CHAPTER 6

RECOMMENDATIONS AND NEXT STEPS

Goals, Strategies, and Recommendations Index

The Ecological System Plan is intended as a call to action. While there is much that Minneapolis Park and Recreation Board can and will do to introduce more ecologically sensitive maintenance, operations, policy, planning, and construction, the need for increased citywide awareness of environmental impacts stemming from individual choices and behaviors is also pronounced. In essence, this plan is MPRB's renewed commitment to partner in and across the community to live its mission and vision even more fully with regard to environmental responsibility. Through increased transparency about what is changing on the park and system level to address environmental concerns, MPRB hopes to spur community-wide discussion, mobilization, and activity in a shared spirit.

Goals, strategies, and recommendations that were shared in each of the previous chapters are shown here in one complete table. The goals, strategies, and recommendations outline ways the MPRB will approach addressing environmental related topics. In addition, Goal M identifies how this plan remains an accountable, living document to guide MPRB into the future.

Advancement of some of the goals, strategies, and recommendations throughout the plan will require partnerships with other agencies, organizations, and/or individuals. They may also require additional resources in the form of staffing and/or funding. Federal, state, and local policy documents related to topics throughout the plan also need to be followed, as applicable, and, in some cases, may go beyond what's outlined in the plan strategies and recommendations.

A. WATER: IMPROVE WATER QUALITY

1. Improve management of park-generated stormwater runoff

1.1. Increase amount of stormwater infiltration, filtration, and storage, and increase disconnected hard surfaces in parks

1.2. Improve Stormwater Pollution Prevention Plans (SWPPPs) to include more comprehensive record keeping, exploration of stormwater capture and control, and surface pollutant reduction, and expand SWPPPs to all park properties, with appropriate staff training

1.3. Assess the functional and budgetary feasibility of green roofs and grey water infrastructure during all new building projects and significant retrofits

1.4. Reduce impervious surface area in parks

1.5. Protect and expand wetland and marsh areas that filter stormwater runoff

1.6. Develop a Clean Sweep Plan, which explores additional street and path sweeping technology, timing and schedule, chloride management strategies, and potential of new equipment

1.7. Improve winter maintenance plans to reduce salt use in parks, including examining which surfaces are treated, removal of excess salt around buildings, and guidance on labor practices and equipment

1.8. Set and achieve maintenance and recreation staff training goals to achieve MPCA Level II Smart Salting Certification

1.9. Expand public education regarding salt impacts on water bodies

1.10. Prioritize replacement of asphalt pavement in areas where pavement is actively eroding and drains directly into the storm sewer system

2. Contribute to management of regional stormwater in the interest of regional water quality

2.1. Continue to work with community partners and agencies, including but not limited to watershed districts, the City of Minneapolis, the Minnesota Pollution Control Agency, and neighboring cities to better address and manage the collective impacts of polluted stormwater runoff.

2.2. Implement regional stormwater facilities and BMPs in parks, in partnership with City of Minneapolis and watershed districts, only where envisioned in park master plans.

2.3. Define roles and responsibilities for MPRB, City of Minneapolis, and watershed districts for management of stormwater facilities in parks, and develop corresponding maintenance practices, budget, and repair schedule

2.4. Create, fund, and implement a stormwater BMP inspection, maintenance, and repair plan for MPRB staff, including a catalog of BMPs installed in parks

2.5. In partnership with the City of Minneapolis, evaluate stormwater outfalls within parks to determine feasibility of pollution controls

3. Reduce the amount of trash and sediment in water bodies

3.1. Complete a trash impact study that identifies estimated volumes, sources, and solutions to meet specific targets and timeframes.

3.2. Further promote the City's adopt-a-catch-basin program

3.3. Install additional best management practices for trash control at key locations in coordination with partners

3.4. Expand public education regarding proper waste reduction and impacts on water bodies

3.5. Work with City of Minneapolis and other agencies to remove sediment fans in water bodies

3.6. Stabilize eroding streambanks and shorelines

3.7. Create a fund to repair erosion in parks

4. Reduce water quality impacts from pets and geese

4.1. Develop a Bacteria Mitigation Strategy, which addresses beach clean-up of goose feces

4.2. Continue and expand public education about no feeding of waterfowl

4.3. Continue and expand public education about dog waste collection, proper disposal, and environmental impacts from dog waste

4.4. Examine locations of trash cans relative to pathways and relocate, add, or remove cans where necessary

4.5. Ensure interdepartmental coordination on dog park siting, design, maintenance, and signing, to ensure impacts to water bodies are minimized

4.6. Develop a standard BMP for bacteria reduction at dog parks

4.7. Modify habitat to discourage use by geese by reducing preferred food sources, limiting preferred nesting areas, and modifying preferred sight lines and access to open water through shoreline restoration, reduction of turfgrass, increased emergent vegetation, and use of deterrents.

5. Reduce impacts of point source pollution and pollutant spills on water bodies

5.1. Expand spill kit distribution in MPRB vehicles

5.2. Expand spill response material storage to at least one location per service area as well as properties outside service area boundaries.

5.3. Regularly conduct staff training (appropriate to work responsibilities) and public education regarding spill prevention and response

5.4. Work with City of Minneapolis and other agency and research partners to identify and address pollution impacting parks and water bodies and establish a coordinated plan for spills

6. Understand and respond to water quality realities

6.1. Continue water quality monitoring based on water clarity, chlorophyll-a, and phosphorous, and add other testing regimes as warranted

6.2. Conduct water quality goal-setting sessions with internal staff and external partners

6.3. Prepare and/or document lake management strategies for each MPRB-managed water body

6.4. Continue partnerships with local and state agencies to remain aware of and address emerging contaminants

B. WATER: BUILD RESILIENCY IN THE FACE OF CHANGING WATER LEVELS

7. Design, plan, and manage park facilities in light of changing water levels

7.1. Utilize projected future floodplain analysis and risks during planning efforts

7.2. Identify outfalls, walls, bridge abutments, trails, and other flood-threatened infrastructure during master planning efforts, and develop proposed solutions in light of flooding and rainfall projections

7.3. Create planting plans for trees, shrubs, and other vegetation with understanding of projected water regime

7.4. Design lakeshores and streambanks to withstand or accommodate projected future flooding and withstand a higher level of erosive energy, with a focus on bioengineering, naturalization, and native plants

7.5. Identify and map flood-prone recreational infrastructure, especially trails, and develop detour plans that can be implemented quickly and with clear public notification

8. Continue and strengthen partnerships to address management of citywide stormwater infrastructure

8.1. Partner with City of Minneapolis and watershed districts in the creation of park master plans, and participate in partner agency efforts, such as flood studies

8.2. Improve communication with partners and the public about water management, park impacts, and other effects of increased precipitation

9. Continue to work with partners to understand, evaluate, and help to address, as appropriate, elevated groundwater levels

C. AIR: CONTRIBUTE TO IMPROVING LOCAL AIR QUALITY AND REDUCING URBAN HEAT ISLAND

10. Reduce urban heat island effect and address heat equity issues

10.1. Focus tree planting in areas identified as having high heat island or low air quality

10.2. Partner in regional heat island and air quality monitoring and studies

11. Reduce vehicle and equipment emissions

11.1. Examine fleet-wide emissions and estimate emissions generated by park employees, then set reduction goals

11.2. Consider, document and communicate options for hybrid and electric vehicles for all vehicle purchases

11.3. Develop small equipment inventory that includes emissions information, then work to transition small equipment fleet to alternative options, such as electric or four-stroke

11.4. Adopt Green Fleet procedures similar to City of Minneapolis fleet procedures, including flex fuel protocols and idling standards

11.5. Complete service centers master plan with consideration of siting to achieve more efficient travel management

11.6. Develop transportation management plan and procedures for field staff that considers and optimizes travel time to and between parks and service centers, in order to reduce overall vehicle miles and emissions

11.7. Track vehicle use to determine if smaller, more efficient trucks can be used as large equipment is phased out of the fleet

12. Reduce air pollution from park supplies, materials, activities, and events

12.1. Use low-VOC or no-VOC materials (paints, glues, cleaning supplies, etc.) in buildings and in maintenance activities wherever possible

12.2. Ensure maintenance of landscapes with fire does not coincide with air quality alert days

12.3. Work with partners to monitor air quality at wood processing facility and adopt a plan to reduce emissions

D. AIR: CONTRIBUTE TO CLIMATE CHANGE MITIGATION

13. Reduce the agency-wide carbon footprint

13.1. Complete a carbon footprint analysis, including identification of areas of improvement and reduction strategies

13.2. Establish carbon footprint reduction targets and tasks and report at least annually on progress

13.3. Explore alternative energy purchasing programs, to increase percentage of MPRB energy that is generated sustainably

14. Advocate for and support carbon footprint reduction for park employees and visitors

14.1. Promote transportation mode changes for MPRB staff and park visitors, including remote work options, shared EV pool vehicles, bicycles, scooters, and transit

14.2. Improve information technology to allow for more effective remote meetings

14.3. Work with MetroTransit to evaluate and improve transit access to parks

14.4. Improve park access points for multi-modal users, including ensuring curb ramps are properly placed and designed

15. Increase building efficiency

15.1. Complete agency-wide energy audit and identify areas of improvement

15.2. Design efficiency into buildings at time of construction or major improvements

15.3. Perform energy efficiency improvements as part of general building and grounds maintenance, including door and window sealing, HVAC improvements, lighting improvements, enhanced insulation, and others

16. Explore alternative energy generation opportunities in parks

16.1. Explore geothermal and solar generation in areas determined suitable for those energy sources, when improving or constructing buildings or other site improvements

16.2. Seek grants for additional solar and/or geothermal installations

17. Sequester carbon in the park system and urban forest

17.1. Study the ability and potential of parkland and urban forest to sequester carbon, and identify areas of improvement through landscape change (in partnership with natural areas management), and other practices

17.2. Increase sequestration through management practices, including forest restoration and augmentation, restoration of grasslands and wetlands, and reduction of turf grass

17.3. Explore use of biochar under athletic fields and in soil modification projects

E. LAND: MAINTAIN AND IMPROVE SOIL HEALTH

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

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

20. Address soil compaction during park construction, after events, or as part of park maintenance

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

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

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

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

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

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

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

21.4. 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

22. Address environmental concerns around highly managed turf

22.1. Pursue staff training and certification, specifically the Turf Management Certificate for Water

22.2. Continue expansion of programmable, higher efficiency irrigation controls, especially at golf courses and premier sports fields

22.3. Identify opportunities to incorporate USGA Golf Course greening practices

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

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

G. LAND: REDUCE NEGATIVE CONSTRUCTION-RELATED IMPACTS

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

25.1. Conduct mandatory pre-construction conferences to address environment- and wildlife-friendly construction requirements, including materials selection and recycling

25.2. Install and maintain wildlife-friendly erosion control devices during construction

25.3. Save and re-use site topsoil

25.4. Require weather protection of stored materials

25.5. Require that construction permits issued to other agencies include environment- and wildlife-friendly construction specifications similar to those used on MPRB projects

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

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

28. Protect trees during park development and provide care during recovery

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

29. Reduce waste generated by and in parks

29.1. Develop public awareness campaign and staff training about proper waste disposal

29.2. Track diversion rates in park waste and set system-wide diversion goals, including for MPRB-organized events

29.3. Adopt waste policies consistent with City of Minneapolis Green to Go Ordinance and Zero Waste Plan

29.4. Work with partners, vendors, and event organizers to ensure food and drink containers in parks are recyclable or compostable

29.5. 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

29.6. Reduce single-use plastic items in parks by prohibiting them at park events, facilities, and permitted park uses

30. Reduce light pollution generated by park activities

30.1. Implement dark sky compliant lighting

30.2. Identify areas where existing lighting can be modified or eliminated to limit light spill-over, especially into natural areas, while also balancing safety

30.3. Provide staff training on dark skies and lighting impacts on people, wildlife, and ecosystems

30.4. Assess street and parkway lights for impact on parks and natural areas along with how that relates to safety considerations. Then, work with partners to redirect, shield, or remove fixtures, as needed, to balance addressing light pollution and safety.

I. LIFE: PROTECT AND ENHANCE HABITAT QUALITY IN PARKS

31. Identify potential habitat areas in most parks as part of master planning efforts

32. Develop and update baseline data on wildlife in the parks, including birds, mammals, amphibians, reptiles, insects, fish, and invertebrates, using citizen science, Bio Blitzes, and other techniques

33. Reduce total acreage of turf by transitioning from turf-focused parks management to a mixture of turf and naturalized areas

33.1. Develop maintenance guidelines for natural areas

33.2. Develop staffing plans that will allow for an expansion of naturalized areas in the parks, including additional ecologist positions, park-keeper/gardener-type positions devoted to naturalized areas, and analysis of cost and staffing impact on organization

33.3. Continue to work with local partners to restore and manage natural areas, guided by park master plans and approved agreements

33.4. Expand use of fescue and drought tolerant grasses, including native plants

33.5. Complete analysis of sites most suited to pollinator-friendly habitat, including pollinator lawns, map their acreage over time, and monitor success

33.6. Reassess equipment suitability and mowing heights to protect bird, bee, and butterfly habitat.

33.7. Prepare prescriptive mowing plans that address height, frequency, timing, and landscape slope in order to protect habitat

34. Enhance management of natural and naturalized areas in parks

34.1. Complete Natural Areas Management Plan

34.2. Increase technology capability in the field to include definitions, maps, methods, and standards of maintenance

34.3. Map both formal and ad-hoc natural surface trails in the park system and identify those in need of improvement or closure to protect natural resources and to mitigate shoreline deterioration

34.4. Increase interdepartmental coordination on plantings, mowing, sight lines, and general landscape management planning

34.5. Identify areas where standing or fallen dead wood can be left to enhance habitat

35. Develop an invasive species management strategy, in keeping with IPM principles, working with state, local, and academic partners advisory groups

36. Limit use of pesticides and fertilizers

36.1. Continue to reduce pesticide and fertilizer applications, based on research-driven recommendations from partners and advisory groups

36.2. Develop and maintain Pest Management Plan for facilities, consistent with IPM program

37. Organize and activate volunteers to enhance management of natural and naturalized areas throughout the park system

37.1. Replicate and expand effective current volunteer projects and activities

37.2. Train field staff to coordinate with and support volunteer efforts

37.3. Expand MPRB volunteer coordination capability to promote volunteerism and to train, monitor, and recognize volunteers

J. LIFE: INCREASE HABITAT CONNECTIVITY THROUGHOUT THE CITY

38. Implement identified habitat corridors (see map)

38.1. Prioritize planting of bird- and pollinator-friendly vegetation, including street trees, within designated corridors, which include the Mississippi River Flyway, the Chain of Lakes, Wirth Park, Minnehaha Creek, Lakes Nokomis and Hiawatha, and several corridors newly proposed and shown on the "Minneapolis Habitat Corridors" map

38.2. Prioritize preservation of existing habitat and restoration and enhancement of new habitat within the designated corridors, with particular focus on preserving and re-storing historic ecotypes

38.3. Work with public, private, and nonprofit partners within identified corridors to implement habitat restoration and enhancement projects, including blooming boulevards, green alleys, habitat enhancement on public lands, etc.

38.4. Research, track, and report on plant life that will offer best pollinator habitat throughout the growing season, working with state, local, and academic partners

38.5. Identify and implement ways to mitigate effects on wildlife corridors during planning, construction, and programming

39. Implement wildlife protection strategies for park projects and facilities and at significant roadway crossings

39.1. Identify sites with largest number of animal-roadway conflicts, working with partner agencies, as necessary, and implement changes to reduce those conflicts

39.2. Develop and implement wildlife-friendly construction and maintenance standards, policies, and procedures (including ramps, turtle tunnels, curb cuts, signed crossings, temporary fences, seasonal signage, wildlife-friendly erosion control netting, etc.)

39.3. Reduce hazards to birds associated with built infrastructure, including buildings, through bird-safe glass, lighting modifications, and other practices

40. Increase public and staff education about wildlife and ecology

40.1. Add interpretive and educational signage in parks that speaks to the value and benefits of ecosystems and wildlife, the importance of birds and wildlife, and the variety of habitats in the MPRB system.

40.2. Continue to develop and disseminate educational resources on the above topics in the form of classes, events, printed literature, maps, videos, or other media

K. LIFE: PROTECT, MAINTAIN, AND EXPAND URBAN FOREST

41. Maintain and expand extents of the forest canopy

41.1. Set specific and realistic goals for city-wide urban forest canopy coverage, with input from the Minneapolis Tree Advisory Commission, and share publicly

41.2. Improve integration of forestry with capital projects in parks, to minimize tree removal and to capitalize on opportunities to increase urban canopy through post-project planting

41.3. Identify areas where soil compaction around trees is an issue due to general use or events, and implement remedies

41.4. Expand pruning of young trees to ensure proper shaping and health as they mature

41.5. Continue pest monitoring and management programs in partnership with federal, state, and local agencies

42. Increase urban forest diversity to make it more resilient to climate change and invasive pests

42.1. Continue to partner with University of Minnesota to research and pilot new tree species in Minneapolis within the public urban forest

42.2. Increase number of tree species and reduce overall percentage of single species as replanting takes place

42.3. Continue to partner with the City of Minneapolis and University of Minnesota to support educating the public on what trees to plant based on future climate forecasts and ways to help support the public urban forest.

L. LIFE: PROTECT AND ENHANCE AQUATIC HABITAT

43. Protect lakes, wetlands, and waterways from aquatic invasive species

43.1. Prepare an Aquatic Invasive Species Management Plan based on the Zebra Mussel Action Plan and Nokomis Carp Management Study

43.2. Continue AIS prevention and early detection programs

43.3. Update IPM to address aquatic and wetland plants

44. Develop an Aquatic Plant Management Plan that addresses fish habitat

44.1. Perform more frequent lake surveys

44.2. Plan and implement aquatic vegetation improvements that enhance habitat for fish, waterfowl, aquatic mammals, reptiles, amphibians, and invertebrates

44.3. Evaluate efficacy and need of aeration systems at the end of each system's useful life

45. Work with local, regional, and state partners to monitor and address mosquito issues

45.1. Plan and design structural BMPs so they are not breeding areas for mosquitoes, per Metropolitan Mosquito Control District (MMCD) recommendations.

45.2. Partner with MMCD on a public information campaign about biological mosquito control

M. REMAIN ACCOUNTABLE AND ADAPT WITH THE EVOLVING WORLD

46. Create interactive map layers in GIS based on the maps included in this document and make them publicly available on the MPRB website

47. Update this plan's implementation checklist and report at least annually to the MPRB Commissioners and general public

48. Review each recommendation to determine which require actionable milestones that can be tracked over time, then develop those milestones

49. Communicate and coordinate plan implementation responsibilities of all departments and divisions

50. Update and modify this plan to account for evolving and emerging technologies every three years

Departmental Responsibilities

The following charts show how MPRB departments connect to the various strategies and recommendations in the plan. A check mark means that a department has some connection, big or small, to that strategey or recommendation. If a "Lead" is identified, that's the department that would be most likely to bring the other identified departments together for coordination on that item.

	Goals, Strategies and Recommendations	Asset Management	Athletic Programs, Aquatics, Golf, Ice Arenas	Communications and Marketing	Community Connections and Violence Prevention	Design and Project Management	Environmental Management	Finance	Forestry	Human Resources	Information Technology	Park Police	Strategic Planning	Visitor Services	Youth and Recreation Center Programs
A	**WATER: IMPROVE WATER QUALITY**														
1.	**Improve management of park-generated stormwater runoff**	✔				✔	**Lead**						✔		
1.1	Increase amount of stormwater infiltration, filtration, and storage, and increase disconnected hard surfaces in parks	✔				**Lead**	✔						✔		
1.2	Improve Stormwater Pollution Prevention Plans (SWPPPs) to include more comprehensive record keeping, exploration of stormwater capture and control, and surface pollutant reduction, and expand SWPPPs to all park properties, with appropriate staff training	✔					**Lead**								
1.3	Assess the functional and budgetary feasibility of green roofs and grey water infrastructure during all new building projects and significant retrofits	✔				✔									
1.4	Reduce impervious surface area in parks	✔				**Lead**	✔						✔		
1.5	Protect and expand wetland and marsh areas that filter stormwater runoff					**Lead**	✔						✔		
1.6	Develop a Clean Sweep Plan, which explores additional street and path sweeping technology, timing and schedule, chloride management strategies, and potential of new equipment	✔													
1.7	Improve winter maintenance plans to reduce salt use in parks, including examining which surfaces are treated, removal of excess salt around buildings, and guidance on labor practices and equipment	✔													
1.8	Set and achieve maintenance and recreation staff training goals to achieve MPCA Level II Smart Salting Certification	✔	✔												✔

	Goals, Strategies and Recommendations	Asset Management	Athletic Programs, Aquatics, Golf, Ice Arenas	Communications and Marketing	Community Connections and Violence Prevention	Design and Project Management	Environmental Management	Finance	Forestry	Human Resources	Information Technology	Park Police	Strategic Planning	Visitor Services	Youth and Recreation Center Programs
1.9	Expand public education regarding salt impacts on water bodies	✔	✔	✔			Lead								✔
1.10	Prioritize replacement of asphalt pavement in areas where pavement is actively eroding and drains directly into the storm sewer system	Lead				✔									
2.	**Contribute to management of regional stormwater in the interest of regional water quality**	✔				✔	Lead						✔		
2.1	Continue to work with community partners and agencies, including but not limited to watershed districts, the City of Minneapolis, the Minnesota Pollution Control Agency, and neighboring cities to better address and manage the collective impacts of polluted stormwater runoff.					✔	Lead						✔		
2.2	Implement regional stormwater facilities and BMPs in parks, in partnership with City of Minneapolis and watershed districts, only where envisioned in park master plans.	✔				Lead	✔						✔		
2.3	Define roles and responsibilities for MPRB, City of Minneapolis, and watershed districts for management of stormwater facilities in parks, and develop corresponding maintenance practices, budget, and repair schedule	✔				✔	Lead						✔		
2.4	Create, fund, and implement a stormwater BMP inspection, maintenance, and repair plan for MPRB staff, including a catalog of BMPs installed in parks	✔				✔	Lead	✔							
2.5	In partnership with the City of Minneapolis, evaluate stormwater outfalls within parks to determine feasibility of pollution controls	✔				✔	Lead								
3	**Reduce the amount of trash and sediment in water bodies**	✔		✔		✔	Lead								
3.1	Complete a trash impact study that identifies estimated volumes, sources, and solutions to meet specific targets and timeframes.	✔					Lead								
3.2	Further promote the City's adopt-a-catch-basin program			✔			Lead								✔
3.3	Install additional best management practices for trash control at key locations in coordination with partners	✔				✔	✔								

	Goals, Strategies and Recommendations	Asset Management	Athletic Programs, Aquatics, Golf, Ice Arenas	Communications and Marketing	Community Connections and Violence Prevention	Design and Project Management	Environmental Management	Finance	Forestry	Human Resources	Information Technology	Park Police	Strategic Planning	Visitor Services	Youth and Recreation Center Programs
3.4	Expand public education regarding proper waste reduction and impacts on water bodies	✔	✔	✔			Lead						✔	✔	✔
3.5	Work with City of Minneapolis and other agencies to remove sediment fans in water bodies						✔								
3.6	Stabilize eroding streambanks and shorelines	✔				✔	✔		✔				✔		
3.7	Create a fund to repair erosion in parks							✔							
4	**Reduce water quality impacts from pets and geese**	✔	✔	✔		✔	Lead							✔	✔
4.1	Develop a Bacteria Mitigation Strategy, which addresses beach clean-up of goose feces	✔	✔												
4.2	Continue and expand public education about no feeding of waterfowl	✔	✔	✔			✔								✔
4.3	Continue and expand public education about dog waste collection, proper disposal, and environmental impacts from dog waste		✔	✔			✔							✔	✔
4.4	Examine locations of trash cans relative to pathways and relocate, add, or remove cans where necessary	✔													
4.5	Ensure interdepartmental coordination on dog park siting, design, maintenance, and signing, to ensure impacts to water bodies are minimized	✔				Lead	✔						✔		
4.6	Develop a standard BMP for bacteria reduction at dog parks					✔									
4.7	Modify habitat to discourage use by geese by reducing preferred food sources, limiting preferred nesting areas, and modifying preferred sight lines and access to open water through shoreline restoration, reduction of turfgrass, increased emergent vegetation, and use of deterrents.	✔				✔	✔								
5.	**Reduce impacts of point source pollution and pollutant spills on water bodies**	Lead					✔								
5.1	Expand spill kit distribution in MPRB vehicles	✔	✔						✔						
5.2	Expand spill response material storage to at least one location per service area as well as properties outside service area boundaries.	✔													

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5.3	Regularly conduct staff training (appropriate to work responsibilities) and public education regarding spill prevention and response	Lead		✔											
5.4	Work with City of Minneapolis and other agency and research partners to identify and address pollution impacting parks and water bodies and establish a coordinated plan for spills	✔				✔	✔								
6.	**Understand and respond to water quality realities**						✔								
6.1	Continue water quality monitoring based on water clarity, chlorophyll-a, and phosphorous, and add other testing regimes as warranted		✔				✔								
6.2	Conduct water quality goal-setting sessions with internal staff and external partners		✔				Lead						✔		
6.3	Prepare and/or document lake management strategies for each MPRB-managed water body						✔								
6.4	Continue partnerships with local and state agencies to remain aware of and address emerging contaminants						✔								
B	**WATER: BUILD RESILIENCY IN THE FACE OF CHANGING WATER LEVELS**														
7.	**Design, plan, and manage park facilities in light of changing water levels**	✔	✔			✔	✔		✔				✔		
7.1	Utilize projected future floodplain analysis and risks during planning efforts					✔							Lead		
7.2	Identify outfalls, walls, bridge abutments, trails, and other flood-threatened infrastructure during master planning efforts, and develop proposed solutions in light of flooding and rainfall projections												✔		
7.3	Create planting plans for trees, shrubs, and other vegetation with understanding of projected water regime	✔	✔			✔	✔		✔						

	Goals, Strategies and Recommendations	Asset Management	Athletic Programs, Aquatics, Golf, Ice Arenas	Communications and Marketing	Community Connections and Violence Prevention	Design and Project Management	Environmental Management	Finance	Forestry	Human Resources	Information Technology	Park Police	Strategic Planning	Visitor Services	Youth and Recreation Center Programs
7.4	Design lakeshores and streambanks to withstand or accommodate projected future flooding and withstand a higher level of erosive energy, with a focus on bioengineering, naturalization, and native plants					✔									
7.5	Identify and map flood-prone recreational infrastructure, especially trails, and develop detour plans that can be implemented quickly and with clear public notification	Lead	✔			✔							✔		
8.	**Continue and strengthen partnerships to address management of citywide stormwater infrastructure**					✔	Lead						✔		
8.1	Partner with City of Minneapolis and watershed districts in the creation of park master plans, and participate in partner agency efforts, such as flood studies		✔				✔						Lead		
8.2	Improve communication with partners and the public about water management, park impacts, and other effects of increased precipitation		✔	✔		✔	Lead						✔		
9.	**Continue to work with partners to understand, evaluate, and help to address, as appropriate, elevated groundwater levels**		✔			✔	Lead						✔		
C	**AIR: CONTRIBUTE TO IMPROVING LOCAL AIR QUALITY AND REDUCING URBAN HEAT ISLAND**														
10.	**Reduce urban heat island effect and address heat equity issues**	✔	✔			✔	✔		✔				✔		
10.1	Focus tree planting in areas identified as having high heat island or low air quality								✔						
10.2	Partner in regional heat island and air quality monitoring and studies						✔		✔				✔		
11	**Reduce vehicle and equipment emissions**	✔													
11.1	Examine fleet-wide emissions and estimate emissions generated by park employees, then set reduction goals	✔											✔		
11.2	Consider, document and communicate options for hybrid and electric vehicles for all vehicle purchases	✔													

	Goals, Strategies and Recommendations	Asset Management	Athletic Programs, Aquatics, Golf, Ice Arenas	Communications and Marketing	Community Connections and Violence Prevention	Design and Project Management	Environmental Management	Finance	Forestry	Human Resources	Information Technology	Park Police	Strategic Planning	Visitor Services	Youth and Recreation Center Programs
11.3	Develop small equipment inventory that includes emissions information, then work to transition small equipment fleet to alternative options, such as electric or four-stroke	✔													
11.4	Adopt Green Fleet procedures similar to City of Minneapolis fleet procedures, including flex fuel protocols and idling standards	✔													
11.5	Complete service centers master plan with consideration of siting to achieve more efficient travel management	✔													
11.6	Develop transportation management plan and procedures for field staff that considers and optimizes travel time to and between parks and service centers, in order to reduce overall vehicle miles and emissions	✔													
11.7	Track vehicle use to determine if smaller, more efficient trucks can be used as large equipment is phased out of the fleet	**Lead**	✔				✔		✔						
12	**Reduce air pollution from park supplies, materials, activities, and events**	✔	✔			✔	✔		✔					✔	✔
12.1	Use low-VOC or no-VOC materials (paints, glues, cleaning supplies, Etc.) in buildings and in maintenance activities wherever possible	✔	✔			✔									✔
12.2	Ensure maintenance of landscapes with fire does not coincide with air quality alert days						✔								
12.3	Work with partners to monitor air quality at wood processing facility and adopt a plan to reduce emissions								✔						
D	**AIR: CONTRIBUTE TO CLIMATE CHANGE MITIGATION**														
13.	**Reduce the agency-wide carbon footprint**	✔	✔			✔	✔		✔				**Lead**		
13.1	Complete a carbon footprint analysis, including identification of areas of improvement and reduction strategies												✔		
13.2	Establish carbon footprint reduction targets and tasks and report at least annually on progress												✔		

	Goals, Strategies and Recommendations	Asset Management	Athletic Programs, Aquatics, Golf, Ice Arenas	Communications and Marketing	Community Connections and Violence Prevention	Design and Project Management	Environmental Management	Finance	Forestry	Human Resources	Information Technology	Park Police	Strategic Planning	Visitor Services	Youth and Recreation Center Programs
13.3	Explore alternative energy purchasing programs, to increase percentage of MPRB energy that is generated sustainably							✔					✔		
14.	**Advocate for and support carbon footprint reduction for park employees and visitors**	✔								✔			✔		
14.1	Promote transportation mode changes for MPRB staff and park visitors, including remote work options, shared EV pool vehicles, bicycles, scooters, and transit	✔	✔	✔			✔			✔				✔	✔
14.2	Improve information technology to allow for more effective remote meetings										✔				
14.3	Work with MetroTransit to evaluate and improve transit access to parks					✔							Lead		
14.4	Improve park access points for multi-modal users, including ensuring curb ramps are properly placed and designed					✔							✔		
15.	**Increase building efficiency**	✔				✔									
15.1	Complete agency-wide energy audit and identify areas of improvement							✔					Lead		
15.2	Design efficiency into buildings at time of construction or major improvements					✔									
15.3	Perform energy efficiency improvements as part of general building and grounds maintenance, including door and window sealing, HVAC improvements, lighting improvements, enhanced insulation, and others	✔				✔									
16.	**Explore alternative energy generation opportunities in parks**	✔				✔							✔		
16.1	Explore geothermal and solar generation in areas determined suitable for those energy sources, when improving or constructing buildings or other site improvements	✔				✔									
16.2	Seek grants for additional solar and/or geothermal installations	✔				✔							✔		
17.	**Sequester carbon in the park system and urban forest**	✔				✔	✔		✔						

	Goals, Strategies and Recommendations	Asset Management	Athletic Programs, Aquatics, Golf, Ice Arenas	Communications and Marketing	Community Connections and Violence Prevention	Design and Project Management	Environmental Management	Finance	Forestry	Human Resources	Information Technology	Park Police	Strategic Planning	Visitor Services	Youth and Recreation Center Programs
17.1	Study the ability and potential of parkland and urban forest to sequester carbon, and identify areas of improvement through landscape change (in partnership with natural areas management), and other practices	✔				✔	✔		✔				✔		
17.2	Increase sequestration through management practices, including forest restoration and augmentation, restoration of grasslands and wetlands, and reduction of turf grass					✔	✔		✔						
17.3	Explore use of biochar under athletic fields and in soil modification projects	✔				✔									
E	**LAND: MAINTAIN AND IMPROVE SOIL HEALTH**														
18.	**Conduct soil contaminant testing in parks where urban agriculture areas have been designated in park master plans**	**Lead**				✔									
19.	**Utilize park development as a means of improving soil health, with mitigation partners such as Hennepin County**					✔							✔		
20.	**Address soil compaction during park construction, after events, or as part of park maintenance**	✔	✔			✔	✔		✔					✔	✔
20.1	Conduct soil compaction tests at the inception of major projects, and develop de-compaction strategies and extents					✔									
20.2	Explore use of biochar in park projects, especially athletic fields, as a means of de-compacting soils					✔									
20.3	Re-assess event fee structure to explore funding for decompaction of impacted parks		✔			✔	✔	**Lead**	✔					✔	✔
21.	**Minimize erosion impacts from maintenance, construction,and use**	✔				✔	✔								
21.1	Evaluate Minnesota Erosion Control Society best management practices for inclusion in standard construction project specifications					✔									

	Goals, Strategies and Recommendations	Asset Management	Athletic Programs, Aquatics, Golf, Ice Arenas	Communications and Marketing	Community Connections and Violence Prevention	Design and Project Management	Environmental Management	Finance	Forestry	Human Resources	Information Technology	Park Police	Strategic Planning	Visitor Services	Youth and Recreation Center Programs
21.2	Evaluate current erosion control construction specifications to address and avoid wildlife conflicts and concerns, and develop and implement wildlife-friendly standards					✔									
21.3	Complete slope analysis for mowing to determine best fit equipment and modify mowing plans to assign specific equipment use to different slope types	✔													
21.4	Identify erosion problem areas throughout the system and develop plans for minimizing and correcting areas that are prone to erosion	Lead				✔	✔								
F	**LAND: IMPROVE ENVIRONMENTAL PERFORMANCE OF TURF MANAGEMENT PRACTICES**														
22.	**Address environmental concerns around highly managed turf**	✔	✔												
22.1	Pursue staff training and certification, specifically the Turf Management Certificate for Water	✔	✔												
22.2	Continue expansion of programmable, higher efficiency irrigation controls, especially at golf courses and premier sports fields	✔	✔												
22.3	Identify opportunities to incorporate USGA Golf Course greening practices		✔												
23.	**Initiate mandatory pre-season mower and trimmer training to address slope, equipment suitability, compaction, grass clipping redirection, natural area protection and tree protection**	✔													
24.	**Develop standard procedures and protocols for vehicles driving on turf, in order to limit compaction and damage**	Lead	✔		✔		✔		✔			✔		✔	✔
G	**LAND: REDUCE NEGATIVE CONSTRUCTION-RELATED IMPACTS**														
25.	**Review and modify construction specifications and practices to increase environmental and wildlife protections**					✔									

	Goals, Strategies and Recommendations	Asset Management	Athletic Programs, Aquatics, Golf, Ice Arenas	Communications and Marketing	Community Connections and Violence Prevention	Design and Project Management	Environmental Management	Finance	Forestry	Human Resources	Information Technology	Park Police	Strategic Planning	Visitor Services	Youth and Recreation Center Programs
25.1	Conduct mandatory pre-construction conferences to address environment- and wildlife-friendly construction requirements, including materials selection and recycling					✔									
25.2	Install and maintain wildlife friendly erosion control devices during construction					✔									
25.3	Save and re-use site topsoil					✔									
25.4	Require weather protection of stored materials					✔									
25.5	Require that construction permits issued to other agencies include environment- and wildlife-friendly construction specifications similar to those used on MPRB projects					Lead	✔								
26.	**Consider construction scheduling and project timing in the context of nesting, spawning, migration, and pollinator emergence**					Lead	✔								
27.	**Incorporate more sustainable and green building technology and materials into design guidelines**					✔									
28.	**Protect trees during park development and provide care during recovery**					✔			Lead						
H	**LAND: REDUCE HUMAN-CREATED NEGATIVE IMPACTS IN THE PARKS**														
29.	**Reduce waste generated by and in parks**	✔	✔			✔	✔		✔				✔	✔	✔
29.1	Develop public awareness campaign and staff training about proper waste disposal	Lead	✔	✔			✔								✔
29.2	Track diversion rates in park waste and set system-wide diversion goals, including for MPRB-organized events	✔													

	Goals, Strategies and Recommendations	Asset Management	Athletic Programs, Aquatics, Golf, Ice Arenas	Communications and Marketing	Community Connections and Violence Prevention	Design and Project Management	Environmental Management	Finance	Forestry	Human Resources	Information Technology	Park Police	Strategic Planning	Visitor Services	Youth and Recreation Center Programs
29.3	Adopt waste policies consistent with City of Minneapolis Green to Go Ordinance and Zero Waste Plan	✔	✔											Lead	✔
29.4	Work with partners, vendors, and event organizers to ensure food and drink containers in parks are recyclable or compostable		✔				✔		✔					✔	✔
29.5	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	✔				✔									✔
29.6	Reduce single-use plastic items in parks by prohibiting them at park events, facilities, and permitted park uses		✔		✔	✔	✔		✔					✔	✔
30.	**Reduce light pollution generated by park activities**	✔	✔			✔									
30.1	Implement dark sky compliant lighting	✔				✔									
30.2	Identify areas where existing lighting can be modified or eliminated to limit light spill-over, especially into natural areas, while also balancing safety					✔	✔								
30.3	Provide staff training on dark skies and lighting impacts on people, wildlife, and ecosystems	✔				✔	✔						✔		
30.4	Assess street and parkway lights for impact on parks and natural areas along with how that relates to safety considerations. Then, work with partners to redirect, shield, or remove fixtures, as needed, to balance addressing light pollution and safety.	Lead				✔	✔					✔			
I	**LIFE: PROTECT AND ENHANCE HABITAT QUALITY IN PARKS**														
31.	**Identify potential habitat areas in most parks as part of master planning efforts**					✔									
32.	**Develop and update baseline data on wildlife in the parks, including birds, mammals, amphibians, reptiles, insects, fish, and invertebrates, using citizen science, Bio Blitzes, and other techniques**						✔								
33.	**Reduce total acreage of turf by transitioning from turf-focused parks management to a mixture of turf and naturalized areas**	✔	✔			✔	✔						✔		

	Goals, Strategies and Recommendations	Asset Management	Athletic Programs, Aquatics, Golf, Ice Arenas	Communications and Marketing	Community Connections and Violence Prevention	Design and Project Management	Environmental Management	Finance	Forestry	Human Resources	Information Technology	Park Police	Strategic Planning	Visitor Services	Youth and Recreation Center Programs
33.1	Develop maintenance guidelines for natural areas						✔								
33.2	Develop staffing plans that will allow for an expansion of naturalized areas in the parks, including possibility of additional ecologist positions, park-keeper/ gardener-type positions devoted to naturalized areas, and analysis of cost and staffing impact on organization	✔					Lead								
33.3	Continue to work with local partners to restore and manage natural areas, guided by park master plans and approved agreements						✔						✔		
33.4	Expand use of fescue and drought tolerant grasses, including native plants	✔	✔			✔	✔								
33.5	Complete analysis of sites most suited to pollinator-friendly habitat, including pollinator lawns, map their acreage over time, and monitor success					✔	✔						Lead		
33.6	Reassess equipment suitability and mowing heights to protect bird, bee, and butterfly habitat.	Lead	✔				✔								
33.7	Prepare prescriptive mowing plans that address height, frequency, timing, and landscape slope in order to protect habitat	Lead	✔				✔								
34.	**Enhance management of natural and naturalized areas in parks**	✔				✔	Lead		✔						
34.1	Complete Natural Areas Management Plan						✔								
34.2	Increase technology capability in the field to include definitions, maps, methods, and standards of maintenance	✔	✔				✔		✔		✔				
34.3	Map both formal and ad-hoc natural surface trails in the park system and identify those in need of improvement or closure to protect natural resources and to mitigate shoreline deterioration	✔				✔	✔						✔		
34.4	Increase interdepartmental coordination on plantings, mowing, sight lines, and general landscape management planning	Lead				✔	✔		✔						
34.5	Identify areas where standing or fallen dead wood can be left to enhance habitat						Lead		✔						

	Goals, Strategies and Recommendations	Asset Management	Athletic Programs, Aquatics, Golf, Ice Arenas	Communications and Marketing	Community Connections and Violence Prevention	Design and Project Management	Environmental Management	Finance	Forestry	Human Resources	Information Technology	Park Police	Strategic Planning	Visitor Services	Youth and Recreation Center Programs
35.	**Develop an invasive species management strategy, in keeping with IPM principles, working with state, local, and academic partners advisory groups**	✔	✔				✔		✔						
36.	**Limit use of pesticides and fertilizers**	✔	✔				✔		✔						
36.1	Continue to reduce pesticide and fertilizer applications, based on research-driven recommendations from partners and advisory groups	✔	✔				✔		✔						
36.2	Develop and maintain Pest Management Plan for facilities, consistent with IPM program	✔													
37	**Organize and activate volunteers to enhance management of natural and naturalized areas throughout the park system**	✔					✔								
37.1	Replicate and expand effective current volunteer projects and activities	✔					✔		✔						
37.2	Train field staff to coordinate with and support volunteer efforts	✔					✔								
37.3	Expand MPRB volunteer coordination capability to promote volunteerism and to train, monitor, and recognize volunteers						✔								
J	**LIFE: INCREASE HABITAT CONNECTIVITY THROUGHOUT THE CITY**														
38.	**Implement identified habitat corridors (see map)**	✔	✔			✔	✔		✔				✔		
38.1	Prioritize planting of bird- and pollinator-friendly vegetation, including street trees, within designated corridors, which include the Mississippi River Flyway, the Chain of Lakes, Wirth Park, Minnehaha Creek, Lakes Nokomis and Hiawatha, and several corridors newly proposed and shown on the “Minneapolis Habitat Corridors” map	✔	✔			✔	✔		✔						
38.2	Prioritize preservation of existing habitat and restoration and enhancement of new habitat within the designated corridors, with particular focus on preserving and re-storing historic ecotypes		✔			✔	✔		✔				✔		

	Goals, Strategies and Recommendations	Asset Management	Athletic Programs, Aquatics, Golf, Ice Arenas	Communications and Marketing	Community Connections and Violence Prevention	Design and Project Management	Environmental Management	Finance	Forestry	Human Resources	Information Technology	Park Police	Strategic Planning	Visitor Services	Youth and Recreation Center Programs
38.3	Work with public, private, and nonprofit partners within identified corridors to implement habitat restoration and enhancement projects, including blooming boulevards, green alleys, habitat enhancement on public lands, etc.	✔	✔			✔	✔		✔				✔		
38.4	Research, track, and report on plant life that will offer best pollinator habitat throughout the growing season, working with state, local, and academic partners						Lead		✔						
38.5	Identify and implement ways to mitigate effects on wildlife corridors during planning, construction, and programming	✔	✔			✔	✔								✔
39.	**Implement wildlife protection strategies for park projects and facilities and at significant roadway crossings**	✔	✔			✔	✔								
39.1	Identify sites with largest number of animal-roadway conflicts, working with partner agencies, as necessary, and implement changes to reduce those conflicts	✔				✔	Lead								
39.2	Develop and implement wildlife-friendly construction and maintenance standards, policies, and procedures (including ramps, turtle tunnels, curb cuts, signed crossings, temporary fences, seasonal signage, wildlife-friendly erosion control netting, etc.)	✔				✔	✔								
39.3	Reduce hazards to birds associated with built infrastructure, including buildings, through bird-safe glass, lighting modifications, and other practices	✔				✔									
40.	**Increase public and staff education about wildlife and ecology**		✔	✔		✔	Lead						✔		✔
40.1	Add interpretive and educational signage in parks that speaks to the value and benefits of ecosystems and wildlife, the importance of birds and wildlife, and the variety of habitats in the MPRB system.		✔	✔		✔	✔						✔		✔
40.2	Continue to develop and disseminate educational resources on the above topics in the form of classes, events, printed literature, maps, videos, or other media		✔	✔			Lead								✔
K	**LIFE: PROTECT, MAINTAIN, AND EXPAND URBAN FOREST**														

	Goals, Strategies and Recommendations	Asset Management	Athletic Programs, Aquatics, Golf, Ice Arenas	Communications and Marketing	Community Connections and Violence Prevention	Design and Project Management	Environmental Management	Finance	Forestry	Human Resources	Information Technology	Park Police	Strategic Planning	Visitor Services	Youth and Recreation Center Programs
41.	**Maintain and expand extents of the forest canopy**					✔			**Lead**						
41.1	Set specific and realistic goals for city-wide urban forest canopy coverage, with input from the Minneapolis Tree Advisory Commission, and share publicly								✔						
41.2	Improve integration of forestry with capital projects in parks, to minimize tree removal and to capitalize on opportunities to increase urban canopy through post-project planting					✔			**Lead**						
41.3	Identify areas where soil compaction around trees is an issue due to general use or events, and implement remedies	✔							**Lead**					✔	
41.4	Expand pruning of young trees to ensure proper shaping and health as they mature								✔						
41.5	Continue pest monitoring and management programs in partnership with federal, state, and local agencies								✔						
42.	**Increase urban forest diversity to make it more resilient to climate change and invasive pests**								✔						
42.1	Continue to partner with University of Minnesota to research and pilot new tree species in Minneapolis within the public urban forest						✔		**Lead**						
42.2	Increase number of tree species and reduce overall percentage of single species as replanting takes place								✔						
42.3	Continue to partner with the City of Minneapolis and University of Minnesota to support educating the public on what trees to plant based on future climate forecasts and ways to help support the public urban forest.			✔			✔		**Lead**						
L	**LIFE: PROTECT AND ENHANCE AQUATIC HABITAT**														
43.	**Protect lakes, wetlands, and waterways from aquatic invasive species**	✔	✔				**Lead**								
43.1	Prepare an Aquatic Invasive Species Management Plan based on the Zebra Mussel Action Plan and Nokomis Carp Management Study						✔								

	Goals, Strategies and Recommendations	Asset Management	Athletic Programs, Aquatics, Golf, Ice Arenas	Communications and Marketing	Community Connections and Violence Prevention	Design and Project Management	Environmental Management	Finance	Forestry	Human Resources	Information Technology	Park Police	Strategic Planning	Visitor Services	Youth and Recreation Center Programs
43.2	Continue AIS prevention and early detection programs	✔					Lead								
43.3	Update IPM to address aquatic and wetland plants	✔					Lead								
44.	**Develop an Aquatic Plant Management Plan that addresses fish habitat**	✔					Lead								
44.1	Perform more frequent lake surveys						✔								
44.2	Plan and implement aquatic vegetation improvements that enhance habitat for fish, waterfowl, aquatic mammals, reptiles, amphibians, and invertebrates [		✔			✔	✔						✔		
44.3	Evaluate efficacy and need of aeration systems at the end of each system's useful life	✔	✔				Lead								
45.	**Work with local, regional, and state partners to monitor and address mosquito issues**	✔	✔			✔	Lead								
45.1	Plan and design structural BMPs so they are not breeding areas for mosquitoes, per Metropolitan Mosquito Control District (MMCD) recommendations.		✔			Lead	✔								
45.2	Partner with MMCD on a public information campaign about biological mosquito control			✔			Lead								
M	**REMAIN ACCOUNTABLE AND ADAPT WITH THE EVOLVING WORLD**														
46.	**Create interactive map layers in GIS based on the maps included in this document and make them publicly available on the MPRB website**												✔		
47.	**Update this plan's implementation checklist and report at least annually to the MPRB Commissioners and general public**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	Lead	✔	✔
48.	**Review each recommendation to determine which require actionable milestones that can be tracked over time, then develop those mile-stones**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	Lead	✔	✔
49.	**Communicate and coordinate plan implementation responsibilities of all departments and divisions**												✔		
50.	**Update and modify this plan to account for evolving and emerging technologies every 5 years**	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔	Lead	✔	✔

Place-Based Concerns—Regional Parks

To help provide a snapshot of which parks are most suited toward particular kinds of environmental protections, the following table lists each park in the Minneapolis park system along with the corresponding lenses that apply to park conditions. This table can be used as capital improvement, rehabilitation, and environmental management projects are planned to help project managers, project partners, and the community at large think about steps they can take in both planning and implementation to address these concerns.

REGIONAL PARK NAME	URBAN HEAT ISLAND EFFECT	CARBON SEQUESTRATION	SUSTAINABLE ENERGY GENERATION	AIR QUALITY ISSUES	HABITAT CONNECTIVITY (Based on suitability for expanded pollinator habitat)	BIODIVERSITY AND HABITAT QUALITY	STORMWATER RUNOFF
Above the Falls Regional Park	✔	✔		✔	✔	✔	✔
Cedar Lake Regional Trail		✔			✔	✔	
Central Mississippi Riverfront Regional Park	✔	✔	✔		✔	✔	✔
Columbia Parkway Regional Trail					✔		✔
Kenilworth Regional Trail				✔	✔		
Luce Line Regional Trail				✔			
Minneapolis Chain of Lakes Regional Park		✔	✔	✔	✔	✔	✔
Minnehaha Parkway Regional Trail		✔	✔	✔	✔	✔	✔
Minnehaha Regional Park					✔	✔	✔
Mississippi Gorge Regional Park		✔	✔	✔	✔	✔	✔
Nokomis - Hiawatha Regional Park		✔	✔		✔	✔	✔
North Mississippi Regional Park		✔	✔	✔	✔	✔	✔
Northeast Diagonal Regional Trail	✔			✔			
Ridgway Parkway Regional Trail	✔	✔	✔		✔	✔	
Shingle Creek Regional Trail		✔	✔		✔	✔	✔
St Anthony Parkway Regional Trail	✔			✔	✔		
Stinson Parkway Regional Park	✔						
Theodore Wirth Regional Trail	✔	✔	✔	✔	✔	✔	✔
Victory/Wirth Memorial Parkway Regional Trail	✔	✔	✔		✔	✔	✔

Place-Based Concerns—Neighborhood Parks

NEIGHBORHOOD PARK NAME	URBAN HEAT ISLAND EFFECT	CARBON SEQUESTRATION	SUSTAINABLE ENERGY GENERATION	AIR QUALITY ISSUES	HABITAT CONNECTIVITY (Based on suitability for expanded pollinator habitat)	BIODIVERSITY AND HABITAT QUALITY	STORMWATER RUNOFF
28th Street Tot Lot							
Adams Triangle		✔				✔	
Alcott Triangle					✔		
Architect Triangle		✔	✔		✔		
Armatage Park, Maude D.		✔	✔	✔	✔	✔	
Audubon Park		✔	✔	✔	✔		
Barnes Place Triangle	✔	✔	✔			✔	
Barton Triangle				✔	✔		
Bassett's Creek Park		✔	✔	✔	✔	✔	✔
Beltrami Park	✔			✔			
Bethune Park, Mary McCleod	✔	✔	✔				
Bohanon Park , John C.						✔	✔
Bossen Field Park	✔	✔	✔	✔		✔	
Bottineau Field Park	✔						
Brackett Field Park, George A	✔		✔	✔	✔	✔	
Bryant Square Park	✔		✔	✔	✔		
Bryn Mawr Meadows Park		✔	✔	✔	✔	✔	✔
Caleb Dorr Circle				✔			
Cavell Park		✔	✔		✔		
Cedar Avenue Field Park	✔			✔		✔	
Central Gym Park	✔		✔			✔	

NEIGHBORHOOD PARK NAME	URBAN HEAT ISLAND EFFECT	CARBON SEQUESTRATION	SUSTAINABLE ENERGY GENERATION	AIR QUALITY ISSUES	HABITAT CONNECTIVITY (Based on suitability for expanded pollinator habitat)	BIODIVERSITY AND HABITAT QUALITY	STORMWATER RUNOFF
Chergosky Park	✔				✔		
Chowen Triangle					✔		
Chute Square, Richard	✔			✔			
Clarence Triangle				✔	✔		
Cleveland Park		✔	✔				
Clinton Field Park	✔						
Columbia Park		✔	✔	✔	✔	✔	✔
Corcoran Park	✔		✔	✔			
Cottage Park			✔	✔		✔	
Currie Park	✔		✔				
Dell Park		✔			✔	✔	
Deming Heights Park, Portius C		✔			✔	✔	
Diamond Lake Park					✔	✔	✔
Dickman Park	✔						
East Phillips Park	✔	✔	✔	✔		✔	
Elliot Park	✔	✔	✔			✔	
Elmwood Triangle							
Farview Park	✔		✔			✔	
Farwell Park						✔	
Folwell Park		✔	✔	✔		✔	
Fort Snelling		✔		✔		✔	
Franklin Steele Square	✔		✔	✔			
Fremont Triangle							
Fuller Park			✔		✔	✔	
Gateway Park, The	✔						

NEIGHBORHOOD PARK NAME	URBAN HEAT ISLAND EFFECT	CARBON SEQUESTRATION	SUSTAINABLE ENERGY GENERATION	AIR QUALITY ISSUES	HABITAT CONNECTIVITY (Based on suitability for expanded pollinator habitat)	BIODIVERSITY AND HABITAT QUALITY	STORMWATER RUNOFF
Gladstone Triangle							
Glen Gale Park				✔		✔	
Gross Golf Course, Francis A (St. Anthony Golf Course)		✔	✔		✔	✔	
Hall Park	✔						
Harrison Park	✔	✔	✔			✔	
Hiawatha School Park		✔	✔		✔		
Hi-View Park	✔			✔			
Holmes Park	✔			✔			
Humboldt Greenway					✔		
Humboldt Triangle	✔	✔	✔				
Irving Triangle				✔		✔	
Jackson Square Park	✔			✔			
Jordan Park		✔	✔		✔		
Keewaydin Park			✔			✔	
Kenny Park	✔		✔		✔		
Kenwood Park		✔	✔		✔	✔	
Kenwood Parkway					✔		✔
King's Highway Parkway					✔		✔
Laurel Triangle						✔	
Levin Triangle, Joanne							
Linden Hills Blvd Parkway					✔		✔
Linden Hills Park		✔	✔		✔		
Logan Park	✔			✔			
Longfellow Park		✔	✔	✔	✔		
Loring Park		✔	✔	✔	✔	✔	✔
Lovell Square	✔	✔	✔			✔	

NEIGHBORHOOD PARK NAME	URBAN HEAT ISLAND EFFECT	CARBON SEQUESTRATION	SUSTAINABLE ENERGY GENERATION	AIR QUALITY ISSUES	HABITAT CONNECTIVITY (Based on suitability for expanded pollinator habitat)	BIODIVERSITY AND HABITAT QUALITY	STORMWATER RUNOFF
Luxton Park, George E	✔		✔	✔	✔		
Lyndale Farmstead Park			✔	✔	✔	✔	
Lyndale School Pool							
Lynnhurst Park		✔	✔		✔	✔	✔
Marcy Park	✔			✔			
Matthews Park, Charles E	✔		✔				
McRae Park	✔	✔	✔				
Mill Place Woonerf							
Monroe Place Park	✔						
Morris Park			✔		✔		
Morrison Park, Dorilus (Minneapolis Institute of Art)	✔		✔	✔			
Mueller Park	✔		✔	✔		✔	
Murphy Square	✔						
Newton Triangle				✔			
Normanna Triangle				✔		✔	
North Commons Park		✔	✔	✔		✔	
Northeast Athletic Field Park	✔			✔			
Northeast Ice Arena							
NW Bell Property/Elwell Park	✔						
Oak Crest Triangle							
Oliver Triangle							
Orlin Triangle				✔	✔		
Painter Park, Jonathan E.	✔		✔	✔	✔		
Parade Park, The	✔	✔	✔		✔	✔	✔
Park Avenue Triangle	✔						
Park Siding Park		✔	✔		✔		

NEIGHBORHOOD PARK NAME	URBAN HEAT ISLAND EFFECT	CARBON SEQUESTRATION	SUSTAINABLE ENERGY GENERATION	AIR QUALITY ISSUES	HABITAT CONNECTIVITY (Based on suitability for expanded pollinator habitat)	BIODIVERSITY AND HABITAT QUALITY	STORMWATER RUNOFF
Pearl Park		✔	✔		✔		✔
Peavey Field Park, Frank H	✔		✔	✔		✔	
Penn Model Village Triangle							
Perkins Hill Park	✔			✔			
Pershing Field Park		✔	✔		✔		✔
Phelps Field Park, Edmund J	✔	✔	✔		✔		
Phillips Community Center	✔			✔			
Powderhorn Park	✔	✔	✔	✔	✔	✔	✔
Reserve Block 40 Park							
Rev. Dr. Martin Luther King, Jr. Park	✔	✔	✔		✔	✔	
Russell Triangle						✔	
Rustic Lodge Triangle					✔		
Ryan Lake Park					✔	✔	✔
Seven Oaks Oval Park					✔	✔	
Shoreview & 54 1/2 Triangle							
Shoreview & 54th Triangle							
Shoreview & 55th Triangle							
Sibley Park	✔	✔	✔	✔			
Sibley Triangle	✔						
Smith Triangle	✔						
Solomon, Edward C. Park	✔	✔	✔		✔	✔	✔
St Anthony Park	✔						
St Louis Triangle					✔		
Stevens Square	✔			✔		✔	
Stewart Park	✔		✔	✔			
Sumner Field Park	✔	✔	✔		✔		✔

NEIGHBORHOOD PARK NAME	URBAN HEAT ISLAND EFFECT	CARBON SEQUESTRATION	SUSTAINABLE ENERGY GENERATION	AIR QUALITY ISSUES	HABITAT CONNECTIVITY (Based on suitability for expanded pollinator habitat)	BIODIVERSITY AND HABITAT QUALITY	STORMWATER RUNOFF
The Mall Park				✔		✔	
Thomas Lowry Park							
Todd Park, George	✔	✔	✔			✔	✔
Tower Hill Park	✔			✔	✔	✔	
Valley View Park		✔	✔		✔	v	
Van Cleve Park	✔	✔	✔	✔		✔	
Victory Park					✔		
Victory Prairie						✔	
Vineland Triangle							
Waite Park		✔	✔	✔			
Washburn Avenue Totlot						✔	✔
Washburn Fair Oaks Park	✔	✔		✔		✔	
Washington Triangle	✔						
Waveland Triangle		✔	✔		✔	✔	
Webber Park, Charles C	✔	✔	✔	✔	✔	✔	✔
West End Triangle					✔		
Whittier Park	✔		✔				
Willard Park		✔	✔			✔	
Windom NE Park				✔	✔		
Windom South Park	✔						
Xcel Field Park/ Northern States Power Park	✔		✔				

APPENDIX 1

MAPS

FIGURE 4: STORMWATER OUTFALLS IN PARKS MAP

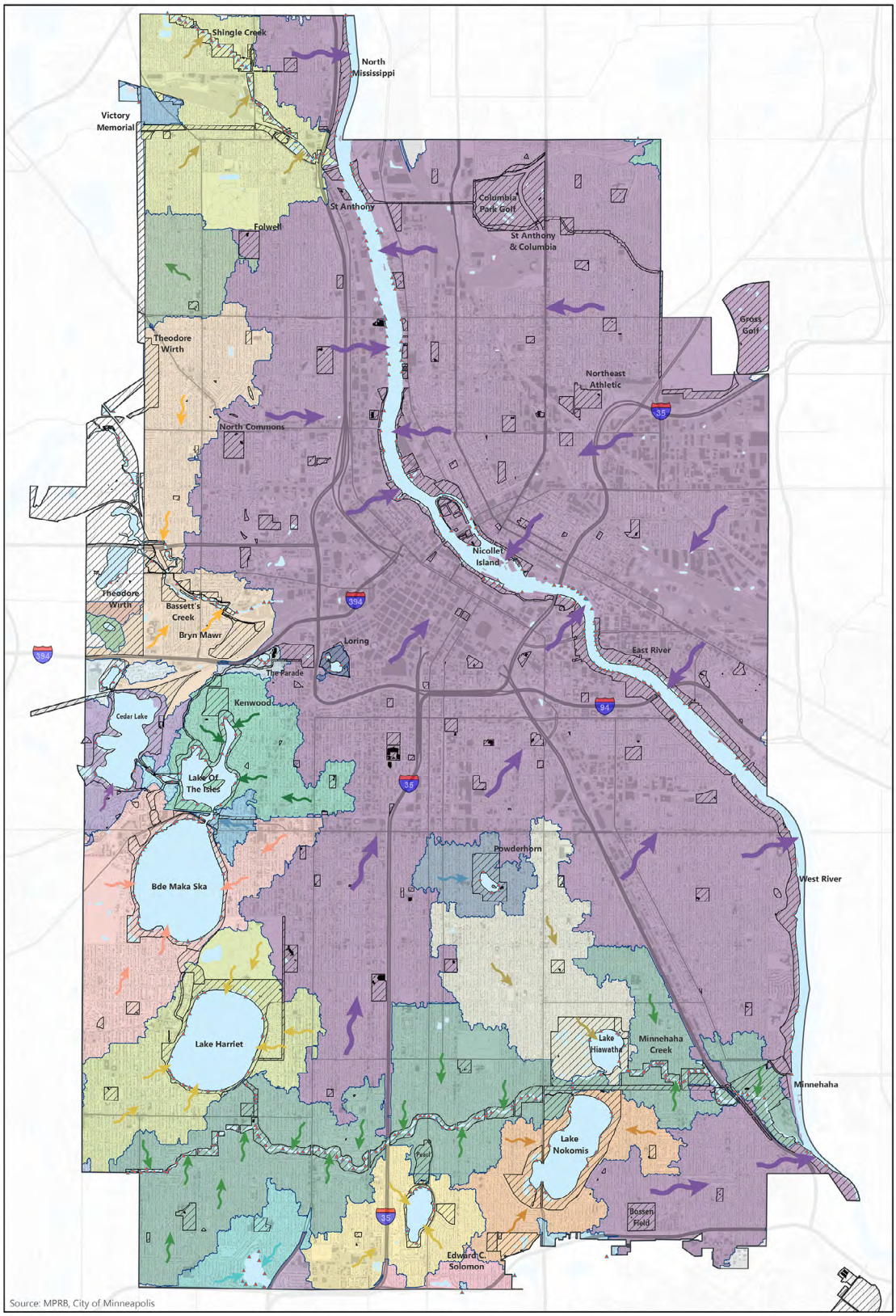


FIGURE 5: POLLUTANT LOADS MAP

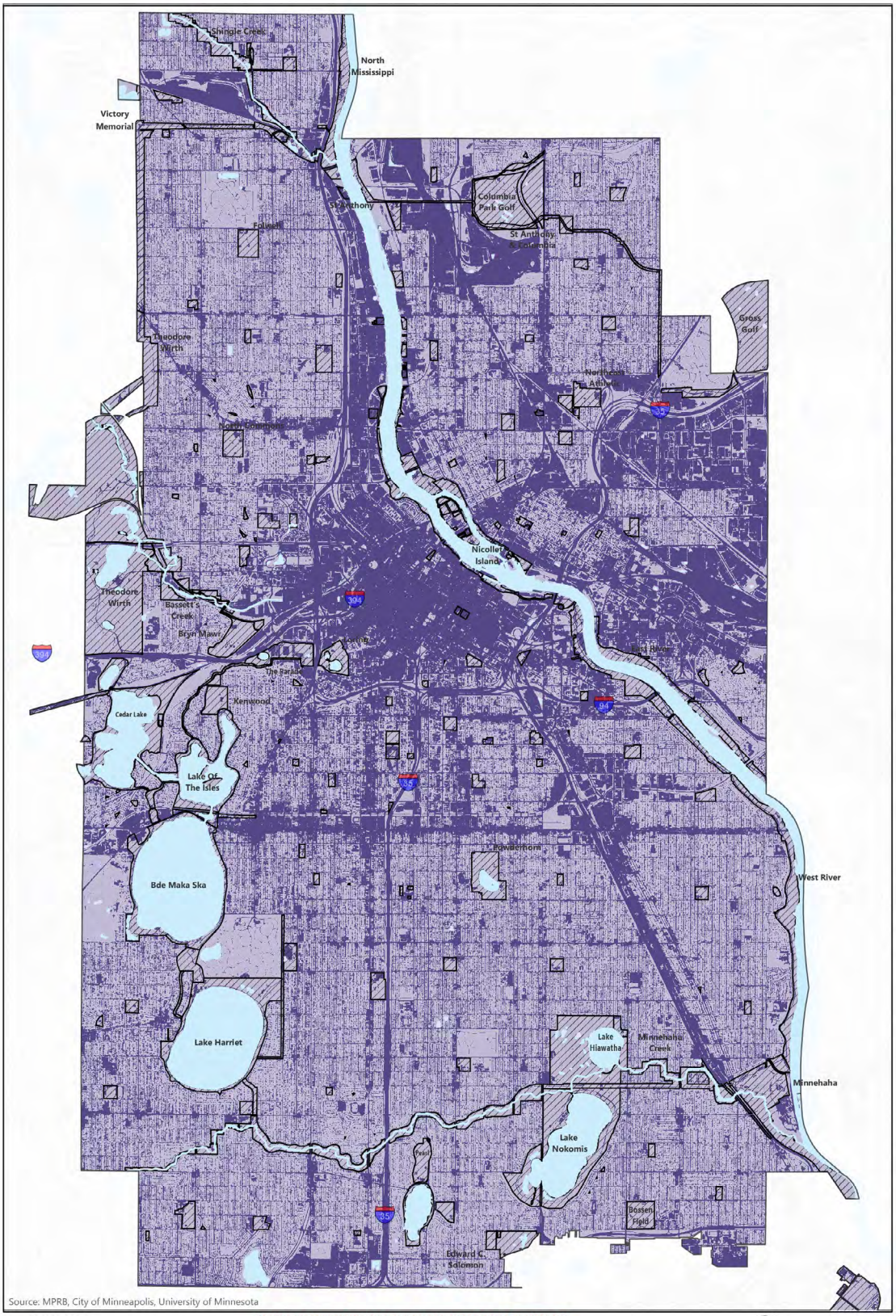


FIGURE 6: POTENTIAL FLOODING MAP

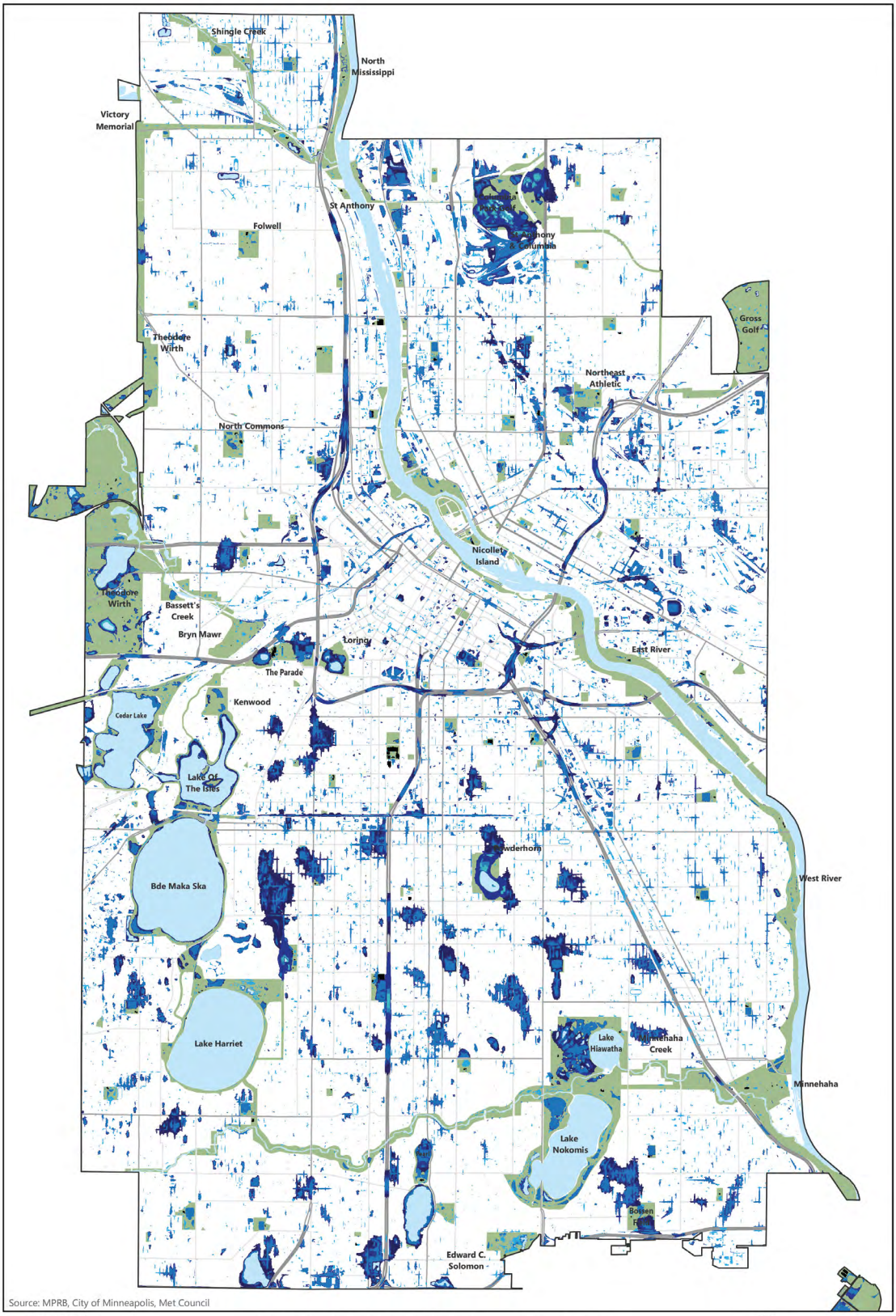


FIGURE 7: MAP OF HANDPUMPS AND DRINKING FOUNTAINS MAP

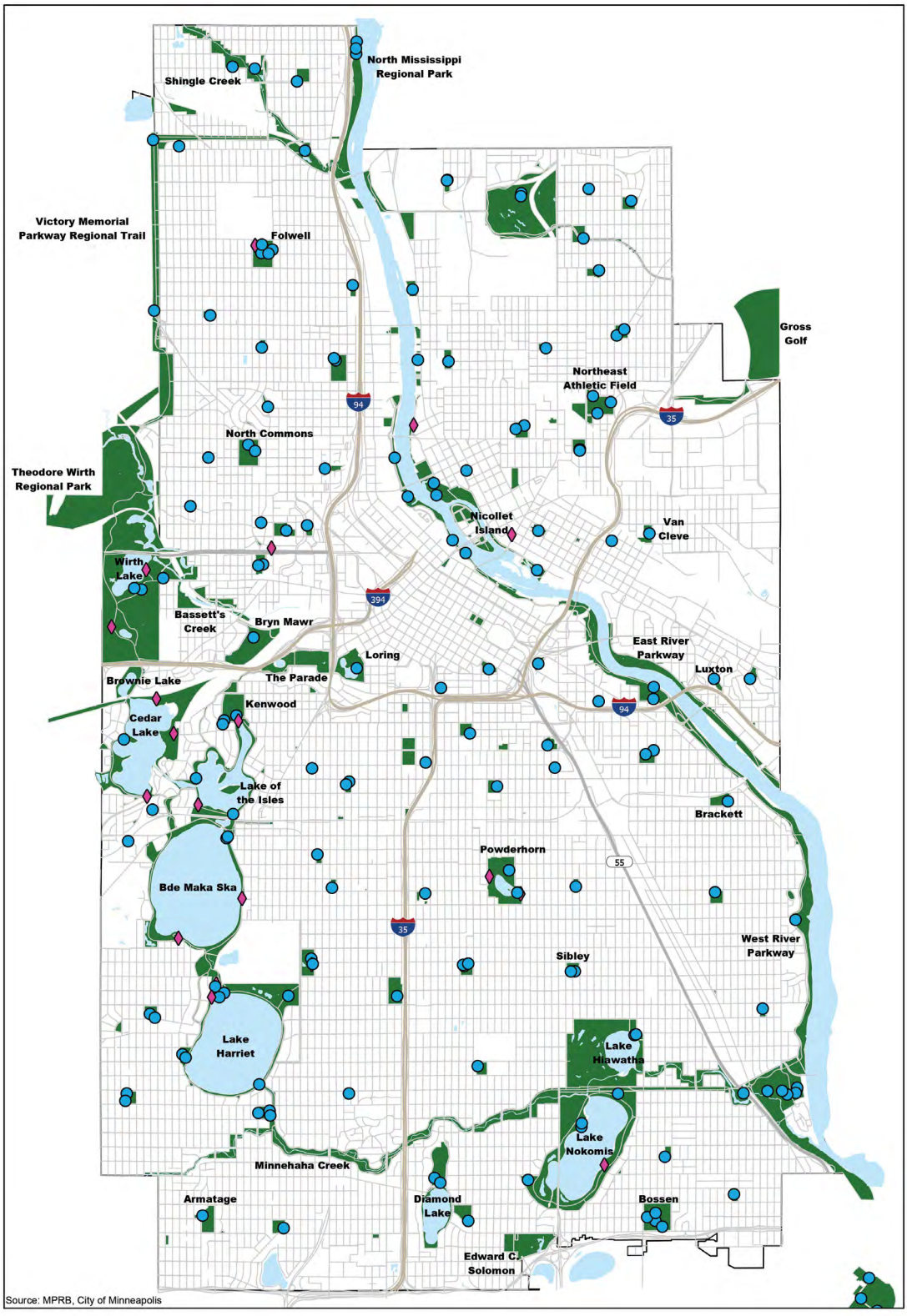


FIGURE 8: MAP OF IMPAIRED WATERS MAP

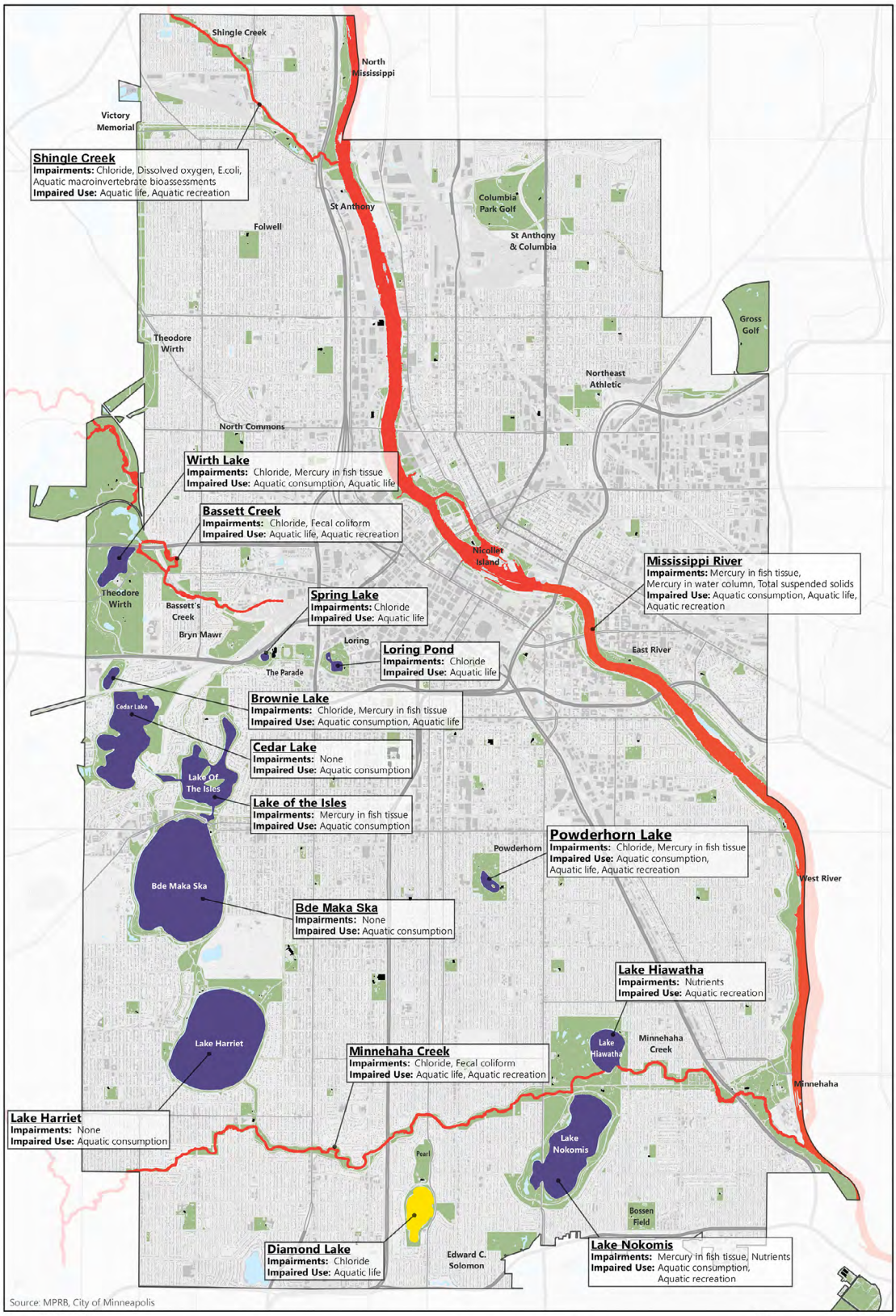


FIGURE 9: WATERSHED TRIBUTARY TO IMPAIRED WATERS MAP

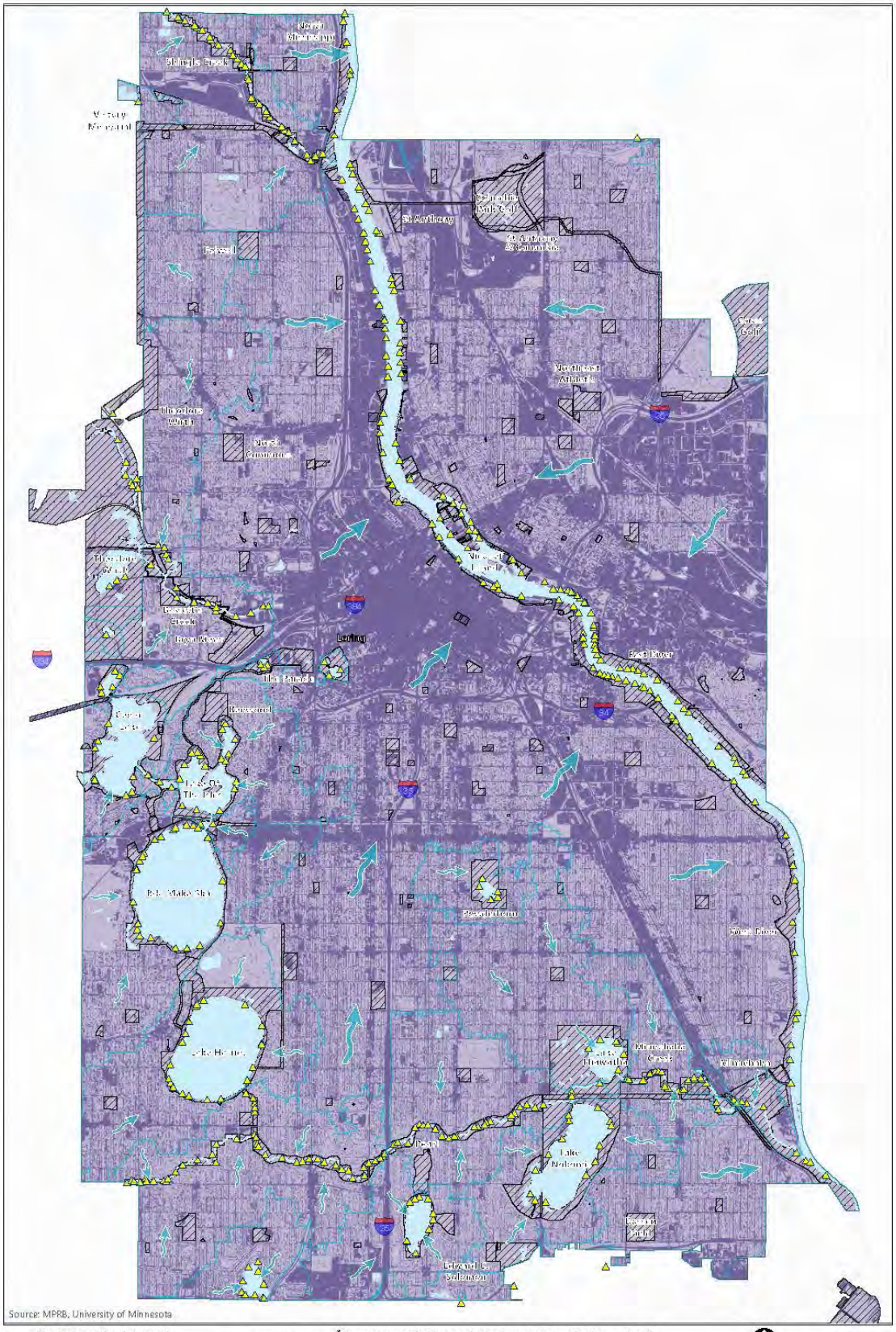


FIGURE 13: FEMA DESIGNATED REGULATORY FLOOD AREA MAP

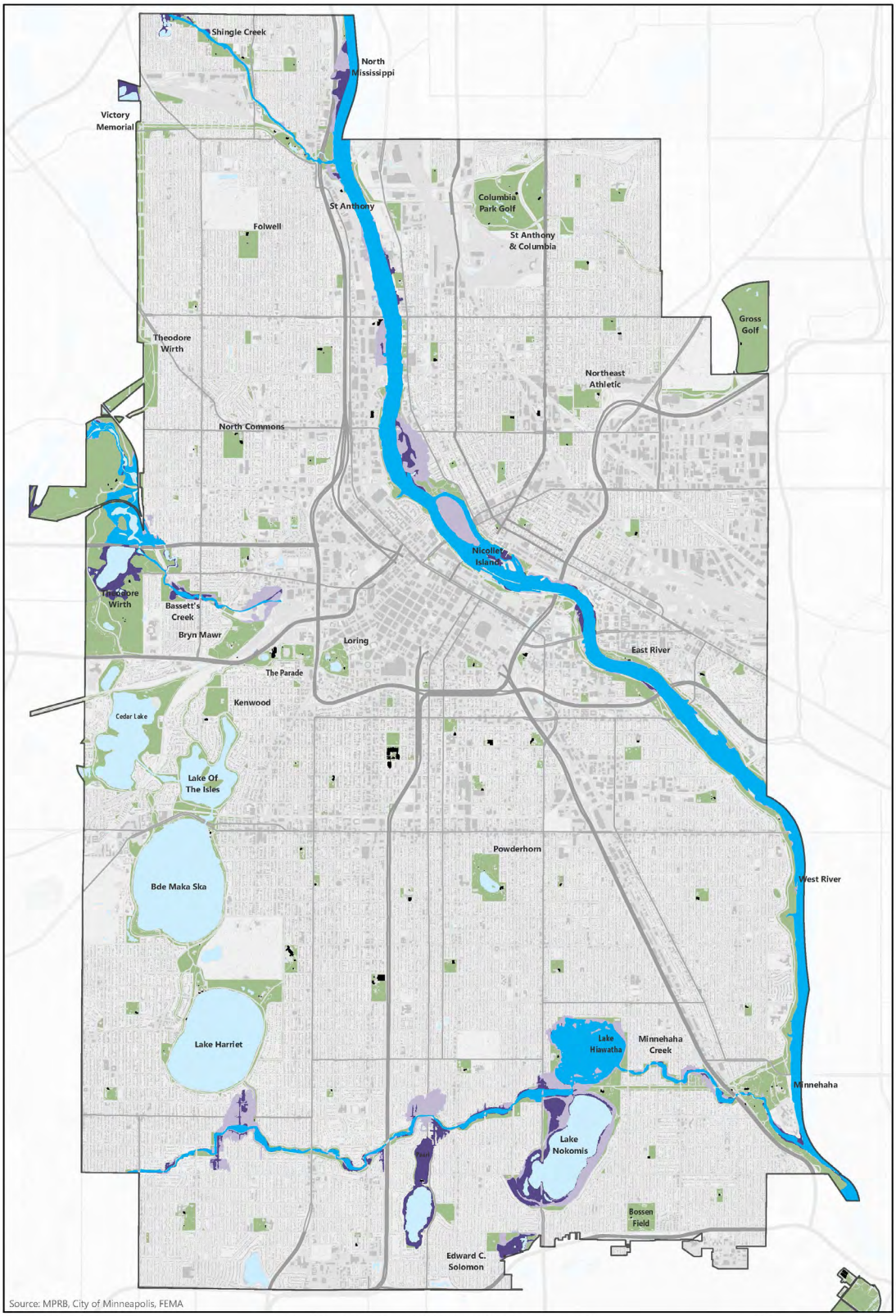


FIGURE 16: VOC MEASUREMENTS AND SAMPLE LOCATIONS MAP

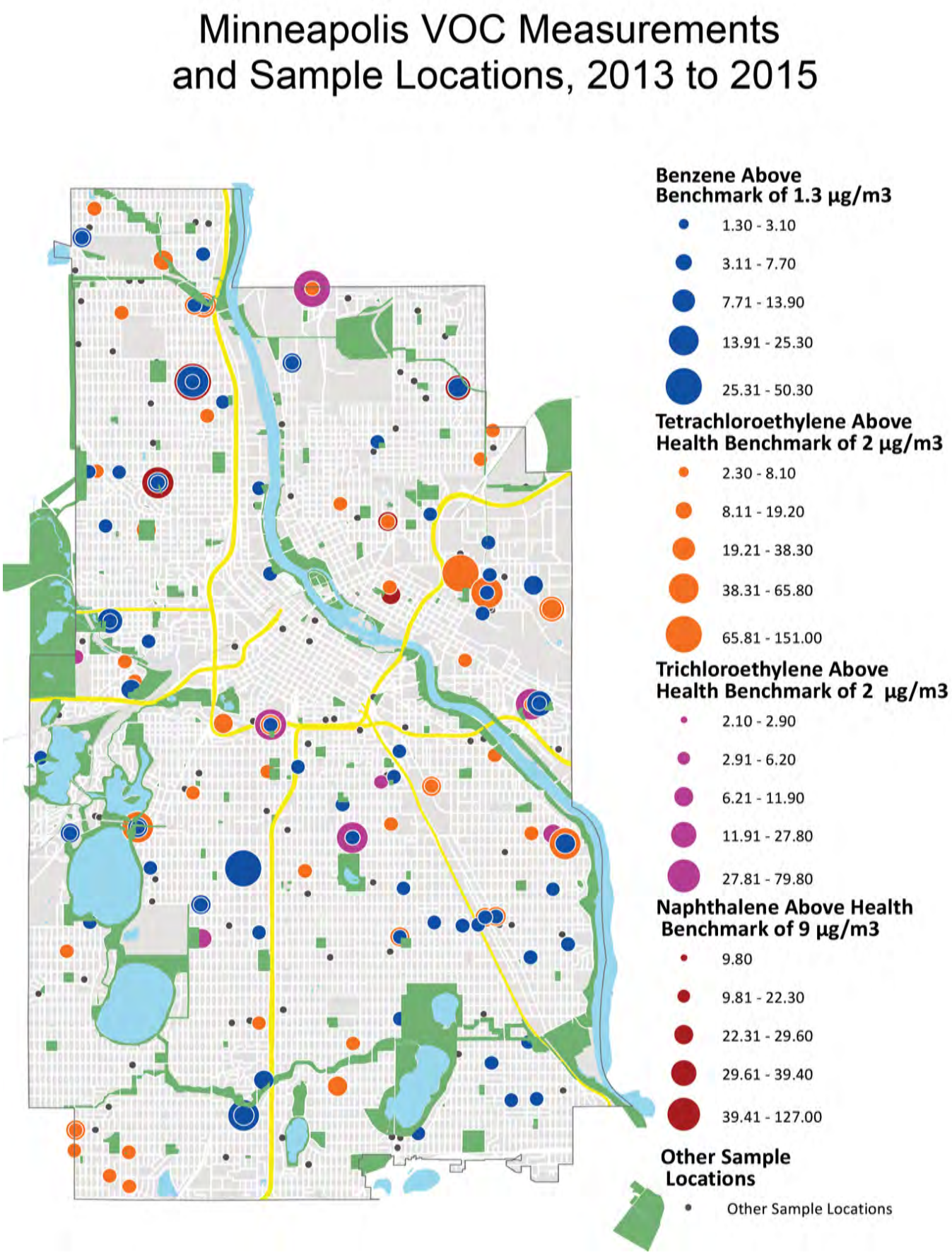
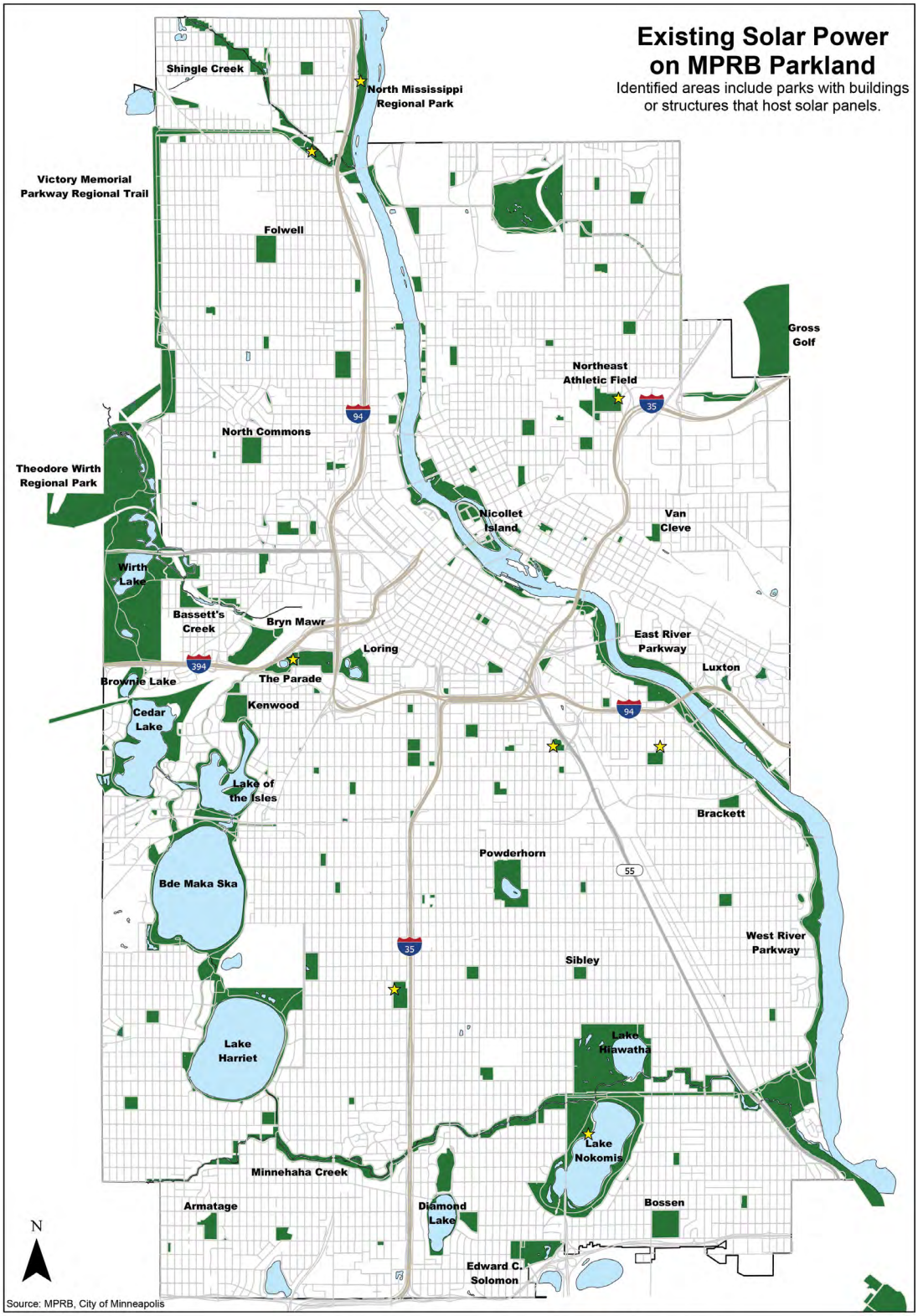


FIGURE 17: SOLAR POWER LOCATIONS MAP



Legend

- Water Bodies
- Parkland
- Solar Sites

0 2,500 5,000 10,000 Feet

Created December 2018

Locations with Identified Existing Solar Power

- Carl W. Knroening Interpretive Center: Roof mount, 34 panels/8kW
- East Phillips Park Cultural and Community Center: Wall mount, 21 panels/6.5kW
- Lake Nokomis Main Beach: Shade structure, 18 panels/7.4 kW
- Matthews Recreation Center: Roof mount, 20 panels/1kW
- Northeast Recreation Center: Roof mount, 18 panels/5kW
- Parade Ice Garden: Roof mount, 374 panels/153kW
- Rev. Dr. Martin Luther King Jr. Recreation Center: Roof mount, 20 panels/6.2kW
- Webber Natural Swimming Pool: Roof mount, 16 panels/4.6kW

FIGURE 18: CARBON SEQUESTRATION PROTECT AND ENHANCE AREAS MAP

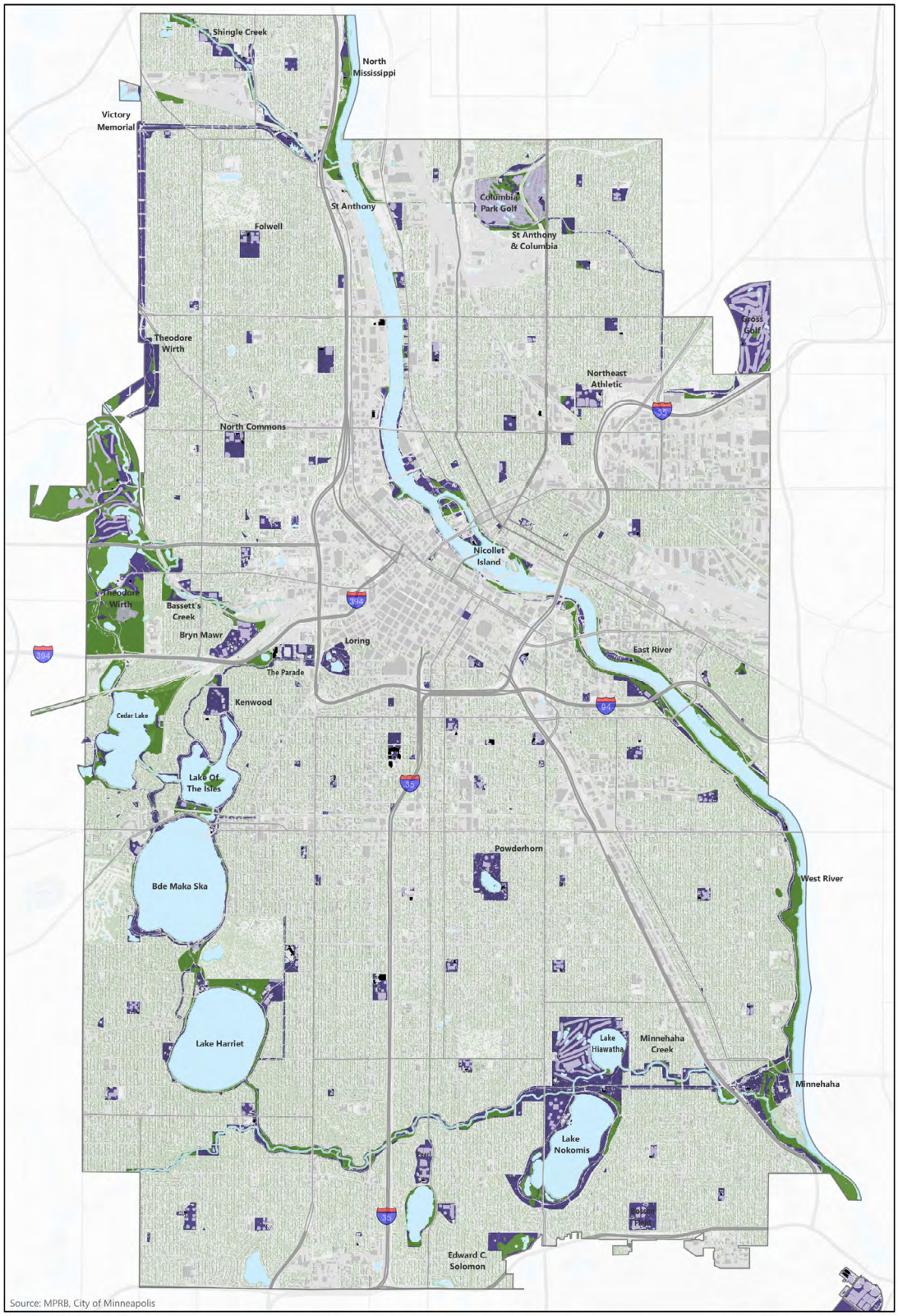


FIGURE 19: CARBON SEQUESTRATION EFFECTIVENESS WITH ENHANCEMENT AREAS MAP

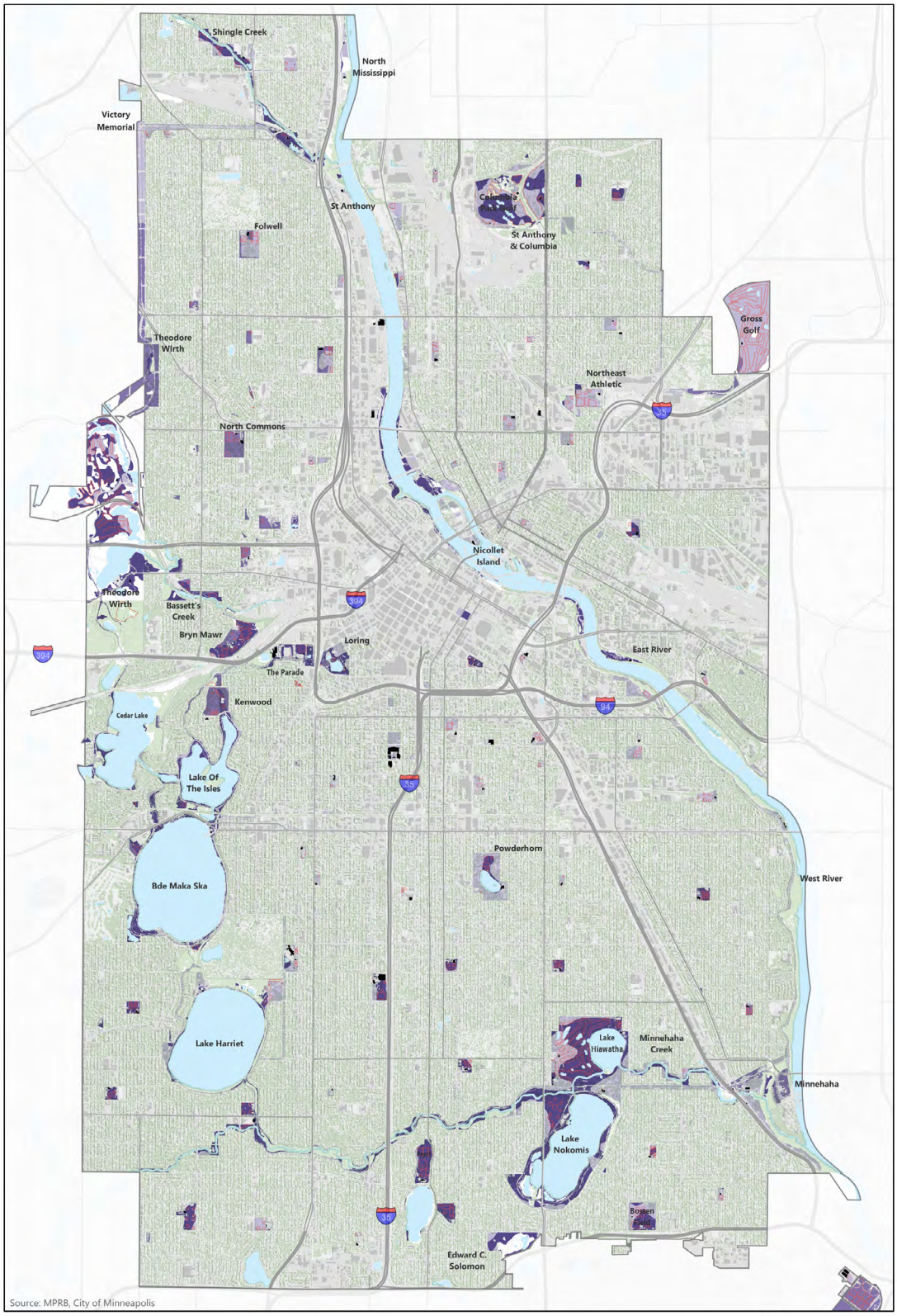
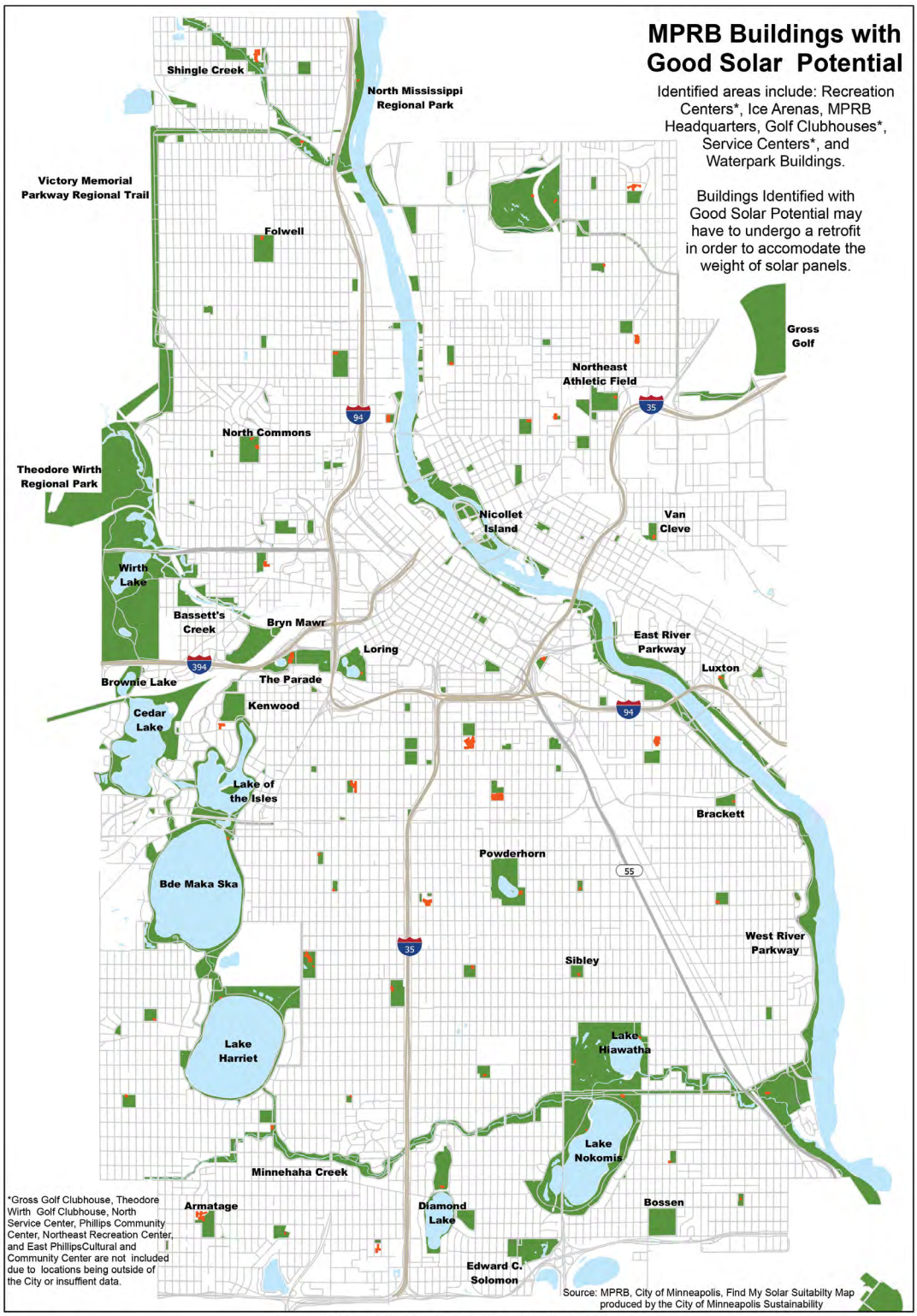


FIGURE 20: MAP OF MPRB BUILDINGS WITH GOOD SOLAR POTENTIAL



Legend

- MPRB Buildings with Solar Potential
- Water Bodies
- Parkland

0 2,500 5,000 10,000 Feet

Created December 2018

Parks with Buildings Identified As Having Solar Potential

- ★Armatage Park, Maude D.
- Audubon Park
- Bottineau Park
- Brackett Field Park, George A.
- Bryant Square Park
- ★Central Gym Park
- Columbia Golf Course Clubhouse
- Corcoran Park
- Currie Park
- ★Creekview Park
- Farview Park
- Folwell Park
- Fuller Park
- ★Harrison Park
- Hiawatha Golf Course Clubhouse
- Keewaydin Park
- Kenny Park
- ★Kenwood Park
- Lake Hiawatha Park
- Lake Nokomis Park
- Linden Hills Park
- Logan Park
- Loring Park
- Longfellow Park
- Luxton Park
- Lyndale Farmstead Park
- Lynnhurst Park
- ★Matthews Park
- McRae Park
- Morris Park
- MPRB Headquarters
- North Commons Park
- North Mississippi Regional Park
- Northeast Ice Arena
- Northeast Service Center
- Northeast Athletic Field Park
- Painter Park
- Parade Park, The
- Pearl Park
- ★Peavey Field Park, Frank H.
- Pershing Field Park
- ★Phelps Field Park
- Powderhorn Park
- Rev. Dr. Martin Luther King Jr. Park
- Sibley Field Park
- Southside Operations Center
- ★Stewart Park
- ★Waite Park
- Webber Park, Charles C.
- ★Whittier Park
- ★Windom Northeast Park
- ★Windom South Park

★ Shared Buildings

N

FIGURE 21: SUSTAINABLE ENERGY—GEOTHERMAL OPPORTUNITY AREAS MAP

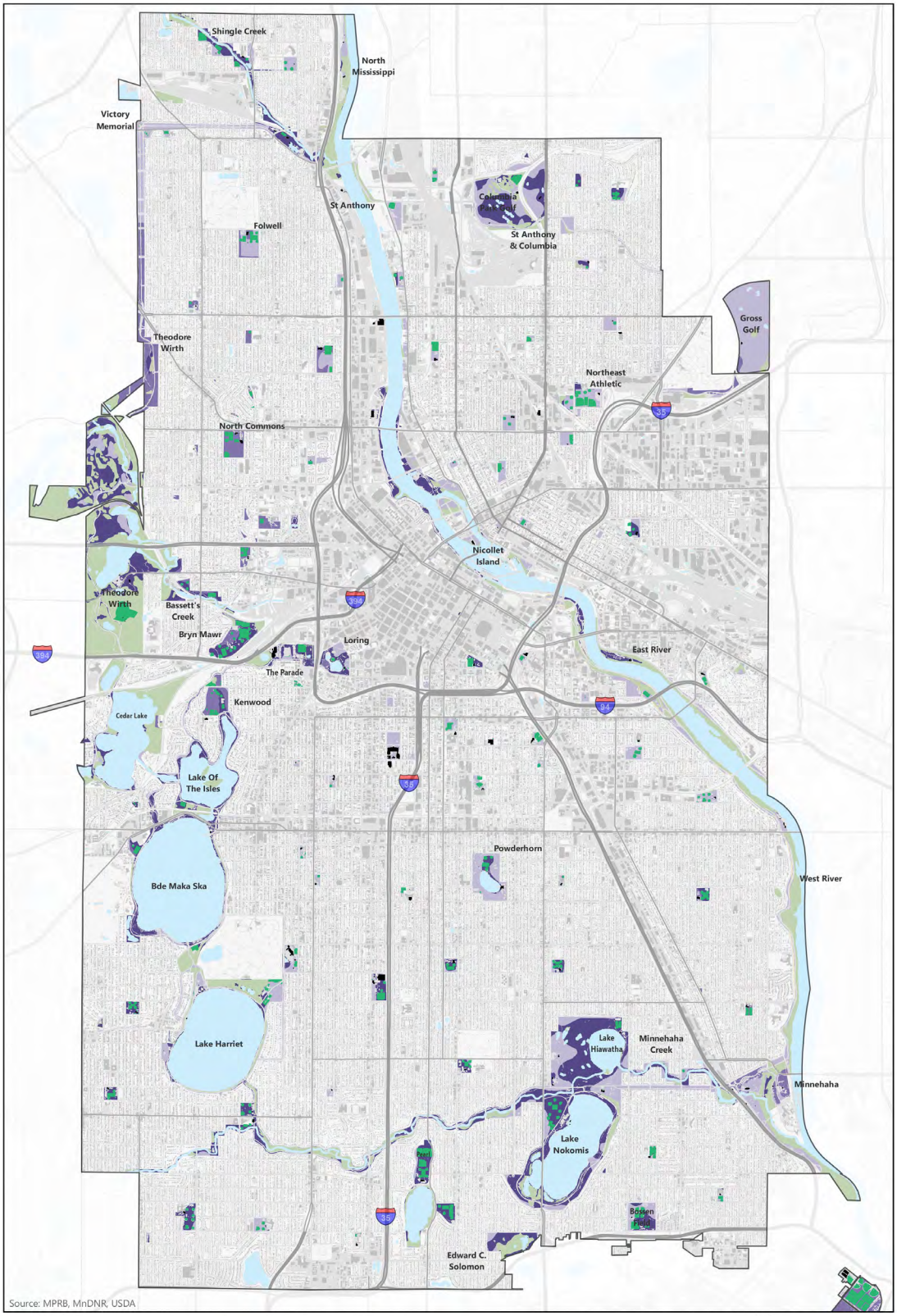


FIGURE 22: BIODIVERSITY PLANT COMMUNITY TYPES MAP

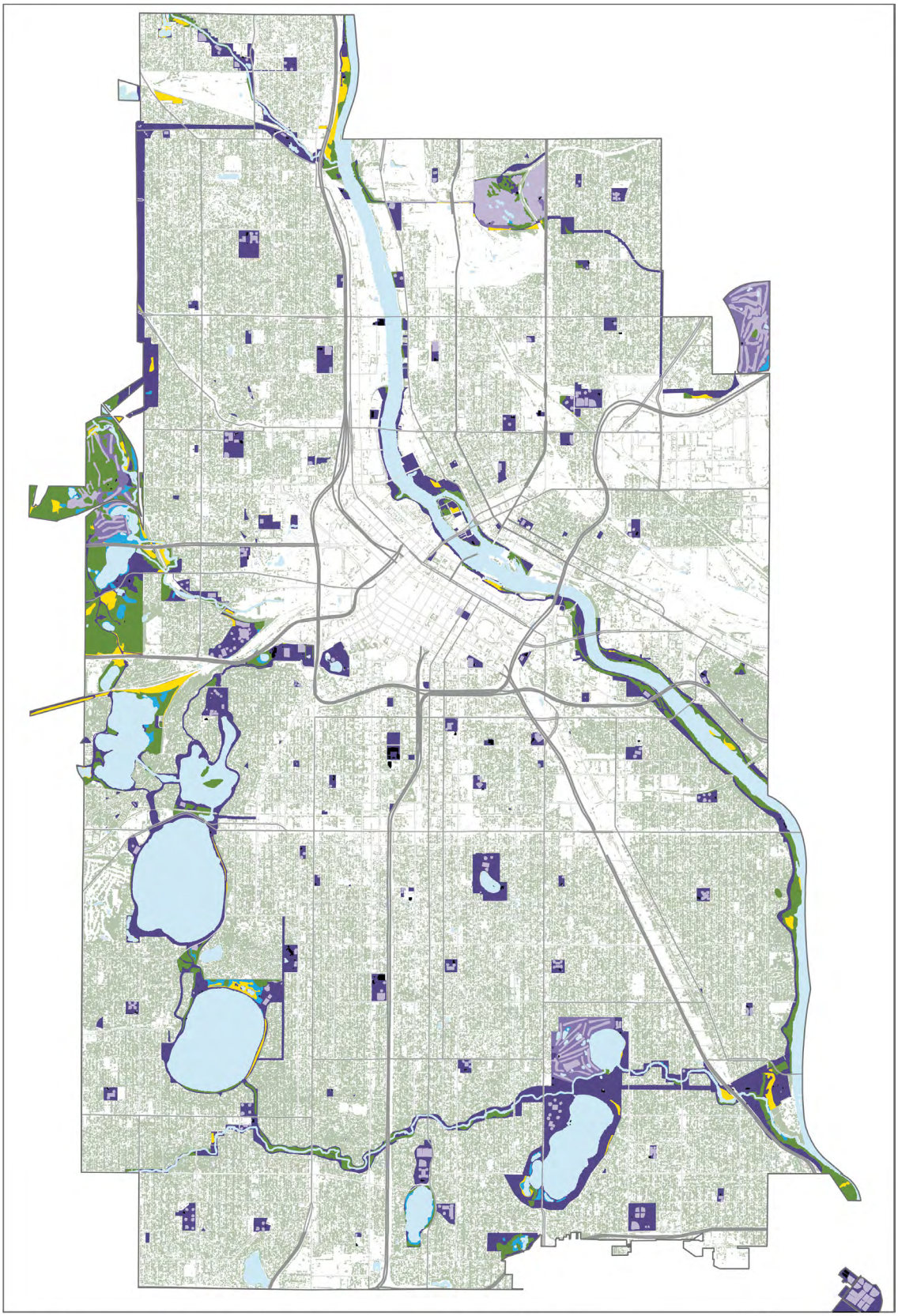


FIGURE 24: DESIGNATED URBAN AGRICULTURE AREAS

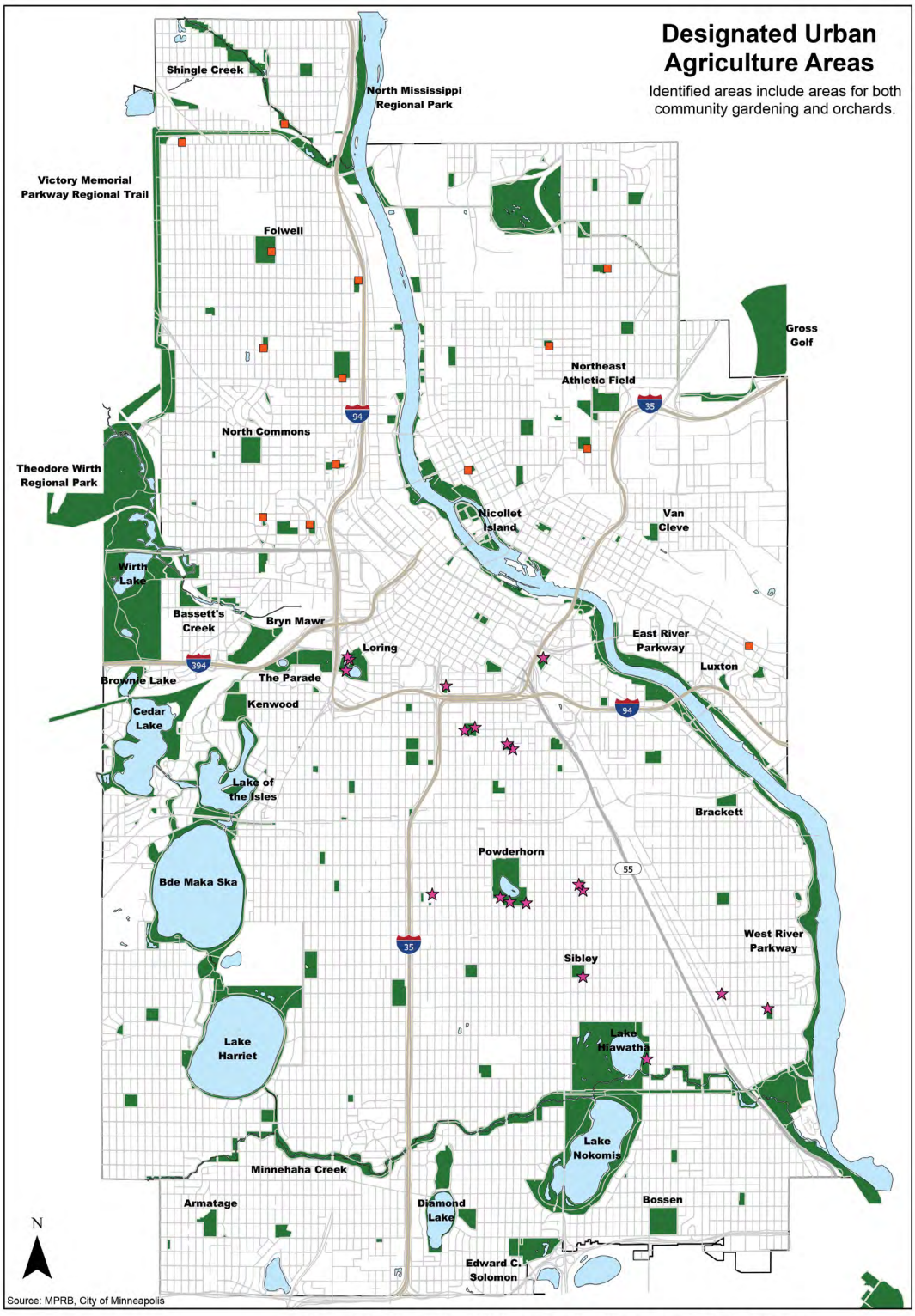


FIGURE 29. URBAN HEAT ISLAND EFFECT: INTENSITY OF HEAT ACCUMULATION

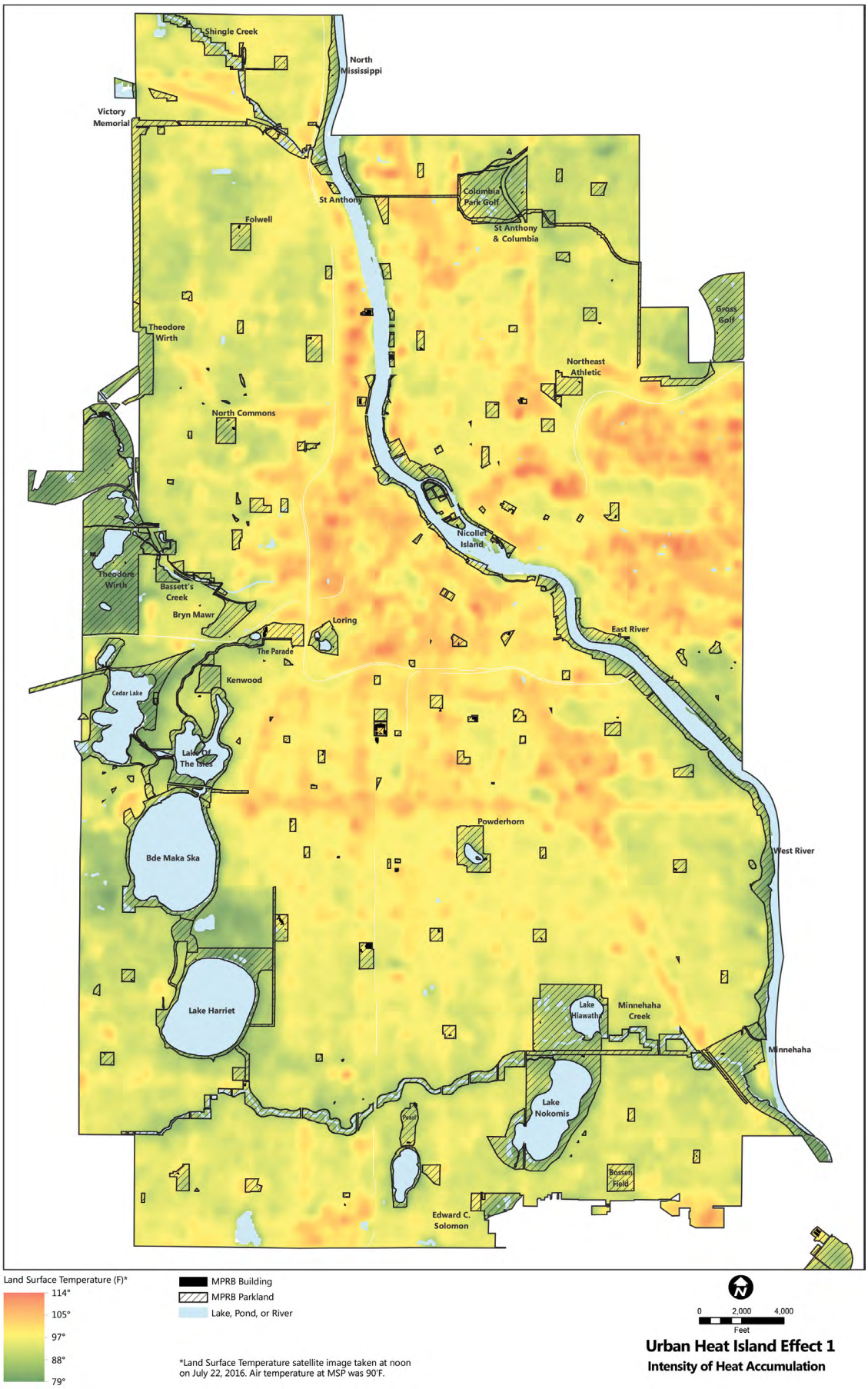


FIGURE 30. URBAN HEAT ISLAND EFFECT: MPRB INTENSITY OF HEAT ACCUMULATION

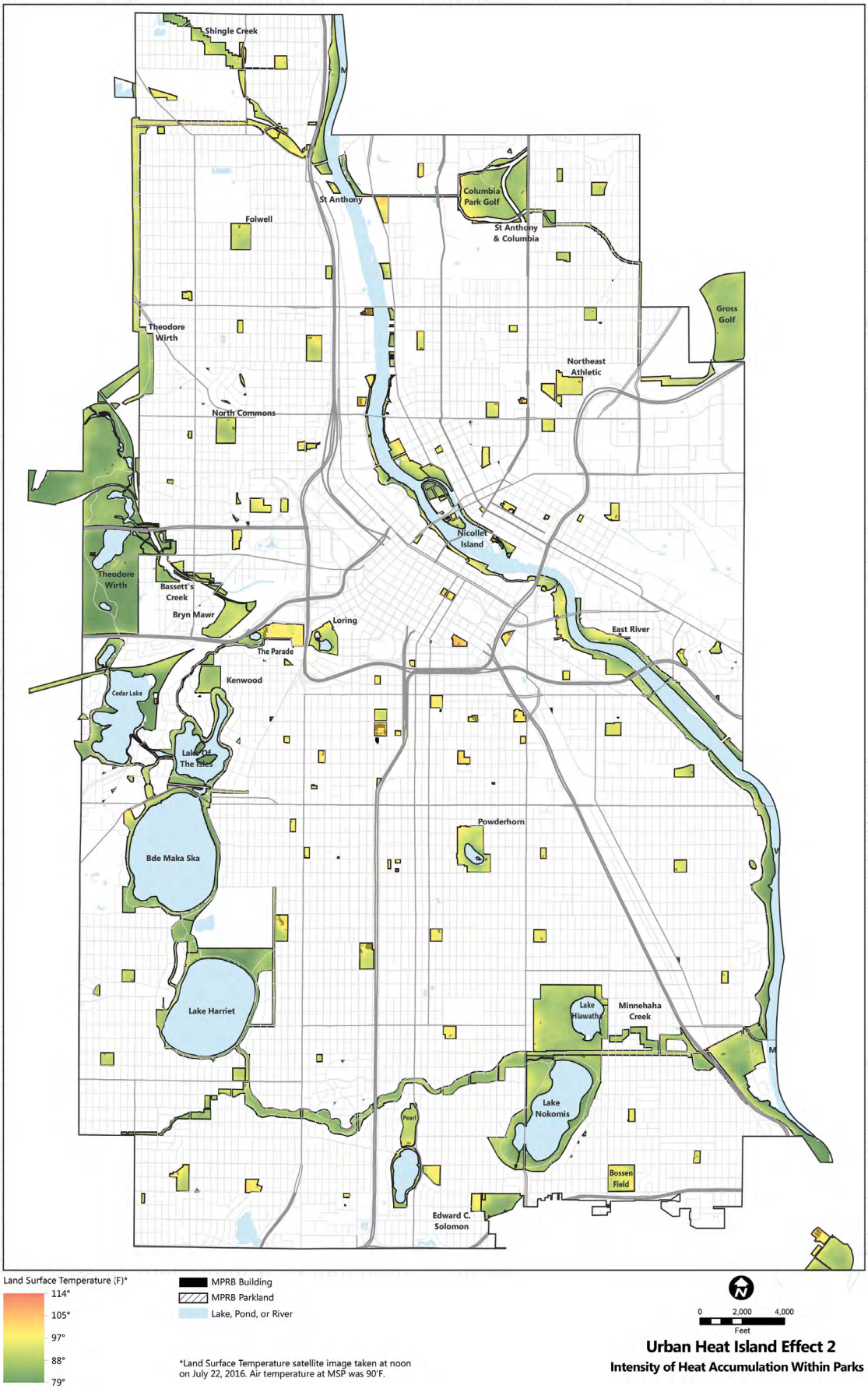


FIGURE 31. URBAN HEAT ISLAND: EFFECTIVE MITIGATION AREAS

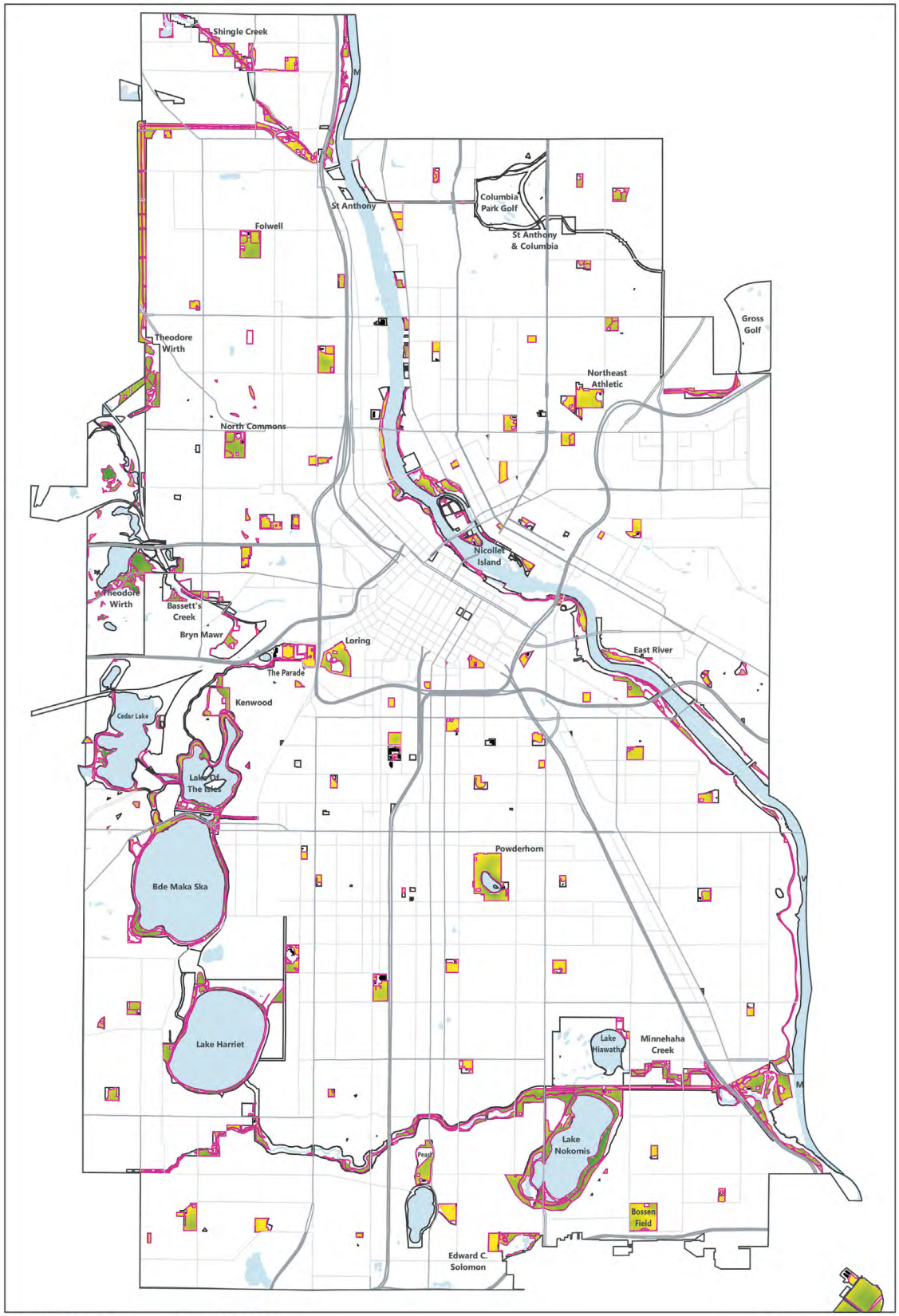


FIGURE 32. HABITAT ENHANCEMENT ZONES

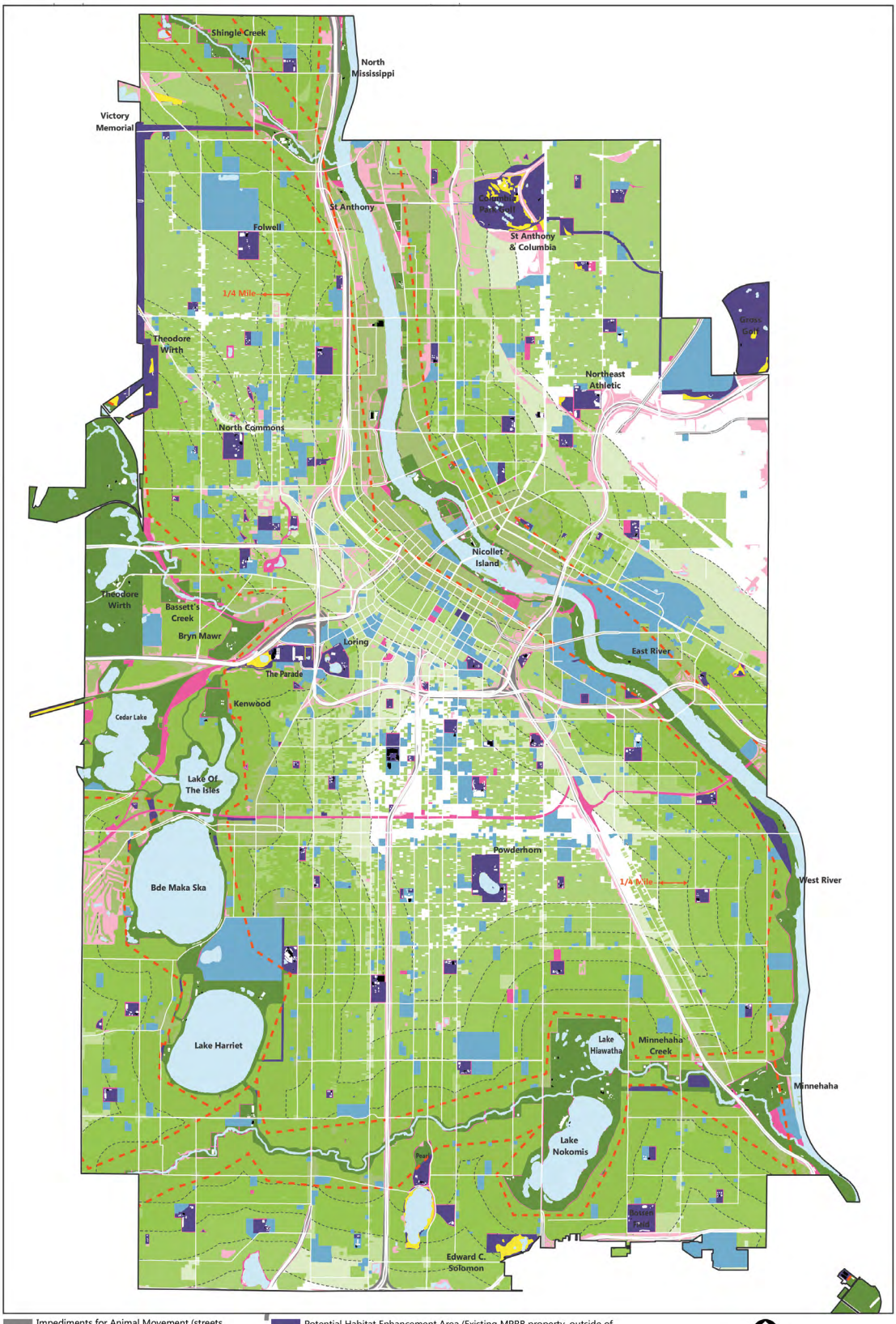


FIGURE 33. SONG BIRD & POLLINATOR HABITAT ZONES

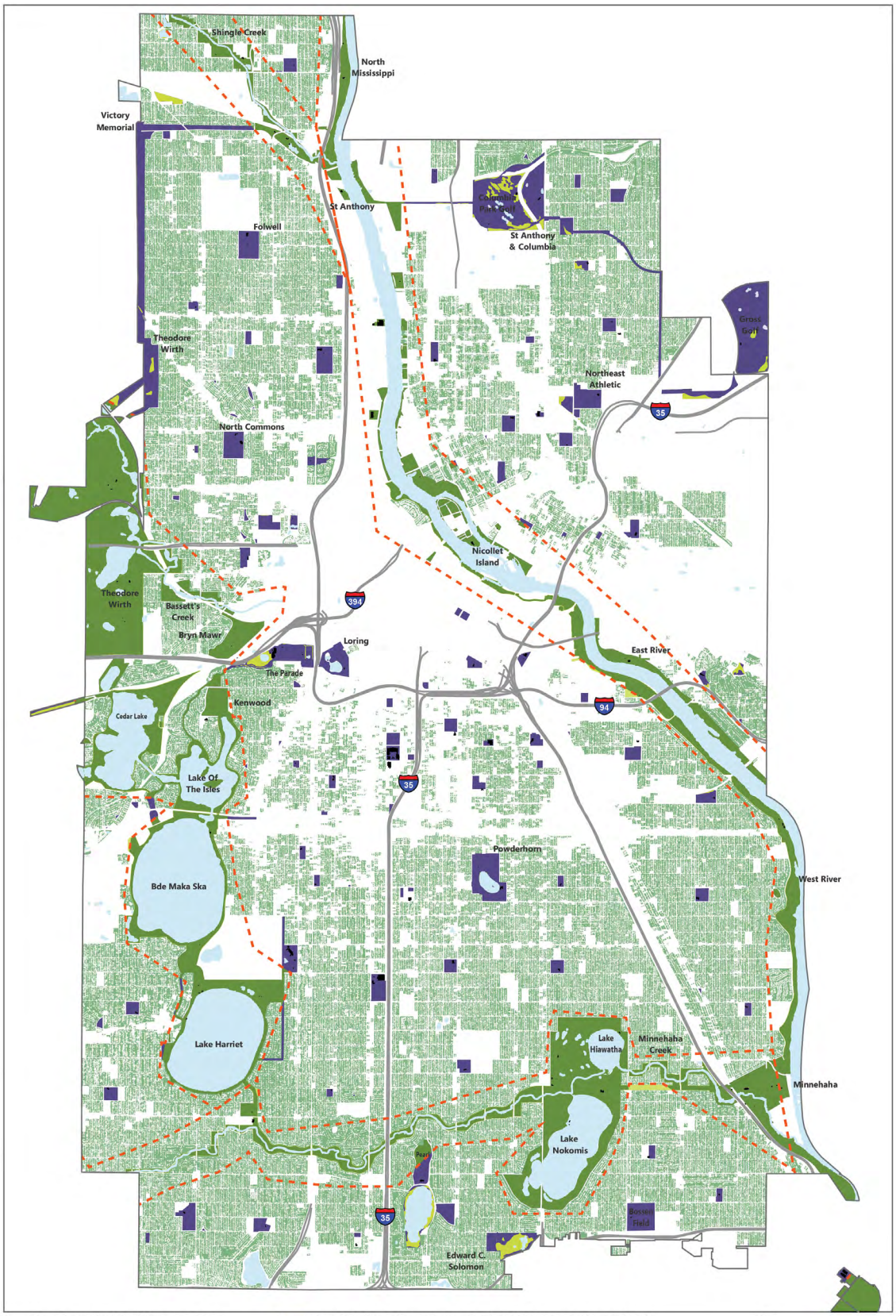


FIGURE 34: POLLINATOR “SWEET SPOT” ANALYSIS MAP

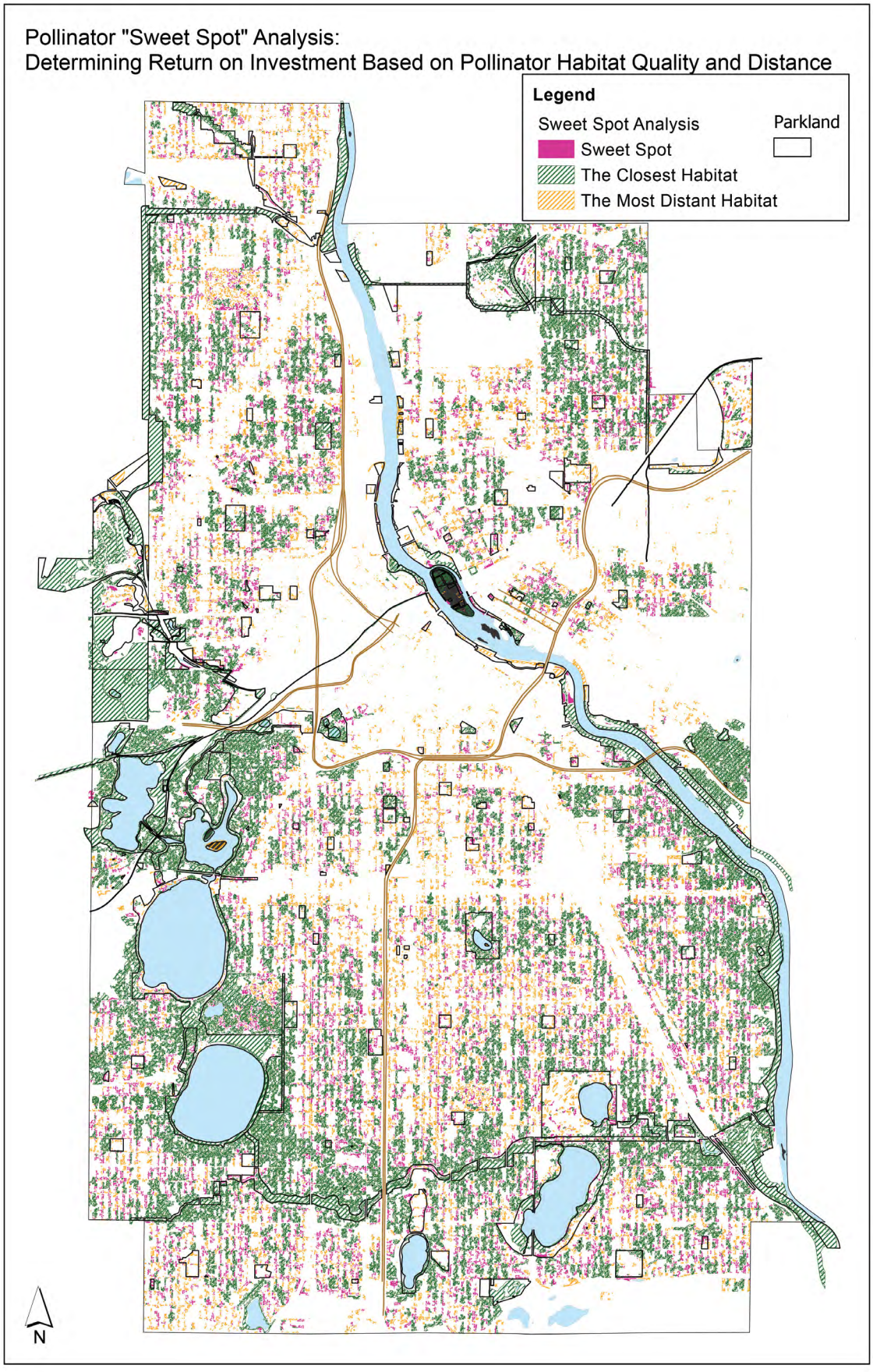


FIGURE 35: SUITABILITY ANALYSIS FOR EXPANDED POLLINATOR HABITAT

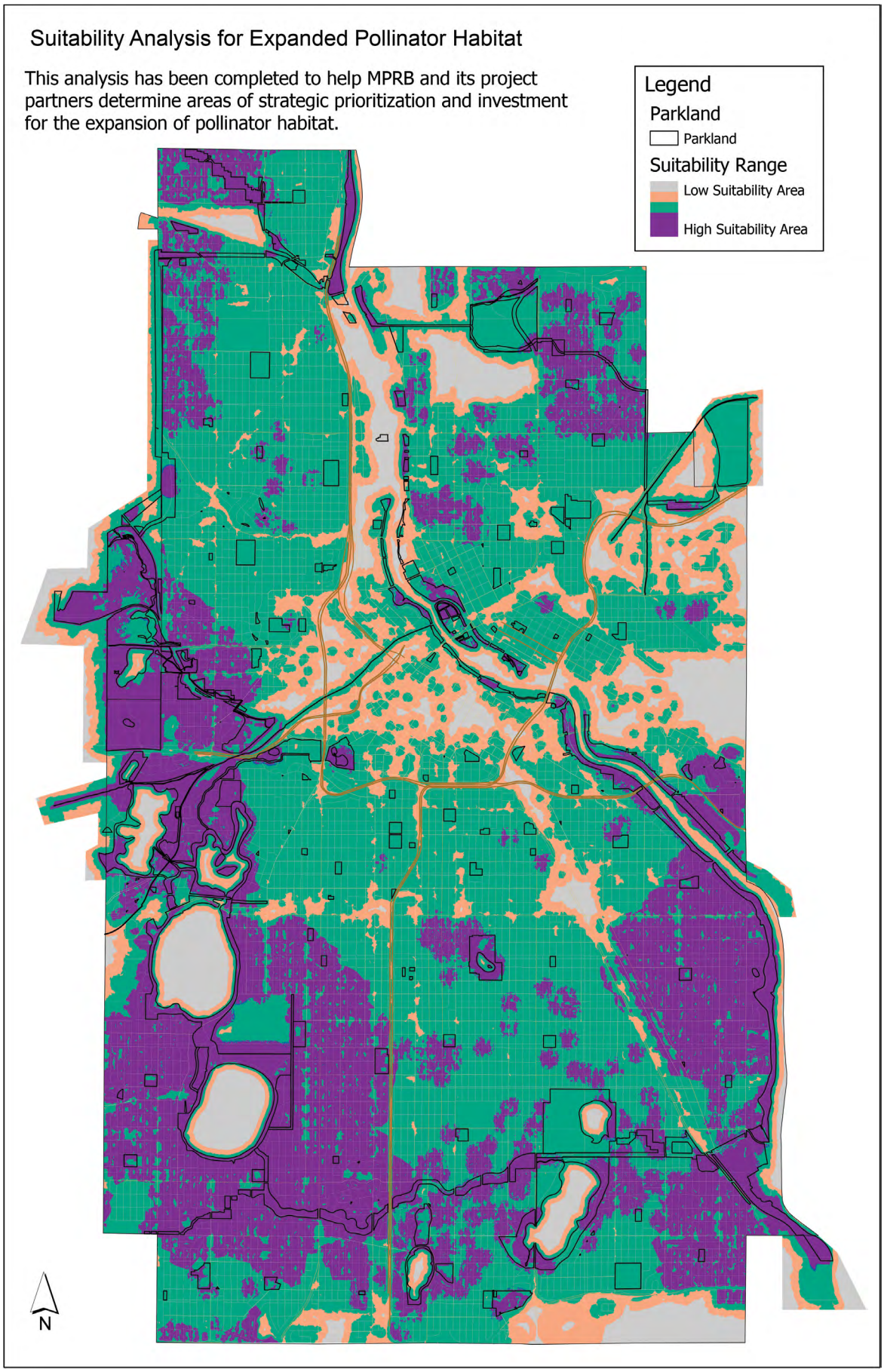


FIGURE 37. HABITAT CORRIDORS