

CHAPTER 4

LAND

Parkland Management

Ongoing Management of Impacts Related to Land

Future Mitigations

Land Goals, Strategies,
and Recommendations



Parkland Management

As the Minneapolis park system has grown and changed over time, land management techniques have adapted to new technologies, community priorities, environmental concerns, and budget parameters. Because neighborhood parks tend to be smaller in size, focusing on active recreational spaces and higher maintenance turf, their care is different from the larger, more natural resource focused regional parks, where native plant communities tend to thrive, tree canopy is most complete, and water bodies are most prevalent, creating higher quality habitat for insects, birds, fish, and other animals. Thus, land management strategies for neighborhood parks tend to be focused more on maintenance and repair while those in regional parks tend to center on restoration, protection, and preservation. These strategies are tailored to the land cover, topography, ecology, as well as the recreational programs present and are mindful of long term sustainability. Additionally, these strategies are based on land management techniques and less on mitigation, as many are a reflection of daily operations already employed to manage park spaces.

This chapter assesses the varied land covers within the MPRB system, as well as corresponding operational, maintenance, and planning practices that address their care. It then identifies goals and strategies by which MPRB can be even more successful in ensuring long term sustainability of the city's treasured green spaces and makes detailed recommendations about where and how to begin this work.

LEARNING FROM THE PAST

A true visionary of his time, Horace W. S. Cleveland saw the potential in Minneapolis to create a park system that would serve the needs of generations to come. Land acquisition was a key strategy for building a park system to serve residents throughout the city. Land management evolved over time, as it became clear that human interaction with natural spaces necessitated more active management and that nature, left to its own devices,

could overgrow, fall victim to invasive species, and find itself unable to sustain recreational visitor demands. As the landscape itself has changed over time — tree species and plant communities are vastly different from what they were at the birth of the park system, as is the city itself, with a dramatic increase in buildings, roadways, and other impervious surfaces—land management has had to change with it and often in partnership with other agencies, given varying regulatory authority on the land and water. Still, there is much to be learned from the stories, photos, and records of park caretaking of the past. These provide important insight into what was originally in these park spaces, what was done to care for them, and can help current staff discern what management techniques have been tried and found to be either effective or ineffective in certain spaces.

CASE STUDY SNAPSHOT: Sheepish: What's Old is New in Park Maintenance

By David C. Smith, Minneapolis Park Historian

Minneapolis has been testing goats to control invasive plants, especially buckthorn, in parks. The concept may be novel, but it's not new. Long ago in park history, attention focused on sheep rather than goats, but you say ovine, I say hircine.

The idea of sheep in Minneapolis parks was first proposed in 1906 by recently hired park superintendent Theodore Wirth. He proposed putting sheep in what was then Glenwood Park (the park was renamed for Wirth in 1938). He wrote in the annual report that year, "There is nothing prettier in landscape effect than a flock of sheep grazing on the meadow and hill-sides.

Wirth didn't get his sheep in 1906, but he kept on trying. In his 1911 Annual Report he again proposed putting sheep in Glenwood Park. Undaunted by no action, in his 1913 report Wirth pulled out all the stops for his sheep. In his grand plan for Glenwood Park he included a sheep fold on the far western edge of the park about equidistant from Glenwood (Wirth) Lake and Birch Pond. He



went even further by providing an architectural drawing for a sheep barn. The sheep, he explained, would be the "proper lawn mowers for the large open areas" of his plan.

In the long view, Wirth's plan for a sheep barn in the park was not the most notable feature he proposed for the park in 1913. More striking was the first plan for a golf course in a Minneapolis park. Wirth's plans for a golf course were implemented well before his plans for sheep in the park. The Minneapolis Park Board opened its first public golf course—nine holes at Glenwood Park—in 1916. It was an instant success and the public clamored for more. The first sheep didn't appear in the park for another five years—and it took a natural disaster to get them there.

Wirth wrote in his 1921 Annual Report that a fire that summer had destroyed several hundred young ever-

green trees that had been planted at Glenwood Park. To reduce further fire danger he had located two flocks of sheep from local farmers in the park to keep the tall weeds down so more trees wouldn't be lost to fires. In Wirth's eyes the experiment was a success and he repeated his plea for a sheepfold in the park and the acquisition of a small flock of sheep for the coming summer. To underscore his message, Wirth included in the annual report a full-page photo of a marvelously bearded shepherd watching his sheep munching weeds beside a road that we can imagine is Glenwood Parkway. Finally, the park commissioners agreed.

The experiment lasted just one summer. The next year, in a rare annual-report admission of failure Wirth wrote, "I am forced to admit that the results obtained from sheep pasturing at Glenwood Park have but partially met our expectations." While the sheep did keep weeds down and provided a pleasing visual aspect in the park, Wirth noted that the abundance of food in the park prevented close grazing and "the pastured grounds presented an unkempt appearance." He added that it was "impossible to keep the herd out of sections which we desired to keep unmolested, in order to get the effect of native flora." His conclusion: "It appears wise to discontinue the experiment."

CURRENT LAND MANAGEMENT IN THE PARKS

To provide a sense of land cover that is managed within the Minneapolis park system, the chart on page 49 (figure 25) illustrates the parks as covered by tree canopy, water, impermeable surfaces, and other land covers.

TREES

Not only does MPRB tend to over 400,000 trees in its parks (including natural areas), it also cares for approximately 200,000 city owned boulevard trees, standing between curbs and sidewalks, and trees on other city properties, such as police and fire stations and stormwater treatment areas. While these trees provide a number of benefits relating to water and air, as discussed previously, there are also important benefits to the land that need to be explored. Trees contribute to soil health, provide natural erosion control, habitat, and their canopy sequesters carbon and creates much needed shade and cooling in park environments and the greater city. With all of these benefits, the tree population is one of the most valuable natural assets in the parks. Thus, the care and maintenance of trees is a critical aspect of MPRB's environmental stewardship and planting plans are in place to help with species diversification, canopy preservation, and tree resiliency. Tree removal is typically limited to instances of tree death, public safety hazards, or pest pressure. Trees within the Minneapolis park system are managed differently according to their location. Those on streets and boulevards require the most care, those in general park areas are given medium care, and those in natural woodland areas are typically given the least active management.

GRASS

General Park Turf

2,080 acres within the parks are known as general park turf. These areas can be found within neighborhood parks, active use areas in regional parks, and parkways. In them, the grass is mowed every ten days, weather permitting. Within these general turf areas, a number of acres have been identified for a "lower mow" regimen, to achieve a multi-faceted organizational and environmen-

ASSET MANAGEMENT

Situated in Minnesota's largest and most visited city, the Minneapolis park system must adhere to a maintenance standard and level of service that meets the needs and demands of millions of community and out-of-area park visitors. Having earned the Trust for Public Land's award of "#1 Park System in the Nation" for six years running (2012-2018), MPRB is expected not only to continue its great work, but to expand on it. Thus, it is no surprise that the single largest budget item in the MPRB budget relates to management of its assets. The diversity and complexity of spaces under its care demands it. So does the need to provide equitable allocation to capital improvements throughout the park system.

One of the most challenging aspects of MPRB's asset management work is balancing the health of the land with the demands of park users. Significant use and demands for recreational spaces and opportunities result in physical wear and tear upon both built and natural spaces. While costly, damage to built facilities is often much easier to correct than damage to natural areas. Compared with built facilities, natural areas can be more sensitive to repair. Compacted or eroded soils, regrowth of vegetation, and restoration of natural asset quality takes time and, in some instances, is not possible. When it comes to the environment, loss often has much deeper impacts than what is immediately viewed by park visitors. This is why park land management, in particular, has become a careful practice blending ordinance, policy, planning, and science.

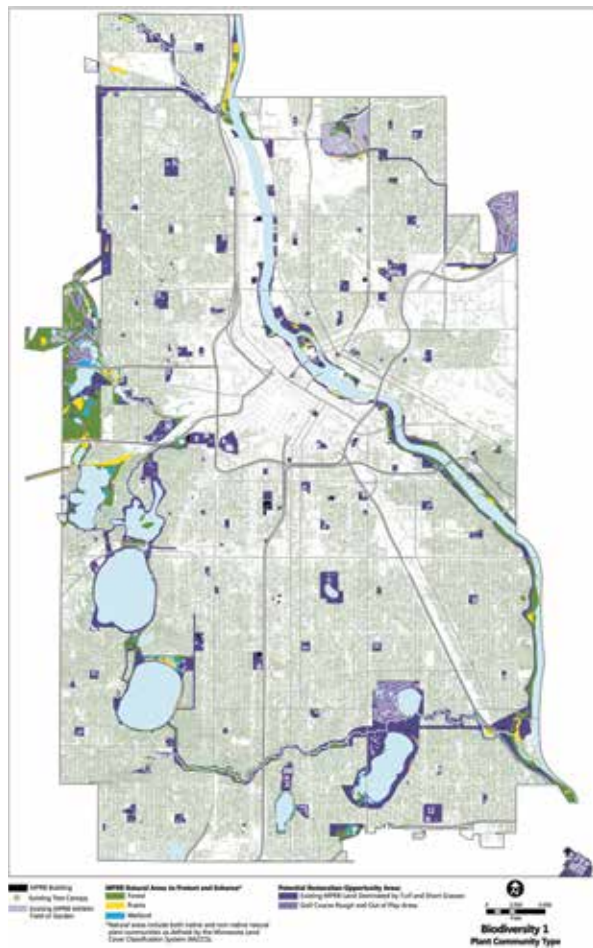


Figure 22. Biodiversity: Plant Community Types. See appendix for full size map.

tal benefit: reduced cost in maintenance (both staff time and equipment cost), reduced emissions from mowers, reduced spread of invasive and problem plant species, and improved habitat connection and quality.

Flowering Lawns

Also known as bee lawns, flowering lawns are made up of turf grass and low growing flowering plants such as white clover, self-heal, or creeping thyme. White clover is already common in turf areas throughout the park system. A recent research project in Minneapolis parks with the University of Minnesota Bee Lab determined that



56 species of bees forage on white clover. In addition, a survey of 537 park users from all four quadrants of the city found that 95% of park visitors (who completed the survey) moderately or strongly support flowering lawns. Phase two of the research project focuses on enhanced flowering lawns (meaning more than white clover was present) to determine the impact on bee diversity and abundance.

There are no changes to mowing practices for flowering lawns. This is a simple way the MPRB will be able support an abundance of pollinators across the park system.

Note: Additional opportunities should be explored to transition general park turf into lower mow areas or alternative land covers, to further improve on these benefits, as well as increase stormwater capture, reduce erosion risk, and add community driven programs to park spaces.

Athletic Field Turf

With active programming for baseball, softball, football, soccer, lacrosse, cricket, and other sports including broomball and hockey in the winter, athletic turf fields are very much in demand and require the most maintenance, as these areas experience the hardest and most frequent use of any turf within the park system. 430 acres of athletic field turf are groomed on a daily to weekly basis, depending on usage. This grass is mown, fertilized, and aerated to keep the grass as healthy as possible, but overuse sometimes necessitates field closure to allow the turf to recover or, where the community has requested it, to be replaced with artificial turf. Artificial turf is currently limited in terms of ecological benefit, though it does offer some intriguing stormwater infiltration possibilities, but tends to have a demonstrably longer life and lower maintenance cost than regular turf grass.

Note: When athletic fields are rested and restored with new turf, they offer an outstanding opportunity for biochar to be placed under the grass, to help improve soil health, stormwater capture, and air quality.

Golf Courses

MPRB owns and operates seven golf courses throughout the City of Minneapolis. Five are championship courses, one is executive, and one is par 3. This distinction applies to the length of the course and subsequently corresponds to the amount of time it takes to care for each course. One reason golf courses are costly features in park and recreation departments is because industry standards for the appearance and maintenance of golf courses are very high, which, in result, drives up the cost of play. This maintenance is very particular as to the frequency with which the green is mowed, grass height, application of pesticides and herbicides, and protection of rough and wetland areas. While not necessarily an intended benefit of golf courses within the Minneapolis park system, it must be recognized that they do provide an important ecological benefit with regard to stormwater capture and infiltration. When they flood, they become temporary wetlands that can absorb excess rainwater that may have otherwise flooded built infrastructure (such as trails, streets, and buildings), preventing safe use or passage.

In 2013, MPRB contracted for a Master Plan Study of its golf courses. The study included \$30 million worth of recommended improvements, including extensive building improvements; addressing poor soil, turf conditions, and compaction; sand bunkers; and vegetation that encroaches on the fairways. While over half of these improvements were categorized as actions that could make MPRB courses more competitive with private courses, a number were assessed as critical improvements that should be made as soon as possible for the health and playability of the course.

Recognizing that four of the courses within the system were built, at least partially, on old lake beds and wetlands, the study noted that site drainage continues to be a critical issue on these courses and raises the question of whether the courses should be transitioned back to the land forms they used to be prior to the dredge and fill process that transformed them into golf courses. This is a highly sensitive issue, both from a public and ecological perspective. In some ways, it is impossible for the land to return to exactly what it was before, having been changed so dramatically. However, former wetlands often

return to a version of their former selves when groundwater aquifers fill, as is currently happening at the Hiawatha Golf Course. This natural process is not a welcomed, well-received, or easily accepted reality among golfers who have treasured the space and its use as they know it. Nor is it to neighbors who are concerned about what this process might mean for their properties.

NATURAL AREAS

MPRB is currently undertaking a study of its natural areas and assessing plant community types within the park system as well as identifying management strategies for each plant community. While this work is underway, the Ecological System Plan will speak generally to the types of natural areas that are being assessed.

PRAIRIES

A good example of areas rich with native vegetation, prairies are typically low in maintenance cost, once established, and high in ecological benefit. They are characterized by plains of grassland with few trees, often

containing native flowers. With the ability to sequester even more carbon than trees, prairies also provide habitat for insects, birds, and ground-dwelling animals. For all of these reasons, prairies are an important part of the Minneapolis park system and present an opportunity for native plant restoration where turf grass or invasive plant species currently exist. However, it is important to note that to the casual observer, unmaintained weedy areas can often be confused with prairies and the ecological value of the two is very different. As part of MPRB's natural areas management planning, prairie areas will be mapped to help both MPRB staff and the community at large better discern which areas within the system can be classified and managed as prairies.

Note: Minneapolis is fortunate to have remnant native prairie spaces that are of great significance, both ecologically and historically, that are preserved through focused conservation efforts. Remnant prairies can be found at the 36th Street overlook along West River Parkway and Morley's prairie at the south end of Minnehaha Regional Park.

BEACHES AND SHORELINES

Beaches and shorelines are the physical transitions between land and water. As one is a man-made recreational amenity (beach) and the other a naturally occurring edge (shoreline), they are managed and monitored differently. Constantly changing from the effects of water, weather, erosion, loss of plant life, and pollution, these edge environments require special consideration in regards to the roles they play, both ecologically and in facilitating recreational access to water. When they deteriorate, both the land and the water suffer from it. However, restoration of beaches and shorelines is possible and a strong example is seen in the recently completed Hall's Island restoration project. Because of the work done to restore the shoreline, re-establish trees and native plants on the land, and add river rocks in the water, the island has been renewed as a natural sanctuary for birds that live in and travel through the Mississippi River flyway as well as for mussels and fish in the river.

Case study snapshot: Hall's Island—the case for re-development and re-wilding

The Minneapolis Park and Recreation Board partnered with many public and non-profit organizations in a RiverFirst project to rebuild Hall's Island in the Mississippi River near the Plymouth Avenue Bridge and develop the adjacent shoreland. Hall's Island shows up in some of the earliest maps of Minneapolis. Throughout its history it was used by lumber mills to retrieve timber, Northeast Minneapolis residents as a swimming area and wildlife for natural habitat within the Mississippi River Flyway.

In 1966, Hall's Island disappeared when it was partially dredged and the channel between the island and shoreline was filled in by Scherer Bros Lumber Co., which purchased the island and land adjacent to it from Minneapolis in 1963. The reconstruction of Hall's Island restored a long-lost natural asset and stands as a landmark achievement in the long-term plan to transform Minneapolis' Upper River into an ecologically sound, publicly accessible destination.

TYPES AND ACREAGE OF PLANT COMMUNITIES WITHIN THE PARKS



Figure 23. Types and acreage of plant communities within the parks

This project has the following benefits:

Ecological Benefits

- ▶ Nearly triples the shoreline from 1,000 linear feet of armored shoreline to nearly 3,000 linear feet of habitat-rich shoreline.
- ▶ Provides a safe stopover for migrating birds in the Mississippi Flyway.
- ▶ Creates a backwater channel designed to promote and improve mussel habitat along this stretch of river.
- ▶ Supports a diverse range of native plants, which will include trees, grasses, shrubs and prairie plantings.
- ▶ Produces a variety of nesting areas with basking logs, a sandy terrace and rock ledges to attract and protect songbirds, amphibians, reptiles and small mammals.



Recreation Opportunities

- ▶ Creates a softer, more accessible connection to the river with a new gravel beach that serves as a safe, smooth location to launch or land canoes and kayaks.
- ▶ Aids transition of north/northeast Minneapolis riverfront from predominately industrial to publicly accessible and available for recreational activities.
- ▶ Lays groundwork for future boardwalk, which would provide a unique experience for pedestrians to connect with the river in a controlled way that minimizes impacts to native plants and habitat.
- ▶ Enhances the views for commuters and recreational users of the Mississippi East Bank Trail.

Should infrastructure on the Mississippi River be altered in the future, it is possible that additional shoreline in and along the river will be restored. Management strategies for these spaces will center on protection and preservation of the natural space and habitat in and around it.

WETLANDS

Some of the most environmentally sensitive places in the park system, wetlands are biologically rich ecosystems that have a myriad of environmental benefits including carbon sequestration, water quality improvement, shoreline erosion control, and flood mitigation. As indicated by the EPA, “Wetlands play an integral role in the ecology of a watershed. The combination of shallow water, high levels of nutrients and primary productivity is ideal for the development of organisms that form the base of the food web and feed many species of fish, amphibians, shellfish and insects. Many species of birds and mammals rely on wetlands for food, water and shelter, especially during migration and breeding” (www.epa.gov/wetlands).

In addition to natural wetlands, there are also many human-made wetlands on MPRB property that are part of the urban stormwater management system. These stormwater management structures (also known as stormwater constructed wetlands or as BMPs) appear to be wetlands, but they are man-made structures, like beaches, and their management and monitoring is necessarily different. Stormwater constructed wetlands are

designed to remove particles, nutrients, and trash from stormwater prior to its discharge into waterbodies. Plantings and maintenance allow many of these structures to appear as diverse and natural as naturally occurring wetlands; however, these working landscapes require periodic dredging to ensure their functionality continues. MPRB, City of Minneapolis, and watershed management organizations often work together to site, construct, and maintain these multifunctional features in MPRB parks. With good design, stormwater wetlands can be an aesthetic park amenity and create additional habitats, like the south Bde Maka Ska constructed wetlands. (Learn more about BMPs in Chapter 2: Water.)

WATER

As the most prevalent natural landcover in the Minneapolis park system, water is a critical resource that impacts the health and maintenance of all other landcovers within the system. Its care and maintenance requires careful partnership with other local, state, and federal agencies and organizations, given shared interest in its protection and shared responsibility for impact mitigation. (For more detail, please see the “Water” chapter.)

OTHER LANDCOVERS

GARDENS

MPRB gardeners care for more than a dozen gardens from the formal spaces of Lyndale Park Gardens to the wilder acreage of the Eloise Butler Wildflower Garden and Bird Sanctuary. Each garden has unique care needs that are tailored to the flora and fauna that call it home. Gardeners follow the MPRB approved integrated pest management policy, utilize volunteer labor, abide by DNR and MDA regulations, participate in trainings, and pilot and assess new techniques. For example, in 2018, the Rose Garden was especially plagued with Japanese beetles and in addition to utilizing volunteers to remove beetles by hand, the gardener piloted a new mobile pheromone trap to fight the beetles and also tested a new product that is part of the reduced risk program under EPA registration.

Garden design must be responsive to growing conditions and shift practices to fight pests and disease more effectively. For example, good fall clean up helps to prevent



Figure 24. Designated Urban Agriculture Areas

fungus from overwintering in known locations. To fight common weeds, gardeners utilize flame torches on paver hardscapes, rely on thick layers of composted leaf mulch, and welcome the help of volunteers to remove weeds by hand. Noxious weeds, such as Canada thistle, are an ongoing challenge.

URBAN AGRICULTURE AREAS

As part of the MPRB Urban Agriculture Activity Plan implementation, designated urban agriculture areas in neighborhood parks will allow for community gardens, orchards, and other forms of urban agriculture to be built for public benefit. Because MPRB recognizes that an important success factor in this activity is soil health, it is

undertaking soil screening in partnership with the University of Minnesota soils lab to assess whether contaminants are present in the soil. This screening will help MPRB to better understand whether remediation is needed as well as whether in-ground or raised bed planting is advisable for community gardens.

IMPERVIOUS SURFACES

Parking lots, roadways, paved paths, and buildings are the reason that a significant amount of the landcover in the City of Minneapolis is impervious. While each of these facilities helps to meet the transportation, housing, work, and recreational needs of the community, they often detract significantly from the ability of nature to flourish. And increasingly, they are located where the most energy consumption and pollution happen within the city. Winter maintenance of impervious surfaces can also create water or air pollution issues that can be mitigated through judicious use of sand and salt and limiting maintenance of only those areas needed. MPRB recognizes the pressure that highly developed areas place on the parks to act as escapes, respites, and healing spaces set apart from the urban bustle.

Roadways, Paved Paths, and Parking

Asphalt pavement is the most pervasive material used for roadways, paved paths, parking lots, and parking spaces within the park system. The asphalt pavement currently in place is nonporous and long lasting under heavy use, which is important in a system that sees over 23 million visits per year. However, it has little ecological benefit outside of encouraging park visitors to keep on the road or path, which can help reduce erosion and improve access to park spaces.

Sport Courts and Skate Parks

Basketball, tennis, and pickleball courts are ever more in demand within the park system, as are skate parks. While conventional materials, such as concrete, are still the primary component of these courts, MPRB will continue to explore opportunities to pursue more “green” construction methods.



Buildings

Most of the buildings within the MPRB system pre-date sustainable and accessible design concepts. Because of their age, these buildings have rather extensive structural and functional needs that must be addressed before “green” development concepts can be incorporated. However, MPRB has several projects either recently completed or currently underway that examine different facets of facility improvement needs, energy consumption, and access challenges. These reports will help the organization better identify ways in which environmentally friendly construction methods and materials might be incorporated into building repair and rehabilitation or around the building’s exterior to help reduce negative environmental impacts.

Note: As most of the infrastructure within MPRB’s system is aging and in need of repair, and funding for these repairs has been allocated through the Capital Improvement Program (CIP), MPRB has the chance to explore cost-effective green building methods and materials that might offer an alternative to those currently in place.

Ongoing Management of Impacts Related to Land

MPRB practices regular monitoring, protection, and mitigation strategies to preserve and maintain park land and pursues remediation, when needed, to bring the land to a healthier state.

CURRENT PRACTICES TO REDUCE IMPACTS TO AND FROM TREES

Historically, very little species diversity was seen in the boulevard tree population throughout Minneapolis. Publicly planted trees consisted of more than 90% elms in the early 20th century. After the devastating impact of Dutch elm disease in 1978, MPRB's Forestry department began a block by block approach to incorporate species diversity. This resulted in a dramatic increase in species diversity within neighborhoods across the city. However, this approach left individual block segments susceptible to forest pests that impact a single species or genus of tree.

MPRB's Forestry department has developed planting strategies that increase tree diversity and therefore resilience to urban forest pests across individual block segments across the city. These tree planting guidelines require at least 3-5 genera per block, a 5 individual trees per genus limit per block, and no more than 5 trees per block that might attract Asian longhorned beetles. Additionally, Forestry has been proactively removing ash trees that would otherwise fall victim to invasion by Emerald Ash Borer (EAB), a type of beetle that feeds on ash trees. In all of the replantings that occur where trees have been removed (due to EAB or for other reasons), MPRB is focusing its effort on achieving species diversity by limiting species selection that are less than 10% of any particular type or genus within each neighborhood. This increases the overall tree population's ability to withstand future forest pests and increase the overall tree canopy throughout the parks and the city. This approach will continue to evolve as the effects of climate change intensify.

TREE MIX – 2004

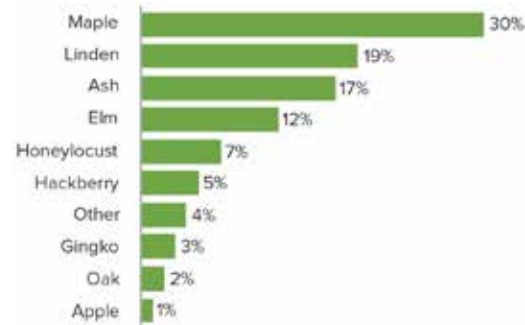


Figure 25. Tree Mix 2004

TREE MIX – 2017

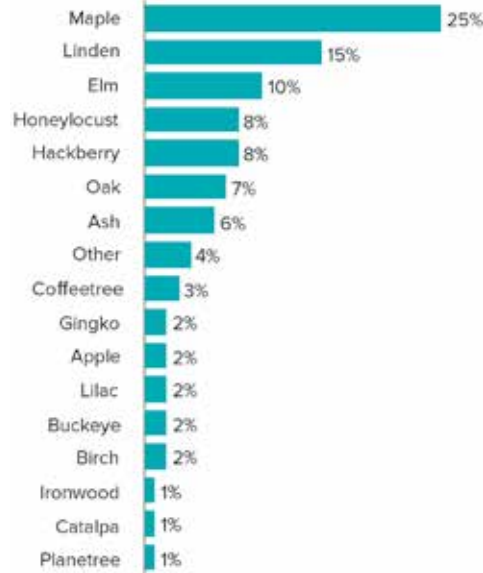


Figure 26. Tree Mix – 2017

Trees in natural woodland areas are also scouted for the potential presence of various diseases, insects, or beaver damage to determine whether tree removal is necessary. Fallen or falling trees are only removed in these areas

TREE MIX – FUTURE

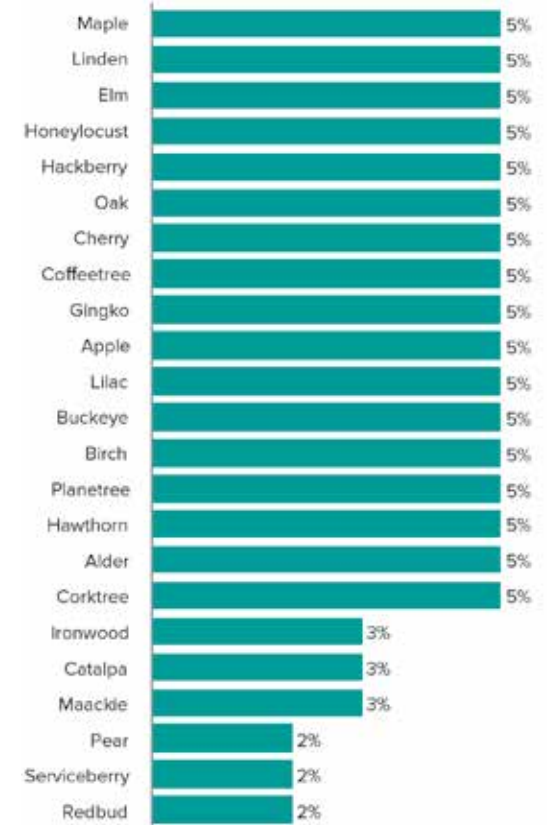


Figure 27. Tree Mix – Future

where they have blocked trails or pose a risk to pedestrian and park visitor safety.

CURRENT PRACTICES TO REDUCE IMPACTS IN TURF AREAS

Grass might seem the most common element in any park and the one element most visitors take for granted, yet there is exceptional nuance to how grass is managed. Of the 4,660 acres of grass or turf in the Minneapolis parks that is mowed, there are different mowing procedures for general grass areas, athletic turf, golf courses, and reduced mow areas. Accordingly, MPRB has mowers of various sizes to accomplish this work. There is also careful trimming that is completed around trees, shrubs, and other structures with handheld devices.

Note: For all of its turf and trimming work, MPRB selects equipment based on performance, durability, budget, and environmental considerations. Currently, the best performing large mowers factoring in all of these considerations are diesel or propane powered, though small electric push mowers have also been found to do well. As such, MPRB should explore setting a goal for transitioning to electric models as aging equipment is phased out. As this goal is met, MPRB will remain committed to trying new equipment as it reaches the marketplace to see if mower performance matches higher environmental goals.

A particularly nuanced element in managing turf as well as gardens within the park system is weed and pest control. In 2008, MPRB adopted an **Integrated Pest Management (IPM) Policy** which states the following:

The Minneapolis Park and Recreation Board has set a threshold of 50% for broadleaf and/or grassy weeds in turf areas. When it has been determined that this percentage has been reached or exceeded, the appropriate post emergent or pre-emergent herbicide may be applied, preferably on a spot spray basis. Selection of the appropriate herbicide of choice will be determined by trained staff after evaluating the site, the hazard rating of the product and the specific location. Staff is required to use turf cultural practices other than herbicide applications if weeds and/or other vegetation must be controlled or removed from areas within 100 feet of wading pools

or playgrounds. Insect and disease infestations are currently managed on a spot spray basis, as they are usually a rare occurrence. Further, application of any plant protectant within parks must be timed to minimize contact with park users. Posting of the park site (according to City of Minneapolis posting regulations) to be treated must occur just prior to application and if this park includes a recreation center or building, posting of a sign must occur at the entrance doors.

The IPM goes on to specify where, how, and under what conditions pesticides and herbicides may be used in the system and MPRB is very careful of application procedures to ensure native plants and wildlife remain unharmed.

In October 2018, the Park Board of Commissioners passed a moratorium on the use of glyphosate within the entire Minneapolis park system. A committee has been formed to examine alternative pest and weed control methods that will offer a similar result, which will, among other things, need to explore the effects of various weed control methods on species to be eradicated as required by the Minnesota Department of Agriculture.

CURRENT PRACTICES TO REDUCE IMPACTS ON OR NEAR GOLF COURSES

MPRB-operated golf courses are examining opportunities to transition “roughs” into pollinator patches and completing some strategic milkweed plantings. Additionally, many of these golf courses contain Audubon protected areas and are introducing sprinkler efficiency programs to ensure better, centrally located irrigation control.

CURRENT PRACTICES TO REDUCE IMPACTS IN NATURAL AREAS

Natural areas are carefully managed by MPRB’s Environmental Management department to preserve their quality and prevent the spread of invasive plant species. MPRB works with crews of staff, volunteers, and community partners to perform strategic removal of invasives and complete restoration projects with native plant species.



The MPRB’s Environmental Management department has identified and prioritized areas for restoration and invasive species management, based on the following criteria:

- ▶ Forested areas with notable amounts of native plant species including canopy, subcanopy, shrub and herbaceous layers with good quantities of native plants.
- ▶ Prairie and savanna areas that have been identified as remnant native plant communities.
- ▶ Areas that were funded and developed as part of a larger park development or water quality improvement initiative that involve planting an area with native plants (for example turf conversion to prairie, storm water BMPs, shoreline restoration areas).

Management of native plant communities and plantings requires a multifaceted approach that is detailed to fit the specific requirements of each site. Management of these sites needs to be flexible and dynamic, as new invasive species, changes in land use and park user needs all change over time. In an urban setting the impact of park users and adjacent land use types is an important consideration as they relate to introduction of invasive species and effective establishment and management of desired vegetation.



PRAIRIES

Prescribed burns, mowing, woody plant removals, and reseeded are all used to maintain planted and native prairies in the Minneapolis park system. Prairies have been planted to replace turf grass in order to create additional habitat in the parks, provide destinations, and diversify the landscape. Many of the golf courses also present unique opportunities for plantings with native plants, especially in the “roughs.”

BEACHES AND SHORELINES

Shoreline and beach erosion can happen for a number of reasons, often including a combination of trampling, wave and ice action, and shallow-rooted vegetation. Thus, restoration projects are underway to help address shoreline erosion through the establishment of native plants that will also provide habitat benefits to shorelines. Sand is also sometimes added to designated beach areas where sand has depleted over time.

WETLANDS

MPRB, in partnership with Hennepin County’s Wetland Health Evaluation Project (WEHP), sponsors teams of volunteers each year to collect and analyze wetland data in order to characterize wetland health. MPRB maintains contracts with local watershed districts to manage stormwater ponds. MPRB staff also monitors wetlands on golf courses to help maintain Audubon International Cooperative Sanctuary Program certification.

CURRENT PRACTICES TO REDUCE IMPACTS ON WATER

As described in the Water chapter, there are a number of mitigation strategies underway to prevent degradation of water quality, build resiliency in the face of changing water levels, and enhance aquatic habitat. These mitigations range from partnership efforts to address specific impacts to inspections, permits, plans, and ongoing testing, management, and maintenance of water bodies.

CURRENT PRACTICES TO REDUCE IMPACTS IN PAVED AREAS

Public education and awareness campaigns, as well as staff training, are two of the biggest mitigation measures MPRB undertakes to help mitigate the impacts of paved areas (including heat island effect, contaminated stormwater runoff, limited carbon sequestration capacity, and salt and chemical use in winter). Other mitigation strategies include the use of pervious pavers, increased street sweeping, and stormwater management practices to help divert runoff to land rather than water bodies.

CURRENT PRACTICES TO REDUCE BUILDING RELATED IMPACTS

MPRB recently completed a yearlong inventory of maintenance, rehabilitation, and capital improvement needs in its neighborhood parks and many opportunities for “green” park facilities were identified in addition to needed basic repairs. This process, known as Closing the Gap, resulted in the 20 Year Neighborhood Park Plan (NPP 20), which prioritized projects based on criteria related to racial and economic equity.

A companion effort, the Americans with Disabilities Transition Plan, identified where retrofitting opportunities exist to make neighborhood recreation centers and park areas more accessible to all visitors. Thousands of action items were identified to help improve accessibility.

MPRB’s Asset Management department is also taking a close look at the resource requirements of all MPRB facilities to determine how efficiently they are operating, both in terms of resource consumption and resource cost. This ongoing analysis helps MPRB to better understand where energy and water use are highest. It will be used on an ongoing basis to help MPRB identify opportunities to introduce strategies that result in better resource efficiencies.

MPRB and City of Minneapolis Public Works have partnered on a project to create site specific stormwater management plans (SWPPPs) for park maintenance facilities. To comply with the plans, monthly inspections will be completed on the sites in order to identify potential pollution issues that need to be addressed. In 2018, inspections began at the first two pilot sites in the MPRB system. Work and reporting will be directed by the new asset management system.

CURRENT PRACTICES TO REDUCE IMPACTS FROM WASTE

One particular issue with waste generated in the parks is making sure the discarded articles wind up in the correct container. If too many trash items wind up in recycling or organics containers, the entire load is considered contaminated and winds up being sent on to trash facilities. In partnership with the City of Minneapolis and Hennepin County, MPRB has added stickers to trash, recycling, and compost containers to make park visitors more aware of what belongs in which bin. At certain large events, MPRB deploys volunteer educators to ensure vendors have the correct food service materials (consistent with the City of Minneapolis’ Green to Go Environmentally Acceptable Packaging Ordinance) and to provide guidance about proper disposal near trash, recycle, and organics collection bins.

Future Mitigations

Given MPRB's management and mitigation strategies often involve day to day operations, it is important to consider what can also be done in planning and programming the parks to help achieve more sustainable and Earth friendly outcomes.

For instance, as facility deficiencies are addressed in the years to come, MPRB has an outstanding opportunity to evaluate where and how to bring environmentally conscious change to its buildings and park spaces. From building and park lighting to HVAC systems to building insulation, there are numerous opportunities to introduce more environmentally friendly building materials and energy efficiencies. Examples of these opportunities include:



FACILITY/ELEMENT	EXISTING CONDITION	ENVIRONMENTAL IMPROVEMENT IDEA	POSSIBLE ACTION
Recreation Centers/ Golf Club Houses/ Maintenance Facilities	Asphalt shingles on roofs	Metal roofs or high albedo roofs, which absorb less heat and are less expensive to maintain	Build alternate bid options alongside traditional bids to compare budget/environmental benefits
	Traditional lights	LED lights	Research standards for LED lights, adopt where feasible/in budget
	Traditional outdoor lights	“Dark sky certified” lights	Explore potential policy avenue that advocates for “dark sky” lighting where feasible and appropriate to reduce light pollution
	Aging furnaces; few facilities with air conditioning	Installation of efficient AC units, replacement with more efficient HVAC units and ensuring existing units meet code	Energy audit of all buildings within MPRB control
	Poorly sealed windows and doors	Replacement with modern materials	Seal doors and windows, where possible; request budget for replacement cost
	Trash collection with separate containers for recycling and organics sees a 27% diversion rate for recycling and 2% for organics	Achieve 35% diversion rate for recycling within 5 years	Improve recycling signage; partner with Hennepin County to educate at events
	Existing bathroom fixtures may or may not be water wise	Install water wise fixtures in all new facilities and retrofits	Complete facilities assessment to determine existing fixture type

FACILITY/ELEMENT	EXISTING CONDITION	ENVIRONMENTAL IMPROVEMENT IDEA	POSSIBLE ACTION
	Open/close bay doors with no air shield to retain heat/cool at maintenance facilities	Air shields	Request budget to complete acquisition/installation of air shields
	No wash bay within system that can accommodate vehicles	Create wash bays at maintenance facilities that have proper water/sediment capture	Request budget to complete acquisition/installation of wash bays at operations centers
Athletic Fields	Athletic turf on soil	Turf with biochar underlay	As fields are slated for rest or replacement, biochar can be laid under new grass
	Traditional field lights	LED lights	Research standards for LED lights, adopt where feasible/in budget
	Mowed turf throughout park system	Low water turf suited to MN climate	Scope how much turf in the system is low water and complete cost-benefit analysis on replacement
General turf area	General turf area	Bee/flowering lawns	Explore opportunities to transition general turf areas to bee/flowering lawns in order to improve habitat and connect green corridors
	Pathways (formal and informal)	Formal pathways with “keep on path” signage	Promote walking, biking, and driving on established pathways to reduce compaction and erosion of turf areas
Pools, fountains, splash pads	Older, leaking infrastructure (both pipes and support systems)	Rebuild least efficient fixtures and fix leaks, where possible; install water capture systems	Complete water use audit on MPRB facilities and fixtures to determine which are least efficient
Impervious pavement	Asphalt and concrete	A combination of pervious pavers and porous concrete, where fitting, with impervious pavement	Analyze which impervious pavements are due for rehabilitation and which might be good candidates for pervious alternatives; explore different bid scenarios that include pervious materials

Figure 28. Environmental Improvement Strategies for Facilities

To make a success of these opportunities, site management and material selection practices are critically important and need to be considered at the beginning of the capital improvement process.



Land Goals, Strategies, and Recommendations

Recommendations come in a few broad categories, including planning, physical design, training, and communication.

PLANNING

MPRB's programming and operations originate from plans and planning processes that are shaped with diverse and extensive community engagement. Accordingly, this chapter's goals and strategies focus heavily on different planning steps that can be taken to promote positive environmental outcomes. From plans that can be written to address particular land management techniques to maintenance and staffing plans to corridor and habitat planning, there are different kinds of planning techniques that can be used to improve environmental performance of turf management practices, improve habitat quality and increase habitat connectivity in the parks, maintain and improve soil health, reduce human-related impacts, and reduce construction-related impacts.

PHYSICAL DESIGN AND CONSTRUCTION

As indicated earlier in this chapter, physical design and construction of park assets and facilities (benches, lighting, athletic fields, playgrounds, buildings, etc.) can have a significant impact on the environment. Where possible, incorporating more sustainable and green building techniques and materials not only into current projects but also design guidelines and construction specifications for future projects will help MPRB to be forward thinking about impact mitigation. Further, implementing wildlife protection strategies in parkways, corridors, and in all construction projects is an essential step toward physical design that balances recreational demand with habitat considerations. To that end, identification of areas in each park or MPRB managed land where habitat might be created to establish more connective habitat corridors is another important step to improve ecological system function within the City of Minneapolis.



TRAINING

Expanded training is needed for MPRB staff to address proper equipment, pesticide, and sand and salt use; habitat and tree protection; soil compaction prevention; and construction specifications to ensure construction materials are as wildlife and environmentally friendly as they can be.

COMMUNICATION AND PUBLIC AWARENESS

In order to help reduce human-related impacts in the parks (through encroachment, trash, pet waste, off-trail exploration, and mode of park access), it is vitally important that communication and public awareness tools be utilized at strategic times and locations to raise awareness about the significance of these impacts. Improved signage, expanded outreach, public awareness campaigns, and reporting on impact mitigation are all methods that MPRB can employ to better connect with park visitors and increase their stewardship of the parks.

The following goals, strategies, and recommendations address particular impacts and offer recommendations so MPRB can achieve more environmentally friendly planning, design, operations, maintenance, and programming. Each recommendation can be evaluated on an annual basis to determine how the organization is progressing as well as to help map next steps and action items for each division within MPRB.

LAND

Goal

Strategy

Recommendation

E. LAND: MAINTAIN AND IMPROVE SOIL HEALTH

21. Conduct soil contaminant testing in parks where urban agriculture areas have been designated in park master plans

22. Utilize park development as a means of improving soil health, with mitigation partners such as Hennepin County

23. Address soil compaction during park construction and after events

23.1. Conduct soil compaction tests at the inception of major projects, and develop de-compaction strategies and extents

23.2. Explore use of biochar in park projects, especially athletic fields, as a means of de-compacting soils

23.3. Re-assess event fee structure to explore funding for decompaction of impacted parks

24. Minimize erosion impacts from maintenance, construction, and use

24.1. Evaluate Minnesota Erosion Control Society best management practices for inclusion in standard construction project specifications

24.2. Evaluate current erosion control construction specifications to address and avoid wildlife conflicts and concerns, and develop and implement wildlife-friendly standards

24.3. Complete slope analysis for mowing to determine best fit equipment and modify mowing plans to assign specific equipment use to different slope types

24.4. Identify erosion problem areas throughout the system and develop plans for minimizing and correcting areas that are prone to erosion



F. LAND: IMPROVE ENVIRONMENTAL PERFORMANCE OF TURF MANAGEMENT PRACTICES

25. Address environmental concerns around highly managed turf

- 25.1. Pursue staff training and certification, specifically the Turf Management Certificate for Water
- 25.2. Continue expansion of programmable, higher efficiency irrigation controls, especially at golf courses and premier sports fields
- 25.3. Identify opportunities to incorporate USGA Golf Course greening practices

- 26. Initiate mandatory pre-season mower and trimmer training to address slope, equipment suitability, compaction, grass clipping redirection, and tree protection

- 27. Develop standard procedures and protocols for vehicles driving on turf, in order to limit compaction and damage

G. LAND: REDUCE NEGATIVE CONSTRUCTION-RELATED IMPACTS

28. Review and modify construction specifications and practices to increase environmental protections

- 28.1. Conduct mandatory pre-construction conferences to address environmentally friendly construction requirements, including materials selection and recycling
- 28.2. Install and maintain wildlife friendly erosion control devices during construction
- 28.3. Save and re-use site topsoil
- 28.4. Require weather protection of stored materials
- 28.5. Require that construction permits issued to other agencies include environmentally friendly construction specifications similar to those used on MPRB projects

29. Consider construction scheduling and project timing in the context of nesting, migration, and pollinator emergence

30. Incorporate more sustainable and green building technology and materials into design guidelines

31. Protect trees during park development



H. LAND: REDUCE HUMAN-CREATED NEGATIVE IMPACTS IN THE PARKS

32. Reduce waste generated by and in parks

- 32.1. Develop public awareness campaign and staff training about proper waste disposal
- 32.2. Track diversion rates in park waste and set system-wide diversion goals, including for MPRB-organized events
- 32.3. Adopt waste policies consistent with City of Minneapolis Green to Go Ordinance and Zero Waster Plan
- 32.4. Work with partners, vendors, and event organizers to ensure food and drink containers in parks are recyclable or compostable
- 32.5. Implement “deconstruction” rather than demolition during park projects to extract high value materials, require contractors to recycle materials as possible, and track construction waste diversion

33. Reduce light pollution generated by park activities

- 33.1. Implement dark sky certified lighting
- 33.2. Identify areas where existing lighting can be modified or eliminated to limit light spill-over, especially into natural areas.
- 33.3. Provide staff training on dark skies and lighting impacts
- 33.4. Assess street and parkway lights for impact on parks and natural areas, then work with partners to redirect, shield, or remove fixtures

