.5
Motherwort	*Leonurus cardiaca*	**NN**	0.5		P	0.5	0.5
Mullein	*Verbascum thapsus*	**NN**	0.5				
Mustard, unknown	*Barbarea sp.*						0.5
New England aster	*Symphyotrichum novae-angliae*	**N**	0.5	0.5			
Nodding beggarstick	*Bidens cernua*	**N**	0.5	2		1	
Northern bugleweed	*Lycopus uniflorus*	**N**		1	P	0.5	
Nutsedge, unknown					P		
Panicled aster	*Symphyotrichum lanceolatum*	**N**			P		
Pennsylvania smartweed	*Persicaria pennsylvannia*	**N**				1	
Poison ivy	*Toxicodendron radicans*	**N**					
Purple loosestrife	*Lythrum salicaria*	**I**	0.5	2			
Purple-leaf willowherb	*Epilobium coloratum*	**N**		0.5			
Reed canary grass	*Phalaris arundinacea*	**I**		2			
Rice cut grass	*Leersia oryzoides*	**N**				1	
Riverbank grape	*Vitis riparia*	**N**	2				
Sedge, unknown 1	*Carex spp.*	**N**					

Sedge, unknown 2	*Carex spp.*				P		
Sedge, unknown 3	*Carex spp. Ovales group*	**N**					
Shaggy soldier	*Galinsoga quadriradiata*	**N**				0.5	
Side oats grama	*Bouteloua curpendula*	**N**					
Sneezeweed	*Helenium autumnale*	**N**		0.5	P		
Soapwort	*Saponaria officinalis*	**I**	3				
Soft stem bulrush	*Schoenoplectus tabernaemontani*	**N**		0.5			
Spotted horsemint	*Monarda punctata*	**N**					
Spotted knapweed	*Centaurea stoebe*	**I**	2				0.5
Starry false solomon's seal	*Maianthemum stellatum*	**N**			P		
Swamp milkweed	*Asclepias incarnata*	**N**		1	P		
Sweet clover, unknown	*Melilotus spp.*	**I**	2				
Sweet clover, white	*Melilotus alba*	**I**			P		
Tall hedge mustard	*Sisymbrium loeselii*	**NN**					
Unknown Mint							
Vervain, unknown	*Verbena spp.*	**N**	0.5				
Vervain, white	*Verbena urticifolia*	**N**					
Virginia stickseed	*Hackelia virginiana*	**N**					
Water buttercup	*Ranunculus flabellaris*	**N**				0.5	
White campion	*Silene latifolia*	**NN**					
White snakeroot	*Ageratina altissima*	**N**	2		P	1	2
Wild Four O'Clock	*Mirabilis nyctaginea*	**N**					
Yellow coneflower	*Ratibida pinnata*	**N**					
Yellow foxtail	*Setaria pumila*	**NN**					
Yellow nutsedge	*Cyperus esculentus*	**I**				0.5	
Yellow wood sorrel	*Oxalis stricta*	**N**					
Vine							

Boston ivy	*Parthenocissus tricuspidata*	**I**				1	
Riverbank grape	*Vitis riparia*	**N**			P	1	3
Virginia creeper	*Parthenocissus quinquefolia*	**N**	2		P	0.5	2

APPENDIX C: RESTORATION PLANTING SPECIES LISTS

Species lists for restoration planting were adapted from the Minnesota Department of Natural Resources native plant community fact sheets. More information can be found at dnr.state.mn.us/npc/index.html. Most species lists have been adapted to deviate from the official DNR fact sheets to accommodate climate change, frequent disturbance, urbanization, and general degraded nature of site and soil quality.

UNITS 1, 2, 3, and 10: Southern Dry-Mesic Oak Forest (MHs37), Southern Terrace Forest (FFs59)			
Wildflowers and Ferns			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Helianthus strumosus	Woodland sunflower	*Hydrophyllum virginianum*	Virginia waterleaf
Impatiens spp.	Touch-me-not	*Rudbeckia laciniata*	Tall coneflower
Eupatorium rugosum	White snakeroot	*Galium aparine*	Cleavers
Adiantum pedatum	Maidenhair fern	*Geum canadense*	White avens
Osmorhiza longistylis	Aniseroot	*Phlox divaricata*	Blue phlox
Polygonum virginianum	Virginia knotweed	*Viola sororia* and similar *Viola* spp.	Stemless blue violets
Caulophyllum thalictroides	Blue cohosh	*Arisaema triphyllum*	Jack-in-the-pulpit
Sanguinaria canadensis	Bloodroot	*Enemion biternatum*	False rue anemone
Pilea spp.	Clearweed	*Ranunculus hispidus*	Hispid buttercup
Circaea lutetiana	Common enchanter's nightshade	*Aster ontarionis*	Ontario aster
Sanicula gregaria	Gregarious black snakeroot	*Sanicula marilandica*	Maryland black snakeroot
Rubus occidentalis	Black raspberry	*Galium triflorum*	Sweet-scented bedstraw
Osmorhiza claytonii	Clayton's sweet cicely	*Amphicarpaea bracteata*	Hog peanut
Blephilia hirsuta	Woodmint	*Thalictrum dioicum*	Early meadow-rue
Smilacina stellata	Starry false Solomon's seal	*Mertensia virginica*	Virginia bluebells
Matteuccia struthiopteris	Ostrich fern	*Geranium maculatum*	Wild geranium
Grasses and Sedges			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**

Elymus virginicus	Virginia wild rye	*Carex amphibola*	Ambiguous sedge
Carex blanda	Wood sedge	*Festuca subverticillata*	Nodding fescue
Leersia virginica	White grass	*Carex rosea*	Starry sedge
Carex grayi	Gray's sedge	*Elymus villosus*	Silky wild rye
Elymus hystrix	Bottlebrush grass	*Carex pensylvanica*	Pennsylvania sedge
Shrubs			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Ribes missouriense	Missouri gooseberry	*Zanthoxylum americanum*	Prickly ash
Sambucus canadensis	Common elder	*Prunus virginiana*	Chokecherry
Corylus americana	American hazelnut	*Viburnum lentago*	Nannyberry
Ribes cynosbati	Prickly gooseberry	*Cornus alternifolia*	Pagoda dogwood
Cornus racemose	Gray dogwood	*Cornus rugosa*	Round-leaved dogwood
Trees			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Ulmus americana	American elm	*Acer negundo*	Box elder
Acer saccharinum	Silver maple	*Ostrya virginiana*	Ironwood
Celtis occidentalis	Hackberry	*Tilia americana*	Basswood
Populus deltoides	Cottonwood	*Quercus alba*	White oak
Catalpa speciosa	Northern catalpa	*Quercus bicolor*	Swamp white oak
Carya cordiformis	Bitternut hickory	*Juglans nigra*	Black walnut

SEED MIXES FOR UNITS 1, 2, 3, AND 10

- MNL Buckthorn Replacement Mix: https://mnlcorp.com/product/mnl-buckthornreplacement-mix/
- Board of Water and Soil (BWSR) State Seed Mixes:
  - Woodland Edge South and West – 36-212

UNITS 4 and 5: Southern Dry Prairie (UPs13), Southern Dry Savanna (UPs14)			
Wildflowers			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Anemone cylindrica	Long-headed thimbleweed	*Liatris punctata*	Dotted blazing star
Antennaria spp.	Pussytoes	*Liatris cylindracea*	Cylindric blazing star
Aquilegia canadensis	Columbine	*Linum sulcatum*	Grooved yellow flax
Asclepias verticillata	Whorled milkweed	*Lobelia spicata*	Rough-spiked Lobelia
Asclepias tuberosa	Butterfly-weed	*Lysimachia ciliate*	Fringed loosestrife
Asclepias viridiflora	Green milkweed	*Mirabilis hirsute*	Hairy four-o'clock
Asclepias syriaca	Common milkweed	*Monarda fistulosa*	Wild bergamot
Aster sericeus	Silky aster	*Another biennia*	Common evening-primrose
Aster oolentan-giensis	Sky-blue aster	*Oenothera clelandii*	Cleland's evening-primrose
Aster ericoides	Heath aster	*Oxalis violacea*	Violet wood-sorrel
Aster laevis	Smooth aster	*Penstemon grandiflorus*	Large-flowered beard-tongue
Astragalus Crassi-carpus	Buffalo-bean	*Physalis virginiana*	Ground-cherry
Calylophus serrulata	Toothed evening primrose	*Potentilla arguta*	Tall cinquefoil
Campanula rotundifolia	Harebell	*Pycnanthemum virginianum*	Virginia mountain-mint
Coreopsis palmata	Stiff tickseed	*Scutellaria leonardi*	Leonard's skullcap
Dalea purpurea	Purple prairie-clover	*Senecio plattensis*	Prairie ragwort
Dalea candida	White prairie-clover	*Silene antirrhina*	Sleepy catchfly
Desmodium illinoense	Illinois tick-trefoil	*Sisyrinchium campestre*	Field blue-eyed grass
Euphorbia corollata	Flowering spurge	*Solidago nemoralis*	Gray goldenrod
Gnaphalium obtuse-folium	Sweet everlasting	*Solidago rigida*	Stiff goldenrod
Helianthemum bicknellii	Hoary frostweed	*Solidago speciosa*	Showy goldenrod
Helianthus pauciflorus	Stiff sunflower	*Tradescantia occidentalis*	Western spiderwort
Heuchera richardsonii	Alum-root	*Viola pedatifida*	Prairie bird-foot violet
Brickellia eupatorioides	False boneset	*Viola pedata*	Bird-foot violet
Lespedeza capitata	Round-headed bush-clover	*Zizia aptera*	Heart-leaved alexanders

Liatris aspera	Rough blazing star	*Liatris cylindracea*	Cylindric blazing star
Grasses and Sedges			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Andropogon gerardii	Big bluestem	*Panicum oligosanthes*	Few-flowered panic grass
Bouteloua curtipendula	Side-oats grama	*Panicum wilcoxianum*	Wilcox's panic grass
Bouteloua hirsuta	Hairy grama	*Panicum perlongum*	Long-leaved panic grass
Calamovilfa longifolia	Sand reed-grass	*Panicum linearifolium*	Linnear-leaved panic grass
Carex pensylvanica	Pennsylvania sedge	*Panicum leibergii*	Leiberg's panic grass
Cyperus schweinitzii	Schweinitz' cyperus	*Schizachyrium scoparium*	Little bluestem
Cyperus lupulinus	Hop-like cyperus	*Sorghastrum nutans*	Indian grass
Elymus canadensis	Canada wild rye	*Sporobolus heterolepis*	Prairie dropseed
Eragrostis spectabilis	Purple lovegrass	*Sporobolus aspera*	Rough dropseed
Muhlenbergia cuspidata	Plains muhly	*Stipa spartea*	Porcupine-grass
Shrubs			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Rosa cmx	Smooth wild rose	*Amorpha canescens*	Leadplant
Trees (if restoring to savanna community instead of prairie)			
Scientific Name	**Scientific Name**	**Scientific Name**	**Scientific Name**
Quercus macrocarpa	Bur oak	*Quercus ellipsoides*	Northern pin oak

SEED MIXES FOR UNITS 4 AND 5

- Board of Water and Soil (BWSR) State Seed Mixes:
  - Little Bluestem Urban Prairie – 35-121
  - Eroding Bank Stabilization Northwest & South – Pilot Seed Mix
  - Dry Prairie General – 35-222
  - Beneficial Insects South & West – 38-542
- MNL Buckthorn Replacement Mix: https://mnlcorp.com/product/mnl-buckthornreplacement-mix/

UNIT 6: Southern Mesic Prairie (UPs23), Southern Mesic Savanna (UPs24)			
Wildflowers			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Allium stellatum	Prairie wild onion	*Allium canadense*	Wild Garlic
Anemone cylindrica	Long-headed thimbleweed	*Anemone virginiana*	Virginia Thimbleweed
Anemone candensis	Canada anemone	Artemisia frigida	Prairie Sagewort
Apocynum androsaemifolium	Spreading dogbane	*Asclepias syriaca*	Common milkweed
Asclepias tuberosa	Butterfly weed	*Aster ericoides*	Heath aster
Aster oolentangiensis	Skyblue aster	*Aster novae-angliae*	New England Aster
Aster lanceolatum	Panicled Aster	*Astragalus canadensis*	Canada Milkvetch
Aster laevis	Smooth blue aster	*Chryysopsis villosa*	Prairie golden Aster
Campanula rotundifolia	Harebell	*Coreopsis palmata*	Stiff Tickseed
Comandra umbellata var. umbellata	Bastard toadflax	*Dalea candida*	White prairie clover
Dalea purpurea var. purpurea	Purple prairie clover	*Euphorbia corollata*	Flowering Spurge
Desmodium canadense	Canada tick trefoil	*Fragaria virginiana*	Common strawberry
Euthamia graminfolia	Grass-leaved goldenrod	*Gantiana balingtoni*	Closed Gentian
Galium boreale	Northern bedstraw	*Helenium autumnale*	Autumn Sneezeweed
Geum triflorum	Prairie Smoke	*Helianthus pauciflorus*	Stiff sunflower
Helianthus maximiliani	Maximilian's sunflower	*Heuchera richardsonii*	Alumroot
Heliopsis helianthoides	Early sunflower	*Lespedeza capitata*	Round-headed Bush-clover
Lathyrus venosus	Veiny Pea	*Liatris ligulistylis*	Northern plains blazing star
Liatris aspera	Rough blazing star	*Lilium philadelphicum*	Wood lily
Liatris pycnostachya	Gay Feather	*Mirabilis hirsuta*	Hairy four o'clock
Lobelia spicata	Rough Spiked Lobelia	*Oenothera biennis*	Common evening-primrose
Monarda fistulosa	Wild bergamot	*Phlox pilosa var. fulgida*	Prairie phlox
Pedicularis canadensis	Wood betony	*Pycnanthemum virginianum*	Virginia mountain mint
Physalis heterophylia	Clammy Ground-cherry	*Rudbeckia hirta*	Black-eyed Susan
Potentilla arguta	Tall cinquefoil	*Smilacina stellata*	Starry False Solomon Seal
Ratibida pinnata	Gray-headed coneflower	*Solidago nemoralis*	Gray goldenrod

Smilacina racemosum	False Solomon's Seal	*Solidago ptarmicoides*	Upland White Aster
Solidago missouriensis	Missouri goldenrod	*Thalictrum dasycarpum*	Tall meadow-rue
Solidago speciosa	Showy goldenrod	*Veronicastrum virginicum*	Culver's Root
Tradescantia bracteata	Bracted Spiderwort	*Viola pedata*	Prairie Bird-foot Violet
Vicia americana	American vetch	*Zizia aptera*	Heart-leaved alexanders
Grasses, Rushes, and Sedges			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Andropogon gerardii	Big bluestem	*Stipa spartea*	Porcupine grass
Carex bicknellii	Bicknell's Sedge	*Bromus kalmii*	Kalm's Brome
Carex meadii	Mead's Sedge	*Carex muehlenbergii*	Muhlenberg's Sedge
Elymus canadensis	Canada Wild Rye	Carex tenera	Remote Sedge
Eragrostis spectabilis	Purple Lovegrass	*Elymus trachycaulus*	Slender wheatgrass
Panicum oligosanthes	Few-flowered Panic grass	*Muhlenbergia mexicana*	Mexican satin-grass
Panicum perlongum	Long-leaved panic grass	*Schizachyrium scoparium*	Little bluestem
Sorghastrum nutans	Indian grass	*Sporobolus heterolepis*	Prairie dropseed
Semi-Shrubs (Generally common)			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Amorpha canescens	Leadplant	*Rosa arkansana*	Prairie rose
Shrubs (Occasional / Rare)			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Cornus racemosa	Grey Dogwood	*Corylus americana*	American Hazelnut

SEED MIXES FOR UNIT 6

- MNL Buckthorn Replacement Mix: https://mnlcorp.com/product/mnl-buckthornreplacement-mix/
- Board of Water and Soil (BWSR) State Seed Mixes:
  - Mesic Prairie General – 35-242
  - Early Successional Floodplain General – 34-161

UNIT 7: Southern Seepage Meadow / Carr (WMs83)			
Wildflowers and Ferns			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Asclepias incarnata	Swamp milkweed	*Lycopus uniflorus*	Northern bugleweed
Aster borealis	Bog aster	*Lysimachia thyrsiflora*	Tufted loosestrife
Aster lanceolatus	Eastern panicled aster	*Mentha arvensis*	Common mint
Aster puniceus	Red-stemmed aster	*Onoclea sensibilis*	Sensitive fern
Aster umbellatus	Flat-topped aster	*Pedicularis lanceolata*	Swamp lousewort
Caltha palustris	Common marsh marigold	*Pilea spp.*	Clearweed
Campanula aparinoides	Marsh bellflower	*Polygonum amphibium*	Water smartweed
Chelone glabra	White turtlehead	*Pycnanthemum virginianum*	Virginia mountain mint
Cicuta bulbifera	Bulb-bearing water hemlock	*Rubus pubescens*	Dwarf raspberry
Cicuta maculata	Spotted water hemlock	*Rumex orbiculatus*	Great water dock
Cirsium muticum	Swamp thistle	*Scutellaria galericulata*	Marsh skullcap
Epilobium sp.	Linear-leaved, Marsh, or Downy willow-herb*	*Smilacina stellata*	Starry false Solomon's seal
Epilobium sp.	American, Purple-leaved, or Northern willow-herb	*Solidago canadensis*	Canada goldenrod
Eupatorium maculatum	Spotted Joe pye weed	*Solidago gigantea*	Giant goldenrod
Eupatorium perfoliatum	Common boneset	*Stachys palustris*	Woundwort
Galium labradoricum	Labrador bedstraw	*Thalictrum dasycarpum*	Tall meadow-rue
Helianthus giganteus, H. grosseserratus, or H. nuttallii	Sunflower	*Thelypteris palustris*	Northern marsh fern
Impatiens spp.	Touch-me-not	*Typha latifolia*	Broad-leaved cattail
Lathyrus palustris	Marsh vetchling	*Verbena hastata*	Blue vervain
Lycopus americanus	Cut-leaved bugleweed	*Viola nephrophylla*	Northern bog violet
Lycopus asper	Rough bugleweed		
Grasses/Rushes/Sedges			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Agrostis stolonifera	Redtop	*Carex sartwellii*	Sartwell's sedge
Bromus ciliatus	Fringed brome	*Carex stipata*	Awl-fruited sedge

Calamagrostis canadensis	Bluejoint	*Carex stricta*	Tussock sedge
Calamagrostis stricta	Narrow reedgrass	*Eleocharis palustris*	Red-stalked spikerush
Carex aquatilis	Aquatic sedge	*Glyceria striata*	Fowl manna grass
Carex hystericina	Porcupine sedge	*Muhlenbergia glomerata*	Clustered muhly grass
Carex interior	Interior sedge	*Poa palustris*	Fowl bluegrass
Carex lacustris	Lake sedge	*Scirpus atrovirens or S. pallidus*	Dark green or Pale bulrush
Carex pellita	Woolly sedge	*Spartina pectinata*	Prairie cordgrass
Carex prairea	Prairie sedge		
Shrubs			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Cornus sericea	Red-osier dogwood	*Salix candida*	Sage-leaved willow
Salix discolor	Pussy willow	*Betula pumila*	Bog birch
Salix petiolaris	Slender willow	*Salix eriocephala*	Heart-leaved willow
Salix bebbiana	Bebb's willow		

SEED MIXES FOR UNIT 7

- Board of Water and Soil (BWSR) State Seed Mixes:
  - Wet Meadow South and West – 34-272
  - Emergent Wetland – 32-182
  - Riparian South & West – 34-265

UNIT 8: Southern Floodplain Forest (FFs68)			
Wildflowers and Ferns			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Laportea canadensis	Wood nettle	*Cryptotaenia canadensis*	Honewort
Aster ontarionis	Ontario aster	*Scutellaria lateriflora*	Mad dog skullcap
Bidens spp.	Bur marigold and Beggarticks	*Ranunculus abortivus*	Kidney-leaved buttercup
Impatiens spp.	Touch-me-not	*Rudbeckia laciniata*	Tall coneflower
Stachys tenuifolia	Narrow-leaved hedge nettle	*Boehmeria cylindrica*	False nettle
Echinocystis lobata	Wild cucumber	*Hackelia deflexa or H. virginiana*	Nodding or Virginia stickseed
Lycopus uniflorus	Northern bugleweed	*Aster lateriflorus*	Side-flowering aster
Pilea spp.	Clearweed	*Campanula americana*	Tall bellflower
Teucrium canadense	Germander	*Sicyos angulatus*	Bur cucumber
Stachys palustris	Woundwort	*Lycopus americanus*	Cut-leaved bugleweed
Aster lanceolatus	Eastern panicled aster	*Iris virginica*	Southern blue flag
Eupatorium rugosum	White snakeroot	*Urtica dioica*	Stinging nettle
Mentha arvensis	Common mint	*Polygonum virginianum*	Virginia knotweed
Grasses and Sedges			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Elymus virginicus	Virginia wild rye	*Carex amphibola*	Ambiguous sedge
Leersia oryzoides	Rice cut grass	*Carex lupulina*	Hop umbrella sedge
Elymus villosus	Silky wild rye	*Carex typhina*	Cattail sedge
Carex grayi	Gray's sedge	*Carex intumescens*	Bladder sedge
Festuca subverticillata	Nodding fescue	*Elymus hystrix*	Bottlebrush grass
Toxicodendron rydbergii	Climbing poison ivy	*Salix nigra*	Black willow
Trees			
Scientific Name	**Common Name**	**Scientific Name**	**Common Name**
Ulmus americana	American elm	*Acer negundo*	Box elder
Acer saccharinum	Silver maple	*Fraxinus pennsylvanica*	Green ash

Celtis occidentalis	Hackberry	*Quercus bicolor*	Swamp white oak
Populus deltoides	Cottonwood	*Ulmus rubra*	Red elm
Salix nigra	Black willow		

SEED MIXES FOR UNIT 8:

- MNL Buckthorn Replacement Mix: https://mnlcorp.com/product/mnl-buckthornreplacement-mix/
- Board of Water and Soil (BWSR) State Seed Mixes:
  - Early Successional Floodplain General – 34-161
  - Eroding Bank Stabilization Northwest & South – Pilot Seed Mix
  - Riparian South & West – 34-265

APPENDIX D: CRITICAL PERIOD CUTTING HOW-TO GUIDE

Critical period cutting

A HOW-TO GUIDE FOR REMOVING LARGE BUCKTHORN

Removing buckthorn can help diversify the plant community, reduce erosion and improve habitat. But it can be a daunting task for homeowners and land managers. The critical period cutting method uses what we know about how buckthorn grows to aid the process. Here are step-by-step instructions:

Use this method if:

- You're trying to remove buckthorn with stems greater than 2" in diameter
- You're working on a small natural area or home landscape
- You can't or don't want to use herbicides
- You can commit to following up for multiple years

Tools you'll need:

- Work gloves
- A saw (bowsaw, handsaw, chainsaw, etc.)
- Loppers or hand pruners
- Eye protection (recommended)

1

YEAR 1, LATE MAY OR EARLY JUNE

Cut and strip the main stem

Cut through the main stem 3-5 feet above the ground, then cut off any side branches and growth on the remaining stump.

Use a saw for the main stem. You may be able to strip side branches with loppers or pruners.

Without leaves, the buckthorn plant can't photosynthesize — its only method to replenish stored nutrients to resprout.

2

YEAR 1, MID-SEPTEMBER

Re-strip the stump until it's bare

Cut off, or "re-strip," any branches and new growth from the sides of the stump.

Re-stripping stresses the plant, exhausting its root reserves and preventing it from drawing down any additional nutrients it may have gained from leaves over the summer.

3

YEAR 2, LATE MAY OR EARLY JUNE

Re-strip the stump again

Cut off new growth again after the initial leaf-out in the spring, usually June.

4

YEAR 2, EARLY TO MID-SEPTEMBER

Re-strip the stump one more time

Do this final re-strip in mid-September or before leaf-drop in the fall.

5

YEAR 2, EARLY TO MID-SEPTEMBER

Remove the stump

Buckthorn is relatively shallow-rooted; when the plant has died, try pushing the stump over. Tamp down soil and leaf litter to limit exposed soil.

WHAT TO DO WITH CUT BUCKTHORN:

Check if you can dispose of it in city yard waste; use it as firewood; scatter or pile it onsite to let it decay. Be careful not to spread its berries!

6

YEAR 2 AND ON

Plant native species and pull new buckthorn seedlings

Follow-up is key! Diverse native plants compete with buckthorn seedlings, so planting or seeding for habitat has another benefit.

MORE DETAILS AND INFO:

fmr.org/CPC

20240613

APPENDIX E: 2024 FATHER HENNEPIN BLUFFS PARK STEWARD RESTORATION PLAN - MPRB

Father Hennepin Bluffs Park

Steward Restoration Plan

2024

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Minneapolis Park and Recreation Board

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Introduction and Guidance

How to Use This Plan

The volunteer restoration plan is composed of several components:

1. **Site Guidance** - a written explainer for the management of the restoration site. Explains the rationale of the remaining components and provides more nuanced advice for more effective care.
2. **Glossary** - a guide to the terminology used in the restoration calendar and the rest of the guide.
3. **Restoration Calendar** - a month by month guide to the restoration activities needed on site. Broken down by species and management unit (if site has management units).
4. **Disposal Guide** - a table describing the disposal method for each weed species in each of its growth stages.
5. **Management Brief** - a brief excerpt from the MPRB Natural Areas Plan corresponding to the habitat type of the restoration site.
6. **Map** - a map of the restoration site that may be broken into habitat types and management units.

Begin by reading the Guidance section and familiarize yourself with the calendar and how to read it. If you are planning to host volunteer events, consider the best times to gather volunteers to best accomplish critical restoration goals and planting efforts. If your group consists of volunteer stewards who operate on their own time, create a communication plan to direct their efforts in accordance with the priorities laid out in the calendar. Familiarize yourself with your target native plant communities and the plants that could be found there. Distribute materials from this guide as they may be helpful, particularly the calendar and map. Take a walk on your site and celebrate any accomplishments already made. Find the plants that already exist on your site in your native plant community. Dream about what could be there in the future. Thank the folks who have helped to care for the site and give yourself a pat on the back for playing your part. Reach out to Natural Resources staff to clarify any questions you have initially and follow up any time when additional guidance is needed.

The Restoration Calendar

The following paragraph is a brief guide to the most important feature of this guide, the restoration calendar. Each row of the calendar represents a target plant species and month by month steps required to manage that plant species. Each column represents a month of the field season, besides the last columns, which represent each management unit on site. The X's in these management unit columns represent the presence of the corresponding plant species in that management unit. Some restoration calendars for groups who host volunteer events have a suggested volunteer group size for completing the tasks for each plant species.

One of the most important parts of the calendar is the color-coded priority system. Each plant species is assigned a priority. Those priority categories are Critical (orange), High (yellow), and Low (green). If your site has management units, each of these are also assigned a priority category.

Critical plants are those that are extremely important to manage on site. They are often on the Minnesota Noxious Weeds list which legally requires landowners to do what they can to eliminate or reduce the spread of those plants. These species are typically highly adaptable, spread rapidly, and tend to crowd out other native species in a short amount of time. They may also be exceptionally difficult to control because of their growth characteristics. Follow the tasks required for these plants very carefully and do your best to clear them from the site. It can sometimes be discouraging to witness very slow progress when removing these plants, but rest assured every bit of effort matters. Natural Resources staff may also be assisting you with the management of these plants in some circumstances.

High Priority plants are those that are detrimental to native ecosystems but may not be as potent as the critical plants. In some instances, they may be just as potent but are so widespread that their removal is more of a slow and consistent process than a quick approach. These plants should be next on your list once tasks for critical plants are completed for the month.

Low Priority plants are those that are mildly detrimental to native ecosystems or are non-native species that typically do little harm to those ecosystems. In some other cases, they may be damaging, but they are very easily removed. These plants would be nice to remove from the site, but there are typically more pressing priorities to attend to. As your site is restored and higher priority plants are removed, attention can be shifted to these plants. Alternatively, they provide a good change of pace if stewards are struggling with more difficult plants and need some quick and simple progress.

Once a task for a species has been completed in a given month, it can sometimes be ignored for the following month. This is typically a judgement call though. For example, Spotted Knapweed lists "Hand Pull Rosettes" for the months of May and June. If the stewards manage to pull all or nearly all knapweed rosettes in May, they can likely skip this step for June. However when the "Hand Pull" tasks calls for adult plants to be pulled in July and August, the knapweed population should be addressed as needed once again. If all plants are pulled in July, it can likely be skipped in August. Alternatively, if stewards are busy in July with other tasks, knapweed could be pulled in August.

Restoration work involves a lot of watching and anticipating tasks as plants grow throughout the season and then determining what needs to be done on any given day. This takes practice, patience, and self-compassion as you learn the ecology of your site. Remember, you're making an impact on the world just by doing your best.

Site Guidance

Follow along on the restoration calendar as you read through this guidance. The primary goal for 2024 should be to keep each of the critical priority plants on this list in check. Check your calendar to see which species are highlighted in orange, signifying critical priority. Each of those species are detailed below. Events should focus on managing those plants first.

The primary goals for 2024 continue to be to restore the canopy and understory of the site, boosting diversity of native plants, and restoring habitat structure through removal of problematic species. These goals are synergistic and interdependent. For example, in areas with buckthorn canopy, removing the buckthorn will also create habitats that are unsuitable for garlic mustard populations. Keep in mind that soil disturbance increases the chances of new invasions, so minimize disturbance of soil in this process.

As forest structure is being restored, soil remediation can begin with the introduction of seed mixes such as the buckthorn replacement mix from Minnesota Native Landscapes. Due to the rocky nature of the site, planting adult plants will prove very challenging, but seed has a distinct advantage in the situation.

The highest priority plants here are listed on the Minnesota Department of Agriculture Noxious Weeds List. They pose a major threat to the habitat if left unchecked.

Canada thistle needs to be the top priority, as it seems to be just emerging into the site in the last couple of years. This thistle is a perennial thistle that spreads via rhizomes. Once established, it will be nearly impossible to control without herbicide.

Spotted knapweed is a similar story. Do your absolute best to stay on top of these two.

Crown vetch is another plant that is extremely difficult to stay on top of, but based on your documentation, it seems you've been doing your best. Continue trying to starve the plant of its needed nutrients and sunlight, and stop seeds from being distributed.

Finally, **buckthorn** remains top priority for reestablishing healthy canopy and understory. This year, you transition to critical cutting as a management method for buckthorn. Ask Andrew for more details on that process if needed.

Balancing priority: Besides the listed priorities, you should also favor tasks that can be completed entirely, tasks that have been completed in previous years, and new/emerging populations that can be stopped before they become problematic. If you need help with prioritizing, please reach out to Natural Resources staff for help. And remember, everything is positive progress, so don’t worry too much about getting it perfect!

Biocontrol: Father Hennepin has at least one species of beetle on site that was released to control Purple Loosestrife. There are possibly two present. In the tasks listed for purple loosestrife, it asks for the stewards to monitor the biocontrol. In practicality, this just means to keep an eye out for insects feeding on the leaves and stems of purple loosestrife. If no insect damage is found, report the lack of activity to Natural Resources staff.

Father Hennepin 2024

Priority Key: Critical | High Priority | Low Priority

Task	January	February	March	April	May	June	July	August	September	October	November	December	East Owamni Steps	East Owamni View	Mill View Meadow	Spillway View	Mill-Stone Arch View	Hennepin Island and Beach	Williams Island
Canada Thistle				Spike, Hand pull	Spike, Hand pull	Spike, Hand pull	Spike, Hand pull	Spike, Hand pull	Spike, Hand pull	Spike, Hand pull					X	X	X		
Common Buckthorn				High Stump Adults, Hand Pull Seedlings	Strip, High Stump Adults, Hand Pull Seedlings	Strip, High Stump Adults, Hand Pull Seedlings		High Stump Adults, Hand Pull Seedlings	Strip, High Stump Adults, Hand Pull Seedlings	Strip, High Stump Adults, Hand Pull Seedlings	High Stump Adults, Hand Pull Seedlings		X	X	X	X	X	X	X
Crown Vetch				Survey	Hand Pull	Hand Pull, Bag Flowering/Seeding	Hand Pull, Bag Flowering/Seeding	Hand Pull, Bag Flowering/Seeding	Hand Pull, Bag Flowering/Seeding	Hand Pull, Bag Flowering/Seeding					X		X		X
Spotted Knapweed					Monitor Biocontrol, Hand pull	Monitor Biocontrol, Hand pull	Monitor Biocontrol, Hand pull	Hand Pull Before Seeding	Hand Pull Before Seeding	Hand Pull Before Seeding								X	
Burdock		Clip & Bag Seedheads	Clip & Bag Seedheads	Spike, Hand pull	Spike, Hand pull	Spike, Hand pull	Spike, Hand pull	Spike, Hand pull	Spike, Hand pull	Clip & Bag Seedheads	Clip & Bag Seedheads		X	X	X	X	X	X	X
Black Locust				High Stump Adults, Hand Pull Seedlings	Strip, High Stump Adults, Hand Pull Seedlings	Strip, High Stump Adults, Hand Pull Seedlings		High Stump Adults, Hand Pull Seedlings	Strip, High Stump Adults, Hand Pull Seedlings	Strip, High Stump Adults, Hand Pull Seedlings			X	X					
Garlic Mustard				Hand Pull	Hand Pull, Bag Bolting/Flowering	Hand Pull, Bag Bolting/Flowering							X	X	X	X	X	X	X
Glossy Buckthorn				High Stump Adults, Hand Pull Seedlings	Strip, High Stump Adults, Hand Pull Seedlings	Strip, High Stump Adults, Hand Pull Seedlings		High Stump Adults, Hand Pull Seedlings	Strip, High Stump Adults, Hand Pull Seedlings	Strip, High Stump Adults, Hand Pull Seedlings	High Stump Adults, Hand Pull Seedlings								X
Purple Loosestrife				Monitor biocontrol	Monitor biocontrol	Monitor biocontrol, Hand Pull	Monitor biocontrol, Hand Pull	Monitor biocontrol, Hand Pull									X		
Bouncing Bet						Hand pull	Hand pull	Hand pull										X	
Bull Thistle					Clip Flowering Stems	Clip Flowering Stems	Spike Rosettes	Spike Rosettes							X	X	X		
Common Mullein				Spike, Hand pull	Spike, Hand pull	Spike, Hand pull	Spike, Hand pull	Spike, Hand pull							X			X	
Motherwort			Hand pull	Hand pull	Hand pull	Hand pull	Hand pull	Hand pull					X	X	X	X	X	X	X
Non-native Honeysuckle (Volunteer)				High Stump Adults, Hand Pull Seedlings	Strip, High Stump Adults, Hand Pull Seedlings	Strip, High Stump Adults, Hand Pull Seedlings		High Stump Adults, Hand Pull Seedlings	Strip, High Stump Adults, Hand Pull Seedlings	Strip, High Stump Adults, Hand Pull Seedlings	High Stump Adults, Hand Pull Seedlings		X	X	X	X	X	X	X
Planting		Dogwood/Willow Stakes	Dogwood/Willow Stakes		Spring Planting	Late Spring Planting			Fall Planting	Fall Planting									
Seeding	Winter Seed	Winter Seed	Spring Seed	Spring Seed						Fall Seed	Fall Seed	Winter Seed							
Erosion Control				Wattle Construction	Wattle Construction	Wattle Construction	Wattle Construction	Wattle Construction	Wattle Construction	Wattle Construction									

Species	Dormant	Growing	Flowering	Seedhead/Fruit Present	Post Seed	MDA Listing
Canada Thistle	Pile	Pile	Compostable bag, separate pile	Compostable bag, separate pile	Compostable bag, separate pile	Control
Common Buckthorn	Pile	Pile	Pile	Optionally separate fruiting trees, pile	Optionally separate fruiting trees, pile	Restricted
Crown Vetch	Pile	Pile	Bag and pile	Bag and pile	Bag and pile	Restricted
Spotted Knapweed	Pile	Pile	Compostable bag, separate pile	Compostable bag, separate pile	Compostable bag, separate pile	Control
Burdock	Pile	Pile	Pile	Bag and pile	Bag and pile	Unlisted
Black Locust	Pile	Pile	Pile	Pile	Pile	Restricted
Garlic Mustard	Pile	Pile	Bag and pile	Bag and pile	Bag and pile	Restricted
Glossy Buckthorn	Pile	Pile	Pile	Optionally separate fruiting trees, pile	Optionally separate fruiting trees, pile	Restricted
Purple Loosestrife	Pile	Pile	Compostable bag, separate pile	Compostable bag, separate pile	Compostable bag, separate pile	Control
Bouncing Bet	Pile	Pile	Pile	Pile	Pile	Unlisted
Bull Thistle	Pile	Pile	Pile	Pile	Pile	Unlisted
Common Mullein	Pile	Pile	Pile	Pile	Pile	Unlisted
Motherwort	Pile	Pile	Pile	Pile	Pile	Unlisted
Non-native Honeysuckle (Volunteer)	Pile	Pile	Pile	Pile	Pile	Unlisted

Disposal method is largely determined by the noxious weed status of the plant. For those listed in the "control" or "eradicate" classifications in the MDA's noxious weed list, we must place any fruiting/seeding material in a compostable bag for special disposal. For other plants needing to be bagged before disposal, either a plastic or compostable bag could be used, but we would tend to prefer to minimize plastic waste. Separation of fruiting buckthorn is optional, but if MPRB is picking up the woody debris we may opt to take fruiting material to a separate disposal location.

ALTERED FOREST/WOODLAND – MANAGEMENT BRIEF

IDENTIFIERS & BASIC INFORMATION

Location: Found throughout much of the MPRB park system

Acres in MPRB Phase II Study: 253

MLCCS Classification(s): Most often "Altered/non-native deciduous forest" or "Boxelder-green ash (forest)"

MNDNR Classification(s): Not considered a natural community

ASSESSMENT OF CURRENT CONDITIONS

General History: A forested plant community on disturbed land (e.g., fill areas, former building/industrial sites, dump sites or unmanaged parkland).

General Conditions: Dominated by light-seeded trees and shrubs, most of which originated in lowland settings (e.g., Box elder, Green ash, American and Slippery elms, Eastern cottonwood, Hackberry).

RESTORATION & MANAGEMENT ISSUES, GOALS & STRATEGIES

Issues to Date

- While these forests/woodlands may be dominated by native species, they are not a natural community
- Invasive vegetation is common

Restoration Goals (increase biodiversity and improve quality rank by implementing the following):

- Transition to a natural community: typically Mesic Forest or Dry-Mesic Forest/Woodland
- Maintain >80% canopy cover
- Remove and control invasive vegetation
- Improve biodiversity by increasing abundance and diversity of native plants throughout

Management Strategies

- Determine target native plant community. Forest and woodland with well-drained soil, especially on south- to west-facing slopes and lacking seepage, are best transitioned to fire-dependent Dry-Mesic Forest/Woodland; moister, mesic sites are best transitioned to Mesic Forest.
- If target is Dry-Mesic Forest/Woodland, assess if fine fuel of oak leaf litter and dense graminoids will carry a prescribed surface fire, and establish if lacking. Fine fuel is essential for management using fire.
- Remove and control invasive woody and herbaceous species using Integrated Pest Management (IPM) practices, and protect desirable vegetation. Start with mechanical and biocontrol means; use herbicides sparingly as a last resort.
- Conduct selective thinning of aggressive native woody species (e.g., Box elder, Green ash) when inhibiting growth of native groundcover and regeneration of desirable canopy trees, especially oaks.
- Identify opportunities to expand and connect to adjacent natural areas.
- Install native trees, shrubs, live plant plugs, and seed to diversify ground, shrub, and canopy layers.
- Conduct annual walkabout to inspect and identify tasks to complete in the next growing season.

Native Species to Plant & Perpetuate

For Dry-Mesic Forest/Woodland restorations, see species lists for MNDNR's Southern Dry-Mesic Oak (Maple) Woodland (FDs37); for Mesic Forest, see species lists for Southern Dry-Mesic Oak Forest (MHs37), Southern Mesic Oak-Basswood Forest (MHs38), or Southern Mesic Maple-Basswood Forest (MHs39).

Restoration Methods Guide

Bag

How: Immediately after clipping or removing the plant from the soil, place into a lawn bag.

Why: Tasks that require bagging typically involve removing plants that have already produced seed or are about to produce seed. Bagging those plants prevents the spread of target species seed.

Clip

How: Using hand pruners or loppers, cut the target plant.

Why: Typically used to remove flowers and seedheads from plants, which ultimately prevents the spread of the target species via seed.

Dig

How: Using shovels or hand trowels, dig deep enough into the soil to completely remove the roots or rhizomes of the plant.

Why: Tasks that require digging are usually associated with target plants that spread via rhizome. These plants form large underground root systems and can sprout new plants from anywhere along those roots. Digging them out is the only way to remove them completely without using chemicals.

Hand Pull

How: Using your hands, a weeding fork, or a stand-up weed puller, pull the plant from the ground with as much of the taproot as possible. MPRB no longer supports the use of weed wrenches to remove woody plants due to their damaging effects on soil. If a plant is too large to be pulled by hand, use a High stump/Strip method or Cut Stump.

Why (Hand Pull): Hand pulling is the simplest way to remove the plant from the environment. Typically, plants removed by hand pulling have no way to recover if most of their root is removed. Be cautious about soil disturbance in this process. It's important to protect as much soil as possible. Return any soil pulled up with the plant to the hole where the plant was rooted.

High Stump

How: Using a hand saw or loppers, cut the shrub or tree between knee and waist height such that the cut surface is parallel to the ground. Avoid creating sharp, pointy stumps on the site.

Why: High stumping is used in the Critical Cutting control method for woody invasive species. When some woody species are stumped, they resprout and begin to create many new shoots that will allow the plant to continue living and eventually recover. By cutting stumps high, your ability to easily monitor and remove resprouting shoots improves. Learn more about critical cutting through Friends of the Mississippi River.

Monitor Biocontrol

How: Monitor the leaves and stems of the target plant for insect damage. Check in with Natural Resources staff to report your findings.

Why: Natural resource managers will sometimes release insects or other creatures into the environment to control invasive species. These insects are specialized to feed only on the target species. Through their feeding they reduce the ability of the target species to produce flowers or seeds, or in some cases cause the death of the target species. Learn more about biocontrol through the Minnesota DNR.

Spike

How: Using a shovel or sharp trowel, sever the taproot of the plant approximately 4-6 inches below the soil. This is best done by placing the shovel 4 inches away from the base of the plant and inserting it with force at a diagonal angle. Pull the plant by hand after spiking.

Why: When plants have too long of a taproot to be pulled by hand, we employ spiking. Removing a sizable chunk of the taproot is often enough damage to prevent the regrowth of these target species. After spiking they should also be quite easy to remove from the soil.

Strip

How: Using your hands or hand pruners, remove all resprouting growth from the stump. If resprouting shoots are fresh, they may be very easy to pull off.

Why: Stripping stumps is part of the Critical Cutting method for removing woody invasive species. By removing resprouting growth from stumps, the ability for the plant to photosynthesize is cut off. Without the energy from photosynthesis, the energy in the roots of the stump will eventually be depleted without the use of chemicals. Learn more about critical cutting through Friends of the Mississippi River.

Stump Cut

How: Using a hand saw or loppers, cut the plant at soil level. Avoid creating sharp, pointy stumps on the site.

Why: Stump cutting is simply removing all of the plant that is above ground, in many cases removing the ability for the plant to recover from the damage. For woody plants, this can set the plant back considerably, although the plant will often resprout and produce new shoots that can be removed later.

Survey

How: Walk the site and identify new populations of the target plant in addition to assessing the state of the known populations.

Why: Surveying is often recommended for plants that may take up a large amount of your effort. A more realistic plan for the year can be created by intentionally finding and planning for the management of these target species ahead of the growing season. Additionally, MPRB staff may be assisting you with control of these species and your knowledge of the site will be valuable in that partnership.

If you have any questions about these methods or any of the tasks assigned by the restoration calendar, please reach out for help. MPRB Natural Resources staff are prepared to talk with you and/or visit your site if needed!

APPENDIX F: ECOLOGICAL RESTORATION CONTRACTORS

Following is a list of contractors to consider for implementing management in Units 9 and 10. While this is not an exhaustive list, it does include firms with ecologists who are very knowledgeable with natural resource management. Unless otherwise noted, all firms do prescribed burning. Many other brush removal companies are listed in the yellow pages (under tree care), but most do not have knowledge or understanding of native plant communities. We recommend hiring firms that can provide ecological expertise.

Friends of the Mississippi River has extensive experience working with landowners, including the Minneapolis Park and Recreation Board, to implement natural resource management plans. FMR can assist MPRB with obtaining funding for restoration and management projects and providing project management, including contractor negotiations, coordinating restoration and management work, and site monitoring and evaluation.

Conservation Corps Minnesota
60 Plato Blvd E Ste 210
Saint Paul, MN 55107
(651) 209-9900
www.conservationcorps.org

Great River Greening
251 Starkey St #2200
St Paul, MN 55107
(651) 665-9500
www.greatrivergreening.org

Minnesota Native Landscapes (MNL)
8740 77th St NE
Otsego, MN 55362
(763) 295-0010
www.mnlcorp.com

Prairie Restorations, Inc.
31646 128th St.,
Princeton, MN 55371
(763) 389-4342
www.prairieresto.com

Stantec
733 Marquette Avenue, Suite 1000
Minneapolis, MN 55402
(612) 712-2000
www.stantec.com

Resource Environmental Solutions, LLC
20276 Delaware Avenue
Jordan, MN 55352
(217) 979-2415
www.res.us

Native Resource Preservation
260 Wentworth Ave E Suite 155
West St Paul, MN 55118
(320) 413-0015
www.nativeresourcepreservation.com

Landbridge Ecological, Inc.
670 Vandalia St.
St Paul, MN 55114
(612) 503-4420
www.landbridge.eco

APPENDIX E: SITE MAPS (FULL SIZE)

Father Hennepin Management Units

Legend

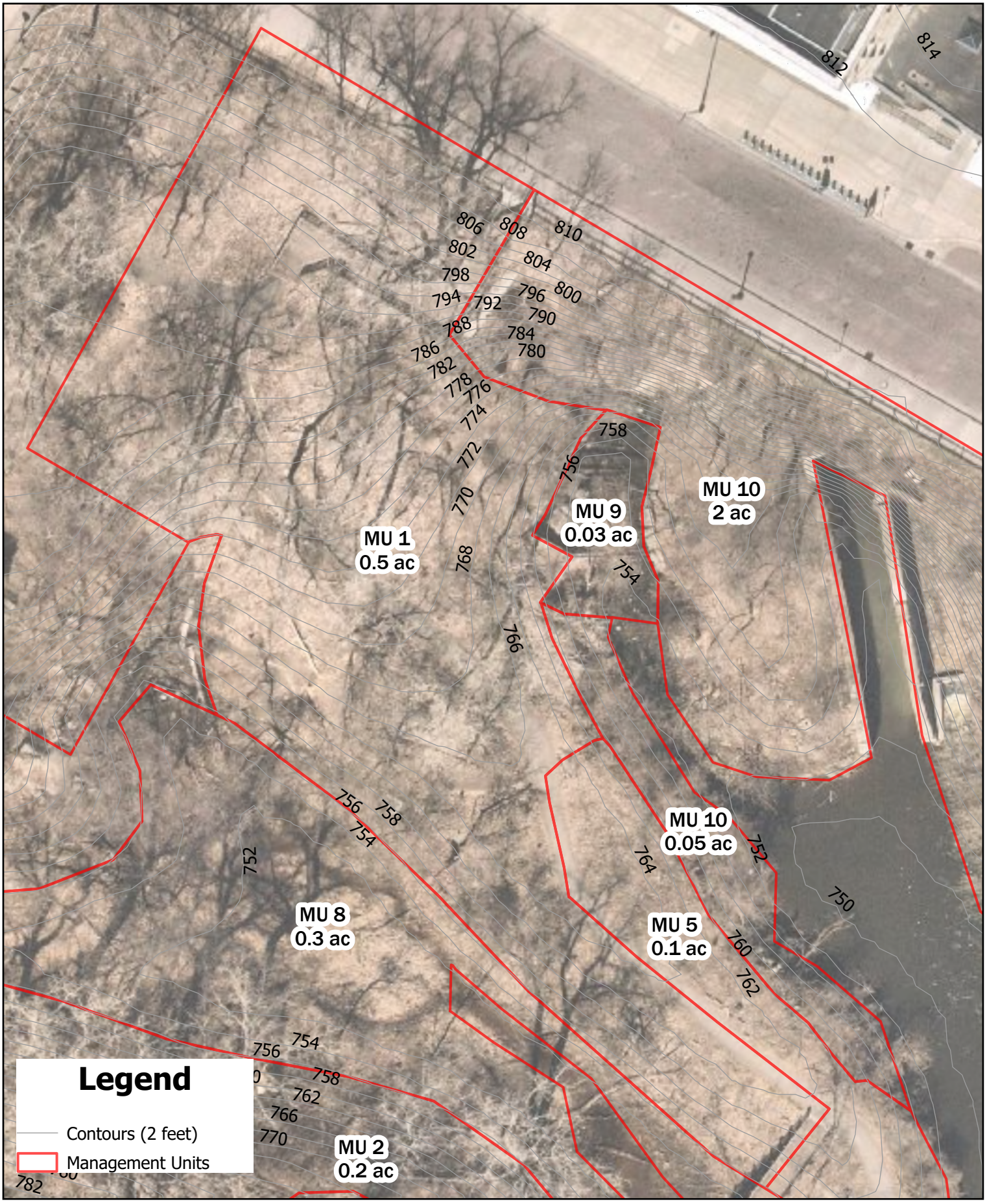
Management Unit

- MU 1 - East Owamni
- MU 2 - Spillway View
- MU 3 - Hennepin Island
- MU 4 - William's Island
- MU 5 - Mill View Meadow
- MU 6 - Hennepin Beach
- MU 7 - Wet Meadow
- MU 8 - Floodplain
- MU 9 - Mill Cave - Inaccessible
- MU 10 - Bluff Slopes - Inaccessible

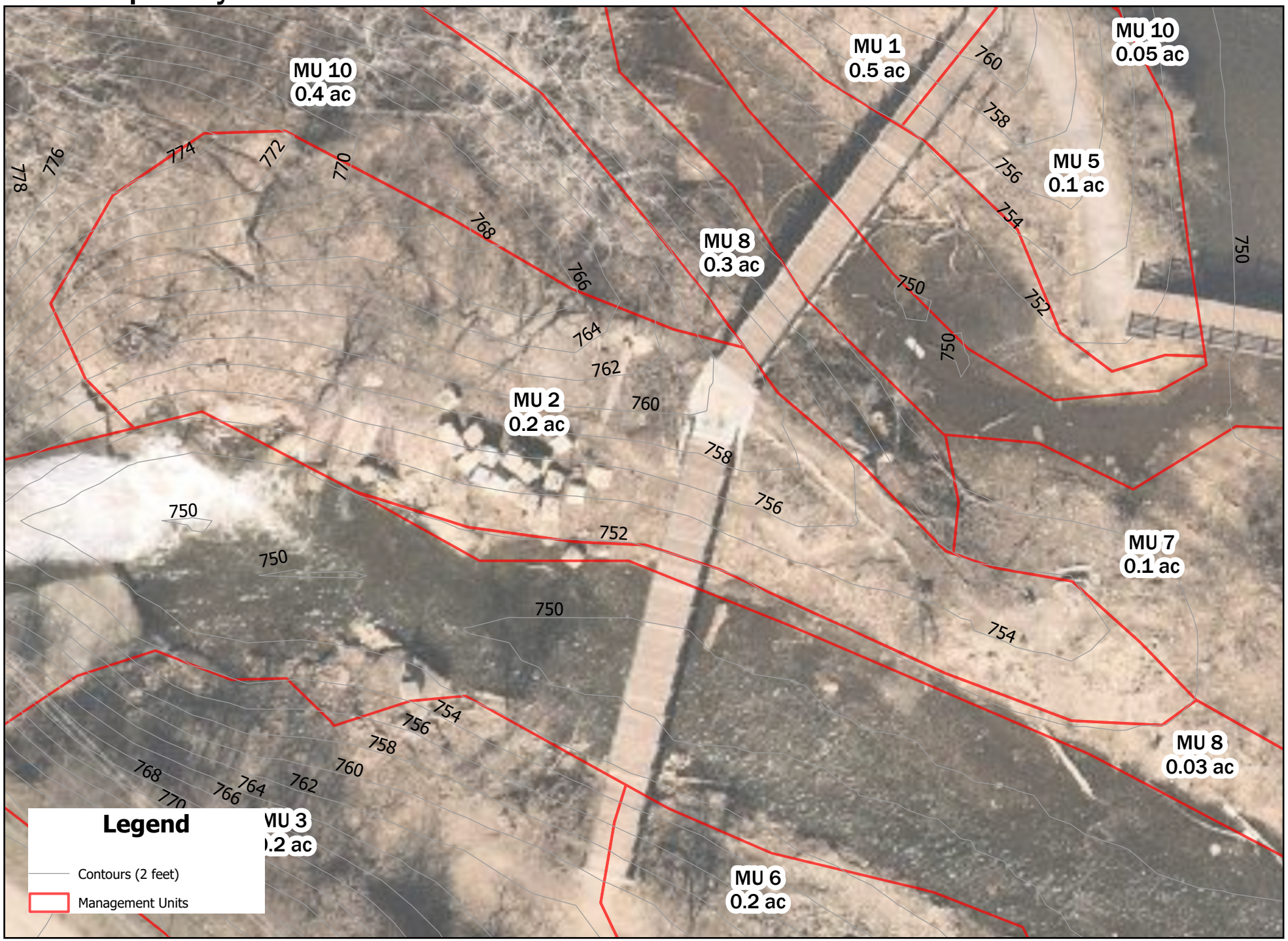
0 25 50 100 Feet

N

MU 1 - East Owamni

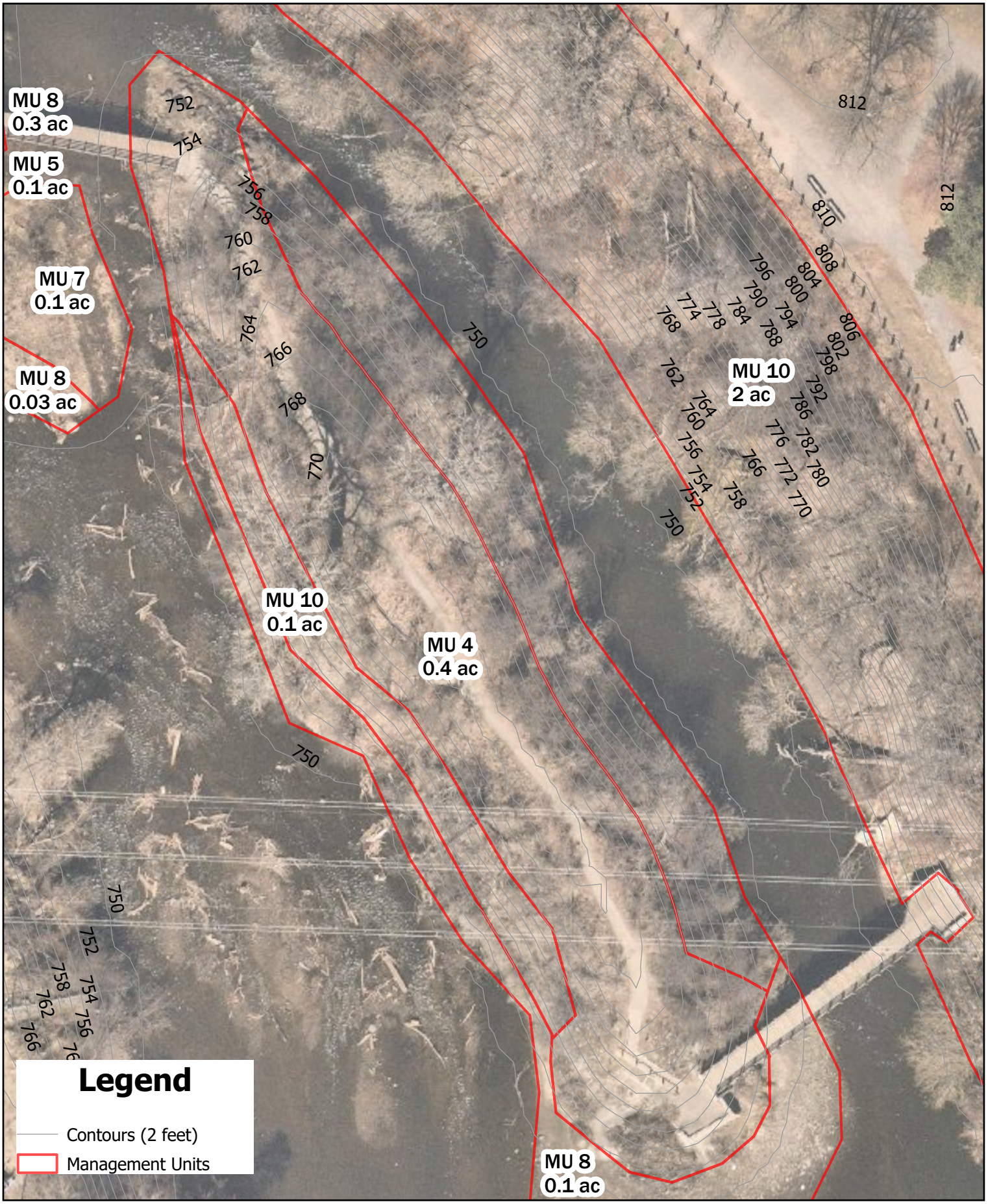


MU 2 - Spillway View

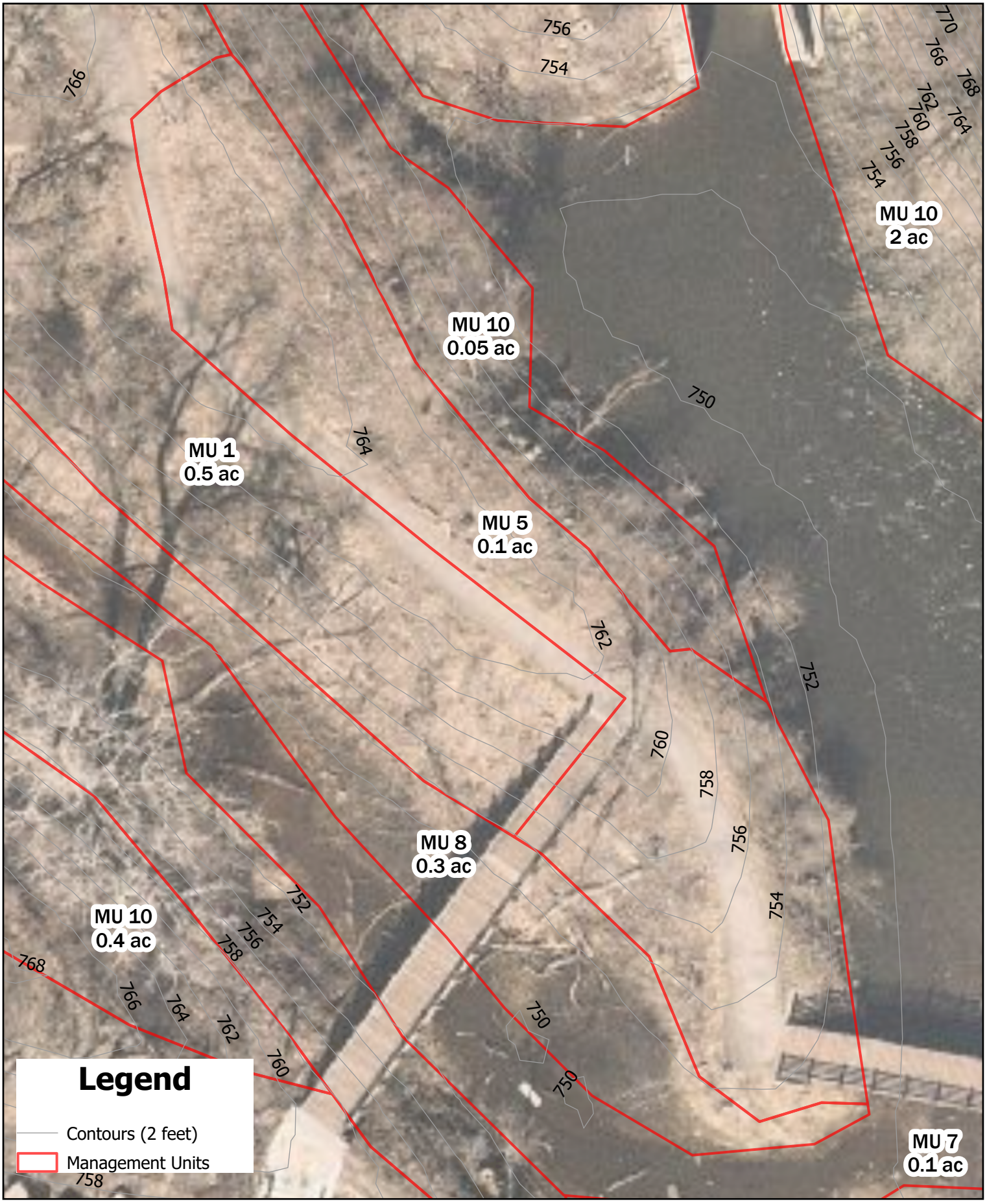


MU 3 - Hennepin Island

MU 4 - Williams Island



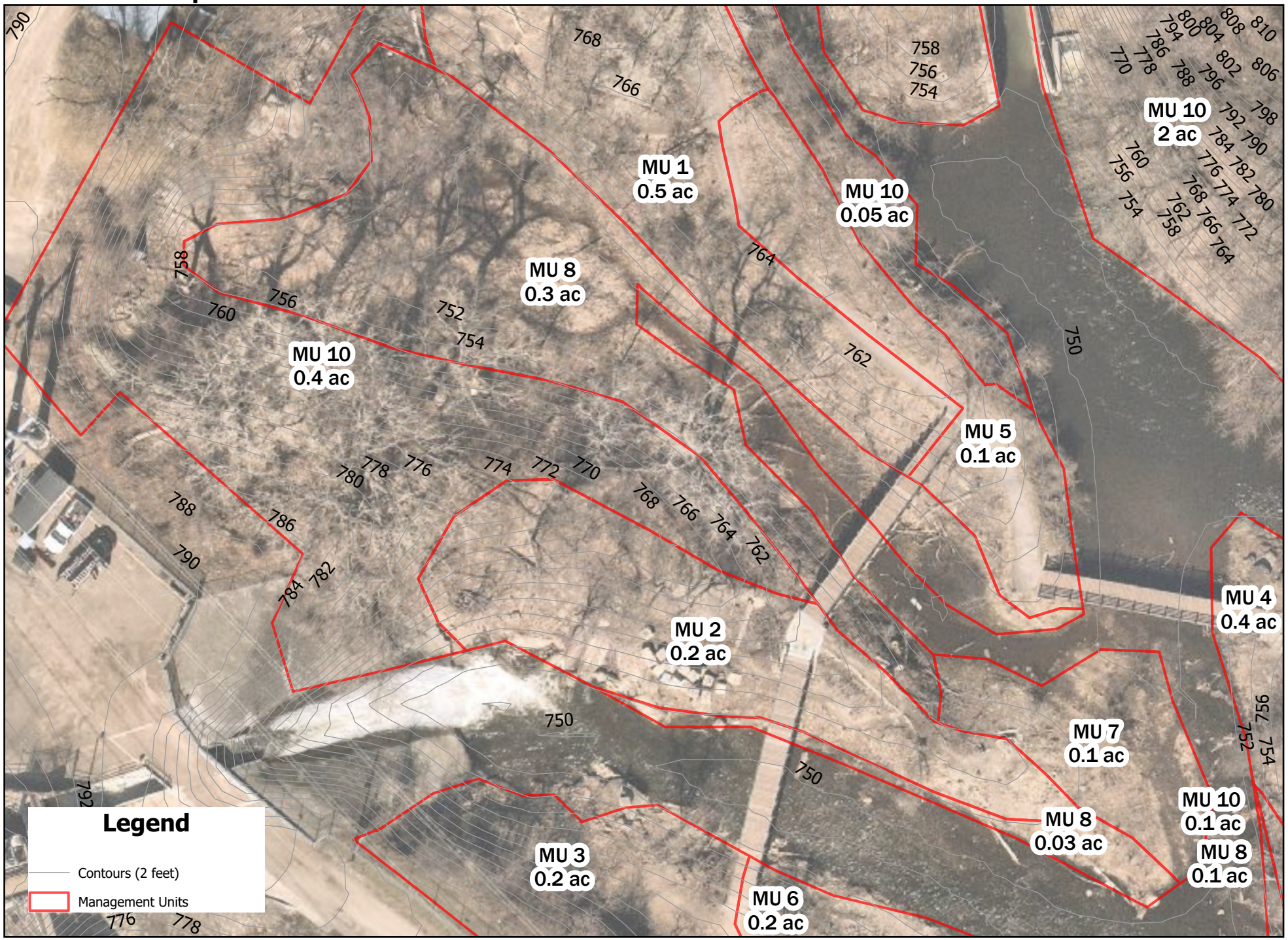
MU 5 - Mill View Meadow



MU 6 - Hennepin Beach

MU 7 - Wet Meadow

MU 8 - Floodplain



MU 8 - Floodplain